Cat. No. W442-E1-01

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SYSMAC

OMRON FB Library

REFERENCE MANUAL

OMRON

Programmable Controller

SYSMAC

OMRON FB Library

Reference Manual

Notice:

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

⚠ DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ Caution Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

OMRON Product References

All OMRON products are capitalized in this manual. The word "Unit" is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

The abbreviation "Ch," which appears in some displays and on some OMRON products, often means "word" and is abbreviated "Wd" in documentation in this sense.

The abbreviation "PLC" means Programmable Controller. "PC" is used, however, in some Programming Device displays to mean Programmable Controller.

Precautions

Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent).

- Personnel in charge of installing FA systems.
- Personnel in charge of designing FA systems.
- Personnel in charge of managing FA systems and facilities.

General Precautions

The user must operate the product according to the performance specifications described in the operation manuals.
Before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems, machines, and equipment that may have a serious influence on lives and property if used improperly, consult your OMRON representative.
Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.
This manual provides information for programming and operating the Unit.
Be sure to read this manual before attempting to use the Unit and keep this manual close at hand for reference during operation.

⚠WARNING It is extremely important that a PLC and all PLC Units be used for the specified purpose and under the specified conditions, especially in applications that can directly or indirectly affect human life. You must consult with your OMRON representative before applying a PLC System to the above-mentioned applications.

This OMRON FB Library Reference describes functions of each OMRON Function Block. This Guide does not include limiting conditions of usage of each unit/control component, or combination of them. Please read user's/operation manual of each product for the actual application.

Safety Precautions (CX-Programmer)

⚠WARNING Confirm safety sufficiently before transferring I/O memory area status from the CX-Programmer to the PLC. The devices connected to Output Units may malfunction, regardless of the operating mode of the CPU Unit. Caution is required in respect to the following functions.

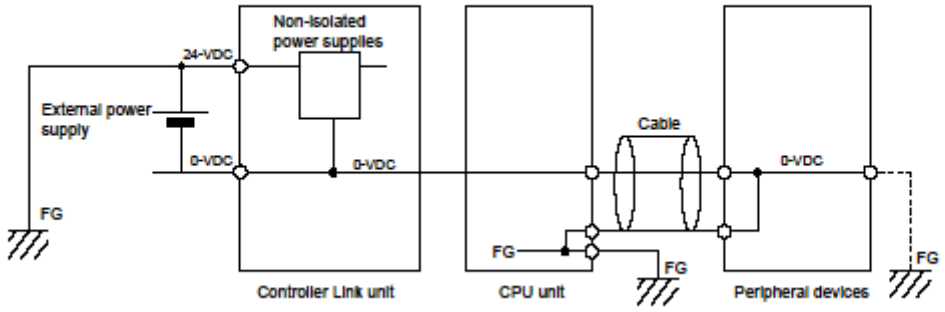
- Transferring from the CX-Programmer to real I/O (CIO Area) in the CPU Unit using the *PLC Memory* window.
- Transferring from file memory to real I/O (CIO Area) in the CPU Unit using the *Memory Card* window.

⚠Caution Confirm safety at the destination node before transferring a program to another node or changing contents of the I/O memory area. Doing either of these without confirming safety may result in injury.

⚠Caution Execute online edit only after confirming that no adverse effects will be caused by extending the cycle time. Otherwise, the input signals may not be readable.

⚠Caution Confirm safety sufficiently before monitoring power flow and present value status in the *Ladder Section* window or when monitoring present values in the *Watch* window. If force-set/reset or set/reset operations are inadvertently performed by pressing short-cut keys, the devices connected to Output Units may malfunction, regardless of the operating mode of the CPU Unit.

⚠Caution Caution is required when connecting peripheral devices, such as a personal computer, to the PLC when Units with non-isolated power supplies, such as the CS1W-CLK12/CLK52(-V1), that are connected to an external power supply are mounted to the PLC. If the 24-V side is grounded on the external power supply, a short will be created if the 0-V side of the peripheral device is grounded. When connecting peripheral devices, either ground the 0-V side of the external power supply or do not ground the external power supply at all.



Safety Precautions (CPU unit)

⚠ **WARNING** The CPU Unit refreshes I/O even when the program is stopped (i.e., even in PROGRAM mode). Confirm safety thoroughly in advance before changing the status of any part of memory allocated to I/O Units, Special I/O Units, or CPU Bus Units. Any changes to the data allocated to any Unit may result in unexpected operation of the loads connected to the Unit. Any of the following operation may result in changes to memory status.

- Transferring I/O memory data to the CPU Unit from a Programming Device.
- Changing present values in memory from a Programming Device.
- Force-setting/-resetting bits from a Programming Device.
- Transferring I/O memory files from a Memory Card or EM file memory to the CPU Unit.
- Transferring I/O memory from a host computer or from another PLC on a network.

⚠ **WARNING** Do not attempt to take any Unit apart while the power is being supplied. Doing so may result in electric shock.

⚠ **WARNING** Do not touch any of the terminals or terminal blocks while the power is being supplied. Doing so may result in electric shock.

⚠ **WARNING** Do not attempt to disassemble, repair, or modify any Units. Any attempt to do so may result in malfunction, fire, or electric shock.

⚠ **WARNING** Provide safety measures in external circuits (i.e., not in the Programmable Controller), including the following items, to ensure safety in the system if an abnormality occurs due to malfunction of the PLC or another external factor affecting the PLC operation. Not doing so may result in serious accidents.

- Emergency stop circuits, interlock circuits, limit circuits, and similar safety measures must be provided in external control circuits.
- The PLC will turn OFF all outputs when its self-diagnosis function detects any error or when a severe failure alarm (FALS) instruction is executed. As a countermeasure for such errors, external safety measures must be provided to ensure safety in the system.
- The PLC outputs may remain ON or OFF due to deposition or burning of the output relays or destruction of the output transistors. As a countermeasure for such problems, external safety measures must be provided to ensure safety in the system.
- When the 24-V-DC output (service power supply to the PLC) is overloaded or short-circuited, the voltage may drop and result in the outputs being turned OFF. As a countermeasure for such problems, external safety measures must be provided to ensure safety in the system.

⚠ **Caution** Confirm safety before transferring data files stored in the file memory (Memory Card or EM file memory) to the I/O area (CIO) of the CPU Unit using a peripheral tool. Otherwise, the devices connected to the output unit may malfunction regardless of the operation mode of the CPU Unit.

⚠ **Caution** Fail-safe measures must be taken by the customer to ensure safety in the event of incorrect, missing, or abnormal signals caused by broken signal lines, momentary power interruptions, or other causes. Serious accidents may result from abnormal operation if proper measures are not provided.

⚠ **Caution** Execute online edit only after confirming that no adverse effects will be caused by extending the cycle time. Otherwise, the input signals may not be readable.

⚠ **Caution** The CS1-H, CJ1-H, CJ1M, and CS1D CPU Units automatically back up the user program and parameter data to flash memory when these are written to the CPU Unit. I/O memory (including the DM, EM, and HR Areas), however, is not written to flash memory. The DM, EM, and HR Areas can be held during power interruptions with a battery. If there is a battery error, the contents of these areas may not be accurate after a power interruption. If the contents of the DM, EM, and HR Areas are used to control external outputs, prevent inappropriate outputs from being made whenever the Battery Error Flag (A40204) is ON.

⚠ **Caution** Confirm safety at the destination node before transferring a program to another node or changing contents of the I/O memory area. Doing either of these without confirming safety may result in injury.

⚠ **Caution** Tighten the screws on the terminal block of the AC Power Supply Unit to the torque specified in the operation manual. The loose screws may result in burning or malfunction.

⚠ **Caution** Do not touch the Power Supply Unit when power is being supplied or immediately after the power supply is turned OFF. The Power Supply Unit will be hot and you may be burned.

⚠ **Caution** Be careful when connecting personal computers or other peripheral devices to a PLC to which is mounted a non-insulated Unit (CS1W-CLK12/52(-V1) or CS1W-ETN01) connected to an external power supply. A short-circuit will be created if the 24 V side of the external power supply is grounded and the 0 V side of the peripheral device is grounded. When connecting a peripheral device to this type of PLC, either ground the 0 V side of the external power supply or do not ground the external power supply at all.

Application Precautions (CX-Programmer)

Observe the following precautions when using the CX-Programmer.

- Observe the following precautions before starting the CX-Programmer.
  - Exit all applications not directly related to the CX-Programmer. Particularly exit any software such as screen savers, virus checkers, email or other communications software, and schedulers or other applications that start up periodically or automatically.
  - Disable sharing hard disks, printers, or other devices with other computers on any network.
  - With some notebook computers, the RS-232C port is allocated to a modem or a infrared line by default. Following the instructions in documentation for your computer and enable using the RS-232C port as a normal serial port.
  - With some notebook computers, the default settings for saving energy do not supply the rated power to the RS-232C port. There may be both Windows settings for saving energy, as well as setting for specific computer utilities and BIOS. Following the instructions in documentation for your computer, disable all energy saving settings.
  - Do not turn OFF the power supply to the PLC or disconnect the connecting cable while the CX-Programmer is online with the PLC. The computer may malfunction.
  - With the CS/CJ-series PLCs, when creating an AUTOEXEC.IOM file from the CX-Programmer to automatically transfer data at startup, set the first write address to D20000 and be sure that the size of data written does not exceed the size of the DM Area. When the data file is read from the Memory Card at startup, data will be written in the CPU Unit starting at D20000 even if another address was set when the AUTOEXEC.IOM file was created. Also, if the DM Area is exceeded (which is possible when the CX-Programmer is used), the remaining data will be written to the EM Area. Refer to information on file operations in the CS/CJ-series Programming Manual for details.
  - Confirm that no adverse effect will occur in the system before attempting any of the following. Not doing so may result in an unexpected operation.

  Changing the operating mode of the PLC.
  - Force-setting/force-resetting any bit in memory.
  - Changing the present value of any word or any set value in memory.
  - Check the user program for proper execution before actually running it on the Unit. Not checking the program may result in an unexpected operation.
  - Precaution on Using Indirect DM and EM Addresses in Comparison Instructions:

    When indirect DM or EM addresses are used as operands in comparison instructions, the top portion of the comparison instruction will be displayed in yellow when it is being monitored. At that time the power flow will not be monitored to the right of such comparison instructions. The contact and coil status, and present values of operands in special instructions will be displayed normally.
  - The user program and parameter area data in CS1-H CPU Units is backed up in the built-in flash memory. The BKUP indicator will light on the front of the CPU Unit when the backup operation is in progress. Do not turn OFF the power supply to the CPU Unit when the BKUP indicator is lit. The data will not be backed up if power is turned OFF.

    To display the status of writing to flash memory on the CX-Programmer, place a checkmark by *Display dialog to show PLC Memory Backup Status* on the PLC properties and then select *Windows* | *PLC Memory Backup Status* from the *Windows* menu.

- Precaution in Changing the PLC Type
  On the CX-Programmer, you can change the PLC (device) type or CPU type. When these are changed, however, only the data for the ladder program and the symbol tables are changed. The following data will be initialized and must be reset.
  - PLC Setup
  - Expansion instructions
  - I/O tables
  - PLC memory

  Particularly the PLC Setup has a large impact on PLC system operation. Be careful to reset all require settings after changing the PLC type.
  If expansion instruction allocations are not reset, program errors could occur, preventing the PLC from running. Always restore the expansion instruction allocates to the previous settings after changing the PLC type.

Observe the following precautions when using the CX-Net.

- Do not change the operating mode of the CPU Unit without first confirming that operation of the controlled system will not be affect.
- Do not run the user program on the PLC until its operation has been checked sufficiently.
- The data link mode (manual setting or automatic setting) and data link method are determined according to the data link setting in the startup node. In the startup node, set a data link table in the case of manual setting and data link automatic setting parameters in the case of automatic setting. If the settings are incorrect, the data link will not start.
- Check the following items before starting data links. If incorrect data link tables or parameters are set, injury may result due to unexpected operation of the system. Even if the correct data link tables and parameters have been set, do not start or stop data links before verifying that there will be no adverse influence on the system.
  (1) Manually Set Data Links

  Check the data link tables in each node participating in the data link to see that they are correct.

  Be sure that data link tables are deleted from nodes that are not participating in the data links.

  (2) Automatically Set Data Links

  Be sure that the correct DM parameters have been set in the data link startup node.
- CPU Bus Units will be automatically restarted when routing tables are transferred from a Programming Device to the CPU Unit. Resetting is required to use the new tables. Confirm that restarting the CPU Bus Units will not adversely affect system operation before transferring routing tables.

Application Precautions (CPU unit)

Observe the following precautions when using the PLC System.

- You must use the CX-Programmer (programming software that runs on Windows) if you need to program more than one task. A Programming Console can be used to program only one cyclic task plus interrupt tasks.

  A Programming Console can, however, be used to edit multitask programs originally created with the CX-Programmer.

⚠ **WARNING** Always heed these precautions. Failure to abide by the following precautions could lead to serious or possibly fatal injury.

- Always connect to a ground of 100 Ω or less when installing the Units. Not connecting to a ground of 100 Ω or less may result in electric shock.
- A ground of 100 Ω or less must be installed when shorting the GR and LG terminals on the Power Supply Unit.
- Always turn OFF the power supply to the PLC before attempting any of the following. Not turning OFF the power supply may result in malfunction or electric shock.
  - Mounting or dismounting Power Supply Units, I/O Units, CPU Units, Inner Boards, or any other Units.
  - Assembling the Units.
  - Setting DIP switches or rotary switches.
  - Connecting cables or wiring the system.
  - Connecting or disconnecting the connectors.

⚠ **Caution** Failure to abide by the following precautions could lead to faulty operation of the PLC or the system, or could damage the PLC or PLC Units. Always heed these precautions.

- The user program and parameter area data in the CS1-H, CS1D, CJ1-H, and CJ1M CPU Units are backed up in the built-in flash memory. The BKUP indicator will light on the front of the CPU Unit when the backup operation is in progress. Do not turn OFF the power supply to the CPU Unit when the BKUP indicator is lit. The data will not be backed up if power is turned OFF.
- When using a CS-series CS1 CPU Unit for the first time, install the CS1W-BAT1 Battery provided with the Unit and clear all memory areas from a Programming Device before starting to program. When using the internal clock, turn ON power after installing the battery and set the clock from a Programming Device or using the DATE(735) instruction. The clock will not start until the time has been set.
- When the CPU Unit is shipped from the factory, the PLC Setup is set so that the CPU Unit will start in the operating mode set on the Programming Console mode switch. When a Programming Console is not connected, a CS-series CS1 CPU Unit will start in PROGRAM mode, but a CS1-H, CS1D, CJ1, CJ1-H, or CJ1M CPU Unit will start in RUN mode and operation will begin immediately. Do not advertently or inadvertently allow operation to start without confirming that it is safe.
- When creating an AUTOEXEC.IOM file from a Programming Device (a Programming Console or the CX-Programmer) to automatically transfer data at startup, set the first write address to D20000 and be sure that the size of data written does not exceed the size of the DM Area. When the data file is read from the Memory Card at startup, data will be written in the CPU Unit starting at D20000 even if another address was set when the AUTOEXEC.IOM file was created. Also, if the DM Area is exceeded (which is possible when the CX-Programmer is used), the remaining data will be written to the EM Area.
- Always turn ON power to the PLC before turning ON power to the control system. If the PLC power supply is turned ON after the control power supply, temporary errors may result in control system signals because the output terminals on DC Output Units and other Units will momentarily turn ON when power is turned ON to the PLC.
- Fail-safe measures must be taken by the customer to ensure safety in the event that outputs from Output Units remain ON as a result of internal circuit failures, which can occur in relays, transistors, and other elements.
- Fail-safe measures must be taken by the customer to ensure safety in the event of incorrect, missing, or abnormal signals caused by broken signal lines, momentary power interruptions, or other causes.
- Interlock circuits, limit circuits, and similar safety measures in external circuits (i.e., not in the Programmable Controller) must be provided by the customer.
- Do not turn OFF the power supply to the PLC when data is being transferred. In particular, do not turn OFF the power supply when reading or writing a Memory Card. Also, do not remove the Memory Card when the BUSY indicator is lit. To remove a Memory Card, first press the memory card power supply switch and then wait for the BUSY indicator to go out before removing the Memory Card.
- If the I/O Hold Bit is turned ON, the outputs from the PLC will not be turned OFF and will maintain their previous status when the PLC is switched from RUN or MONITOR mode to PROGRAM mode. Make sure that the external loads will not produce dangerous conditions when this occurs. (When operation stops for a fatal error, including those produced with the FALS(007) instruction, all outputs from Output Unit will be turned OFF and only the internal output status will be maintained.)

- The contents of the DM, EM, and HR Areas in the CPU Unit are backed up by a Battery. If the Battery voltage drops, this data may be lost. Provide countermeasures in the program using the Battery Error Flag (A40204) to re-initialize data or take other actions if the Battery voltage drops.
- When supplying power at 200 to 240 V AC with a CS-series PLC, always remove the metal jumper from the voltage selector terminals on the Power Supply Unit (except for Power Supply Units with wide-range specifications). The product will be destroyed if 200 to 240 V AC is supplied while the metal jumper is attached.
- Always use the power supply voltages specified in the operation manuals. An incorrect voltage may result in malfunction or burning.
- Take appropriate measures to ensure that the specified power with the rated voltage and frequency is supplied. Be particularly careful in places where the power supply is unstable. An incorrect power supply may result in malfunction.
- Install external breakers and take other safety measures against short-circuiting in external wiring. Insufficient safety measures against short-circuiting may result in burning.
- Do not apply voltages to the Input Units in excess of the rated input voltage. Excess voltages may result in burning.
- Do not apply voltages or connect loads to the Output Units in excess of the maximum switching capacity. Excess voltage or loads may result in burning.
- Disconnect the functional ground terminal when performing withstand voltage tests. Not disconnecting the functional ground terminal may result in burning.
- Install the Units properly as specified in the operation manuals. Improper installation of the Units may result in malfunction.
- With CS-series PLCs, be sure that all the Unit and Backplane mounting screws are tightened to the torque specified in the relevant manuals. Incorrect tightening torque may result in malfunction.
- Be sure that all terminal screws, and cable connector screws are tightened to the torque specified in the relevant manuals. Incorrect tightening torque may result in malfunction.
- Leave the label attached to the Unit when wiring. Removing the label may result in malfunction if foreign matter enters the Unit.
- Remove the label after the completion of wiring to ensure proper heat dissipation. Leaving the label attached may result in malfunction.
- Use crimp terminals for wiring. Do not connect bare stranded wires directly to terminals. Connection of bare stranded wires may result in burning.
- Wire all connections correctly.
- Double-check all wiring and switch settings before turning ON the power supply. Incorrect wiring may result in burning.
- Mount Units only after checking terminal blocks and connectors completely.
- Be sure that the terminal blocks, Memory Units, expansion cables, and other items with locking devices are properly locked into place. Improper locking may result in malfunction.
- Check switch settings, the contents of the DM Area, and other preparations before starting operation. Starting operation without the proper settings or data may result in an unexpected operation.
- Check the user program for proper execution before actually running it on the Unit. Not checking the program may result in an unexpected operation.

- Confirm that no adverse effect will occur in the system before attempting any of the following. Not doing so may result in an unexpected operation.
  - Changing the operating mode of the PLC.
  - Force-setting/force-resetting any bit in memory.
  - Changing the present value of any word or any set value in memory.
- Do not pull on the cables or bend the cables beyond their natural limit. Doing either of these may break the cables.
- Do not place objects on top of the cables or other wiring lines. Doing so may break the cables.
- Do not use commercially available RS-232C personal computer cables. Always use the special cables listed in this manual or make cables according to manual specifications. Using commercially available cables may damage the external devices or CPU Unit.
- Never connect pin 6 (5-V power supply) on the RS-232C port on the CPU Unit to any device other than an NT-AL001 or CJ1W-CIF11 Adapter.The external device or the CPU Unit may be damaged.
- When replacing parts, be sure to confirm that the rating of a new part is correct. Not doing so may result in malfunction or burning.
- Before touching a Unit, be sure to first touch a grounded metallic object in order to discharge any static build-up. Not doing so may result in malfunction or damage.
- When transporting or storing circuit boards, cover them in antistatic material to protect them from static electricity and maintain the proper storage temperature.
- Do not touch circuit boards or the components mounted to them with your bare hands. There are sharp leads and other parts on the boards that may cause injury if handled improperly.
- Do not short the battery terminals or charge, disassemble, heat, or incinerate the battery. Do not subject the battery to strong shocks. Doing any of these may result in leakage, rupture, heat generation, or ignition of the battery. Dispose of any battery that has been dropped on the floor or otherwise subjected to excessive shock. Batteries that have been subjected to shock may leak if they are used.
- UL standards required that batteries be replaced only by experienced technicians. Do not allow unqualified persons to replace batteries.
- With a CJ-series PLC, the sliders on the tops and bottoms of the Power Supply Unit, CPU Unit, I/O Units, Special I/O Units, and CPU Bus Units must be completely locked (until they click into place). The Unit may not operate properly if the sliders are not locked in place.
- With a CJ-series PLC, always connect the End Plate to the Unit on the right end of the PLC. The PLC will not operate properly without the End Plate
- Unexpected operation may result if inappropriate data link tables or parameters are set. Even if appropriate data link tables and parameters have been set, confirm that the controlled system will not be adversely affected before starting or stopping data links.
- CPU Bus Units will be restarted when routing tables are transferred from a Programming Device to the CPU Unit. Restarting these Units is required to read and enable the new routing tables. Confirm that the system will not be adversely affected before allowing the CPU Bus Units to be reset.

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■Programmable Controller

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Move Relative: _NCx021_MoveRelative_DINT ····· 3-238
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Origin Search: _NCx051_Home_DINT ····· 3-243
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Read Parameter: _NCx201_ReadParameter ····· 3-251
Read Boolean Parameter: _NCx202_ReadBoolParameter ····· 3-254
Read Axis Error: _NCx203_ReadAxisError ····· 3-256
Read Present Position: _NCx204_ReadActualPosition_REAL ····· 3-258
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■Inverter

3-8 Inverter (DeviceNet)

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Stop Inverter: _INVDRT060_Stop ····· 3-277
Reset Inverter Error: _ INVDRT080_Reset ····· 3-279
Read Inverter Status: _INVDRT200_ReadStatus ····· 3-281
Read Inverter Parameter: _INVDRT201_ReadParameter ····· 3-284
Read Inverter Error Information: _INVDRT203_ReadAxisError ····· 3-286
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■Servo Driver

3-9 Servo Driver

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Read Servo Error: _SRV203_ReadAxisError ····· 3-296
Read Servomotor Value: _SRV206_ReadValue ····· 3-299
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■RFID

3-10 ID Sensor Unit

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Read Data Carrier Data: _V60x200_ReadData ····· 3-311
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Set Data Carrier Bit: _V60x401_SetBit ····· 3-317
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3-11 Vision Sensor

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■Barcode

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3-13 Laser Sensor

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Execute Zero Reset: _ZXL004_ExeZeroReset ····· 3-373
Release Zero Reset: _ZXL005_StopZeroReset ····· 3-376
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Teach 1-point Low Threshold: _ZXL009_Teach1LowThreshold ····· 3-388
Teach 2-point High Threshold: _ZXL010_Teach2HighThreshold ····· 3-391
Teach 2-point Low Threshold: _ZXL011_Teach2LowThreshold ····· 3-394
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Read Incident Light: _ZXL203_ReadIncidentLevel ····· 3-407
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Read Control Output: _ZXL205_ReadOutputs ····· 3-413
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Read High Threshold: _ZXL207_ReadHighThreshold ····· 3-419
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■Temperature Controller

3-14 Temperature Controller (Serial)

[E5AR/E5ER series]

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[E5ZN/E5CN/CN-U series]

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Stop Operation: _E5xx003_Stop ····· 3-438
Autotune: _E5xN004_ExecuteAT ····· 3-475
Stop Autotuning: _E5xN005_CancelAT ····· 3-478
Read Variable Area: _E5xx200_ReadVariable ····· 3-441
Read Status: _E5xx201_ReadStatus ····· 3-444
Read Process Value: _E5xx202_ReadPV ····· 3-447
Read Set Point: _E5xx203_ReadSP ····· 3-450
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Read Heating MV: _E5xx205_ReadHeatingMV ····· 3-456
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Write Set Point: _E5xx403_WriteSP ····· 3-465

3-15 Temperature Controller (DeviceNet)

[E5AR/E5ER series]

Operation Command: _E5xxDRT001_ExeOperation ····· 3-482
Start Operation: _E5xxDRT002_Run ····· 3-485
Stop Operation: _E5xxDRT003_Stop ····· 3-488
Autotune: _E5xRDRT004_ExecuteAT ····· 3-518
Stop Autotuning: _E5xRDRT005_CancelAT ····· 3-521
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Read Status: _E5xxDRT201_ReadStatus ····· 3-494
Read Process Value: _E5xxDRT202_ReadPV ····· 3-497
Read Set Point: _E5xxDRT203_ReadSP ····· 3-500
Read Cooling MV: _E5xxDRT204_ReadCoolingMV ····· 3-503
Read Heating MV: _E5xxDRT205_ReadHeatingMV ····· 3-506
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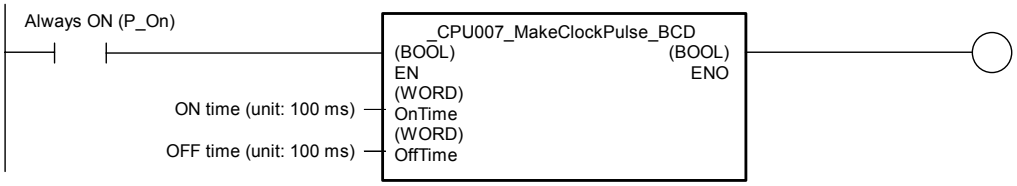
Write Variable Area: _E5xxDRT400_WriteVariable ····· 3-512
Write Set Point: _E5xxDRT403_WriteSP ····· 3-515

[E5ZN series]
Operation Command: _E5xxDRT001_ExeOperation ····· 3-482
Start Operation: _E5xxDRT002_Run ····· 3-485
Stop Operation: _E5xxDRT003_Stop ····· 3-488
Autotune: _E5ZNDRT004_ExecuteAT ····· 3-524
Stop Autotuning: _E5ZNDRT005_CancelAT ····· 3-527
Read Variable Area: _E5xxDRT200_ReadVariable ····· 3-491
Read Status: _E5xxDRT201_ReadStatus ····· 3-494
Read Process Value: _E5xxDRT202_ReadPV ····· 3-497
Read Set Point: _E5xxDRT203_ReadSP ····· 3-500
Read Cooling MV: _E5xxDRT204_ReadCoolingMV ····· 3-503
Read Heating MV: _E5xxDRT205_ReadHeatingMV ····· 3-506
Write Variable Area: _E5xxDRT400_WriteVariable ····· 3-512
Write Set Point: _E5xxDRT403_WriteSP ····· 3-515

3-16 Temperature Controller (Unit)
Start Control: _TCx002_Run ····· 3-531
Stop Control: _TCx003_Stop ····· 3-533
Autotune: _TCx004_ExecuteAT ····· 3-535
Cancel Autotuning: _TCx005_CancelAT ····· 3-537
Read Status: _TCx201_ReadStatus ····· 3-539
Read Process Value: _TCx202_ReadPV ····· 3-540
Read Set Point: _TCx203_ReadSP ····· 3-542
Write Set Point: _TCx403_WriteSP ····· 3-544

Chapter 1 How to use this guide

Notation and Layout of Function Block Descriptions

FB Name	The name of the function block is described.
Basic function	The basic function of the function block is described.
Symbol	The radder symbol used to represent the function block on the CX-Programmer is shown. 
File name	The default position of the function block file is described. For example, the description [Lib\FBL\omronlib\PLC\CPU_CPU007_MakeClockPulse_BCD.cxf] specified that the function block file exists at [c :\ProgramFiles\omron\Lib\ FBL\omronlib\PLC\CPU\] at the default setting.
Applicable models	The units and components enabled to be applied the function block are described.
Conditions for usage	The condition enabled to be applied the function block is described.
Function description	The functions of the function block are described.
EN input condition	The starting trigger(EN) of the function block is described.
Restrictions	The restriction of the function block is described.
Application example	The example of the function block used is described.

■ **Variable Tables**

The name and variable range are described.

Chapter 2 List of FB library

The List of the function block

CPU unit

_CPU001_TP_BCD	BCD Pulse Timer	Turns ON the output for a specified time after the input turns ON.
_CPU002_TP_BIN	Binary Pulse Timer	Turns ON the output for a specified time after the input turns ON.
_CPU003_TON_BCD	BCD ON Delay	Turns ON the output a specified time after the input turns ON.
_CPU004_TON_BIN	Binary ON Delay	Turns ON the output a specified time after the input turns ON.
_CPU005_TOF_BCD	BCD OFF Delay	Turns OFF the output a specified time after the input turns OFF.
_CPU006_TOF_BIN	Binary OFF Delay	Turns OFF the output a specified time after the input turns OFF.
_CPU007_MakeClockPulse_BCD	Make ON Time/OFF Time Clock Pulse in BCD	Generates a clock pulse with the specified ON time and OFF time and outputs it to ENO.
_CPU008_MakeClockPulse_BIN	Make ON Time/OFF Time Clock Pulse in Binary	Generates a clock pulse with the specified ON time and OFF time and outputs it to ENO.
_CPU010_SendData	Send Data	Sends data to a node on a network.
_CPU011_ReceiveData	Receive Data	Receives data from a node on a network.
_CPU012_SendCommand	Send Command	Sends command data to a node on a network.
_CPU013_PMCR	Execute Communications Sequence	Calls a registered communications sequence (protocol data) and executes it.
_CPU014_RXD	Receive from Communications Port	Receives the specified number of bytes of data from the port.
_CPU015_TXD	Send from Serial Port	Sends the specified number of bytes of data from the port.

CPU bus unit and board

_UNIT001_Restart	Unit Restart	Restarts the unit or board.

Serial Communication unit and board

_SCx001_ResetPort	Reset Serial Port	Resets a serial port.
_SCx002_PMCR_Abort	Abort in Protocol Macro Mode	Aborts execution in Protocol Macro Mode.
_SCx003_PMCR_ReleaseWait	Release Wait	Releases Wait Status in Protocol Macro Mode.
_SCx600_SetPortSYSWAY	Set Host Link Port	Sets a serial port to Host Link mode.
_SCx601_SetPortNTLINK	Set NT Link Port	Sets a serial port to NT Link mode.
_SCx602_SetPortPMCR	Set Protocol Macro Mode Port	Sets a serial port to Protocol Macro mode.
_SCx603_SetPortNOPRTCL	Set No-protocol Mode	Sets a serial port to No-protocol mode.
_SCx604_SetPortGATEWAY	Set Serial Gateway Mode	Sets a serial port to Serial Gateway mode.
_SCx605_SetPortLOOPBACK	Set Loopback Test Mode	Sets a serial port to Loopback Test mode.

Controller link unit

_CLK001_LINK_RunDatalink	Start Data Links	Starts the data links.
_CLK002_LINK_StopDatalink	Stop Data Links	Stops the data links.
_CLK003_CheckNode32	Monitor Controller Link Node Errors 32	Monitors node communications status and data link status using the network status.
_CLK004_CheckNode62	Monitor Controller Link Node Errors 62	Monitors node communications status and data link status using the network status.

Ethernet unit

_ETN001_SOCKET_TcpOpenPassive	Open TCP Socket Passive	Issues a request to the specified Ethernet Unit to open a TCP socket using passive processing.
_ETN002_SOCKET_TcpOpenActive	Open TCP Socket Active	Issues a request to the specified Ethernet Unit to open a TCP socket using active processing.
_ETN003_SOCKET_TcpClose	Close TCP Socket	Performs TCP socket close processing for the specified Ethernet Unit.
_ETN004_SOCKET_TcpSend	Send via TCP Socket	Issues a request to the specified Ethernet Unit to send using a TCP socket.
_ETN005_SOCKET_TcpRecv	Receive via TCP Socket	Issues a request to the specified Ethernet Unit to receive using a TCP socket.
_ETN011_SOCKET_UdpOpen	Open UDP Socket	Issues a request to the specified Ethernet Unit to open a UDP socket.
_ETN013_SOCKET_UdpClose	Close UDP Socket	Performs UDP socket close processing for the specified Ethernet Unit.
_ETN014_SOCKET_UdpRecv	Receive via UDP Socket	Issues a request to the specified Ethernet Unit to receive using a UDP socket.
_ETN015_SOCKET_UdpSend	Send via UDP Socket	Issues a request to the specified Ethernet Unit to send using a UDP socket.

DeviceNet unit

_Dnet200_GetGenericStat	Read Generic Status	Reads the generic status from slaves.
_Dnet201_GetNetVoltage_PV	Read Network Voltage Present Value	Reads the present values of the network power supply from slaves.
_Dnet202_GetNetVoltage_Min	Read Network Voltage Minimum	Reads the minimum values of the network power supply from slaves.
_Dnet203_GetNetVoltage_Max	Read Network Voltage Maximum Value	Reads the maximum values of the network power supply from slaves.
_Dnet204_GetONTime_PV	Read Present Unit ON Time	Reads the present Unit ON time (conduction time) from slaves.
_Dnet205_GetONTime_Stat	Read Unit ON Time Status	Reads the Unit ON time (conduction time) status from slaves.
_Dnet206_GetCounter_IN_PV	Read Input Terminal Maintenance Counter Present Value	Reads the present values of terminal maintenance counters from slaves.
_Dnet207_GetCounter_IN_SV	Read Input Terminal Maintenance Counter Set Value	Reads the set values of terminal maintenance counters from slaves.
_Dnet208_GetCounter_OUT_PV	Read Output Terminal Maintenance Counter Present Value	Reads the present values of terminal maintenance counters from slaves.
_Dnet209_GetCounter_OUT_SV	Read Output Terminal Maintenance Counter Set Value	Reads the set values of terminal maintenance counters from slaves.
_Dnet210_GetCounter_Stat	Read Maintenance Counter Status	Reads maintenance counter status from slaves.
_Dnet211_GetInputPower_Stat	Read Input Power Status	Reads the input power status from slaves.
_Dnet212_GetOutPower_Stat	Read Output Power Status	Reads the power supply status for outputs from slaves.
_Dnet213_GetLoadShort_Stat	Read Load Short-circuit Status	Reads the load OFF short-circuit status from slaves.
_Dnet214_GetLoadOffWire_Hold	Read Load OFF Wire Hold Status	Reads the load OFF wire hold status from slaves.
_Dnet215_GetLoadOffWire_Stat	Read Load OFF Wire Status	Reads the load OFF wire status from slaves. Use this FM for output terminals.
_Dnet216_GetOperationTime_PV	Read Operation Time Monitor Present Value	Reads the present values of the operation time monitors from slaves.
_Dnet217_GetOperationTime_SV	Read Operation Time Monitor Set Value	Reads the set values of the operation time monitors from slaves.
_Dnet218_GetOperationTime_ Stat	Read Operation Time Monitor Status	Reads the status of the operation time monitors from slaves.
_Dnet219_GetOperationTime_ Hold	Read Operation Time Monitor Hold Status	Reads the hold status for operation times from slaves.
_Dnet220_GetOperationTime_ Peak	Read Operation Time Monitor Peak Value Read	Reads the peak values for operation times from slaves.
_Dnet221_GetSensorOffWire_ Stat	Read Sensor OFF Wire Status	Reads the sensor OFF wire status from slaves.
_Dnet222_GetSensorOffWire_ Hold	Read Sensor OFF Wire Hold Status	Reads the sensor OFF wire hold status from slaves.
_Dnet223_GetSensorShort_Stat	Read Sensor Power Supply Short-circuit Status	Reads the power supply short circuit status from slaves.
_Dnet224_GetSensorShort_Hold	Read Sensor Power Supply Short-circuit Hold Status	Reads the power supply short circuit hold status from slaves.

Position Controller

_NCF010_MoveAbsolute_REAL	Move Absolute	Positions using an absolute move.
_NCF011_MoveAbsolute_DINT	Absolute Move Command	Positions using an absolute move.
_NCF020_MoveRelative_ REAL	Move Relative	Positions using a relative move.
_NCF021_MoveRelative_DINT	Relative Move Command	Positions using a relative move.
_NCF030_MoveVelocity_ REAL	Speed Control	Controls the speed.
_NCF031_MoveVelocity_DINT	Speed Control	Controls the speed.
_NCF040_TorqueControl_REAL	Torque Control	Controls torque.
_NCF041_TorqueControl_DINT	Control Torque	Controls torque.
_NCF050_Home_REAL	Origin Search	Performs an origin search operation to establish the origin.
_NCF051_Home_DINT	Origin Search	Performs an origin search operation to establish the origin.
_NCF060_Stop	Stop Deceleration	Decelerates an axis to a stop.
_NCF070_Power	Operation Command	Turns the main power circuit ON and OFF.
_NCF080_Reset	Reset Axis Error	Resets and axis error.
_NCF200_ReadStatus	Read Status	Reads the status of an axis.
_NCF201_ReadParameter	Read Parameter	Reads a servo parameter of an axis.
_NCF202_ReadBoolParameter	Read Boolean Parameter	Reads a Boolean parameter.
_NCF203_ReadAxisError	Read Axis Error	Reads axis error information.
_NCF204_ReadActualPosition_ REAL	Read Present Position	Reads the present position of an axis.
_NCF205_ReadActualPosition_ DINT	Read Present Position	Reads the present position of an axis.
_NCF401_WriteParameter	Write Parameter	Writes an axis servo parameter.
_NCF402_WriteBoolParameter	Write Boolean Parameter	Writes a Boolean parameter.
_NCx010_MoveAbsolute_REAL	Move Absolute	Positions using an absolute move.
_NCx011_MoveAbsolute_DINT	Move Absolute	Positions using an absolute move.
_NCx020_MoveRelative_REAL	Move Relative	Positions using a relative move.
_NCx021_MoveRelative_DINT	Move Relative	Positions using a relative move.
_NCx050_Home_REAL	Origin Search	Performs an origin search operation to establish the origin.
_NCx051_Home_DINT	Origin Search	Performs an origin search operation to establish the origin.
_NCx060_Stop	Deceleration Stop	Decelerates an axis to a stop.
_NCx080_Reset	Axis Error Reset	Resets and axis error.
_NCx200_ReadStatus	Read Status	Reads the status of an axis.
_NCx201_ReadParameter	Read Parameter	Reads a parameter of an axis.
_NCx202_ReadBoolParameter	Read Boolean Parameter	Reads a boolean parameter of an axis.
_NCx203_ReadAxisError	Read Axis Error	Reads axis error information.
_NCx204_ReadActualPosition_ REAL	Read Present Position	Reads the present position of an axis.
_NCx205_ReadActualPosition_ DINT	Read Present Position	Reads the present position of an axis.
_NCx401_WriteParameter	Write Parameter	Writes an axis parameter.
_NCx402_WriteBoolParameter	Write Boolean Parameter	Writes a Boolean parameter.
_NCx600_Setting	Set Unit	Sets the Position Control Unit.

Inverter

_INVDRT032_MoveVelocityHz	Move Inverter Hz	Outputs a run signal, rotation direction, and speed to the Inverter
_INVDRT033_MoveVelocityRPM	Move Inverter RPM	Outputs a run signal, rotation direction, and speed to the Inverter
_INVDRT060_Stop	Stop Inverter	Stops the Inverter.
_INVDRT080_Reset	Reset Inverter Error	An error is reset for the Inverter.
_INVDRT200_ReadStatus	Read Inverter Status	Reads status information from the Inverter.
_INVDRT201_ReadParameter	Read Inverter Parameter	Reads the setting of a parameter in an Inverter.
_INVDRT203_ReadAxisError	Read Inverter Error Information	Reads the error information from an Inverter.
_INVDRT401_WriteParameter	Write Inverter Parameter	Writes the setting of a parameter in an Inverter.

Servo

_SRV080_Reset	Reset Servo Error	Resets an error in the Servo Driver.
_SRV201_ReadParameter	Read Servo Parameter	Reads parameter information from the Servo Driver.
_SRV203_ReadAxisError	Read Servo Error	Reads Servo Driver error information.
_SRV206_ReadValue	Read Servomotor Value	Reads a monitor value from the servo driver.
_SRV401_WriteParameter	Write Servo Parameter	Changes a parameter in the Servo Driver.

RFID

_V60x001_CheckData	Check Data Carrier Data	The CRC is calculated and written for the data in the Data Carrier.
_V60x002_ControlWrites	Number of Writes Control	Updates the number of writes stored in the Data Carrier.
_V60x200_ReadData	Read Data Carrier Data	Reads data from a Data Carrier.
_V60x400_WriteData	Write Data to Data Carrier	Writes data to a Data Carrier.
_V60x401_SetBit	Set Data Carrier Bit	Turns ON the specified bit in the Data Carrier.
_V60x402_ClearBit	Bit Carrier Bit Clear	Turns OFF the specified bits in the Data Carrier.
_V60x403_WriteMaskBit	Write Data Carrier Mask Bits	Writes the specified data to a Data Carrier using the specified mask data.
_V60x404_WriteCalculation	Write Calculation	Performs a calculation between Data Carrier data and specified data and writes the result to the Data Carrier.
_V60x405_FillData	Fill Data in Data Carrier	Writes fill data to a Data Carrier.
_V60x406_Copy	Copy Data Carrier	Copies the data from one Data Carrier and writes it to another Data Carrier.
_V60x600_SetSystemSetting	Set System Settings	Sets the mode of the ID Sensor Unit.

Vision Sensor

_Fxxx001_Reset	Reset	Restarts the Vision Sensor.
_Fxxx200_GetSceneNo	Get Scene Number	Reads the scene number.
_Fxxx201_ChangeSceneNo	Change Scene	Changes the scene.
_Fxxx202_GetSceneGrNo	Get Scene Group Number	Gets the scene group number.
_Fxxx203_ChangeSceneGrNo	Switch Scene Group	Switches the scene group.
_Fxxx401_ExecMeasure	Execute Measurement	Executes one measurement.
_Fxxx402_ExecPictureMeasure	Execute Picture Measurement	Executes one measurement for displayed picture.

Code Reader

_2DCR401_ExecRead	Execute Read	Executes one read for a 2D Code Reader.
_2DCR201_ChangeSceneNo	Change Scene Number	Changes the scene number of the 2D Code Reader.
_2DCR200_GetSceneNo	Get Scene Number	Reads the scene number.

Laser Sensor

_ZXL001_InitializeParameter	Initialize Settings	Initializes the settings in the Smart Sensor.
_ZXL002_StartAutoTeach	Start Autoteaching	Starts automatic teaching.
_ZXL003_StopAutoTeach	Stop Autoteaching	Ends automatic teaching.
_ZXL004_ExeZeroReset	Execute Zero Reset	Executes a zero reset for the Smart Sensor.
_ZXL005_StopZeroReset	Release Zero Reset	Releases the zero reset status of the Smart Sensor.
_ZXL006_StartLDOFF	Start Load OFF Status	Starts the Load-OFF status.
_ZXL007_StopLDOFF	Stop Load OFF Status	Ends the Load-OFF status.
_ZXL008_Teach1HighThreshold	Teach 1-point High Threshold	Uses one point to teach the high threshold.
_ZXL009_Teach1LowThreshold	Teach 1-point Low Threshold	Uses one point to teach the low threshold
_ZXL010_Teach2HighThreshold	Teach 2-point High Threshold	Uses two points to teach the high threshold.
_ZXL011_Teach2LowThreshold	Teach 2-point Low Threshold	Uses two points to teach the low threshold.
_ZXL200_ReadMemArea	Read Memory Area	Reads data from the variable area.
_ZXL201_ReadMainDisplay	Read Main Display Value	Reads the numeric value displayed on the main digital display of a Smart Sensor.
_ZXL202_ReadDecimalPoint	Read Decimal Point Position	Reads the decimal point position set for the main digital display of a Smart Sensor.
_ZXL203_ReadIncidentLevel	Read Incident Light	Reads the incident light for a Smart Sensor.
_ZXL204_ReadResolution	Read Resolution	Reads the resolution for a Smart Sensor.
_ZXL205_ReadOutputs	Read Control Output	Reads the high, pass, and low control outputs.
_ZXL206_ReadEnableData	Read Enable Data	Checks if the Smart Sensor is currently in enable status.
_ZXL207_ReadHighThreshold	Read High Threshold	Reads the high threshold value from the Smart Sensor.
_ZXL208_ReadLowThreshold	Read Low Threshold	Reads the low threshold value from the Smart Sensor.
_ZXL407_WriteHighThreshold	Write High Threshold Data	Writes the high threshold value.
_ZXL408_WriteLowThreshold	Write Low Threshold Data	Writes the low threshold value.

Temperature Controller (serial)

_E5xx001_ExeOperation	Operation Command	Executes the specified operation command.
_E5xx002_Run	Start Operation	Starts operation for the specified channel of the specified Controller.
_E5xx003_Stop	Stop Operation	Stops operation for the specified channel of the specified Controller.
_E5xR004_ExecuteAT	Autotune	Starts autotuning for the specified channel of the specified Controller.
_E5xR005_CancelAT	Stop Autotuning	Cancels autotuning for the specified channel of the specified Controller.
_E5xN004_ExecuteAT	Autotune	Starts autotuning for the specified channel of the specified Controller.
_E5xN005_CancelAT	Stop Autotuning	Cancels autotuning for the specified channel of the specified Controller.
_E5xx200_ReadVariable	Read Variable Area	Reads one element from the specified variable area.
_E5xx201_ReadStatus	Read Status	Reads the status of the specified channel of a Controller.
_E5xx202_ReadPV	Read Process Value	Reads the process value of the specified channel of a Controller.
_E5xx203_ReadSP	Read Set Point	Reads the set point of the specified channel of a Controller.
_E5xx204_ReadCoolingMV	Read Cooling MV	Reads the cooling MV of the specified channel of a Controller.
_E5xx205_ReadHeatingMV	Read Heating MV	Reads the heating MV of the specified channel of a Controller.
_E5xR206_ReadValveOpening	Read Valve Opening	Reads the monitor value for valve opening for the specified channel of a Controller.
_E5xx400_WriteVariable	Write Variable Area	Writes one element to the specified variable area.
_E5xx403_WriteSP	Write Set Point	Writes the set point of the specified channel of a Controller.

Temperature Controller (DeviceNet)

_E5xxDRT001_ExeOperation	Operation Command	Executes the specified operation command for a Controller.
_E5xxDRT002_Run	Start Operation	Starts operation for a channel of a Controller.
_E5xxDRT003_Stop	Stop Operation	Stops operation for a channel of a Controller.
_E5xRDRT004_ExecuteAT	Autotune	Starts autotuning for a channel of a Controller.
_E5xRDRT005_CancelAT	Stop Autotuning	Cancels autotuning for a channel of a Controller.
_E5ZNDRT004_ExecuteAT	Autotune	Starts autotuning for a channel of a Controller.
_E5ZNDRT005_CancelAT	Stop Autotuning	Cancels autotuning for a channel of a Controller.
_E5xxDRT200_ReadVariable	Read Variable Area	Reads one element from the variable area of a Controller.
_E5xxDRT201_ReadStatus	Read Status	Reads the status of the specified channel of a Controller.
_E5xxDRT202_ReadPV	Read Process Value	Reads the process value of the specified channel of a Controller.
_E5xxDRT203_ReadSP	Read Set Point	Reads the set point of the specified channel of a Controller.
_E5xxDRT204_ReadCooling MV	Read Cooling MV	Reads the cooling MV of the specified channel of a Controller.
_E5xxDRT205_ReadHeating MV	Read Heating MV	Reads the heating MV of the specified channel of a Controller.
_E5xRDRT206_ReadValve Opening	Read Valve Opening	Reads the valve opening monitor value for the specified channel of a Controller.
_E5xxDRT400_WriteVariable	Write Variable Area	Writes one element to the specified variable area of a Controller.
_E5xxDRT403_WriteSP	Write Set Point	Writes the set point of the specified channel of a Controller.

Temperature Controller (unit)

_TCx002_Run	Start Control	Starts control for the specified loop.
_TCx003_Stop	Stop Control	Stops control for the specified loop.
_TCx004_ExecuteAT	Autotune	Executes autotuning for the specified loop.
_TCx005_CancelAT	Cancel Autotuning	Cancels autotuning for the specified loop.
_TCx201_ReadStatus	Read Status	Reads the status of the specified loop.
_TCx202_ReadPV	Read Process Value	Reads a process value (PV).
_TCx203_ReadSP	Read Set Point	Reads the set point (SP) of the specified loop.
_TCx403_WriteSP	Write Set Point	Writes the set point (SP) of the specified loop.

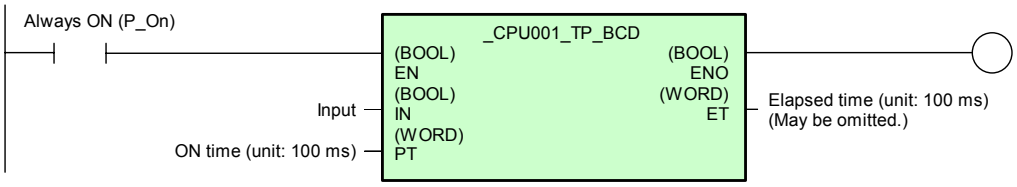
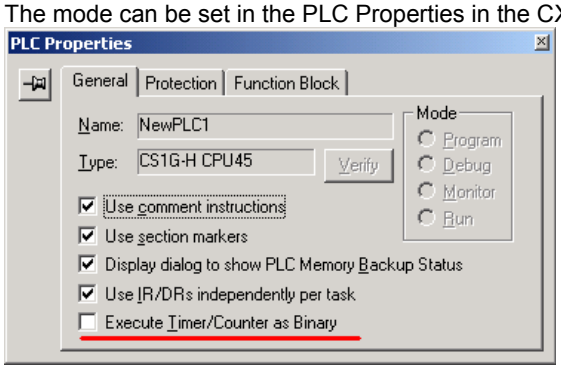
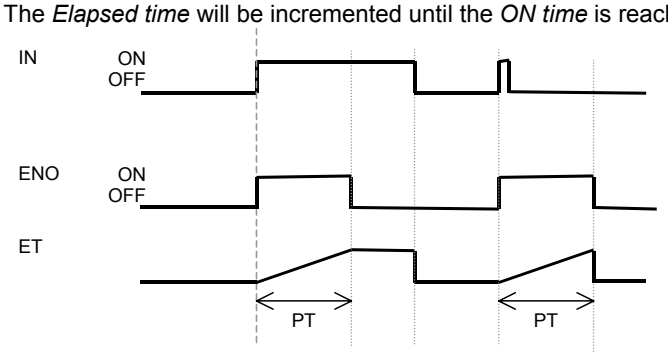
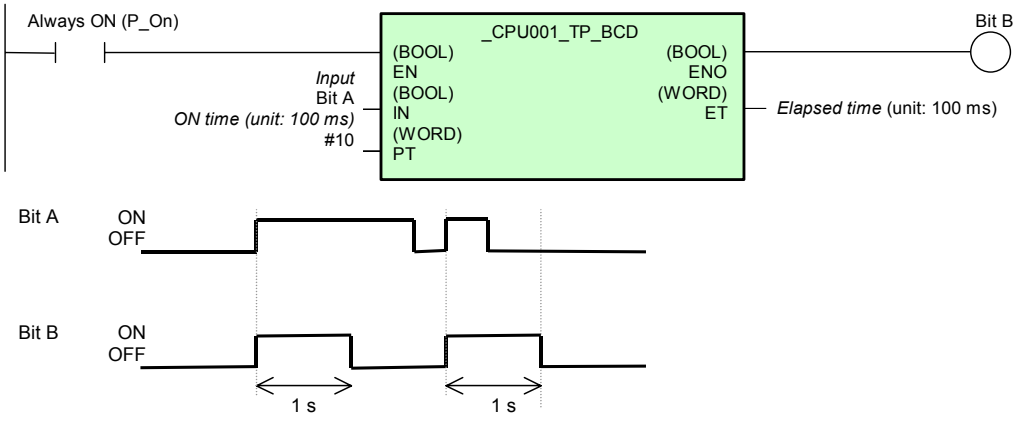
Chapter 3 Details of FB library

3-1 CPU Unit

CS1G, CS1H, CJ1G, CJ1H, CJ1M series

FB Name	Function	Page
_CPU001_TP_BCD	BCD Pulse Timer	3-3
_CPU002_TP_BIN	Binary Pulse Timer	3-5
_CPU003_TON_BCD	BCD ON Delay	3-7
_CPU004_TON_BIN	Binary ON Delay	3-9
_CPU005_TOF_BCD	BCD OFF Delay	3-11
_CPU006_TOF_BIN	Binary OFF Delay	3-13
_CPU007_MakeClockPulse_BCD	Make ON Time/OFF Time Clock Pulse in BCD	3-15
_CPU008_MakeClockPulse_BIN	Make ON Time/OFF Time Clock Pulse in Binary	3-17
_CPU010_SendData	Send Data	3-19
_CPU011_ReceiveData	Receive Data	3-22
_CPU012_SendCommand	Send Command	3-25
_CPU013_PMCR	Execute Communications Sequence	3-28
_CPU014_RXD	Receive from Communications Port	3-31
_CPU015_TXD	Send from Serial Port	3-34

CPU -001	BCD Pulse Timer: _CPU001_TP_BCD

Basic function	Turns ON the output for a specified time after the input turns ON.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU001_TP_BCD10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	PLC Properties • The PV update method for timers and counters must be set to BCD in the PLC Setup. A compiling error will occur if BCD mode is not set. The mode can be set in the PLC Properties in the CX-Programmer.  Shared Resources • Timers
Function description	ENO is turned ON for the time specified in *ON time* when the *Input* turns ON. The *Elapsed time* will be incremented until the *ON time* is reached. 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • The *ON time* input variable must be BCD between #0000 and #9999. If a setting is not within range, ENO is turned OFF.
Application example	

Related FBs	Use the correct FB for the timer/counter PV update mode set in the PLC Setup. Binary mode: Binary Pulse Timer (_CPU002_TP_BIN) BCD mode: BCD Pulse Timer (_CPU001_TP_BCD)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Input	IN	BOOL			Turn ON to start timing.
ON time	PT	WORD		#0000 to #9999	Specify the ON pulse time (unit: 100 ms). For example, #30 means 3 seconds.

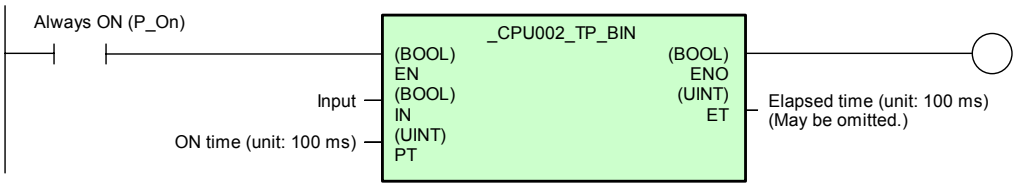
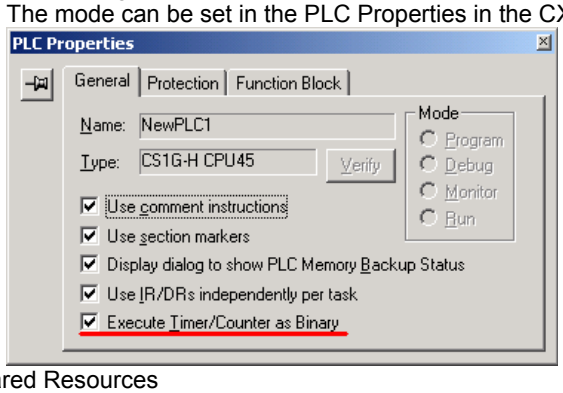
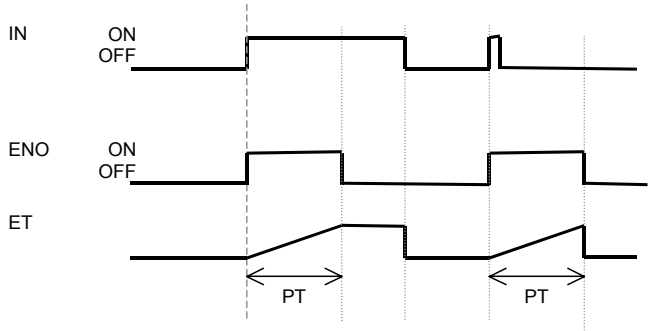
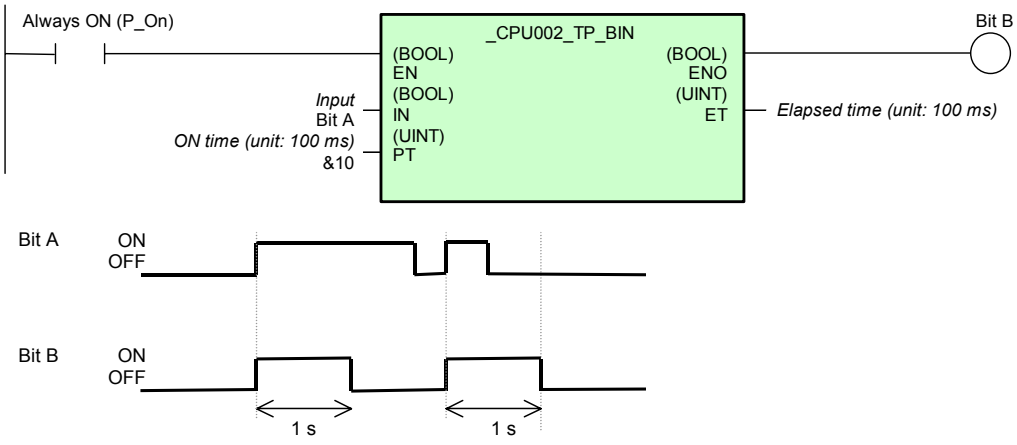
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		Turns ON for a specified time after the input turns ON.
Elapsed time (May be omitted.)	ET	WORD		Outputs the time that *Input* was ON until the *ON time* is reached (unit: 100 ms).

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -002	Binary Pulse Timer: _CPU002_TP_BIN

Basic function	Turns ON the output for a specified time after the input turns ON.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU002_TP_BIN10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	PLC Properties • The PV update method for timers and counters must be set to binary in the PLC Setup. A compiling error will occur if BCD mode is set. The mode can be set in the PLC Properties in the CX-Programmer.  Shared Resources • Timers
Function description	ENO is turned ON for the time specified in *ON time* when the *Input* turns ON. The *Elapsed time* will be incremented until the *ON time* is reached. 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions	None
Application example	

Related FBs	Use the correct FB for the timer/counter PV update mode set in the PLC Setup. Binary mode: Binary Pulse Timer (_CPU002_TP_BIN) BCD mode: BCD Pulse Timer (_CPU001_TP_BCD)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Input	IN	BOOL			Turn ON to start timing.
ON time	PT	UINT		&0 to &65535	Specify the ON pulse time (unit: 100 ms). For example, &30 means 3 seconds.

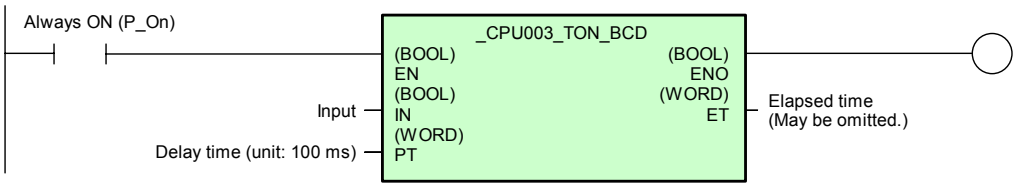
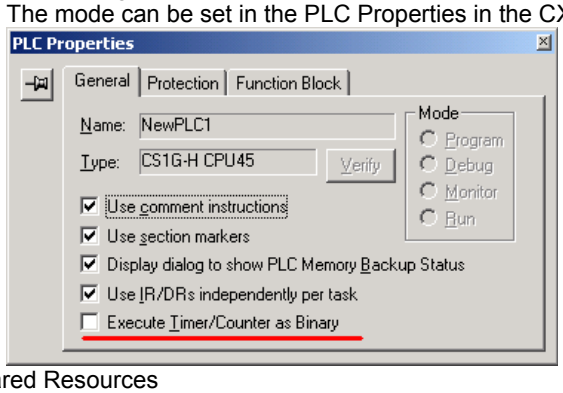
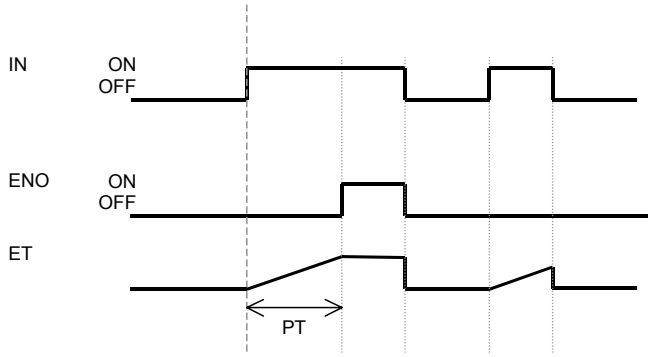
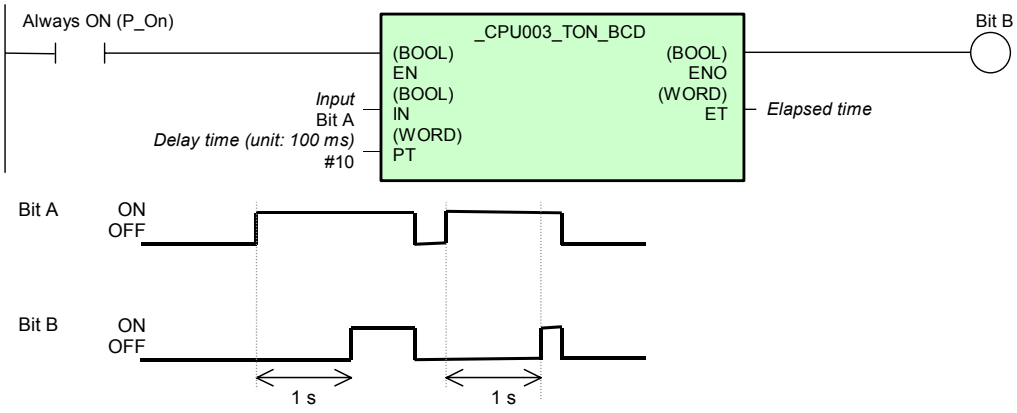
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		Turns ON for a specified time after the input turns ON.
Elapsed time (May be omitted.)	ET	UINT		Outputs the time that *Input* was ON until the *ON time* is reached (unit: 100 ms).

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -003	BCD ON Delay: _CPU003_TON_BCD

Basic function	Turns ON the output a specified time after the input turns ON.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU003_TON_BCD10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	PLC Properties • The PV update method for timers and counters must be set to BCD in the PLC Setup. A compiling error will occur if BCD mode is not set. The mode can be set in the PLC Properties in the CX-Programmer.  Shared Resources • Timers
Function description	The delay timer is started when *Input* turns ON. When the time set the *Delay time* has expired, ENO is turned ON. ENO remains ON until *Input* turns OFF. 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • The *Delay time* input variable must be BCD between #0000 and #9999. If a setting is not within range, ENO is turned OFF.
Application example	

Related FBs	Binary mode: Binary ON Delay (_CPU004_TON_BIN) BCD mode: BCD ON Delay (_CPU003_TON_BCD)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Input	IN	BOOL			Turn ON to start timing.
Delay time	PT	WORD		#0000 to #9999	Specify the delay time (unit: 100 ms). For example, #30 means 3 seconds.

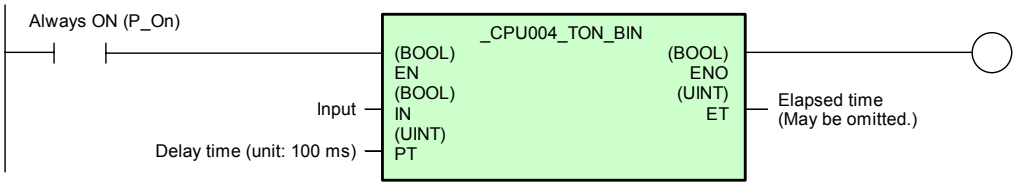
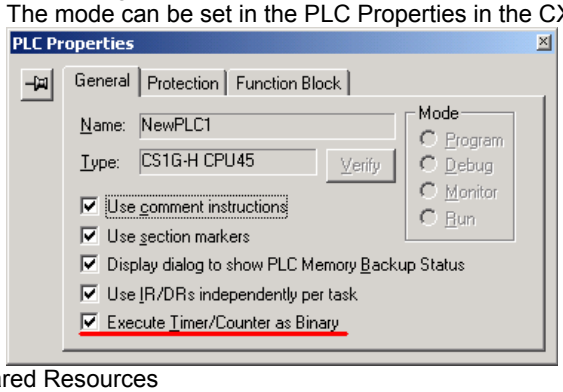
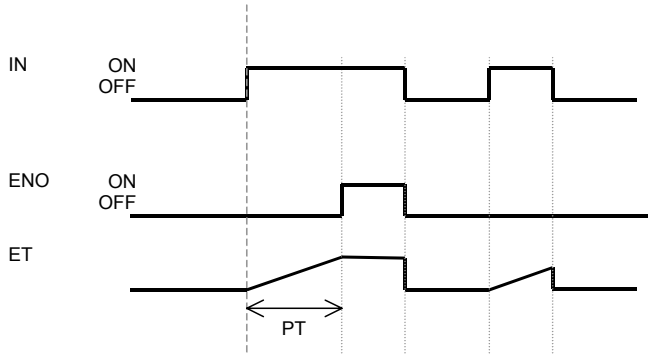
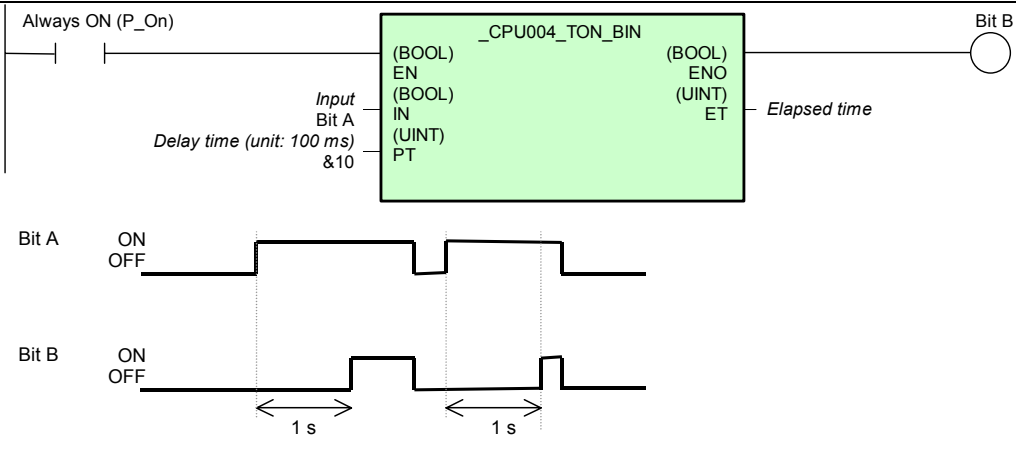
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		Turns ON a specified time after the input turns ON.
Elapsed time (May be omitted.)	ET	WORD		Outputs the time that *Input* was ON (unit: 100 ms).

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -004	Binary ON Delay: _CPU004_TON_BIN

Basic function	Turns ON the output a specified time after the input turns ON.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU004_TON_BIN10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	PLC Properties • The PV update method for timers and counters must be set to binary in the PLC Setup. A compiling error will occur if BCD mode is set. The mode can be set in the PLC Properties in the CX-Programmer.  Shared Resources • Timers
Function description	The delay timer is started when *Input* turns ON. When the time set the *Delay time* has expired, ENO is turned ON. ENO remains ON until *Input* turns OFF. 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions	None
Application example	

Related FBs	Binary mode: Binary ON Delay (_CPU004_TON_BIN) BCD mode: BCD ON Delay (_CPU003_TON_BCD)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Input	IN	BOOL			Turn ON to start timing.
Delay time	PT	UINT		&0 to &65535	Specify the delay time (unit: 100 ms). For example, &30 means 3 seconds.

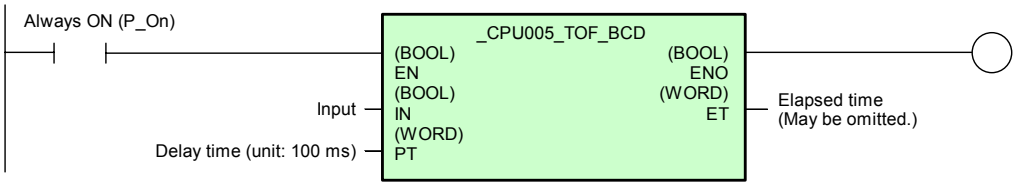
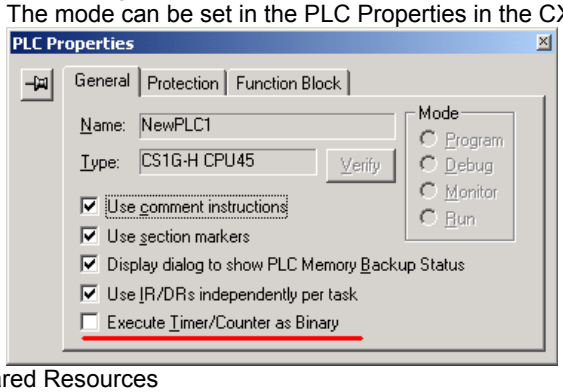
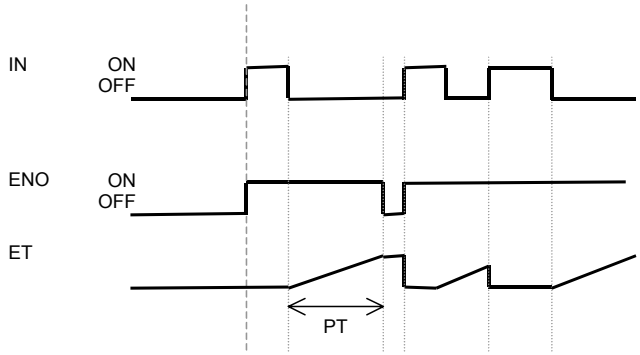
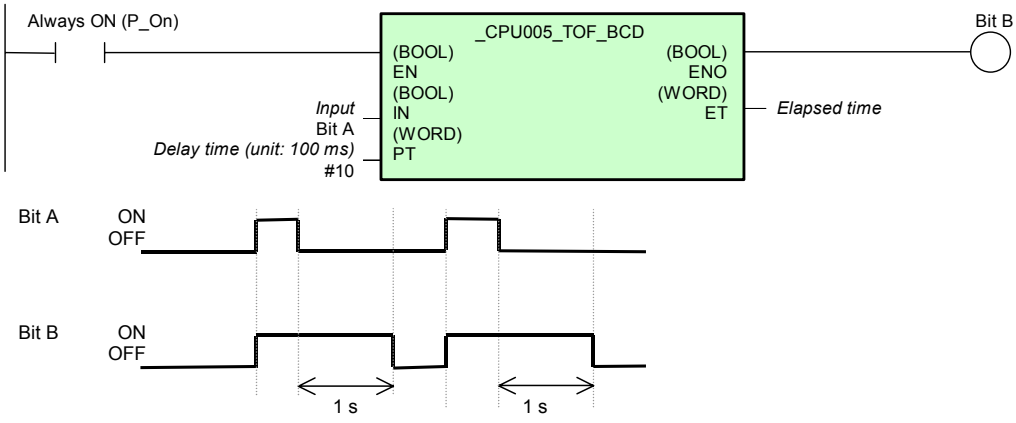
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		Turns ON a specified time after the input turns ON.
Elapsed time (May be omitted.)	ET	UINT		Outputs the time that *Input* was ON (unit: 100 ms).

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -005	BCD OFF Delay: _CPU005_TOF_BCD

Basic function	Turns OFF the output a specified time after the input turns OFF.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU005_TOF_BCD10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	PLC Properties • The PV update method for timers and counters must be set to BCD in the PLC Setup. A compiling error will occur if BCD mode is not set. The mode can be set in the PLC Properties in the CX-Programmer.  Shared Resources • Timers
Function description	ENO is turned ON when the *Input* turns ON. The delay timer is started when *Input* turns OFF. When the time set for the *Delay time* has expired, ENO is turned OFF. 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • The *Delay time* input variable must be BCD between #0000 and #9999. If a setting is not within range, ENO is turned OFF.
Application example	

Related FBs	Binary mode: Binary OFF Delay (_CPU006_TOF_BIN) BCD mode: BCD OFF Delay (_CPU005_TOF_BCD)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Input	IN	BOOL			Turn ON to start timing.
Delay time	PT	WORD		#0000 to #9999	Specify the delay time (unit: 100 ms). For example, #30 means 3 seconds.

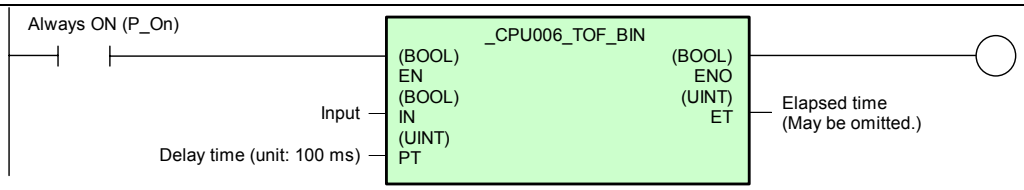
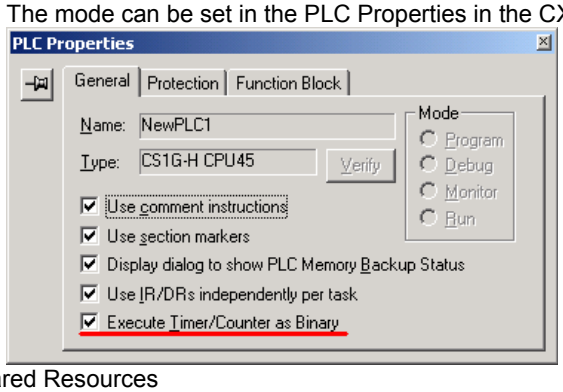
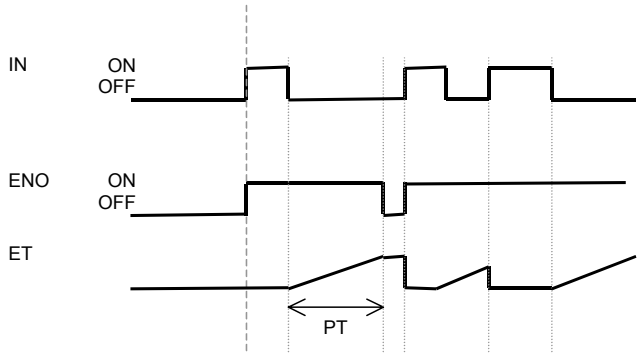
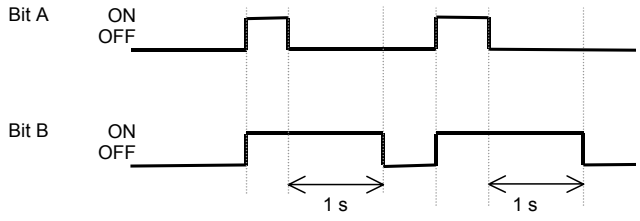
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		Turns ON when the *Input* turns ON and turns OFF a specified time after the *Input* turns OFF.
Elapsed time (May be omitted.)	ET	WORD		Outputs the time that *Input* was ON (unit: 100 ms).

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -006	Binary OFF Delay: _CPU006_TOF_BIN

Basic function	Turns OFF the output a specified time after the input turns OFF.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU006_TOF_BIN10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	PLC Properties • The PV update method for timers and counters must be set to binary in the PLC Setup. A compiling error will occur if BCD mode is set. The mode can be set in the PLC Properties in the CX-Programmer.  Shared Resources • Timers
Function description	ENO is turned ON when the *Input* turns ON. The delay timer is started when *Input* turns OFF. When the time set for *Delay time* has expired, ENO is turned OFF. 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions	None
Application example	BUSY 
Related FBs	Binary mode: Binary OFF Delay (_CPU006_TOF_BIN) BCD mode: BCD OFF Delay (_CPU005_TOF_BCD)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Input	IN	BOOL			Turn ON to start timing.
Delay time	PT	UINT		&0 to &65535	Specify the delay time (unit: 100 ms). For example, &30 means 3 seconds.

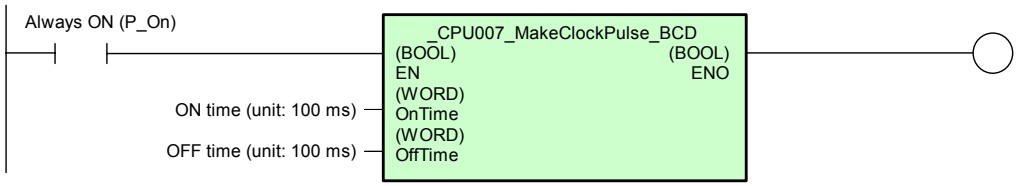
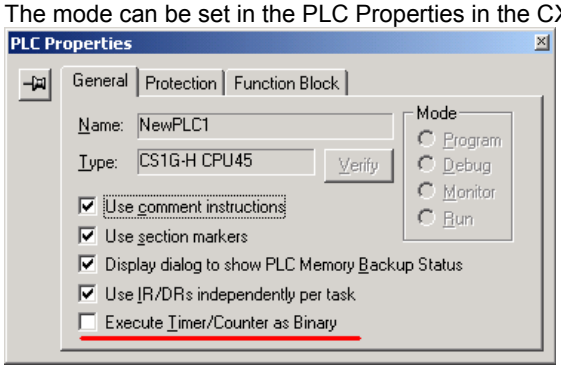
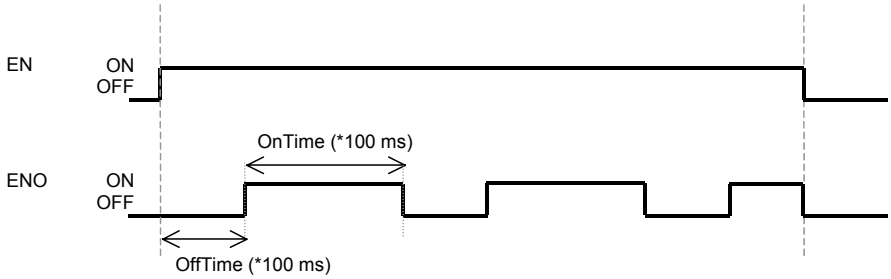
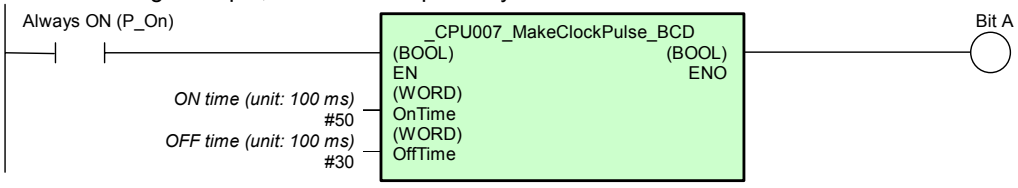
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		Turns ON when the *Input* turns ON and turns OFF a specified time after the *Input* turns OFF.
Elapsed time (May be omitted.)	ET	UINT		Outputs the time that *Input* was ON (unit: 100 ms).

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -007	Make ON Time/OFF Time Clock Pulse in BCD: _CPU007_MakeClockPulse_BCD

Basic function	Generates a clock pulse with the specified ON time and OFF time and outputs it to ENO.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU007_MakeClockPulse_BCD10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	PLC Properties • The PV update method for timers and counters must be set to BCD in the PLC Setup. A compiling error will occur if BCD mode is not set. The mode can be set in the PLC Properties in the CX-Programmer.  Shared Resources • Timers
Function description	ENO will be OFF for the time set in *OFF time* and then will be ON for the time set in *ON time*. 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Set the *ON time* and *OFF time* input variables to between #0000 and #9999 in BCD (100 ms units). If a setting is not within range, ENO is turned OFF.
Application example	In the following example, bit A will be repeatedly ON for 5 s and OFF for 3 s. 
Related FBs	Use the correct FB for the timer/counter PV update mode set in the PLC Setup. Binary mode: Make ON Time/OFF Time Clock Pulse in Binary (_CPU008_MakeClockPulse_BIN) BCD mode: Make ON Time/OFF Time Clock Pulse in BCD (_CPU007_MakeClockPulse_BCD)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
ON time	OnTime	WORD		#0000 to #9999	Specify the ON time (unit: 100 ms). For example, #30 means 3 seconds.
OFF time	OffTime	WORD		#0000 to #9999	Specify the OFF time (unit: 100 ms). For example, #30 means 3 seconds.

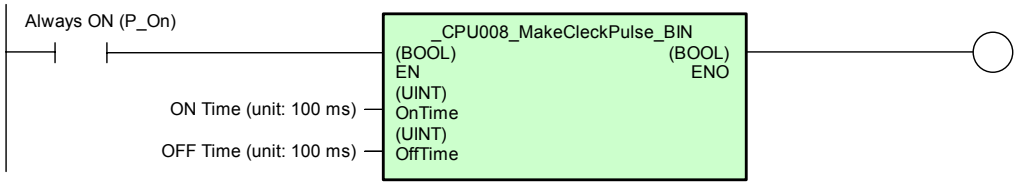
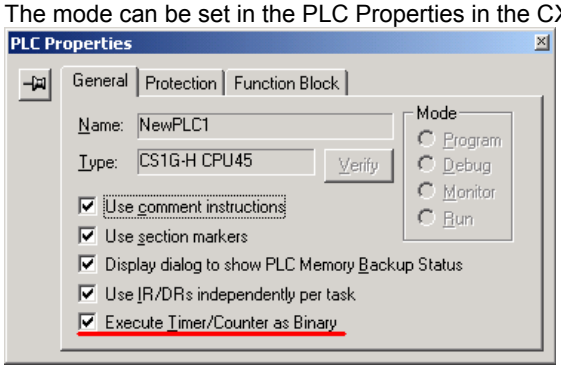
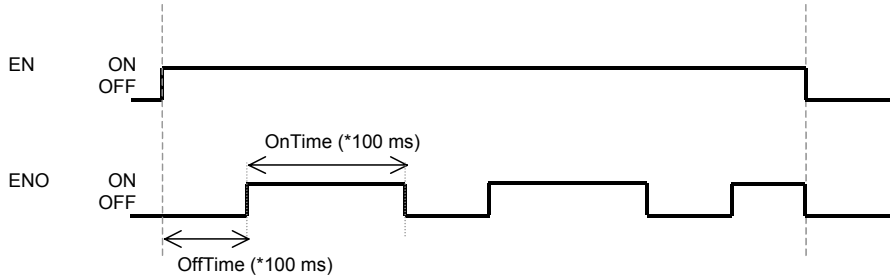
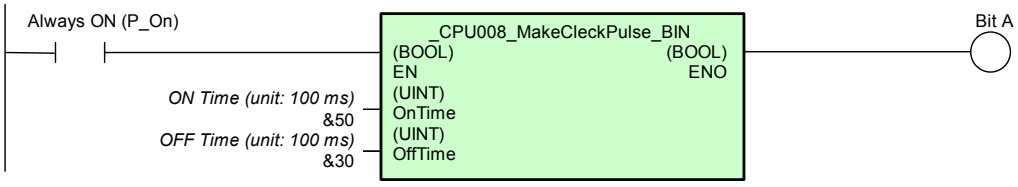
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		Turns ON for the OnTime and OFF for the OffTime.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -008	Make ON Time/OFF Time Clock Pulse in Binary: _CPU008_MakeClockPulse_BIN

Basic function	Generates a clock pulse with the specified ON time and OFF time and outputs it to EN0.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU008_MakeClockPulse_BIN10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	PLC Properties • The PV update method for timers and counters must be set to binary in the PLC Setup. A compiling error will occur if BCD mode is set. The mode can be set in the PLC Properties in the CX-Programmer.  Shared Resources • Timers
Function description	ENO will be OFF for the time set in *OFF time* and then will be ON for the time set in *ON time.* 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions	None
Application example	In the following example, bit A will be repeatedly ON for 5 s and OFF for 3 s. 
Related FBs	Use the correct FB for the timer/counter PV update mode set in the PLC Setup. Binary mode: Make ON Time/OFF Time Clock Pulse in Binary (_CPU008_MakeClockPulse_BIN) BCD mode: Make ON Time/OFF Time Clock Pulse in BCD (_CPU007_MakeClockPulse_BCD)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
ON Time	OnTime	UINT			Specify the ON time (unit: 100 ms). For example, &30 means 3 seconds.
OFF Time	OffTime	UINT			Specify the OFF time (unit: 100 ms). For example, &30 means 3 seconds.

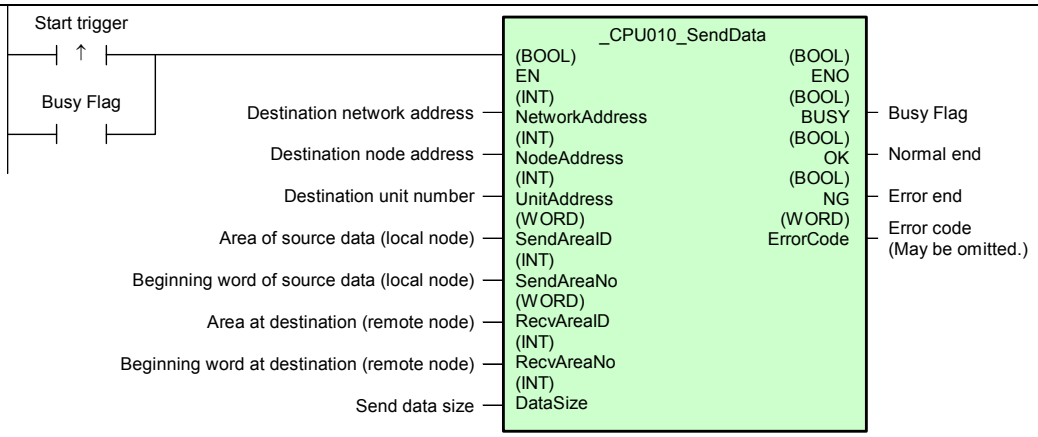
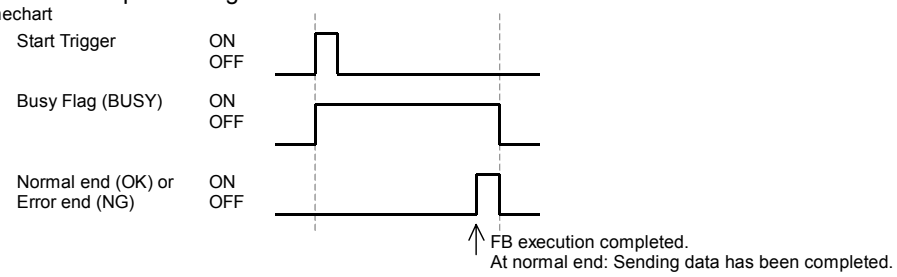
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		Turns ON for the OnTime and OFF for the OffTime.

■ **Version History**

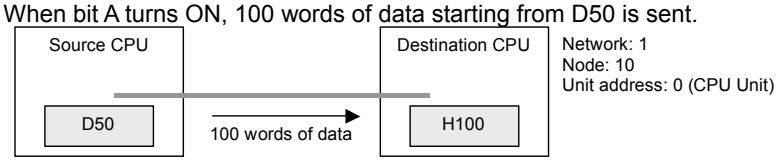
Version	Date	Contents
1.00	2004.6.	Original production

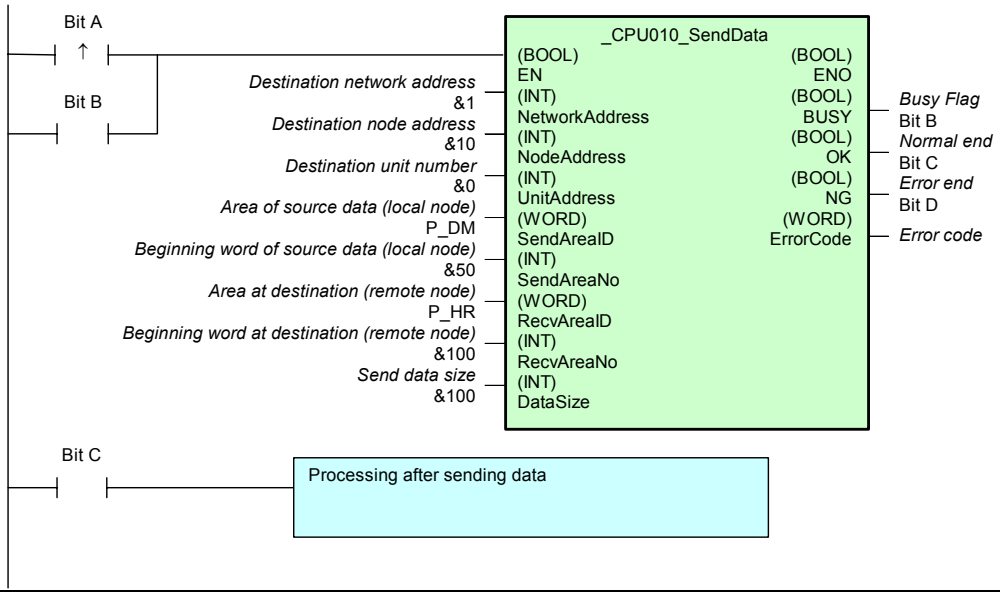
CPU -010	Send Data: _CPU010_SendData

Basic function	Sends data to a node on a network.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU010_SendData10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	Sends the number of words of data specified in *Send data size* to the Unit specified by the *Send network address, Send node address*, and *Send unit address.* The data word designations are specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example

When bit A turns ON, 100 words of data starting from D50 is sent.





Related manuals

Communications Commands Reference Manual (W342)
5-1-3 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Destination network address	NetworkAddress	INT	&0	&0 to &127	&0: Local network
Destination node address	NodeAddress	INT	&0		
Destination unit number	UnitAddress	INT	#0000	#0000 to #00FE	CPU: #0000 CPU Bus Units: Unit number + #10(Hex) Special I/O Units: Unit number + #20(Hex) INNER Board: #00E1 Computer: #0001
Area of source data (local node)	SendAreaID	WORD	#0082	At right	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Beginning word of source data (local node)	SendAreaNo	INT	&0		
Area at destination (remote node)	RecvAreaID	WORD	#0082	At right	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Beginning word at destination (remote node)	RecvAreaNo	INT	&0		
Send data size	DataSize	INT	&0		The maximum data size depends on the network. For example, the range for a Controller Link network is &1 to &990 words.

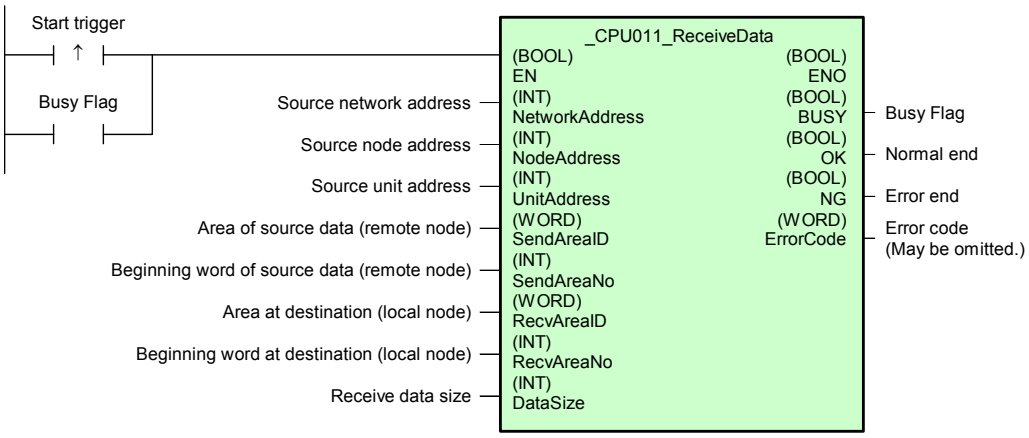
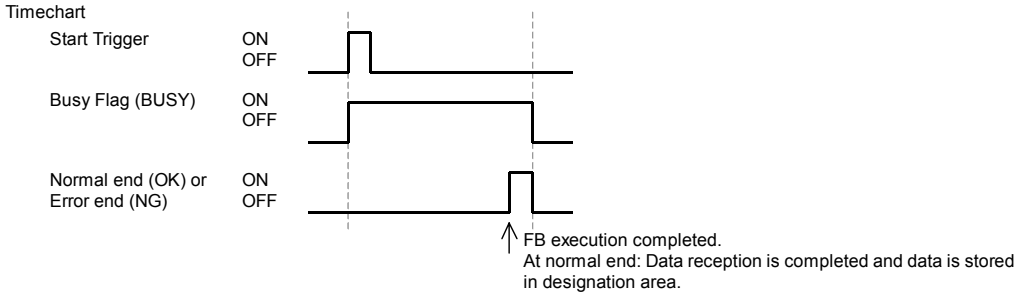
Output Variables

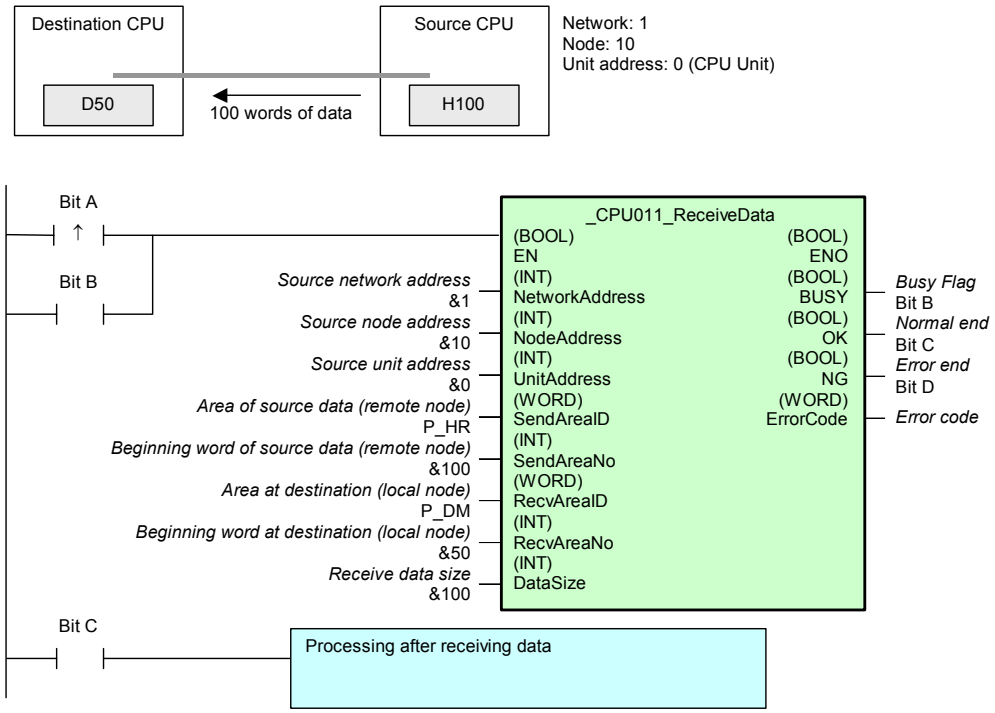
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -011	Receive Data: _CPU011_ReceiveData

Basic function	Receives data from a node on a network.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU011_ReceiveData10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 3) Shared Resources • Communications ports (internal logical ports)
Function description	Receives the number of words of data specified in *Receive data size* from the Unit specified by the *Source network address, Source node address*, and *Source unit address.* The data word designations are specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, 100 words of data starting from D50 is received. 
Related manuals	*Communications Commands Reference Manual* (W342) 5-1-3 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Source network address	NetworkAddress	INT	&0	&0 to &127	&0: Local network
Source node address	NodeAddress	INT	&0		
Source unit address	UnitAddress	INT	&0	#0000 to #00FE	CPU: #0000 CPU Bus Units: Unit number + #10(Hex) Special I/O Units: Unit number + #20(Hex) INNER Board: #00E1 Computer: #0001
Area of source data (remote node)	SendAreaID	WORD	#0082	At right	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Beginning word of source data (remote node)	SendAreaNo	INT	&0		
Area at destination (local node)	RecvAreaID	WORD	#0082	At right	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Beginning word at destination (local node)	RecvAreaNo	INT	&0		
Receive data size	DataSize	INT	&0		The maximum data size depends on the network. For example, the range for a Controller Link network is &1 to &990 words.

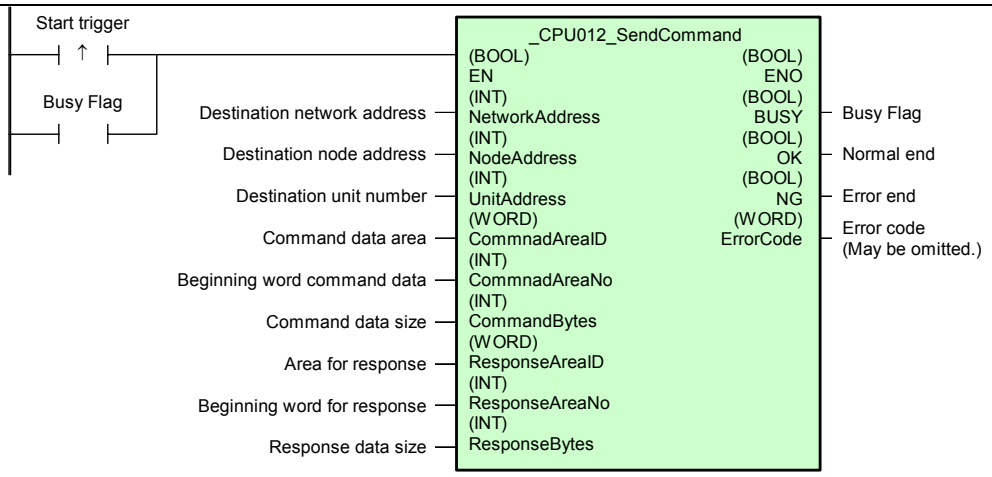
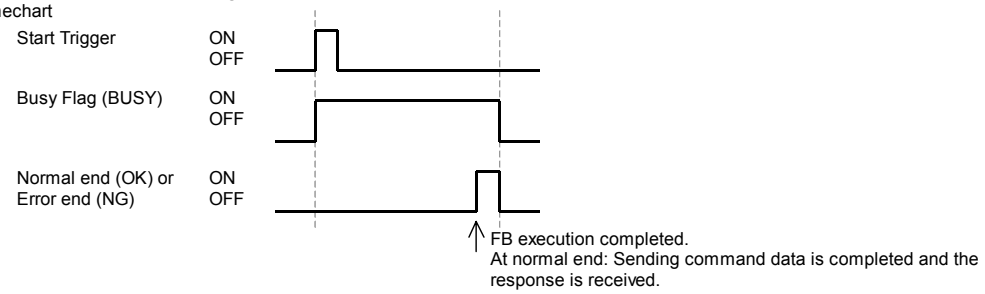
Output Variables

1.1. Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.

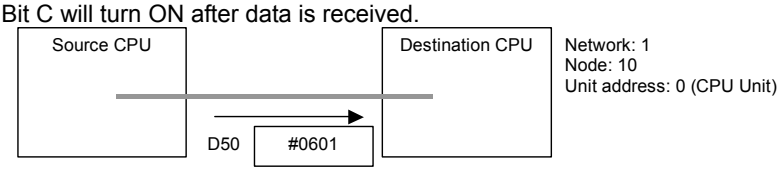
■ **Version History**

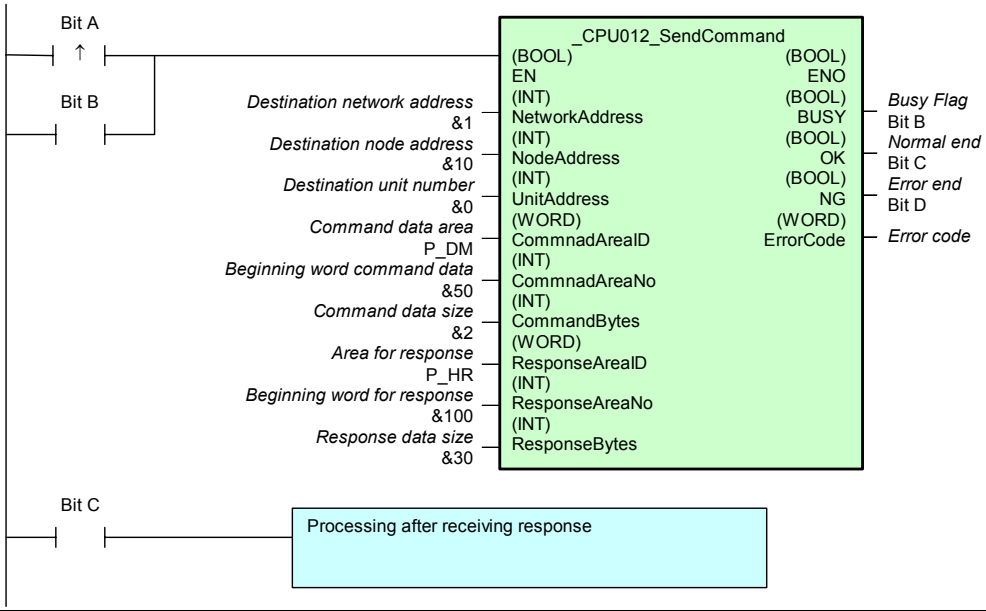
Version	Date	Contents
1.00	2004.6.	Original production

CPU -012	Send Command: _CPU012_SendCommand

Basic function	Sends command data to a node on a network.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU012_SendCommand10.cxf
Applicable models	CS1-H, CS1-H, and CJ1M CPU Units
Conditions for usage	Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 3) Shared Resources • Communications ports (internal logical ports)
Function description	Sends a command of the number of words of specified in *Command data size* to the Unit specified by the *Send network address, Send node address*, and *Send unit address.* The data word designations are specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, the Read Status FINS command (0601) is sent and the response is stored in HR100. Bit C will turn ON after data is received.
Related manuals	*Communications Commands Reference Manual* (W342) 5-1-3 Error Codes





■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Destination network address	NetworkAddress	INT	&0	&0 to &127	
Destination node address	NodeAddress	INT	&0		&0: Local network
Destination unit number	UnitAddress	INT	&0	#0000 to #00FE	CPU: #0000 CPU Bus Units: Unit number + #10(Hex) Special I/O Units: Unit number + #20(Hex) INNER Board: #00E1 Computer: #0001
Command data area	CommandAreaID	WORD	#0082	At right	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Beginning word command data	CommandAreaNo	INT	&0		
Command data size	CommandBytes	INT	&0		Depends on the command.
Area for response	ResponseAreaID	WORD	#0082	At right	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Beginning word for response	ResponseAreaNo	INT	&0		
Response data size	ResponseBytes	INT	&0		Depends on the command.

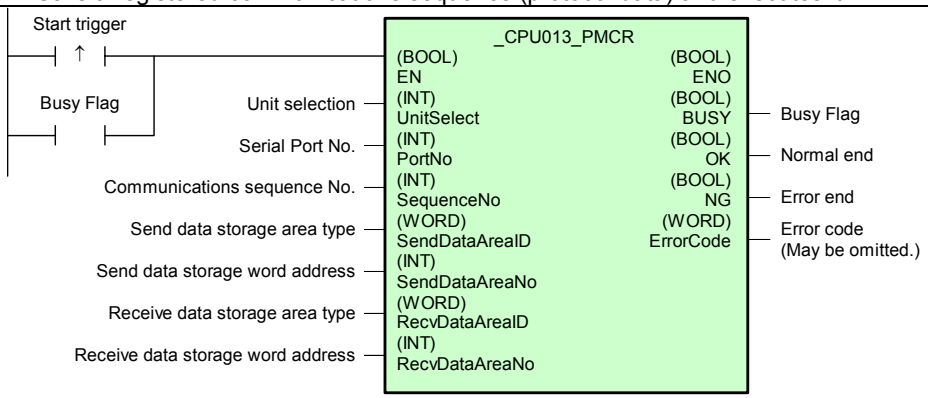
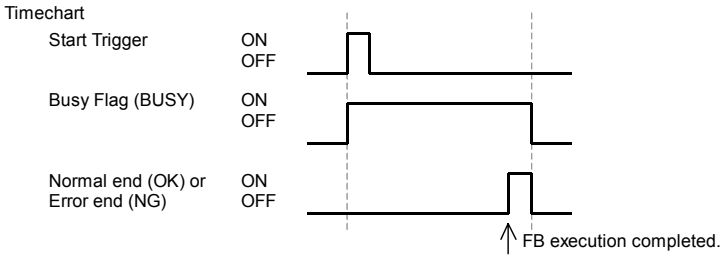
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.

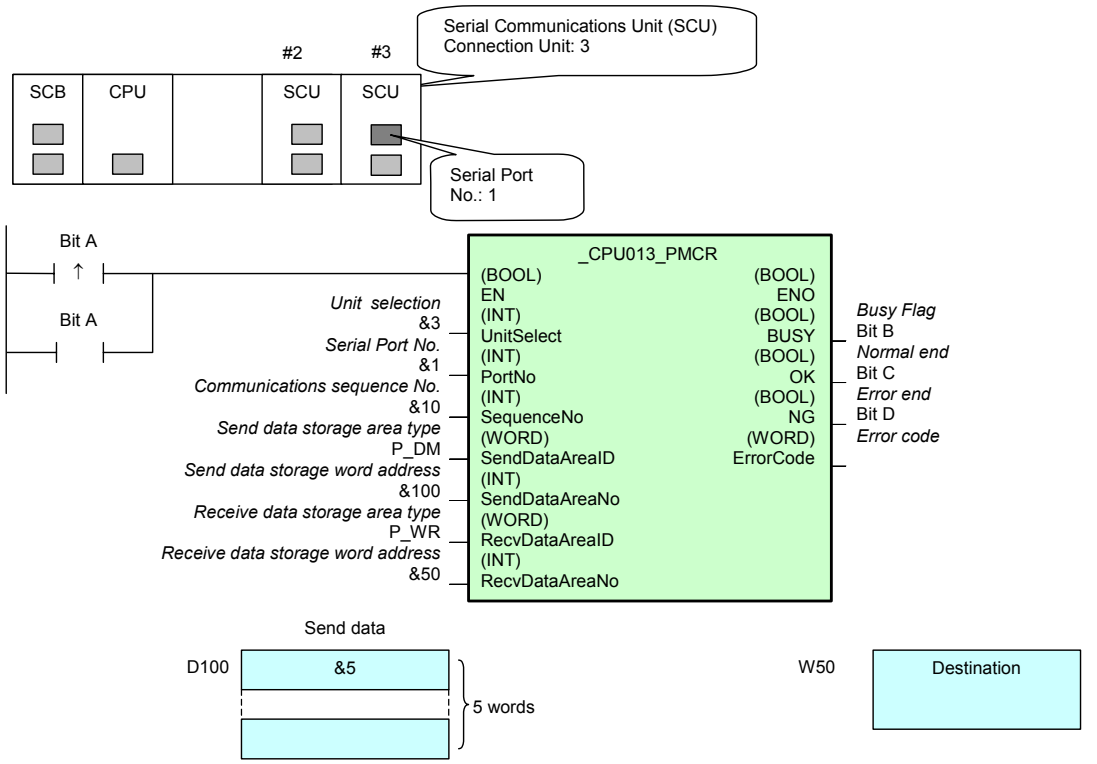
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -013	Execute Communications Sequence: _CPU013_PMCR

Basic function	CPU Unit Cannot be used for connection to the CPU Unit. Serial Communications Unit (SCU)/Board (SCB) Calls a registered communications sequence (protocol data) and executes it.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU013_PMCR10.cxf
Applicable models	CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.
Function description	The specified registered communications sequence (protocol data) is called and executed for the Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Connection Unit* and *Serial port No.* The word designation for storing the send/receive data is specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, the send data in five words beginning with D100 is used and the protocol macro is executed. The receive data is stored in W50. (The size of the receive data depends on the protocol macro.)



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Connected to CPU Unit Cannot be used. ■ Connected to Serial Communication Board(SCB) Model selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Model selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Communications sequence No.	SequenceNo	INT	&0	&0 to &999	
Send data storage area type	SendDataAreaID	WORD	#00B0	At right.	No Send data: #0000 P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Send data storage word address	SendDataAreaNo	INT	&0		
Receive data storage area type	RecvDataAreaID	WORD	#00B0	At right.	No Receive data: #0000 P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Receive data storage word address	RecvDataAreaNo	INT	&0		

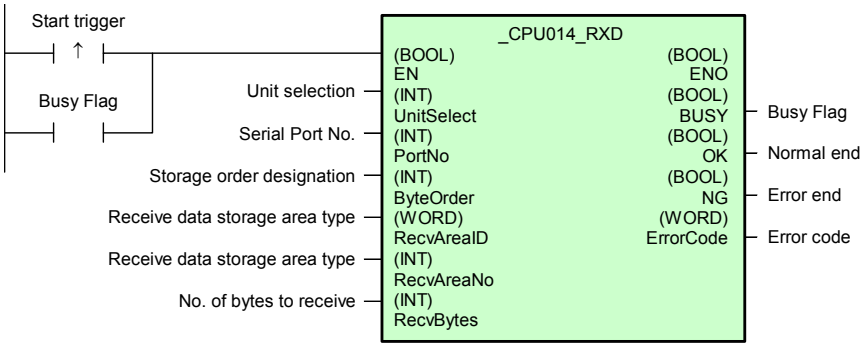
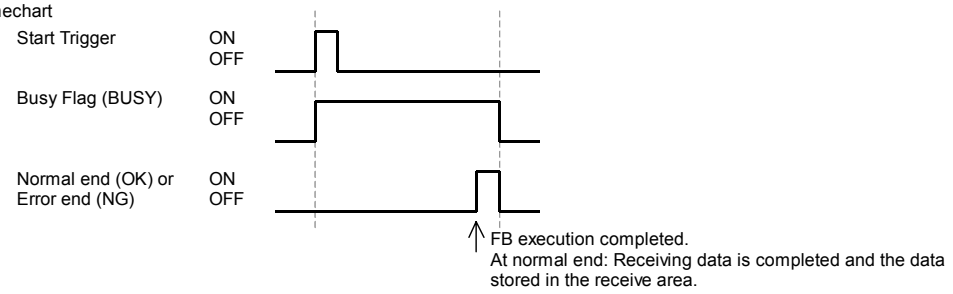
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.

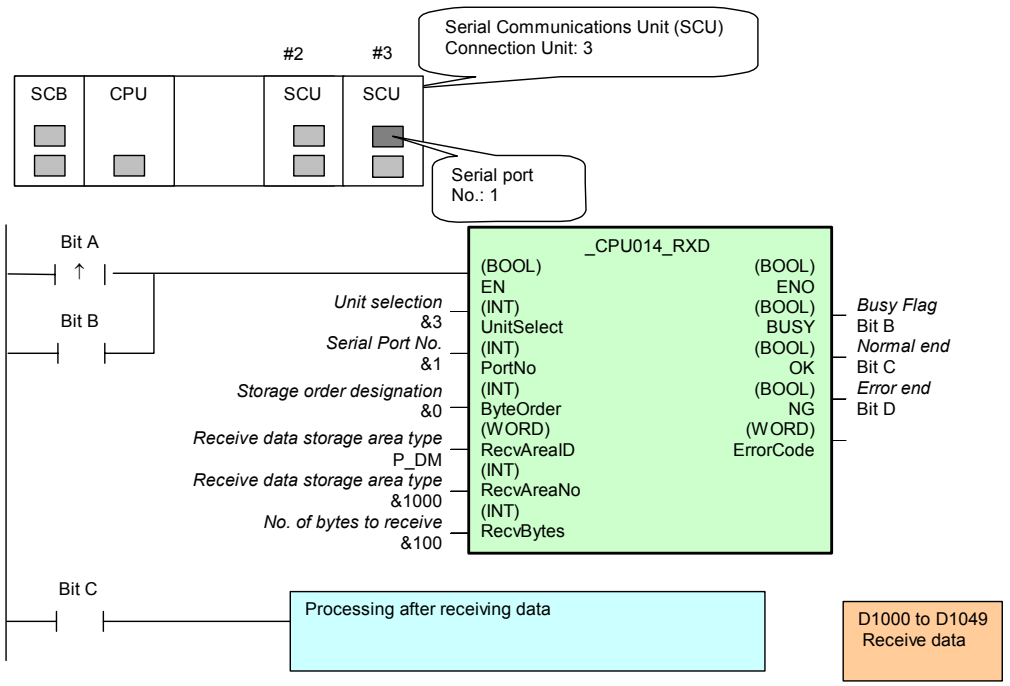
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -014	Receive from Communications Port: _CPU014_RXD

Basic function	CPU Unit Receives the specified number of bytes of data from the built-in RS-232C port on the CPU Unit. Serial Communications Unit (SCU)/Board (SCB) Receives the specified number of bytes of data from the specified port.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU014_RXD10.cxf
Applicable models	CPU Units • CS1-H, CJ1-H, or CJ1M CPU Units Serial Communications Units/Boards • Unit Version 1.2 of CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units • Unit Version 1.2 of CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Shared Resources • When a Serial Communications Unit is specified: Communications ports (internal logical ports)
Function description	The number of bytes specified in *Receive size* is received from the Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Connection unit* and *Serial port No.* and stored in the specified receive data area. The word designation for storing the receive data is specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, 100 bytes of data is received from the serial port 1 of the Serial Communications Unit with unit number 3 and stored in memory beginning with D1000.



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Connected to CPU Unit Unit selection #FFFF Serial port No. Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Storage order designation	ByteOrder	INT	&0	&0 to &1	&0: Upper byte to lower byte &1: Lower byte to upper byte
Receive data storage area type	RecvAreaID	WORD	#0082	At right.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Receive data storage area type	RecvAreaNo	INT	&0		
No. of bytes to receive	RecvBytes	INT	&0	&0 to &256	

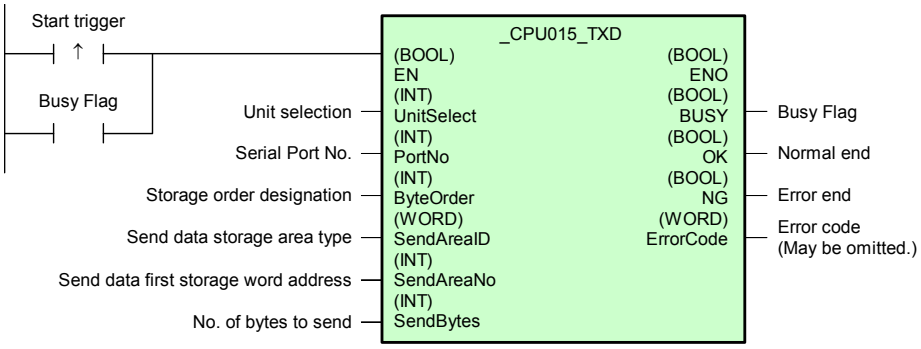
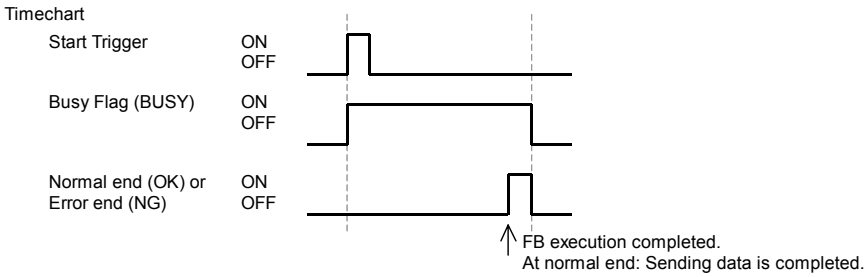
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code	ErrorCode	WORD		CPU Unit/SCB A code of #0000 is always output. SCU Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.

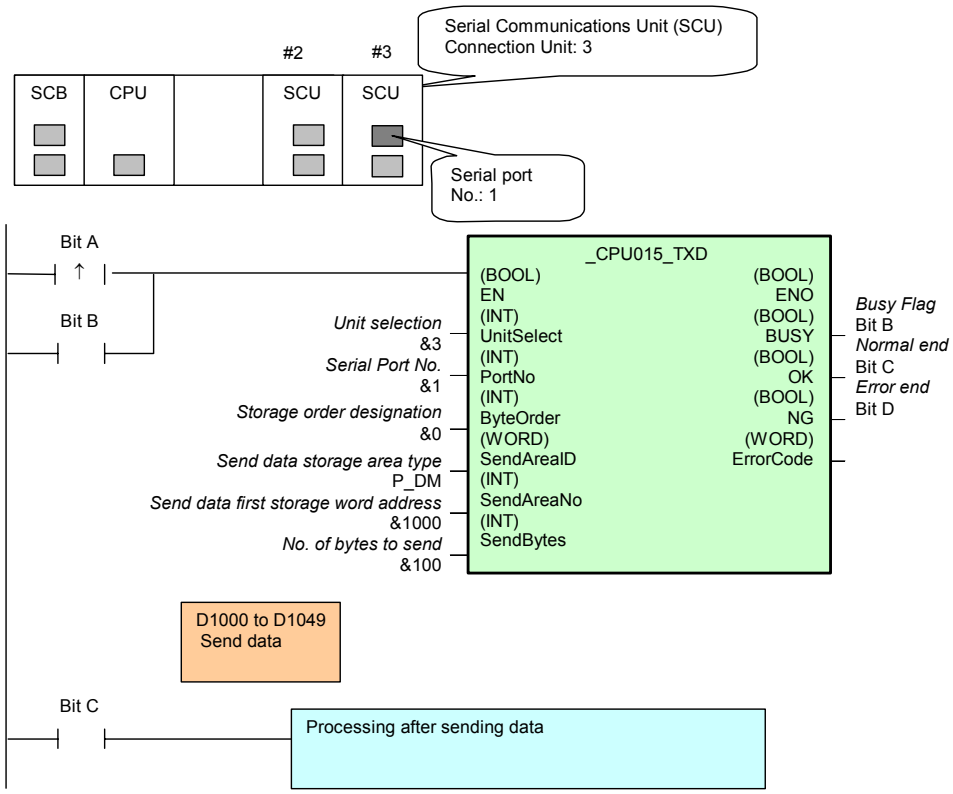
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CPU -015	Send from Serial Port: _CPU015_TXD

Basic function	CPU Unit Sends the specified number of bytes of data from the built-in RS-232C port on the CPU Unit. Serial Communications Unit (SCU)/Board (SCB) Sends the specified number of bytes of data from the specified port.
Symbol	
File name	Lib\FLB\omronlib\PLC\CPU_CPU015_TXD10.cxf
Applicable models	CPU Units • CS1-H, CJ1-H, or CJ1M CPU Units Serial Communications Units/Boards • Unit Version 1.2 of CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units • Unit Version 1.2 of CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Shared Resources • When a Serial Communications Unit is specified: Communications ports (internal logical ports) Communications Unit Settings • The use of CTS control depends on the setting in the Serial Communications Unit (SCU) or Serial Communications Board (SCB).
Function description	The number of bytes specified in *Send size* is sent from the Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Connection unit* and *Serial port No.* The word designation for storing the send data is specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, 100 bytes of data starting from D1000 is sent via serial port 1 of the Serial Communications Unit with unit number 3.



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Storage order designation	ByteOrder	INT	&0	&0 to &1	&0: Upper byte to lower byte &1: Lower byte to upper byte
Send data storage area type	SendAreaID	WORD	#0082	At right.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Send data first storage word address	SendAreaNo	INT	&0		
No. of bytes to send	SendBytes	INT	&0	&0 to &256	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code	ErrorCode	WORD		CPU Unit/SCB A code of #0000 is always output. SCU Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.

■ **Version History**

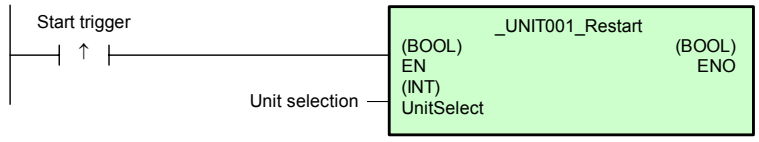
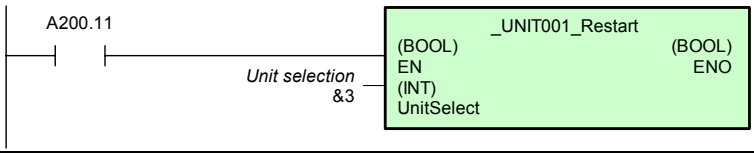
Version	Date	Contents
1.00	2004.6.	Original production

3-2 CPU bus unit and board

CPU Bus Unit/Innerboard

FB Name	Function	Page
_UNIT001_Restart	Unit Restart	3-38

UNIT -001	Unit Restart: _UNIT001_Restart

Basic function	Restarts the unit or board.
Symbol	
File name	¥Lib¥FBL¥omronlib¥PLC¥UNIT¥_UNIT001_Restart10.cxf
Applicable models	All Boards All CPU Bus Units
Conditions for usage	None
Function description	When the Start Trigger turns ON, the unit or board specified by the Unit selection is restarted.
FB precautions	A restart completion check is not performed for this FB. To confirm completion, program it using the Unit/Board Restart Flags in the AR Area.
EN input condition	When use an upwardly differentiated bit or the First Cycle Flag (A200.11).
Restrictions Input variables	・Always use an upwardly differentiated condition for EN. ・If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	In the first running cycle, restarts the Unit with a unit number of 3. 

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the unit or board. ■ Board Unit selection #BBBB ■ Unit Unit selection Unit No. (&0 to &15)

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ Version History

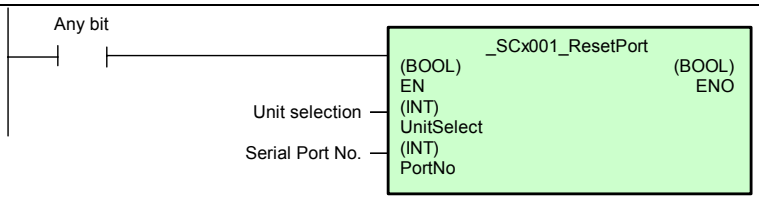
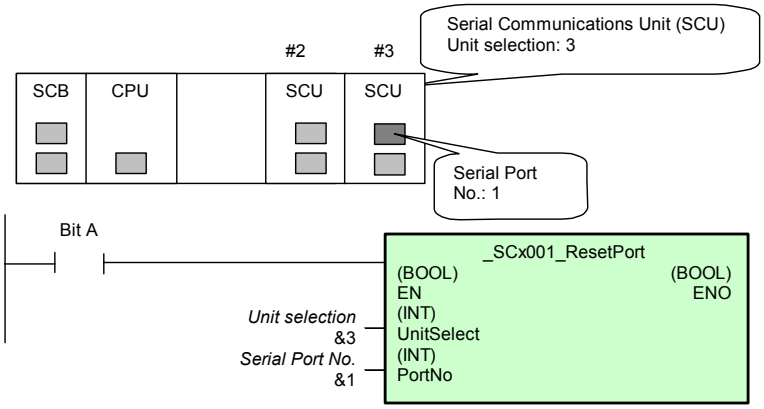
Version	Date	Contents
1.00	2004.6.	Original production

3-3 Serial Communication unit and board

CS1W-SCU21-V1, CJ1W-SCU21-V1/SCU41-V1
CS1W-SCB21-V1/SCB41-V1

FB Name	Function	Page
_SCx001_ResetPort	Reset Serial Port	3-40
_SCx002_PMCR_Abort	Abort in Protocol Macro Mode	3-41
_SCx003_PMCR_ReleaseWait	Release Wait	3-42
_SCx600_SetPortSYSWAY	Set Host Link Port	3-43
_SCx601_SetPortNTLINK	Set NT Link Port	3-45
_SCx602_SetPortPMCR	Set Protocol Macro Mode Port	3-47
_SCx603_SetPortNOPRTCL	Set No-protocol Mode	3-49
_SCx604_SetPortGATEWAY	Set Serial Gateway Mode	3-53
_SCx605_SetPortLOOPBACK	Set Loopback Test Mode	3-55

SCx -001	Reset Serial Port: _SCx001_ResetPort

Basic function	Resets a serial port.
Symbol	
File name	Lib\FBL\omronlib\PLC\SCx_SCx001_ResetPort10.cxf
Applicable models	CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Other • Communications must be within one network and cannot cross to another network.
Function description	The Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified U*nit selection* and *Serial port No.* is reset.
EN input condition	Any bit can be specified.
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When bit A turns ON, the serial port 1 of the Serial Communications Unit with unit number 3 is reset. 

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

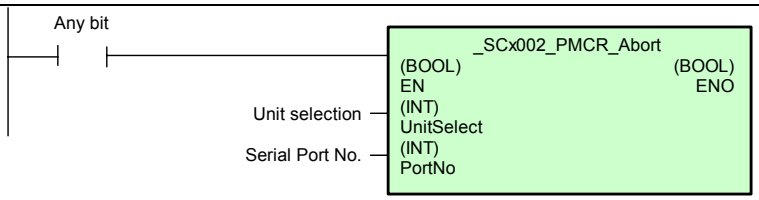
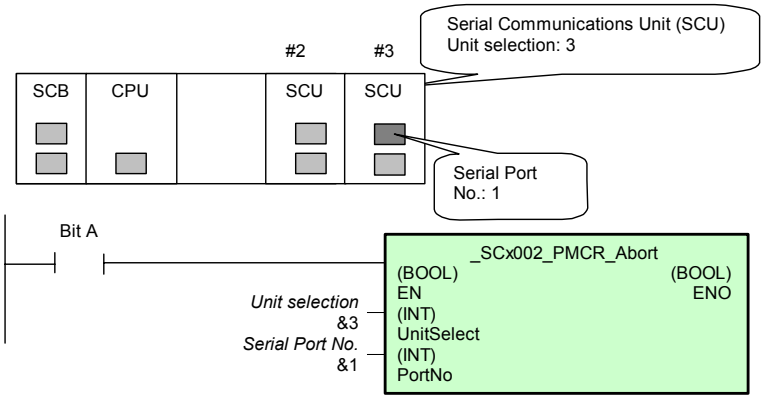
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

SCx -002	Abort in Protocol Macro Mode: _SCx002_PMCR_Abort

Basic function	Aborts execution in Protocol Macro Mode.
Symbol	
File name	Lib\FBL\omronlib\PLC\SCx_SCx002_PMCR_Abort10.cxf
Applicable models	CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Serial Communications Unit (SCU)/Board (SCB) Settings • The Serial Communications Mode must be set. If this condition is not met, the ENO Flag will turn OFF and the FB will not be processed. Other • Communications must be within one network and cannot cross to another network.
Function description	Execution is aborted in Protocol Macro Mode for the Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Unit selection* and *Serial port No.*
EN input condition	Any bit can be specified.
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	Execution is aborted for the serial port 1 of the Serial Communications Unit with unit number 3. 

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

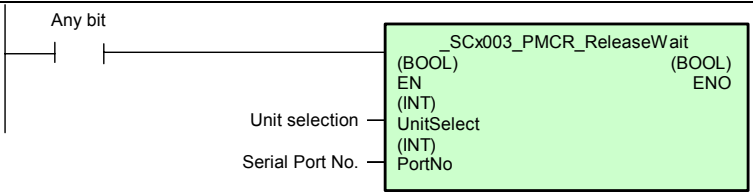
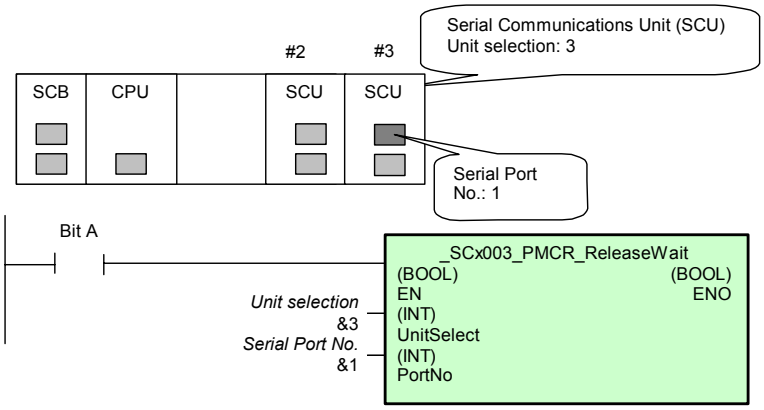
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

SCx -003	Release Wait: _SCx003_PMCR_ReleaseWait

Basic function	Releases Wait Status in Protocol Macro Mode.
Symbol	
File name	Lib\FBL\omronlib\PLC\SCx_SCx003_PMCR_ReleaseWait10.cxf
Applicable models	CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Serial Communications Unit (SCU)/Board (SCB) Settings • The Protocol Macro Mode must be set. If this condition is not met, the ENO Flag will turn OFF and the FB will not be processed. Other • Communications must be within one network and cannot cross to another network.
Function description	The wait status is released in Protocol Macro Mode for the Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Unit selection* and *Serial port No.*
EN input condition	Any bit can be specified.
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When bit A turns ON, wait status is released for serial port 1 of the Serial Communications Unit with unit number 3. 

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

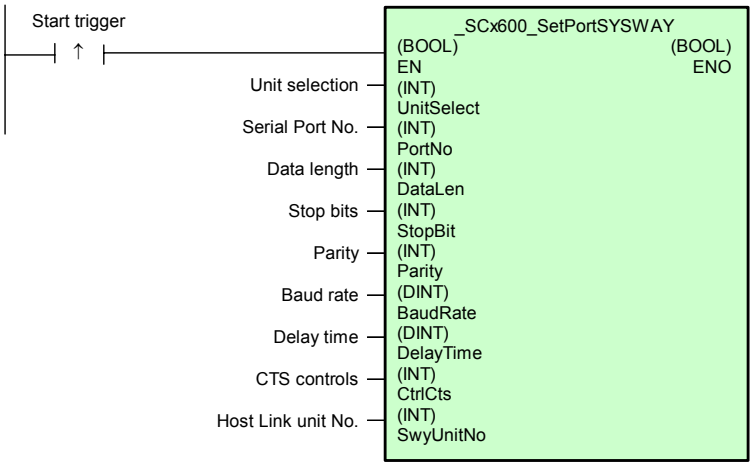
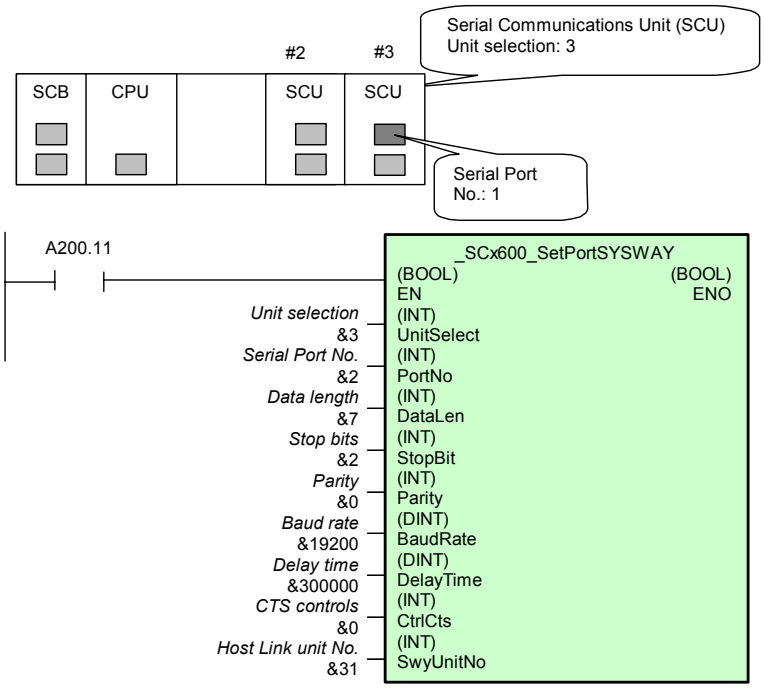
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

SCx -600	Set Host Link Port: _SCx600_SetPortSYSWAY

Basic function	Sets a serial port to Host Link mode.
Symbol	
File name	Lib\FBL\omronlib\PLC\SCx_SCx600_SetPortSYSWAY10.cxf
Applicable models	CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Other • Communications must be within one network and cannot cross to another network.
Function description	The Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Unit selection* and *Serial port No.* is set to Host Link Mode. When the *Start Trigger* turns ON, the operating mode is changed and a port restart is begun.
FB precautions	• A restart completion check is not performed for this FB. To confirm completion, program it using the Serial Communications Board Settings Changed Flag in the AR Area.
EN input condition	Always use an upwardly differentiated bit or the First Cycle Flag (A200.11). If one is not used, the communications port will be continuously restarted.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When operation is started, the mode of serial port 2 on the Serial Communications Unit with unit number 3 is changed and the port is restarted. 

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Data length	DataLen	INT	&7	&7 to &8	&7: 7 bits &8: 8 bits
Stop bits	StopBit	INT	&2	&1 to &2	&1: 1 bit &2: 2 bits
Parity	Parity	INT	&0	&0 to &2	&0: Even parity &1: Odd parity &2: None
Baud rate	BaudRate	DINT	&9600	At right.	1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 (bits/s)
Delay time	DelayTime	DINT	&0	&0 to &300000	0 to 300,000 (ms) Note: In units of 10 ms. Any digits below the setting unit are truncated.
CTS controls	CtrlCts	INT	&0	&0 to &1	&0: None &1: Use
Host Link unit No.	SwyUnitNo	INT	&0	&0 to &31	

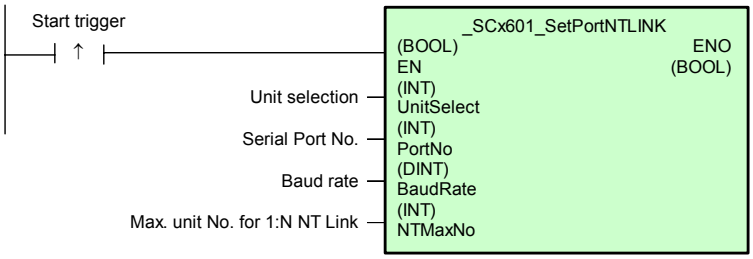
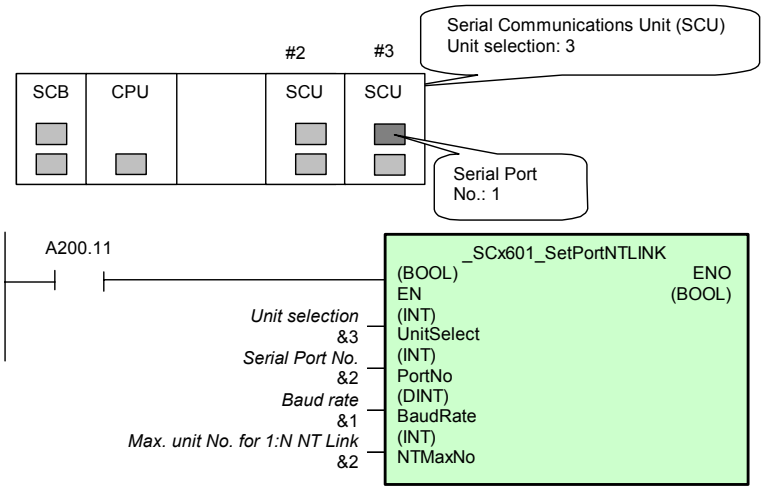
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

SCx -601	Set NT Link Port: _SCx601_SetPortNTLINK

Basic function	Sets a serial port to NT Link mode.
Symbol	
File name	Lib\FBL\omronlib\PLC\SCx_SCx601_SetPortNTLINK10.cxf
Applicable models	CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Other • Communications must be within one network and cannot cross to another network.
Function description	The Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Unit selection* and *Serial port No.* is set to NT Link Mode. When the *Start Trigger* turns ON, the operating mode is changed and a port restart is begun.
FB precautions	• A restart completion check is not performed for this FB. To confirm completion, program it using the Serial Communications Board Settings Changed Flag in the AR Area.
EN input condition	Always use an upwardly differentiated bit or the First Cycle Flag (A200.11). If one is not used, the communications port will be continuously restarted.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When operation is started, the mode of serial port 2 on the Serial Communications Unit with unit number 3 is changed and the port is restarted. 

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Baud rate	BaudRate	INT	&0	&0 to &1	&0: High-speed NT Link &1: Standard NT Link
Max. unit No. for 1:N NT Link	NtMaxNo	INT	&0	&0 to &7	

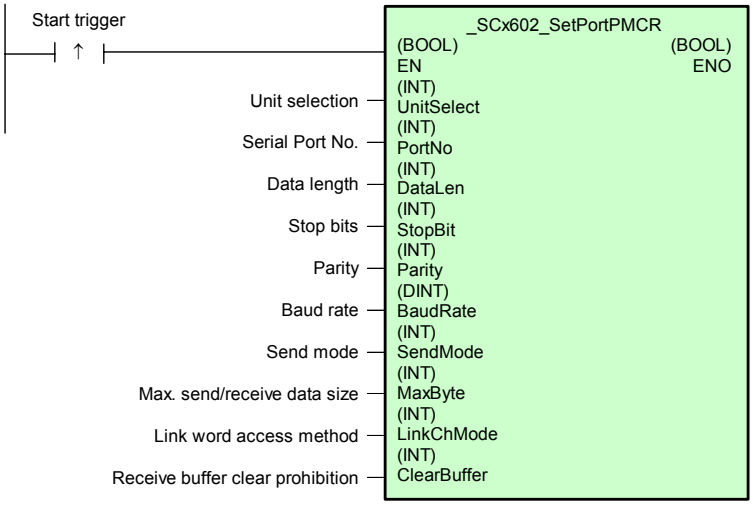
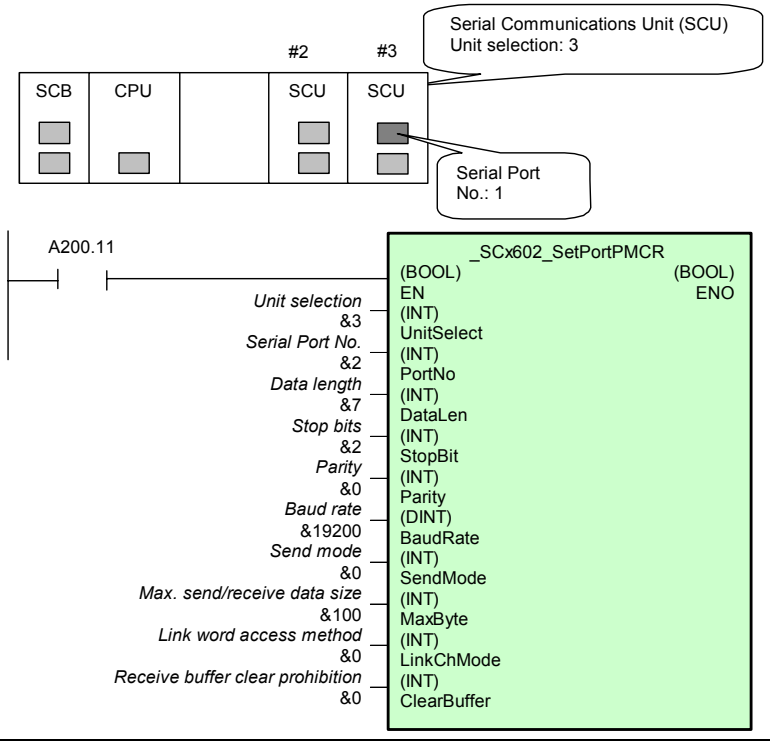
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

SCx -602	Set Protocol Macro Mode Port: _SCx602_SetPortPMCR

Basic function	Sets a serial port to Protocol Macro mode.
Symbol	
File name	\FBL\omronlib\SerialCommunication_SCx602_SetPortPMCR10.cxf
Applicable models	CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Other • Communications must be within one network and cannot cross to another network.
Function description	The Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Unit selection* and *Serial port No.* is set to Protocol Macro Mode. When the *Start Trigger* turns ON, the operating mode is changed and a port restart is begun. The Serial Gateway Send start timeout monitoring time, and response timeout monitoring time are 5s (default).
FB precautions	• A restart completion check is not performed for this FB. To confirm completion, program it using the Serial Communications Board Settings Changed Flag in the AR Area.
EN input condition	Always use an upwardly differentiated bit or the First Cycle Flag (A200.11). If one is not used, the communications port will be continuously restarted.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When operation is started, the mode of serial port 2 on the Serial Communications Unit with unit number 3 is changed and the port is restarted. 

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Data length	DataLen	INT	&7	&7 to &8	&7: 7 bits &8: 8 bits
Stop bits	StopBit	INT	&2	&1 to &2	&1: 1 bits &2: 2 bits
Parity	Parity	INT	&0	&0 to &2	&0: Even parity &1: Odd parity &2: None
Baud rate	BaudRate	DINT	&9600	At right.	1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 (bits/s)
Send mode	SendMode	INT	&0	&0 to &1	&0: Half duplex &1: Duplex
Max. send/receive data size	MaxByte	INT	&0	&200 to &1000	200 to 1,000 (bytes)
Link word access method	LinkChMode	INT	&0	&0 to &1	&0: Immediate refresh mode &1: Cyclic refresh mode
Receive buffer clear prohibition	ClearBuffer	INT	&0	&0 to &1	&0: Enable clearing &1: Prohibit clearing

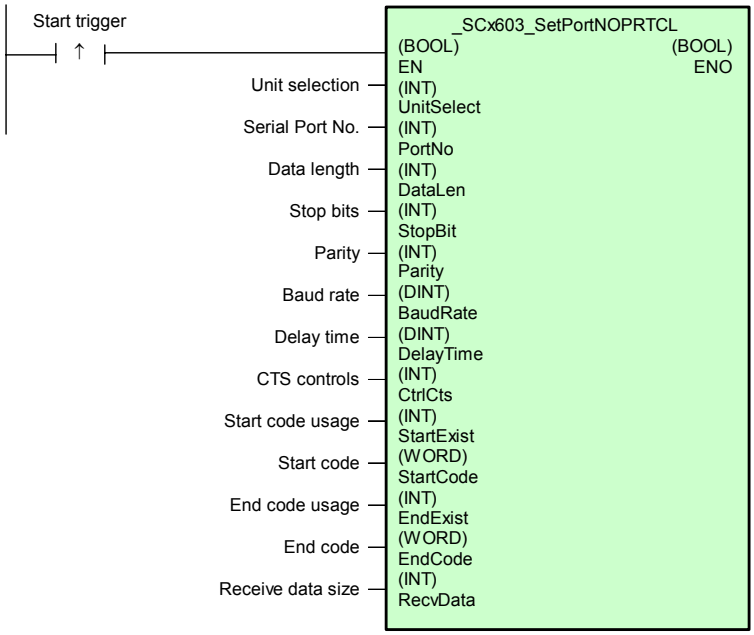
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

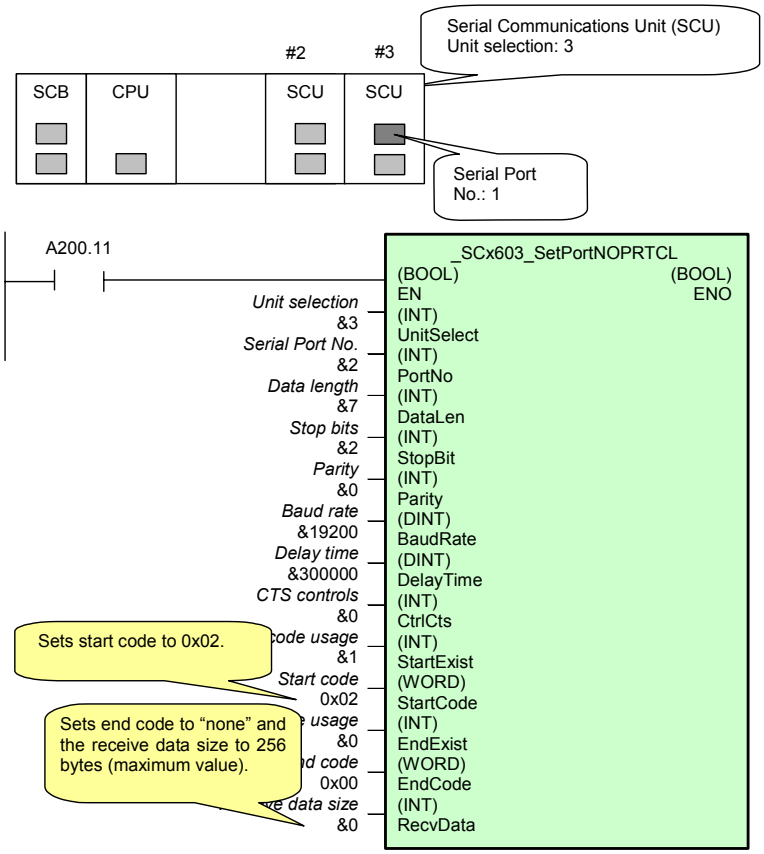
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

SCx -603	Set No-protocol Mode: _SCx603_SetPortNOPRTCL

Basic function	Sets a serial port to No-protocol mode.
Symbol	
File name	Lib\FBL\omronlib\PLC\SCx_SCx603_SetPortNOPRTCL10.cxf
Applicable models	CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Other • Communications must be within one network and cannot cross to another network.
Function description	The Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Unit selection* and *Serial port No.* is set to No-protocol Mode. When the *Start Trigger* turns ON, the operating mode is changed and a port restart is begun.
FB precautions	• A restart completion check is not performed for this FB. To confirm completion, program it using the Serial Communications Board Settings Changed Flag in the AR Area.
EN input condition	Always use an upwardly differentiated bit or the First Cycle Flag (A200.11). If one is not used, the communications port will be continuously restarted.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.

Application example	When operation is started, the mode of serial port 2 on the Serial Communications Unit with unit number 3 is changed and the port is restarted.



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Data length	DataLen	INT	&7	&7 to &8	&7: 7 bits &8: 8 bits
Stop bits	StopBit	INT	&2	&1 to &2	&1: 1 bits &2: 2 bits
Parity	Parity	INT	&0	&0 to &2	&0: Even parity &1: Odd parity &2: None
Baud rate	BaudRate	DINT	&9600	At right.	1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 (bits/s)
Delay time	DelayTime	DINT	&0	&0 to &300000	0 to 300,000 (ms) Note: In units of 10 ms. Any digits below the setting unit are truncated.
CTS controls	CtrlCts	INT	&0	&0 to &1	&0: None &1: Use
Start code usage	StartExist	INT	&0	&0 to &1	&0: None &1: Use
Start code	StartCode	INT	&0	0x0000 to 0x00FF	Note: Valid only when *Start code usage* is set to &1.
End code usage	EndExist	INT	&0	&0 to &2	&0: None (Receive data size specified.) &1: Use &2: CR+LF
End code	EndCode	INT	&0	0x0000 to 0x0OFF	Note: Valid only when *End code usage* is set to &1.
Receive data size	RecvDataSize	INT	&0	&0 to &256	0: Maximum size (256) 1 to 256 (bytes) Note: Valid only when *End code usage* is set to &0.

■ **Start Code**

Start code specified	**Start code usage**	&1: Use
	Start code	0x0000 to 0xFFFF
Start code not used	**Start code usage**	&0: None
	Start code	(Not accessed.)

■ **End Code**

End code specified	**End code usage**	&1: Use
	End code	0x0000 to 0xFFFF
	Receive data size	(Not accessed.)
CR+LF specified for end code	**End code usage**	&2: CR+LF
	End code	(Not accessed.)
	Receive data size	(Not accessed.)
End code not specified	**End code usage**	&0: None
	End code	(Not accessed.)
	Receive data size	&0 to &256

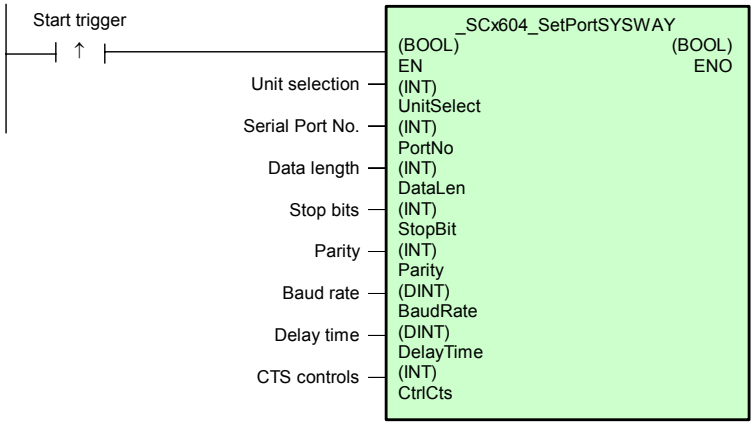
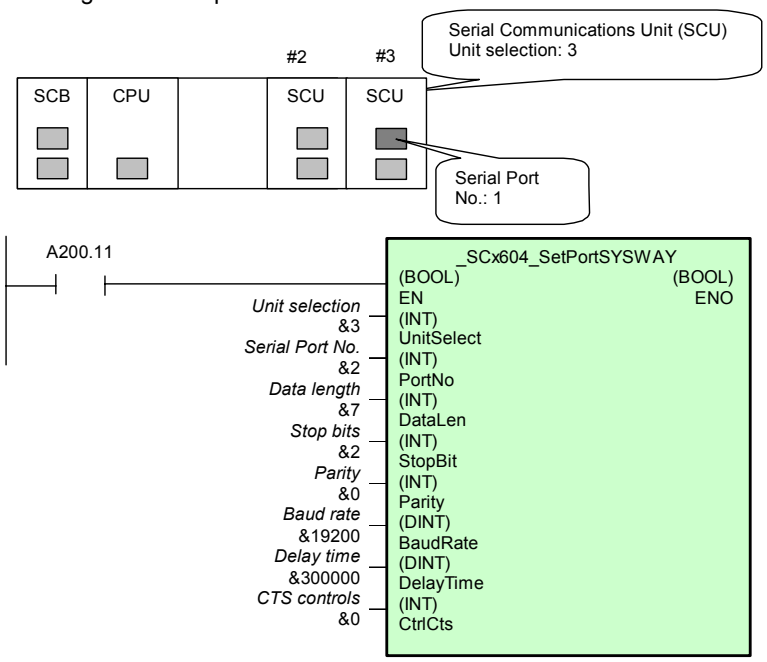
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

SCx -604	Set Serial Gateway Mode: _SCx604_SetPortGATEWAY

Basic function	Sets a serial port to Serial Gateway mode.
Symbol	
File name	Lib\FBL\omronlib\PLC\SCx_SCx604_SetPortGATEWAY10.cxf
Applicable models	CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Other • Communications must be within one network and cannot cross to another network.
Function description	The Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Unit selection* and *Serial port No.* is set to Serial Gateway Mode. When the *Start Trigger* turns ON, the operating mode is changed and a port restart is begun. The Serial Gateway Send start timeout monitoring time, and response timeout monitoring time are 5s (default).
FB precautions	• A restart completion check is not performed for this FB. To confirm completion, program it using the Serial Communications Board Settings Changed Flag in the AR Area.
EN input condition	Always use an upwardly differentiated bit or the First Cycle Flag (A200.11). If one is not used, the communications port will be continuously restarted.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When operation is started, the mode of serial port 2 on the Serial Communications Unit with unit number 3 is changed and the port is restarted. 

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Data length	DataLen	INT	&7	&7 to &8	&7: 7 bits &8: 8 bits
Stop bits	StopBit	INT	&2	&1 to&2	&1: 1 bits &2: 2 bits
Parity	Parity	INT	&0	&1 to &2	&0: Even parity &1: Odd parity &2: None
Baud rate	BaudRate	DINT	&9600	At right.	1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 (bits/s)
Delay time	DelayTime	DINT	&0	&0 to &300000	0 to 300,000 (ms) Note: In units of 10 ms. Any digits below the setting unit are truncated.
CTS controls	CtrlCts	INT	&0	&0 to &1	&0: None &1: Use

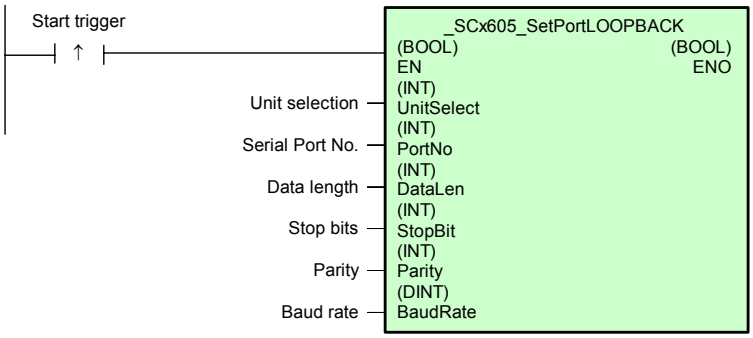
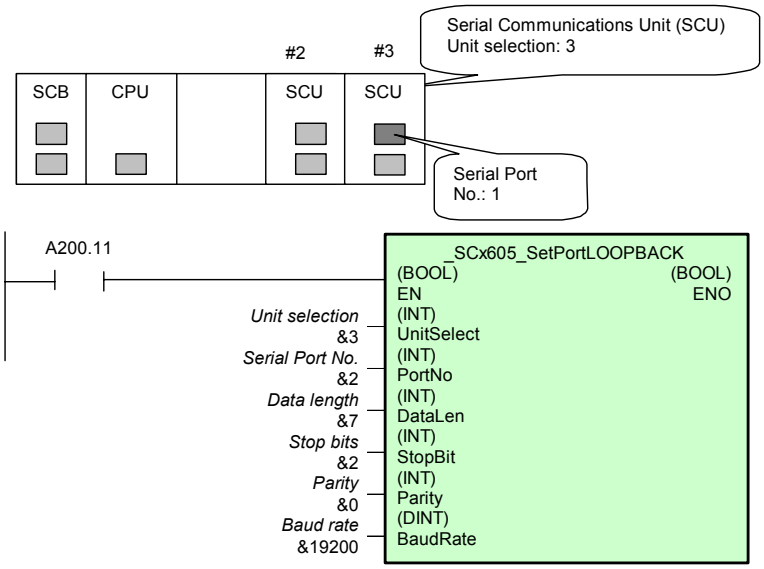
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

SCx -605	Set Loopback Test Mode: _SCx605_SetPortLOOPBACK

Basic function	Sets a serial port to Loopback Test mode.
Symbol	
File name	Lib\FBL\omronlib\PLC\SCx_SCx605_SetPortLOOPBACK10.cxf
Applicable models	CS1W-SCU21-V1, CJ1W-SCU21-V1, and CJ1W-SCU41-V1 Serial Communications Units CS1W-SCB21-V1 and CS1W-SCB41-V1 Serial Communications Boards
Conditions for usage	Other • Communications must be within one network and cannot cross to another network.
Function description	The Serial Communications Unit (SCU) or Serial Communications Board (SCB) serial port for the specified *Unit selection* and *Serial port No.* is set to Loopback Test Mode. When the *Start Trigger* turns ON, the operating mode is changed and a port restart is begun.
FB precautions	• A restart completion check is not performed for this FB. To confirm completion, program it using the Serial Communications Board Settings Changed Flag in the AR Area.
EN input condition	Always use an upwardly differentiated bit or the First Cycle Flag (A200.11). If one is not used, the communications port will be continuously restarted.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When operation is started, the mode of serial port 2 on the Serial Communications Unit with unit number 3 is changed and the port is restarted. 

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port. ■ Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Data length	DataLen	INT	&7	&7 to &8	&7: 7 bits &8: 8 bits
Stop bits	StopBit	INT	&2	&1 to &2	&1: 1 bits &2: 2 bits
Parity	Parity	INT	&0	&1 to &2	&0: Even parity &1: Odd parity &2: None
Baud rate	BaudRate	DINT	&9600	At right.	1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 (bits/s)

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ **Version History**

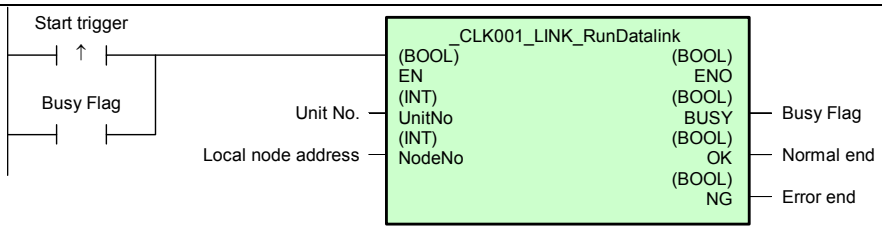
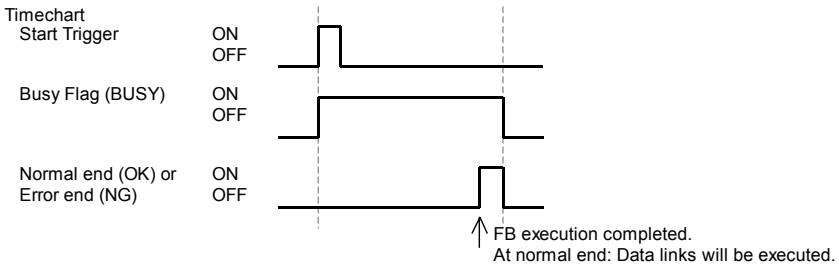
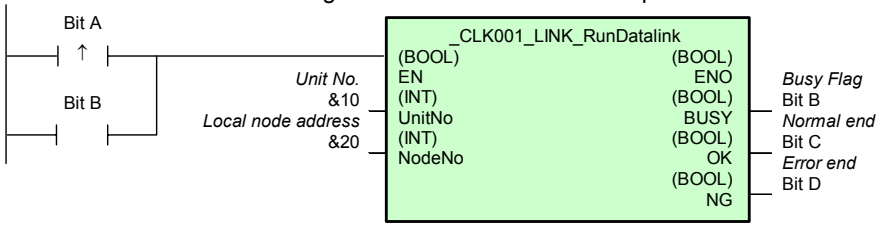
Version	Date	Contents
1.00	2004.6.	Original production

3-4 Controller Link Unit

CS1W-CLK21-V1/CLK12-V1/CLK52-V1, CJ1W-CLK21-V1

FB Name	Function	Page
_CLK001_LINK_RunDatalink	Start Data Links	3-58
_CLK002_LINK_StopDatalink	Stop Data Links	3-60
_CLK003_CheckNode32	Monitor Controller Link Node Errors 32	3-62
_CLK004_CheckNode62	Monitor Controller Link Node Errors 62	3-63

CLK -001	Start Data Links: _CLK001_LINK_RunDatalink

Basic function	Starts the data links.
Symbol	
File name	Lib\FBL\omronlib\PLC\CLK_CLK001_LINK_RunDatalink10.cxf
Applicable models	CS1W-CLK21-V1, CS1W-CLK12-V1, CS1W-CLK52-V1, and CJ1W-CLK21-V1 Controller Link Units
Conditions for usage	Other • Communications must be within one network and cannot cross to another network.
Function description	When the Start Trigger turns ON, the data links are started for the Controller Link Unit specified by the *UnitNo.* If the data links are started normally, the OK Flag will turn ON for one cycle. If they cannot be started for any reason, the NG Flag will turn ON for one cycle.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see Symbol). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON, the data links are started for the Unit with unit number 10. Bit C will turn ON when starting the data links has been completed. 

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Local node address	NodeNo	INT	&1	&1 to &62	

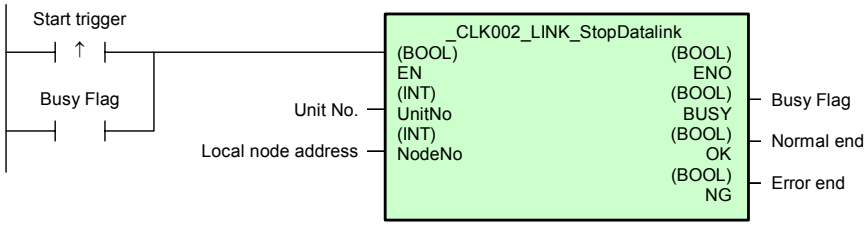
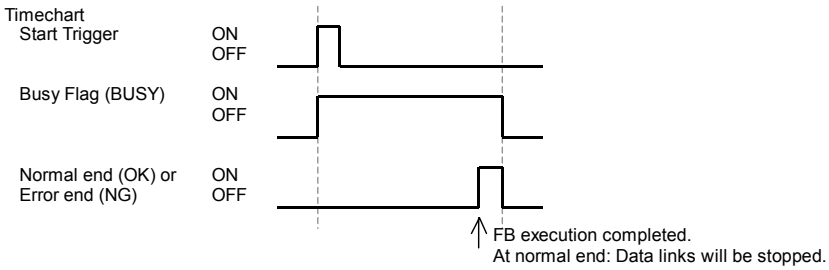
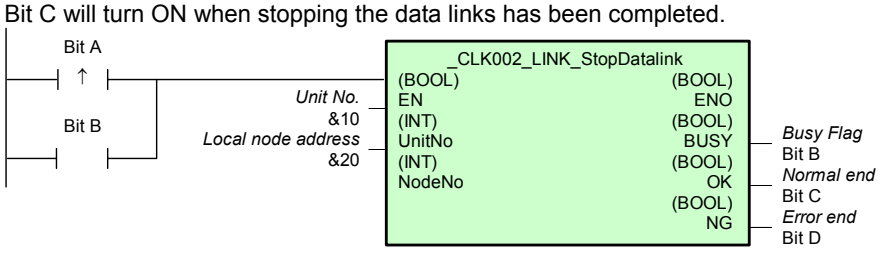
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CLK -002	Stop Data Links: _CLK002_LINK_StopDatalink

Basic function	Stops the data links.
Symbol	
File name	Lib\FBL\omronlib\PLC\CLK_CLK002_LINK_StopDatalink10.cxf
Applicable models	CS1W-CLK21-V1, CS1W-CLK12-V1, CS1W-CLK52-V1, and CJ1W-CLK21-V1 Controller Link Units
Conditions for usage	Other • Communications must be within one network and cannot cross to another network.
Function description	When the Start Trigger turns ON, the data links are stopped for the Controller Link Unit specified by the *UnitNo.* If the data links are started normally, the OK Flag will turn ON for one cycle. If they cannot be started for any reason, the NG Flag will turn ON for one cycle.
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB. 
Application example	When bit A turns ON, the data links are stopped for the Unit with unit number 10. Bit C will turn ON when stopping the data links has been completed. 

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Local node address	NodeNo	INT	&1	&1 to &62	

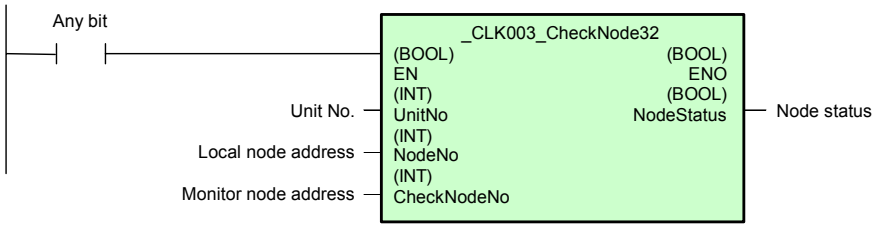
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

CLK -003	Monitor Controller Link Node Errors 32: _CLK003_CheckNode32

Basic function	Monitors node communications status and data link status using the network status.
Symbol	
File name	Lib\FBL\omronlib\PLC\CLK_CLK003_CheckNode3210.cxf
Applicable models	CS1W-CLK21-V1, CS1W-CLK12-V1, CS1W-CLK52-V1, and CJ1W-CLK21-V1 Controller Link Units
Conditions for usage	Controller Link Unit Settings and Status • The local node must be participating in the network. If it is not participating in the network, the status of the node to be monitored cannot be checked and the node status will indicate a node error. • The data link status format for the startup node must be set to 8 bits and the default data link status storage area must be used. If these conditions are not met, the node status will not be stable. Other • Communications must be within one network and cannot cross to another network.
Function description	The node communications status and data link status of the specified *Monitor Node Address* is monitored using the network status for the Controller Link Unit specified by *UnitNo*.
EN input condition	Any bit can be specified.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Local node address	NodeNo	INT	&1	&1 to &32	
Monitor node address	CheckNodeNo	INT	&1	&1 to &32	

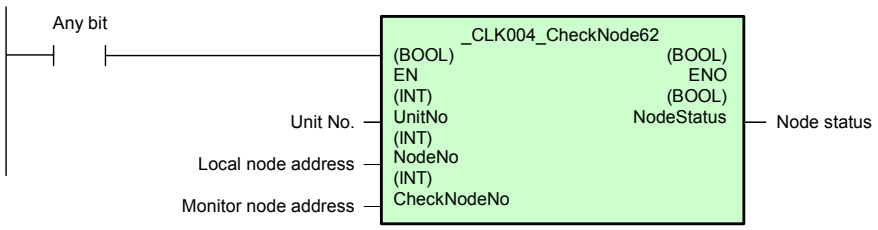
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Node status	NodeStatus	BOOL		Shows the status of the specified node. 1 (ON): Node normal 0 (OFF): Node error

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

CLK -004	Monitor Controller Link Node Errors 62: _CLK004_CheckNode62

Basic function	Monitors node communications status and data link status using the network status.
Symbol	
File name	Lib\FBL\omronlib\PLC\CLK_CLK003_CheckNode6210.cxf
Applicable models	CS1W-CLK21-V1, CS1W-CLK12-V1, CS1W-CLK52-V1, and CJ1W-CLK21-V1 Controller Link Units
Conditions for usage	Controller Link Unit Settings and Status • The local node must be participating in the network. If it is not participating in the network, the status of the node to be monitored cannot be checked and the node status will indicate a node error. • The data link status format for the startup node must be set to 4 bits and the default data link status storage area must be used. If these conditions are not met, the node status will not be stable. Other • Communications must be within one network and cannot cross to another network.
Function description	The node communications status and data link status of the specified *Monitor Node Address* is monitored using the network status for the Controller Link Unit specified by *UnitNo*.
EN input condition	Any bit can be specified.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Local node address	NodeNo	INT	&1	&1 to &62	
Monitor node address	CheckNodeNo	INT	&1	&1 to &62	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Node status	NodeStatus	BOOL		Shows the status of the specified node. 1 (ON): Node normal 0 (OFF): Node error

■ Version History

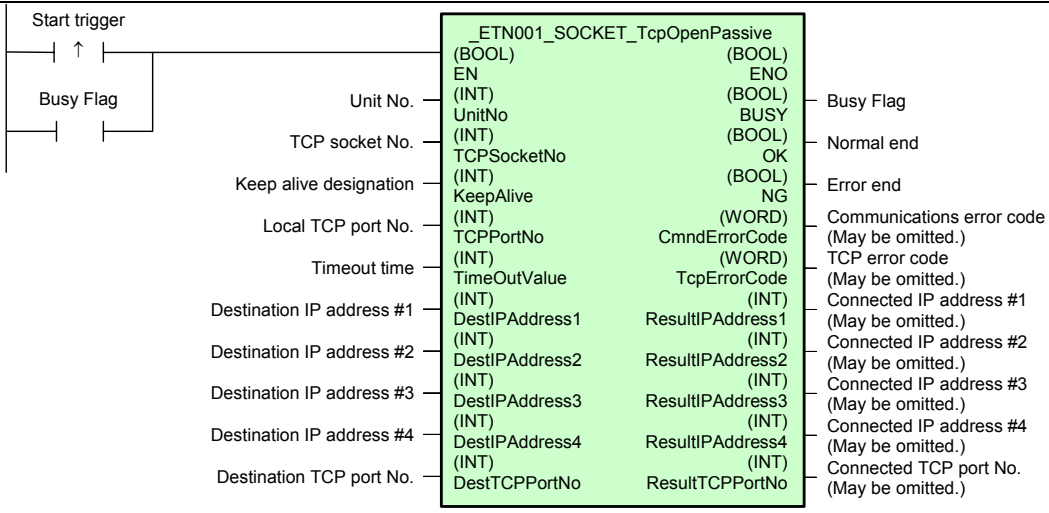
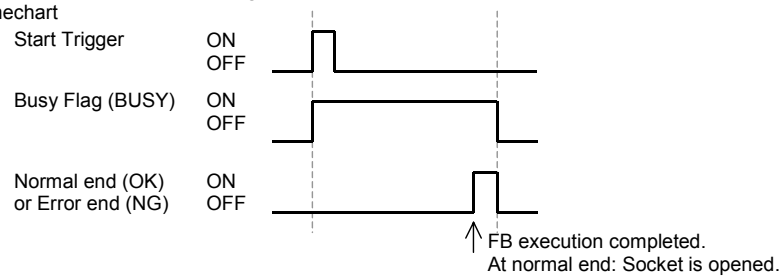
Version	Date	Contents
1.00	2004.6.	Original production

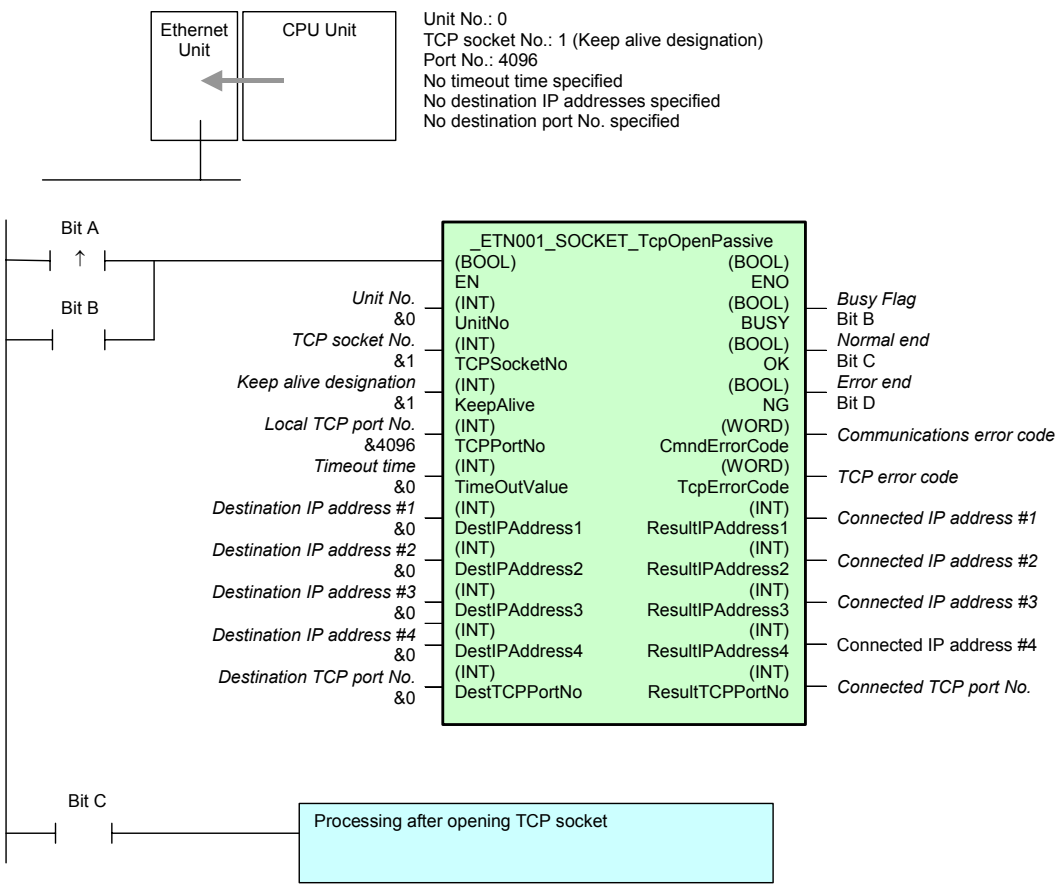
3-5 Ethernet unit

CS1W-ETN21, CJ1W-ETN21

FB Name	Function	Page
_ETN001_SOCKET_TcpOpenPassive	Open TCP Socket Passive	3-65
_ETN002_SOCKET_TcpOpenActive	Open TCP Socket Active	3-68
_ETN003_SOCKET_TcpClose	Close TCP Socket	3-71
_ETN004_SOCKET_TcpSend	Send via TCP Socket	3-73
_ETN005_SOCKET_TcpRecv	Receive via TCP Socket	3-76
_ETN011_SOCKET_UdpOpen	Open UDP Socket	3-79
_ETN013_SOCKET_UdpClose	Close UDP Socket	3-81
_ETN014_SOCKET_UdpRecv	Receive via UDP Socket	3-83
_ETN015_SOCKET_UdpSend	Send via UDP Socket	3-86

ETN -001	Open TCP Socket Passive: _ETN001_SOCKET_TcpOpenPassive

Basic function	Issues a request to the specified Ethernet Unit to open a TCP socket using passive processing.
Symbol	
File name	Lib\FBL\omronlib\PLC\ETN_ETN001_SOCKET_TcpOpenPassive10.cxf
Applicable models	CS1W-ETN21 and CJ1W-ETN21 Ethernet Units
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.
Function description	A TCP socket is opened using passive processing for the Ethernet Unit specified by *UnitNo.* The socket will wait for a connection from another node. The partner node's IP address and TCP port number are stored in the specified results storage area when the TCP connection has been established. If communications processing produces an error, a completion code indicating the error will be output to the *Communications Error Code.* If TCP socket open processing produces an error, a completion code indicating the error will be output to the *TCP Error Code.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, a TCP socket open request is issued. Bit C will turn ON when the open request has been completed. 
Related manuals	TCP/UDP Error Codes *Ethernet Units Construction of Networks Operation Manual* (W420) 7-3 Command/Response Reference FINS Error Codes *Communications Commands Reference Manual* (W342) 5-1-3 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	The unit number of the Ethernet Unit.
TCP socket No.	TCPSocketNo	INT	&1	&1 to 8	
Keep alive designation	KeepAlive	INT	&0	&0 to &1	&1: Keep alive &0: Don't keep alive
Local TCP port No.	TCPPortNo	INT	&0		
Timeout time	TimeOutValue	INT	&0	&0 to 32767	&0: Time not monitored.
Destination IP address #1	DestIPAddress1r	INT	&0	&0 to &254	
Destination IP address #2	DestIPAddress2	INT	&0	&0 to &254	
Destination IP address #3	DestIPAddress3	INT	&0	&0 to &254	
Destination IP address #4	DestIPAddress4	INT	&0	&0 to &254	
Destination TCP port No.	DestTCPPortNo	INT	&0	&0 to	&0: Partner node's port number not specified. Will wait for a connection from any port.

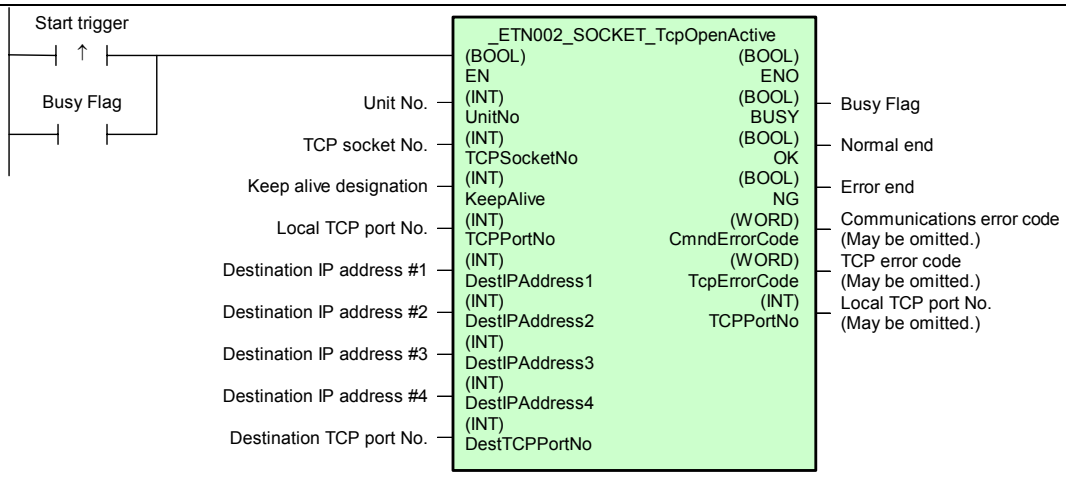
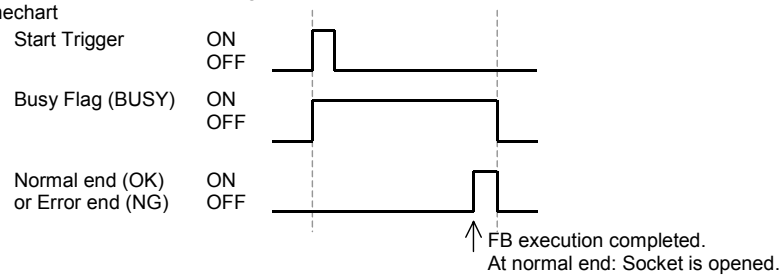
Output Variables

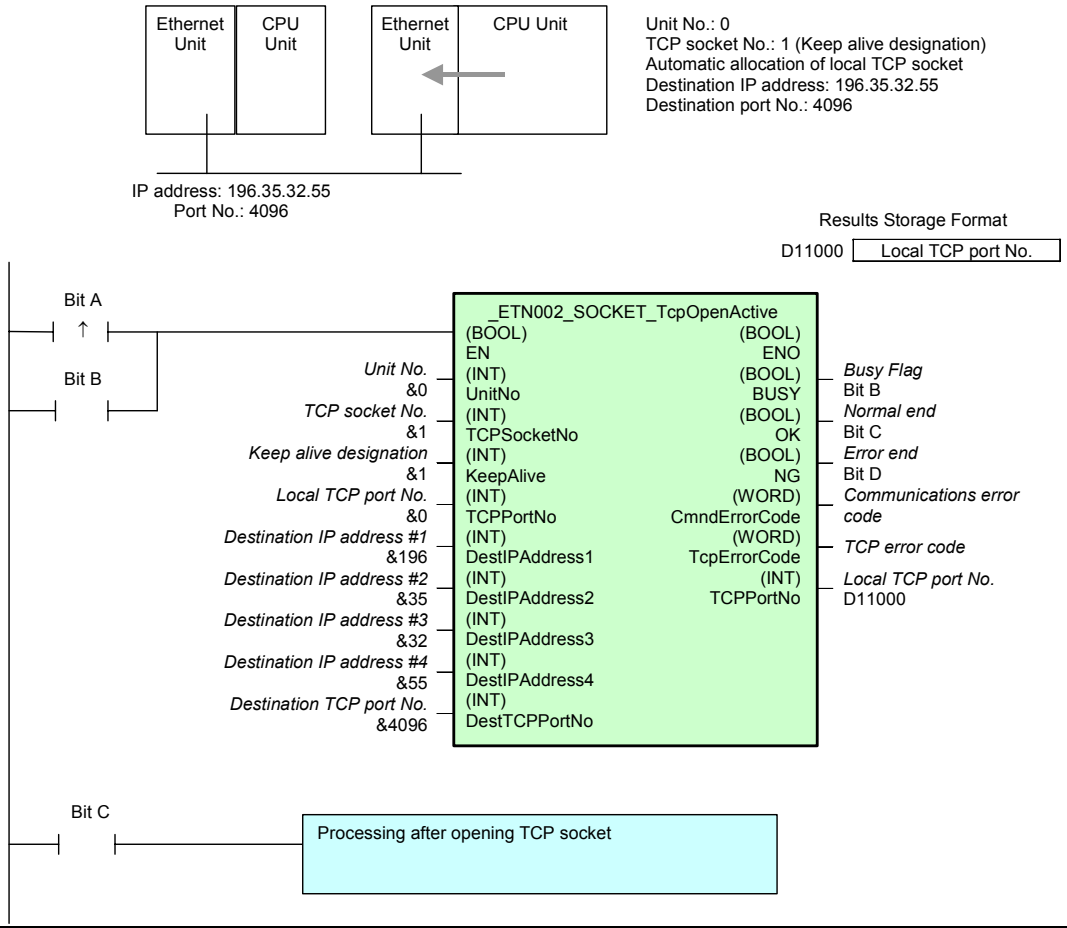
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Communications error code (May be omitted.)	CmndErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.
TCP error code (May be omitted.)	TCPErrorCode	WORD		Outputs the error code when the TCP socket operation ends in an error. Refer to *7-3 Command/Response Reference* in the *Ethernet Units Construction of Networks Operation Manual* (W420) for details on the error codes.
Connected IP address #1 (May be omitted.)	ResultIPAddress1r	INT	&0 to &254	
Connected IP address #2 (May be omitted.)	ResultIPAddress2	INT	&0 to &254	
Connected IP address #3 (May be omitted.)	ResultIPAddress3	INT	&0 to &254	
Connected IP address #4 (May be omitted.)	ResultIPAddress4	INT	&0 to &254	
Connected TCP port No. (May be omitted.)	ResultTCPPortNo	INT		

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ETN -002	Open TCP Socket Active: _ETN002_SOCKET_TcpOpenActive

Basic function	Issues a request to the specified Ethernet Unit to open a TCP socket using active processing.
Symbol	
File name	Lib\FBL\omronlib\PLC\ETN_ETN002_SOCKET_TcpOpenActive10.cxf
Applicable models	CS1W-ETN21 and CJ1W-ETN21 Ethernet Units
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.
Function description	A TCP socket is opened using active processing for the Ethernet Unit specified by *UnitNo.* The socket is connected to another node. The local TCP port number is stored in the specified results storage area when the TCP connection has been established. If communications processing produces an error, a completion code indicating the error will be output to the *Communications Error Code.* If TCP socket open processing produces an error, a completion code indicating the error will be output to the *TCP Error Code*.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, a TCP socket open request is issued. Bit C will turn ON when the open request has been completed. 
Related manuals	TCP/UDP Error Codes *Ethernet Units Construction of Networks Operation Manual* (W420) 7-3 Command/Response Reference FINS Error Codes *Communications Commands Reference Manual* (W342) 5-1-3 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	The unit number of the Ethernet Unit.
TCP socket No.	TCPSocketNo	INT	&1	&1 to &8	
Keep alive designation	KeepAlive	INT	&0	&0 to &1	&1: Keep alive &0: Don't keep alive
Local TCP port No.	TCPPortNo	INT	&0		If 0 is specified, an available port number will be automatically allocated.
Destination IP address #1	DestIPAddress1r	INT	&0	&0 to &254	
Destination IP address #2	DestIPAddress2	INT	&0	&0 to &254	
Destination IP address #3	DestIPAddress3	INT	&0	&0 to &254	
Destination IP address #4	DestIPAddress4	INT	&0	&0 to &254	
Destination TCP port No.	DestTCPPortNo	INT	&0	&1 to	

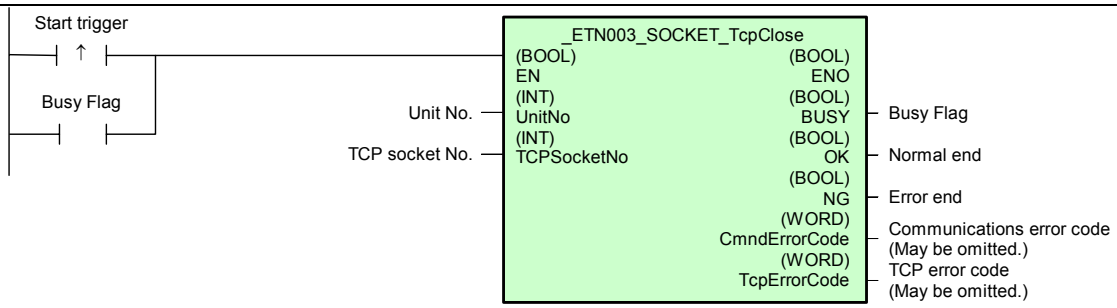
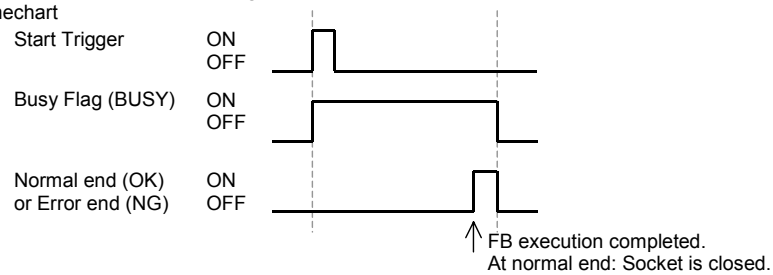
Output Variables

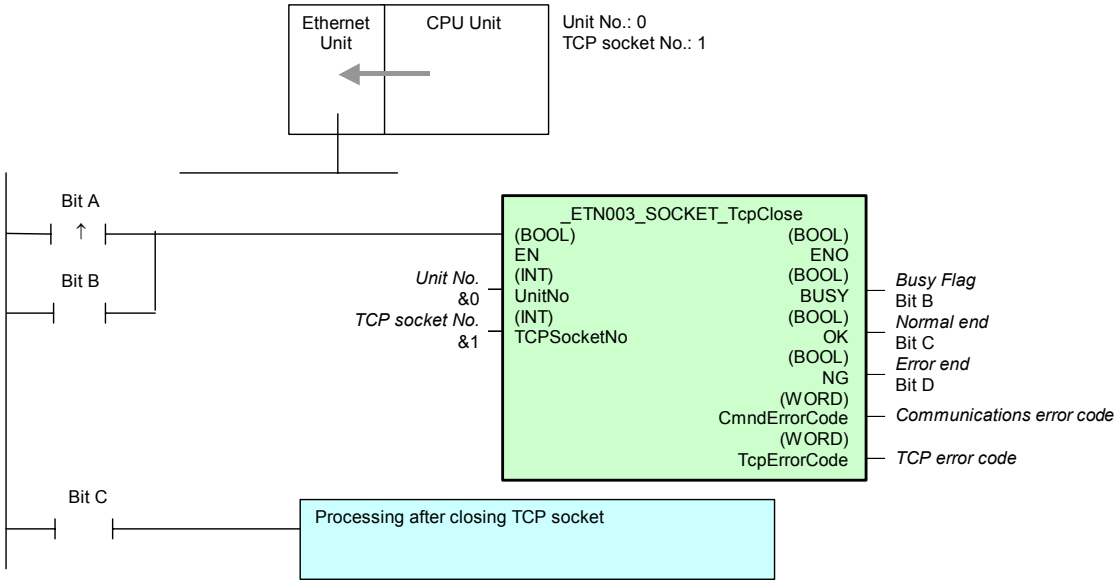
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Communications error code (May be omitted.)	CmndErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.
TCP error code (May be omitted.)	TcpErrorCode	WORD		Outputs the error code when the TCP socket operation ends in an error. Refer to *7-3 Command/Response Reference* in the *Ethernet Units Construction of Networks Operation Manual* (W420) for details on the error codes.
Local TCP port No. (May be omitted.)	TCPPortNo	INT	&1 to	

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ETN -003	Close TCP Socket: _ETN003_SOCKET_TcpClose

Basic function	Performs TCP socket close processing for the specified Ethernet Unit.
Symbol	
File name	Lib\FBL\omronlib\PLC\ETN_ETN002_SOCKET_TcpClose10.cxf
Applicable models	CS1W-ETN21 and CJ1W-ETN21 Ethernet Units
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.
Function description	The specified TCP socket is closed for the Ethernet Unit specified by *UnitNo.* If communications processing produces an error, a completion code indicating the error will be output to the *Communications Error Code.* If TCP socket close processing produces an error, a completion code indicating the error will be output to the *TCP Error Code.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, a TCP socket close request is issued. Bit C will turn ON when close processing has been completed. 
Related manuals	TCP/UDP Error Codes *Ethernet Units Construction of Networks Operation Manual* (W420) 7-3 Command/Response Reference FINS Error Codes *Communications Commands Reference Manual* (W342) 5-1-3 Error Codes

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	The unit number of the Ethernet Unit.
TCP socket No.	TCPSocketNo	INT	&1	&1 to 8	

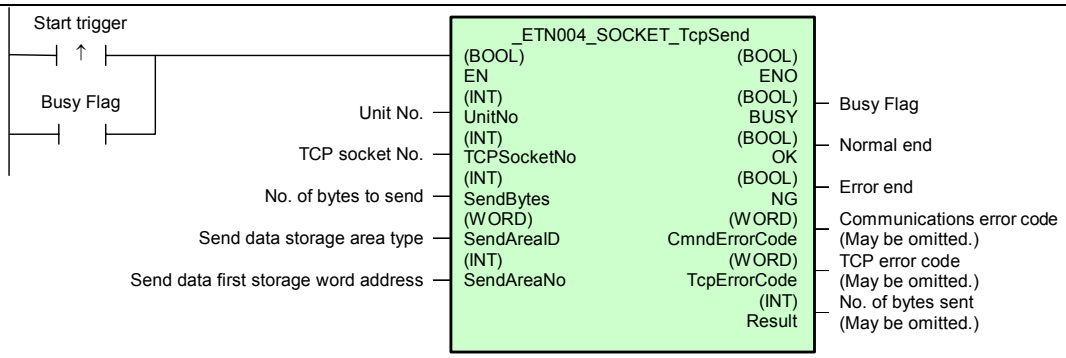
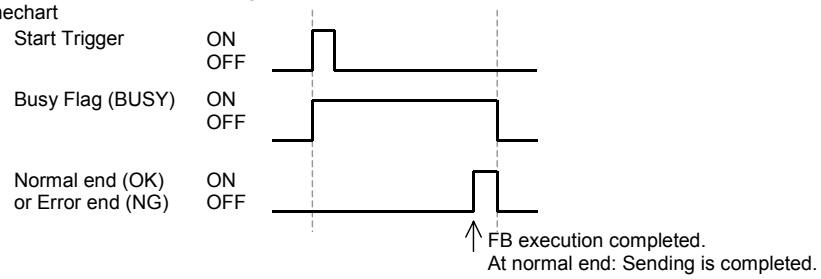
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Communications error code (May be omitted.)	CmndErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.
TCP error code (May be omitted.)	TcpErrorCode	WORD		Outputs the error code when the TCP socket operation ends in an error. Refer to *7-3 Command/Response Reference* in the *Ethernet Units Construction of Networks Operation Manual* (W420) for details on the error codes.

■ Version History

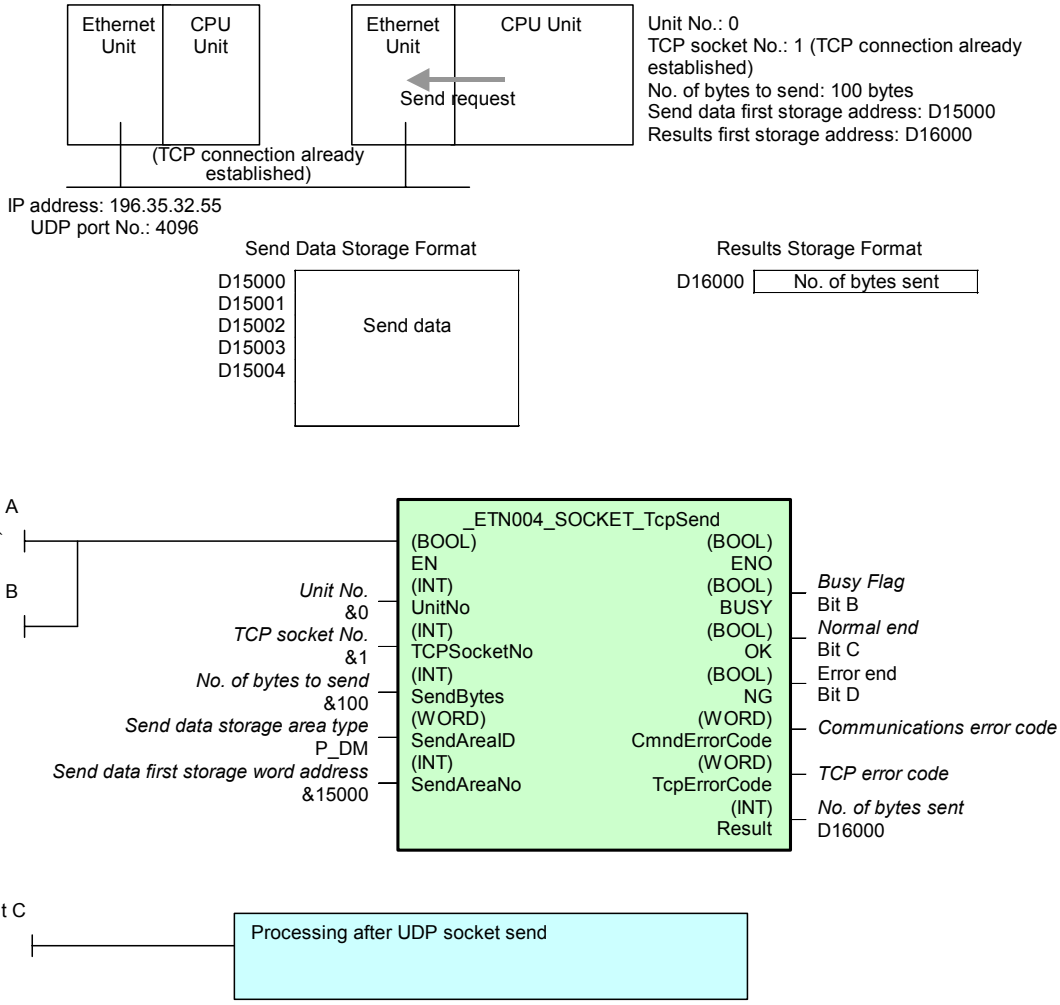
Version	Date	Contents
1.00	2004.6.	Original production

ETN -004	Send via TCP Socket: _ETN004_SOCKET_TcpSend

Basic function	Issues a request to the specified Ethernet Unit to send using a TCP socket.
Symbol	
File name	Lib\FBL\omronlib\PLC\ETN_ETN004_SOCKET_TcpSend10.cxf
Applicable models	CS1W-ETN21 and CJ1W-ETN21 Ethernet Units
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.
Function description	A command is sent to the Ethernet Unit specified by *UnitNo.* to request a send from the specified TCP socket. If send processing is completed normally, the number of bytes that was sent will be stored. If the request command processing produces an error, a completion code indicating the error will be output to the *Communications Error Code.* If the request command is processed normally but the TCP socket send processing produces an error, a completion code indicating the error will be output to the *TCP Error Code.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example

When bit A turns ON, a TCP socket send request is issued.
Bit C will turn ON when the send request has been completed.



Related manuals

TCP/UDP Error Codes
Ethernet Units Construction of Networks Operation Manual (W420)
7-3 Command/Response Reference
FINS Error Codes
Communications Commands Reference Manual (W342)
5-1-3 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	The unit number of the Ethernet Unit.
TCP socket No.	TCPSocketNo	INT	&1	&1 to &8	
No. of bytes to send	SendBytes	INT	&1	&1 to &1980	
Send data storage area type	SendAreaID	WORD	#0082	At left.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Send data first storage word address	SendAreaNo	INT	&0		

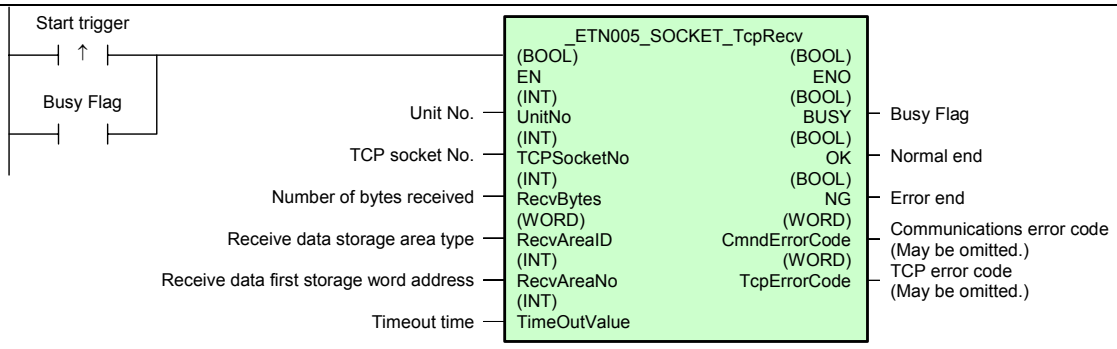
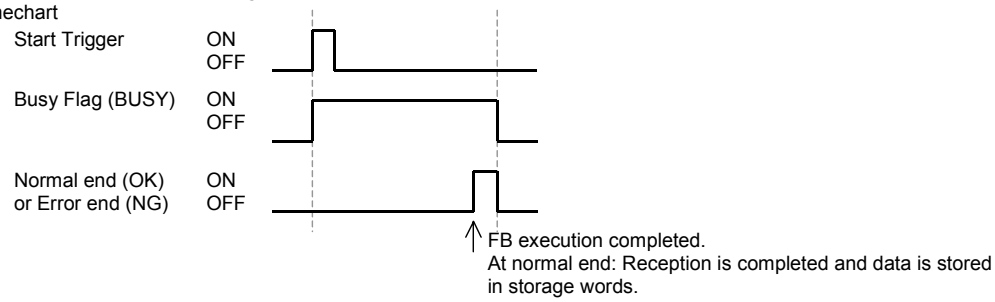
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Communications error code (May be omitted.)	CmndErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.
TCP error code (May be omitted.)	TcpErrorCode	WORD		Outputs the error code when the TCP socket operation ends in an error. Refer to *7-3 Command/Response Reference* in the *Ethernet Units Construction of Networks Operation Manual* (W420) for details on the error codes.
No. of bytes sent (May be omitted.)	Result	INT		The number of bytes that were actually sent.

■ **Version History**

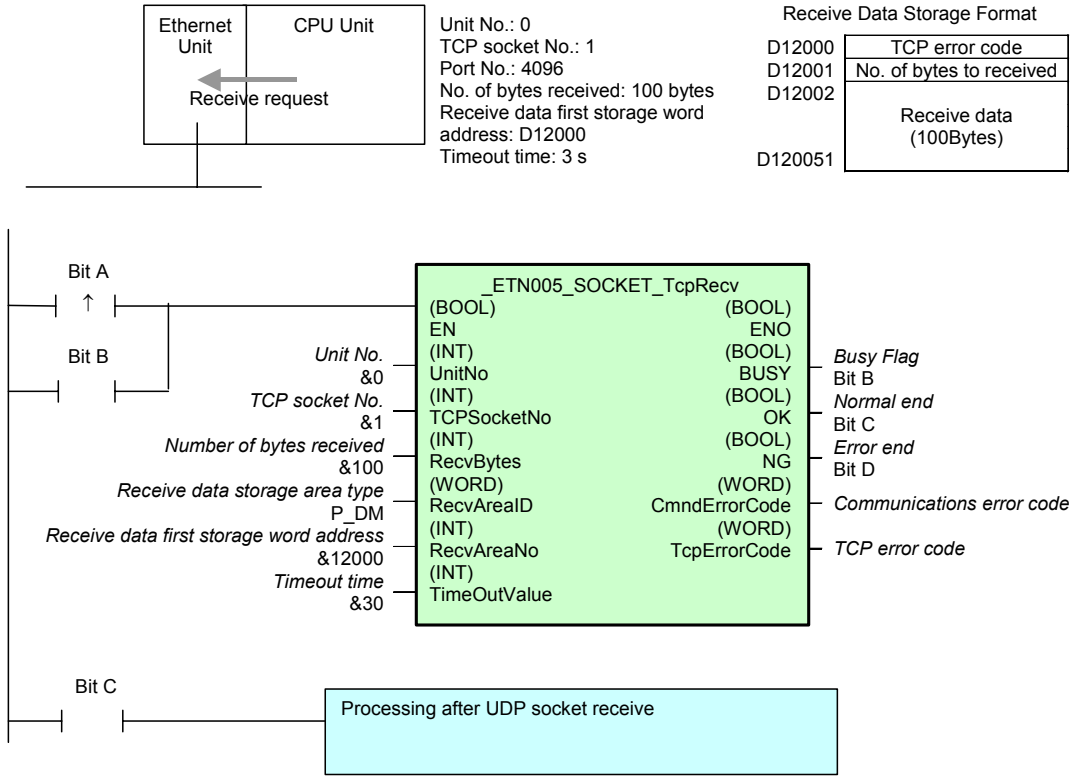
Version	Date	Contents
1.00	2004.6.	Original production

ETN -005	Receive via TCP Socket: _ETN005_SOCKET_TcpRecv

Basic function	Issues a request to the specified Ethernet Unit to receive using a TCP socket.
Symbol	
File name	Lib\FBL\omronlib\PLC\ETN_ETN005_SOCKET_TcpRecv10.cxf
Applicable models	CS1W-ETN21 and CJ1W-ETN21 Ethernet Units
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.
Function description	A command is sent to the Ethernet Unit specified by *UnitNo.* to request receiving from the specified TCP socket. The TCP error code, the number of bytes received and the reception data are stored in the specified results storage area when the reception processing is performed normally. If the request command processing produces an error, a completion code indicating the error will be output to the *Communications Error Code.* If the request command is processed normally but the TCP socket reception processing produces an error, a completion code indicating the error will be output to the *TCP Error Code.* And the specified results storage top area.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example

When bit A turns ON, a TCP socket receive request is issued.
Bit C will turn ON when the receive request has been completed.



Related manuals

TCP/UDP Error Codes
Ethernet Units Construction of Networks Operation Manual (W420)
7-3 Command/Response Reference
FINS Error Codes
Communications Commands Reference Manual (W342)
5-1-3 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	The unit number of the Ethernet Unit.
TCP socket No.	TCPSocketNo	INT	&1	&1 to &8	
Number of bytes received	RecvBytes	INT	&1	&1 to &1980	In the case of odd-byte, the lower byte of the last word is stored 0.
Receive data storage area type	RecvAreaID	WORD	#0082	At left.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Receive data first storage word address	RecvAreaNo	INT	&0		
Timeout time	TimeOutValue	INT	&0		&0: Time not monitored.

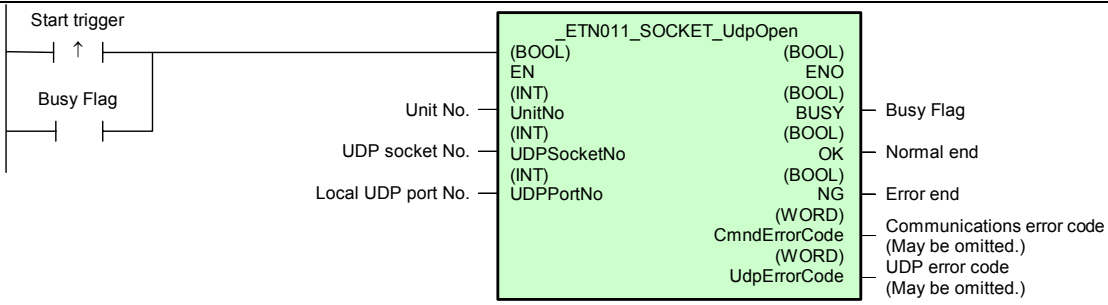
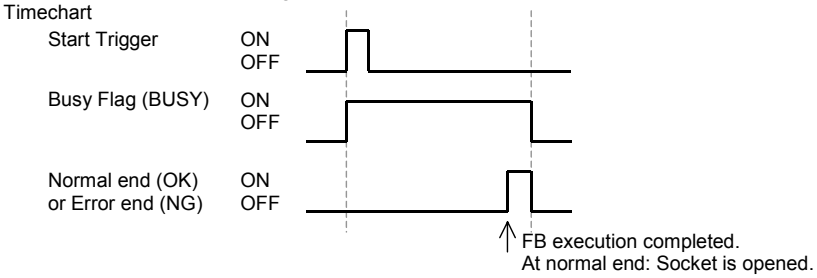
Output Variables

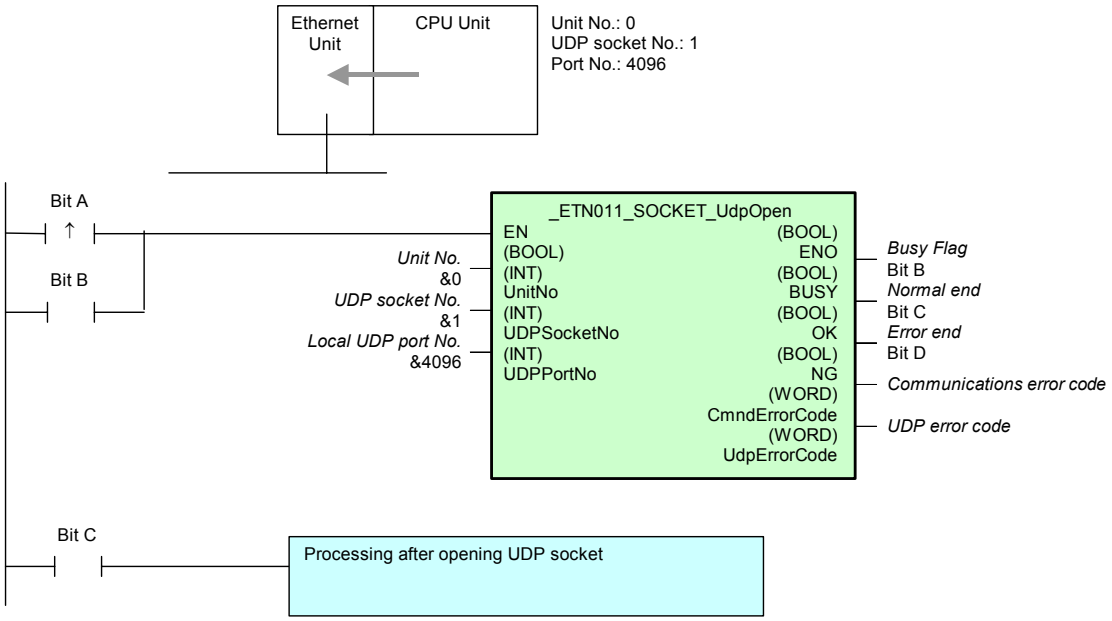
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Communications error code (May be omitted.)	CmndErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.
TCP error code (May be omitted.)	TcpErrorCode	WORD		Outputs the error code when the TCP socket operation ends in an error. Refer to *7-3 Command/Response Reference* in the *Ethernet Units Construction of Networks Operation Manual* (W420) for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ETN -011	Open UDP Socket: _ETN011_SOCKET_UdpOpen

Basic function	Issues a request to the specified Ethernet Unit to open a UDP socket.
Symbol	
File name	Lib\FBL\omronlib\PLC\ETN_ETN011_SOCKET_UdpOpen10.cxf
Applicable models	CS1W-ETN21 and CJ1W-ETN21 Ethernet Units
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.
Function description	The specified UDP socket is opened for the Ethernet Unit specified by *UnitNo.* If communications processing produces an error, a completion code indicating the error will be output to the *Communications Error Code.* If UDP socket open processing produces an error, a completion code indicating the error will be output to the *UDP Error Code.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, a UDP socket open request is issued. Bit C will turn ON when the open request has been completed. 
Related manuals	TCP/UDP Error Codes *Ethernet Units Construction of Networks Operation Manual* (W420) 7-3 Command/Response Reference FINS Error Codes *Communications Commands Reference Manual* (W342) 5-1-3 Error Codes

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	The unit number of the Ethernet Unit.
UDP socket No.	UDPSocketNo	INT	&1	&1 to 8	
Local UDP port No.	UDPPortNo	INT	&0		

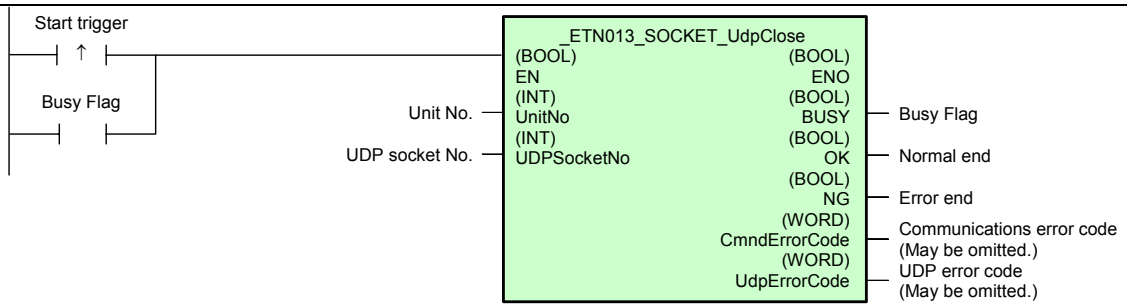
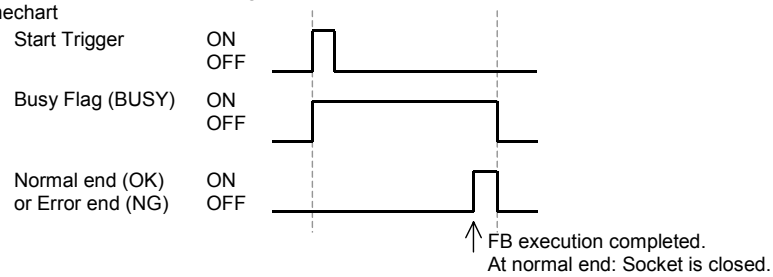
Output Variables

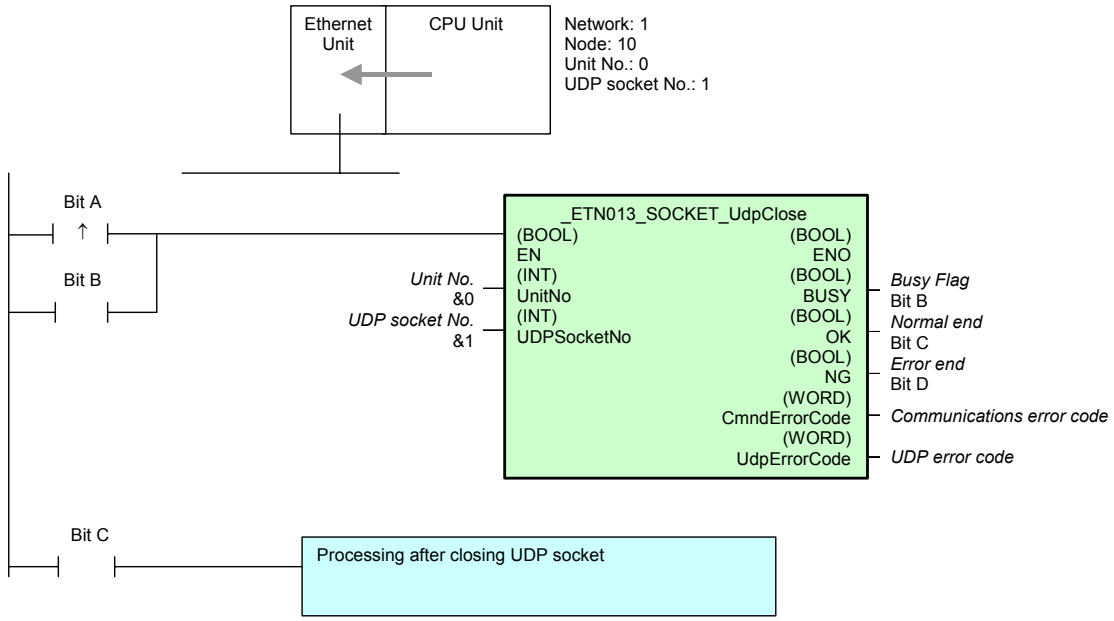
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Communications error code (May be omitted.)	CmndErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.
UDP error code (May be omitted.)	UdpErrorCode	WORD		Outputs the error code when the UDP socket operation ends in an error. Refer to *7-3 Command/Response Reference* in the *Ethernet Units Construction of Networks Operation Manual* (W420) for details on the error codes.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

ETN -013	Close UDP Socket: _ETN013_SOCKET_UdpClose

Basic function	Performs UDP socket close processing for the specified Ethernet Unit.
Symbol	
File name	Lib\FBL\omronlib\PLC\ETN_ETN013_SOCKET_UdpClose10.cxf
Applicable models	CS1W-ETN21 and CJ1W-ETN21 Ethernet Units
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 10 s or more are recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.
Function description	The specified UDP socket is closed for the Ethernet Unit specified by *UnitNo.* If communications processing produces an error, a completion code indicating the error will be output to the *Communications Error Code.* If UDP socket close processing produces an error, a completion code indicating the error will be output to the *UDP Error Code.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, a UDP socket close request is issued. Bit C will turn ON when close processing has been completed. 
Related manuals	TCP/UDP Error Codes *Ethernet Units Construction of Networks Operation Manual* (W420) 7-3 Command/Response Reference FINS Error Codes *Communications Commands Reference Manual* (W342) 5-1-3 Error Codes

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	The unit number of the Ethernet Unit.
UDP socket No.	UDPSocketNo	INT	&1	&1 to 8	

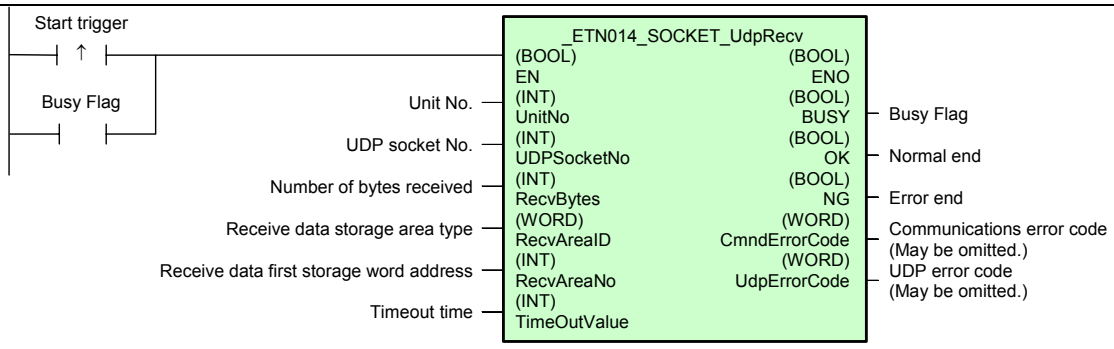
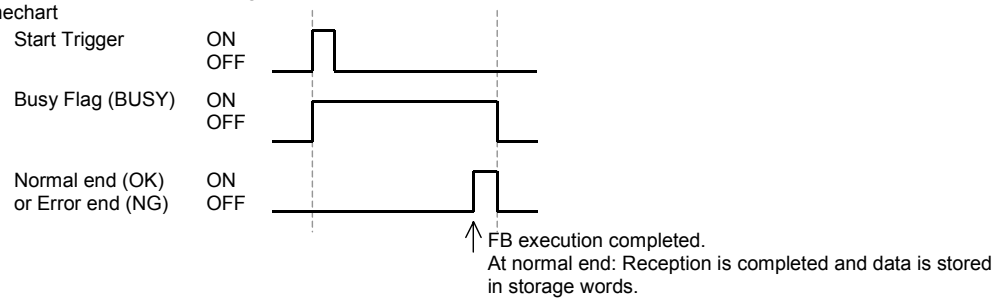
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Communications error code (May be omitted.)	CmndErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.
UDP error code (May be omitted.)	TcpErrorCode	WORD		Outputs the error code when the UDP socket operation ends in an error. Refer to *7-3 Command/Response Reference* in the *Ethernet Units Construction of Networks Operation Manual* (W420) for details on the error codes.

■ Version History

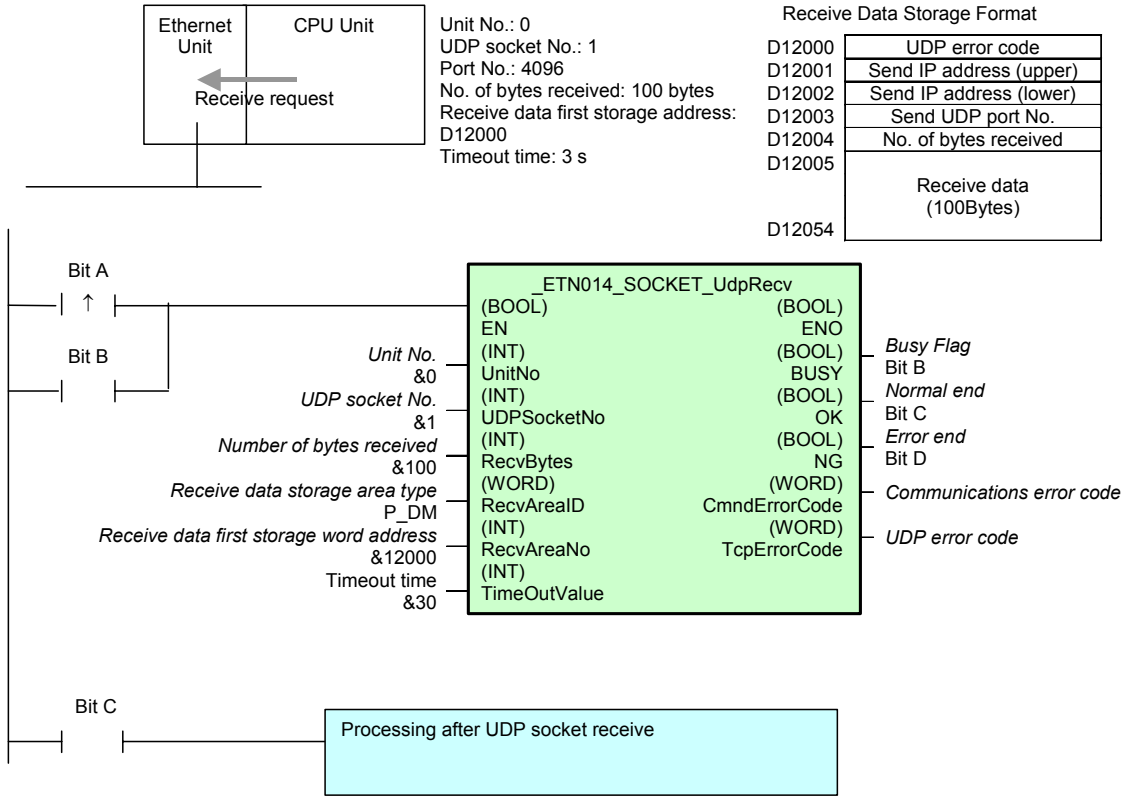
Version	Date	Contents
1.00	2004.6.	Original production

ETN -014	Receive via UDP Socket: _ETN014_SOCKET_UdpRecv

Basic function	Issues a request to the specified Ethernet Unit to receive using a UDP socket.
Symbol	
File name	Lib\FBL\omronlib\PLC\ETN_ETN014_SOCKET_UdpRecv10.cxf
Applicable models	CS1W-ETN21 and CJ1W-ETN21 Ethernet Units
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.
Function description	A command is sent to the Ethernet Unit specified by *UnitNo.* to request receiving from the specified UDP socket. The UDP error code, the source IP address, source UDP port number, number of bytes received, and the reception data are stored in the specified results storage area when the reception processing is performed normally. If the request command processing produces an error, a completion code indicating the error will be output to the *Communications Error Code.* If the request command is processed normally but the UDP socket reception processing produces an error, a completion code indicating the error will be output to the *UDP Error Code* and, the specified results storage top area
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example

When bit A turns ON, a UDP socket receive request is issued.
Bit C will turn ON when the receive request has been completed.



Related manuals

TCP/UDP Error Codes
Ethernet Units Construction of Networks Operation Manual (W420)
7-3 Command/Response Reference
FINS Error Codes
Communications Commands Reference Manual (W342)
5-1-3 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	The unit number of the Ethernet Unit.
UDP socket No.	UDPSocketNo	INT	&1	&1 to &8	
Number of bytes received	RecvBytes	INT	&1	&1 to &1974	In the case of odd-byte, the lower byte of the last word is stored 0.
Receive data storage area type	RecvAreaID	WORD	#0082	At left.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Receive data first storage word address	RecvAreaNo	INT	&0		
Timeout time	TimeOutValue	INT	&0		&0: Time not monitored.

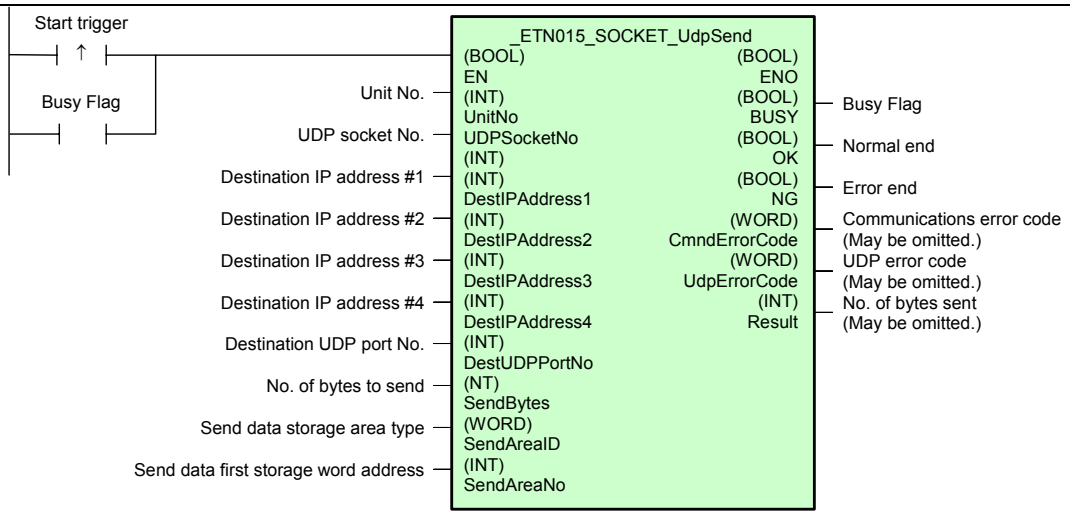
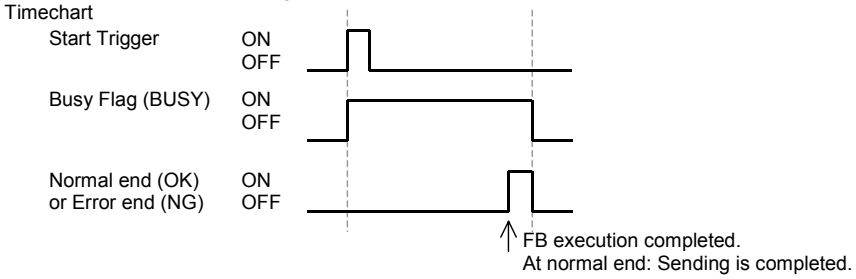
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Communications error code (May be omitted.)	CmndErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.
UDP error code (May be omitted.)	UdpErrorCode	WORD		Outputs the error code when the UDP socket operation ends in an error. Refer to *7-3 Command/Response Reference* in the *Ethernet Units Construction of Networks Operation Manual* (W420) for details on the error codes.

■ **Version History**

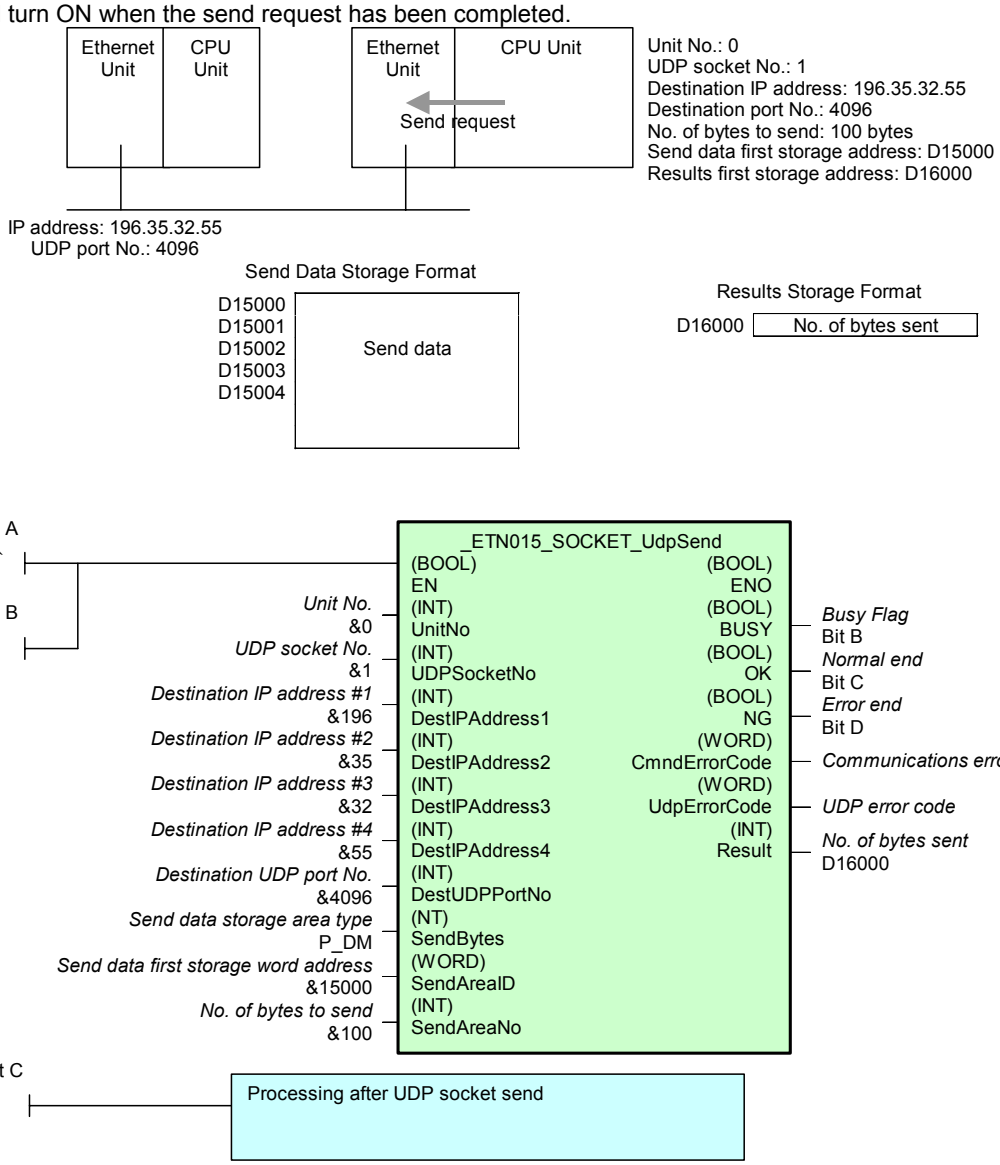
Version	Date	Contents
1.00	2004.6.	Original production

ETN -015	Send via UDP Socket: _ETN015_SOCKET_UdpSend

Basic function	Issues a request to the specified Ethernet Unit to send using a UDP socket.
Symbol	
File name	Lib\FBL\omronlib\PLC\ETN_ETN015_SOCKET_UdpSend10.cxf
Applicable models	CS1W-ETN21 and CJ1W-ETN21 Ethernet Units
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.
Function description	A command is sent to the Ethernet Unit specified by *UnitNo.* to request a send to the specified IP address and destination UDP port number using a UDP socket. If send processing is completed normally, the number of bytes that was sent will be stored. If the request command processing produces an error, a completion code indicating the error will be output to the *Communications Error Code.* If the request command is processed normally but the UDP socket send processing produces an error, a completion code indicating the error will be output to the *UDP Error Code.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example

When bit A turns ON, a UDP socket send request is issued.
Bit C will turn ON when the send request has been completed.



Related manuals

TCP/UDP Error Codes
Ethernet Units Construction of Networks Operation Manual (W420)
7-3 Command/Response Reference
FINS Error Codes
Communications Commands Reference Manual (W342)
5-1-3 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	The unit number of the Ethernet Unit.
UDP socket No.	UDPSocketNo	INT	&1	&1 to &8	
Destination IP address #1	DestIPAddress1	INT	&0	&1 to &254	
Destination IP address #2	DestIPAddress2	INT	&0	&1 to &254	
Destination IP address #3	DestIPAddress3	INT	&0	&1 to &254	
Destination IP address #4	DestIPAddress4	INT	&0	&1 to &254	
Destination UDP port No.	DestUDPProtNo	INT	&0		
No. of bytes to send	SendBytes	INT	&1	&1 to &1974	
Send data storage area type	SendAreaID	WORD	#0082	At left.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Send data first storage word address	SendAreaNo	INT	&0		

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Communications error code (May be omitted.)	CmndErrorCode	WORD		Outputs the error code when execution ends in an error in the communications command level. Refer to the *FINS Command Reference Manual* (W227) for details on the error codes.
UDP error code (May be omitted.)	UdpErrorCode	WORD		Outputs the error code when the UDP socket operation ends in an error. Refer to *7-3 Command/Response Reference* in the *Ethernet Units Construction of Networks Operation Manual* (W420) for details on the error codes.
No. of bytes sent (May be omitted.)	Result	INT		The number of bytes that were actually sent.

■ **Version History**

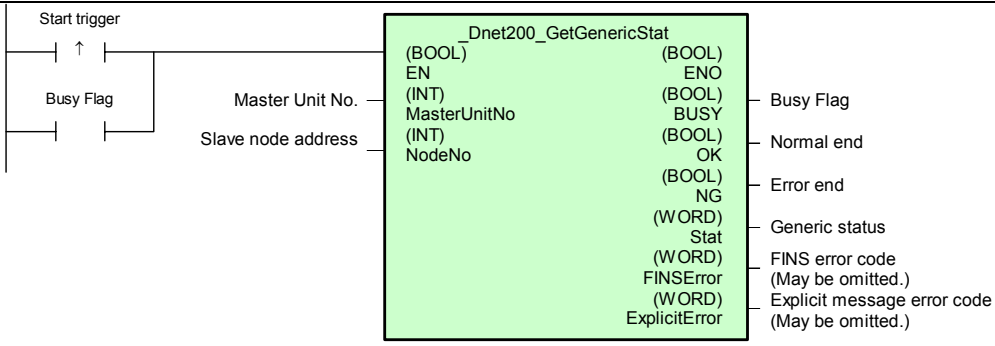
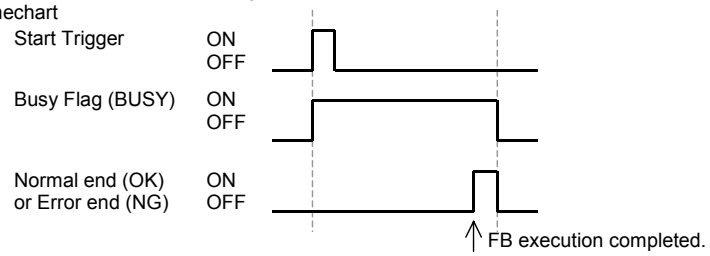
Version	Date	Contents
1.00	2004.6.	Original production

3-6 DeviceNet Unit

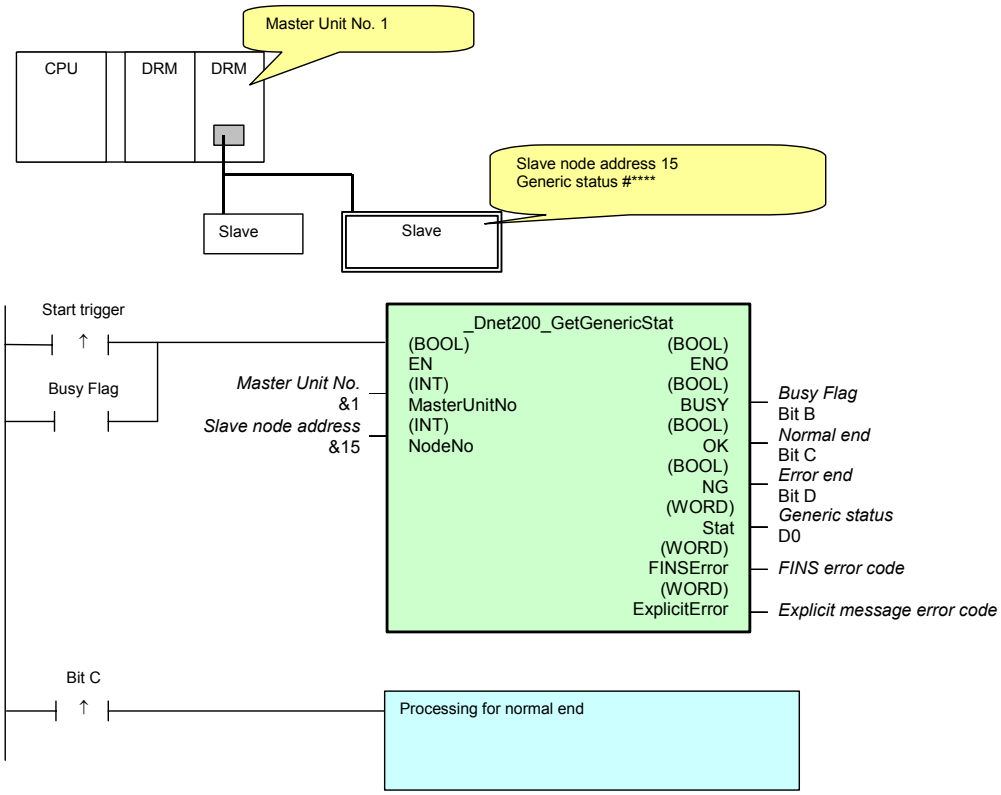
CS1W-DRM21(-V1), CJ1W-DRM21

FB Name	Function	Page
_Dnet200_GetGenericStat	Read Generic Status	3-90
_Dnet201_GetNetVoltage_PV	Read Network Voltage Present Value	3-93
_Dnet202_GetNetVoltage_Min	Read Network Voltage Minimum	3-96
_Dnet203_GetNetVoltage_Max	Read Network Voltage Maximum Value	3-99
_Dnet204_GetONTime_PV	Read Present Unit ON Time	3-102
_Dnet205_GetONTime_Stat	Read Unit ON Time Status	3-105
_Dnet206_GetCounter_IN_PV	Read Input Terminal Maintenance Counter Present Value	3-108
_Dnet207_GetCounter_IN_SV	Read Input Terminal Maintenance Counter Set Value	3-111
_Dnet208_GetCounter_OUT_PV	Read Output Terminal Maintenance Counter Present Value	3-114
_Dnet209_GetCounter_OUT_SV	Read Output Terminal Maintenance Counter Set Value	3-117
_Dnet210_GetCounter_Stat	Read Maintenance Counter Status	3-120
_Dnet211_GetInputPower_Stat	Read Input Power Status	3-123
_Dnet212_GetOutPower_Stat	Read Output Power Status	3-126
_Dnet213_GetLoadShort_Stat	Read Load Short-circuit Status	3-129
_Dnet214_GetLoadOffWire_Hold	Read Load OFF Wire Hold Status	3-132
_Dnet215_GetLoadOffWire_Stat	Read Load OFF Wire Status	3-135
_Dnet216_GetOperationTime_PV	Read Operation Time Monitor Present Value	3-138
_Dnet217_GetOperationTime_SV	Read Operation Time Monitor Set Value	3-141
_Dnet218_GetOperationTime_Stat	Read Operation Time Monitor Status	3-144
_Dnet219_GetOperationTime_Hold	Read Operation Time Monitor Hold Status	3-147
_Dnet220_GetOperationTime_Peak	Read Operation Time Monitor Peak Value Read	3-150
_Dnet221_GetSensorOffWire_Stat	Read Sensor OFF Wire Status	3-153
_Dnet222_GetSensorOffWire_Hold	Read Sensor OFF Wire Hold Status	3-156
_Dnet223_GetSensorShort_Stat	Read Sensor Power Supply Short-circuit Status	3-159
_Dnet224_GetSensorShort_Hold	Read Sensor Power Supply Short-circuit Hold Status	3-162

Dnet -200	Read Generic Status: _Dnet200_GetGenericStat

Basic function	Reads the generic status from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet200_GetGenericStat10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, ID08C, HD16C, ID16S, ID16TA, ID32ML, ID32SL, ID32SLH, DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH, DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH, DRT2-AD04, AD04H, DA02, TS04T, and TS04P
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The generic status is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the generic status of slave with the specified node address, 15, will be read and output to D0.
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

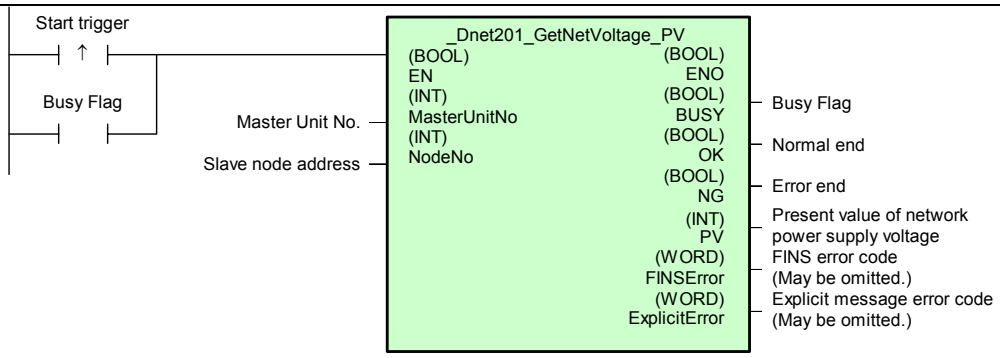
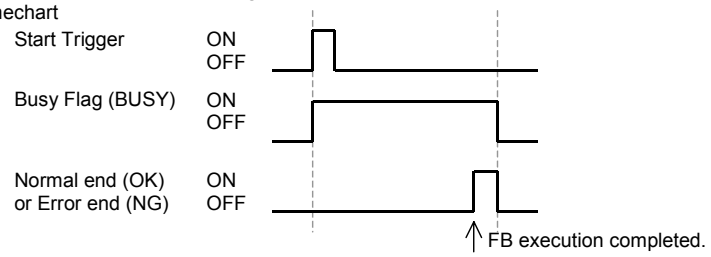
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Generic status	Stat	WORD		The generic status is output. Bit 15 8 7 0 Always 0 | Generic status
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

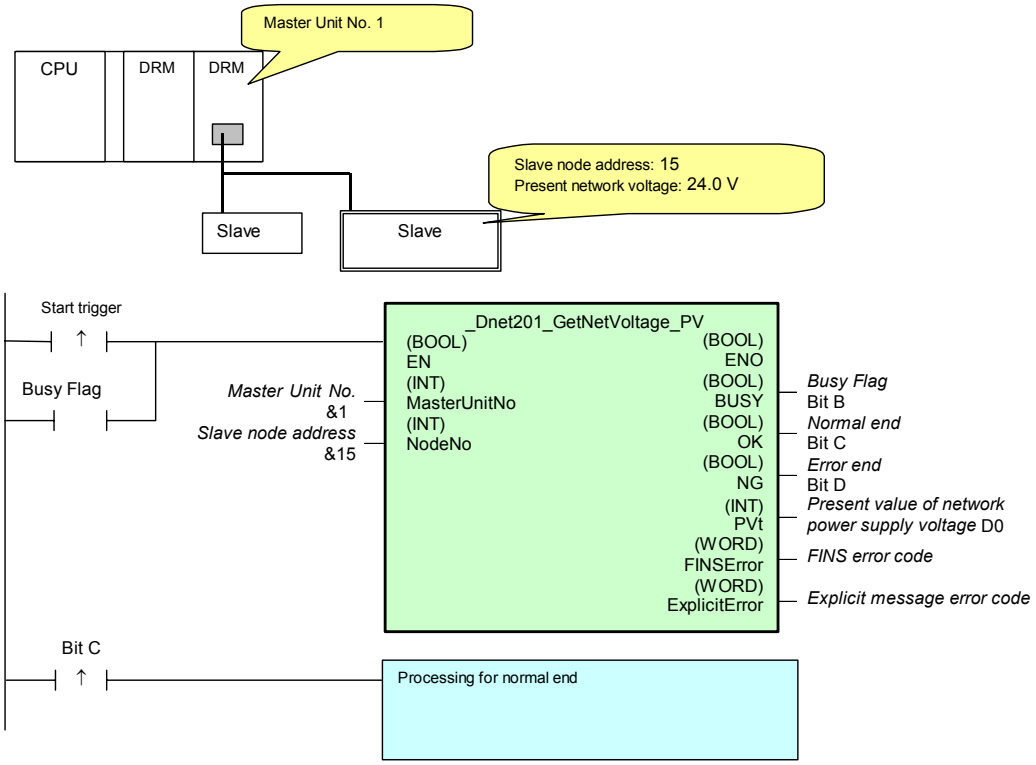
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -201	Read Network Voltage Present Value: _Dnet201_GetNetVoltage_PV

Basic function	Reads the present values of the network power supply from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet201_GetNetVoltage_PV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, ID08C, HD16C, ID16S, ID16TA, ID32ML, ID32SL, ID32SLH DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH DRT2-AD04, AD04H, DA02, TS04T, TS04P
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The present voltage of the network power supply is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the present value of the network power supply voltage to the slave with the specified node address, 15, will be read. The result, &240, is stored in D0.
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Destination slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

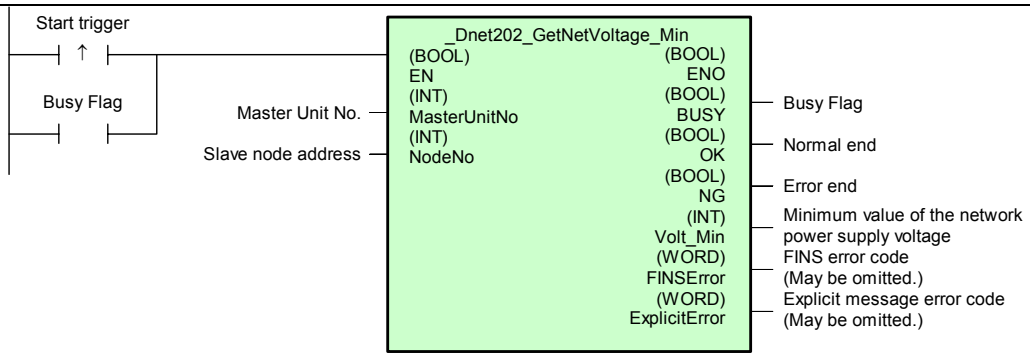
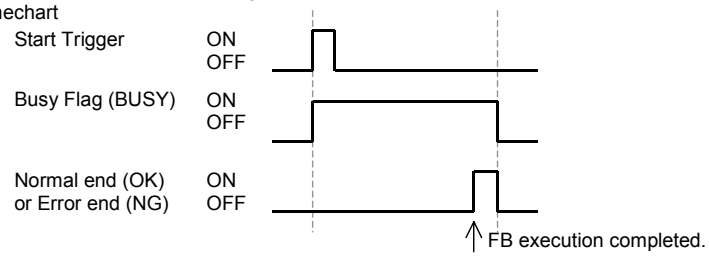
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Present value of network power supply voltage	PV	INT	&0 to &300	The present value of the network power supply voltage is output (unit: 0.1 V). For example, &240 would be output for 24.0 V.
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

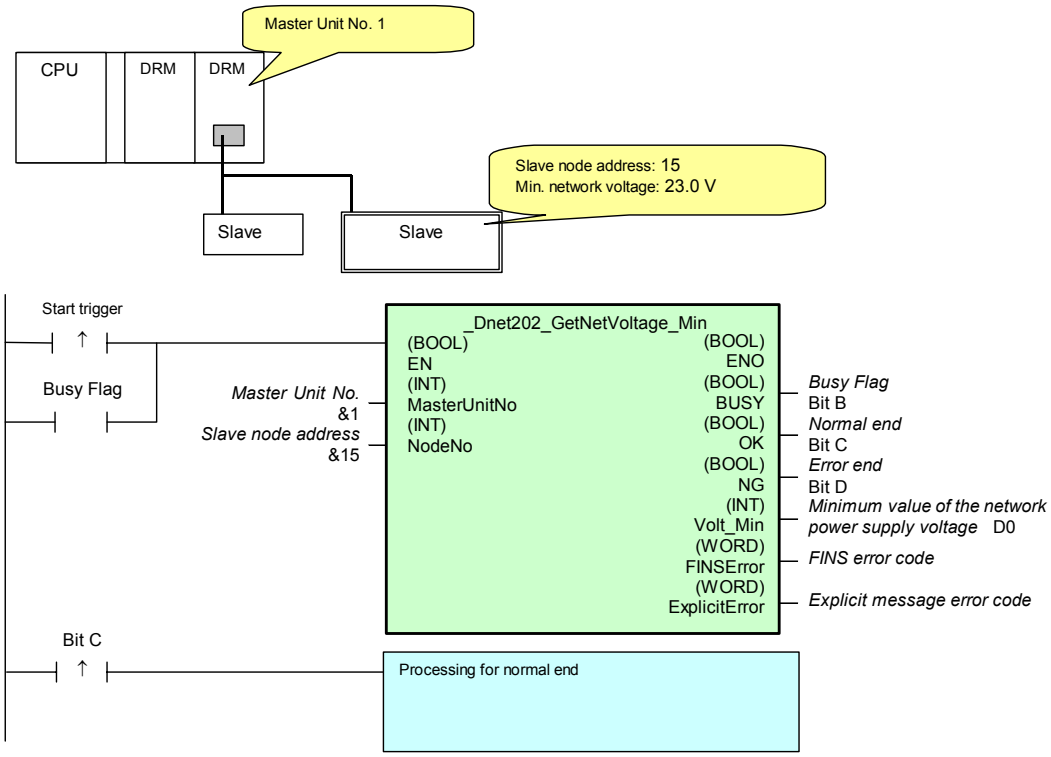
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -202	Read Network Voltage Minimum: _Dnet202_GetNetVoltage_Min

Basic function	Reads the minimum values of the network power supply from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet202_GetNetVoltage_Min.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, ID08C, HD16C, ID16S, ID16TA, ID32ML, ID32SL, ID32SLH DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH DRT2-AD04, AD04H, DA02, TS04T, TS04P
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The minimum voltage of the network power supply is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions		
Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the minimum value of the network power supply voltage to the slave with the specified node address, 15, will be read. The result, &230, is stored in D0.
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Destination slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

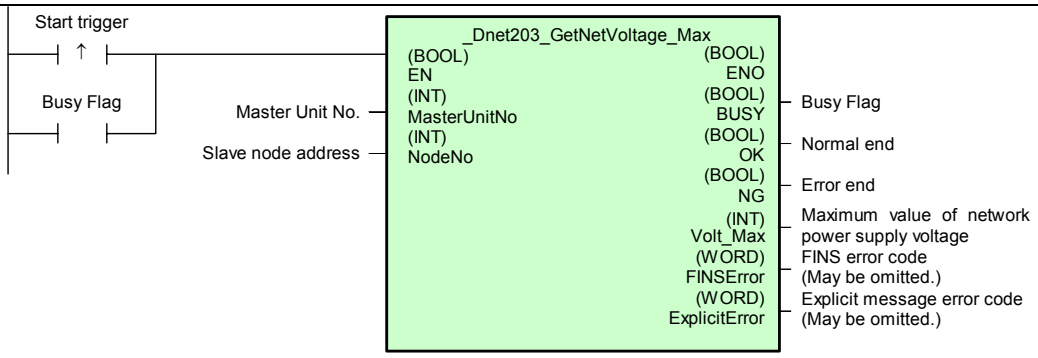
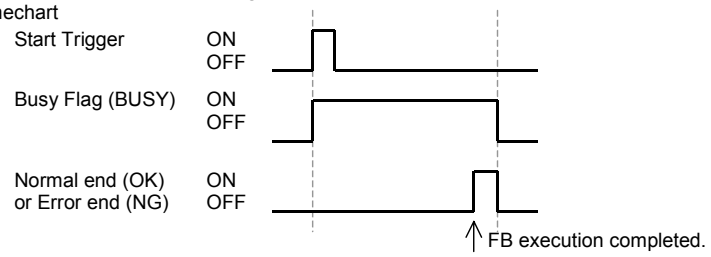
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Minimum value of the network power supply voltage	Volt_Min	INT	&0 to &300	The minimum value of the network power supply voltage is output (unit: 0.1 V). For example, &240 would be output for 24.0 V.
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

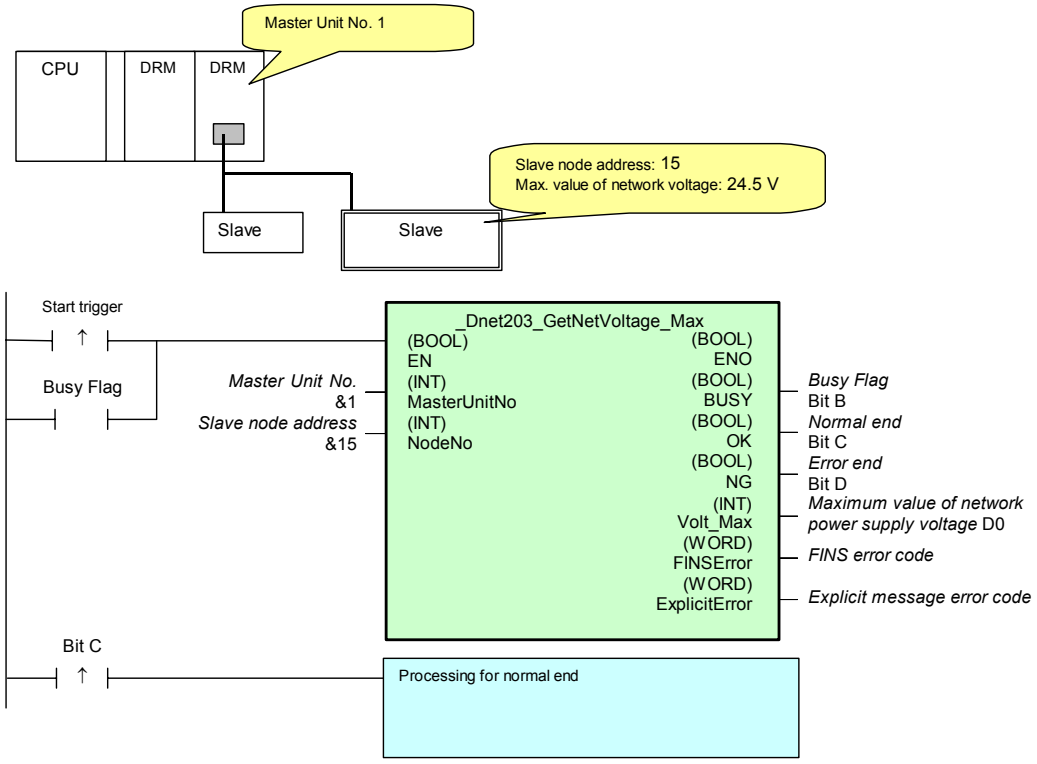
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -203	Read Network Voltage Maximum Value: _Dnet203_GetNetVoltage_Max

Basic function	Reads the maximum values of the network power supply from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet203_GetNetVoltage_Max10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, ID08C, HD16C, ID16S, ID16TA, ID32ML, ID32SL, ID32SLH DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH, DRT2- AD04, AD04H, DA02, TS04T, TS04P
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The maximum voltage of the network power supply is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the maximum value of the network power supply voltage to the slave with the specified node address, 15, will be read. The result, &245, is stored in D0.
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Destination slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

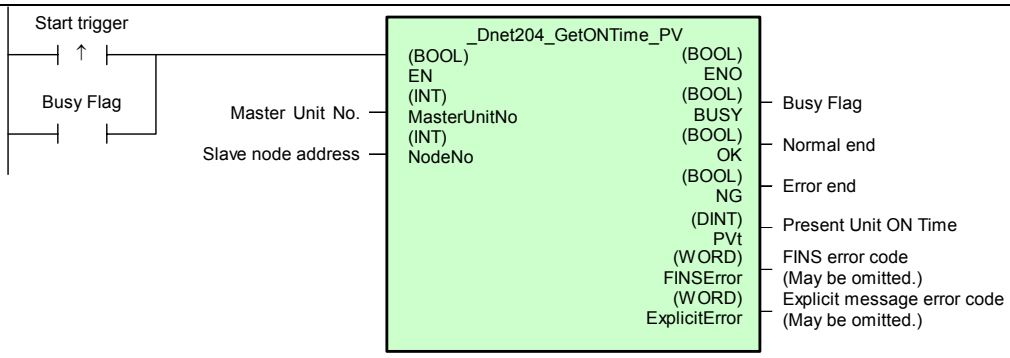
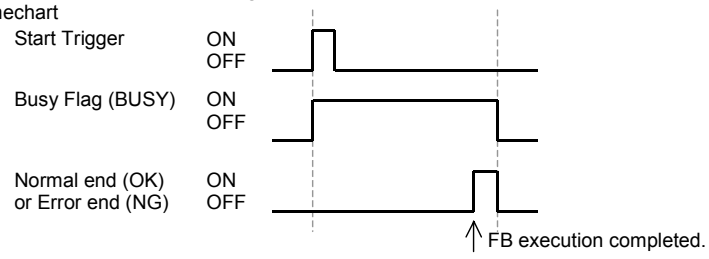
Output Variables

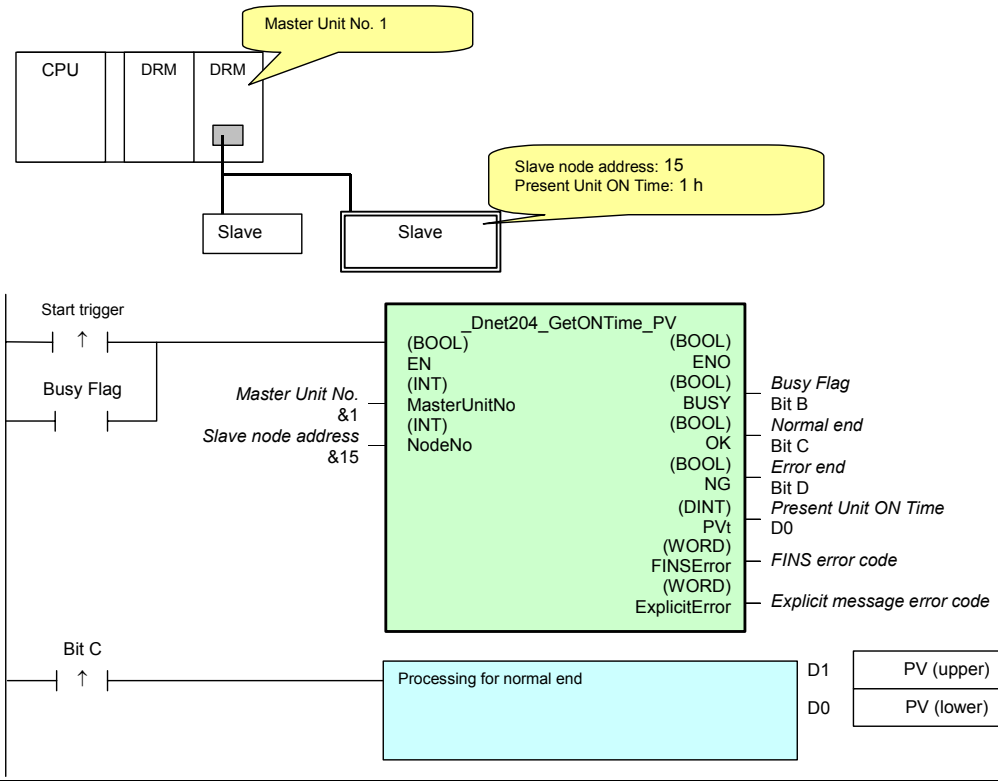
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Maximum value of network power supply voltage	Volt_Max	INT	&0 to &300	The maximum value of the network power supply voltage is output (unit: 0.1 V). For example, &240 would be output for 24.0 V.
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -204	Read Present Unit ON Time: _Dnet204_GetONTime_PV

Basic function	Reads the present Unit ON time (conduction time) from slaves connected to DeviceNet.	
Symbol		
File name	\FBL\omronlib\DevieNet_Dnet204_GetONTime_PV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, ID08C, HD16C, ID16S, ID16TA, ID32ML, ID32SL, ID32SLH DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH DRT2-AD04/AD04H/DA02/TS04T/TS04P
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The present Unit ON time (conduction time) is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions		
Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the present Unit ON time of the slave with the specified node address, 15, will be read. The result, &10, is stored in D0. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

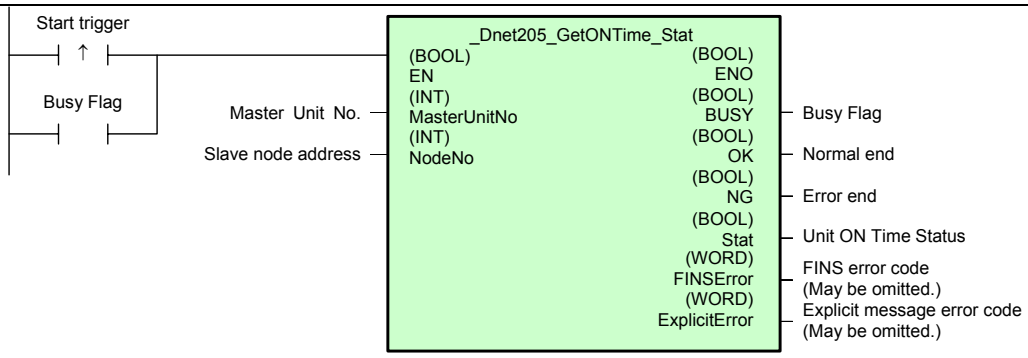
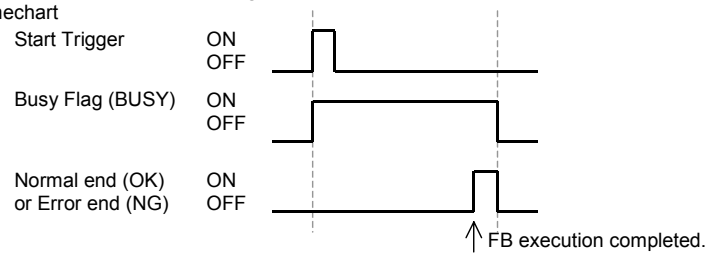
Output Variables

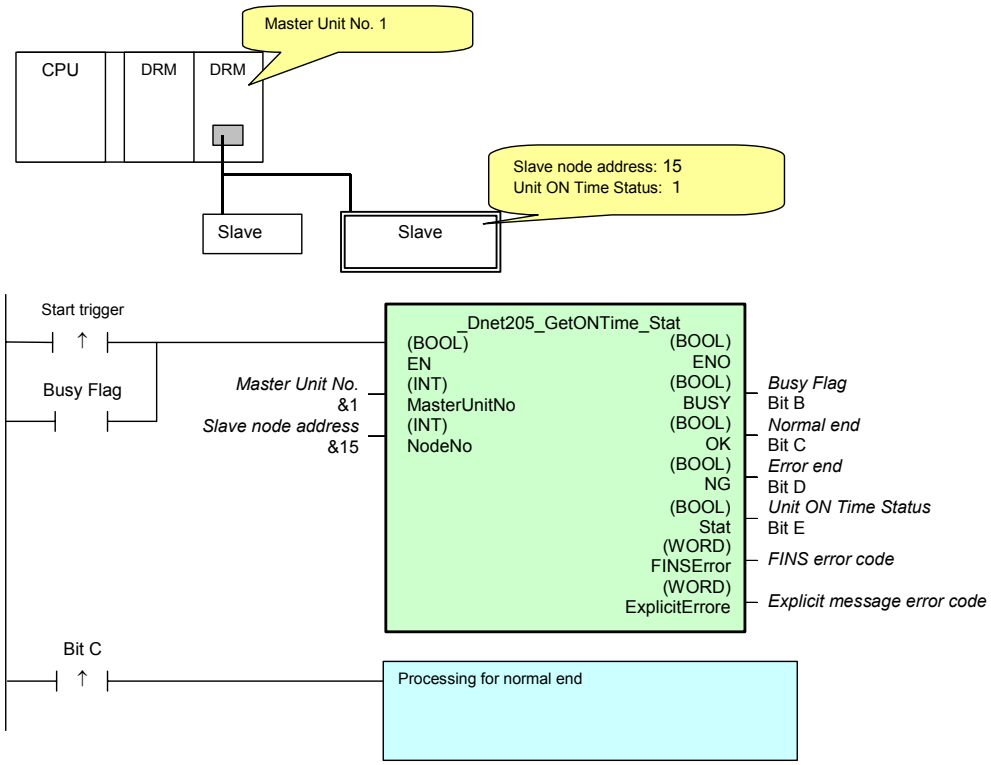
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Present Unit ON Time	PV	DINT		The present Unit ON time is output (unit: 0.1 h). For example, &20 would be output for 2 hours.
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -205	Read Unit ON Time Status: _Dnet205_GetONTime_Stat

Basic function	Reads the Unit ON time (conduction time) status from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet205_GetONTime_Stat10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, ID08C, HD16C, ID16S, ID16TA, ID32ML, ID32SL, ID32SLH DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH DRT2-AD04, AD04H, DA02, TS04T, TS04P
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The Unit ON time status is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the Unit ON time status of the slave with the specified node address, 15, will be read. The result is output to bit E. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

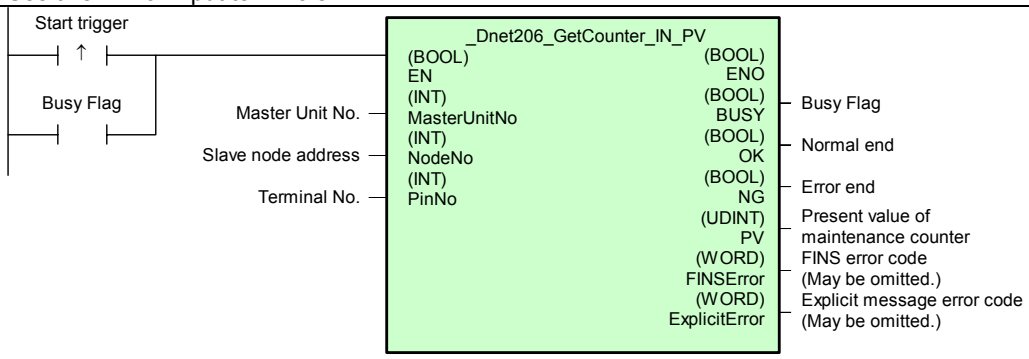
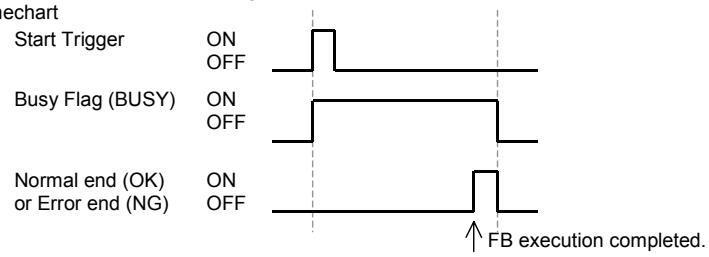
Output Variables

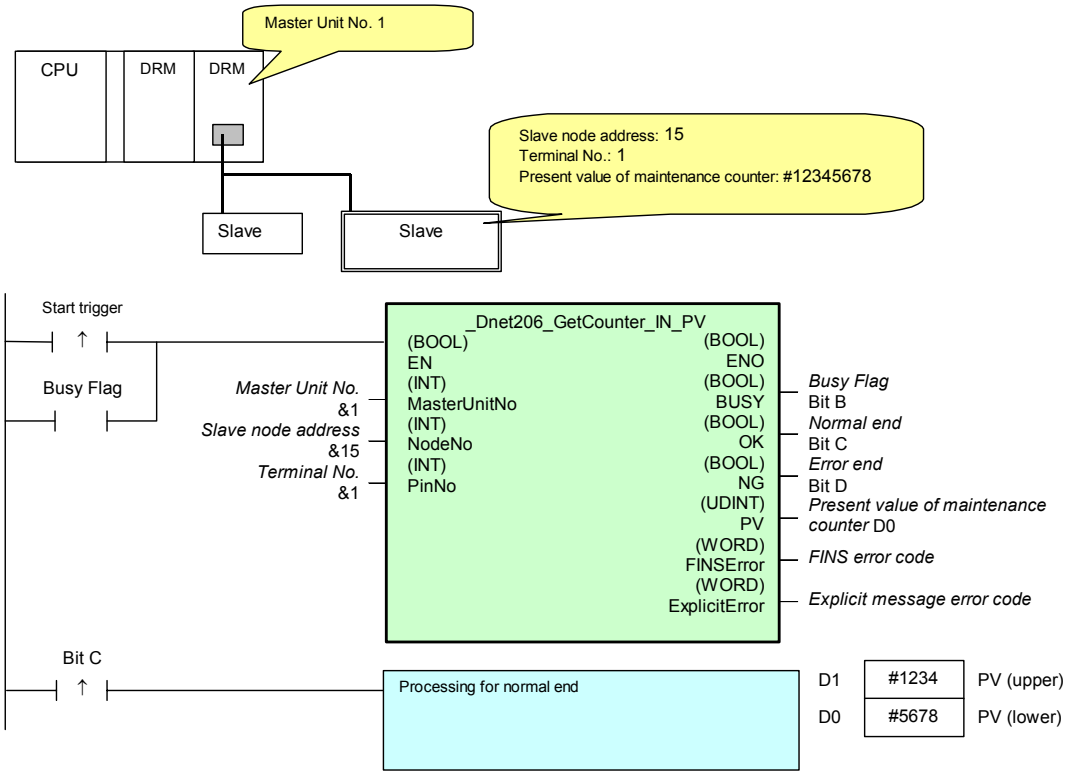
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Unit ON Time Status	Stat	BOOL		Indicates the Unit ON (conduction) time status. 0 (OFF): Within specified range 1 (ON): Out of range
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -206	Read Input Terminal Maintenance Counter Present Value: _Dnet206_GetCounter_IN_PV

Basic function	Reads the present values of terminal maintenance counters from slaves connected to DeviceNet. Use this FB for input terminals.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet206_GetCounter_IN_PV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, ID08C, HD16C, ID16S, ID16TA, ID32ML, ID32SL, ID32SLH DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH
Conditions for usage	External Connections Using a DeviceNet Configurator, set for each terminal whether to use the total ON time or the number of contact operations for the maintenance counter. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The present value of the maintenance counter is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the present value of the maintenance counter of the slave with the specified node address, 15, will be read. The result, &12345678, is stored in D0 and D1. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&1 to &63	Specify the node address of the slave.
Terminal No.	PinNo	INT	&0	&0 to &31	The terminal (pin) number for which the present value is to be read.

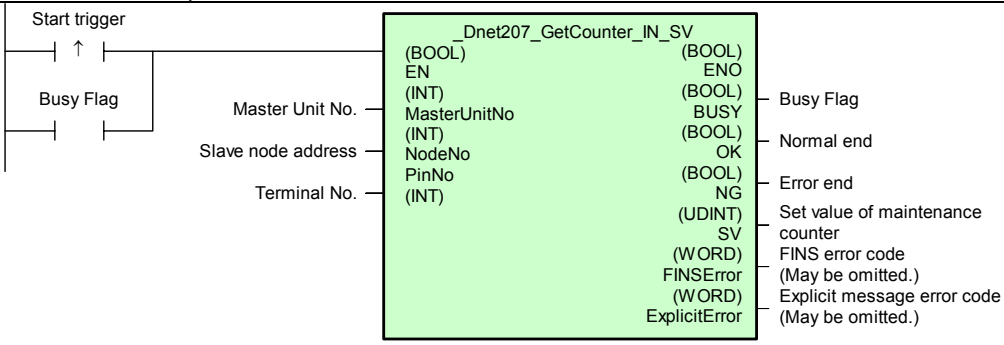
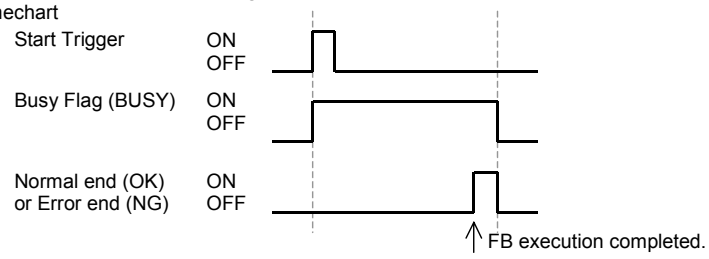
Output Variables

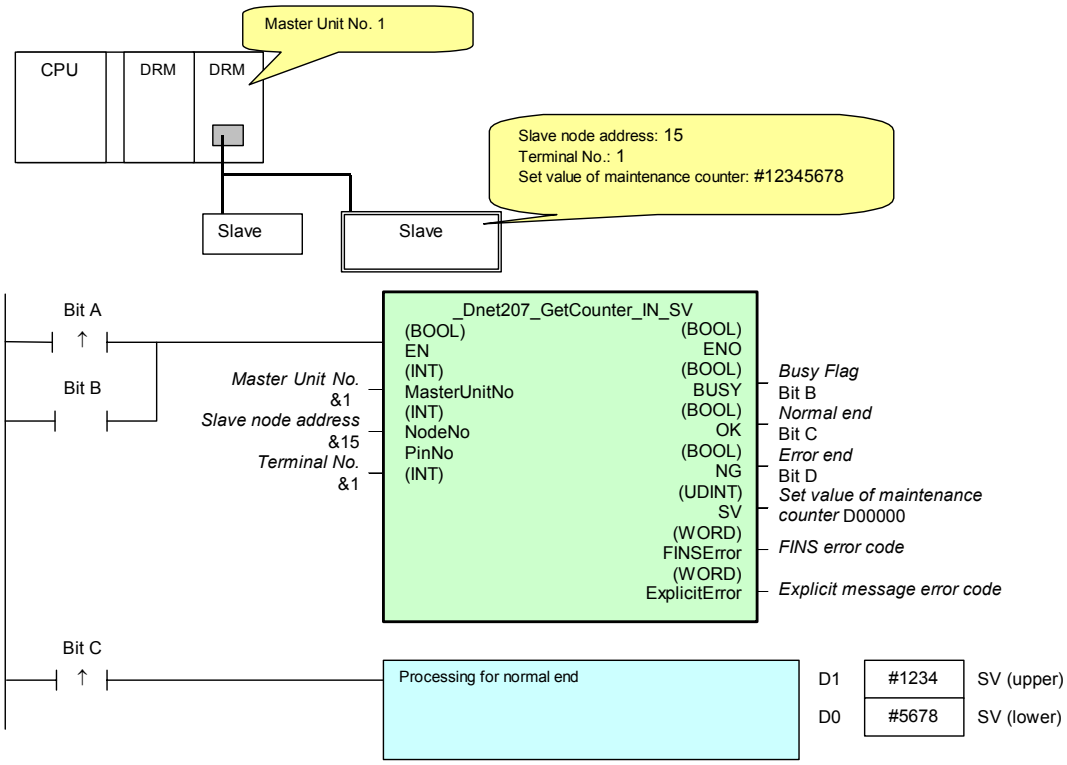
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Present value of maintenance counter	PV	UDINT		The present value of the maintenance counter is output. The present value is either the total ON time or the number of operations. (Unit: seconds for total ON time, operations for the number of operations)
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -207	Read Input Terminal Maintenance Counter Set Value: _Dnet207_GetCounter_IN_SV

Basic function	Reads the set values of terminal maintenance counters from slaves connected to DeviceNet. Use this FB for input terminals.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet207_GetCounter_IN_SV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, ID08C, HD16C, ID16S, ID16TA, ID32ML, ID32SL, ID32SLH DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH
Conditions for usage	External Connections Using a DeviceNet Configurator, set for each terminal whether to use the total ON time or the number of contact operations for the maintenance counter. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The set value of the maintenance counter is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the set value of the maintenance counter of the slave with the specified node address, 15, will be read. The result, &12345678, is stored in D0 and D1. 
Related manuals	Explicit Message Error Codes DeviceNet DRT2 Series Slaves Operation Manual (W404) Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes FINS Error Codes Communications Commands Reference Manual (W342) 5-1-3 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&1 to &63	Specify the node address of the slave.
Terminal No.	PinNo	INT	&0	&0 to &31	The terminal (pin) number for which the set value is to be read.

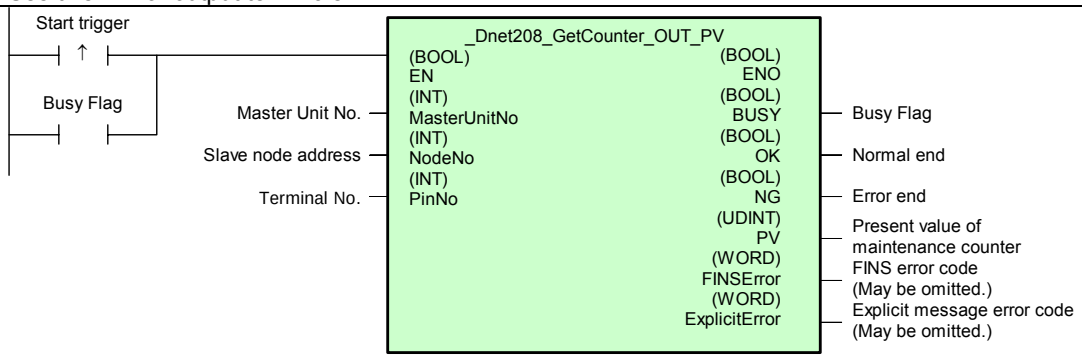
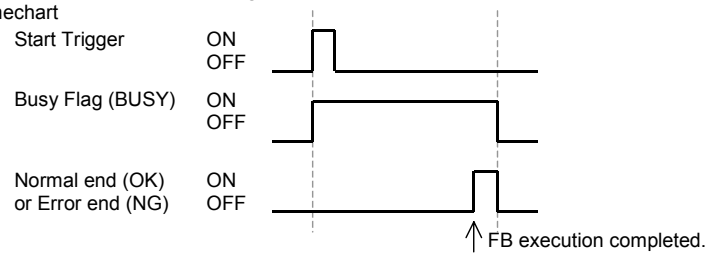
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Set value of maintenance counter	SV	UDINT	&0 to &4294967295	The set value of the maintenance counter is output. The present value is either the total ON time or the number of operations. (Unit: seconds for total ON time, operations for the number of operations)
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

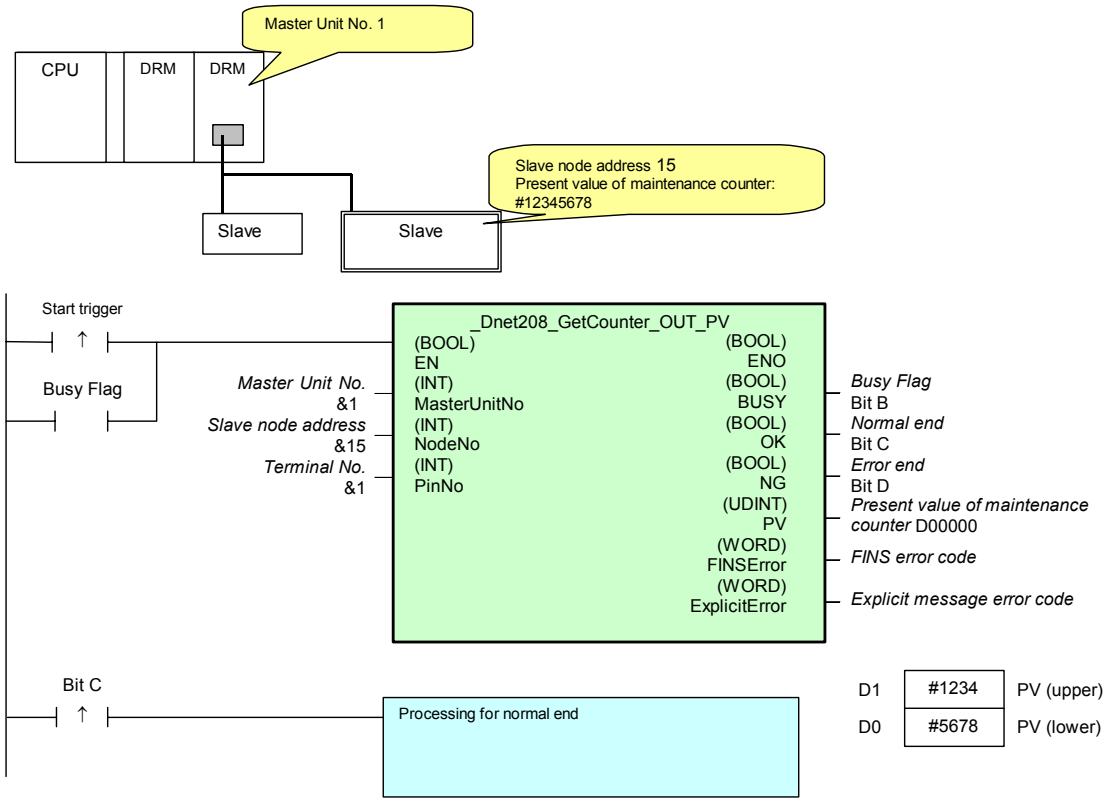
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -208	Read Output Terminal Maintenance Counter Present Value: _Dnet208_GetCounter_OUT_PV

Basic function	Reads the present values of terminal maintenance counters from slaves connected to DeviceNet. Use this FB for output terminals.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet208_GetCounter_OUT_PV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH, DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The present value of the maintenance counter is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the present value of the maintenance counter of terminal 1 of the slave with the specified node address, 15, will be read.
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Terminal No.	PinNo	INT	&0	&0 to &31	Specify the terminal (pin) number for which the present value is to be read.

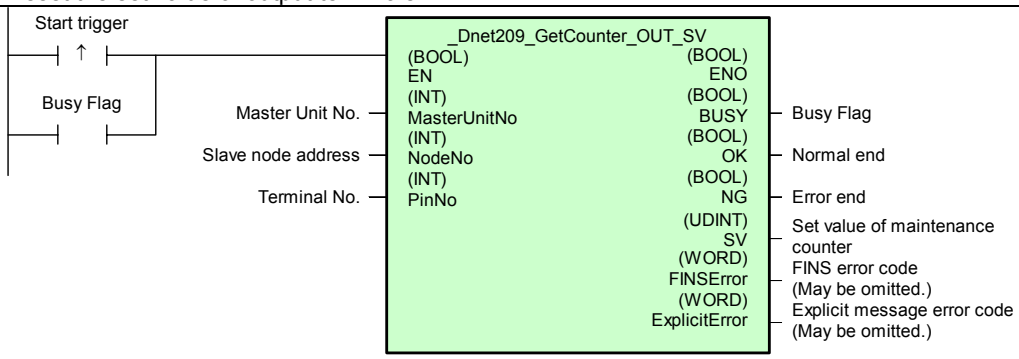
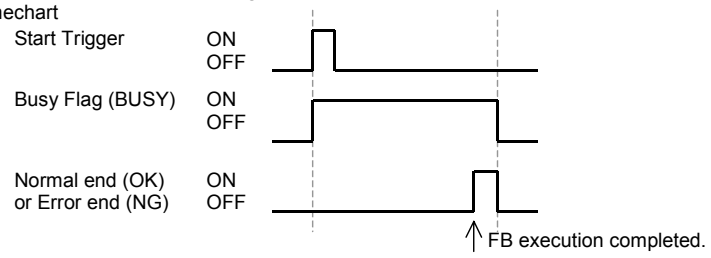
Output Variables

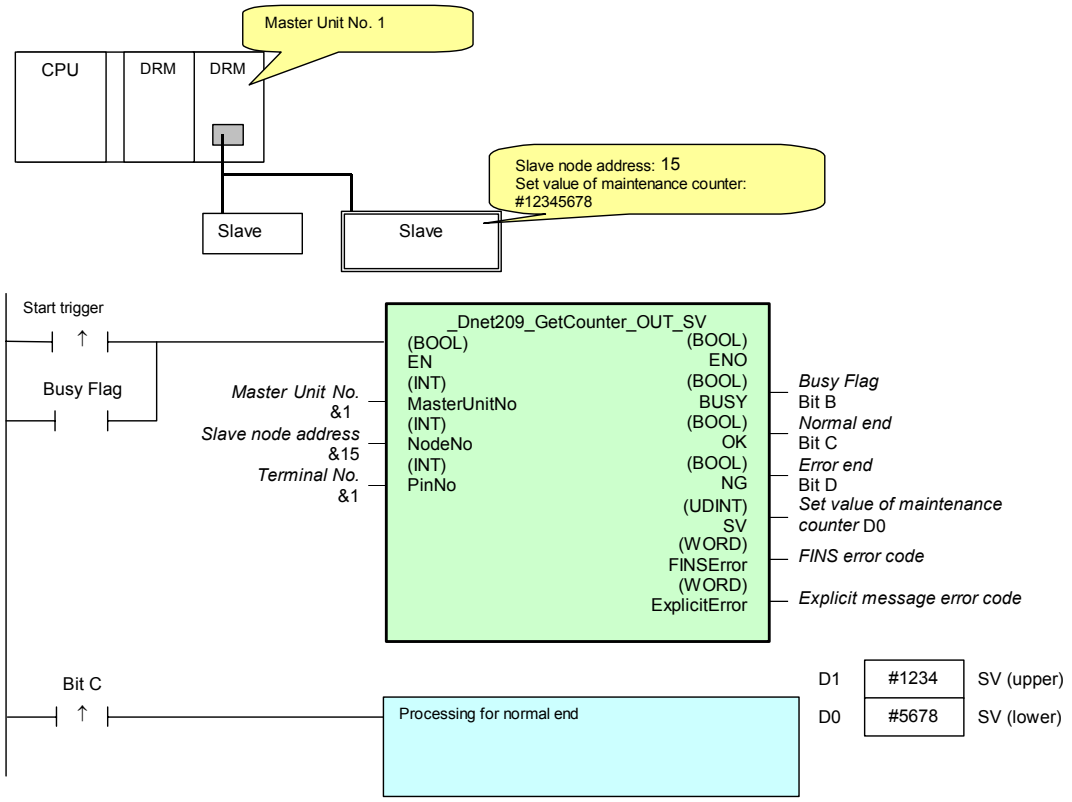
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Present value of maintenance counter	PV	UDINT		The present value of the maintenance counter is output. The present value is either the total ON time or the number of operations. (Unit: seconds for total ON time, operations for the number of operations)
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -209	Read Output Terminal Maintenance Counter Set Value: _Dnet209_GetCounter_OUT_SV

Basic function	Reads the set values of terminal maintenance counters from slaves connected to DeviceNet. Reset the set value of output terminals.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet209_GetCounter_OUT_SV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The set value of the maintenance counter is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the set value of the maintenance counter of terminal 1 of the slave with the specified node address, 15, will be read and output to D0 and D1. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
MasterUnit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Terminal No.	PinNo	INT	&0	&0 to &31	Specify the terminal (pin) number for which the set value is to be read.

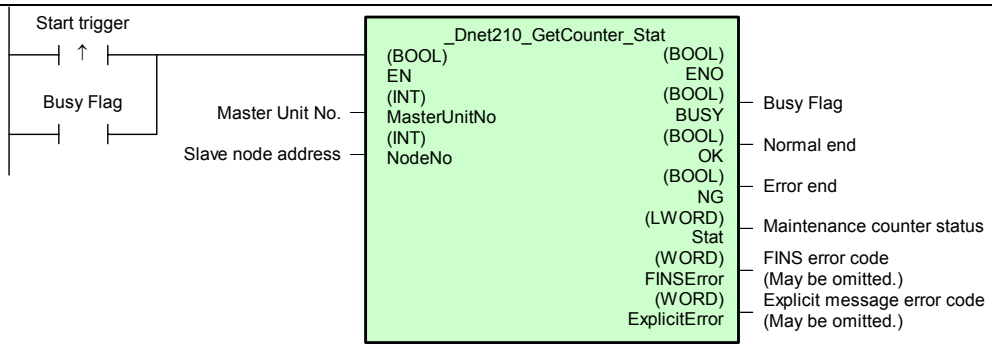
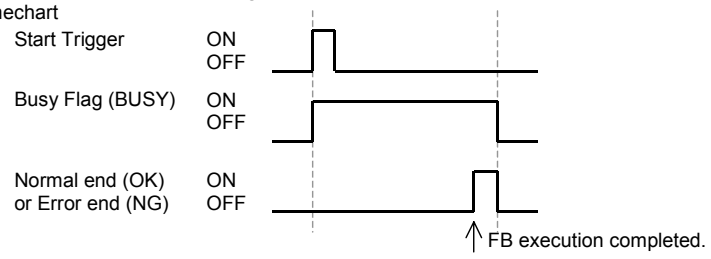
Output Variables

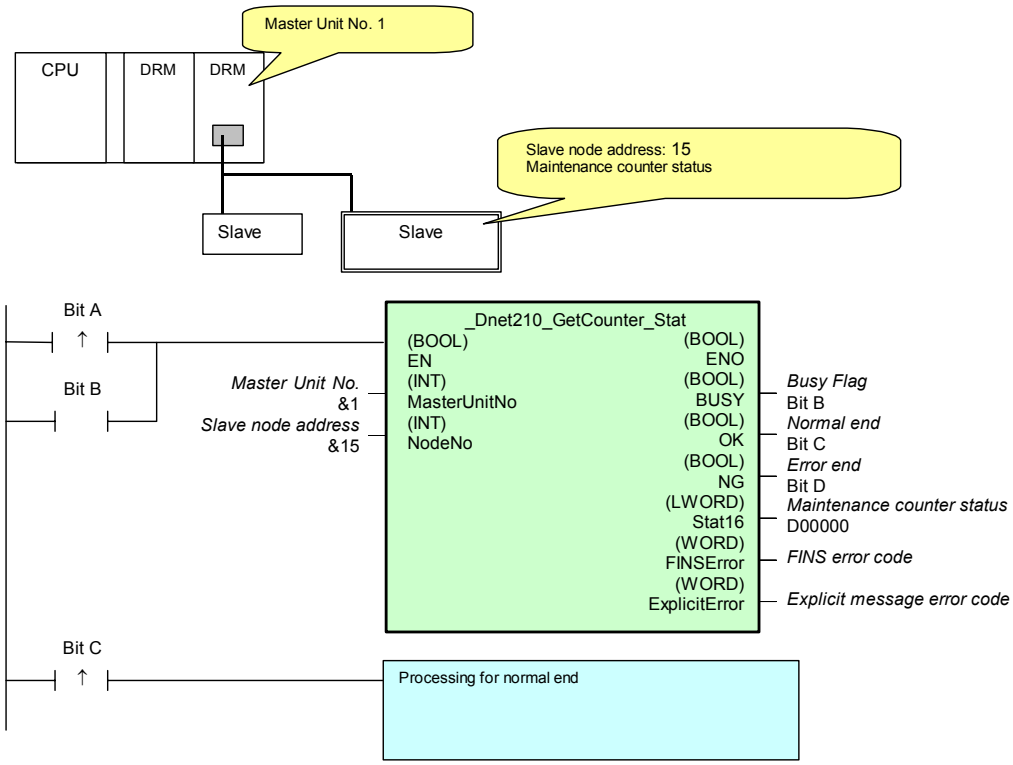
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Set value of maintenance counter	SV	UDINT		The set value of the maintenance counter is output. The present value is either the total ON time or the number of operations. (Unit: seconds for total ON time, operations for the number of operations)
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -210	Read Maintenance Counter Status: _Dnet210_GetCounter_Stat

Basic function	Reads maintenance counter status from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet210_GetCounter_Stat10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, ID08C, HD16C, ID16S, ID16TA, ID32ML, ID32SL, ID32SLH DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH
Conditions for usage	External Connections Using a DeviceNet Configurator, set for each terminal whether to use the total ON time or the number of contact operations for the maintenance counter. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The status of the maintenance counter is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions		
Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the status of the maintenance counter of the slave with the specified node address, 15, will be read. As the results, #0000000000001234 is stored in D0 to D3. 
Related manuals	Explicit Message Error Codes DeviceNet DRT2 Series Slaves Operation Manual (W404) Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes FINS Error Codes Communications Commands Reference Manual (W342) 5-1-3 Error Codes

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

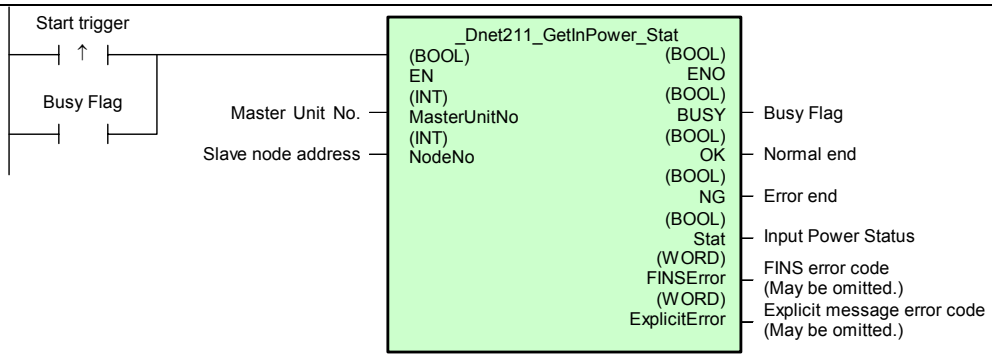
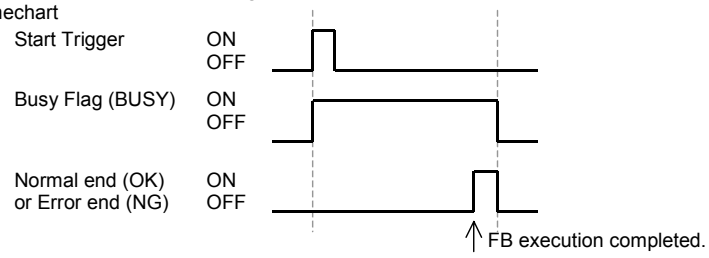
Output Variables

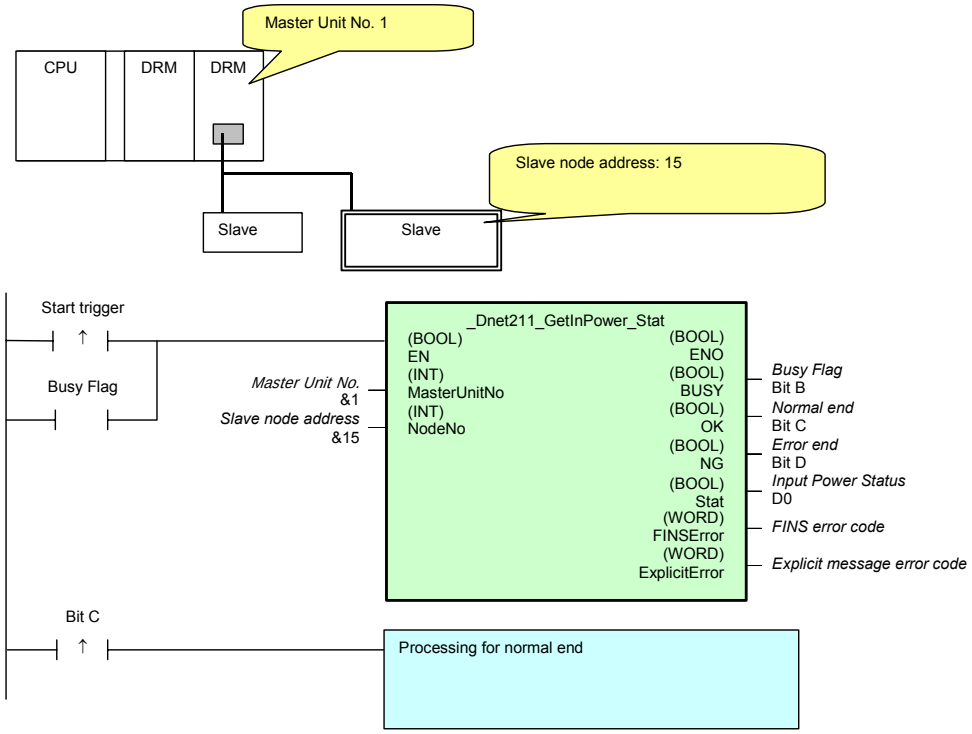
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Maintenance counter status	Stat	LWORD		The status of the maintenance counter is output. The status is whether the specified total ON time or the number of operations has been exceed. DRT2-*D16TA(-1) Input unit +3 CH +2 CH +1 CH +0 CH IN15-0 Output unit +3 CH +2 CH +1 CH +0 CH OUT15-0 Mix unit +3 CH +2 CH +1 CH +0 CH OUT7-0 IN7-0 DRT2-*D32ML(-1) / DRT2-*D32SL(H)(-1) Input unit +3 CH +2 CH +1 CH +0 CH IN31-16 IN15-0 Output unit +3 CH +2 CH +1 CH +0 CH OUT31-16 OUT15-0 Mix unit +3 CH +2 CH +1 CH +0 CH OUT15-0 IN15-0 The other Input unit +3 CH +2 CH +1 CH +0 CH IN31-16 IN15-0 Output unit +3 CH +2 CH +1 CH +0 CH OUT31-16 OUT15-0 Mix unit +3 CH +2 CH +1 CH +0 CH OUT15-0 IN15-0 0 (OFF): Within specified range 1 (ON): Out of range
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -211	Read Input Power Status: _Dnet211_GetInputPower_Stat

Basic function	Reads the input power status from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet211_GetInputPower_Stat10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, ID08C, HD16C, ID16S, ID16TA, ID32ML, ID32SL, ID32SLH DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH
Conditions for usage	External Connections Using a DeviceNet Configurator, set for each terminal whether to use the total ON time or the number of contact operations for the maintenance counter. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The input power supply status for inputs is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the input power status of the slave with the specified node address, 15, will be read. As the result, bit E is turned ON or OFF. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&1 to &63	Specify the node address of the slave.

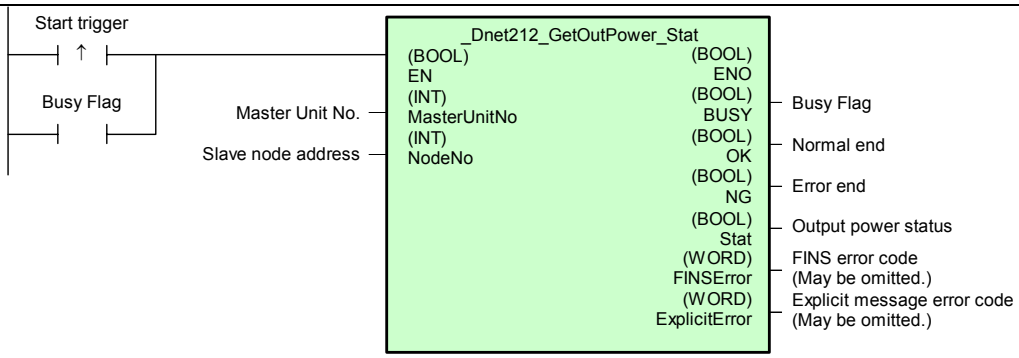
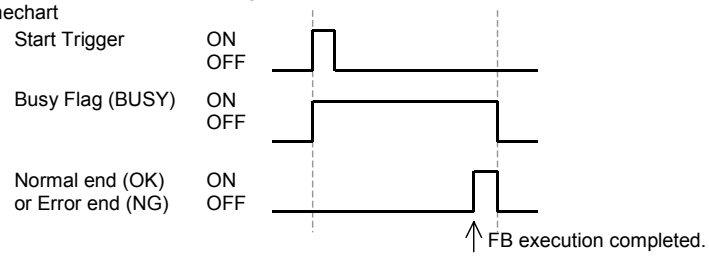
Output Variables

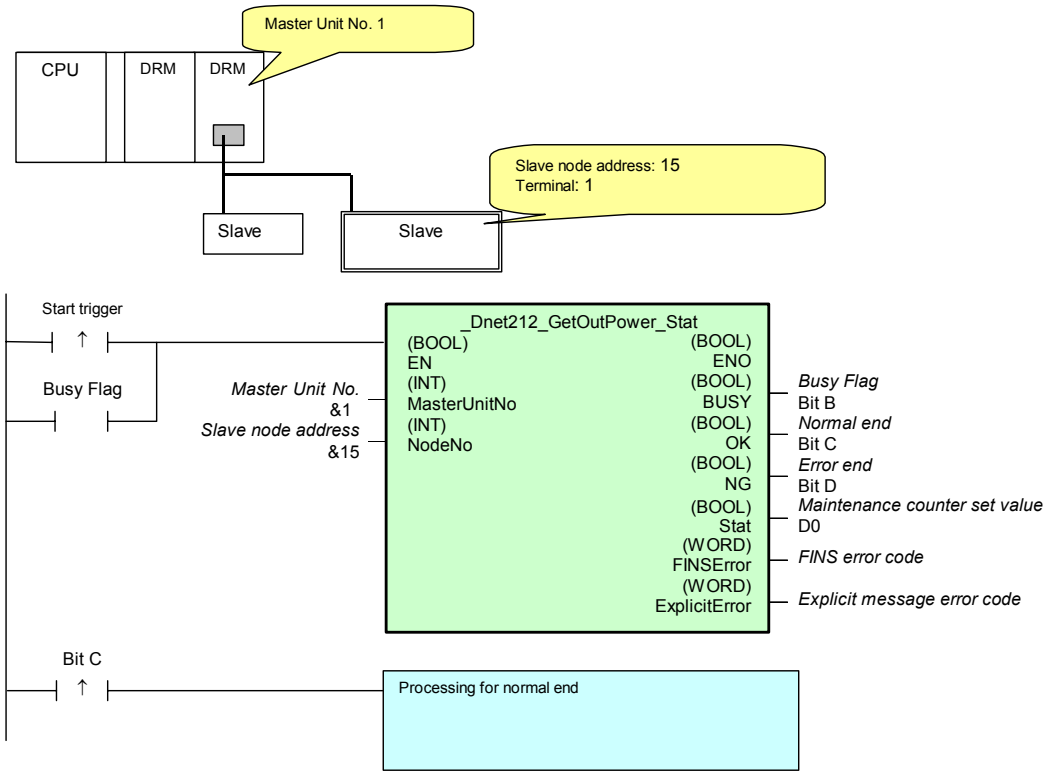
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Input Power Status	Stat	BOOL		Shows the input power status for Input Units. 0 (OFF): Normal 1 (ON): Input power OFF
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -212	Read Output Power Status: _Dnet212_GetOutPower_Stat

Basic function	Reads the power supply status for outputs from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet212_GetOutPower_Stat10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-OD16, OD08C, ROS16, OD16TA, OD32ML, OD32SL, OD32SLH, DRT2-MD16S, MD16TA, MD32ML, MD32SL, MD32SLH
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The input power supply status for outputs is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN.] • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the input power status of the slave with the specified node address, 15, will be read and output to bit E. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

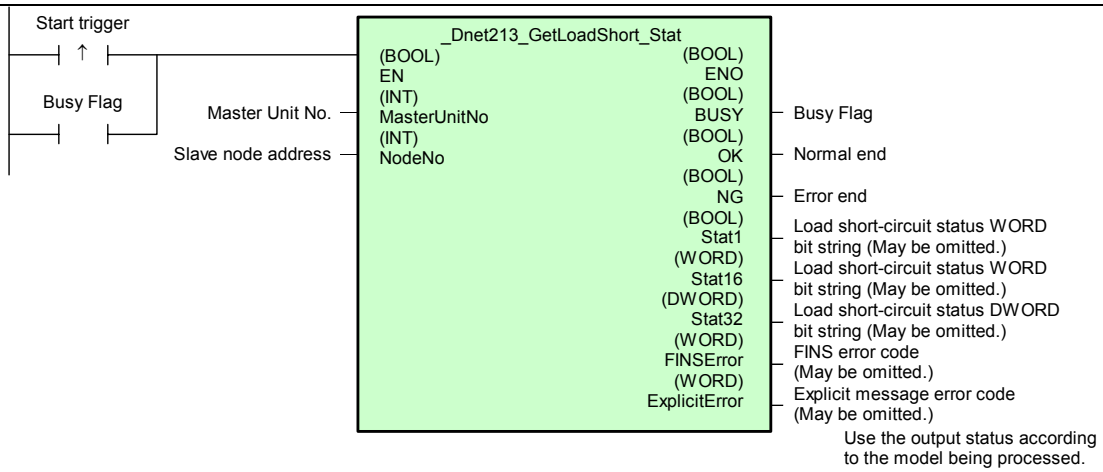
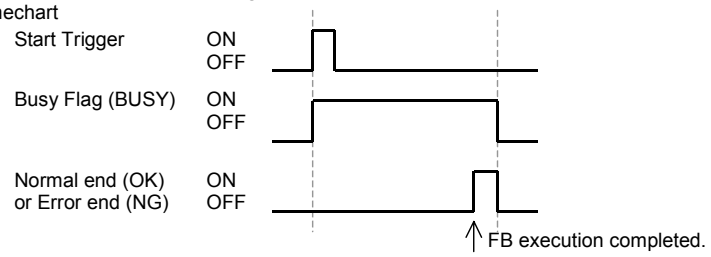
Output Variables

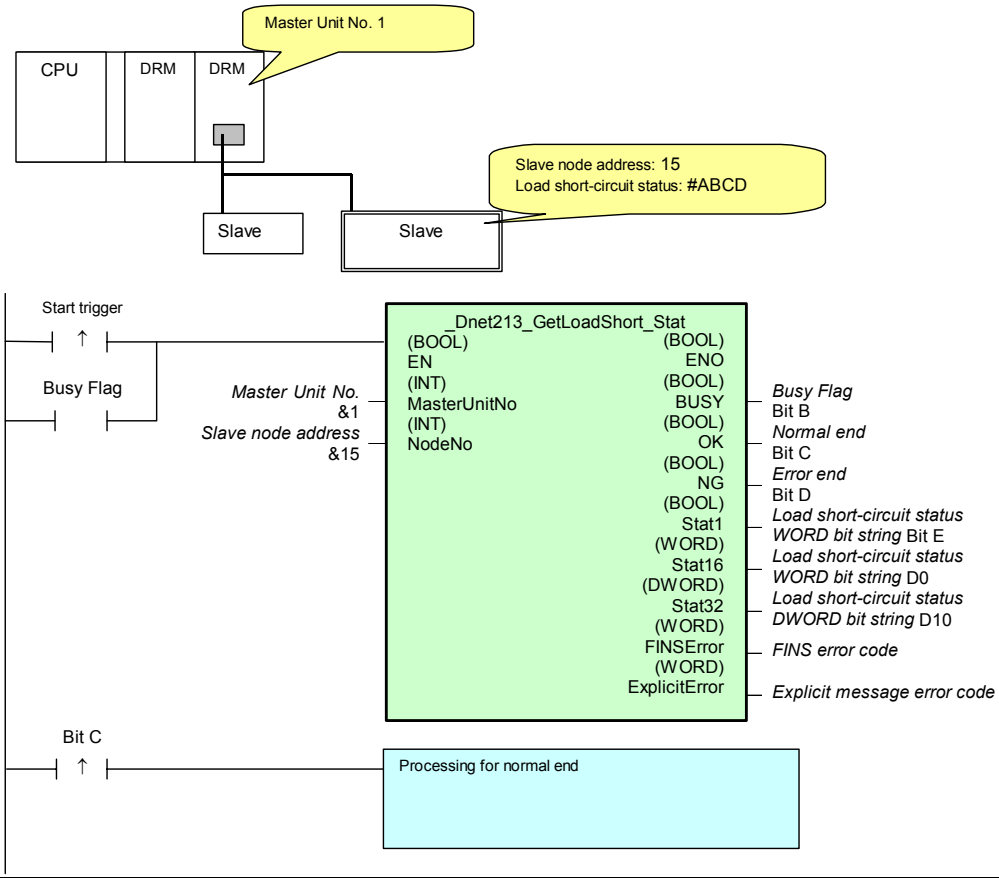
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Output power status	Stat	BOOL		Shows the output power status. 0 (OFF): Normal 1 (ON): Power OFF
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -213	Read Load Short-circuit Status: _Dnet213_GetLoadShort_Stat

Basic function	Reads the load OFF short-circuit status from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet213_GetLoadShort_Stat10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-OD08C, MD16S
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The load short-circuit status is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the load short-circuit status of the slave with the specified node address, 15, will be read. As the results, bit E is turned ON, #ABCD is stored in D0, and #0000ABCD is stored in D10 and D11. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&1 to &63	Specify the node address of the slave.

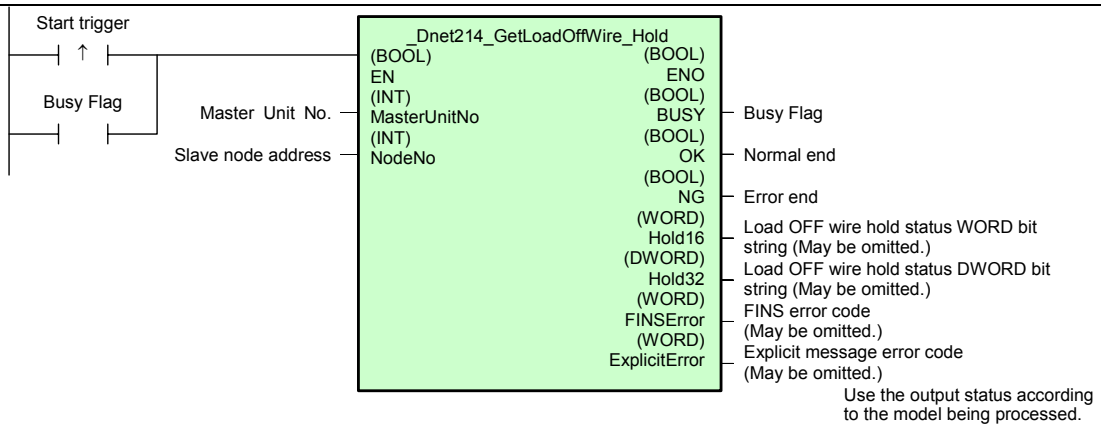
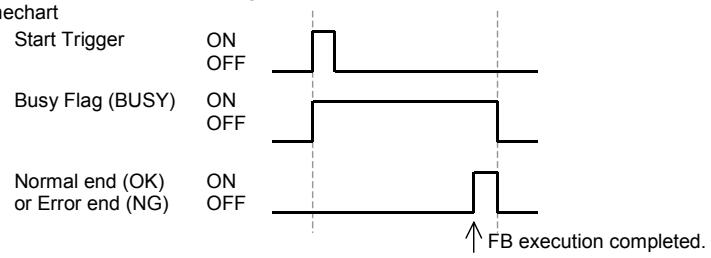
Output Variables

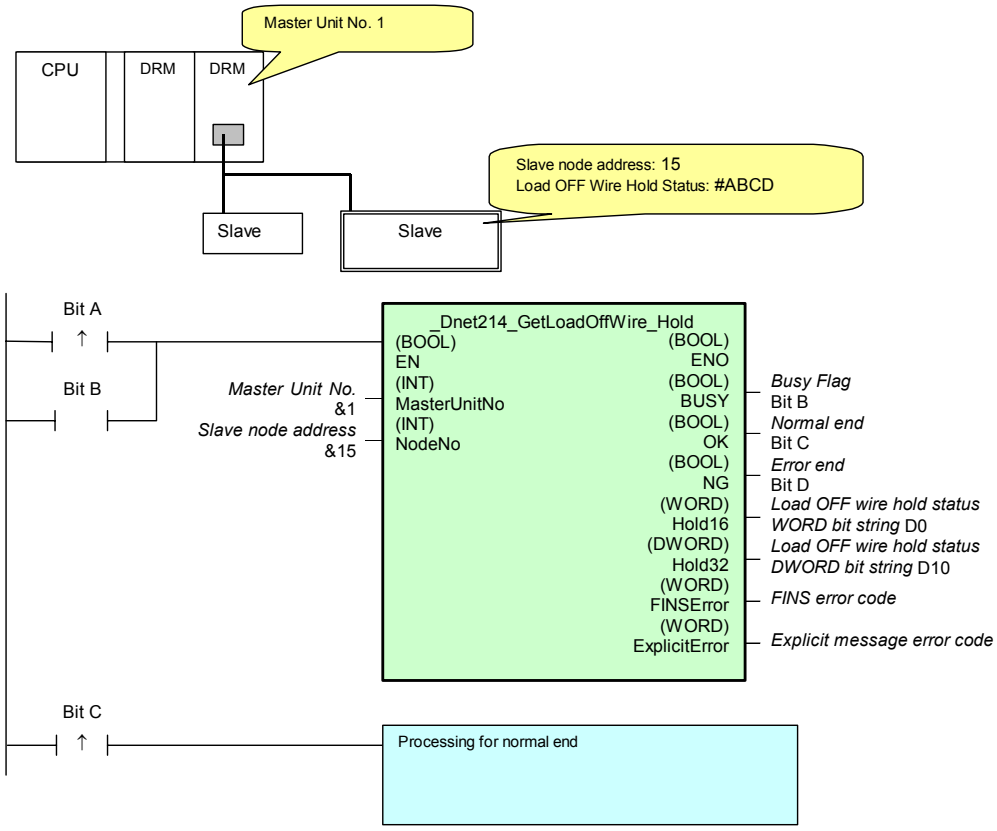
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Load short-circuit status WORD bit string (May be omitted.)	Stat1	BOOL		The load short-circuit status is output. Data • DRT2-OD08C Short-circuit status of terminal 0 • DRT2-MD16S An OR of the short-circuit status of all terminals 0 (OFF): Normal 1 (ON): Shorted
Load short-circuit status WORD bit string (May be omitted.)	Stat16	WORD		The load short-circuit status is output. Data DRT2-OD08C Bits 00 to 7: Short-circuit status of terminals 0 to 7 Bits 8 to 16: Reserved (OFF) DRT2-MD16S Bit 00: An OR of the short-circuit status for all terminals Bits 1 to 16: Reserved (OFF) 0 (OFF): Normal 1 (ON): Shorted
Load short-circuit status DWORD bit string (May be omitted.)	Stat32	DWORD		The load short-circuit status is output. Data • DRT2-OD08C Bits 00 to 7: Short-circuit status of terminals 0 to 7 Bits 8 to 31: Reserved (OFF) • DRT2-MD16S Bit 00: An OR of the short-circuit status for all terminals Bits 1 to 31: Reserved (OFF) 0 (OFF): Normal 1 (ON): Shorted
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -214	Read Load OFF Wire Hold Status: _Dnet214_GetLoadOffWire_Hold

Basic function	Reads the load OFF wire hold status from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet214_GetLoadOffWire_Hold10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-MD32SLH, OD32SLH
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The load OFF wire hold status is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the load OFF wire hold status of the slave with the specified node address, 15, will be read. The results, #ABCD, is stored in D0 and #0000ABCD is stored in D10 and D11. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&1 to &63	Specify the node address of the slave.

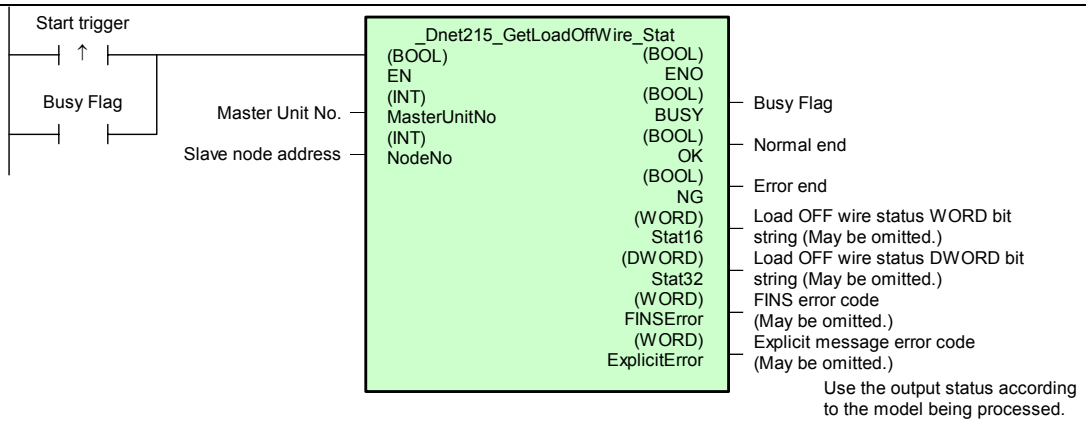
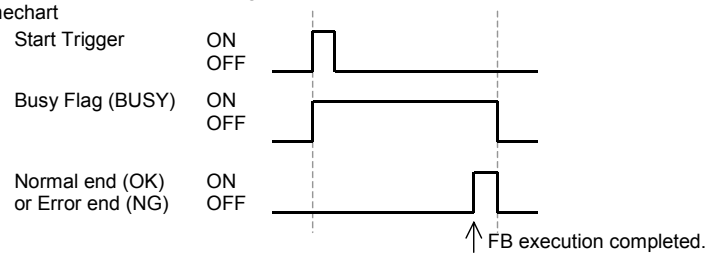
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Load OFF wire hold status WORD bit string (May be omitted.)	Hold 16	WORD		The load OFF wire hold status is output. **Data** • DRT2-MD32SLH Bits 00 to 15: OFF Wire status of terminals 0 to 15 • DRT2-MD32SLH Bits 00 to 15: OFF Wire status of terminals 0 to 15 (status of terminals 16 to 31 is not output) 0 (OFF): Normal 1 (ON): Shorted
Load OFF wire hold status DWORD bit string (May be omitted.)	Hold 32	DWORD		The load OFF wire hold status is output. Data • DRT2-MD32SLH Bits 00 to 15: OFF Wire status of terminals 0 to 15 Bits 16 to 31: Reserved (OFF) • DRT2-OD32SLH Bits 00 to 31: OFF Wire status of terminals 0 to 31 0 (OFF): Normal 1 (ON): Shorted
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

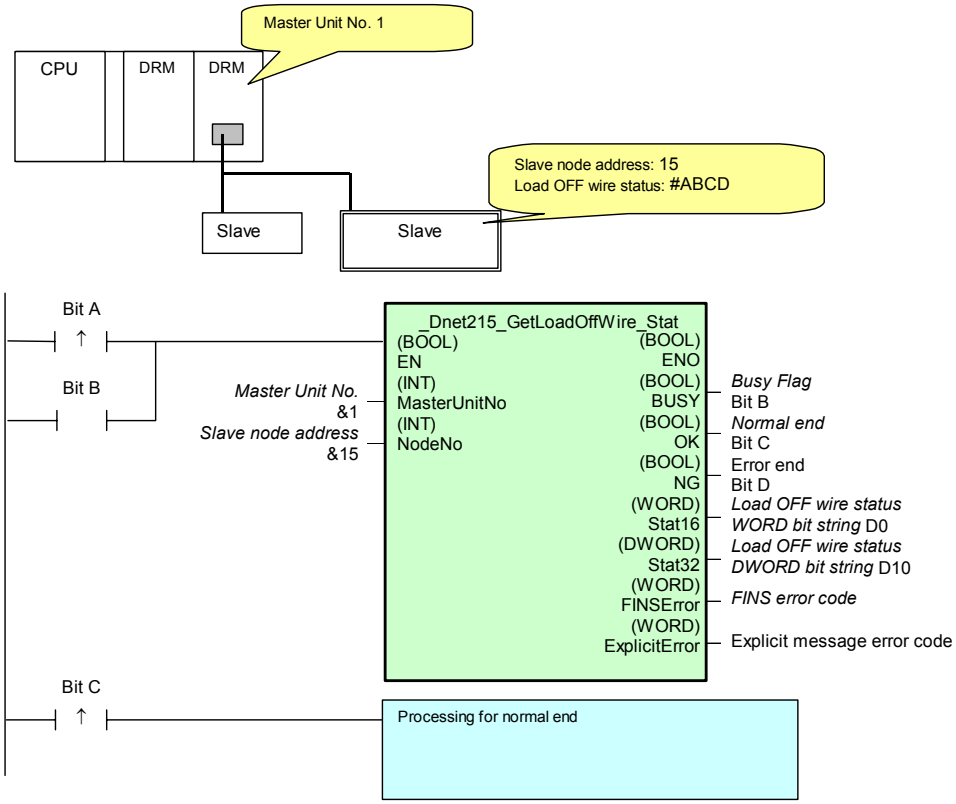
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -215	Read Load OFF Wire Status: _Dnet215_GetLoadOffWire_Stat

Basic function	Reads the load OFF wire status from slaves connected to DeviceNet. Use this FM for output terminals.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet215_GetLoadOffWire_Stat10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-MD32SLH, OD32SLH
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The load OFF wire status is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the load OFF wire status of the slave with the specified node address, 15, will be read. The results, #ABCD, is stored in D0 and #0000ABCD is stored in D10 and D11.
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&1 to &63	Specify the node address of the slave.

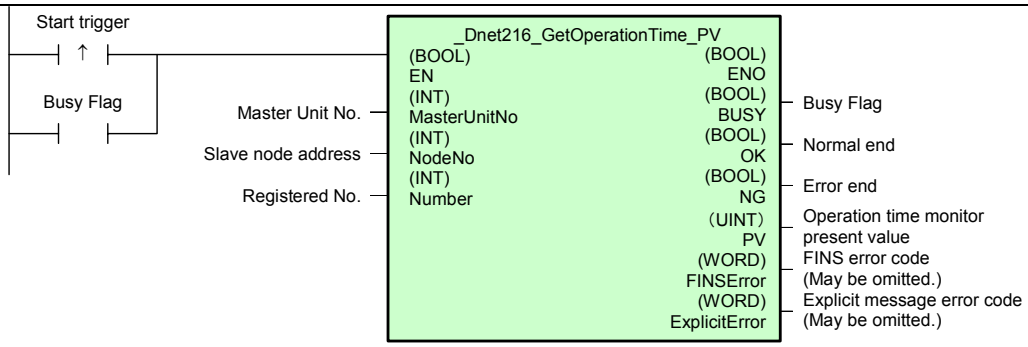
Output Variables

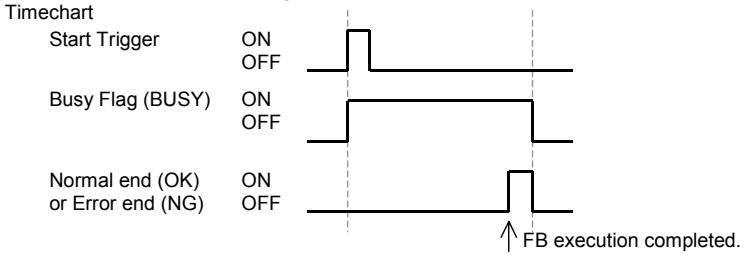
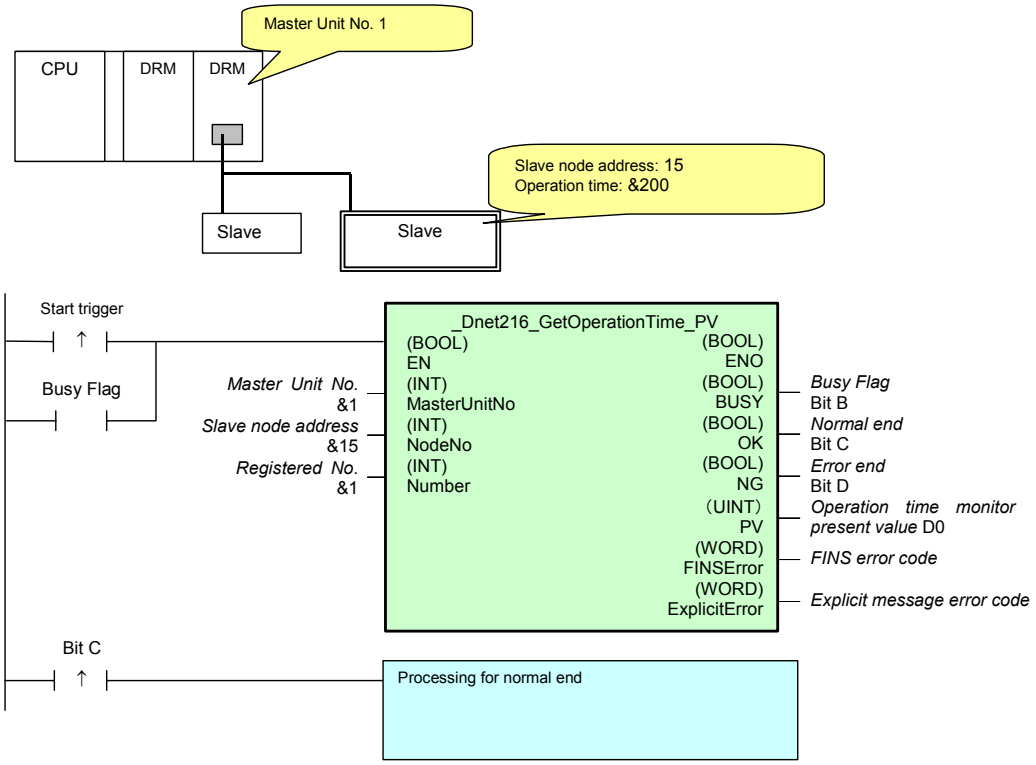
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Load OFF wire status WORD bit string (May be omitted.)	Stat16	WORD		The load OFF wire hold status is output. Data • DRT2-MD32SLH Bits 00 to 15: OFF Wire status of terminals 0 to 15 • DRT2-OD32SLH Bits 00 to 15: OFF Wire status of terminals 0 to 15 (status of terminals 16 to 31 is not output) 0 (OFF): Normal 1 (ON): Shorted
Load OFF wire status DWORD bit string (May be omitted.)	Stat32	DWORD		The load OFF wire status is output. Data • DRT2-MD32SLH Bits 00 to 15: OFF Wire status of terminals 0 to 15 Bits 16 to 31: Reserved (OFF) • DRT2-OD32SLH Bits 00 to 31: OFF Wire status of terminals 0 to 31 0 (OFF): Normal 1 (ON): Shorted
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -216	Read Operation Time Monitor Present Value: _Dnet216_GetOperationTime_PV

Basic function	Reads the present values of the operation time monitors from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet216_GetOperationTime_PV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, OD16, ROS16, MD16S, ID16TA, MD16TA, OD16TA, ID32ML, MD32ML, OD32ML, ID32SL, MD32SL, OD32SL, ID32SLH, MD32SLH, OD32SLH
Conditions for usage	External Connections **1. Applicable Models** (1) DRT2-ID16(-1) with XWT-OD16/08 (2) DRT2-OD16(-1) with XWT-ID16/08 (3) DRT2-ROS16 with XWT-ID16/08 (4) DRT2-MD16S • Measures the time for two I/O points from ON edge to ON edge. • Measurements are possible for input 0 and output 0, input 1 and output 1, input 2 and output 2, … input 15 and output 15. Note: Only through input 7 and output 7 can be used for XWT Units with 8 I/O points. (5) DRT2-ID/OD/MD-TA, ML, SL Series • Mixed I/O Units support input 0 and output 0, input 1 and output 1, input 2 and output 2, … input 5 and output 5. • Input Units support input 0 to input 16, input 1 to input 17, input 2 to input 18, … input 5 to input 21. • Output Units support outputs 0 to 16, outputs 1 to 17, outputs 2 to 8, … outputs 5 to 21. • Measurement condition: ON edge to ON edge • The I/O bit combinations for which to measure the operation time and ON/OFF edges can be selected. Note: Refer to the *DeviceNet DRT2 Series Slaves Operation Manual* (W404) for details. Note: The conditions shown above are the default conditions. **2. Time Accuracy** Accuracy for measurements in milliseconds: ±6 ms CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The present value of the operation time monitor is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	

FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON, the present value of the operation time monitor of the slave with the specified node address, 15, will be read. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Registered No.	Number	INT	&0	&0 to &15	Specify the registered number.

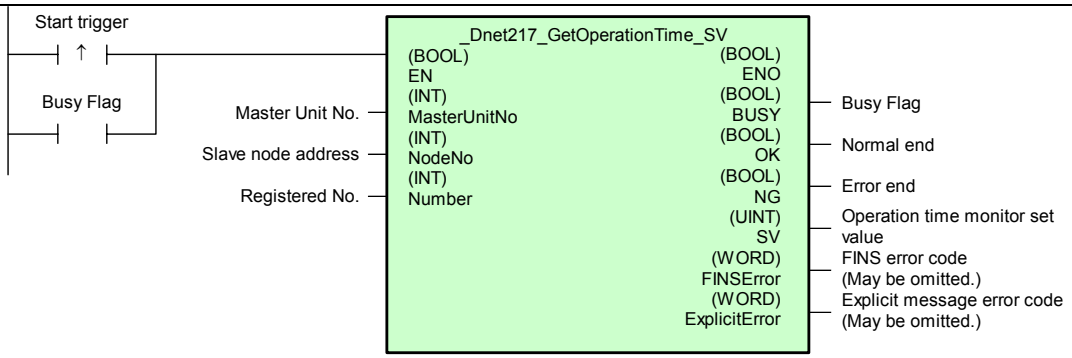
Output Variables

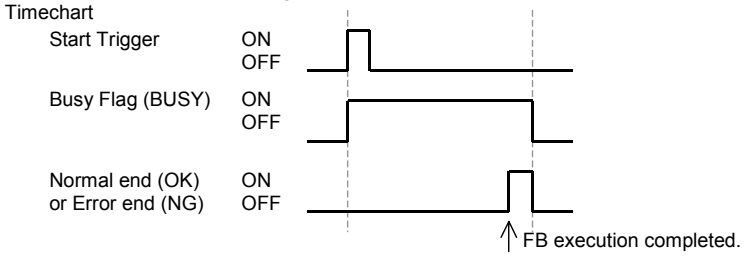
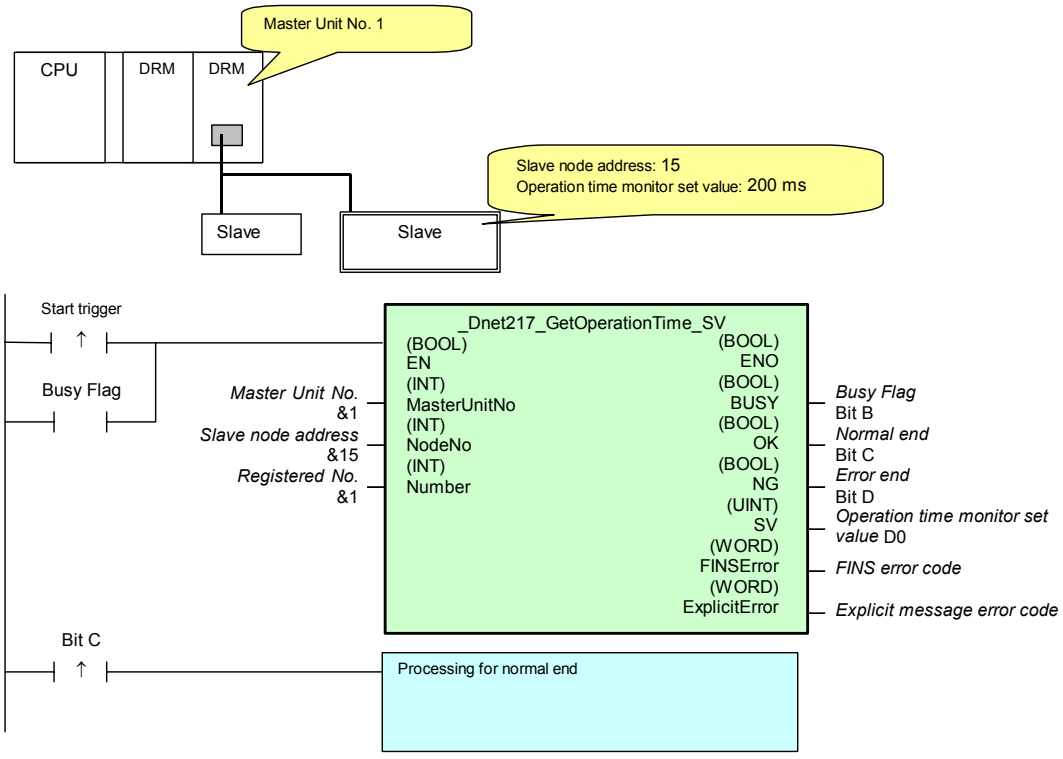
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Operation time monitor present value	PV	UINT		The present value of the operation time monitor is output. (Unit: ms) For example, &200 would be output for 200 ms.
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -217	Read Operation Time Monitor Set Value: _Dnet217_GetOperationTime_SV

Basic function	Reads the set values of the operation time monitors from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet217_GetOperationTime_SV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, OD16, ROS16, MD16S, ID16TA, MD16TA, OD16TA, ID32ML, MD32ML, OD32ML, ID32SL, MD32SL, OD32SL, ID32SLH, MD32SLH, OD32SLH
Conditions for usage	External Connections **1. Applicable Models** (1) DRT2-ID16(-1) with XWT-OD16/08 (2) DRT2-OD16(-1) with XWT-ID16/08 (3) DRT2-ROS16 with XWT-ID16/08 (4) DRT2-MD16S • Measures the time for two I/O points from ON edge to ON edge. • Measurements are possible for input 0 and output 0, input 1 and output 1, input 2 and output 2, … input 15 and output 15. Note: Only through input 7 and output 7 can be used for XWT Units with 8 I/O points. (5) DRT2-ID, OD, MD-TA, ML, SL Series • Mixed I/O Units support input 0 and output 0, input 1 and output 1, input 2 and output 2, … input 5 and output 5. • Input Unit supports input 0 to input 16, input 1 to input 17, input 2 to input 18, … input 5 to input 21. • Output Units support outputs 0 to 16, outputs 1 to 17, outputs 2 to 8, … outputs 5 to 21. • Measurement condition: ON edge to ON edge • The I/O bit combinations for which to measure the operation time and ON/OFF edges can be selected. Note: Refer to the *DeviceNet DRT2 Series Slaves Operation Manual* (W404) for details. Note: The conditions shown above are the default conditions. **2. Time Accuracy** Accuracy for measurements in milliseconds: ±6 ms CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The set value of the operation time monitor is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	

FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON, the set value of the operation time monitor of the slave with the specified node address, 15, will be read. The result, #200, is stored in D0. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Registered No.	Number	INT	&0	&0 to &15	Specify the registered number.

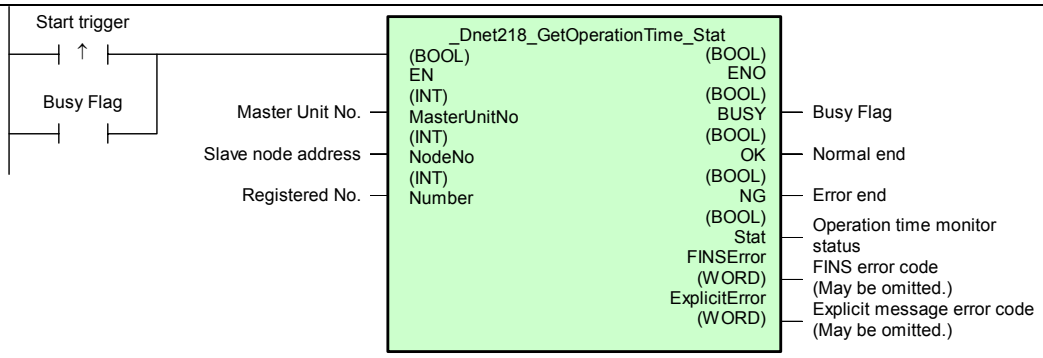
Output Variables

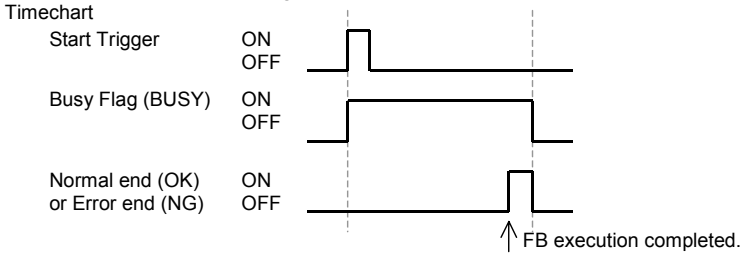
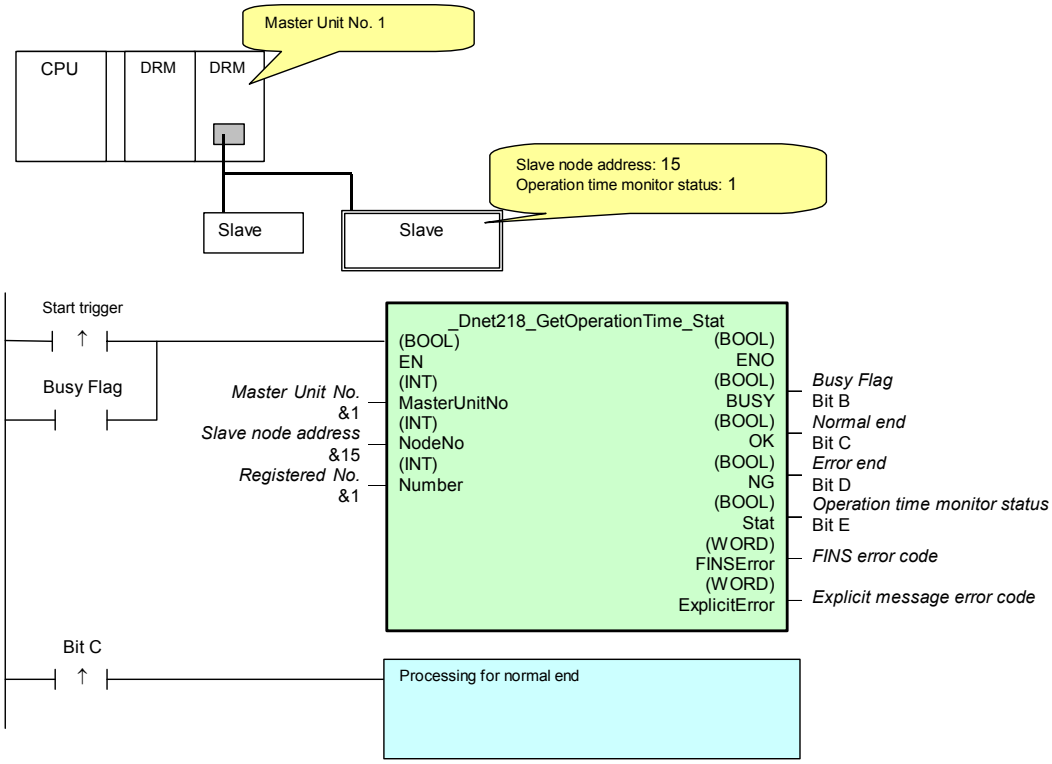
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Operation time monitor set value	SV	UINT	&0 to &65535	The set value of the operation time monitor is output. (Unit: ms) For example, &200 would be output for 200 ms.
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -218	Read Operation Time Monitor Status: _Dnet218_GetOperationTime_Stat

Basic function	Reads the status of the operation time monitors from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet218_GetOperationTime_Stat10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16, OD16, ROS16, MD16S, ID16TA, MD16TA, OD16TA, ID32ML, MD32ML, OD32ML, ID32SL, MD32SL, OD32SL, ID32SLH, MD32SLH, OD32SLH
Conditions for usage	External Connections **1. Applicable Models** (1) DRT2-ID16(-1) with XWT-OD16/08 (2) DRT2-OD16(-1) with XWT-ID16/08 (3) DRT2-ROS16 with XWT-ID16/08 (4) DRT2-MD16S • Measures the time for two I/O points from ON edge to ON edge. • Measurements are possible for input 0 and output 0, input 1 and output 1, input 2 and output 2, … input 15 and output 15. Note: Only through input 7 and output 7 can be used for XWT Units with 8 I/O points. (5) DRT2-ID/OD/MD-TA, ML, SL Series • Mixed I/O Units support input 0 and output 0, input 1 and output 1, input 2 and output 2, … input 5 and output 5. • Input Units support input 0 to input 16, input 1 to input 17, input 2 to input 18, … input 5 to input 21. • Output Units support outputs 0 to 16, outputs 1 to 17, outputs 2 to 8, … outputs 5 to 21. • Measurement condition: ON edge to ON edge • The I/O bit combinations for which to measure the operation time and ON/OFF edges can be selected. Note: Refer to the *DeviceNet DRT2 Series Slaves Operation Manual* (W404) for details. Note: The conditions shown above are the default conditions. **2. Time Accuracy** Accuracy for measurements in milliseconds: ±6 ms CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The status of the operation time monitor is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	

FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON, the status of the operation time monitor of the slave with the specified node address, 15, will be read. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Registered No.	Number	INT	&0	&0 to &15	Specify the registered number.

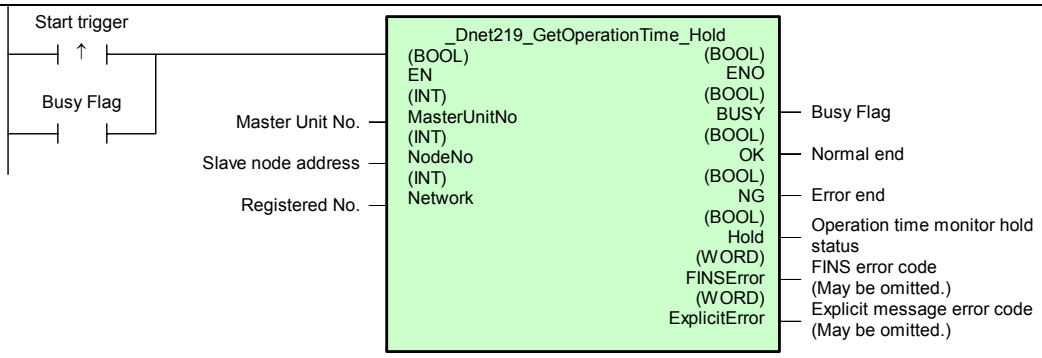
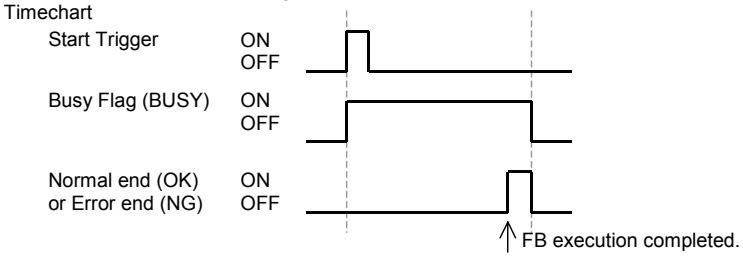
Output Variables

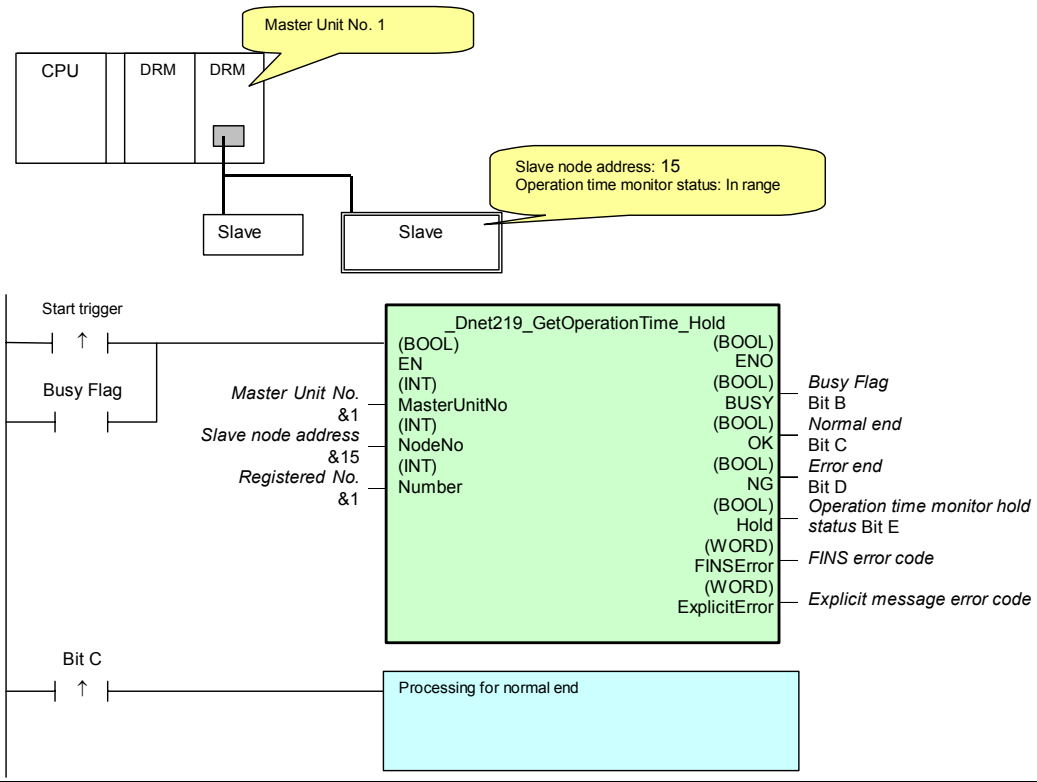
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Operation time monitor status	Stat	BOOL		The status of the operation time monitor is output. 0 (OFF): Within specified range 1 (ON): Out of range
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -219	Read Operation Time Monitor Hold Status: _Dnet219_GetOperationTime_Hold

Basic function	Reads the hold status for operation times from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet219_GetOperationTime_Hold10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16TA, MD16TA, O16TA, ID32ML, MD32ML, OD32ML, ID32SL, MD32SL, OD32SL, ID32SLH, MD32SLH, OD32SLH
Conditions for usage	External Connections **1. Conditions for Usage** • Mixed I/O Units support input 0 and output 0, input 1 and output 1, input 2 and output 2, … input 5 and output 5. • Input Units support inputs 0 to 16, inputs 1 to 17, inputs 2 to 18, … inputs 5 to 21. • Output Units support outputs 0 to 16, outputs 1 to 17, outputs 2 to 8, … outputs 5 to 21. • Measurement conditions: From ON edge to ON edge The I/O bit combinations for which to measure the operation time and ON, OFF edges can be selected. Note: Refer to the *DeviceNet DRT2 Series Slaves Operation Manual* (W404) for details. Note: The conditions shown above are the default conditions. **2. Time Accuracy** Accuracy for measurements in milliseconds: ±6 ms CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The hold status of the operation time monitor is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Input variables		
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the hold status of the operation time monitor of the slave with the specified node address, 15, will be read. As the result, bit E will be turned OFF. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Registered No.	Number	INT	&0	&0 to &7	Specify the registered number.

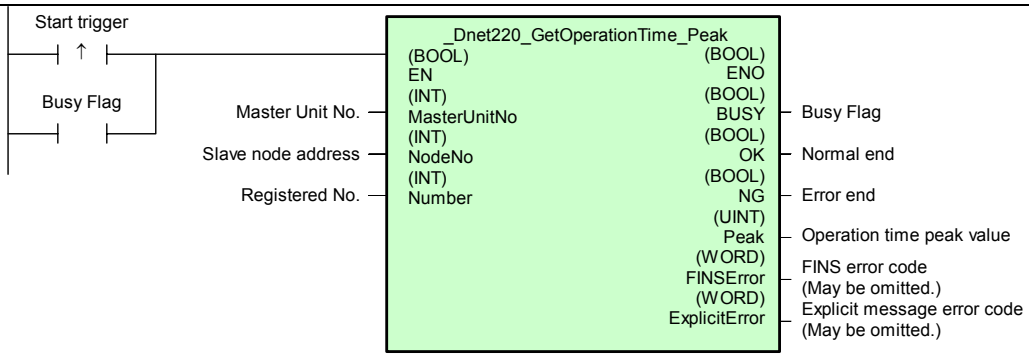
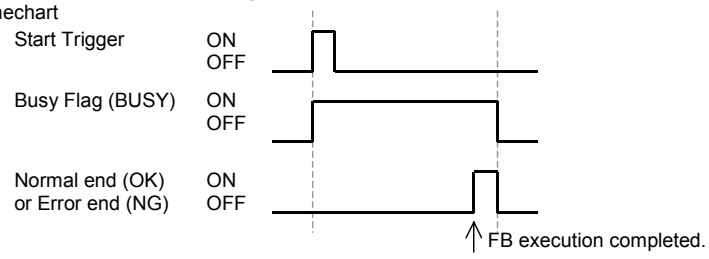
Output Variables

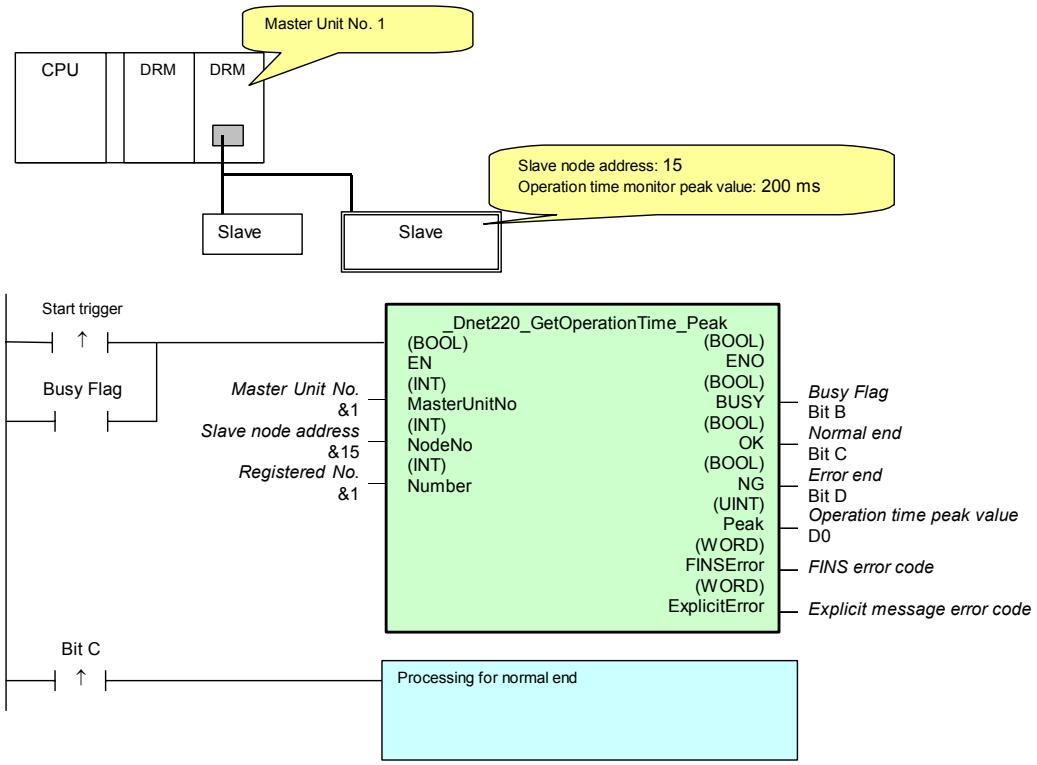
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Operation time monitor hold status	Hold	BOOL		The hold status of the operation time monitor is output. 0 (OFF): Within specified range 1 (ON): Out of range
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -220	Read Operation Time Monitor Peak Value Read: _Dnet220_GetOperationTime_Peak

Basic function	Reads the peak values for operation times from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet220_GetOperationTime_Peak10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID16TA, MD16TA, OD16TA, ID32ML, MD32ML, OD32ML, ID32SL, MD32SL, OD32SL, ID32SLH, MD32SLH, OD32SLH
Conditions for usage	External Connections **1. Conditions for Usage** • Mixed I/O Units support input 0 and output 0, input 1 and output 1, input 2 and output 2, … input 5 and output 5. • Input Units support input 0 to input 16, input 1 to input 17, input 2 to input 18, … input 5 to input 21. • Output Units support outputs 0 to 16, outputs 1 to 17, outputs 2 to 8, … outputs 5 to 21. • Measurement conditions: From ON edge to ON edge The I/O bit combinations for which to measure the operation time and ON/OFF edges can be selected. Note: Refer to the *DeviceNet DRT2 Series Slaves Operation Manual* (W404) for details. Note: The conditions shown above are the default conditions. **2. Time Accuracy** Accuracy for measurements in milliseconds: ±6 ms CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The peak value of the operation time monitor is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the peak of the operation time monitor of the slave with the specified node address, 15, will be read. The result, #200, is stored in D0. 
Related manals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Registered No.	Number	INT	&0	&0 to &7	Specify the registered number.

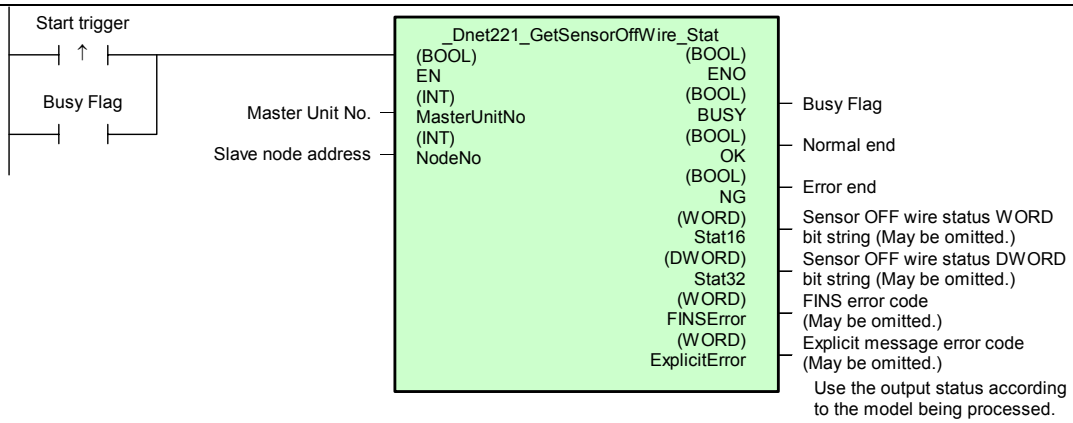
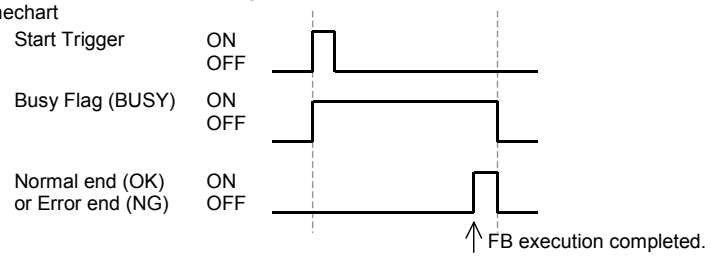
Output Variables

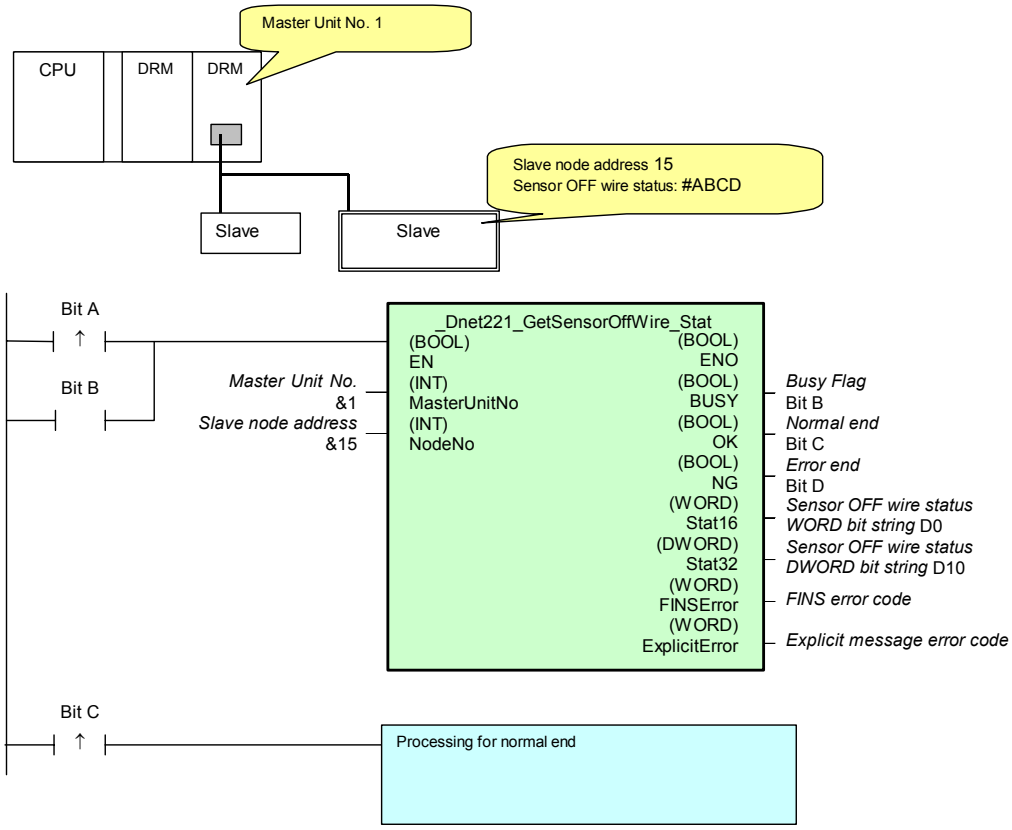
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Operation time peak value	Peak	UINT	&0 to &65535	The peak value of the operation time monitor is output. (Unit: ms) For example, &200 would be output for 200 ms.
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -221	Read Sensor OFF Wire Status: _Dnet221_GetSensorOffWire_Stat

Basic function	Reads the sensor OFF wire status from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet_GetSensorOffWire_Stat10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID08C, HD16C, ID32SLH, MD32SLH
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The sensor OFF wire status is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the sensor OFF wire status of the slave with the specified node address, 15, will be read. The results, #ABCD, is stored in D0 and #0000ABCD is stored in D10 and D11. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

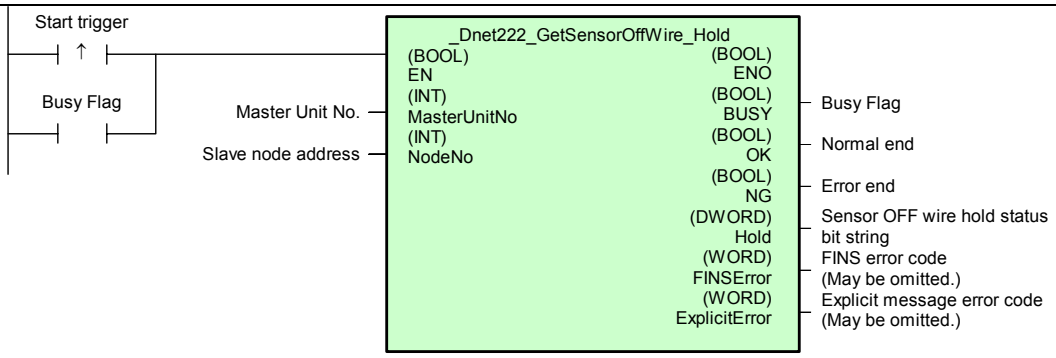
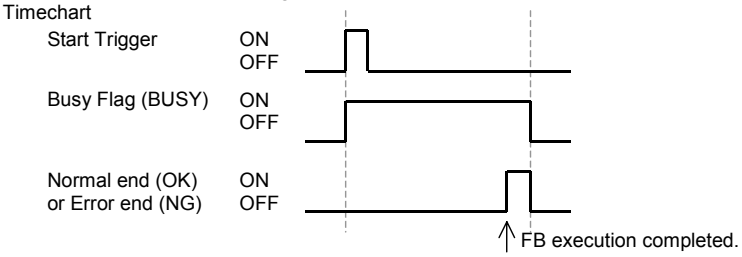
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Sensor OFF wire status WORD bit string (May be omitted.)	Stat16	WORD		The sensor OFF wire status is output. Data • DRT2-ID08C Bits 00 to 7: Short-circuit status of terminals 0 to 7 Bits 8 to 16: Reserved (OFF) • DRT2-HD16C•DRT2-ID16S•DRT2-MD16S Bits 00 to 15: OFF Wire status of terminals 0 to 15 • DRT2-ID32SLH•DRT2-MD32SLH Bits 00 to 15: OFF Wire status of terminals 0 to 15 (status of terminals 16 to 31 is not output) • DRT2-ID16S•DRT2-MD16S Bit 00: An OR of the short-circuit status for all terminals Bits 1 to 16: Reserved (OFF) 0 (OFF): Normal 1 (ON): OFF wire
Sensor OFF wire status DWORD bit string (May be omitted.)	Stat32	DWORD		The sensor OFF wire status is output. Data • DRT2-ID08C Bits 00 to 7: Short-circuit status of terminals 0 to 7 Bits 8 to 16: Reserved (OFF) • DRT2-HD16C•DRT2-ID16S•DRT2-MD16S Bits 00 to 15: OFF Wire status of terminals 0 to 15 Bits 16 to 31: Reserved (OFF) • DRT2-ID32SLH•DRT2-MD32SLH Bits 00 to 31: OFF Wire status of terminals 0 to 31 • DRT2-ID16S•DRT2-MD16S Bit 00: An OR of the short-circuit status for all terminals Bits 1 to 31: Reserved (OFF) 0 (OFF): Normal 1 (ON): OFF wire
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

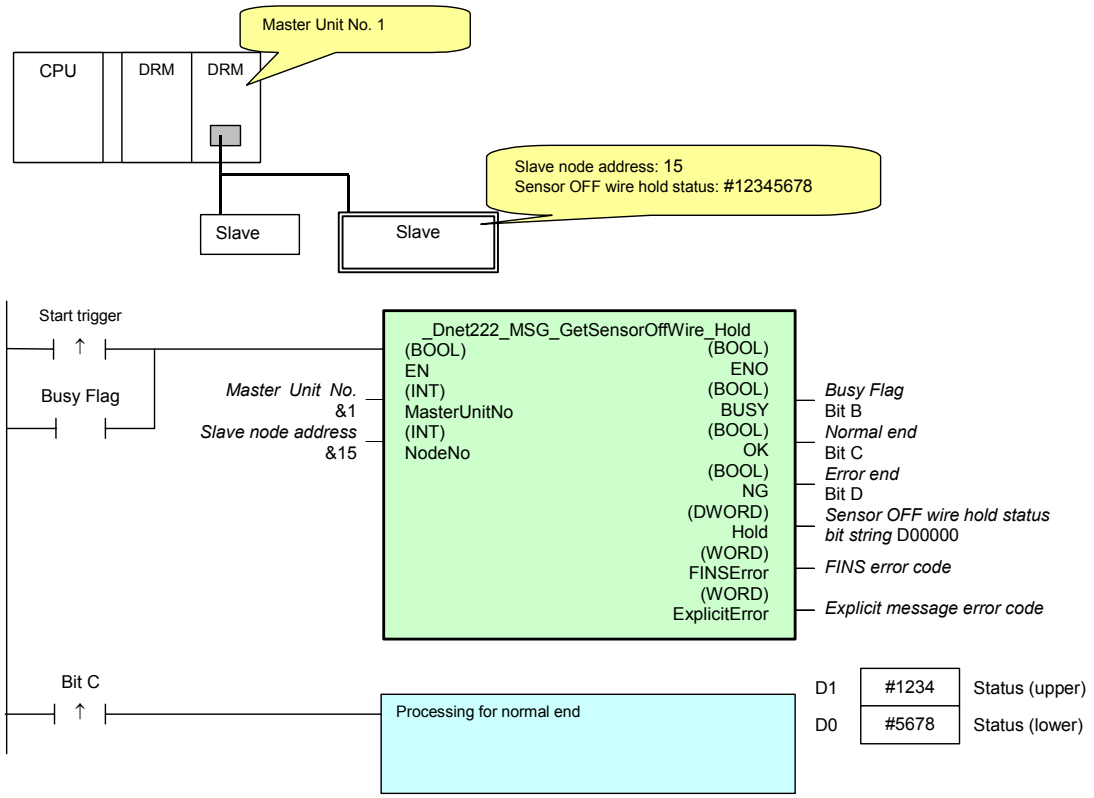
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -222	Read Sensor OFF Wire Hold Status: _Dnet222_GetSensorOffWire_Hold

Basic function	Reads the sensor OFF wire hold status from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet222_GetSensorOffWire_Hold10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID32SLH, MD32SLH
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The sensor OFF wire status is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the load OFF wire status of the slave with the specified node address, 15, will be read and output to D0. The result, &1234ABCD, is stored in D0 and D1.
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

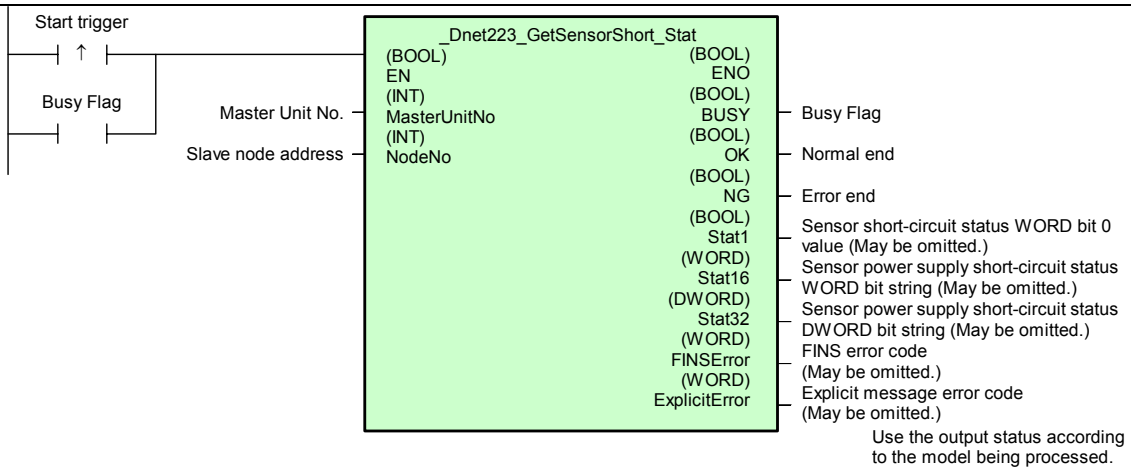
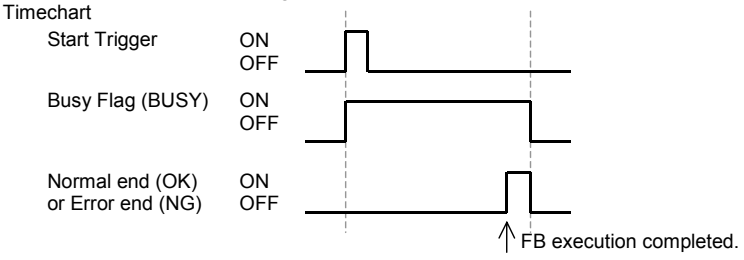
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Sensor OFF wire hold status bit string	Hold	DWORD		The sensor OFF wire hold status is output. Data Bits 00 to 31: OFF wire hold status of terminals 0 to 31 0 (OFF): Normal 1 (ON): OFF wire
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

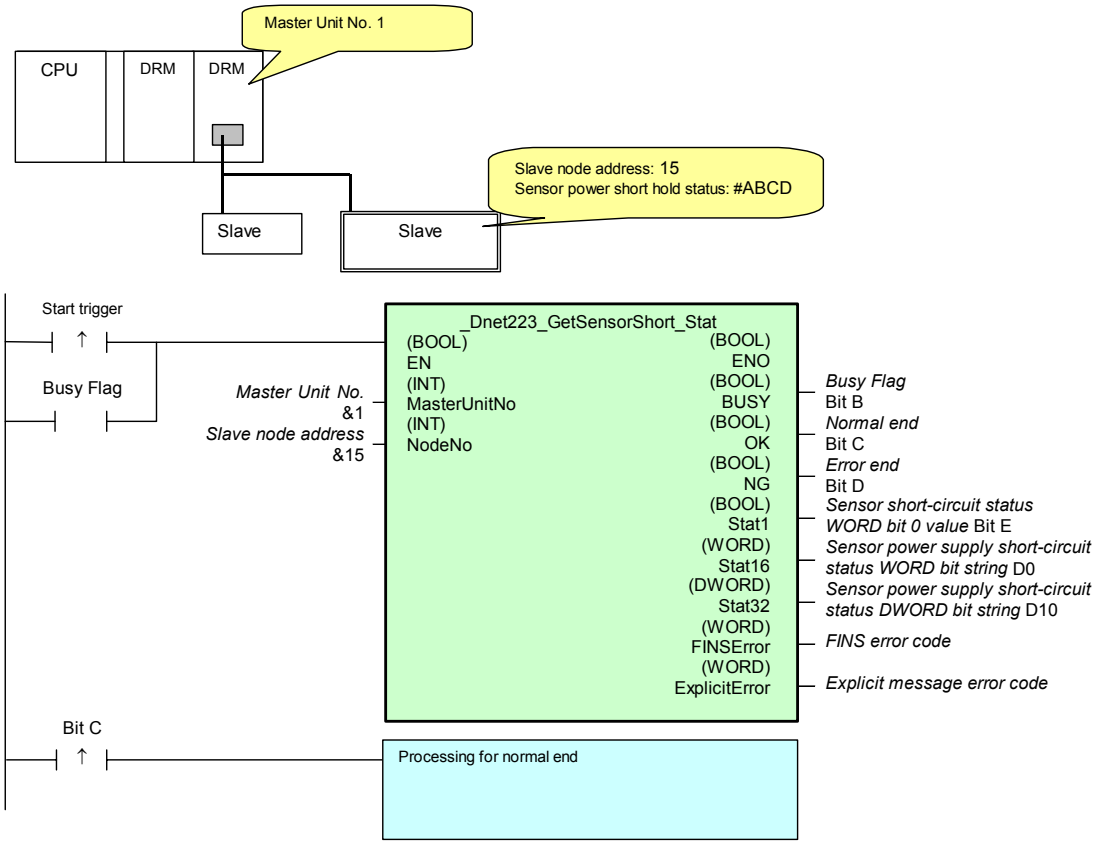
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -223	Read Sensor Power Supply Short-circuit Status: _Dnet223_GetSensorShort_Stat

Basic function	Reads the power supply short circuit status from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet223_GetSensorShort_Stat10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID08C, HD16C, MD16S, ID32SLH, MD32SLH
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The sensor power supply short-circuit status is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions		
Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the sensor power supply short-circuit status of the slave with the specified node address, 15, will be read. As the results, bit E is turned ON, #ABCD is stored in D0, and #0000ABCD is stored in D10 and D11.
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

Output Variables

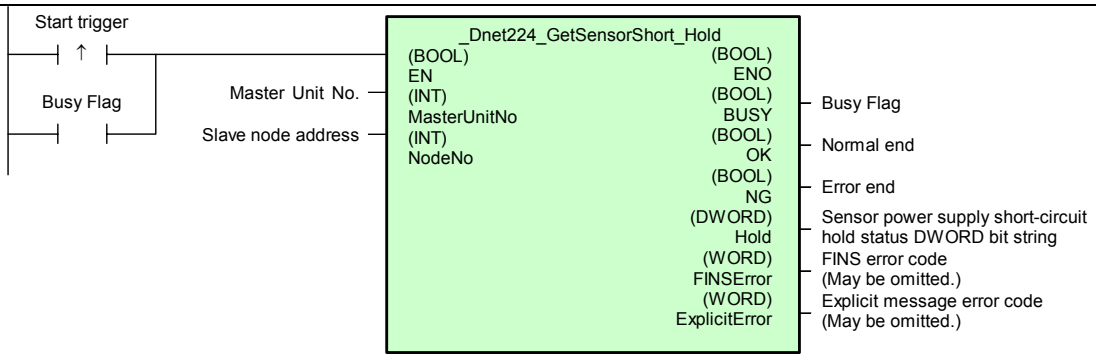
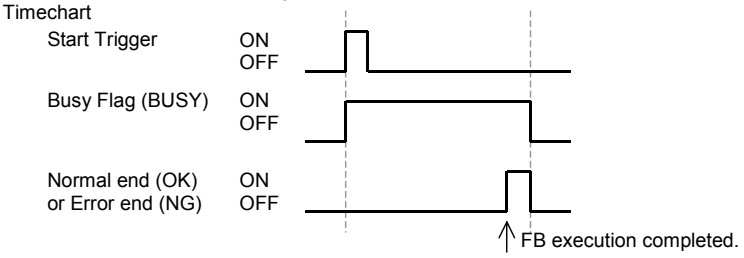
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Sensor short-circuit status WORD bit 0 value (May be omitted.)	Stat1	BOOL		The sensor power supply short-circuit status is output. Data • DRT2-ID08C DRT2-HD16C •DRT2-MD16S DRT2-ID32SLH •DRT2-MD32SLH Short-circuit status of terminal 0 • DRT2-MD16S An OR of the short-circuit status of all terminals 0 (OFF): Normal 1 (ON): Shorted

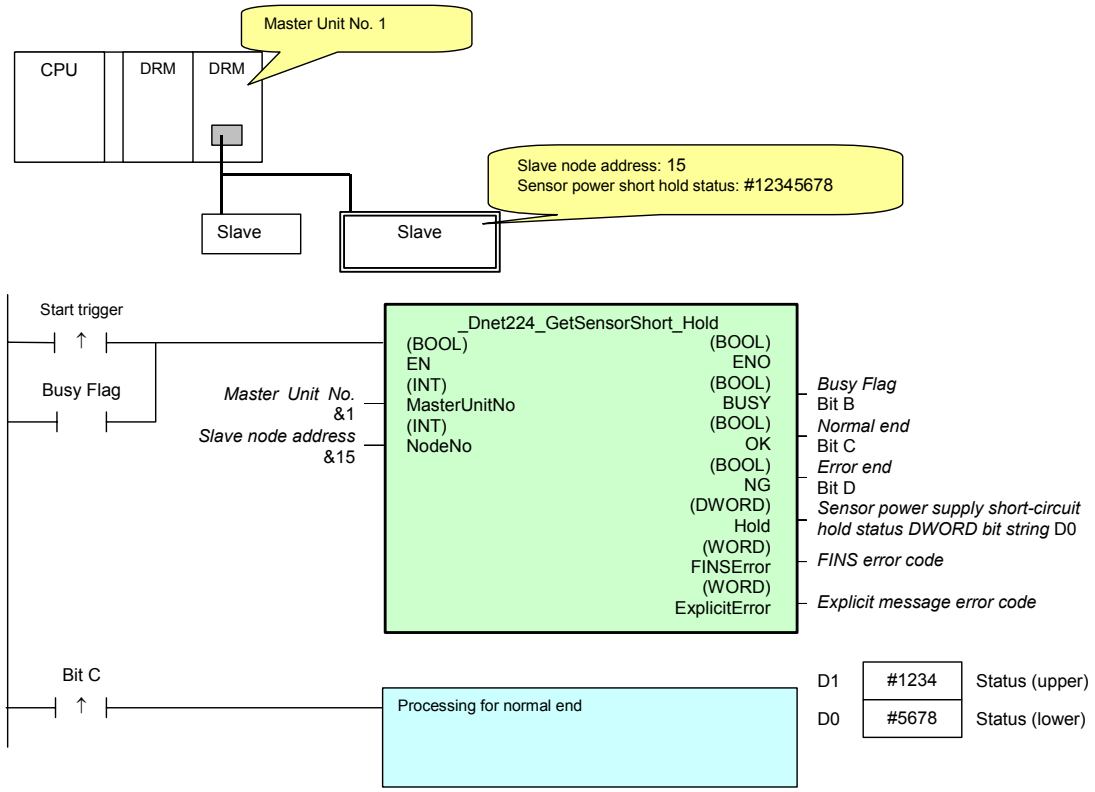
Sensor power supply short-circuit status WORD bit string (May be omitted.)	Stat16	WORD		The sensor power supply short-circuit status is output. Data • DRT2-ID08C Bits 00 to 7: Short-circuit status of terminals 0 to 7 Bits 8 to 16: Reserved (OFF) • DRT2-HD16C •DRT2-MD16S Bits 00 to 15: Short-circuit status of terminals 0 to 15 • DRT2-ID32SLH •DRT2-MD32SLH Bits 00 to 15: Short-circuit status of terminals 0 to 15 (status of terminals 16 to 31 is not output) • DRT2-MD16S Bit 00: An OR of the short-circuit status for all terminals Bits 1 to 16: Reserved (OFF) 0 (OFF): Normal 1 (ON): Shorted
Sensor power supply short-circuit status DWORD bit string (May be omitted.)	Stat32	DWORD		The sensor power supply short-circuit status is output. Data • DRT2-ID08C Bits 00 to 7: Short-circuit status of terminals 0 to 7 Bits 8 to 31: Reserved (OFF) • DRT2-HD16C •DRT2-MD16S Bits 00 to 15: Short-circuit status of terminals 0 to 15 Bits 16 to 31: Reserved (OFF) • DRT2-ID32SLH •DRT2-MD32SLH Bits 00 to 31: Short-circuit status of terminals 0 to 31 • DRT2-MD16S Bit 00: An OR of the short-circuit status for all terminals Bits 1 to 31: Reserved (OFF) 0 (OFF): Normal 1 (ON): Shorted
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

Dnet -224	Read Sensor Power Supply Short-circuit Hold Status: _Dnet224_GetSensorShort_Hold

Basic function	Reads the power supply short circuit hold status from slaves connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\RemoteIO\SmartIO_Dnet224_GetSensorShort_Hold10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	DRT2-ID32SLH, MD32SLH
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	The sensor power supply short-circuit hold status is read from the DeviceNet slave specified by the Master Unit No. and the Slave Node Address. Refer to the FINS error code and explicit message error code if an error occurs. Both error codes will be output as #0000 for a normal end.	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the sensor power supply short-circuit hold status of the slave with the specified node address, 15, will be read. The result, &12345678, is stored in D0 and D1. 
Related manuals	Explicit Message Error Codes *DeviceNet DRT2 Series Slaves Operation Manual* (W404) *Appendix A DeviceNet Explicit Messages, Basic Format of Explicit Messages, List of Error Codes* FINS Error Codes *Communications Commands Reference Manual* (W342) *5-1-3 Error Codes*

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Master Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Sensor power supply short-circuit hold status DWORD bit string	Hold	DWORD		The sensor power supply short-circuit hold status is output. Data Bits 00 to 31: Short-circuit hold status of terminals 0 to 31 0 (OFF): Normal 1 (ON): Shorted
FINS error code (May be omitted.)	FINSError	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code (May be omitted.)	ExplicitError	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

3-7 Position Controller

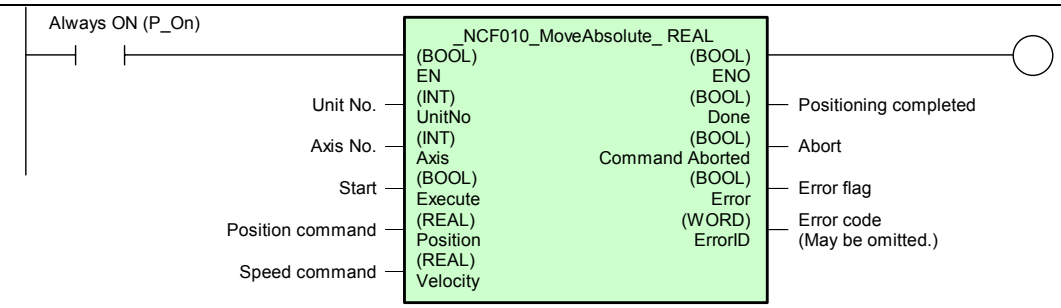
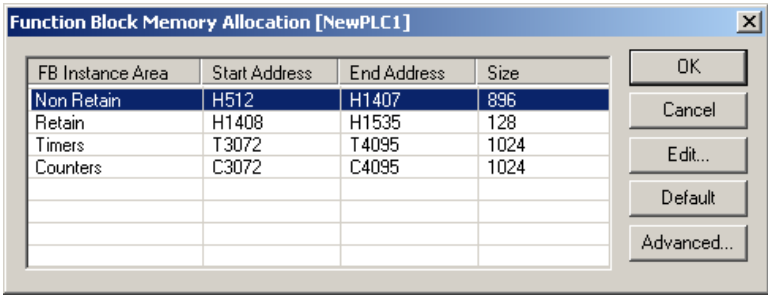
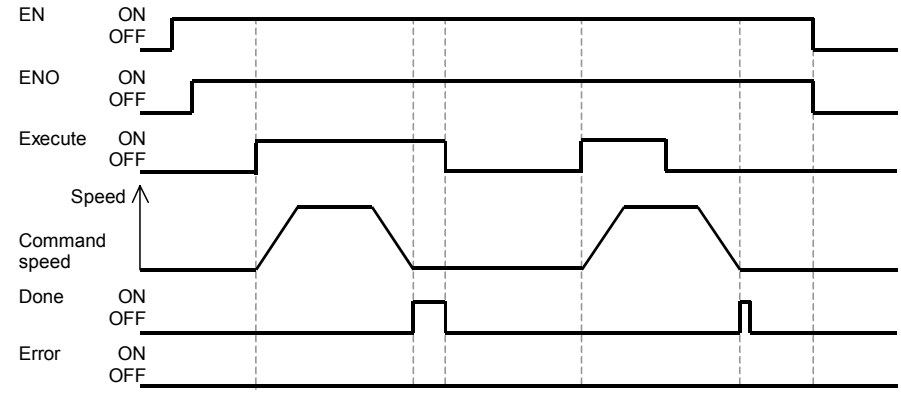
CJ1W-NCF71

FB Name	Function	Page
_NCF010_MoveAbsolute_REAL	Move Absolute	3-166
_NCF011_MoveAbsolute_DINT	Absolute Move Command	3-169
_NCF020_MoveRelative_ REAL	Move Relative	3-172
_NCF021_MoveRelative_DINT	Relative Move Command	3-175
_NCF030_MoveVelocity_ REAL	Speed Control	3-178
_NCF031_MoveVelocity_DINT	Speed Control	3-181
_NCF040_TorqueControl_REAL	Torque Control	3-184
_NCF041_TorqueControl_DINT	Control Torque	3-187
_NCF050_Home_REAL	Origin Search	3-190
_NCF051_Home_DINT	Origin Search	3-193
_NCF060_Stop	Stop Deceleration	3-196
_NCF070_Power	Operation Command	3-199
_NCF080_Reset	Reset Axis Error	3-202
_NCF200_ReadStatus	Read Status	3-205
_NCF201_ReadParameter	Read Parameter	3-208
_NCF202_ReadBoolParameter	Read Boolean Parameter	3-211
_NCF203_ReadAxisError	Read Axis Error	3-214
_NCF204_ReadActualPosition_REAL	Read Present Position	3-217
_NCF205_ReadActualPosition_DINT	Read Present Position	3-220
_NCF401_WriteParameter	Write Parameter	3-223
_NCF402_WriteBoolParameter	Write Boolean Parameter	3-226

CS1W-NC113/133/213/233/413/433, CJ1W-NC113/133/213/233/413/433

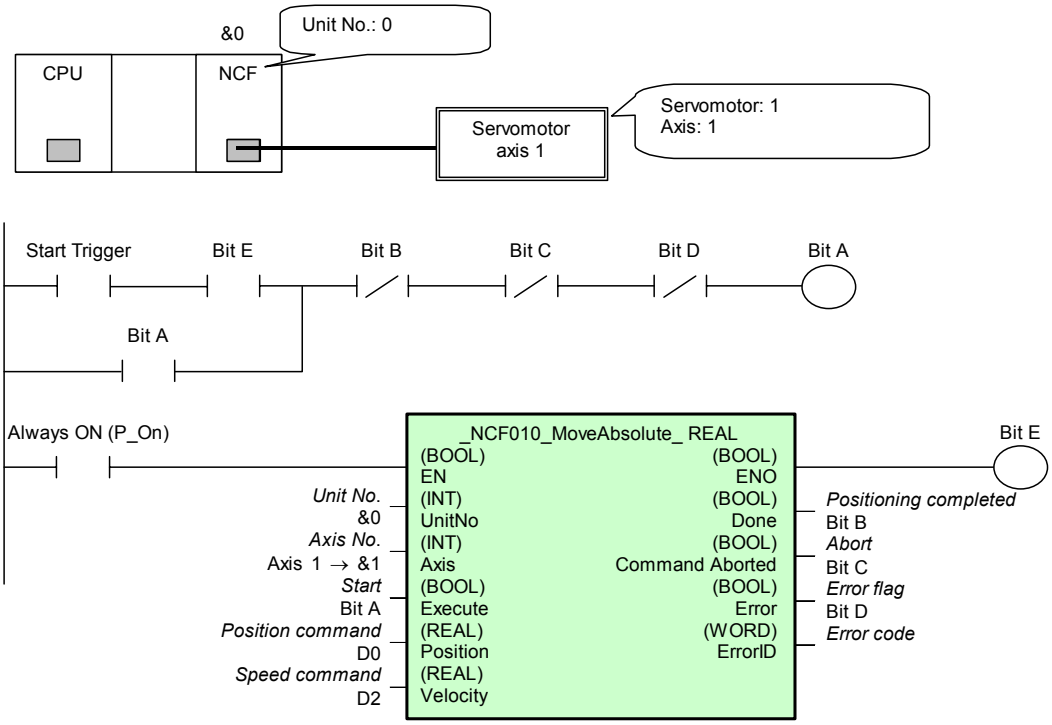
FB Name	Function	Page
_NCx010_MoveAbsolute_REAL	Move Absolute	3-229
_NCx011_MoveAbsolute_DINT	Move Absolute	3-232
_NCx020_MoveRelative_REAL	Move Relative	3-235
_NCx021_MoveRelative_DINT	Move Relative	3-238
_NCx050_Home_REAL	Origin Search	3-241
_NCx051_Home_DINT	Origin Search	3-243
_NCx060_Stop	Deceleration Stop	3-245
_NCx080_Reset	Axis Error Reset	3-247
_NCx200_ReadStatus	Read Status	3-249
_NCx201_ReadParameter	Read Parameter	3-251
_NCx202_ReadBoolParameter	Read Boolean Parameter	3-254
_NCx203_ReadAxisError	Read Axis Error	3-256
_NCx204_ReadActualPosition_REAL	Read Present Position	3-258
_NCx205_ReadActualPosition_DINT	Read Present Position	3-260
_NCx401_WriteParameter	Write Parameter	3-262
_NCx402_WriteBoolParameter	Write Boolean Parameter	3-266
_NCx600_Setting	Set Unit	3-268

NCF -010	Move Absolute: _NCF010_MoveAbsolute_ REAL

Basic function	Positions using an absolute move.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF010_MoveAbsolute_ REAL10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, a positioning operation for the axis of the specified Unit No. and Axis No. is started using the specified positioning command value and position control speed. The Positioning Completed Flag (Done) is turned ON when the positioning operation for the FB has been completed. This flag will not be turned ON if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If execution of another instance is started during the positioning operation, a duplicate start status will exist and a positioning operation will be performed for the absolute position specified for Position Command from the point at which the last execution was started. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

<table>
<tr><td>Restrictions
Other</td><td>

The following cannot be specified for this FB: acceleration/deceleration curves, forward torque limit, and reverse torque limit. If any of these functions is required, specify them in advance outside the FB.
An error may occur if Execute is turned ON before ENO is turned ON.
This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands).
There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON.

Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
</td></tr>
<tr><td>Application example</td><td>
Operation is started for an absolute move for axis 1 of the Servomotor connected to the Position Control Unit with a unit number of 0.


</td></tr>
<tr><td>Related manuals</td><td>CJ1W-NCF71 Position Control Unit Operation Manual (W426)
Section 9 Positioning
12-4 Error Codes</td></tr>
</table>

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑ Starts the absolute move.
Position command	Position	REAL	+0.0	-2.147484e+009 to +2.147484e+009	Specify the numeric value of to set for the present position. Unit: Command units
Speed command	Velocity	REAL	+0.0	+0.0 to +2.147484e+009	Specify the target speed. Unit: Command units/s Changing the value while Execute is ON will change the actual operating speed.

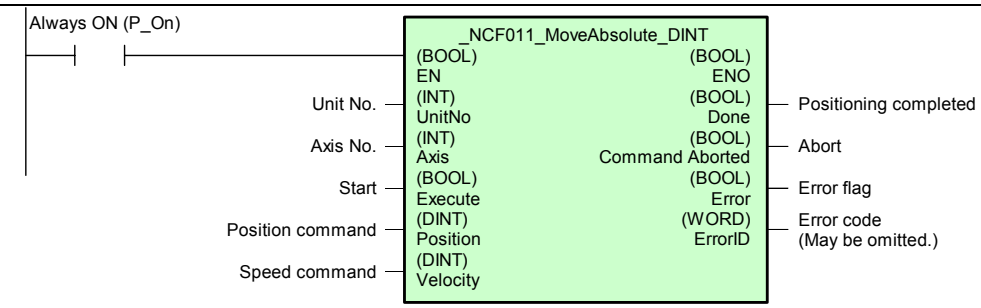
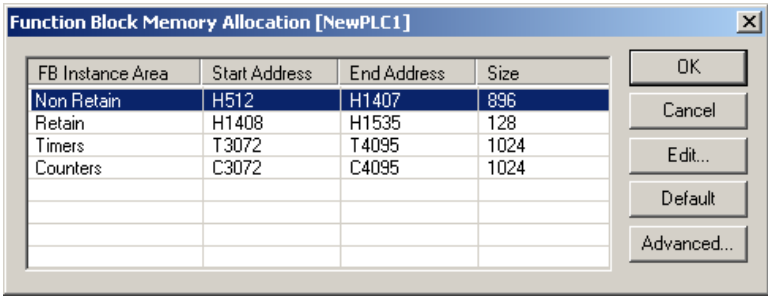
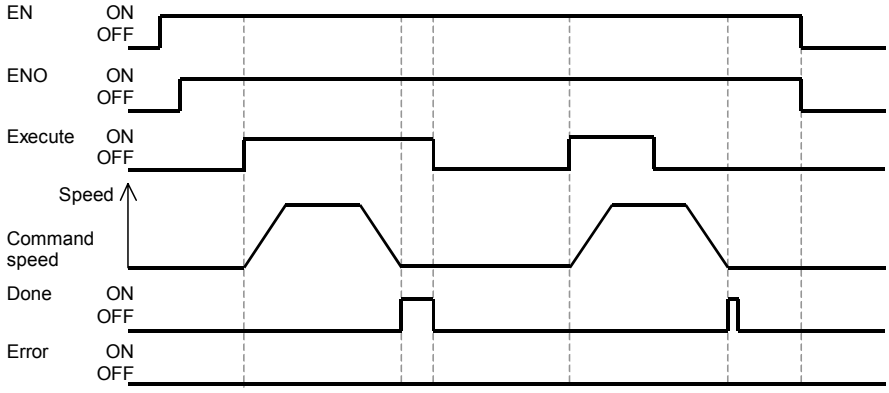
Output Variables

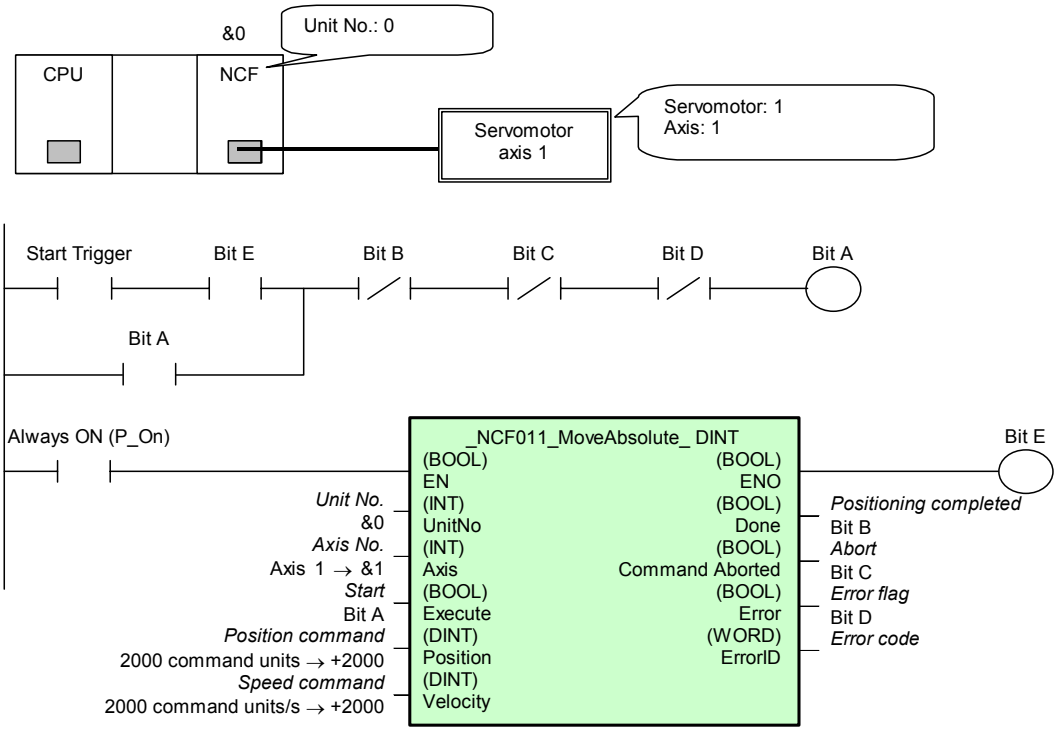
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Positioning completed	Done	BOOL		Turns ON when the positioning operation has been completed.
Abort	CommandAborted	BOOL		Turns ON when the other Move command done (Duplicate Move) -Stopped with DECELERATION STOP or EMERGENCY STOP. -Executed SERVO UNLOCK on an operating axis. -Attempted to execute FB while SERVO UNLOCK, DECELERATION STOP, or EMERGENCY STOP Bit is ON.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -011	Move Absolute: _NCF011_MoveAbsolute_DINT

Basic function	Positions using an absolute move.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF011_MoveAbsolute_DINT10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, a positioning operation for the axis of the specified Unit No. and Axis No. is started using the specified positioning command value and position control speed. The Positioning Completed Flag (Done) is turned ON when the positioning operation for the FB has been completed. This flag will not be turned ON if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for errors in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If execution of another instance is started during the positioning operation, a duplicate start status will exist and a positioning operation will be performed for the absolute position specified for Position Command from the point at which *Execute* turned ON. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Restrictions Other	• The following cannot be specified for this FB: acceleration/deceleration curves, forward torque limit, and reverse torque limit. If any of these functions is required, specify them in advance outside the FB. • An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
Application example	Operation is started for an absolute position command for axis 1 of the Servomotor connected to the Position Control Unit with unit number 0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) Section 9 Positioning 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑ Starts the absolute move.
Position command	Position	DINT	+0	-2,147,483,648 to +2,147,483,647	Specify the target position. Unit: Command units
Speed command	Velocity	DINT	+0	+0 to +2,147,483,647	Specify the target speed. Unit: Command units/s The actual speed of the operation will change if the Speed Command is changed while Execute is ON.

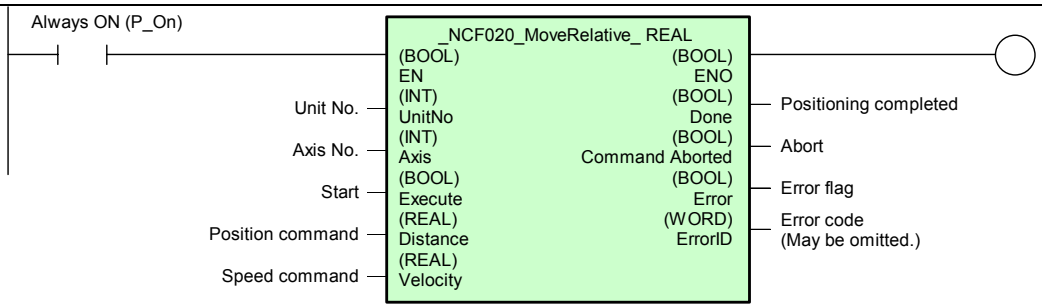
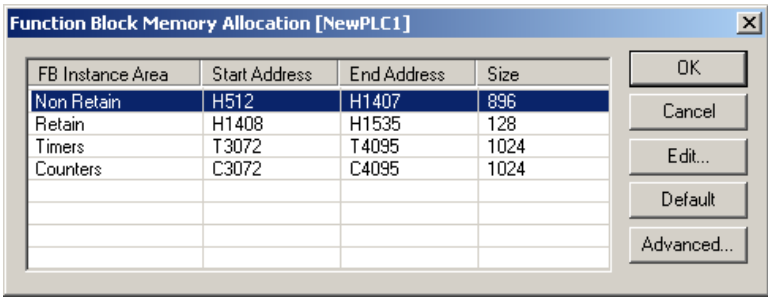
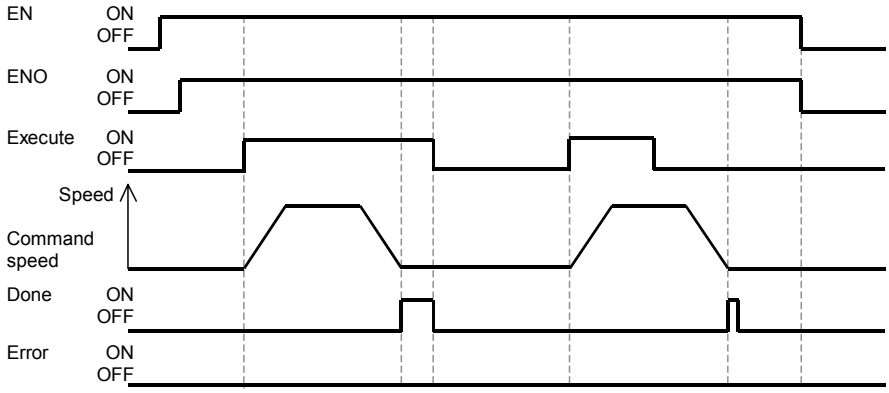
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Positioning completed	Done	BOOL		Turns ON when the positioning operation has been completed.
Abort	CommandAborted	BOOL		Turns ON when - the other Move command done (Duplicate Move) - Stopped with DECELERATION STOP or EMERGENCY STOP. - Executed SERVO UNLOCK on an operating axis. - Attempted to execute FB while SERVO UNLOCK, DECELERATION STOP, or EMERGENCY STOP Bit is ON.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

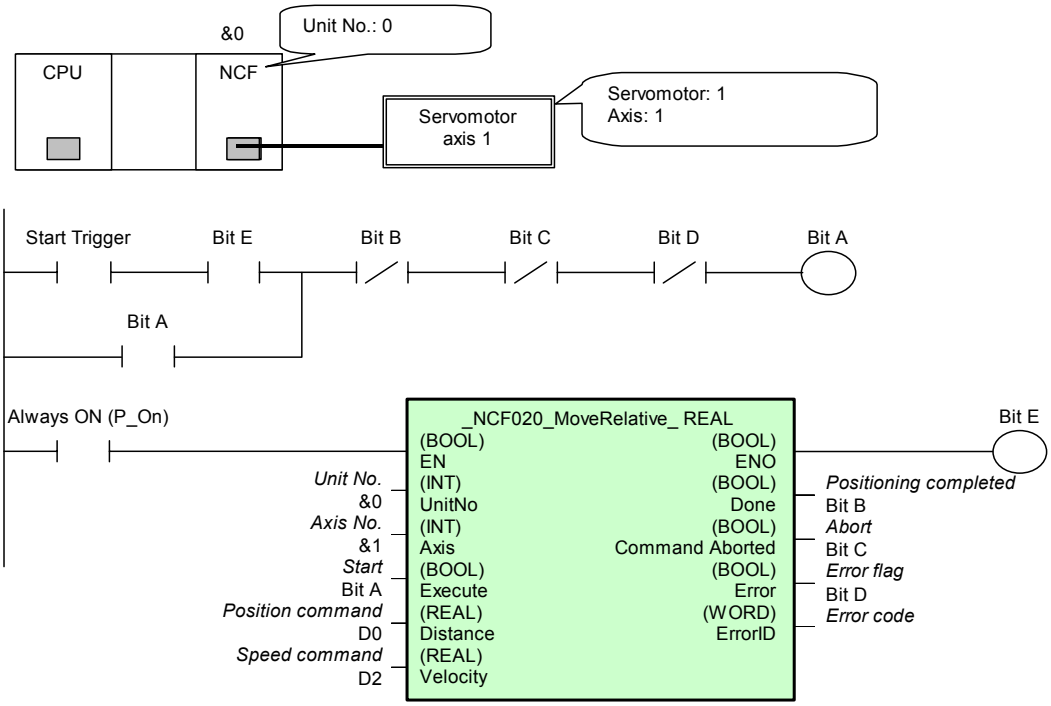
Version	Date	Contents
1.00	2004.6.	Original production

NCF -020	Move Relative: _NCF020_MoveRelative_ REAL

Basic function	Positions using a relative move.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF020_MoveRelative_ REAL10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, a positioning operation for the axis of the specified Unit No. and Axis No. is started using the specified positioning command value and position control speed. The Positioning Completed Flag (Done) is turned ON when the positioning operation for the FB has been completed. This flag will not be turned ON if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If the input to *Execute* turns ON again during the positioning operation, a duplicate start status will exist and a positioning operation will be performed for the position specified for position command from the point at which *Execute* turned ON. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

<table>
<tr><td>Restrictions
Other</td><td>

The following cannot be specified for this FB: acceleration/deceleration curves, forward torque limit, and reverse torque limit. If any of these functions is required, specify them in advance outside the FB.
An error may occur if Execute is turned ON before ENO is turned ON.
This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands).
There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON.

Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
</td></tr>
<tr><td>Application example</td><td>
Operation is started for a relative move for axis 1 of the Servomotor connected to the Position Control Unit with a unit number of 0.


</td></tr>
<tr><td>Related manuals</td><td>CJ1W-NCF71 Position Control Unit Operation Manual (W426)
8-3 Present Value Preset
12-4 Error Codes</td></tr>
</table>

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑ Starts the relative move.
Position command	Distance	REAL	+0.0	-2.147484e+009 to +2.147484e+009	Specify the numeric value of to set for the present position. Unit: Command units
Speed command	Velocity	REAL	+0.0	+0.0 to +2.147484e+009	Specify the target speed. Unit: Command units/s Changing the value while Execute is ON will change the actual operating speed.

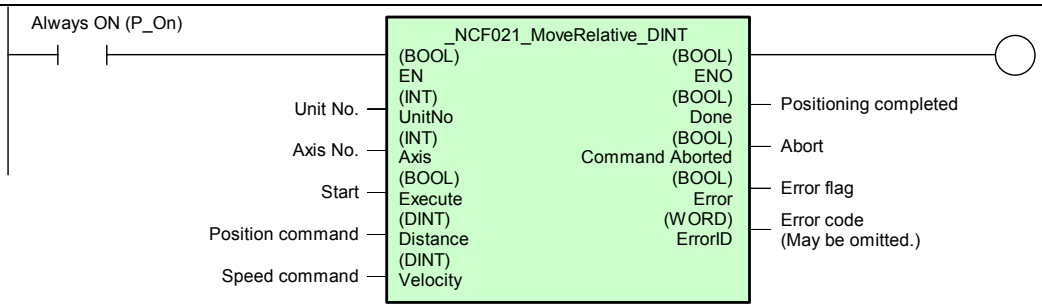
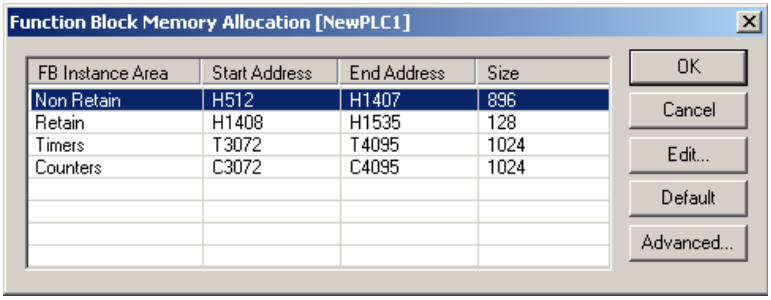
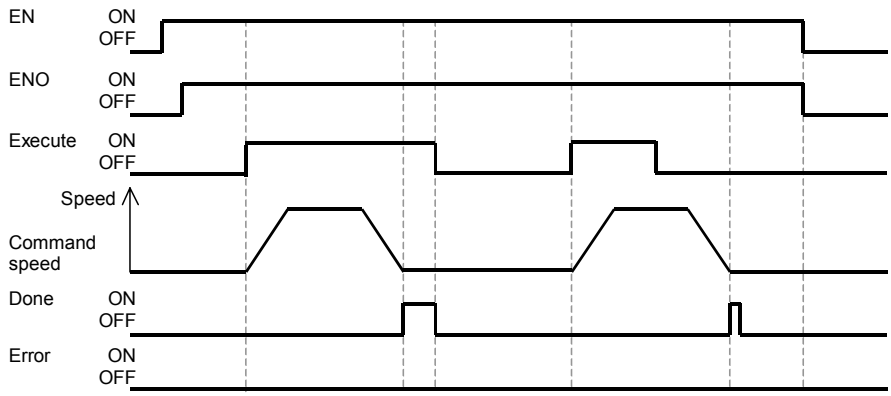
Output Variables

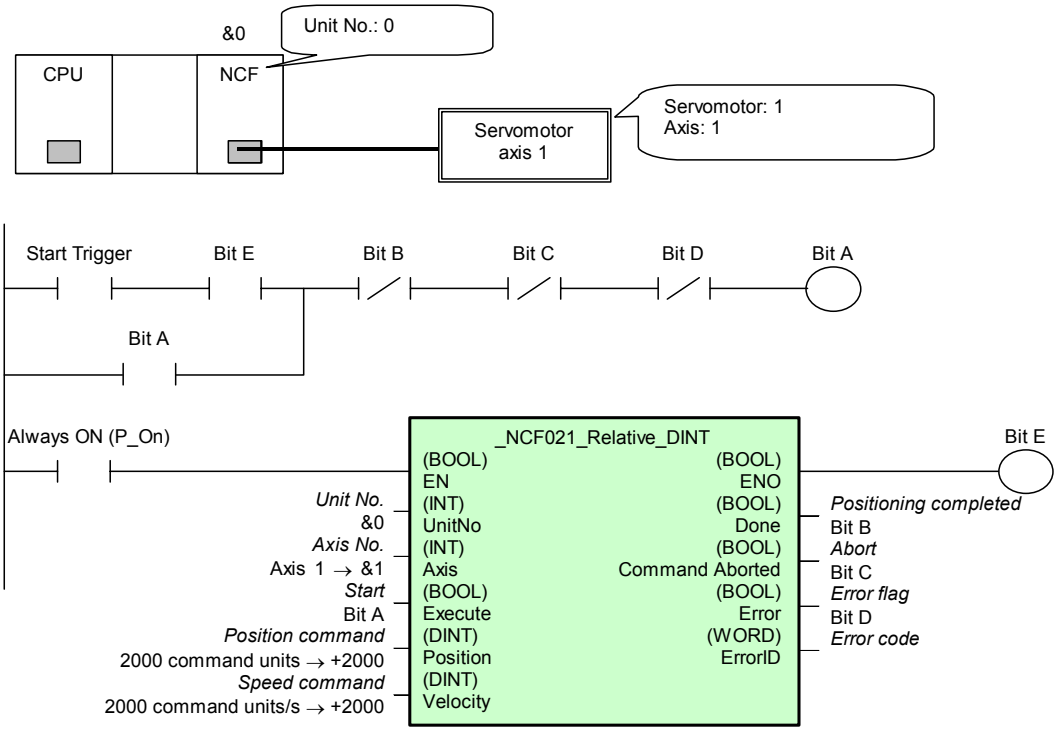
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Positioning completed	Done	BOOL		Turns ON when the positioning operation has been completed.
Abort	CommandAborted	BOOL		Turns ON when - the other Move command done (Duplicate Move) - Stopped with DECELERATION STOP or EMERGENCY STOP. - Executed SERVO UNLOCK on an operating axis. - Attempted to execute FB while SERVO UNLOCK, DECELERATION STOP, or EMERGENCY STOP Bit is ON.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -021	Move Relative: _NCF021_MoveRelative_DINT

Basic function	Positions using a relative move.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF021_MoveRelative_DINT10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, a positioning operation for the axis of the specified Unit No. and Axis No. is started using the specified positioning command value and position control speed. The Positioning Completed Flag (Done) is turned ON when the positioning operation for the FB has been completed. This flag will not be turned on if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If the input to *Execute* turns ON again during the positioning operation, a duplicate start status will exist and a positioning operation will be performed for the position specified for position command from the point at which *Execute* turned ON. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Restrictions Other	• The following cannot be specified for this FB: acceleration/deceleration curves, forward torque limit, and reverse torque limit. If any of these functions is required, specify them in advance outside the FB. • An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
Application example	Operation is started for a relative position command for axis 1 of the Servomotor connected to the Position Control Unit with unit number 0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 8-3 Present Value Preset 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑ Starts the relative move.
Position command	Distance	DINT	+0	-2,147,483,648 to +2,147,483,647	Specify the relative move distance. Unit: Command units
Speed command	Velocity	DINT	+0	+0 to +2,147,483,647	Specify the target speed. Unit: Command units/s Changing the value while Execute is ON will change the actual operating speed.

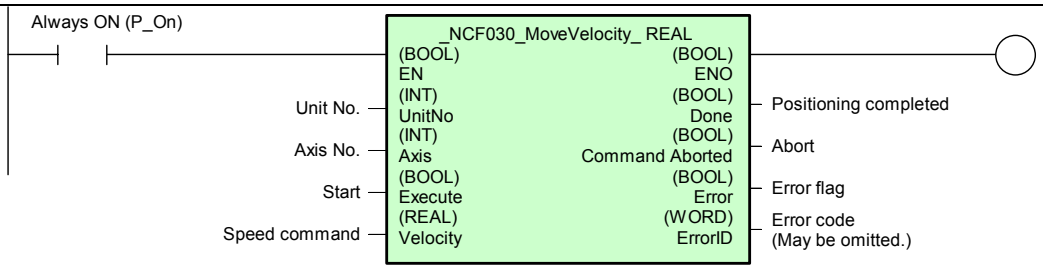
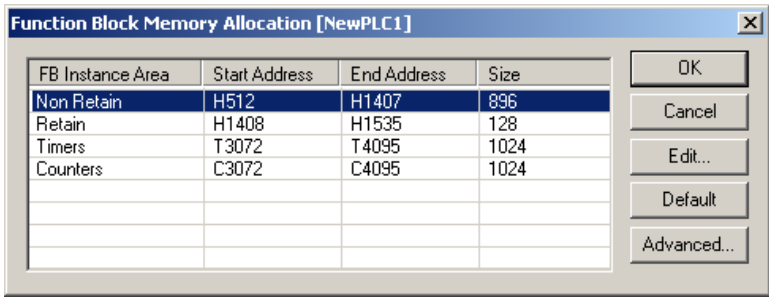
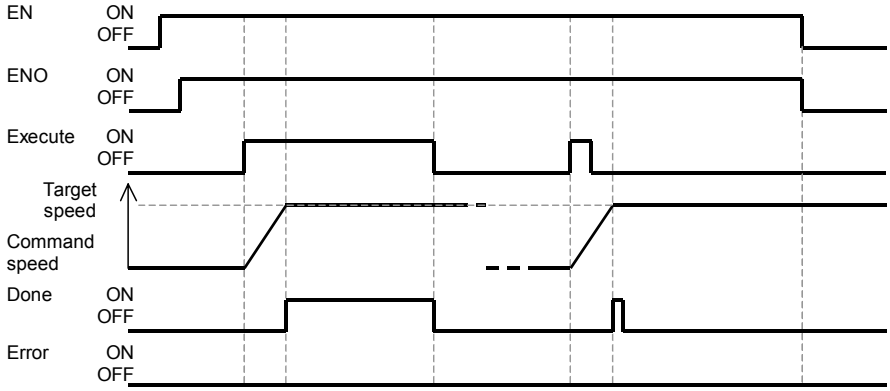
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Positioning completed	Done	BOOL		Turns ON when the positioning operation has been completed.
Abort	CommandAborted	BOOL		Turns ON when the other Move command done (Duplicate Move) - Stopped with DECELERATION STOP or EMERGENCY STOP. - Executed SERVO UNLOCK on an operating axis. - Attempted to execute FB while SERVO UNLOCK, DECELERATION STOP, or EMERGENCY STOP Bit is ON.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

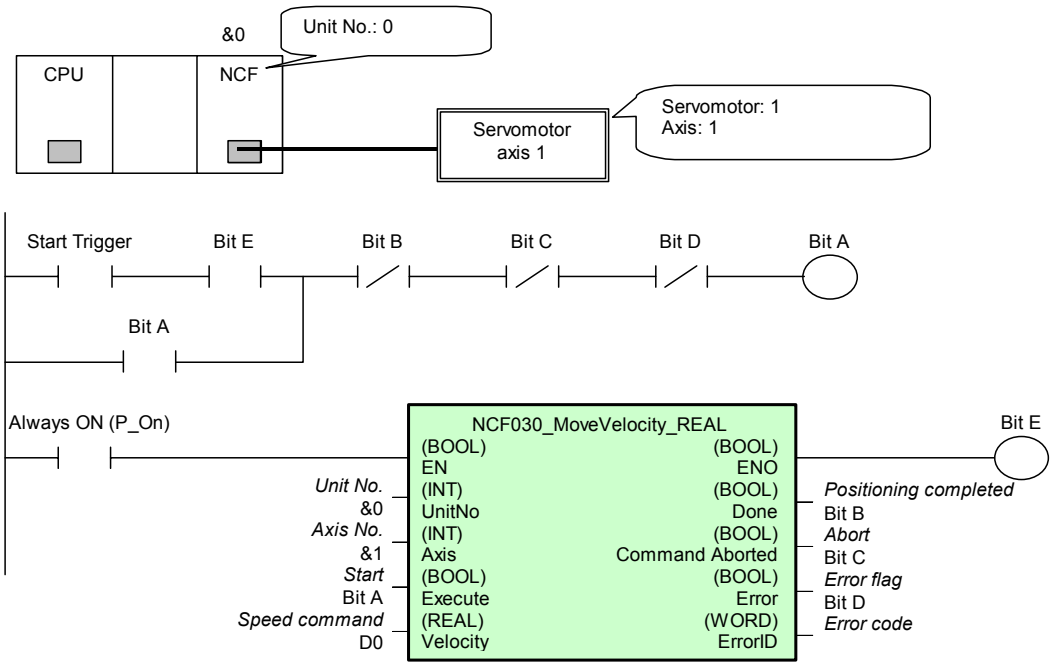
Version	Date	Contents
1.00	2004.6.	Original production

NCF -030	Speed Control: _NCF030_MoveVelocity_ REAL

Basic function	Controls the speed.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF030_MoveVelocity_ REAL10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, speed control is started for the axis of the specified Unit No. and Axis No. using the specified speed command for speed control. The Speed Reached Flag (Done) is turned ON when the target speed specified in the FB has been reached. This flag will be turned OFF if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If the input to *Execute* turns ON again during the speed control operation, a duplicate start status will exist and a speed control will be performed for the speed specified for *Velocity* from the point at which *Execute* turned ON. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

<table>
<tr><td>Restrictions
Other</td><td>

An error may occur if Execute is turned ON before ENO is turned ON.
This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands).
There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON.

Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
</td></tr>
<tr><td>Application example</td><td>
Operation is started for speed control for axis 1 of the Servomotor connected to the Position Control Unit with a unit number of 0.


</td></tr>
<tr><td>Related manuals</td><td>CJ1W-NCF71 Position Control Unit Operation Manual (W426)
10-5 Speed Control
12-4 Error Codes</td></tr>
</table>

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑ : Torque control is started.
Speed command	Velocity	REAL	+0.0	-199.999 to +199.999	Specify the target speed. The unit is % of the maximum speed of the motor being used. The actual speed of the operation will change if the Speed Command is changed while Execute is ON.

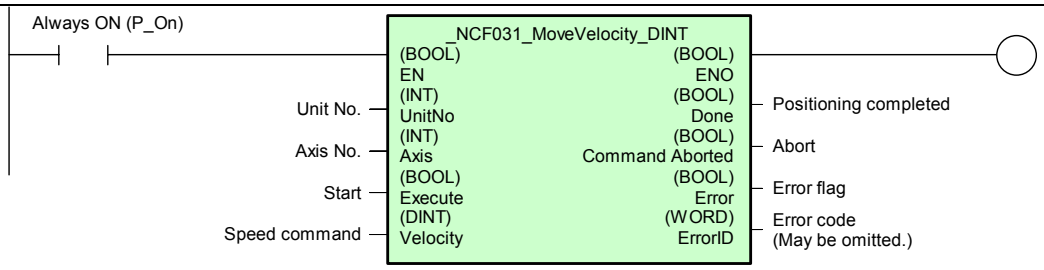
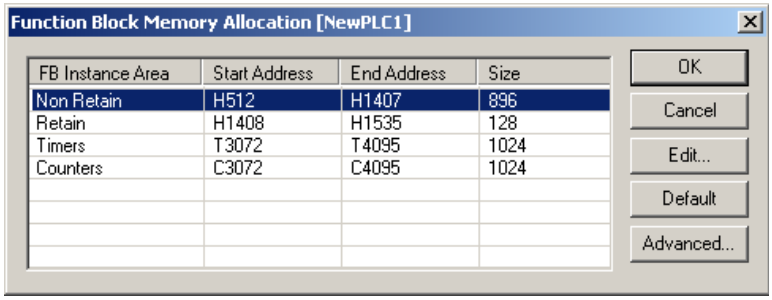
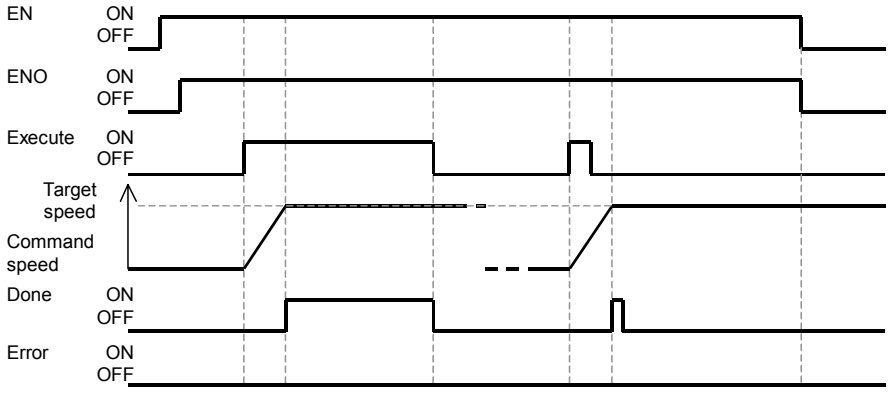
Output Variables

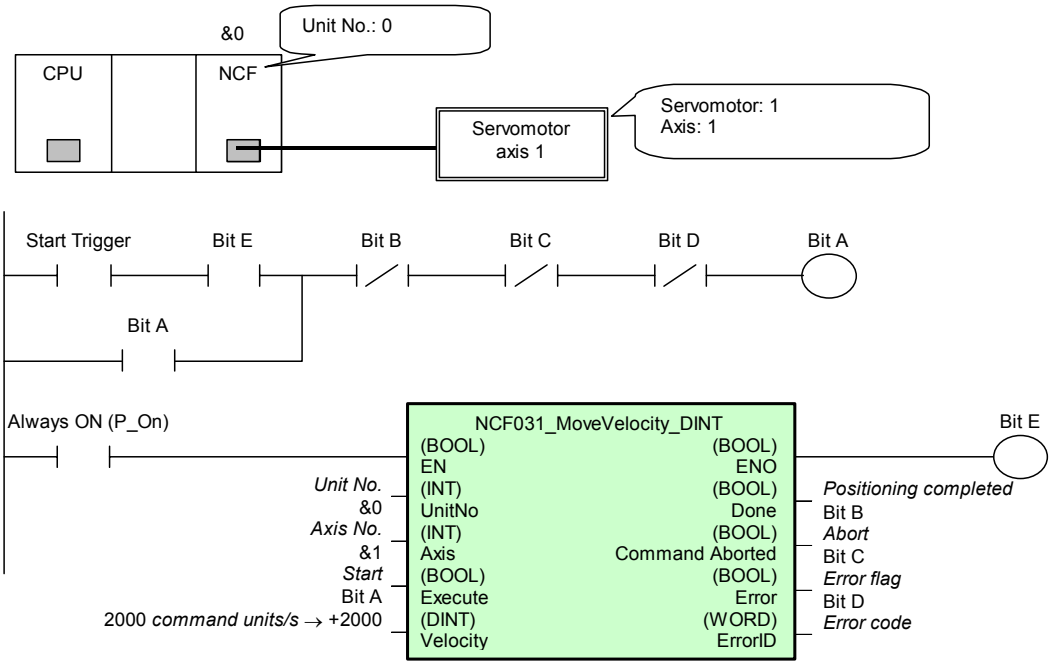
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Speed reached flag	Invelocity	BOOL		Turns ON when the target speed has been reached.
Abort	CommandAborted	BOOL		Turns ON when - the other Move command done (Duplicate Move) - Stopped with DECELERATION STOP or EMERGENCY STOP. - Executed SERVO UNLOCK on an operating axis. - Attempted to execute FB while SERVO UNLOCK, DECELERATION STOP, or EMERGENCY STOP Bit is ON.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -031	Speed Control: _NCF031_MoveVelocity_DINT

Basic function	Controls the speed.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF031_MoveVelocity_DINT10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, speed control is started for the axis of the specified Unit No. and Axis No. using the specified speed command for speed control. The Speed Reached Flag (Done) is turned ON when the target speed specified in the FB has been reached. This flag will be turned OFF if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If the input to *Execute* turns ON again during the speed control operation, a duplicate start status will exist and a speed control will be performed for the speed specified for *Velocity* from the point at which *Execute* turned ON. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Restrictions Other	• An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
Application example	Operation is started using speed control for axis 1 of the Servomotor connected to the Position Control Unit with unit number 0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 10-5 Speed Control 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑: Speed control is started.
Speed command	Velocity	DINT	+0	-199999 to +199999	Specify the target speed. The unit is 0.001% of the maximum speed of the motor being used. The actual speed of the operation will change if the Speed Command is changed while Execute is ON.

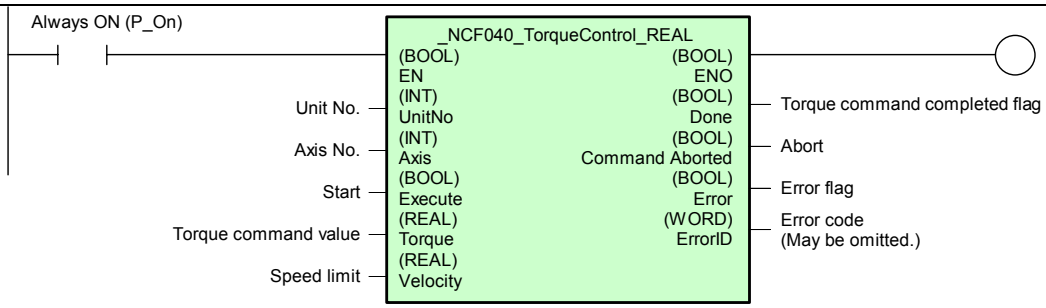
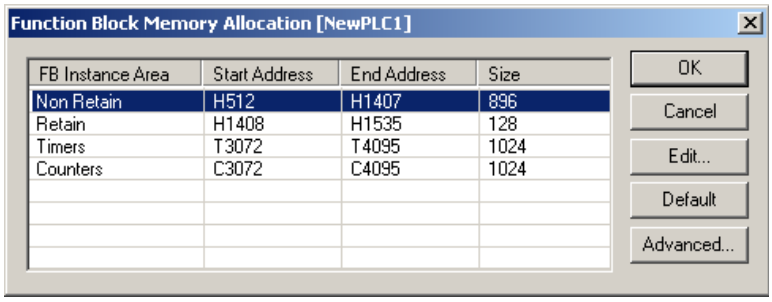
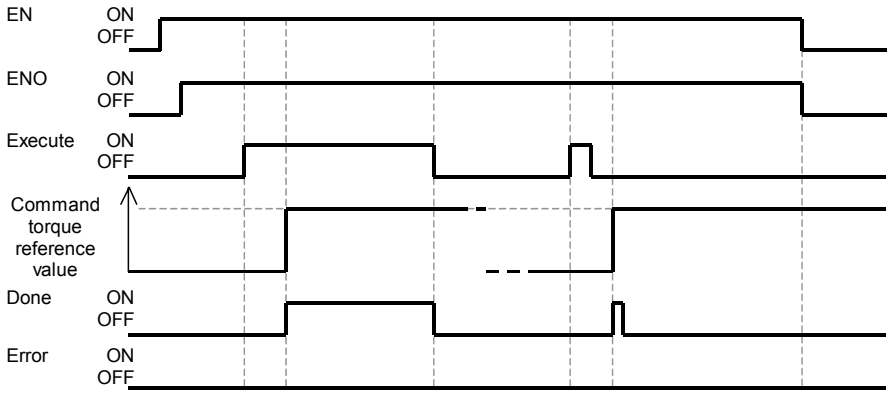
Output Variables

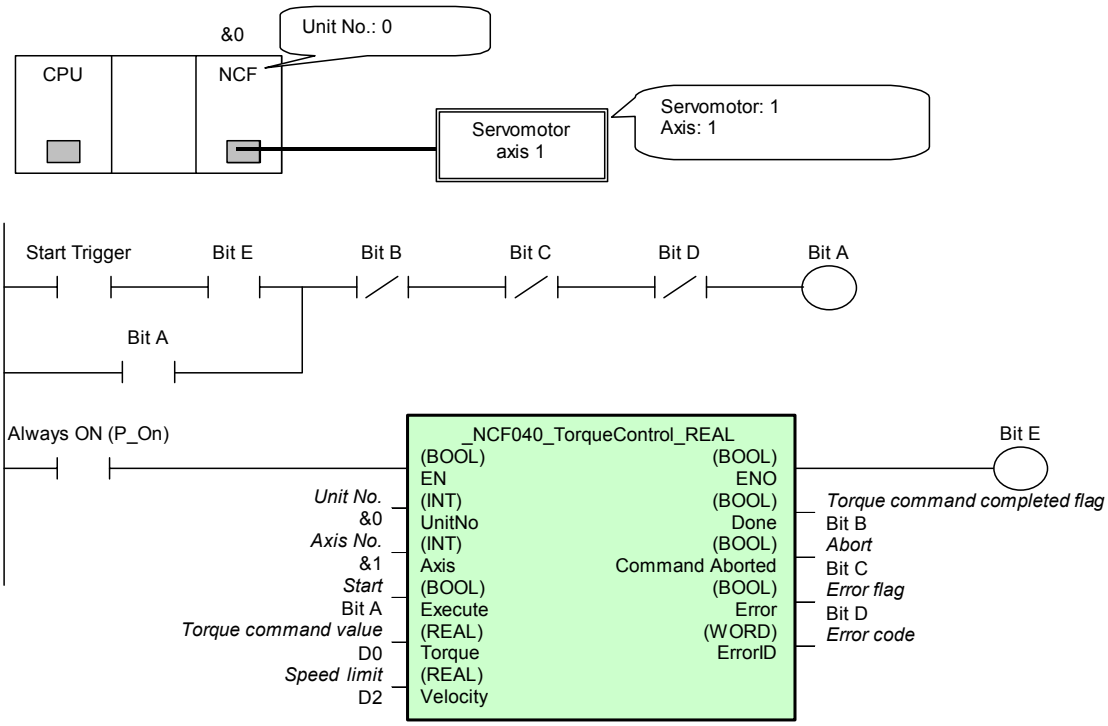
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Speed reached flag	Invelocity	BOOL		Turns ON when the target speed has been reached.
Abort	CommandAborted	BOOL		Turns ON when the other Move command done (Duplicate Move) - Stopped with DECELERATION STOP or EMERGENCY STOP. - Executed SERVO UNLOCK on an operating axis. - Attempted to execute FB while SERVO UNLOCK, DECELERATION STOP, or EMERGENCY STOP Bit is ON.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -040	Torque Control: _NCF040_TorqueControl_REAL

Basic function	Controls torque.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF040_TorqueControl_REAL10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, torque control for the axis of the specified Unit No. and Axis No. is started using the specified torque command value. The *Speed Limit* can be used to specify the maximum speed during torque control. The Torque Command Completed Flag (Done) is turned ON when the Servo Driver accepts the torque command value for this FB. This flag will be turned OFF if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If the input to *Execute* turns ON again during the torque control operation, a duplicate start status will exist and torque control will be performed for the torque specified for *Torque* from the point at which *Execute* turned ON. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Restrictions Other	• An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
Application example	Operation is started for an absolute move for axis 1 of the Servomotor connected to the Position Control Unit with a unit number of 0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 10-6 Torque Control 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑ : Torque control is started.
Torque command value	Torque	REAL	+0.0	-199.999 to +199.999	Specify the target torque. The unit is % of the rated torque of the motor being used. The actual torque of the operation will change if the Torque Command Value is changed while Execute is ON.
Speed limit	Velocity	REAL	+0.0	+0.0 to +199.999	Specify the target speed. The unit is % of the maximum speed of the motor being used.

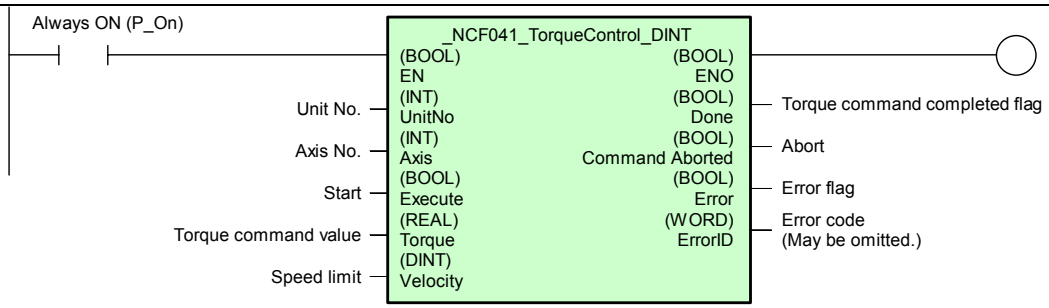
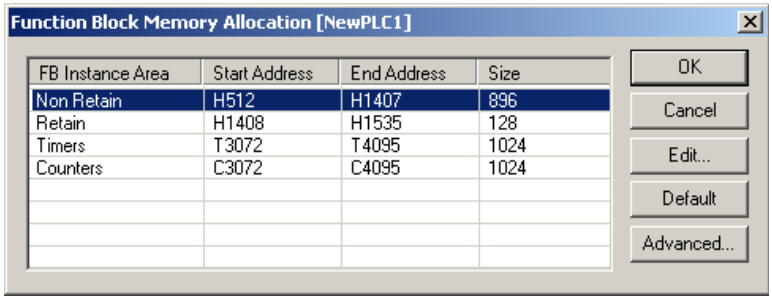
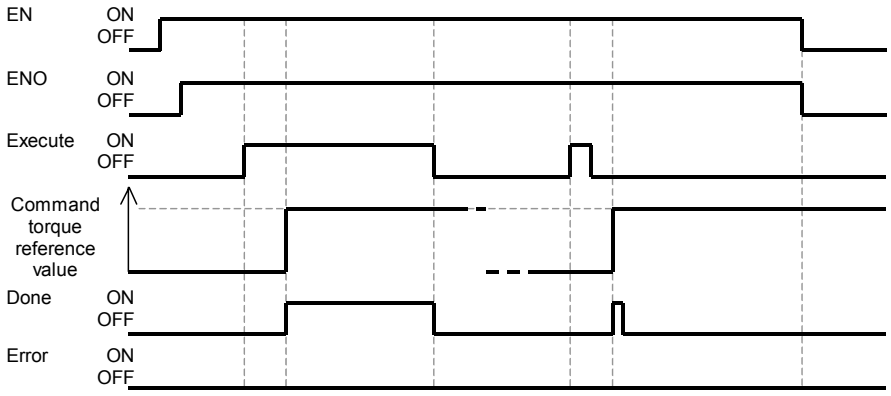
Output Variables

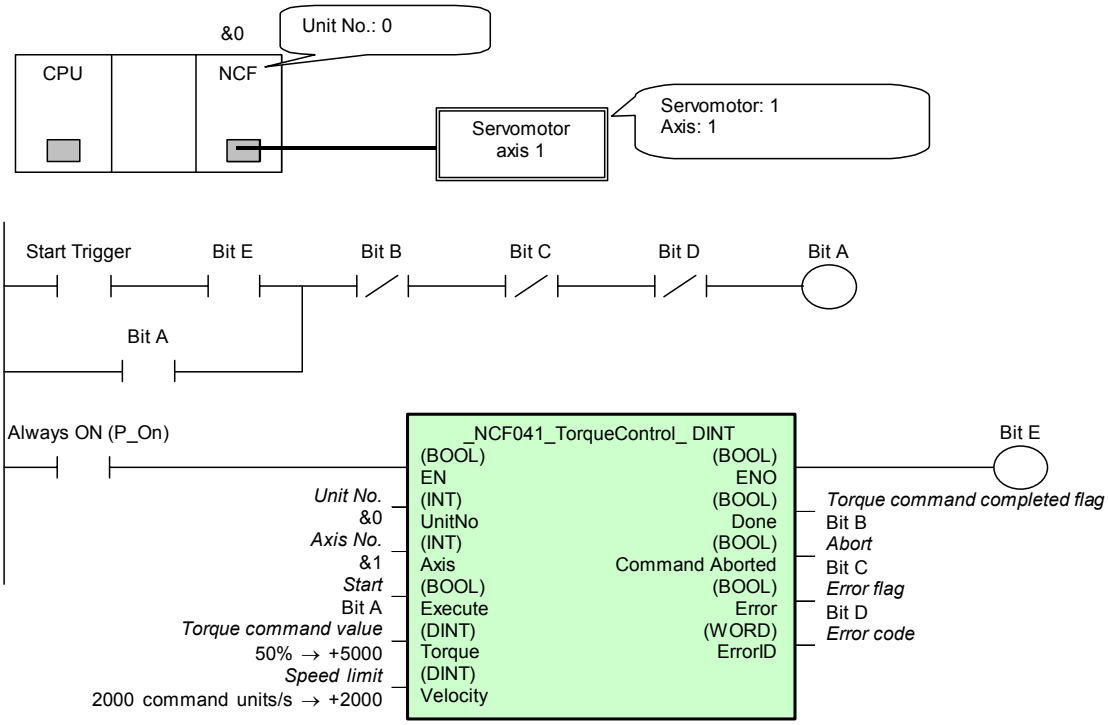
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Torque command completed flag	Done	BOOL		Turns ON when the torque command has been accepted.
Abort	CommandAborted	BOOL		Turns ON when - the other Move command done (Duplicate Move) - Stopped with DECELERATION STOP or EMERGENCY STOP. - Executed SERVO UNLOCK on an operating axis. - Attempted to execute FB while SERVO UNLOCK, DECELERATION STOP, or EMERGENCY STOP Bit is ON.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -041	Control Torque: _NCF041_TorqueControl_DINT

Basic function	Controls torque.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF041_TorqueControl_DINT10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, torque control for the axis of the specified Unit No. and Axis No. is started using the specified torque command value. The *Speed Limit* can be used to specify the maximum speed during torque control. The Torque Command Completed Flag (Done) is turned ON when the Servo Driver accepts the torque command value for this FB. This flag will be turned OFF if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If the input to *Execute* turns ON again during the torque control operation, a duplicate start status will exist and torque control will be performed for the torque specified for *Torque* from the point at which *Execute* turned ON. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Restrictions Other	• An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
Application example	Operation is started using torque control for axis 1 of the Servomotor connected to the Position Control Unit with unit number 0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 10-6 Torque Control 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑: Torque control is started.
Torque command value	Torque	DINT	+0	-199999 to +199999	Specify the target torque. The unit is 0.001% of the rated torque of the motor being used. The actual torque of the operation will change if the Torque Command Value is changed while Execute is ON.
Speed limit	Velocity	DINT	+0	+0 to +199999	Specify the target speed. The unit is 0.001% of the maximum speed of the motor being used.

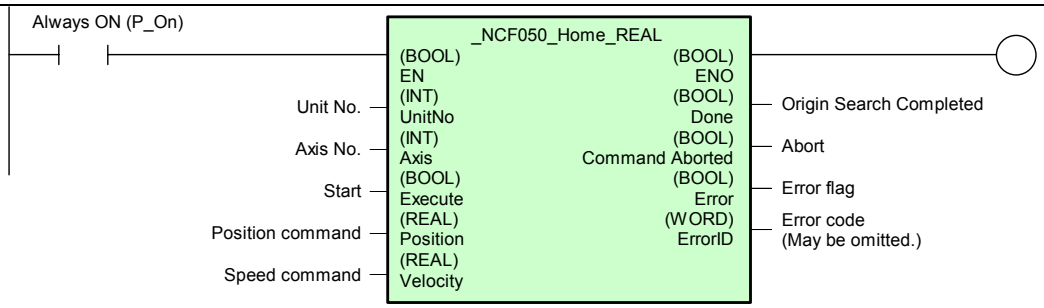
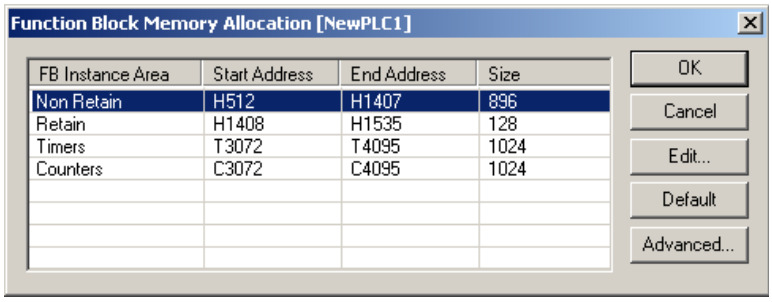
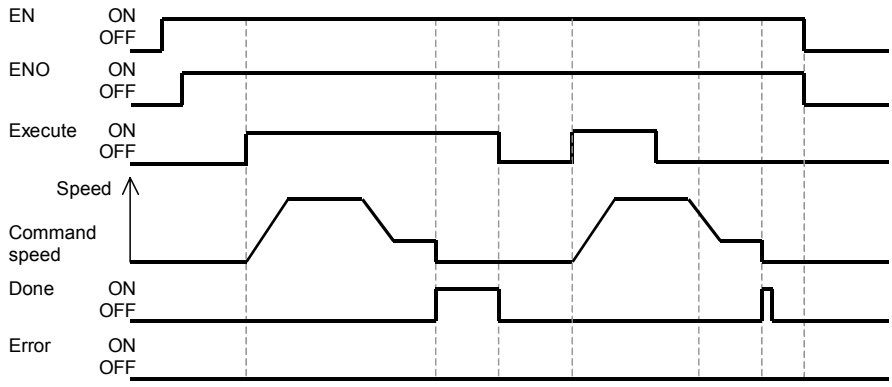
Output Variables

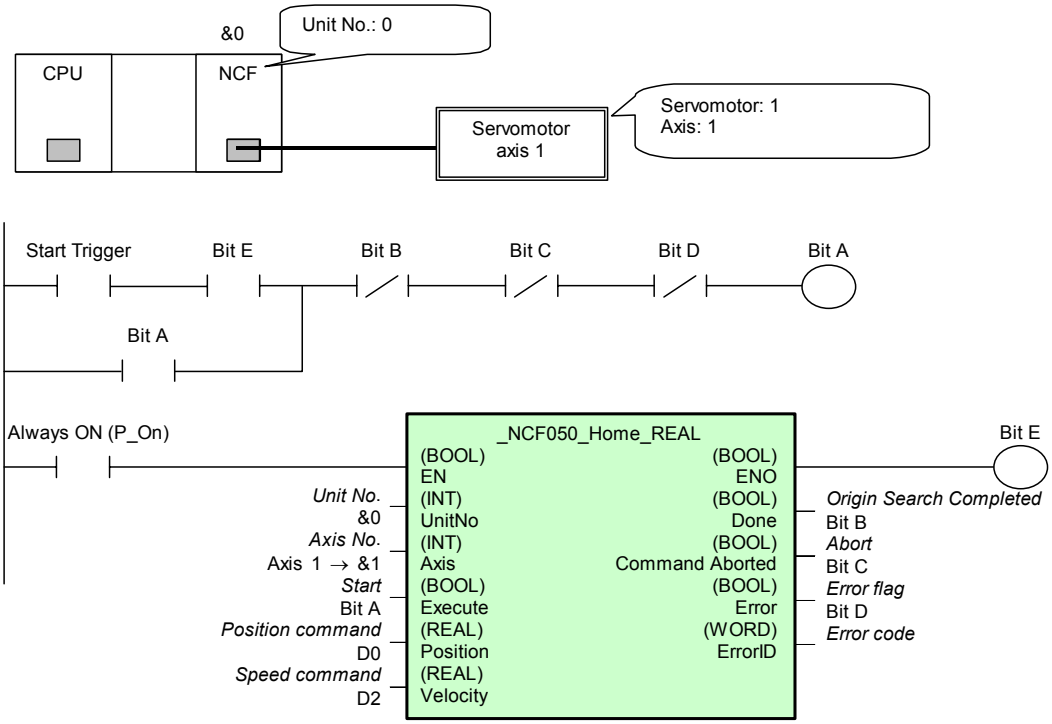
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Torque command completed flag	Done	BOOL		Turns ON when the torque command has been accepted.
Abort	CommandAborted	BOOL		Turns ON when the other Move command done (Duplicate Move) - Stopped with DECELERATION STOP or EMERGENCY STOP. - Executed SERVO UNLOCK on an operating axis. - Attempted to execute FB while SERVO UNLOCK, DECELERATION STOP, or EMERGENCY STOP Bit is ON.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -050	Origin Search: _NCF050_Home_REAL

Basic function	Performs an origin search operation to establish the origin.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF050_Home_REAL10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, a origin search operation for the axis of the specified Unit No. and Axis No. is started using the specified *command speed* value as the initial search speed. When the search operation is completed, the preset position preset operation is executed and the present position is set to the value specified in the *position command.* The present value preset operation is performed even if the *position command* is set to 0. The Origin Search Completed Flag (Done) is turned ON when the present position preset operation for the FB has been completed. This flag will not be turned ON if operation is canceled for a deceleration stop or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred.  Reference This FB executes the origin search and present value preset functions of the Position Control Unit. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Restrictions Other	• The following cannot be specified for this FB: acceleration/deceleration curves, forward torque limit, and reverse torque limit. If any of these functions is required, specify them in advance outside the FB. • If the software limits are enabled, so not set the origin at a software upper or lower limit. The FB may not end depending on the specifications of the Servo Drive. • An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
Application example	An origin search is performed for axis 1 of the Servomotor connected to the Position Control Unit with a unit number of 0. When the origin search has been completed, the preset position preset operation is executed. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 8-3 Present Value Preset 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑ : Origin search started
Position command	Position	REAL	+0.0	-2.147484e+009 to +2.147484e+009	Specify the numeric value of to set for the present position. Unit: Command units
Speed command	Velocity	REAL	+0.0	+0.0 to +2.147484e+009	Specify the target speed. Unit: Command units/s

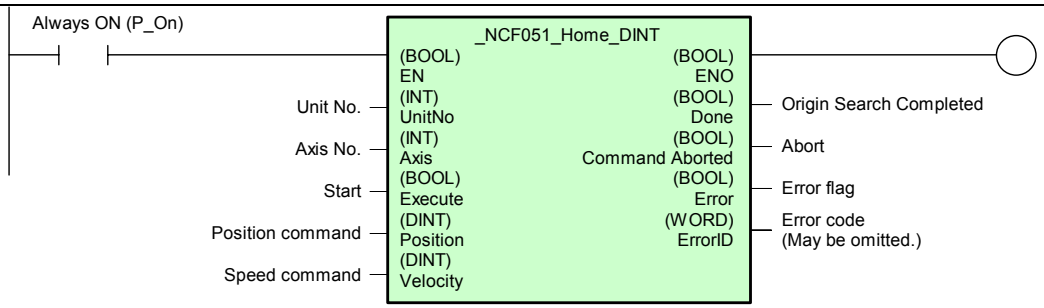
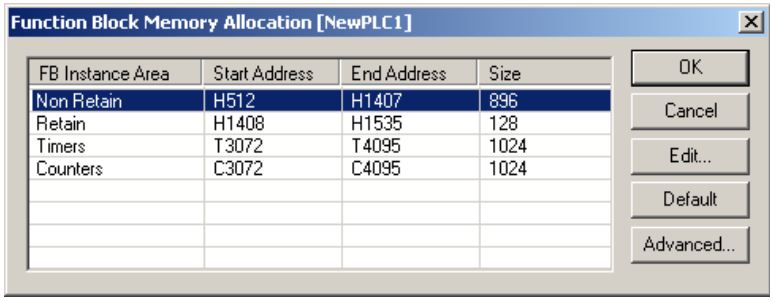
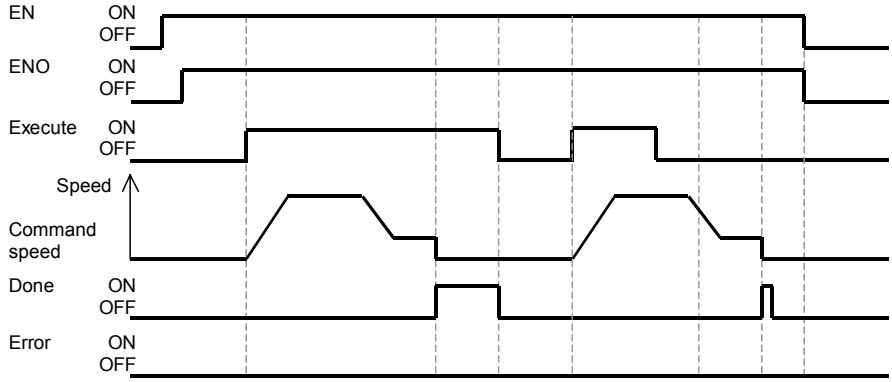
Output Variables

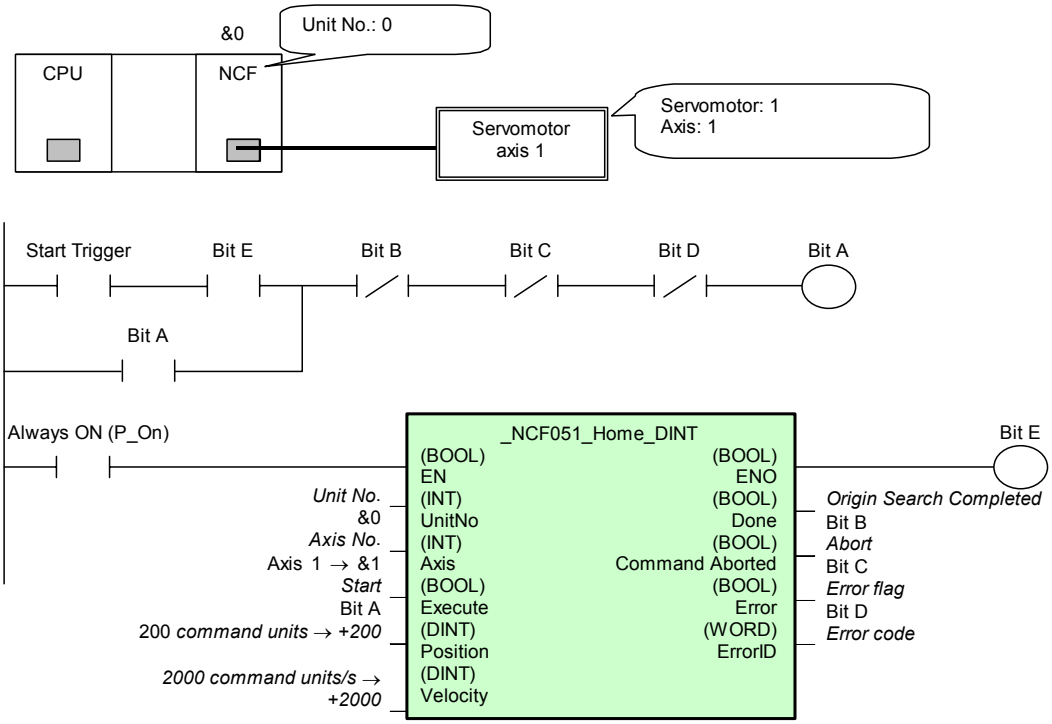
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Origin Search Completed	Done	BOOL		Turns ON when the origin search operation has been completed.
Abort	CommandAborted	BOOL		1 (ON): Abort - Stopped an operating axis with DECELERATION STOP or EMERGENCY STOP. - Executed SERVO UNLOCK on an operating axis. - Attempted to execute FB while SERVO UNLOCK, DECELERATION STOP, or EMERGENCY STOP Bit is ON.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -051	Origin Search: _NCF051_Home_DINT

Basic function	Performs an origin search operation to establish the origin.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF051_Home_DINT10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, an origin search operation for the axis of the specified Unit No. and Axis No. is started using the specified *command speed* value as the initial search speed. When the search operation is completed, the preset position preset operation is executed and the present position is set to the value specified in the *position command.* The present value preset operation is performed even if the *position command* is set to 0. The Origin Search Completed Flag (Done) is turned ON when the present position preset operation for the FB has been completed. This flag will not be turned ON if operation is canceled for a deceleration stop or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for errors in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred.  Reference This FB executes the origin search and present value preset functions of the Position Control Unit. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Restrictions Other	• The following cannot be specified for this FB: acceleration/deceleration curves, forward torque limit, and reverse torque limit. If any of these functions is required, specify them in advance outside the FB. • If the software limits are enabled, do not set the origin at the upper or lower software limit. The FB may not end depending on the specifications of the Servo Drive. • An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
Application example	An origin search is performed for axis 1 of the Servomotor connected to the Position Control Unit with unit number 0. A preset position preset operation is executed after the search has been completed. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 8-3 Present Value Preset 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑: Origin search started
Position command	Position	DINT	+0	-2,147,483,648 to +2,147,483,647	Specify the numeric value of to set for the present position. Unit: Command units
Speed command	Velocity	DINT	+0	+0 to +2,147,483,647	Specify the target speed. Unit: Command units/s

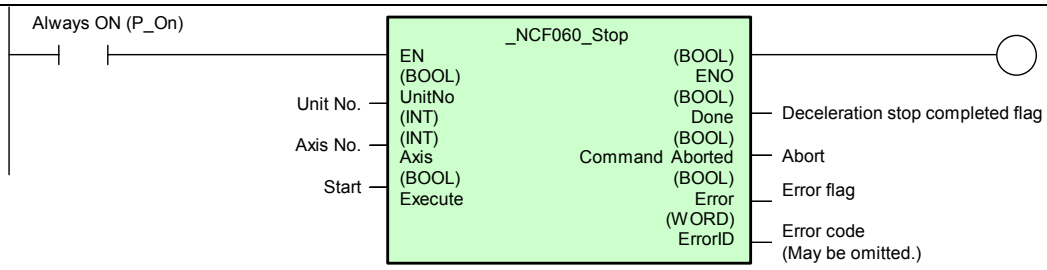
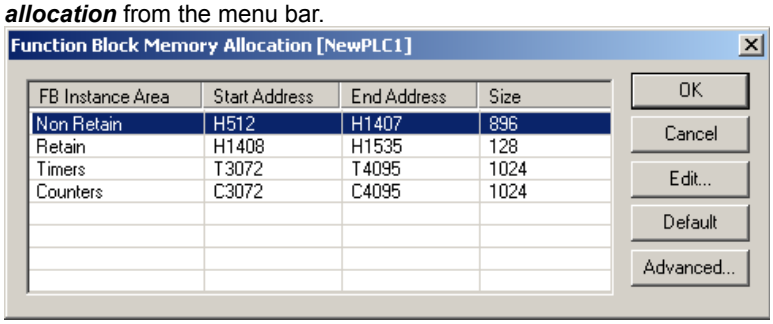
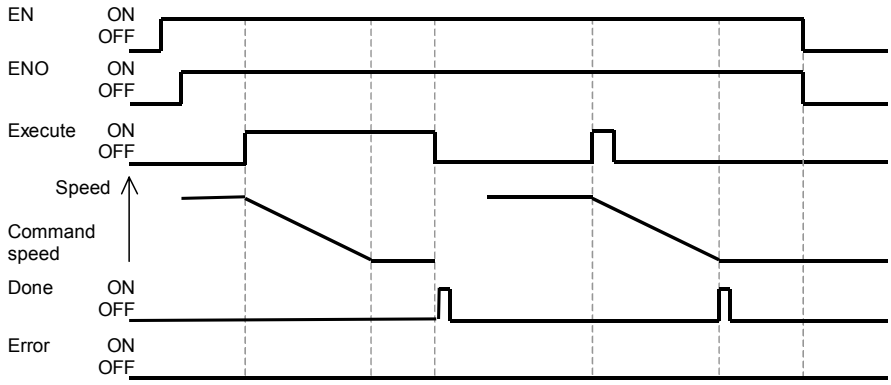
Output Variables

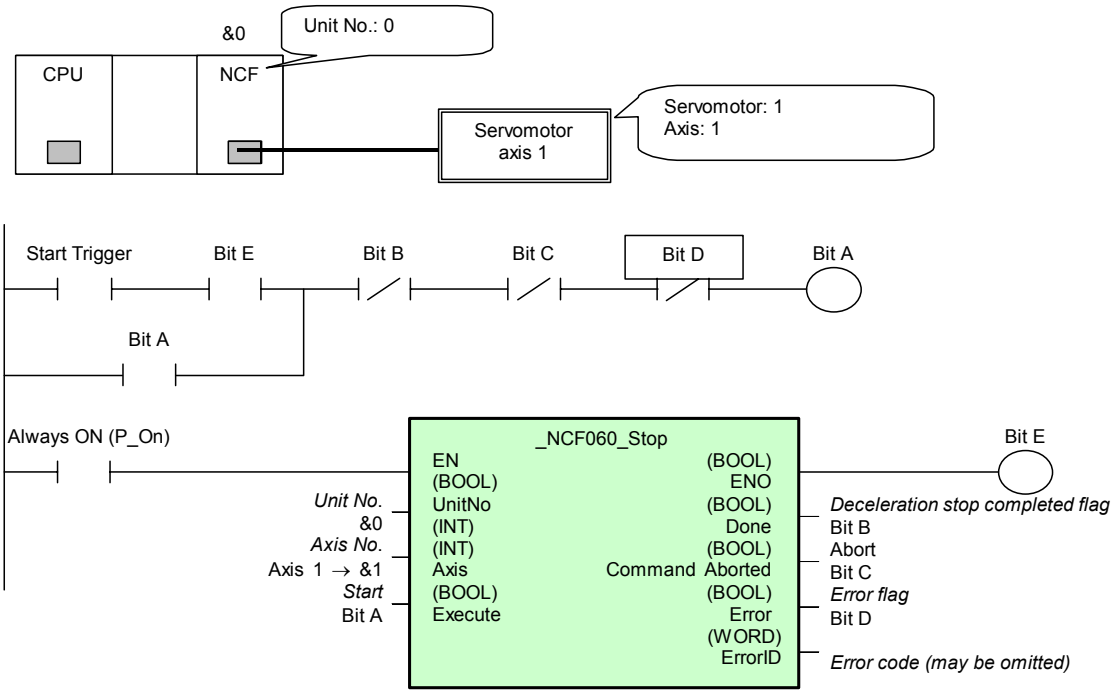
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Origin Search Completed	Done	BOOL		Turns ON when the origin search operation has been completed.
Abort	CommandAborted	BOOL		1 (ON): Abort -Stopped with DECELERATION STOP or EMERGENCY STOP. -Executed SERVO UNLOCK on an operating axis.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -060	Stop Deceleration: _NCF060_Stop

Basic function	Decelerates an axis to a stop.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF060_Stop10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, a deceleration stop is started for the axis of the specified Unit No. and Axis No. An operation command will not be accepted while the Start Bit (Execute) is ON. Refer to the *Related Manuals* for details. The Deceleration Stop Completed Flag (Done) is turned ON when the deceleration stop has been completed for this FB. This flag will also be turned ON if an error results in an emergency stop. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. Reference This FB executes the deceleration stop function of the Position Control Unit. Refer to the *Related Manuals* for details. 
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Restrictions OTher	● An error may occur if Execute is turned ON before ENO is turned ON. ● This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). ● There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
Application example	A deceleration stop is performed for axis 1 of the Servomotor connected to the Position Control Unit with unit number 0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 10-9 Stop Functions 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑ : A deceleration stop is started.

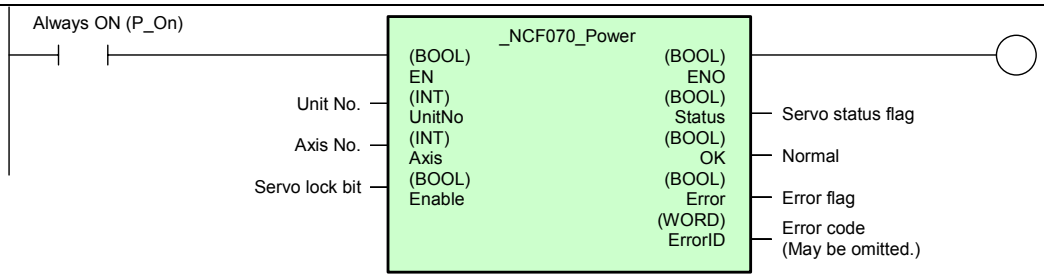
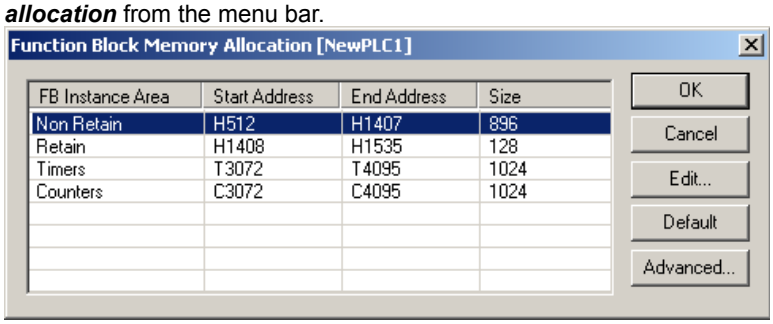
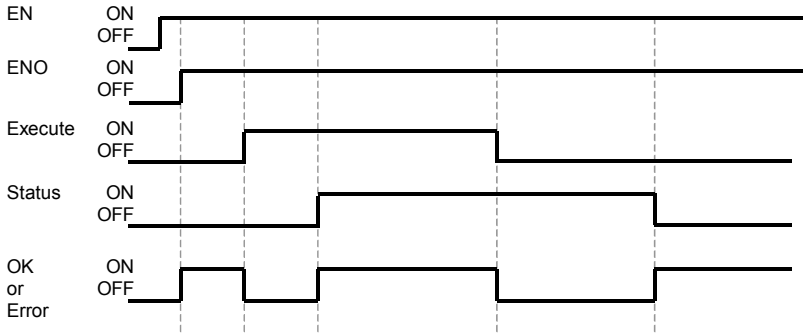
Output Variables

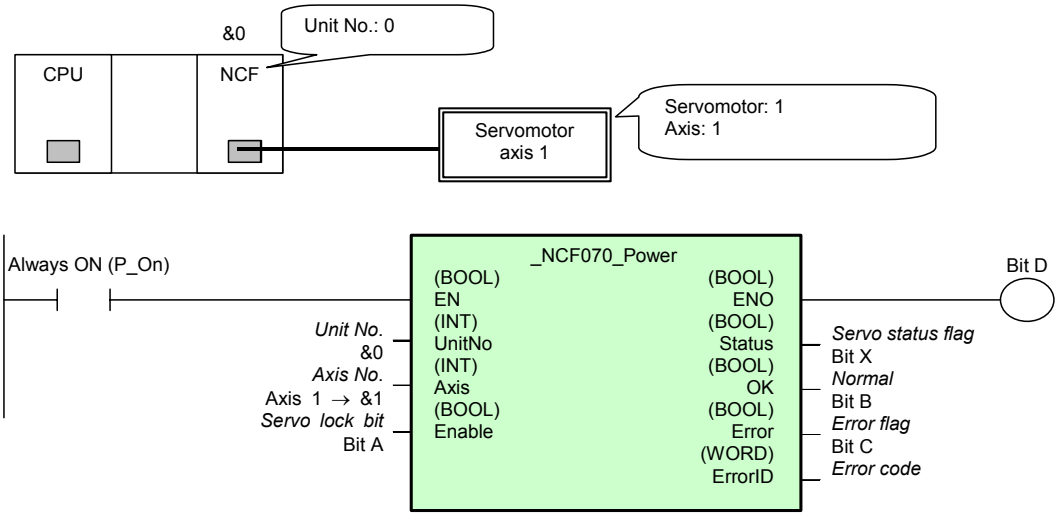
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Deceleration stop completed flag	Done	BOOL		Turns ON when the deceleration stop operation has been completed.
Abort	Command Aborted	BOOL		1 (ON): Abort -Stopped an operating axis with EMERGENCY STOP. -Executed SERVO UNLOCK on an operating axis.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -070	Operation Command: _NCF070_Power

Basic function	Turns the main power circuit ON and OFF.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF070_Power10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, locking the servo is started for the axis of the specified Unit No. and Axis No. When the Start Bit (Execute) turns OFF, unlocking the servo is started Refer to the *Related Manuals* for details. The Servo Status Flag (Status) is turned ON when command reception has been completed for this FB. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Restrictions Other	• An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.

Application example	The servo is locked for axis 1 of the Servomotor connected to the Position Control Unit with unit number 0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 10-1 Servo Lock/Unlock 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Servo lock bit	Enable	BOOL	0 (OFF)		↑: Servo lock started ↓: Servo unlock started

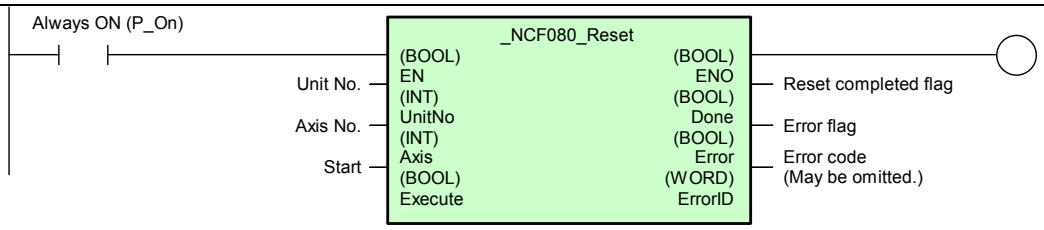
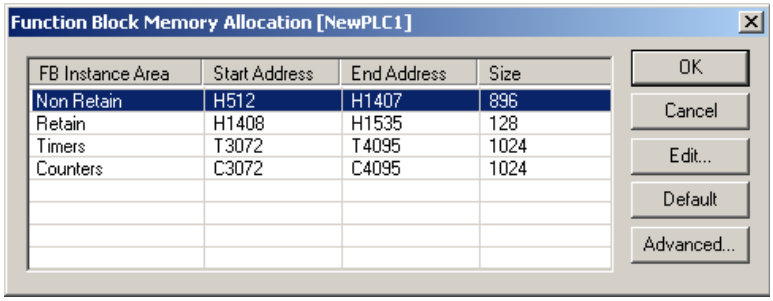
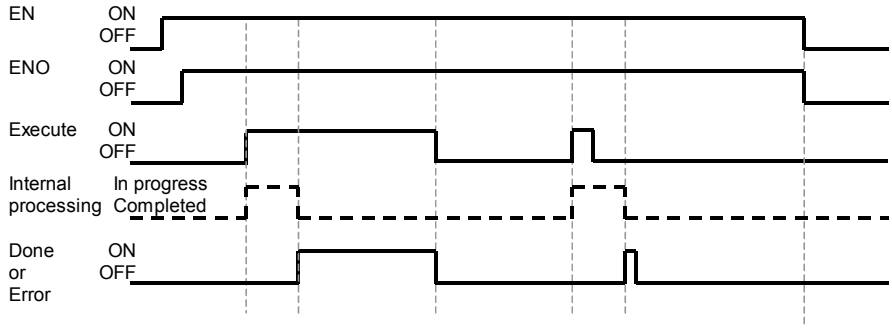
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Servo status flag	Status	BOOL		1 (ON): Servo driver running 0 (OFF): Servo driver no running
Normal	OK	BOOL		Turns ON when the status agrees with the status specified by the command.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

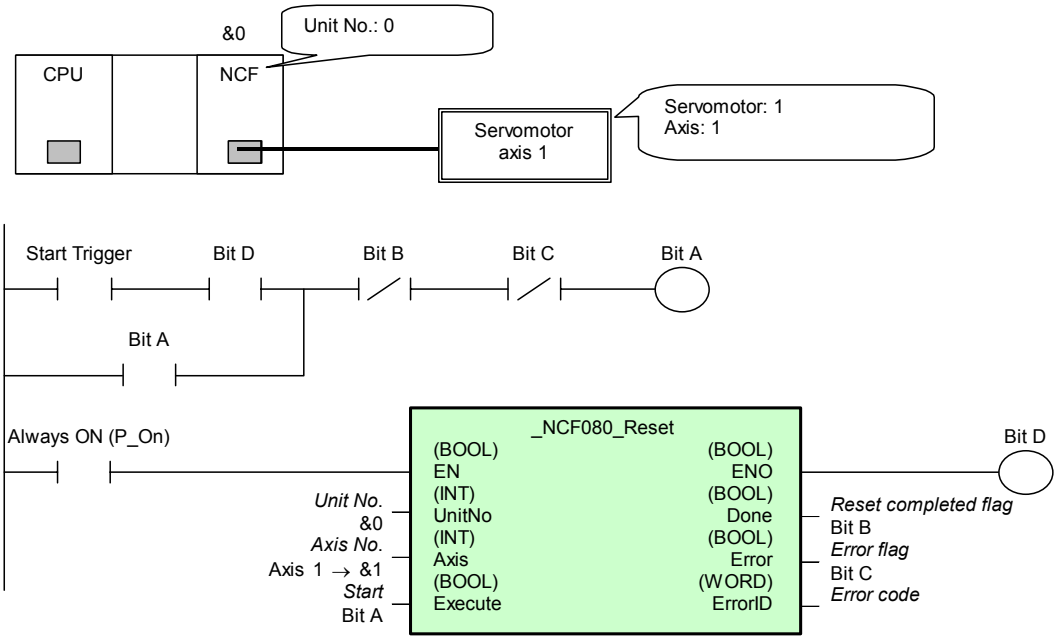
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -080	Reset Axis Error: _NCF080_Reset

Basic function	Resets and axis error.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF080_Reset10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the Start Bit (Execute) turns ON, an error is reset for the axis of the specified Unit No. and Axis No. The Reset Completed Flag (Done) will turn ON when resetting the error has been completed and commands can be accepted. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for errors in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the reset operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred.  Reference This FB executes the error reset function of the Position Control Unit. Refer to the *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Restrictions Other	• An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.

Application example	An axis error is reset for axis 1 of the Servomotor connected to the Position Control Unit with unit number 0.
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 12-4 Error Codes



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0 (OFF)		↑: Resetting the error started.

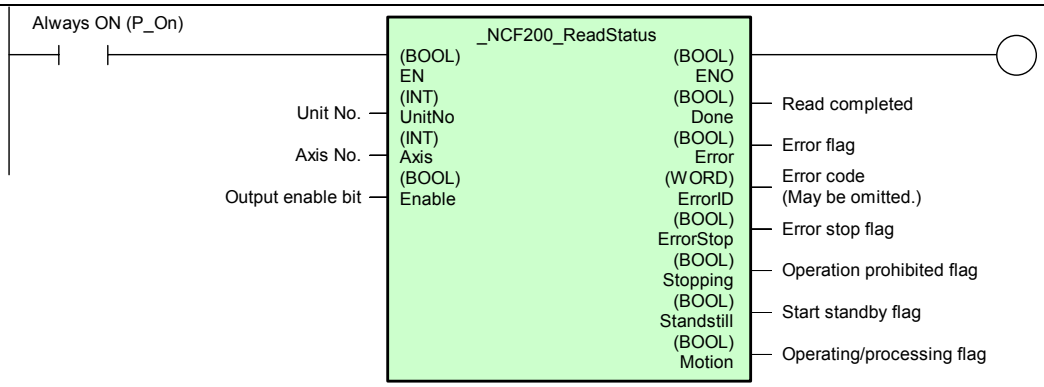
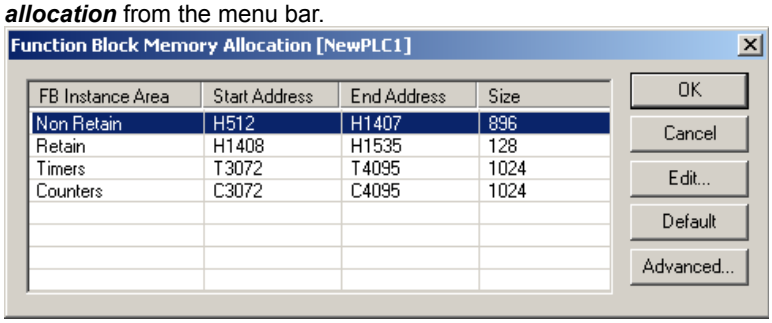
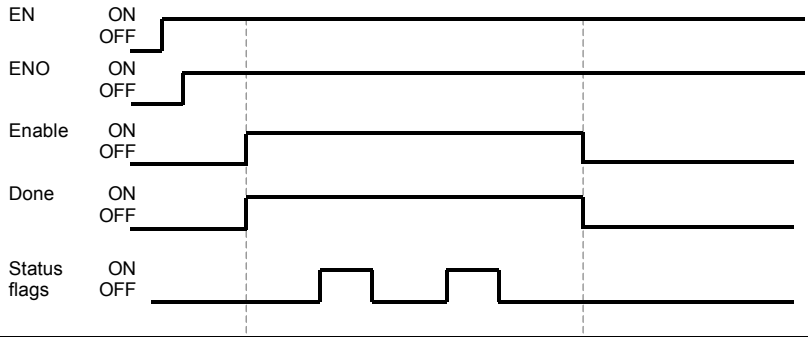
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Reset completed flag	Done	BOOL		Turns ON when the error reset operation has been completed.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

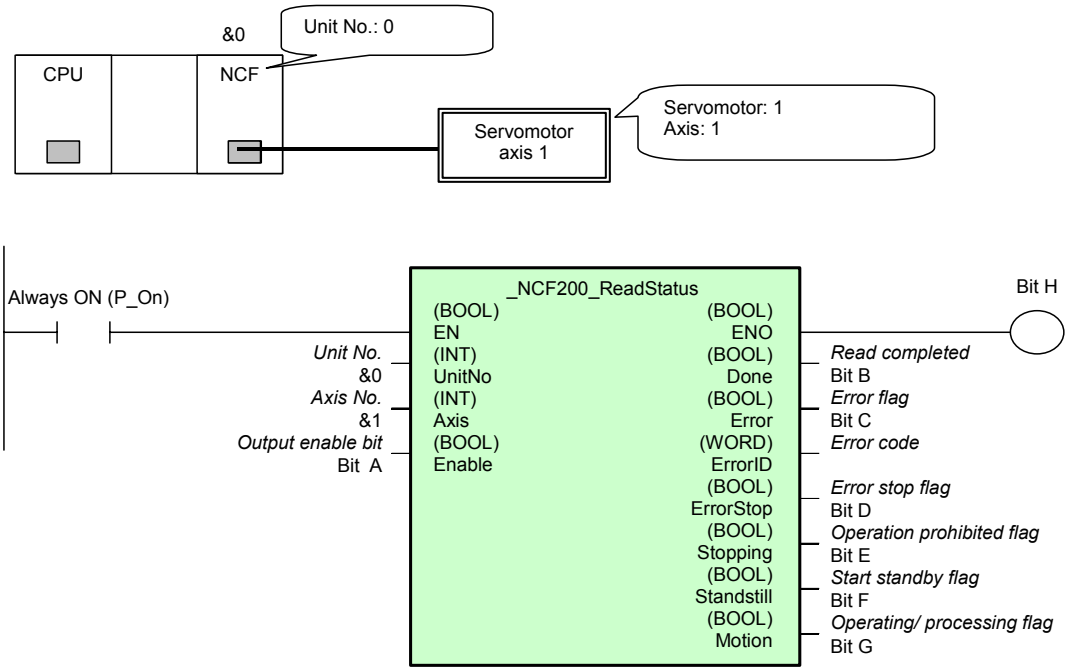
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -200	Read Status: _NCF200_ReadStatus

Basic function	Reads the status of an axis.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF200_ReadStatus10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	The status of the axis of the specified Unit No. and Axis No. is continuously updated while the Output Enable Bit (Enable) is ON. When the Output Enable Bit (Enable) turns OFF, the status is reset. The Read Completed Flag (Done) turns ON when the status data is valid. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. The Error Flag will actually be turned ON only when the unit number or axis number is not in range. The status for this FB is output combining the status of the CIO Area bits and words allocated to the Position Control Unit. This status will be reset then the Output Enable Bit (Enable) turns OFF. 

Output variable	Status	Output conditions
ErrorStop	Stopped for an error.	Error Flag is ON.
Stopping	Stopped for a deceleration stop or emergency stop and operation prohibited.	Deceleration Stop or Emergency Stop ON, Stop Executed ON, and Error Flag OFF.
StandStill	Waiting for start command.	Deceleration Stop and Emergency Stop OFF, Error Flag OFF, and Busy Flag OFF.
Motion	Operating or processing command. (Including processing present position preset command, error reset command, etc.)	Positioning Operation Completed OFF and Busy Flag OFF.

EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Restrictions **Other**	● An error may occur if Execute is turned ON before ENO is turned ON. ● This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). ● There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.
Application example	Status is read from axis 1 of the Servomotor connected to the Position Control Unit with unit number 0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Output enable bit	Enable	BOOL	0 (OFF)		Turn ON to enable output. Turn OFF to reset the output.

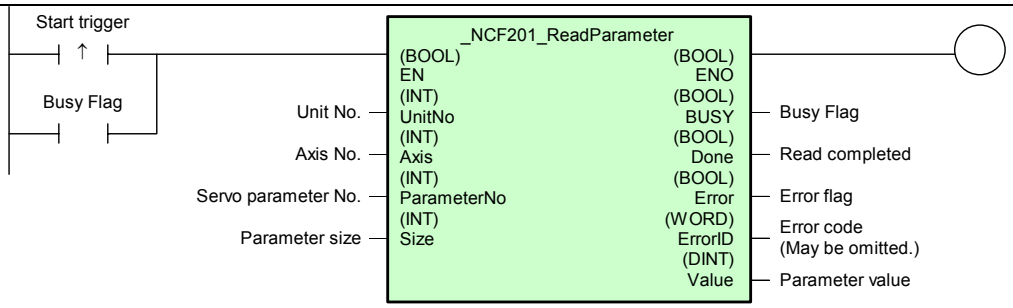
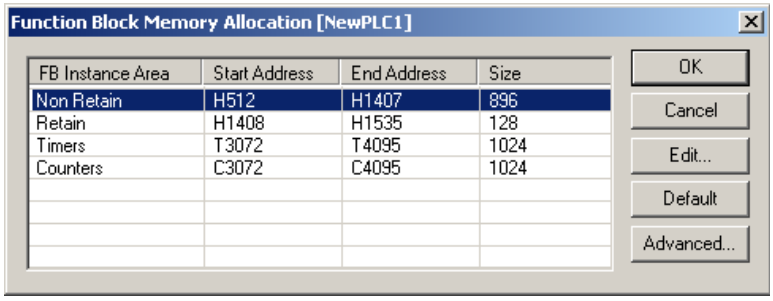
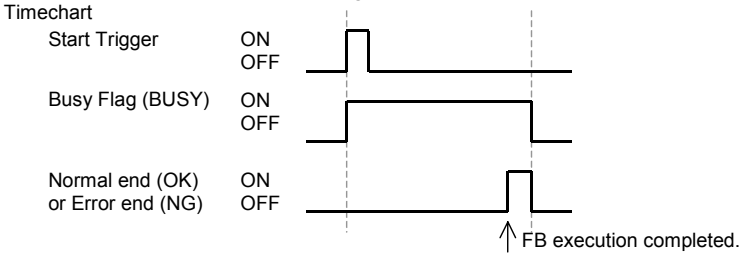
Output Variables

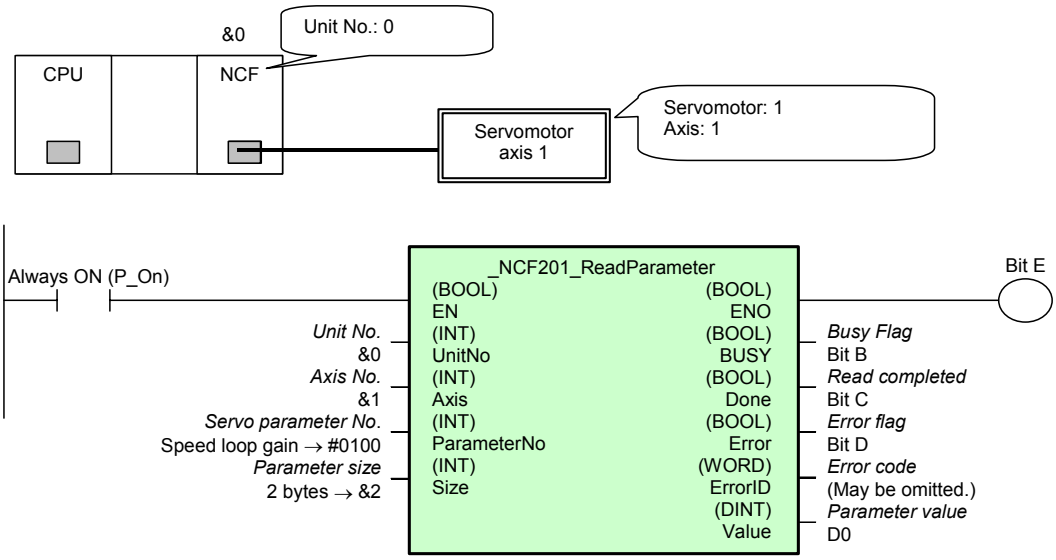
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Read completed	Done	BOOL		Turns ON when the status data is valid.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.
Error stop flag	ErrorStop	BOOL		Turns ON when operation has been stopped for an error.
Operation prohibited flag	Stopping	BOOL		Turns ON when operation has been stopped for an deceleration stop and operation is prohibited.
Start standby flag	Standstill	BOOL		Turns ON when waiting for a start command.
Operating/ processing flag	Motion	BOOL		Turns ON when an axis is moving or processing is being performed for a present position preset command, error reset command, etc.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -201	Read Parameter: _NCF201_ReadParameter

Basic function	Reads a servo parameter of an axis.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF201_ReadParameter10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the *Start Trigger* turns ON, the specified parameter value for the axis of the specified Unit No. and Axis No. is read from the Servo Driver. If the FB execution ends in an error, an error code will be output to the *Error Code.* Reference This FB executes the servo parameter transfer function of the Position Control Unit. Refer to the *Related Manuals* for details.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time.

Application example	A servo parameter (the speed loop gain) is read from axis 1 of the Servomotor connected to the Position Control Unit with unit number 0 and stored in D0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 5-3 Transferring Servo Parameters 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Servo parameter No.	ParameterNo	INT	&0		Specify the number of the Servo Driver parameter to read.
Parameter size	Size	INT	&2	&1 to &4	Specify the number of bytes in the parameter to read.

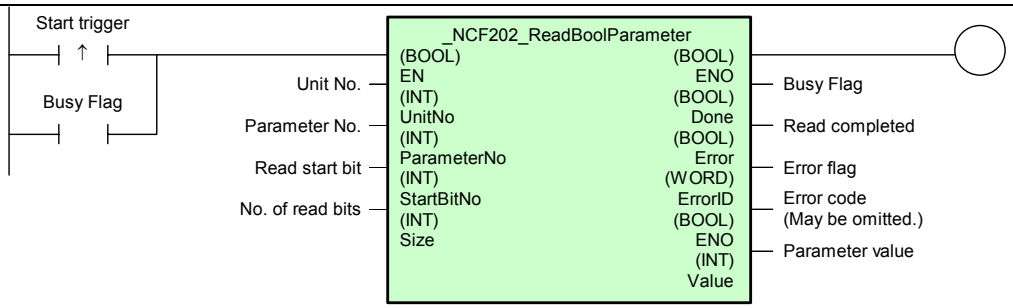
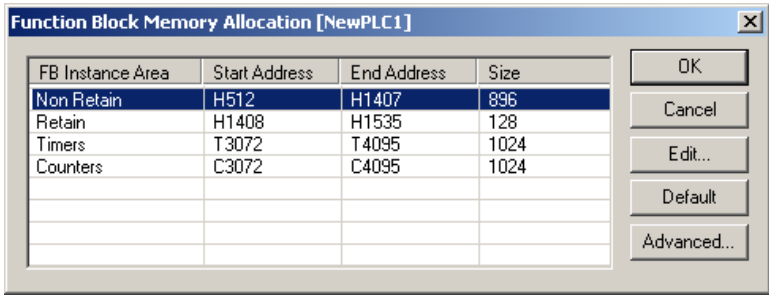
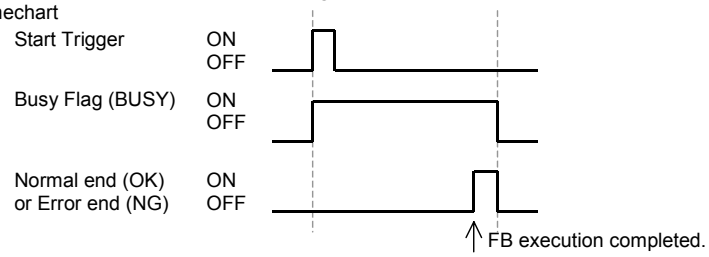
Output Variables

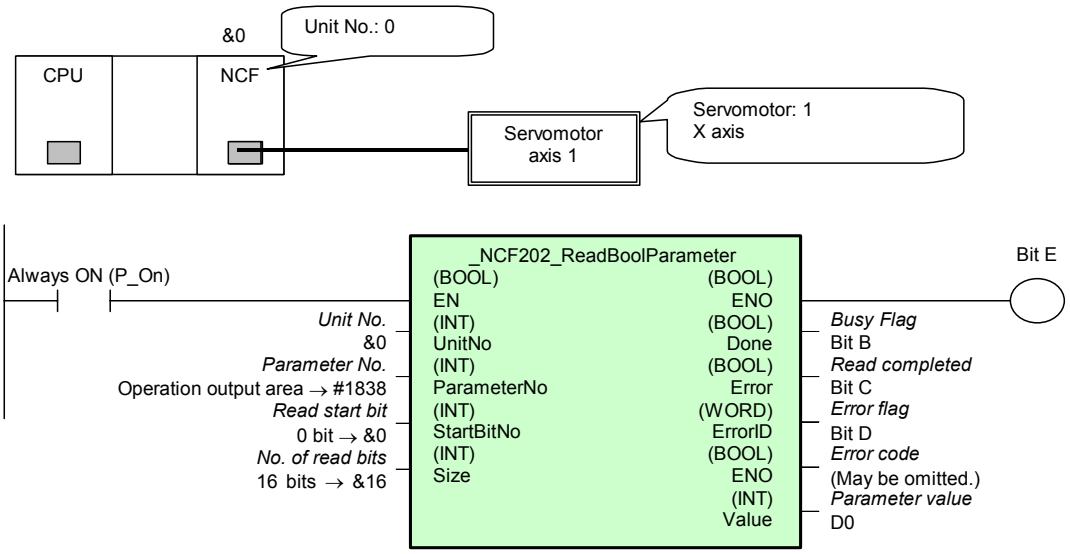
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Read completed	Done	BOOL		Turns ON for one cycle when processing ends normally.
Error flag	Error	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.
Parameter value	Value	DINT		The parameter value that was read. If the parameter size is 2 bytes, the data is stored in the lower address.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -202	Read Boolean Parameter: _NCF202_ReadBoolParameter

Basic function	Reads a Boolean parameter.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF202_ReadBoolParameter10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	When the *Start Trigger* turns ON, the parameter of the specified parameter number, read start bit, and number of read bits for the axis of the specified Unit No. and Axis No. is read. Only common parameters or individual axis parameters can be read. Only the specified number of read bits will be transferred to lowest bits of the *Parameter Value*. Other bits will be 0. If FB execution ends in an error, an error code will be output to the *Error Code*. Reference This FB executes the parameter transfer function of the Position Control Unit. Refer to the *Related Manuals* for details.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.

Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	A parameter is read (axis operation output area designation) from Position Control Unit with unit number 0 and stored in D0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 5-2 Transferring PCU Parameters 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Parameter No.	ParameterNo	INT	#0000	#1838 to #199F	Specify the address inside the Position Control Unit.
Read start bit	StartBitNo	INT	&0	&0 to &15	Specify the first bit to read in the specified parameter.
No. of read bits	Size	INT	&4	&1 to &16	Specify the number of bits to read.

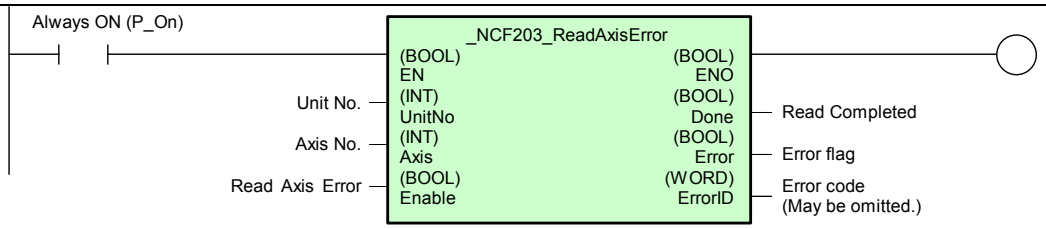
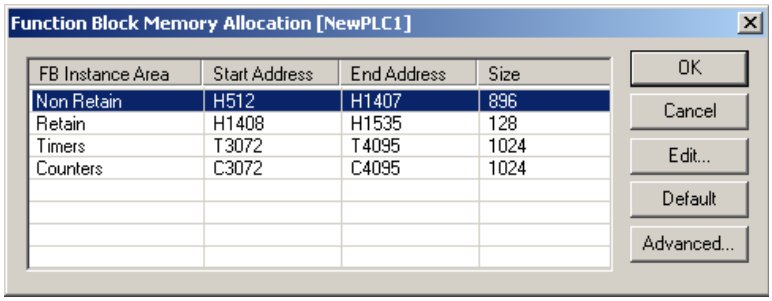
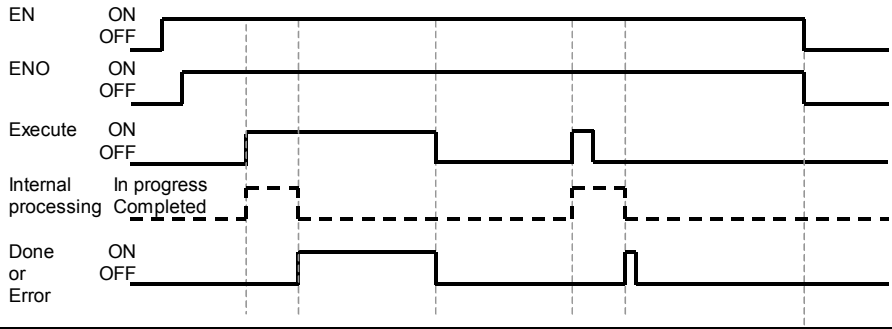
Output Variables

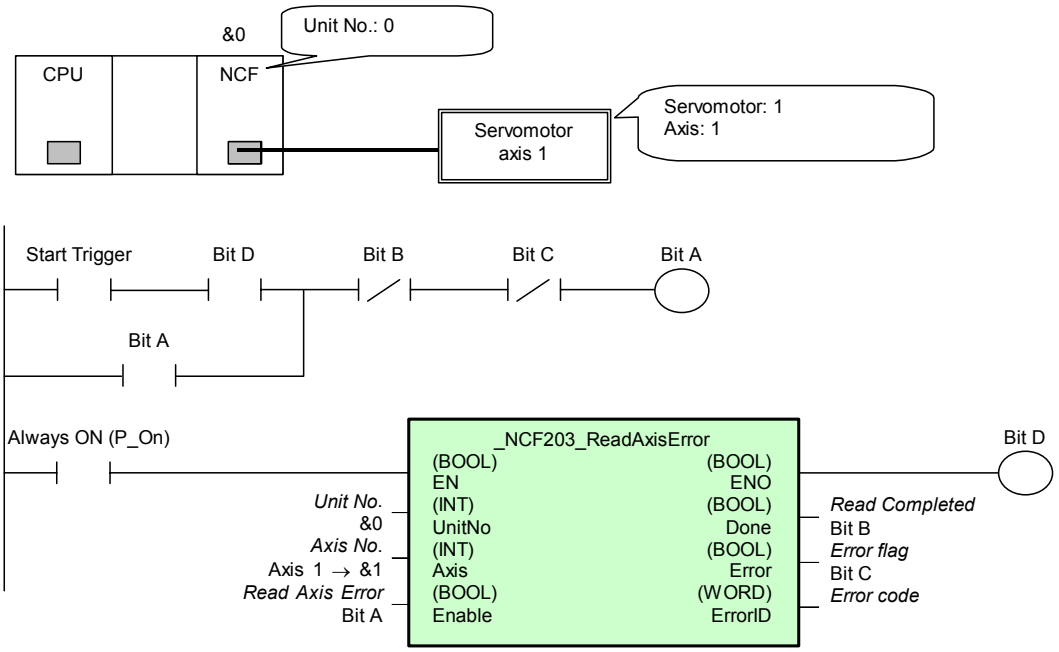
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Read completed	Done	BOOL		Turns ON for one cycle when processing ends normally.
Error flag	Error	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.
Parameter value	Value	DINT		The specified number of read bits are transferred to lowest bits of the *Parameter Value*.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -203	Read Axis Error: _NCF203_ReadAxisError

Basic function	Reads axis error information.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF203_ReadAxisError10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	Axis error information for the axis of the specified Unit No. and Axis No. is read when the Read Axis Error Bit (Enable) is turned ON. The Read Completed Flag (Done) turns ON when there is no error on the Unit. The Error Flag and the Error Code will show the status of errors for the Position Control Unit axis. The Error Flag will also be turned ON when the unit number or axis number is not in range. This status will be reset then the Read Axis Error Flag (Enable) turns OFF. 
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Restrictions Other	• The Error Flag and Error Code for this FB reflect the status of the CIO Area bits and words allocated to the Position Control Unit without alteration. • An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.

Application example	Error information is read for axis 1 of the Servomotor connected to the Position Control Unit with unit number 0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Read Axis Error	Enable	BOOL	0 (OFF)		↑: Starts reading error

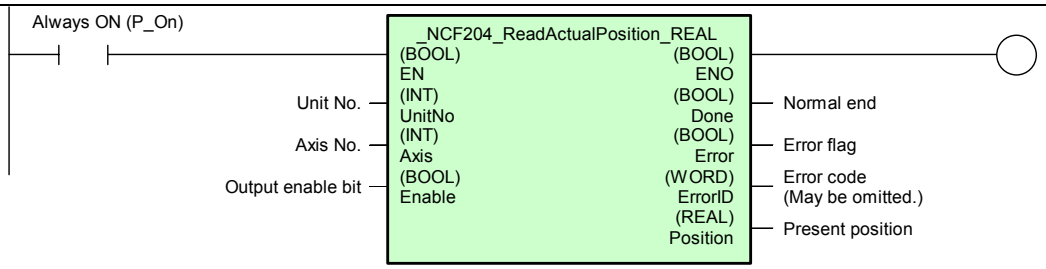
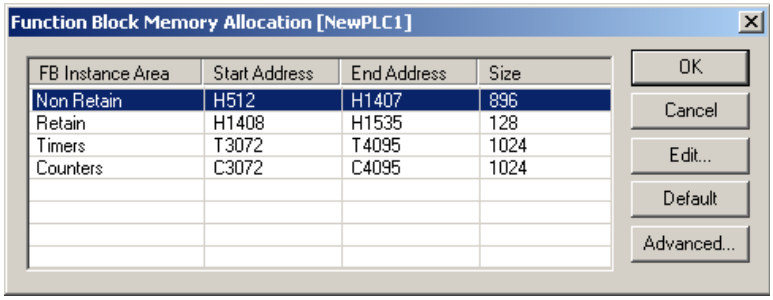
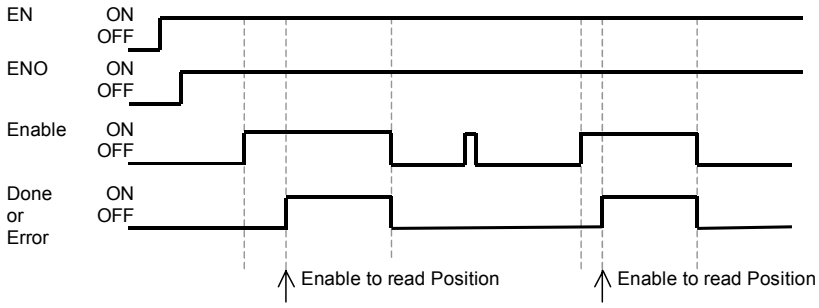
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Read Completed	Done	BOOL		1 (ON) indicates that there is no error on the specified axis.
Error flag	Error	BOOL		Turns ON when an error has occurred in the specified axis.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

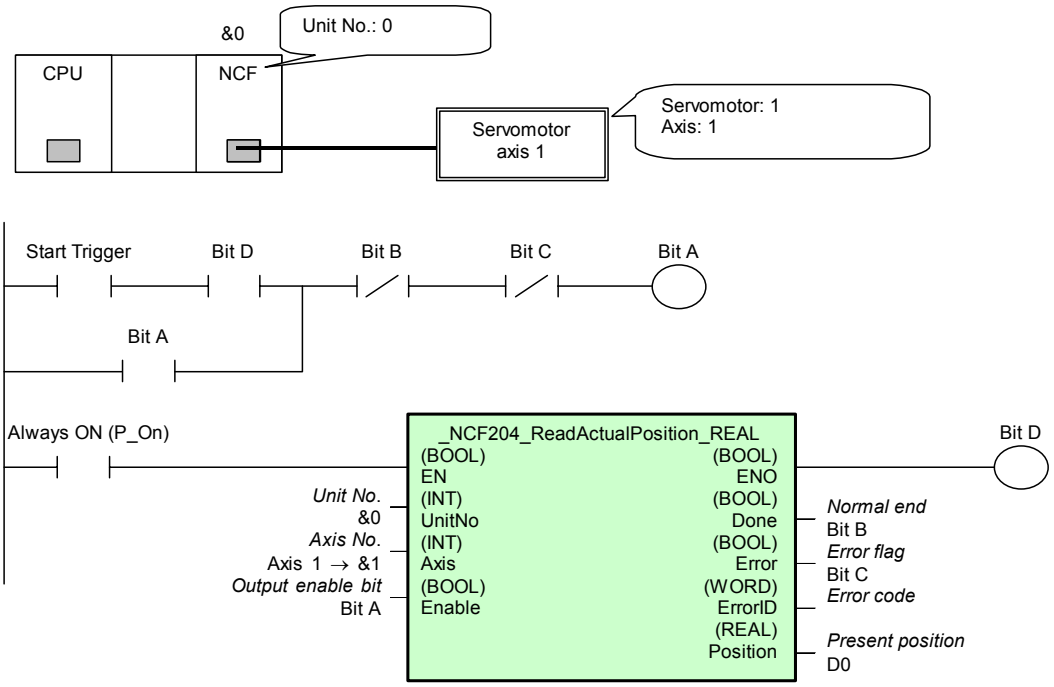
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -204	Read Present Position: _NCF204_ReadActualPosition_REAL

Basic function	Reads the present position of an axis.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF204_ReadActualPosition_REAL10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	The present position of the axis of the specified Unit No. and Axis No. is continuously updated while the Output Enable Bit (Enable) is ON. When the Output Enable Bit (Enable) turns OFF, the present value is cleared to all zeros. The Read Completed Flag (Done) turns ON when the present position data is valid. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. The Error Flag will actually be turned ON only when the unit number or axis number is not in range. This status will be reset then the Output Enable Bit (Enable) turns OFF. 
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Restrictions Other	● The Error Flag and Error Code for this FB reflect the status of the CIO Area bits and words allocated to the Position Control Unit without alteration. ● An error may occur if Execute is turned ON before ENO is turned ON. ● This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). ● There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.

Application example	The present position of axis 1 of the Servomotor connected to the Position Control Unit with a unit number of 0 is read and stored in D0.
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 12-4 Error Codes



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Output enable bit	Enable	BOOL	0 (OFF)		Turn ON to enable output. Turn OFF to reset the output.

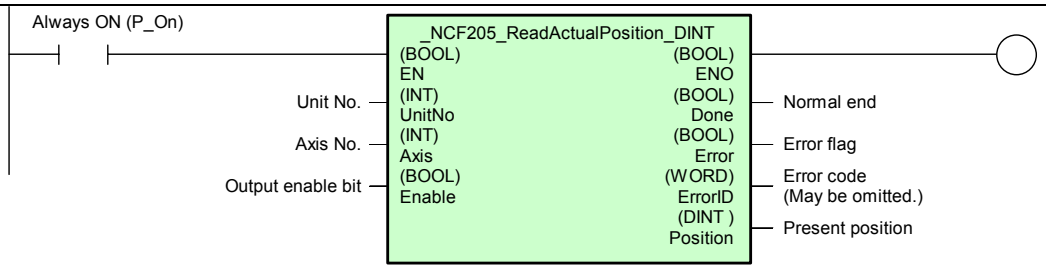
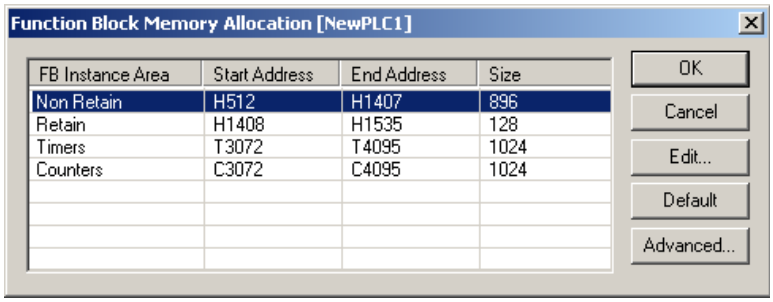
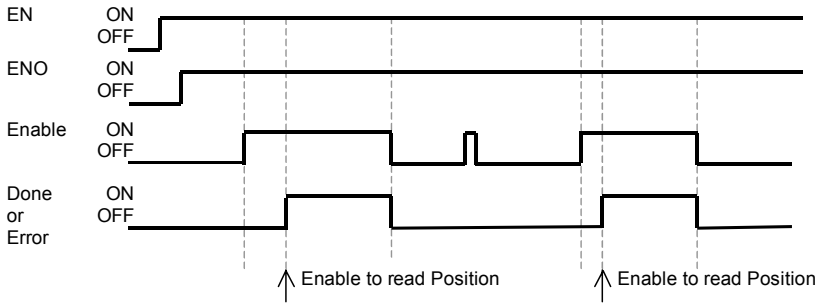
Output Variables

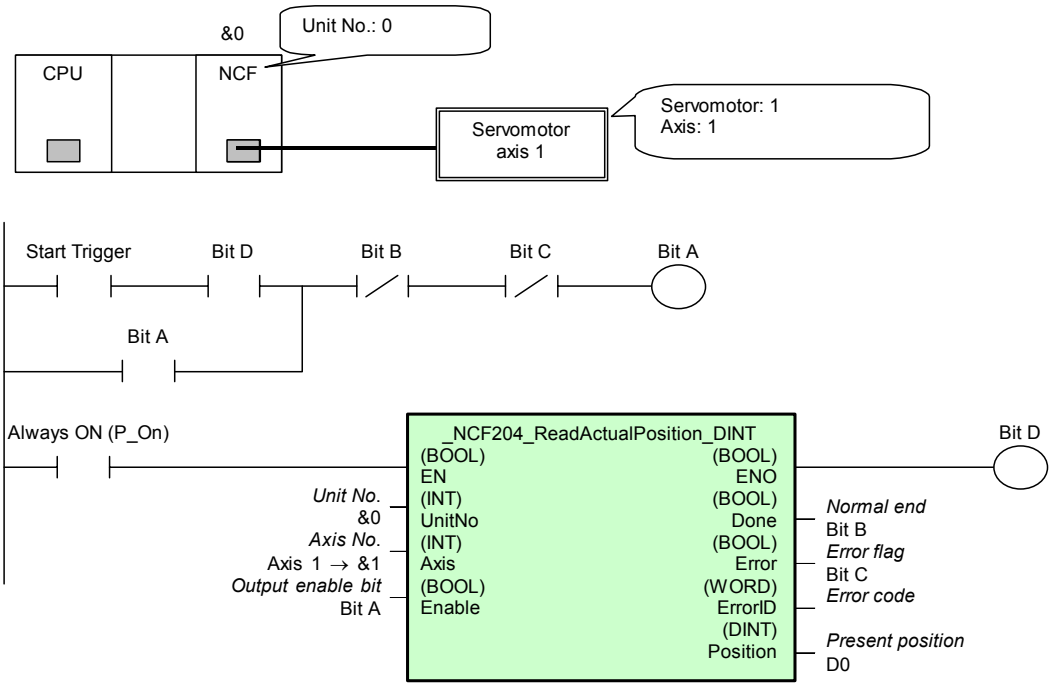
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Normal end	Done	BOOL		Turns ON for a normal end.
Error flag	Error	BOOL		Turns ON for an error end.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.
Present position	Position	REAL	-2.147484e+009 to +2.147484e+009	The present position of the axis controlled by the Position Control Unit.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -205	Read Present Position: _NCF205_ReadActualPosition_DINT

Basic function	Reads the present position of an axis.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF205_ReadActualPosi_DINT10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar. 
Function description	The present position of the axis of the specified Unit No. and Axis No. is continuously updated while the Output Enable Bit (Enable) is ON. When the Output Enable Bit (Enable) turns OFF, the present value is cleared to all zeros. The Read Completed Flag (Done) turns ON when the present position data is valid. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. The Error Flag will actually be turned ON only when the unit number or axis number is not in range. This status will be reset then the Output Enable Bit (Enable) turns OFF. 
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Restrictions Other	● An error may occur if Execute is turned ON before ENO is turned ON. ● This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). ● There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time or changing the input variable Unit No.

Application example	The present position of axis 1 of the Servomotor connected to the Position Control Unit with unit number 0 is read and stored in D0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Output enable bit	Enable	BOOL	0(OFF)		Turn ON to enable output. Turn OFF to reset the output.

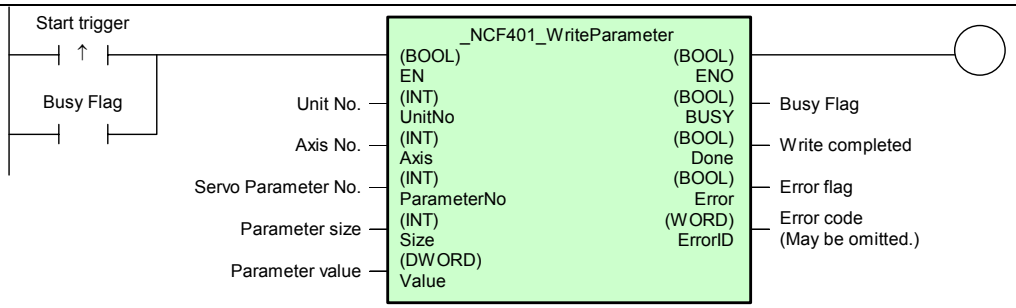
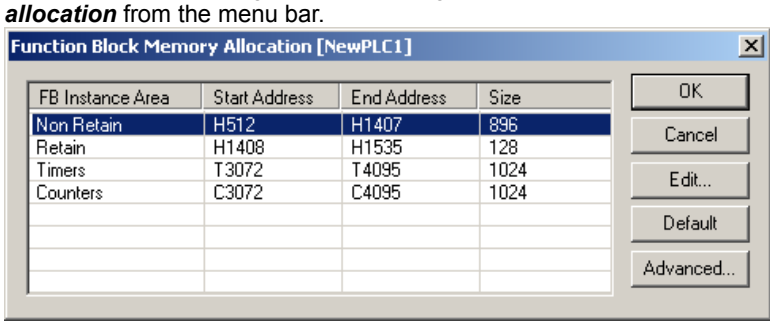
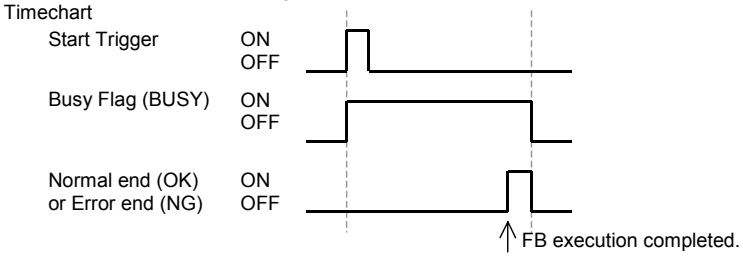
Output Variables

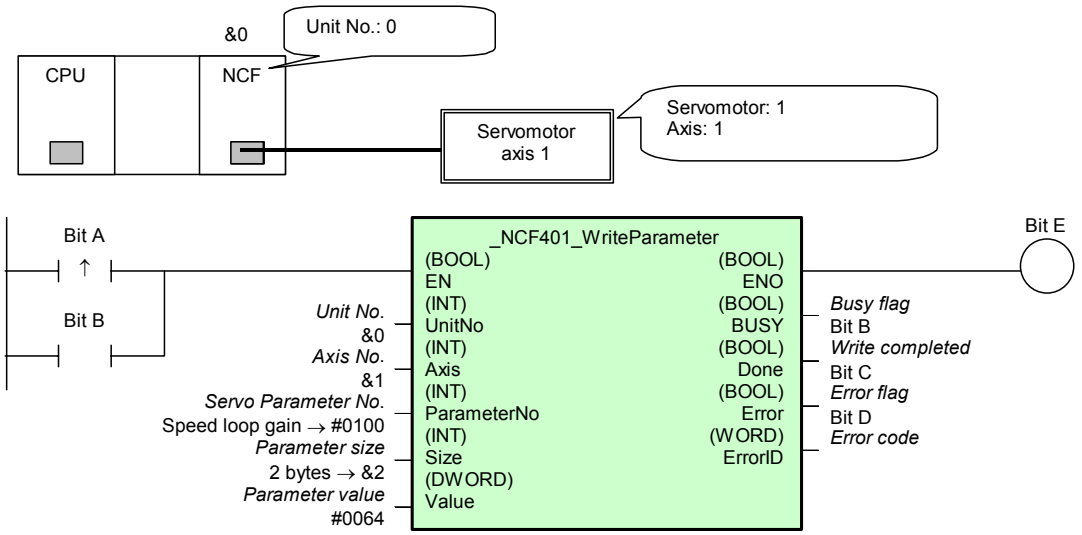
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Read Completed	Done	BOOL		Turns ON for a normal end.
Error flag	Error	BOOL		Turns ON for an error end.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.
Present position	Position	DINT	-2,147,483,648 to +2,147,483,647	The present position of the axis controlled by the Position Control Unit.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -401	Write Parameter: _NCF401_WriteParameter

Basic function	Writes an axis servo parameter.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF401_WriteParameter10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  Setting the Position Control Unit • Parameters written with this FB will be lost when the power supply to the Position Control Unit is interrupted or the Position Control Unit is restarted. If required, save the parameters to nonvolatile memory in the Position Control Unit using separate processing.
Function description	When the *Start Trigger* turns ON, the specified parameter value for the axis of the specified Unit No. and Axis No. is written to the parameters in the specified Servo Driver. Reference This FB executes the servo parameter transfer function of the Position Control Unit. Refer to the *Related Manuals* for details.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.

Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • An error may occur if Execute is turned ON before ENO is turned ON. • This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands). • There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON. Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	A parameter (the speed loop gain) is changed for axis 1 of the Servomotor connected to the Position Control Unit with unit number 0. 
Related manuals	CJ1W-NCF71 Position Control Unit Operation Manual (W426) 5-3 Transferring Servo Parameters 12-4 Error Codes

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Servo Parameter No.	ParameterNo	INT	&0		Specify the number of the Servo Driver parameter to write.
Parameter size	Size	INT	&2	&1 to &4	Specify the length of the Servo Driver parameter to write in bytes.
Parameter value	Value	DWORD	#0000		Specify the data to write. If the parameter size is 2 bytes, only the data stored in the lower address will be written.

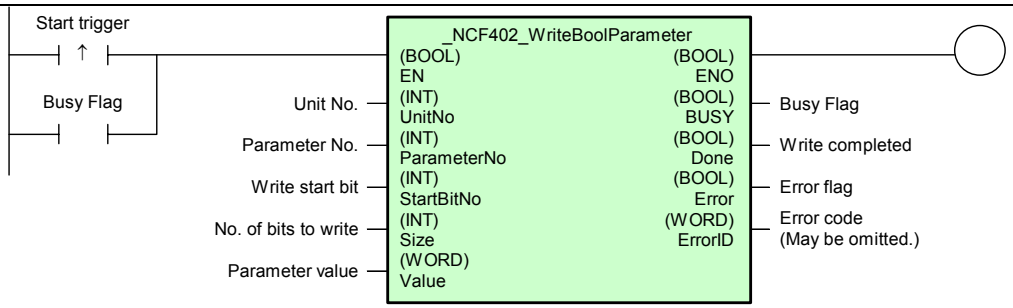
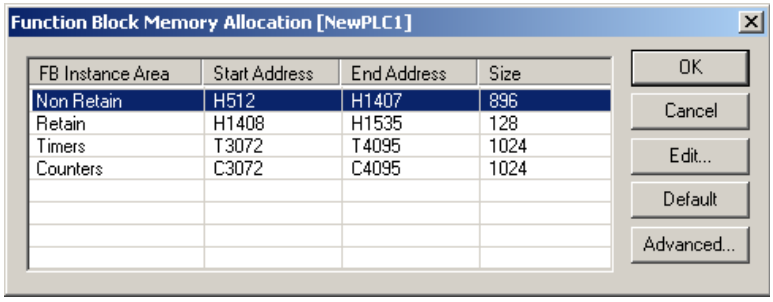
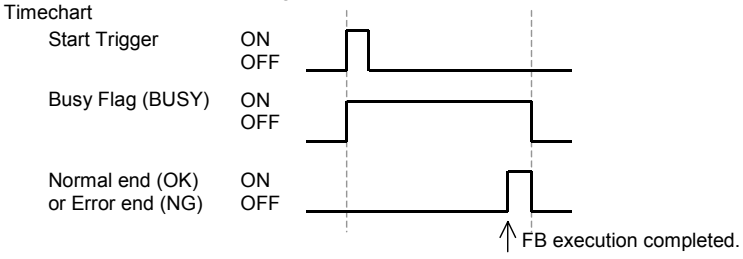
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Write completed	Done	BOOL		Turns ON for one cycle when processing ends normally.
Error flag	Error	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCF -402	Write Boolean Parameter: _NCF402_WriteBoolParameter

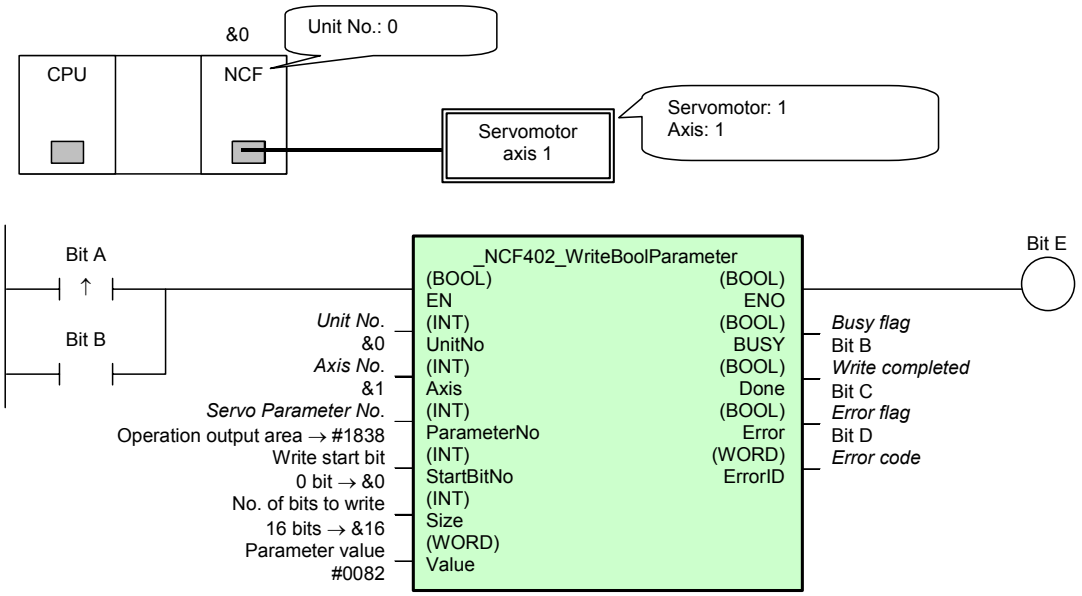
Basic function	Writes a Boolean parameter.
Symbol	
File name	Lib\FBL\omronlib\PositionController\NCF_NCF402_WriteBoolParameter10.cxf
Applicable models	CJ1W-NCF71 Position Control Unit
Conditions for usage	CX-Programmer Settings Function blocks for Position Control Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  Setting the Position Control Unit • Parameters written with this FB will be lost when the power supply to the Position Control Unit is interrupted or the Position Control Unit is restarted. If required, save the parameters to nonvolatile memory in the Position Control Unit using separate processing.
Function description	When the *Start Trigger* turns ON, the parameter of the specified parameter number, write start bit, and number of write bits for the axis of the specified Unit No. and Axis No. is written. Only common parameters or individual axis parameters can be read. Parameters that are written are valid when the power is cycled or the Unit is restarted after first saving the parameters to nonvolatile memory in the Unit using separate processing. Reference This FB executes the parameter transfer function of the Position Control Unit. Refer to the *Related Manuals* for details.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.

<table>
<tr><td>Restrictions
Input variables</td><td>

Always use an upwardly differentiated condition for EN.
Set the value to which the parameter is to be set in lowest bits of Value.
If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
An error may occur if Execute is turned ON before ENO is turned ON.
This FB uses READ DATA, WRITE DATA, and SAVE DATA Bits of the Position Control Unit (NCF) (see note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands).
There may be a case where the output variable of FB will not change even if EN is turned ON. In that case, check if READ DATA, WRITE DATA, or SAVE DATA Bit is left ON.

Note: For calculation of bit addresses, these bits are referenced in this FB when executing each instance for the first time.
</td></tr>
<tr><td>Output variables</td><td>

This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see Symbol).
Do not turn the BUSY output variable ON or OFF outside the FB.

</td></tr>
<tr><td>Application example</td><td>
A parameter is changed (axis operation output area) for the Position Control Unit with unit number 0.


</td></tr>
<tr><td>Related manuals</td><td>CJ1W-NCF71 Position Control Unit Operation Manual (W426)
5-2 Transferring PCU Parameters
12-4 Error Codes</td></tr>
</table>

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	
Parameter No.	ParameterNo	INT	#0000	#1838 to #199F	Specify the address inside the Position Control Unit.
Write start bit	StartBitNo	INT	&0	&0 to &15	Specify the first bit to write in the specified parameter.
No. of bits to write	Size	INT	&4	&1 to &16	Specify the number of bits to write.
Parameter value	Value	WORD	#0000		Set the value to which the parameter is to be set in lowest bits of *Value*.

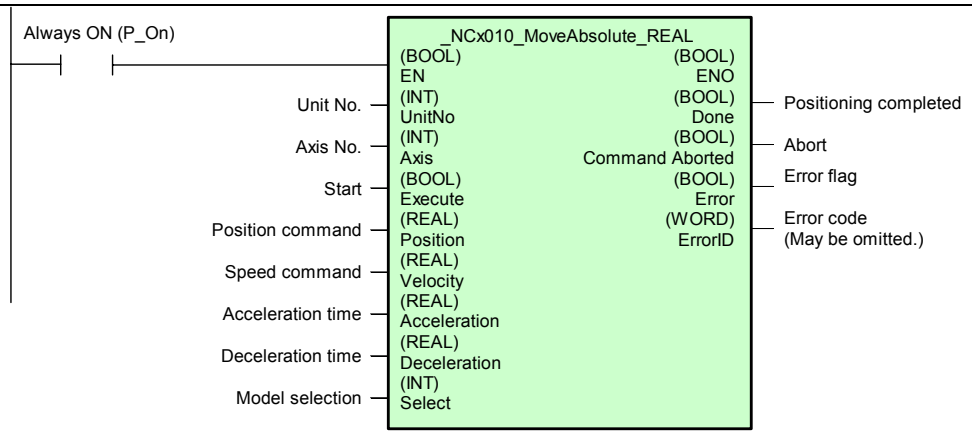
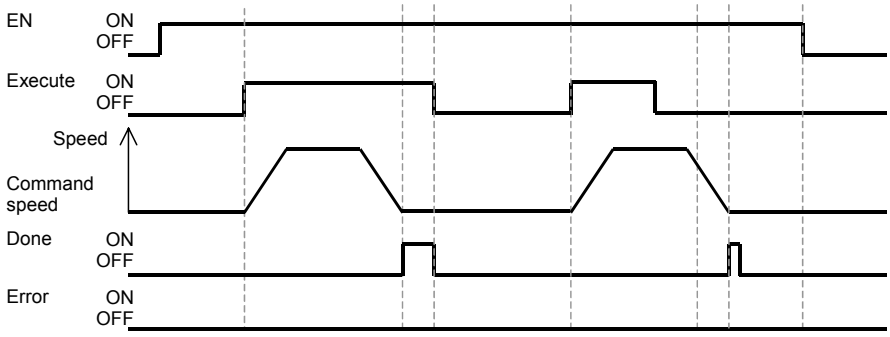
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error. FB not processed Invalid inputs parameter ended in an error Not finished to read the common parameter
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Write completed	Done	BOOL		Turns ON for one cycle when processing ends normally.
Error flag	Error	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

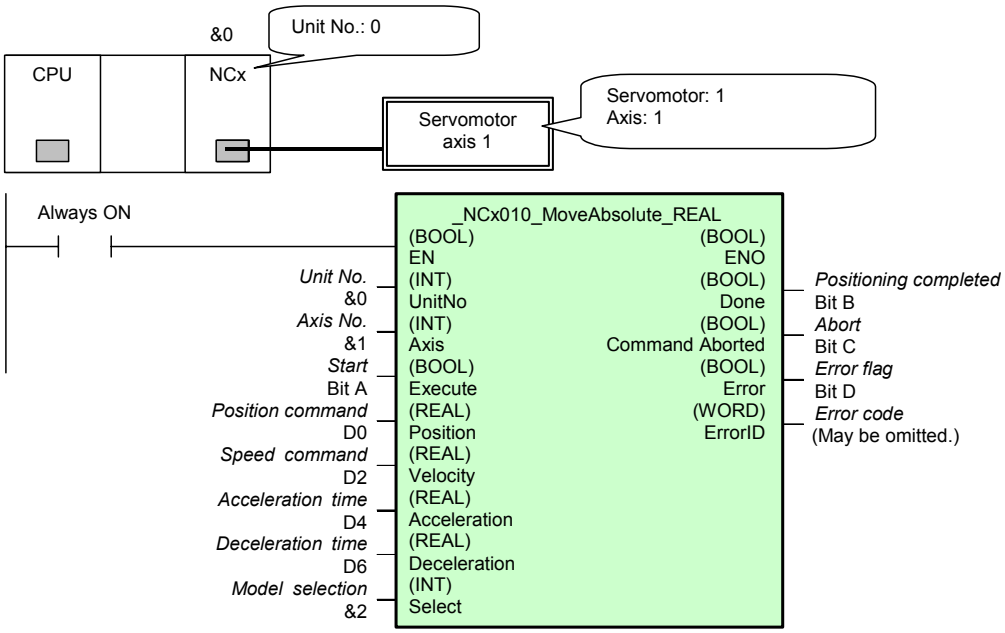
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -010	Move Absolute: _NCx010_MoveAbsolute_REAL

Basic function	Positions using an absolute move.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx010_MoveAbsolute_REAL10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	A positioning operation for the axis of the specified Unit No. and Axis No. is started using the specified position command value, speed command value, acceleration time, and deceleration time. The Positioning Completed Flag (Done) is turned ON when the positioning operation for the FB has been completed. This flag will not be turned ON if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If execution of another instance is started during the positioning operation, a duplicate start status will exist and a positioning operation will be performed for the absolute position specified for Position Command from the point at which the last execution was started. Refer to information on direct operation given in the *Operation Manual* listed in *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Application example	Operation is started for an absolute move for axis 1 of the Servomotor connected to the Position Control Unit with a unit number of 0.
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Start	Execute	BOOL	0 (OFF)		↑ Starts the absolute move.
Position command	Position	REAL	+0.0	-1.073742e+009 to +1.073742e+009	Specify the target position. Unit: Pulses
Speed command	Velocity	REAL	+1.0	+1.0 to +500000.0	Specify the target speed. Unit: pps The actual speed of the operation will change if the Speed Command is changed while Execute is ON.
Acceleration time	Acceleration	REAL	+0.0	+0.0 to +250000.0	Specify the acceleration time. Unit: ms
Deceleration time	Deceleration	REAL	+0.0	+0.0 to +250000.0	Specify the deceleration time. Unit: ms
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

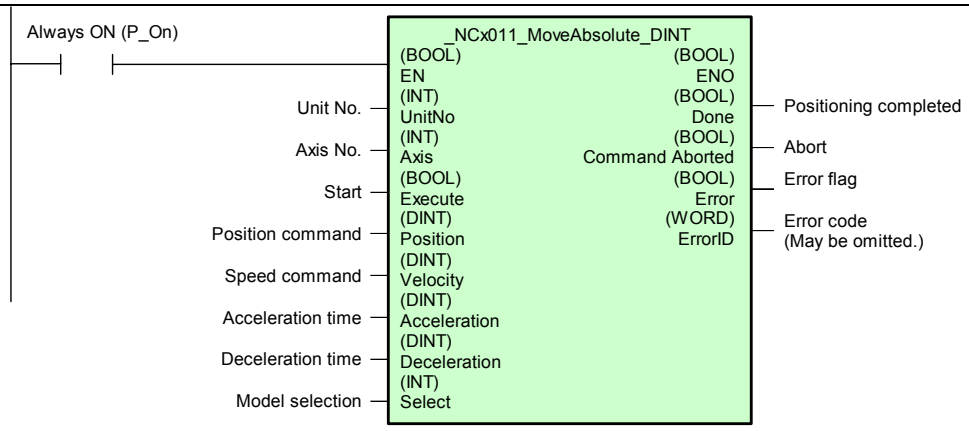
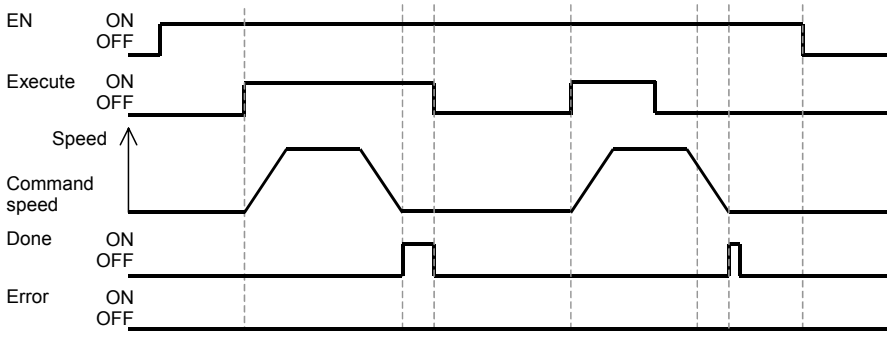
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Positioning completed	Done	BOOL		Turns ON when the positioning operation has been completed.
Abort	Command Aborted	BOOL		1(ON): Aborted
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

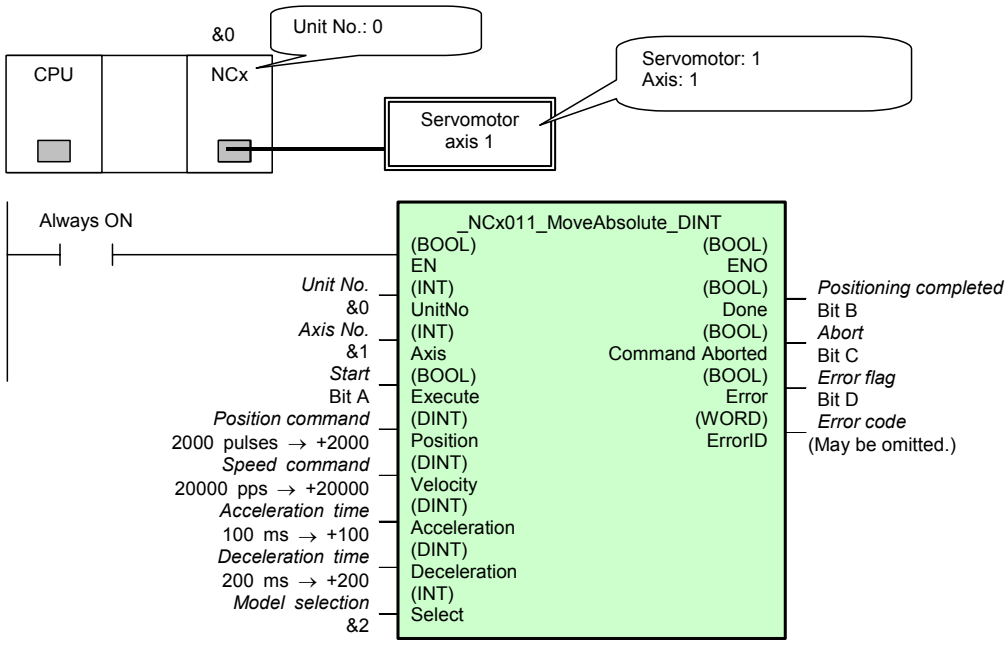
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -011	Move Absolute: _NCx011_MoveAbsolute_DINT

Basic function	Positions using an absolute move.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx011_MoveAbsolute_DINT10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	A positioning operation for the axis of the specified Unit No. and Axis No. is started using the specified position command value, speed command value, acceleration time, and deceleration time. The Positioning Completed Flag (Done) is turned ON when the positioning operation for the FB has been completed. This flag will not be turned ON if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If execution of another instance is started during the positioning operation, a duplicate start status will exist and a positioning operation will be performed for the absolute position specified for Position Command from the point at which the last execution was started. Refer to information on direct operation given in the *Operation Manual* listed in *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Application example	Operation is started for an absolute move for axis 1 of the Servomotor connected to the Position Control Unit with a unit number of 0.
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Start	Execute	BOOL	0 (OFF)		↑ Starts the absolute move.
Position command	Position	DINT	&0	-1,073,741,823 to +1,073,741,823	Specify the target position. Unit: Pulses
Speed command	Velocity	DINT	+1	+1 to +500,000	Specify the target speed. Unit: pps The actual speed of the operation will change if the Speed Command is changed while Execute is ON.
Acceleration time	Acceleration	DINT	+0	+0 to +250,000	Specify the acceleration time. Unit: ms
Deceleration time	Deceleration	DINT	+0	+0 to +250,000	Specify the deceleration time. Unit: ms
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

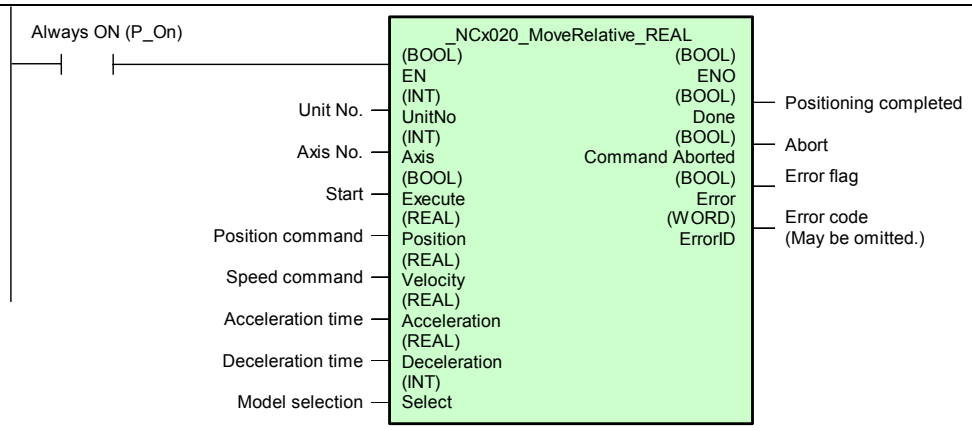
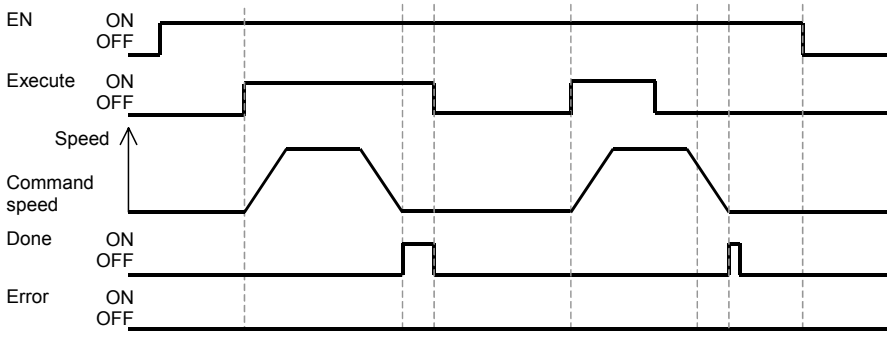
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Positioning completed	Done	BOOL		Turns ON when the positioning operation has been completed.
Abort	Command Aborted	BOOL		1(ON): Aborted
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

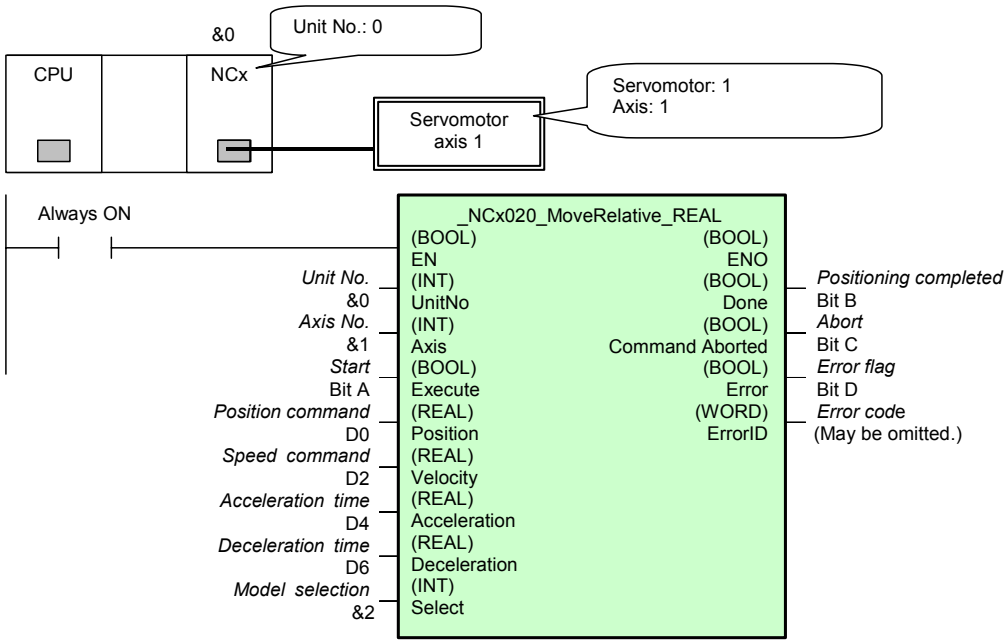
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -020	Move Relative: _NCx020_MoveRelative_REAL

Basic function	Positions using a relative move.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx020_MoveRelative_REAL10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	A positioning operation for the axis of the specified Unit No. and Axis No. is started using the specified position command value, speed command value, acceleration time, and deceleration time. The Positioning Completed Flag (Done) is turned ON when the positioning operation for the FB has been completed. This flag will not be turned ON if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If the input to *Execute* turns ON again during the positioning operation, a duplicate start status will exist and a positioning operation will be performed for the position specified for position command from the point at which *Execute* turned ON. Refer to information on direct operation given in the *Operation Manual* listed in *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Application example	Operation is started for a relative move for axis 1 of the Servomotor connected to the Position Control Unit with a unit number of 0.
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Start	Execute	BOOL	0 (OFF)		↑Starts the relative move.
Position command	Distance	REAL	+0.0	-1.073742e+009 +1.073742e+009	Specify the relative move distance. Unit: Pulses
Speed command	Velocity	REAL	+1.0	+1 to +500,000	Specify the target speed. Unit: pps The actual speed of the operation will change if the Speed Command is changed while Execute is ON.
Acceleration time	Acceleration	REAL	+0.0	+0.0 to +250000.0	Specify the acceleration time. Unit: ms
Deceleration time	Deceleration	REAL	+0.0	+0.0 to +250000.0	Specify the deceleration time. Unit: ms
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

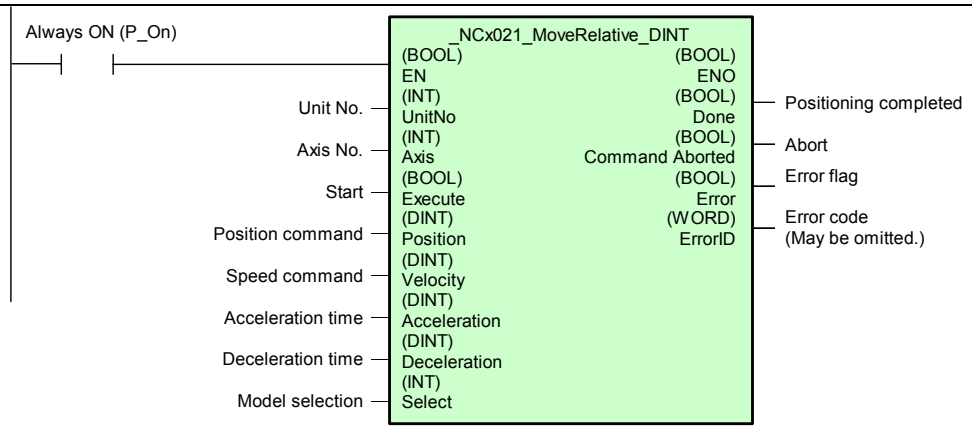
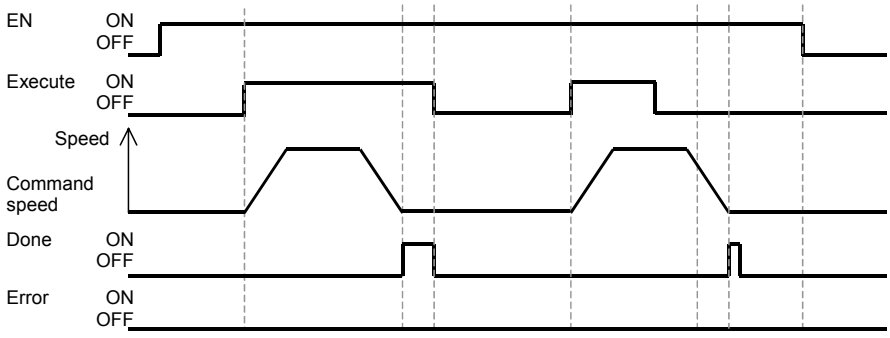
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Positioning completed	Done	BOOL		Turns ON when the positioning operation has been completed.
Abort	Command Aborted	BOOL		1(ON): Aborted
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

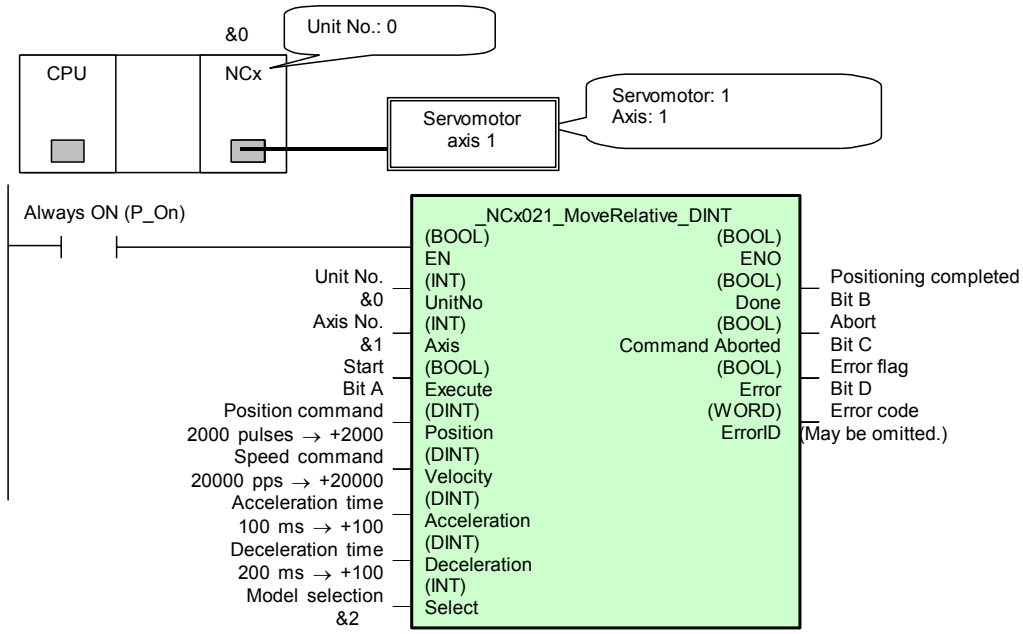
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -021	Move Relative: _NCx021_MoveRelative_DINT

Basic function	Positions using a relative move.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx021_MoveRelative_DINT10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Basic function	Positions using a relative move.
Conditions for usage	None
Function description	A positioning operation for the axis of the specified Unit No. and Axis No. is started using the specified position command value, speed command value, acceleration time, and deceleration time. The Positioning Completed Flag (Done) is turned ON when the positioning operation for the FB has been completed. This flag will not be turned ON if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. 
FB precautions	• If the input to *Execute* turns ON again during the positioning operation, a duplicate start status will exist and a positioning operation will be performed for the position specified for position command from the point at which *Execute* turned ON. Refer to information on direct operation given in the *Operation Manual* listed in *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Application example	Operation is started for a relative move for axis 1 of the Servomotor connected to the Position Control Unit with a unit number of 0.
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Start	Execute	BOOL	0 (OFF)		↑ Starts the relative move.
Position command	Distance	DINT	+0	-1,073,741,823 to +1,073,741,823	Specify the relative move distance. Unit: Pulses
Speed command	Velocity	DINT	+1	+1 to +500,000	Specify the target speed. Unit: pps The actual speed of the operation will change if the Speed Command is changed while Execute is ON.
Acceleration time	Acceleration	DINT	+0	+0 to +250,000	Specify the acceleration time. Unit: ms
Deceleration time	Deceleration	DINT	+0	+0 to +250,000	Specify the deceleration time. Unit: ms
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

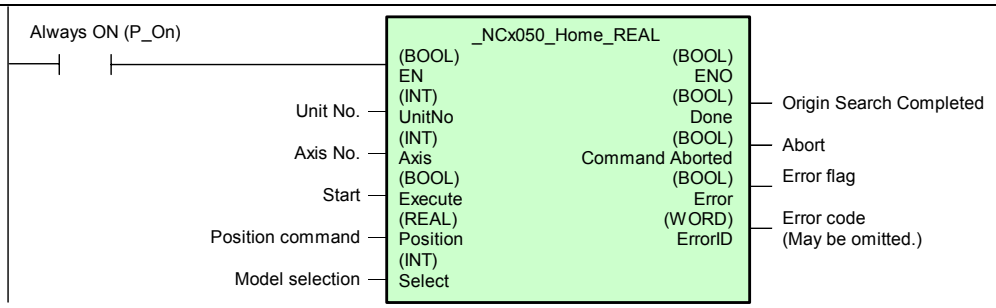
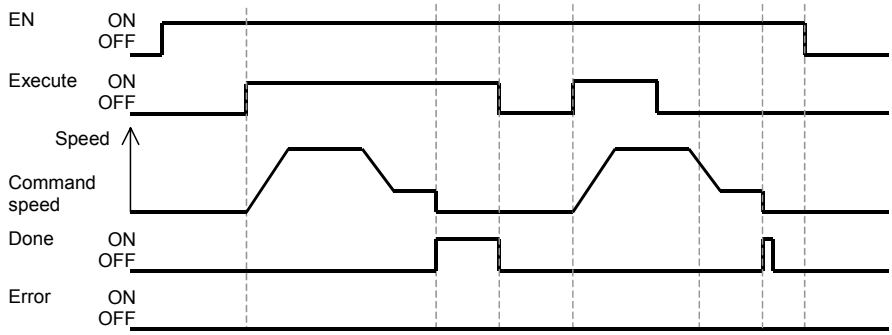
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Positioning completed	Done	BOOL		Turns ON when the positioning operation has been completed.
Abort	Command Aborted	BOOL		1(ON): Aborted
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

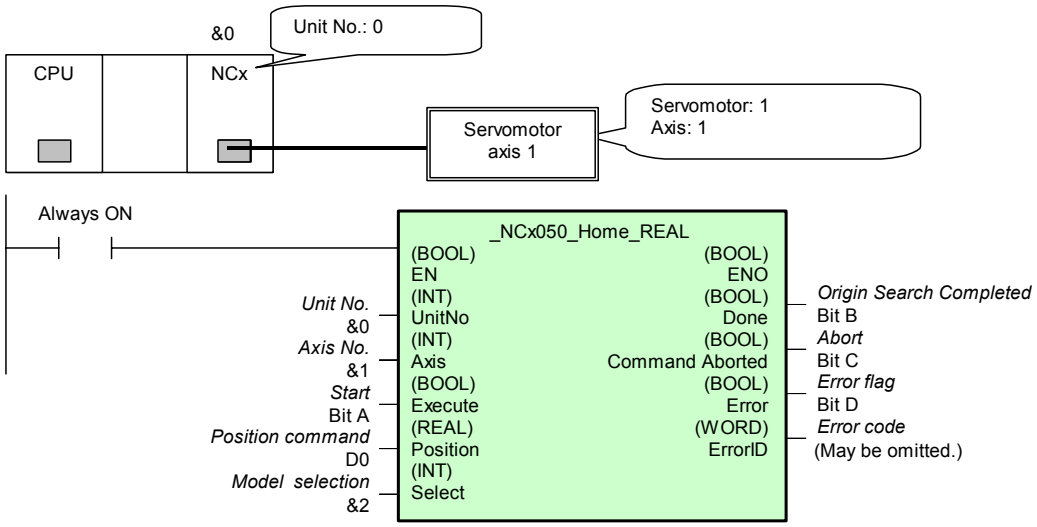
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -050	Origin Search: _NCx050_Home_REAL

Basic function	Performs an origin search operation to establish the origin.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx050_Home_REAL10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	An origin search operation is started when *Start* turns ON for the axis of the specified Unit No. and Axis No. When the search operation is completed, the preset position preset operation is executed and the present position is set to the value specified in the *position command.* The present value preset operation is performed even if the *position command* is set to 0. The Origin Serch Completed Flag (Done) is turned ON when the present position preset operation for the FB has been completed. This flag will not be turned ON if operation is canceled for a deceleration stop or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred.  Reference This FB executes the origin search and present value preset functions of the Position Control Unit. Refer to the *Operation Manual* listed in *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Application example	An origin search is performed for axis 1 of the Servomotor connected to the Position Control Unit with a unit number. When the origin search has been completed, a present value preset operation is executed.
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists



■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Start	Execute	BOOL	0 (OFF)		↑ : Origin search started
Position command	Position	REAL	+0.0	-1.073742e+009 to +1.073742e+009	Specify the numeric value of to set for the present position. Unit: Pulses
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

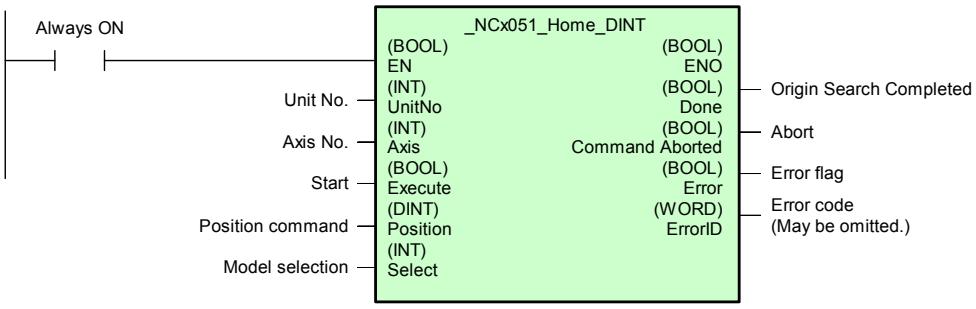
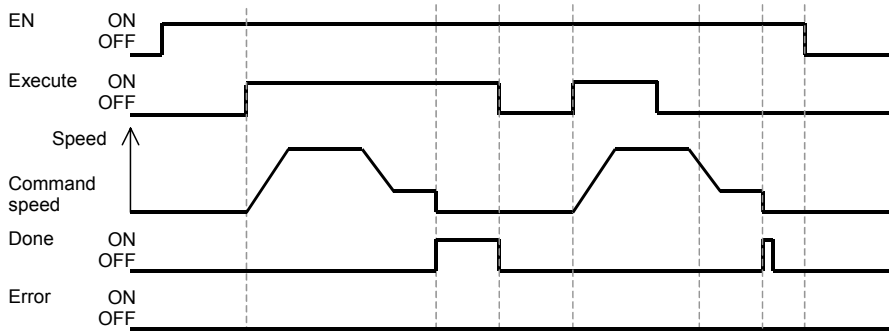
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Origin Search Completed	Done	BOOL		Turns ON when the origin search operation has been completed.
Abort	Command Aborted	BOOL		1(ON): Aborted
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

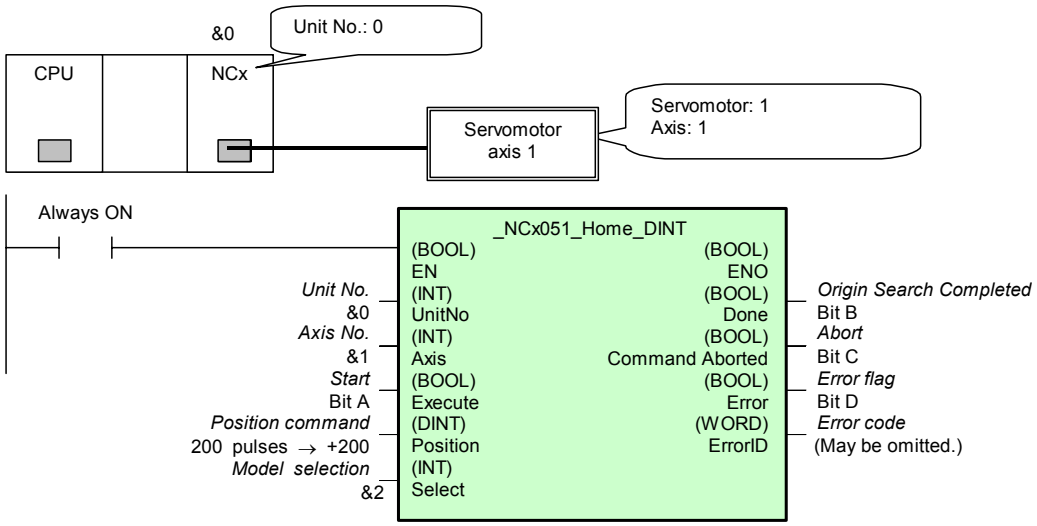
■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

NCx -051	Origin Search: _NCx051_Home_DINT

Basic function	Performs an origin search operation to establish the origin.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx051_Home_DINT10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	An origin search operation is started when *Start* turns ON for the axis of the specified Unit No. and Axis No. When the search operation is completed, the preset position preset operation is executed and the present position is set to the value specified in the *position command.* The present value preset operation is performed even if the *position command* is set to 0. The Origin Serch Completed Flag (Done) is turned ON when the present position preset operation for the FB has been completed. This flag will not be turned ON if operation is canceled for a deceleration stop or because an error has occurred. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred.  Reference This FB executes the origin search and present value preset functions of the Position Control Unit. Refer to the *Operation Manual* listed in *Related Manuals* for details.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Application example	An origin search is performed for axis 1 of the Servomotor connected to the Position Control Unit with a unit number. When the origin search has been completed, a present value preset operation is executed.
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Start	Execute	BOOL	0 (OFF)		↑: Origin search started
Position command	Position	DINT	+0.0	-1,073,741,823 to +1,073,741,823	Specify the numeric value of to set for the present position. Unit: Pulses
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

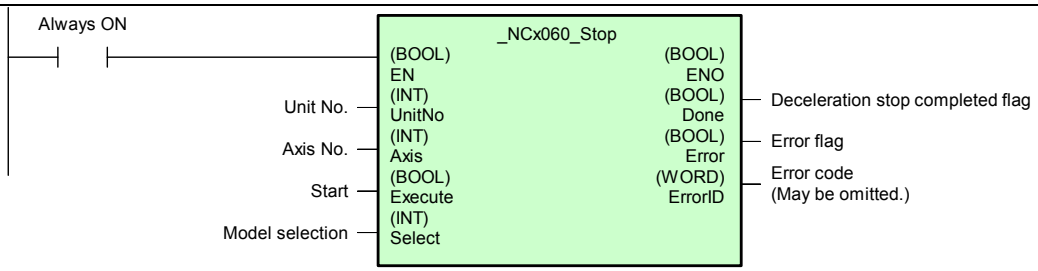
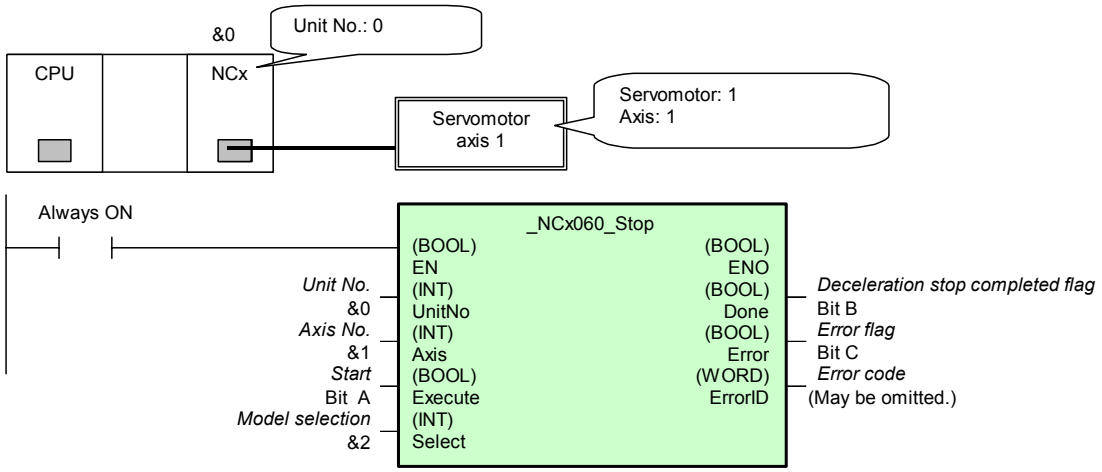
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Origin Search Completed	Done	BOOL		Turns ON when the origin search operation has been completed.
Abort	Command Aborted	BOOL		1(ON): Aborted
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -060	Deceleration Stop: _NCx060_Stop

Basic function	Decelerates an axis to a stop.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx060_Stop10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	When the Start Bit (Execute) turns ON, a deceleration stop is started for the axis of the specified Unit No. and Axis No. An operation command will not be accepted while the Start Bit (Execute) is ON. Refer to information on a deceleration stop given in the *Operation Manual* listed in *Related Manuals* for details. The Deceleration Stop Completed Flag (Done) is turned ON when the deceleration stop has been completed for this FB. This flag will also be turned ON if an error results in an emergency stop. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred. Reference This FB executes the deceleration stop function of the Position Control Unit.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Application example	A deceleration stop is performed for axis 1 of the Servomotor connected to Position Control Unit with a unit number of 0. 
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Start	Execute	BOOL			↑: A deceleration stop is started.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

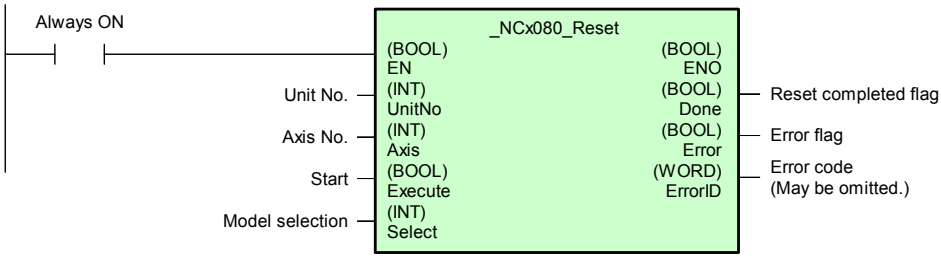
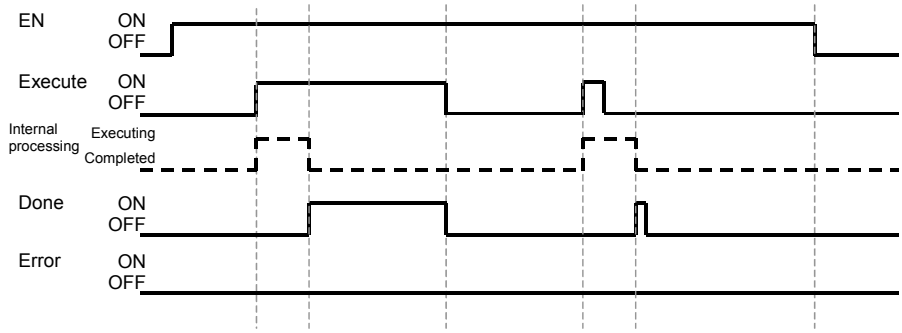
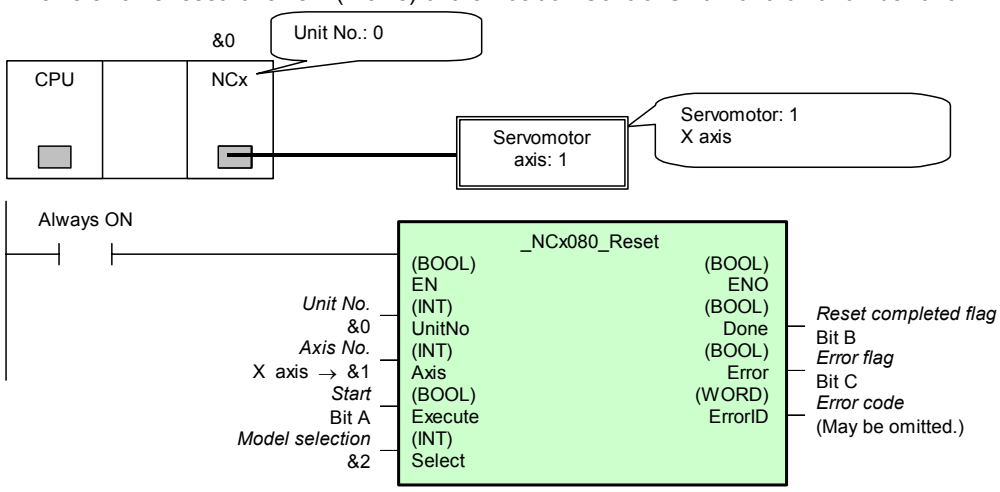
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Deceleration stop completed flag	Done	BOOL		Turns ON when the deceleration stop operation has been completed.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -080	Axis Error Reset: _NCx080_Reset

Basic function	Resets and axis error.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx080_Reset10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	When the Start Bit (Execute) turns ON, an error is reset for the axis of the specified Unit No. and Axis No. The Reset Completed Flag (Done) will turn ON when resetting the error has been completed and commands can be accepted. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB. This status will be reset then the Start Bit (Execute) turns OFF. If the Start Bit (Execute) turns OFF before the reset operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred.  Reference This FB executes the error reset/pulse output prohibit function of the Position Control Unit.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Application example	An axis error is reset for axis 1 (X axis) of the Position Control Unit with a unit number of 0. 
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Start	Execute	BOOL	0 (OFF)		↑: Resetting the error started.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

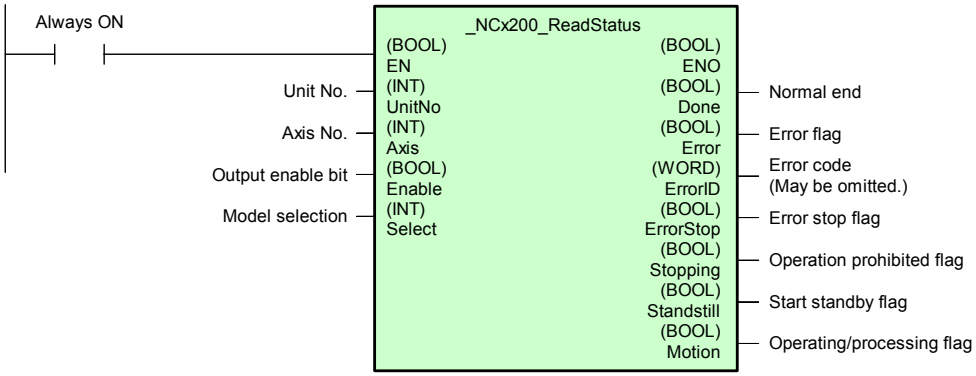
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Reset completed flag	Done	BOOL		Turns ON when the error reset operation has been completed.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

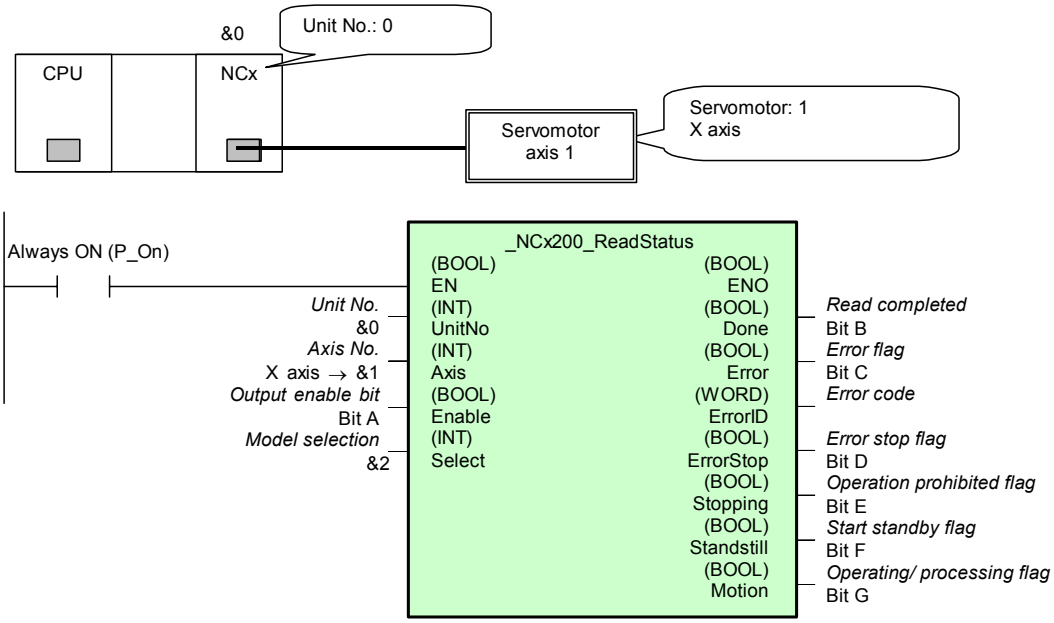
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -200	Read Status: _NCx200_ReadStatus

Basic function	Reads the status of an axis.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx200_ReadStatus10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	The status of the axis of the specified Unit No. and Axis No. is continuously updated while the Output Enable Bit (Enable) is ON. When the Output Enable Bit (Enable) turns OFF, the status is reset. The Read Completed Flag (Done) turns ON when the status data is valid. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. The Error Flag will actually be turned ON only when the unit number or axis number is not in range. This status will be reset then the Output Enable Bit (Enable) turns OFF. Thestatus for this FB is output combining the status of the CIO Area bits and words allocated to the Position Control Unit. **Output variable** **Status** **Output conditions** **ErrorStop** Stopped for an error. Error Flag is ON. **Stopping** Stopped for a deceleration stop and operation prohibited. Deceleration Stop ON, Stop Executed ON, and Error Flag OFF. **StandStill** Waiting for start command. Deceleration Stop OFF, Error Flag OFF, and Busy Flag OFF. **Motion** Operating or processing command. (Including processing present position preset command, error reset command, etc.) Positioning Operation Completed OFF and Busy Flag OFF.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.

Application example	The status is read for axis 1 (X axis) of the Position Control Unit with a unit number of 0.
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists



■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Output enable bit	Enable	BOOL	0 (OFF)		Turn ON to enable output. Turn OFF to reset the output.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

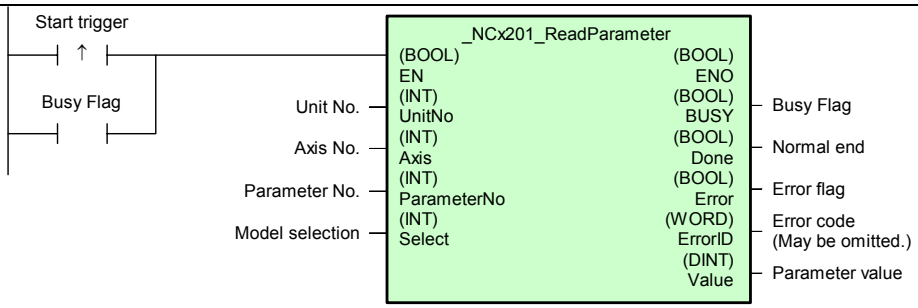
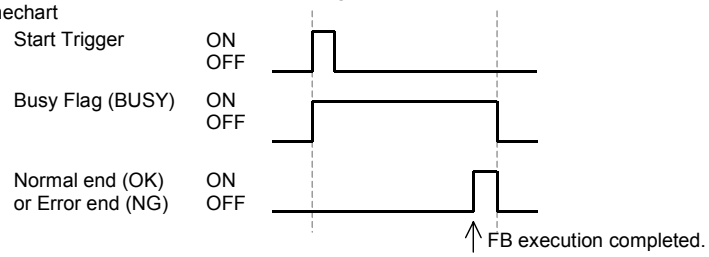
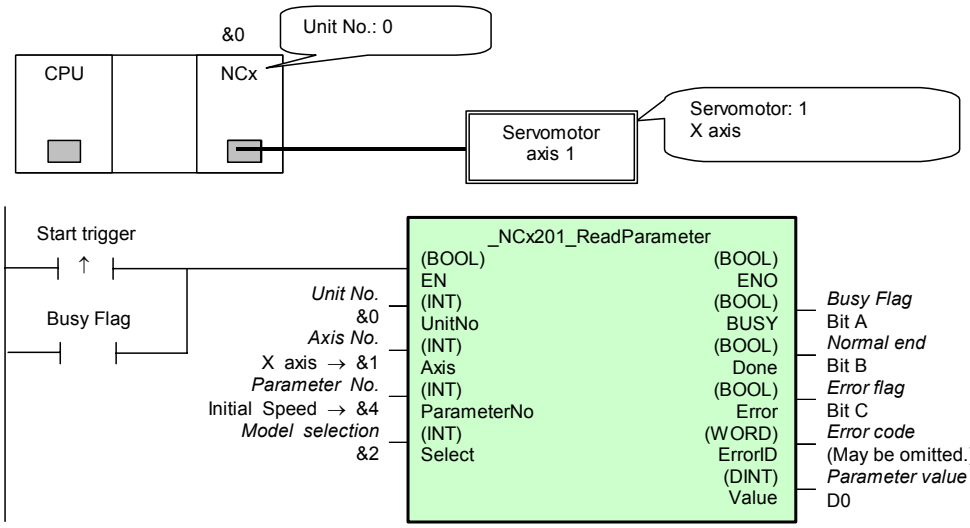
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Normal end	Done	BOOL		Turns ON when the status data is valid.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.
Error stop flag	ErrorStop	BOOL		Turns ON when operation has been stopped for an error.
Operation prohibited flag	Stopping	BOOL		Turns ON when operation has been stopped for an deceleration stop and operation is prohibited.
Start standby flag	Standstill	BOOL		Turns ON when waiting for a start command.
Operating/processing flag	Motion	BOOL		Turns ON when an axis is moving or processing is being performed for a present position preset command, error reset command, etc.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

NCx -201	Read Parameter: _NCx201_ReadParameter

Basic function	Reads a parameter of an axis.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx201_ReadParameter10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	The value of the specified parameter for the axis of the specified Unit No. and Axis No. is read. When the start trigger turns ON, the parameter is read from the Position Control Unit. If FB execution ends in an error, an error code will be output to the *Error Code*. Reference This FB executes a data read using the IORD instruction for the Position Control Unit. Refer to the *Operation Manual* listed in *Related Manuals* for details.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	A parameter (the initial speed) of axis 1 (X axis) of the Position Control Unit with a unit number of 0 is read and stored in D0. 

Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 4-4 Axis Parameter Area 11-5 Error Code Lists

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Parameter No.	ParameterNo	INT	&1	&1 to &16	See the following table.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

Parameter Numbers

Parameter No.	Name	Address in Position Control Unit				Number of words
		X axis	Y axis	Z axis	U axis	
1	I/O Setting	m+4 (0004)	m+32 (0020)	m+60 (003C)	m+88 (0058)	1 word
2	Operation Mode Setting	m+5 (0005)	m+33 (0021)	m+61 (003D)	m+89 (0059)	1 word
3	Maximum Speed	m+6 (0006)	m+34 (0022)	m+62 (003E)	m+90 (005A)	2 words
4	Initial Speed	m+8 (0008)	m+36 (0024)	m+64 (0040)	m+92 (005C)	2 words
5	Origin Search High Speed	m+10 (000A)	m+38 (0026)	m+66 (0042)	m+94 (005E)	2 words
6	Origin Search Proximity Speed	m+12 (000C)	m+40 (0028)	m+68 (0044)	m+96 (0060)	2 words
7	Origin Compensation	m+14 (000E)	m+42 (002A)	m+70 (0046)	m+98 (0062)	2 words
8	Backlash Compensation	m+16 (0010)	m+44 (002C)	m+72 (0048)	m+100 (0064)	1 word
9	Backlash Compensation Speed	m+17 (0011)	m+45 (002D)	m+73 (0049)	m+101 (0065)	2 words
10	Acceleration/Deceleration Curve	m+19 (0013)	m+47 (002F)	m+75 (004B)	m+103 (0067)	1 word
11	Origin Search Acceleration Time	m+20 (0014)	m+48 (0030)	m+76 (004C)	m+104 (0068)	2 words
12	Origin Search Deceleration Time	m+22 (0016)	m+50 (0032)	m+78 (004E)	m+106 (006A)	2 words
13	Positioning Monitor Time	m+24 (0018)	m+52 (0034)	m+80 (0050)	m+108 (006C)	1 word
14	CCW Software Limit	m+25 (0019)	m+53 (0035)	m+81 (0051)	m+109 (006D)	2 words
15	CW Software Limit	m+27 (001B)	m+55 (0037)	m+83 (0053)	m+111 (006F)	2 words
16	Initial Pulse Designation	m+31 (001F)	m+59 (003B)	m+87 (0057)	m+115 (0073)	1 word

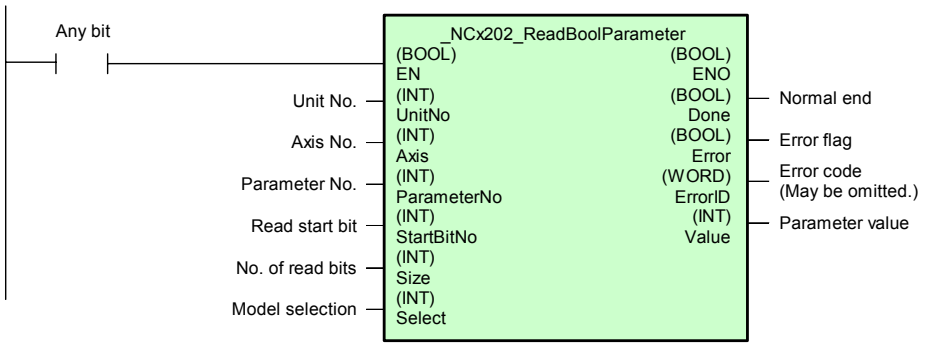
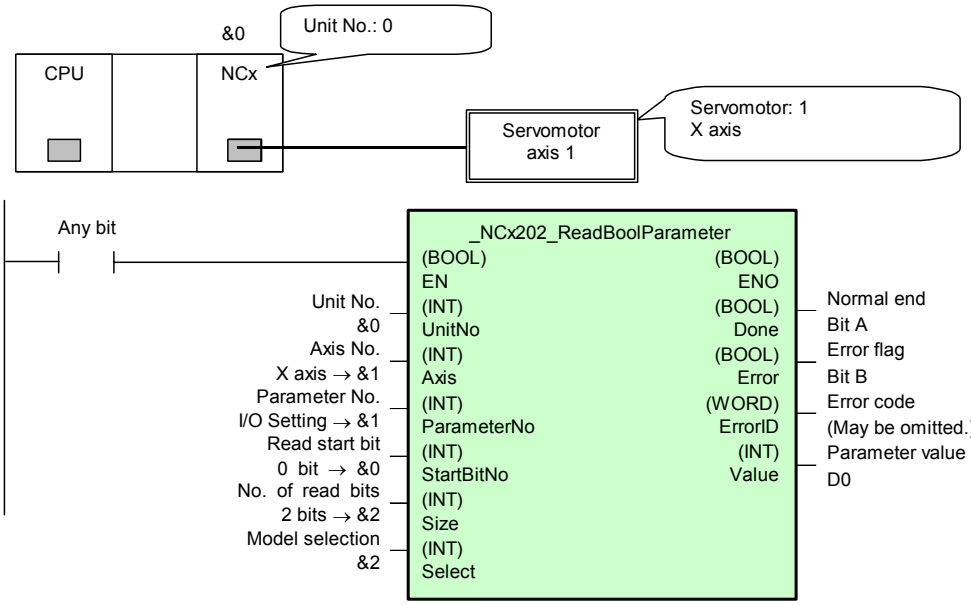
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	Done	BOOL		Turns ON for one cycle when processing ends normally.
Error flag	Error	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.
Parameter value	Value	DINT		The parameter value that was read. If the parameter size is 1 word, the data is stored in the lower word.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

NCx -202	Read Boolean Parameter: _NCx202_ReadBoolParameter

Basic function	Reads a boolean parameter of an axis.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx202_ReadBoolParameter10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	The parameter of the specified parameter number, read start bit, and number of read bits for the axis of the specified Unit No. and Axis No. is read. Only I/O settings and operation mode settings can be read. When EN turns ON, the parameter is read from the DM Area words allocated to the Position Control Unit as a Special I/O Unit. *Read Completed* and the *Error Flag* can be used to see whether internal processing has been completed normally. If FB execution ends in an error, an error code will be output to the *Error Code.* Only the specified number of read bits will be transferred to lowest bits of *Value*. Other bits will be 0.
EN input condition	Any bit can be specified. The data will be read continuously while *Any bit* is ON.
Application example	A parameter (I/O setting) of axis 1 (X axis) of the Position Control Unit with a unit number of 0 is read and stored in D0. 
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Parameter No.	ParameterNo	INT	&1	&1, &2	See below.
Read start bit	StartBitNo	INT	&0	&0 to &15	Specify the first bit to read in the specified parameter.
No. of read bits	Size	INT	&1	&1 to &2	Specify the number of bits to read.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

Parameter Numbers

Parameter No.	Name	Address in Position Control Unit				Number of words
		X axis	Y axis	Z axis	U axis	
1	I/O Setting	m+4 (0004)	m+32 (0020)	m+60 (003C)	m+88 (0058)	1 word
2	Operation Mode Setting	m+5 (0005)	m+33 (0021)	m+61 (003D)	m+89 (0059)	1 word

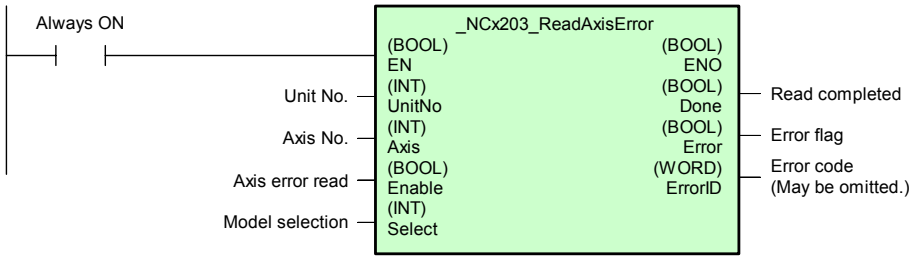
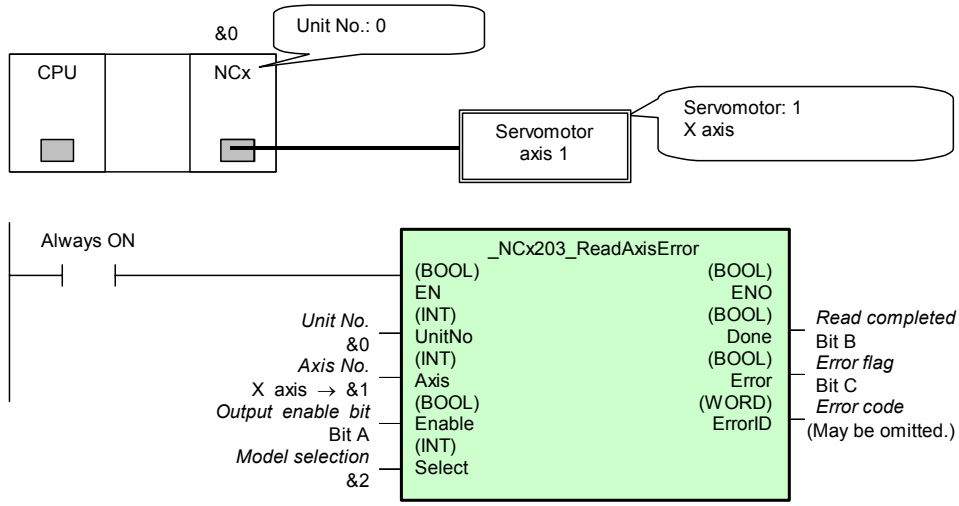
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Normal end	Done	BOOL		Turns ON for a normal end.
Error flag	Error	BOOL		Turns ON for an error end.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.
Parameter value	Value	DINT		The specified number of read bits are transferred to lowest bits of the *Parameter Value*.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -203	Read Axis Error: _NCx203_ReadAxisError

Basic function	Reads axis error information.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx203_ReadAxisError10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	Axis error information for the axis of the specified Unit No. and Axis No. is continuously updated while the Output Enable Bit (Enable) is ON. When *Enable* turns OFF, the status is reset. A rising edge of the Output Enable Bit (Enable) would read the error which occur in the unit. A Read completed is turned ON when no error occur in the unit. The Read Completed Flag (Done) turns ON when the error information is valid. The Error Flag and the Error Code will show the status of errors for the Position Control Unit axis. The Error Flag will also be turned ON when the unit number or axis number is not in range. This status will be reset then the Output Enable Bit (Enable) turns OFF. The Error Flag and Error Code for this FB reflect the status of the CIO Area bits and words allocated to the Position Control Unit without alteration.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Application example	Error information is read for axis 1 (X axis) of the Position Control Unit with a unit number of 0. 
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Output enable bit	Enable	BOOL	0 (OFF)		Turn ON to enable output. Turn OFF to reset the output.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

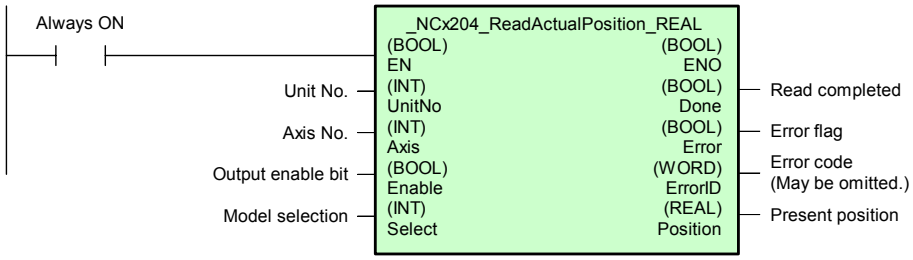
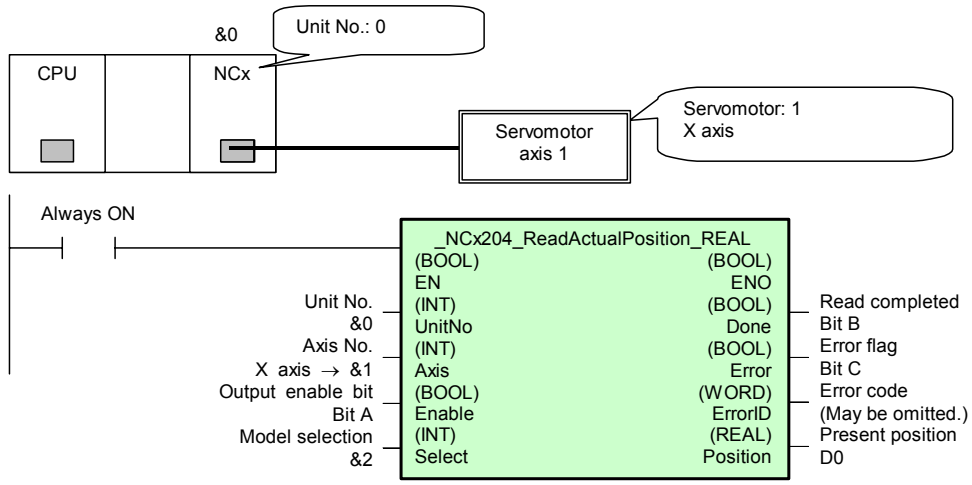
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Read completed	Done	BOOL		Turns ON when the error information is valid.
Error flag	Error	BOOL		Turns ON when an error has occurred in the specified axis.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -204	Read Present Position: _NCx204_ReadActualPosition_REAL

Basic function	Reads the present position of an axis.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx204_ReadActualPosition_REAL10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	The present position of the axis of the specified Unit No. and Axis No. is continuously updated while the Output Enable Bit (Enable) is ON. When the Output Enable Bit (Enable) turns OFF, the present value is cleared to all zeros. The Read Completed Flag (Done) turns ON when the present position data is valid. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. The Error Flag will actually be turned ON only when the unit number or axis number is not in range. This status will be reset then the Output Enable Bit (Enable) turns OFF.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Application example	The present position of axis 1 of the Position Control Unit with a unit number of 0 is read and stored in D0. 
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Output enable bit	Enable	BOOL	0 (OFF)		Turn ON to enable output. Turn OFF to reset the output.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

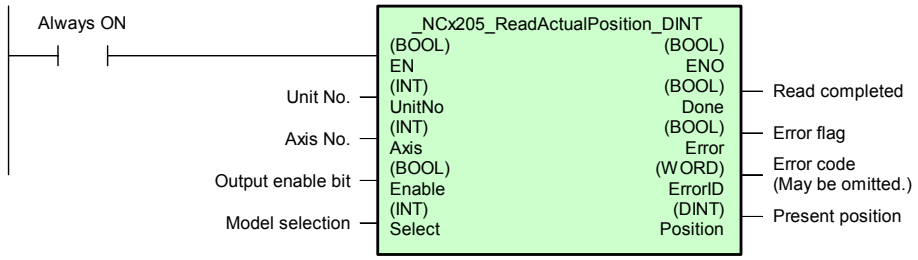
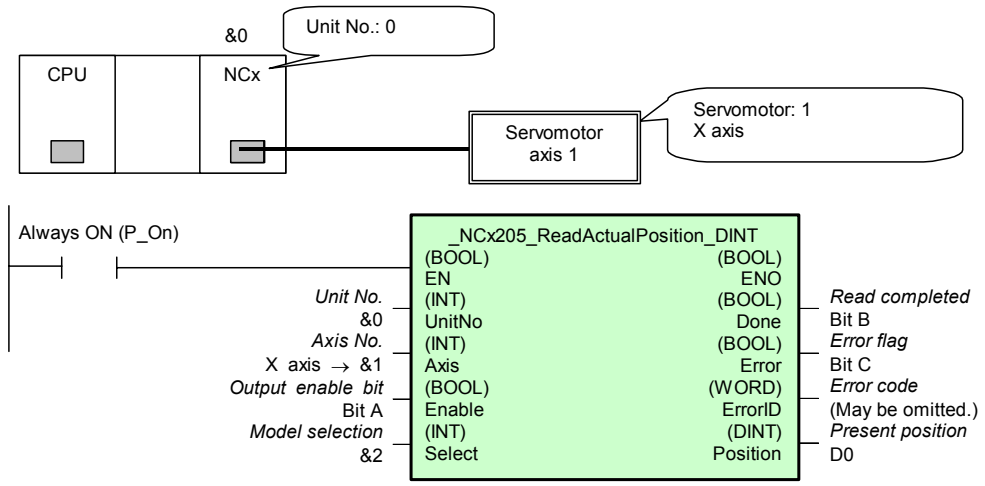
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Read completed	Done	BOOL		Turns ON for a normal end.
Error flag	Error	BOOL		Turns ON for an error end.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.
Present position	Position	REAL	-2.147484e+009 to +2.147484e+009	The present position of the axis controlled by the Position Control Unit.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -205	Read Present Position: _NCx205_ReadActualPosition_DINT

Basic function	Reads the present position of an axis.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx205_ReadActualPosition_DINT10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	The present position of the axis of the specified Unit No. and Axis No. is continuously updated while the Output Enable Bit (Enable) is ON. When the Output Enable Bit (Enable) turns OFF, the present value is cleared to all zeros. The Read Completed Flag (Done) turns ON when the present position data is valid. The Error Flag will be turned ON and the Error Code will be output if an error occurs for the FB. The Error Flag will actually be turned ON only when the unit number or axis number is not in range. This status will be reset then the Output Enable Bit (Enable) turns OFF.
EN input condition	Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.
Application example	The present position of axis 1 of the Position Control Unit with a unit number of 0 is read and stored in D0. 
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 11-5 Error Code Lists

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Output enable bit	Enable	BOOL	0 (OFF)		Turn ON to enable output. Turn OFF to reset the output.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

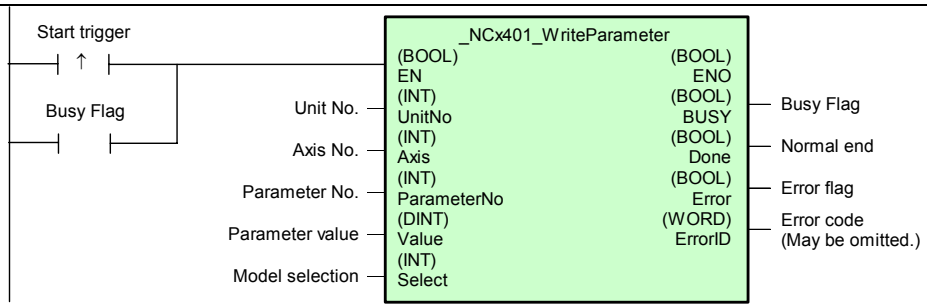
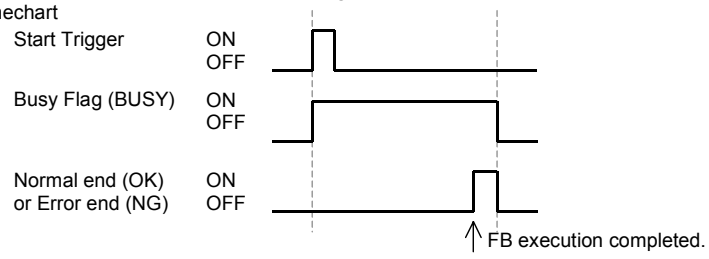
Output Variables

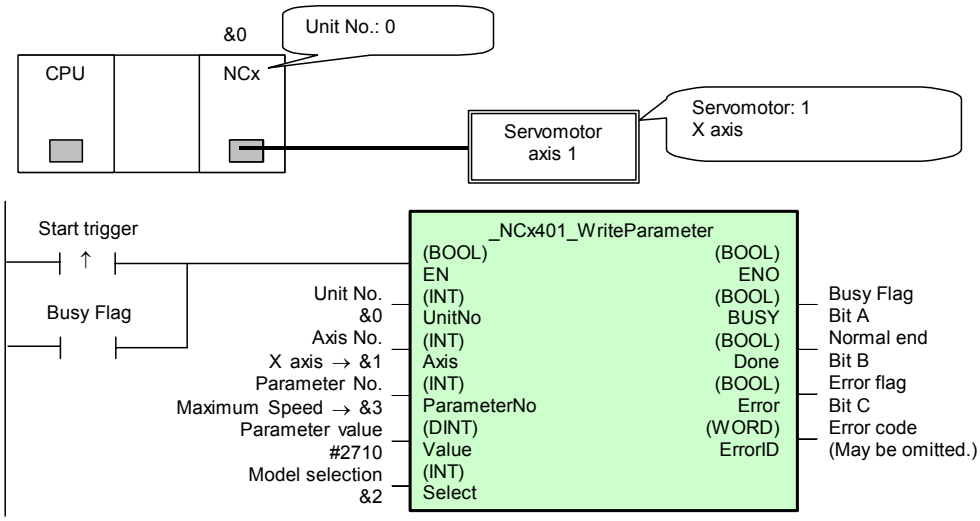
Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Read completed	Done	BOOL		Turns ON for a normal end.
Error flag	Error	BOOL		Turns ON for an error end.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.
Present position	Position	DINT	-2,147,483,647 to +2,147,483, 647	The present position of the axis controlled by the Position Control Unit.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -401	Write Parameter: _NCx401_WriteParameter

Basic function	Writes an axis parameter.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx401_WriteParameter10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	Setting the Position Control Unit • To use this FB, the Unit must be set to operate according to the axis parameters set in the DM Area words allocated to the Unit as a Special I/O Unit and to set parameters in the DM Area words. These settings can be made using the Set Unit FB (_NCx_Setting) or with the common parameters. Refer to *4-3 Common Parameter Area* of the *Position Control Unit Operation Manual* for details.
Function description	The set value is written to the specified parameter for the axis of the specified Unit No. and Axis No. If FB execution ends in an error, an error code will be output to the *Error Code.* Reference This FB executes a data write using the IOWR instruction for the Position Control Unit. Refer to the *Operation Manual* listed in *Related Manuals* for details.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A parameter (maximum speed) is changed for axis 1 (X axis) of the Position Control Unit with a unit number of 0. 
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 4-3 Common Parameter Area 4-4 Axis Parameter Area 11-5 Error Code Lists

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Parameter No.	ParameterNo	INT	&1	&1 to &16	See below.
Parameter value	Value	DINT	&0		Specify the data to write with the IOWR instruction. If the write size is 1 word, only the data stored in the lower address will be written.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

Parameter Numbers

Parameter No.	Name	Address in Position Control Unit				Number of words
		X axis	Y axis	Z axis	U axis	
1	I/O Setting	m+4 (0004)	m+32 (0020)	m+60 (003C)	m+88 (0058)	1 word
2	Operation Mode Setting	m+5 (0005)	m+33 (0021)	m+61 (003D)	m+89 (0059)	1 word
3	Maximum Speed	m+6 (0006)	m+34 (0022)	m+62 (003E)	m+90 (005A)	2 words
4	Initial Speed	m+8 (0008)	m+36 (0024)	m+64 (0040)	m+92 (005C)	2 words
5	Origin Search High Speed	m+10 (000A)	m+38 (0026)	m+66 (0042)	m+94 (005E)	2 words
6	Origin Search Proximity Speed	m+12 (000C)	m+40 (0028)	m+68 (0044)	m+96 (0060)	2 words
7	Origin Compensation	m+14 (000E)	m+42 (002A)	m+70 (0046)	m+98 (0062)	2 words
8	Backlash Compensation	m+16 (0010)	m+44 (002C)	m+72 (0048)	m+100 (0064)	1 word
9	Backlash Compensation Speed	m+17 (0011)	m+45 (002D)	m+73 (0049)	m+101 (0065)	2 words
10	Acceleration/Deceleration Curve	m+19 (0013)	m+47 (002F)	m+75 (004B)	m+103 (0067)	1 word
11	Origin Search Acceleration Time	m+20 (0014)	m+48 (0030)	m+76 (004C)	m+104 (0068)	2 words
12	Origin Search Deceleration Time	m+22 (0016)	m+50 (0032)	m+78 (004E)	m+106 (006A)	2 words
13	Positioning Monitor Time	m+24 (0018)	m+52 (0034)	m+80 (0050)	m+108 (006C)	1 word
14	CCW Software Limit	m+25 (0019)	m+53 (0035)	m+81 (0051)	m+109 (006D)	2 words
15	CW Software Limit	m+27 (001B)	m+55 (0037)	m+83 (0053)	m+111 (006F)	2 words
16	Initial Pulse Designation	m+31 (001F)	m+59 (003B)	m+87 (0057)	m+115 (0073)	1 word

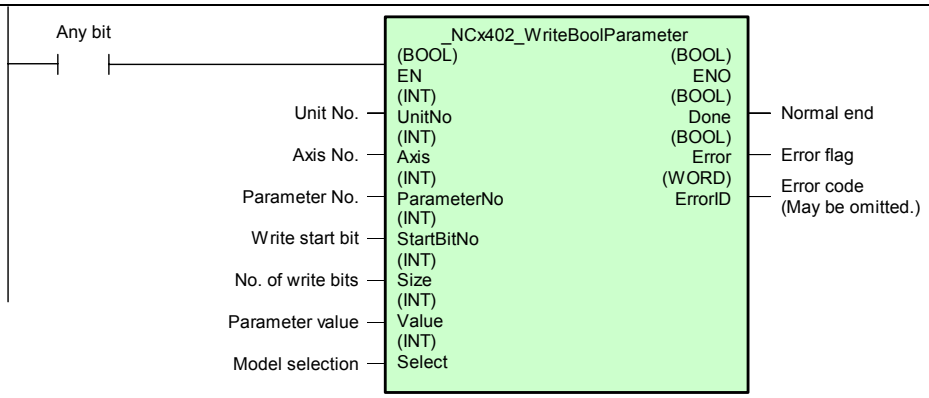
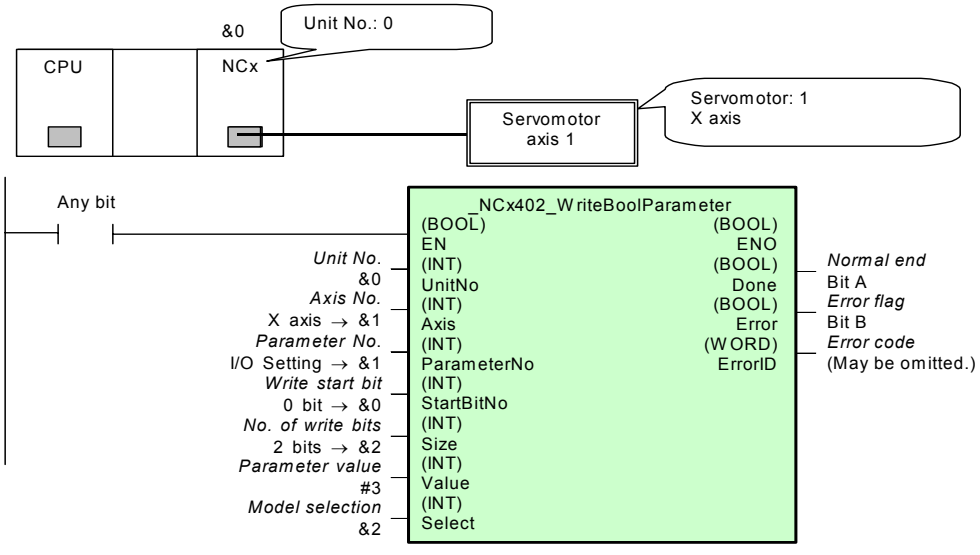
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	Done	BOOL		Turns ON for one cycle when processing ends normally.
Error flag	Error	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -402	Write Boolean Parameter: _NCx402_WriteBoolParameter

Basic function	Writes a Boolean parameter.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx402_WriteBoolParameter10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	Setting the Position Control Unit • To use this FB, the Unit must be set to operate according to the axis parameters set in the DM Area words allocated to the Unit as a Special I/O Unit and to set parameters in the DM Area words. These settings can be made using the Set Unit FB (_NCx_Setting) or with the common parameters. Refer to *4-3 Common Parameter Area* of the *Position Control Unit Operation Manual* for details.
Function description	The parameter of the specified parameter number, write start bit, and number of write bits for the axis of the specified Unit No. and Axis No. is written. Only I/O settings and operation mode settings can be read. Parameters that are written are valid when the power is cycled or the Unit is restarted. *Normal end* and the *Error Flag* can be used to see whether internal processing has been completed normally. If FB execution ends in an error, an error code will be output to the *Error Code*. Set the value to which the parameter in lowest bits of *Parameter Value.*
EN input condition	Any bit can be specified. The data will be written continuously while *Any bit* is ON.
Restrictions	None
Application example	A parameter (I/O setting) is changed for axis 1 (X axis) of the Position Control Unit with a unit number of 0. 
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 4-3 Common Parameter Area 4-4 Axis Parameter Area 11-5 Error Code Lists

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Axis No.	Axis	INT	&1	&1 to &4	&1: X axis &2: Y axis &3: Z axis &4: U axis
Parameter No.	ParameterNo	INT	&1	&1 to &2	See below.
Write start bit	StartBitNo	INT	&0	&0 to &15	Specify the first bit to write in the specified parameter.
No. of write bits	Size	INT	&1	&1 to &2	Specify the number of bits to write.
Parameter value	Value	DINT	&0		Set the value to which the parameter is to be set in lowest bits of *Value*.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

Parameter Numbers

Parameter No.	Name	Address in Position Control Unit				Number of words
		X axis	Y axis	Z axis	U axis	
1	I/O Setting	m+4 (0004)	m+32 (0020)	m+60 (003C)	m+88 (0058)	1 word
2	Operation Mode Setting	m+5 (0005)	m+33 (0021)	m+61 (003D)	m+89 (0059)	1 word

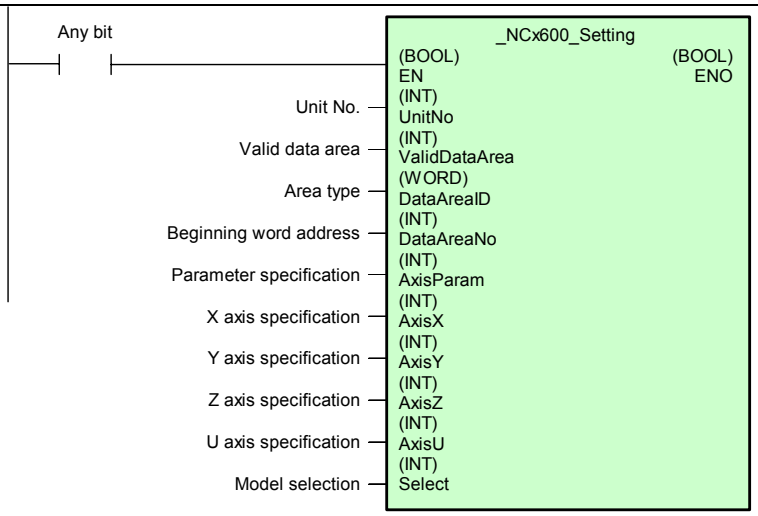
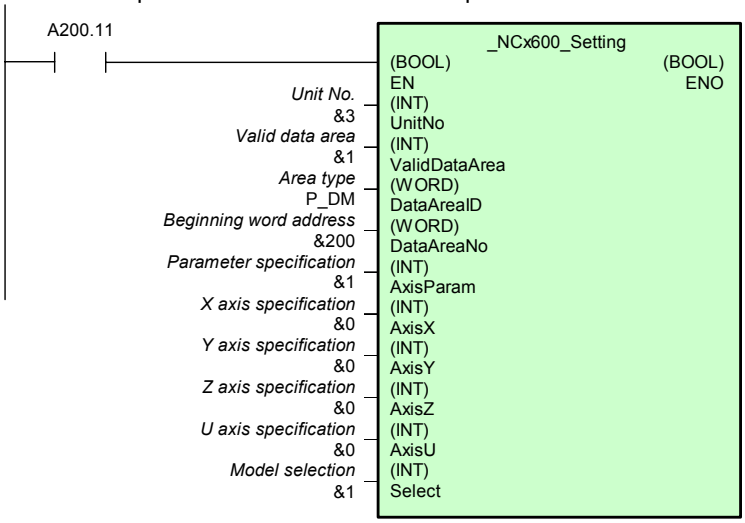
Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Normal end	Done	BOOL		Turns ON for a normal end.
Error flag	Error	BOOL		Turns ON for an error end.
Error code (May be omitted.)	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the *Related Manuals* for details on errors. A code of #0000 will be returned when the unit number of axis number is out of range.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

NCx -600	Set Unit: _NCx600_Setting

Basic function	Sets the Position Control Unit.
Symbol	
File name	\FBL\omronlib\PositionController\NCx_NCx600_Setting10.cxf
Applicable models	CS1W-NC113/133/213/233/413/433 and CJ1W-NC113/133/213/233/413/433
Conditions for usage	None
Function description	Sets the Position Control Unit of the specified unit number. • Operating Data Area 1. Using the DM Area (default) 2. Using a user-specified area • Axis Parameter Settings 1. Operate using the parameters saved in the flash memory in the Position Control Unit 2. Operating using the parameters in the DM Area words allocated to the Position Control Unit The operating data area designation is specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
EN input condition	Any bit can be specified.
Restrictions Other	Observe the following precautions. Otherwise, incorrect operation may occur. • Do not specify EM Area words that have been converted to file memory for the operating data area. • When more than one Position Control Unit is being used in the same PLC, do not allow the operating data areas to overlap.
Application example	When operation is started, the operating data area is set to start at D200 for the Position Control Unit with unit number 3. Operation is set to use DM Area parameters. 
Related manuals	CS-series Position Control Unit Operation Manual (W376) CJ-series Position Control Unit Operation Manual (W397) 4-3 Common Parameter Area

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Valid data area	ValidDataArea	INT	&0	&0 to &1	0: Default allocation (DM Area words) 1: User-specified area
Area type (Valid only when *Valid data area* is set to 1 (user-specified area).)	DataAreaID	WORD	&0	At right (Not checked for default area.)	Specify the desired area. ”P_DM” (#0082): DM ”P_EM0” (#0050) to “P_EMC” (#005C): EM Area bank 0 to C
Beginning word address (Valid only when *Valid data area* is set to 1 (user-specified area).)	DataAreaNo	INT	&0	Not checked.	Specify the first word of the user-specified area.
Parameter specification	AxisParam	INT	&0	&0 to &1	&0: Use parameters in flash memory &1: Use parameters in DM Area
X axis specification (Valid only when *Parameter specification* is set to 1 (Use parameters in flash memory)	AxisX	INT	&0	&0 to &1	&0: Use axis parameters in DM Area &1: Set axis parameters to default values.
Y axis specification (Same as above.)	AxisY	INT	&0	&0 to &1	Same as above.
Z axis specification (Same as above.)	AxisZ	INT	&0	&0 to &1	Same as above.
U axis specification (Same as above.)	AxisU	INT	&0	&0 to &1	Same as above.
Model selection	Select	INT	&4	&1, &2, &4	&1: 1-axis Unit (NC1xx) &2: 2-axis Unit (NC2xx) &4: 4-axis Unit (NC4xx)

Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ **Version History**

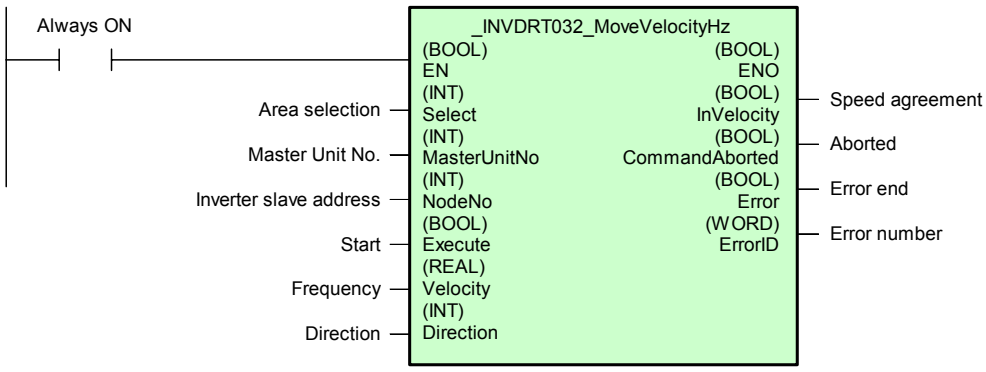
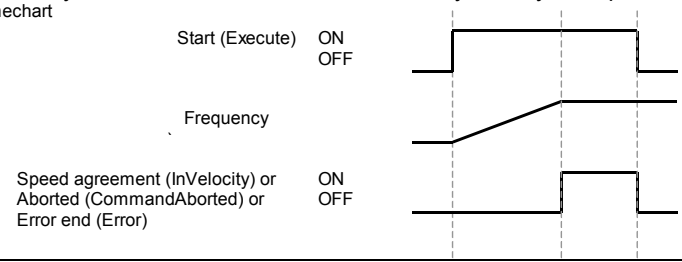
Version	Date	Contents
1.00	2004.6.	Original production

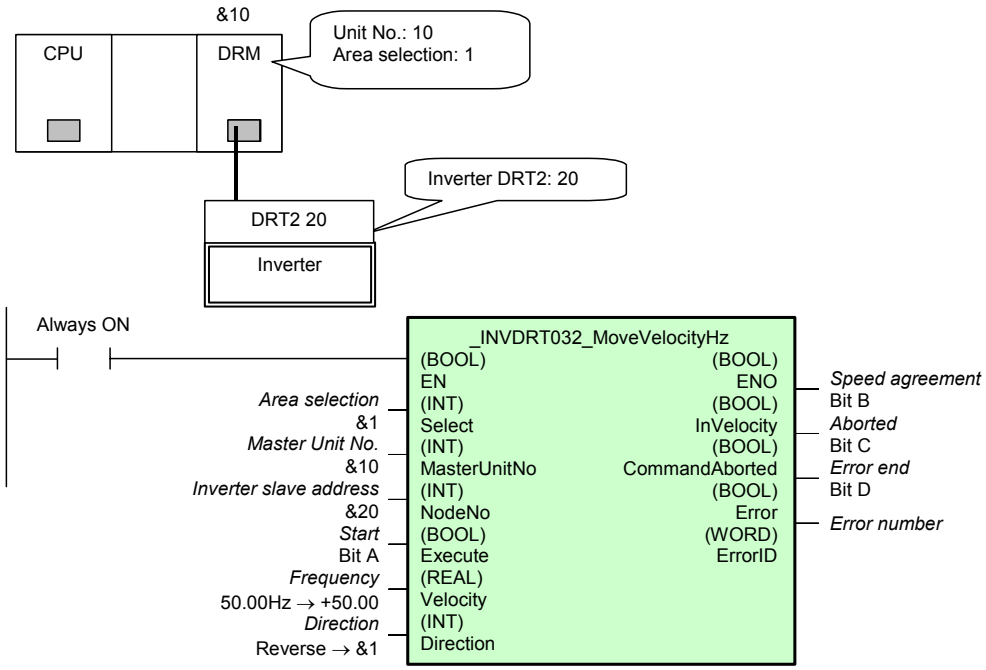
3-8 Inverter (DeviceNet)

3G3MV series / 3G3RV series

FB Name	Function	Page
_INVDRT032_MoveVelocityHz	Move Inverter Hz	3-271
_INVDRT033_MoveVelocityRPM	Move Inverter RPM	3-274
_INVDRT060_Stop	Stop Inverter	3-277
_INVDRT080_Reset	Reset Inverter Error	3-279
_INVDRT200_ReadStatus	Read Inverter Status	3-281
_INVDRT201_ReadParameter	Read Inverter Parameter	3-284
_INVDRT203_ReadAxisError	Read Inverter Error Information	3-286
_INVDRT401_WriteParameter	Write Inverter Parameter	3-288

INVDRT -032	Move Inverter Hz: _INVDRT032_MoveVelocityHz

Basic function	Outputs a run signal, rotation direction, and speed to the Inverter
Symbol	
File name	Lib\FBL\omronlib\Inverter\INVRT\Dnet_INVDRT032_MoveVelocityHz10.cxf
Applicable models	3G3MV-series and 3G3RV-series Inverters
Conditions for usage	Inverter Settings The following are necessary for the Inverter connected to DeviceNet. • It must use standard remote I/O. (This is the default setting for the 3G3xV-PDRT2 DeviceNet Unit.) • Fixed allocations must be used for I/O memory allocations. Run command selection (3G3MV: n003=3 / 3G3RV: b1-02=3) and Frequency reference selection (3G3MV: n004=9 / 3G3MV: b1-01=3) are set “From the optional DeviceNet Communications Unit” The Fixed Allocation Procedure • Software switch 2 in the DeviceNet Unit is used to set fixed allocations. • Refer to section 3 of the *DeviceNet Unit Operation Manual* for details. Bits in n where n = 1500 + (Master Unit No. × 25) Bit 08: Slave Fixed Allocation Area Setting 1 IN1 (PLC←INV) Area CIO 3300 to CIO 3363 (Inverter uses 2 words from unit No. word) OUT1 (PLC→INV) Area CIO 3200 to CIO 3263 (Inverter uses 2 words from unit No. word) Bit 09: Slave Fixed Allocation Area Setting 2 IN2 (PLC←INV) Area CIO 3500 to CIO 3563 (Inverter uses 2 words from unit No. word) OUT2 (PLC→INV) Area CIO 3400 to CIO 3463 (Inverter uses 2 words from unit No. word) Bit 10: Slave Fixed Allocation Area Setting 3 IN3 (PLC←INV) Area CIO 3700 to CIO 3763 (Inverter uses 2 words from unit No. word) OUT3 (PLC→INV) Area CIO 3600 to CIO 3663 (Inverter uses 2 words from unit No. word) Note 1: The settings for bits 08 to 10 are effective when they are turned ON and then OFF. (The Master Unit will automatically turn OFF these bits when it detects they have been turned ON.) Refer to section 2 in the *SYSDRIVE DeviceNet Communications Unit/Card User's Manual* for the complete procedure.
Function description	Operation is started for the Inverter specified by the Master Unit No. and the Inverter Slave Address. The speed is specified using a frequency (Hz). The run command is written to the command area when *Execute* turns ON. The speed and direction are written to the command area each cycle while *Execute* remains ON. If *Execute* is ON and the run command is OFF, it will be assumed that the Stop Inverter (_INVDRT060_Stop) function block has been executed and *Command aborted* will turn ON.
FB precautions	• The words allocated to the Inverter depend on the settings in the DeviceNet Unit. • Set the *Area selection* to the slave area set in the DeviceNet Unit, i.e., area 1, 2 or 3. The default setting is for area 1. • Inverocity or Error will be turned ON for one cycle only after processing is completed. Timechart 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions Input variables	• Always use the Always ON Flag for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.

Output variables	• *Command aborted* is turned OFF when *Execute* turns OFF.
Application example	Operation is started for Inverter 20 connected to the DeviceNet Unit with a unit number of 10. 
Related manuals	SYSDRIVE 3G3MV Multi-function Compact Inverters User's Manual (I527) SYSDRIVE 3G3RV High-function General-purpose Inverters User's Manual (I532) SYSDRIVE DeviceNet Communications Unit/Card User's Manual (I539) 2-3-1 Mounting and Setting the DeviceNet (Master) Unit CS/CJ Series DeviceNet Units Operation Manual (W380) Section 3 Allocated CIO and DM Words Section 4 Remote I/O Master Communications
Related FBs	Stop Inverter (_INVDRT060_Stop)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Area selection	Select	INT	&1	&1 to &3	Specifies the DeviceNet I/O memory area. Specify the area set using the software switch in the DeviceNet Unit. &1: Fixed allocations, IN: CIO 3300, OUT: CIO 3200 &2: Fixed allocations, IN: CIO 3500, OUT: CIO 3400 &3: Fixed allocations, IN: CIO 3700, OUT: CIO 3600
Master Unit No.	MasterUnitNo	INT	0	&0 to &15 #0 to #F	The unit number of the DeviceNet Unit
Inverter slave address	NodeNo	INT	&0	&0 to &63	The address of the slave
Start	Execute	BOOL	0(OFF)		1 (ON): Operation started 0 (OFF): All of the following are turned OFF: InVelocity, CommandAborted, Error, and ErrorID.
Frequency	Velocity	REAL	0	+0.00 to +400.00	Specify the frequency in units of 0.01. Any digits below the setting unit are truncated.
Direction	Direction	INT	&0	&0 to &1	&0: Forward &1: Reverse

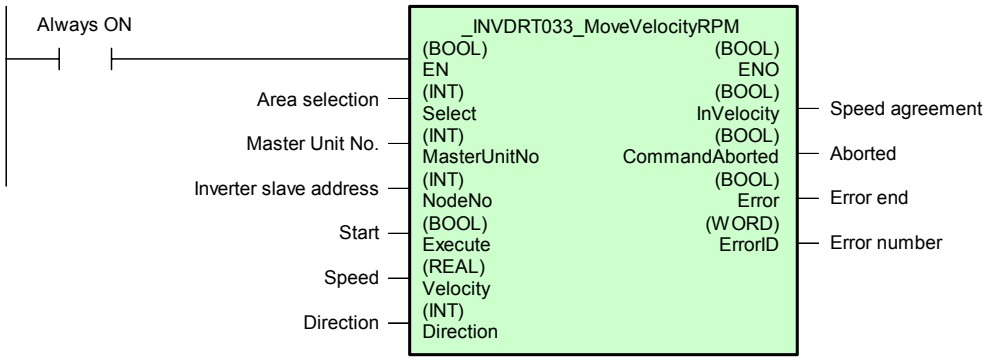
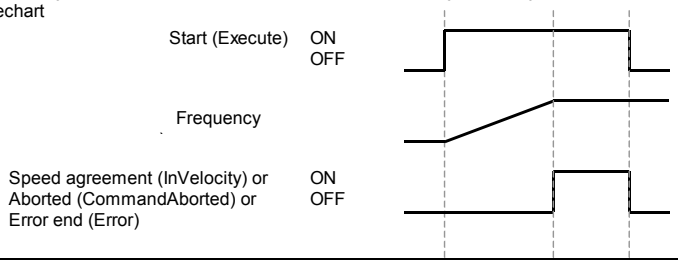
Output Variables

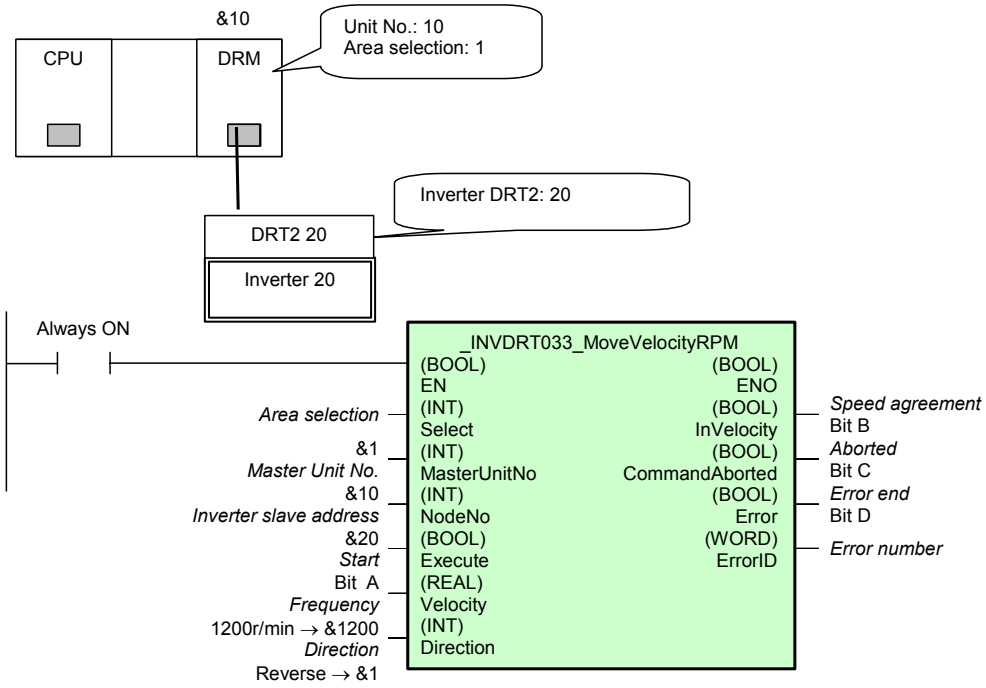
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Speed agreement	InVelocity	BOOL		1 (ON): Speed agreement
Aborted	CommandAborted	BOOL		1 (ON): Aborted
Error end	Error	BOOL		0 (OFF): Other status 1 (ON): Error in FB
Error number	ErrorID	WORD		#0000: No error or communications error prevented getting the error number #0001 to #FFFF: Error number from Inverter Refer to the *Related Manuals* for details.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

INVDRT -033	Move Inverter RPM: _INVDRT033_MoveVelocityRPM

Basic function	Outputs a run signal, rotation direction, and speed to the Inverter
Symbol	
File name	Lib\FBL\omronlib\Inverter\INVRT\Dnet_INVDRT033_MoveVelocityRPM10.cxf
Applicable models	3G3MV-series and 3G3RV-series Inverters
Conditions for usage	Inverter Settings The following are necessary for the Inverter connected to DeviceNet. • It must use standard remote I/O. (This is the default setting for the 3G3xV-PDRT2 DeviceNet Unit.) • Fixed allocations must be used for I/O memory allocations. If the Configurator software is used to set any allocation different from the fixed allocation, this FB cannot find the specific inverter and FB does not work properly. Run command selection (3G3MV: n003=3 / 3G3RV: b1-02=3) and Frequency reference selection (3G3MV: n004=9 / 3G3MV: b1-01=3) are set “From the optional DeviceNet Communications Unit” The Fixed Allocation Procedure • Software switch 2 in the DeviceNet Unit is used to set fixed allocations. Refer to section 3 of the *DeviceNet Unit Operation Manual* for details. Bits in n where n = 1500 + (Master Unit No. × 25) Bit 08: Slave Fixed Allocation Area Setting 1 IN1 (PLC←INV) Area CIO 3300 to CIO 3363 (Inverter uses 2 words from unit No. word) OUT1 (PLC→INV) Area CIO 3200 to CIO 3263 (Inverter uses 2 words from unit No. word) Bit 09: Slave Fixed Allocation Area Setting 2 IN2 (PLC←INV) Area CIO 3500 to CIO 3563 (Inverter uses 2 words from unit No. word) OUT2 (PLC→INV) Area CIO 3400 to CIO 3463 (Inverter uses 2 words from unit No. word) Bit 10: Slave Fixed Allocation Area Setting 3 IN3 (PLC←INV) Area CIO 3700 to CIO 3763 (Inverter uses 2 words from unit No. word) OUT3 (PLC→INV) Area CIO 3600 to CIO 3663 (Inverter uses 2 words from unit No. word) Note 1: The settings for bits 08 to 10 are effective when they are turned ON and then OFF. (The Master Unit will automatically turn OFF these bits when it detects they have been turned ON.) Refer to section 2 in the *SYSDRIVE DeviceNet Communications Unit/Card User's Manual* for the complete procedure.
Function description	Operation is started for the Inverter specified by the Master Unit No. and the Inverter Slave Address. The speed is specified using revolutions per minute. Set the Frequency Reference Setting and Monitor Units parameter (MV: n35, RV: o1-03) in the Inverter to control the references for revolutions per minute The default setting is Hz. The run command is written to the command area when *Execute* turns ON. The speed and direction are written to the command area each cycle while *Execute* remains ON. If *Execute* is ON and the run command is OFF, it will be assumed that the Stop Inverter (_INVDRT060_Stop) function block has been executed and *Command aborted* will turn ON.
FB precautions	• The words allocated to the Inverter depend on the settings in the DeviceNet Unit. • Set the *Area selection* to the slave area set in the DeviceNet Unit, i.e., area 1, 2 or 3. The default setting is for area 1. • Inverocity or Error will be turned ON for one cycle only after processing is completed. Timechart 
EN input condition	Connect the EN input to the Always ON Flag (P_On).

Restrictions Input variables	• Always use the Always ON Flag for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• *Command aborted* is turned OFF when *Execute* turns OFF.
Application example	Operation is started for Inverter 20 connected to the DeviceNet Unit with a unit number of 10. 
Related manuals	SYSDRIVE 3G3MV Multi-function Compact Inverters User's Manual (I527) SYSDRIVE 3G3RV High-function General-purpose Inverters User's Manual (I532) SYSDRIVE DeviceNet Communications Unit/Card User's Manual (I539) 2-3-1 Mounting and Setting the DeviceNet (Master) Unit CS/CJ Series DeviceNet Units Operation Manual (W380) Section 3 Allocated CIO and DM Words Section 4 Remote I/O Master Communications
Related FBs	Stop Inverter (_INVDRT060_Stop)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Area selection	Select	INT	&1	&1 to &3	Specifies the DeviceNet I/O memory area. Specify the area set using the software switch in the DeviceNet Unit. &1: Fixed allocations, IN: CIO 3300, OUT: CIO 3200 &2: Fixed allocations, IN: CIO 3500, OUT: CIO 3400 &3: Fixed allocations, IN: CIO 3700, OUT: CIO 3600
Master Unit No.	MasterUnitNo	INT	0	&0 to 15 #0 to #F	The unit number of the DeviceNet Unit
Inverter slave address	NodeNo	INT	&0	&0 to &63	The address of the slave (n153, H5-01)
Start	Execute	BOOL	0 (OFF)		1 (ON): Operation started 0 (OFF): All of the following are turned OFF: InVelocity, CommandAborted, Error, and ErrorID.
Speed	Velocity	REAL	0.0		Specify a REAL integer value. Any digits below 1 r/min are truncated.
Direction	Direction	INT	0	&0 to &1	0: Forward 1: Reverse

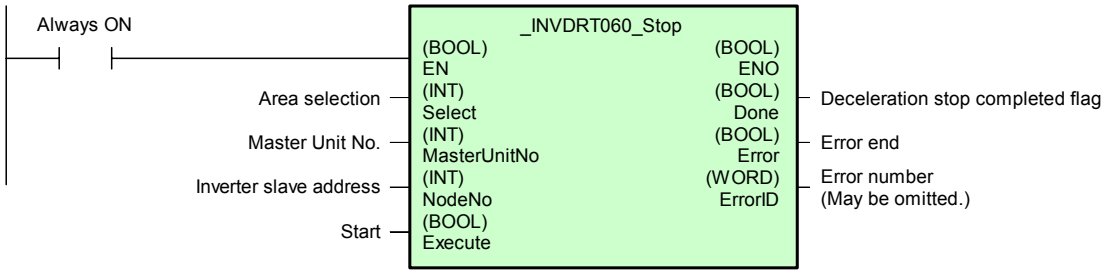
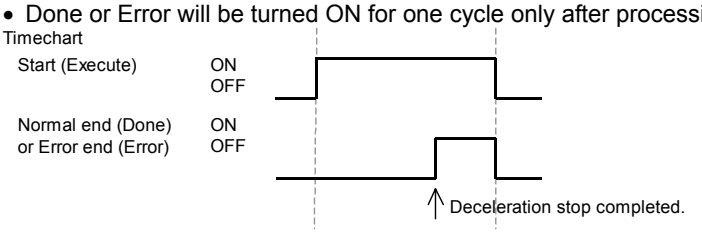
Output Variables

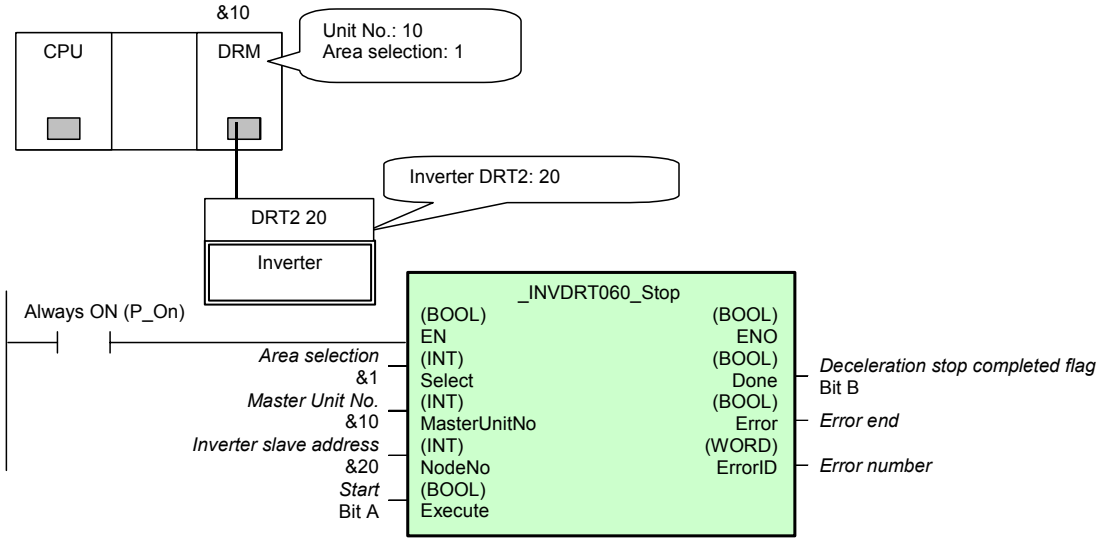
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Speed agreement	InVelocity	BOOL		1 (ON): Speed agreement
Aborted	CommandAborted	BOOL		1 (ON): Aborted
Error end	Error	BOOL		0 (OFF): Other status 1 (ON): Error in FB
Error number	ErrorID	WORD		#0000: No error or communications error prevented getting the error number #0001 to #FFFF: Error number from Inverter Refer to the *Related Manuals* for details.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

INVDRT -060	Stop Inverter: _INVDRT060_Stop

Basic function	Stops the Inverter.
Symbol	
File name	Lib\FBL\omronlib\Inverter\INVRT\Dnet_INVDRT060_Stop10.cxf
Applicable models	3G3MV-series and 3G3RV-series Inverters
Conditions for usage	Inverter Settings The following are necessary for the Inverter connected to DeviceNet. • It must use standard remote I/O. (This is the default setting for the 3G3xV-PDRT2 DeviceNet Unit.) • Fixed allocations must be used for I/O memory allocations. If the Configurator software is used to set any allocation different from the fixed allocation, this FB cannot find the specific inverter and FB does not work properly. • Run command selection (3G3MV: n003=3 / 3G3RV: b1-02=3) and Frequency reference selection (3G3MV: n004=9 / 3G3MV: b1-01=3) are set “From the optional DeviceNet Communications Unit” The Fixed Allocation Procedure Software switch 2 in the DeviceNet Unit is used to set fixed allocations. Refer to section 3 of the *DeviceNet Unit Operation Manual* for details. Bits in n where n = 1500 + (Master Unit No. × 25) Bit 08: Slave Fixed Allocation Area Setting 1 IN1 (PLC←INV) Area CIO 3300 to CIO 3363 (Inverter uses 2 words from unit No. word) OUT1 (PLC→INV) Area CIO 3200 to CIO 3263 (Inverter uses 2 words from unit No. word) Bit 09: Slave Fixed Allocation Area Setting 2 IN2 (PLC←INV) Area CIO 3500 to CIO 3563 (Inverter uses 2 words from unit No. word) OUT2 (PLC→INV) Area CIO 3400 to CIO 3463 (Inverter uses 2 words from unit No. word) Bit 10: Slave Fixed Allocation Area Setting 3 IN3 (PLC←INV) Area CIO 3700 to CIO 3763 (Inverter uses 2 words from unit No. word) OUT3 (PLC→INV) Area CIO 3600 to CIO 3663 (Inverter uses 2 words from unit No. word) Note 1: The settings for bits 08 to 10 are effective when they are turned ON and then OFF. (The Master Unit will automatically turn OFF these bits when it detects they have been turned ON.) Refer to section 2 in the *SYSDRIVE DeviceNet Communications Unit/Card User's Manual* for the complete procedure.
Function description	The Inverter specified by the Master Unit No. and the Inverter Slave Address is stopped. *Deceleration stop completed* is turned OFF when *Execute* turns OFF. The run command is reset (turned OFF) each cycle while *Execute* remains ON. *Deceleration stop completed* is turned ON when *Execute* turns OFF, Forward Run is OFF, and Reverse Run is OFF.
FB precautions	• The words allocated to the Inverter depend on the settings in the DeviceNet Unit. • Set the *Area selection* to the slave area set in the DeviceNet Unit, i.e., area 1, 2 or 3. The default setting is for area 1. • Done or Error will be turned ON for one cycle only after processing is completed. Timechart 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions Input variables	• Always use the Always ON Flag for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.

Application example	When bit A turns ON, operation is stopped for Inverter 20 connected to the DeviceNet Unit with a unit number of 10. 
Related manuals	SYSDRIVE 3G3MV Multi-function Compact Inverters User's Manual (I527) SYSDRIVE 3G3RV High-function General-purpose Inverters User's Manual (I532) SYSDRIVE DeviceNet Communications Unit/Card User's Manual (I539) 2-3-1 Mounting and Setting the DeviceNet (Master) Unit CS/CJ Series DeviceNet Units Operation Manual (W380) Section 3 Allocated CIO and DM Words Section 4 Remote I/O Master Communications

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Area selection	Select	INT	&1	&1 to &3	Specifies the DeviceNet I/O memory area. Specify the area set using the software switch in the DeviceNet Unit. &1: Fixed allocations, IN: CIO 3300, OUT: CIO 3200 &2: Fixed allocations, IN: CIO 3500, OUT: CIO 3400 &3: Fixed allocations, IN: CIO 3700, OUT: CIO 3600
Master Unit No.	MasterUnitNo	INT	0	&0 to &15 #0 to #F	The unit number of the DeviceNet Unit
Inverter slave address	NodeNo	INT	&0	&0 to &63	The address of the slave
Start	Execute	BOOL	0(OFF)		1 (ON): Aborts Inverter operation.

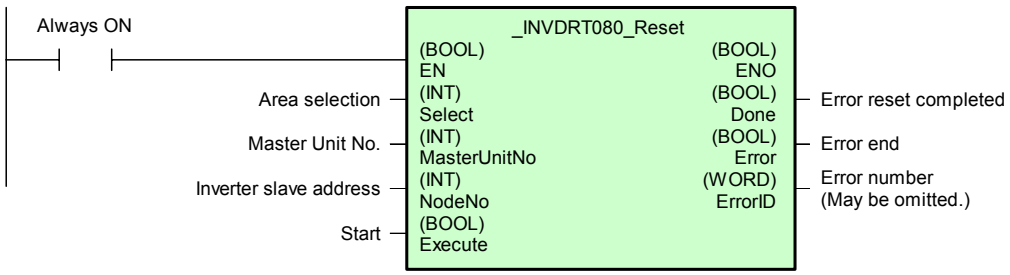
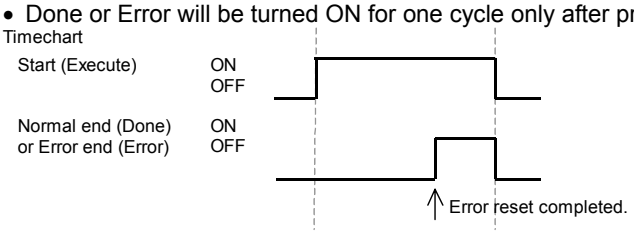
Output Variables

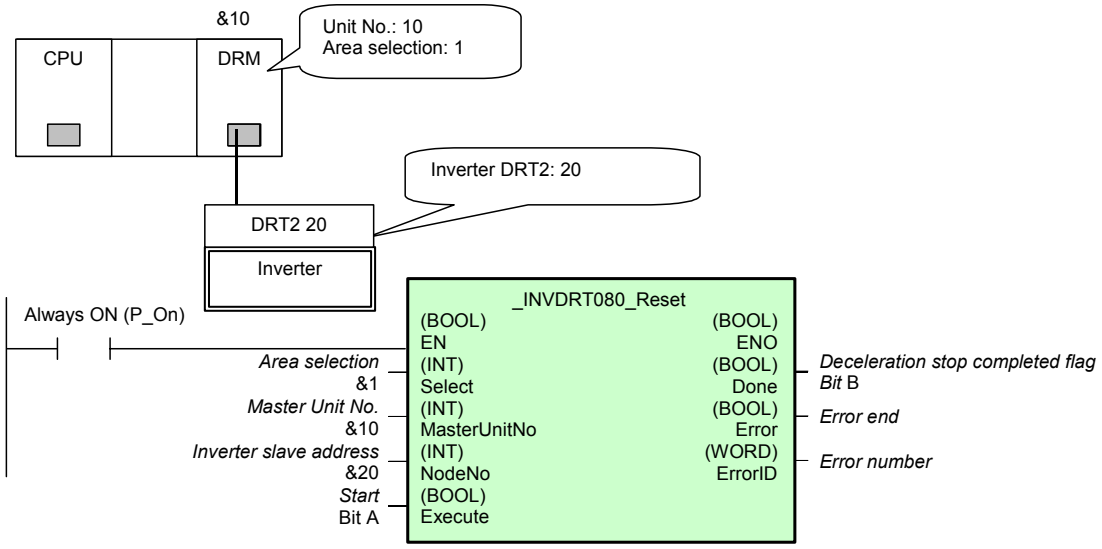
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		0 (OFF): Status invalid 1 (ON): Status valid
Deceleration stop completed flag	Done	BOOL		0 (OFF): Other status 1 (ON): Deceleration stop completed flag
Error flag	Error	BOOL		0 (OFF): Other status 1 (ON): Error in FB
Error number	ErrorID	WORD		#0000: No error or communications error prevented getting the error number #0001 to #FFFF: Error number from Inverter Refer to the *Related Manuals* for details.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

INVDRT -080	Reset Inverter Error: _ INVDRT080_Reset

Basic function	An error is reset for the Inverter.
Symbol	
File name	Lib\FBL\omronlib\Inverter\INVRT\Dnet_INVDRT080_Reset10.cxf
Applicable models	3G3MV-series and 3G3RV-series Inverters
Conditions for usage	Inverter Settings The following are necessary for the Inverter connected to DeviceNet. • It must use standard remote I/O. (This is the default setting for the 3G3xV-PDRT2 DeviceNet Unit.) • Fixed allocations must be used for I/O memory allocations. If the Configurator software is used to set any allocation different from the fixed allocation, this FB cannot find the specific inverter and FB does not work properly. The Fixed Allocation Procedure DeviceNet Master node address should set to 63 as same as factory setting. Software switch 2 (nCH) in the DeviceNet Unit is used to set fixed allocations. Refer to section 3 of the *DeviceNet Unit Operation Manual* for details. Bits in n where n = 1500 + (Master Unit No. × 25) Bit 08: Slave Fixed Allocation Area Setting 1 IN1 (PLC←INV) Area CIO 3300 to CIO 3363 (Inverter uses 2 words from unit No. word) OUT1 (PLC→INV) Area CIO 3200 to CIO 3263 (Inverter uses 2 words from unit No. word) Bit 09: Slave Fixed Allocation Area Setting 2 IN2 (PLC←INV) Area CIO 3500 to CIO 3563 (Inverter uses 2 words from unit No. word) OUT2 (PLC→INV) Area CIO 3400 to CIO 3463 (Inverter uses 2 words from unit No. word) Bit 10: Slave Fixed Allocation Area Setting 3 IN3 (PLC←INV) Area CIO 3700 to CIO 3763 (Inverter uses 2 words from unit No. word) OUT3 (PLC→INV) Area CIO 3600 to CIO 3663 (Inverter uses 2 words from unit No. word) Note 1: The settings for bits 08 to 10 are effective when they are turned ON and then OFF. (The Master Unit will automatically turn OFF these bits when it detects they have been turned ON.) Refer to section 2 in the *SYSDRIVE DeviceNet Communications Unit/Card User's Manual* for the complete procedure.
Function description	An error in the Inverter specified by the Master Unit No. and the Inverter Slave Address is reset. *Error reset completed* is turned OFF when *Execute* turns OFF. The error reset command is turned ON each cycle while *Execute* remains ON. *Error reset completed* is turned ON when *Execute* is ON and the error status is OFF.
FB precautions	• The words allocated to the Inverter depend on the settings in the DeviceNet Unit. • Set the *Area selection* to the slave area set in the DeviceNet Unit, i.e., area 1, 2 or 3. The default setting is for area 1. • Done or Error will be turned ON for one cycle only after processing is completed. Timechart 
EN input condition	Connect the EN input to the Always ON Flag (P_On).
Restrictions Input variables	• Always use the Always ON Flag for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.

Application example	When bit A turns ON, an error is reset for Inverter 20 connected to the DeviceNet Unit with a unit number of 10. 
Related manuals	SYSDRIVE 3G3MV Multi-function Compact Inverters User's Manual (I527) SYSDRIVE 3G3RV High-function General-purpose Inverters User's Manual (I532) SYSDRIVE DeviceNet Communications Unit/Card User's Manual (I539) 2-3-1 Mounting and Setting the DeviceNet (Master) Unit CS/CJ Series DeviceNet Units Operation Manual (W380) Section 3 Allocated CIO and DM Words Section 4 Remote I/O Master Communications

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Area selection	Select	INT	&1	&1 to &3	Specifies the DeviceNet I/O memory area. Specify the area set using the software switch in the DeviceNet Unit. &1: Fixed allocations, IN: CIO 3300, OUT: CIO 3200 &2: Fixed allocations, IN: CIO 3500, OUT: CIO 3400 &3: Fixed allocations, IN: CIO 3700, OUT: CIO 3600
Master Unit No.	MasterUnitNo	INT	0	&0 to &15 #0 to #F	The unit number of the DeviceNet Unit
Inverter slave address	NodeNo	INT	&0	&0 to &63	The address of the slave
Start	Execute	BOOL	0 (OFF)		1 (ON): Resets an error in the Inverter.

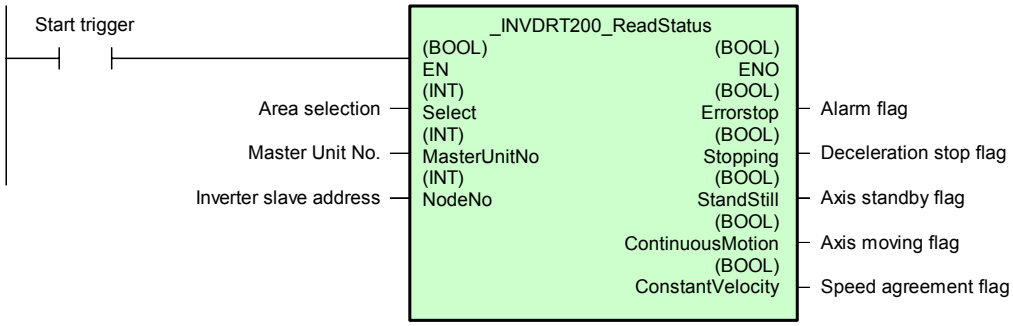
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		0 (OFF): Status invalid 1 (ON): Status valid
Error reset completed	Done	BOOL		0 (OFF): Other status 1 (ON): Error reset completed.
Error flag	Error	BOOL		0 (OFF): Other status 1 (ON): Error in FB
Error number	ErrorID	WORD		#0000: No error or communications error prevented getting the error number #0001 to #FFFF: Error number from Inverter Refer to the *Related Manuals* for details.

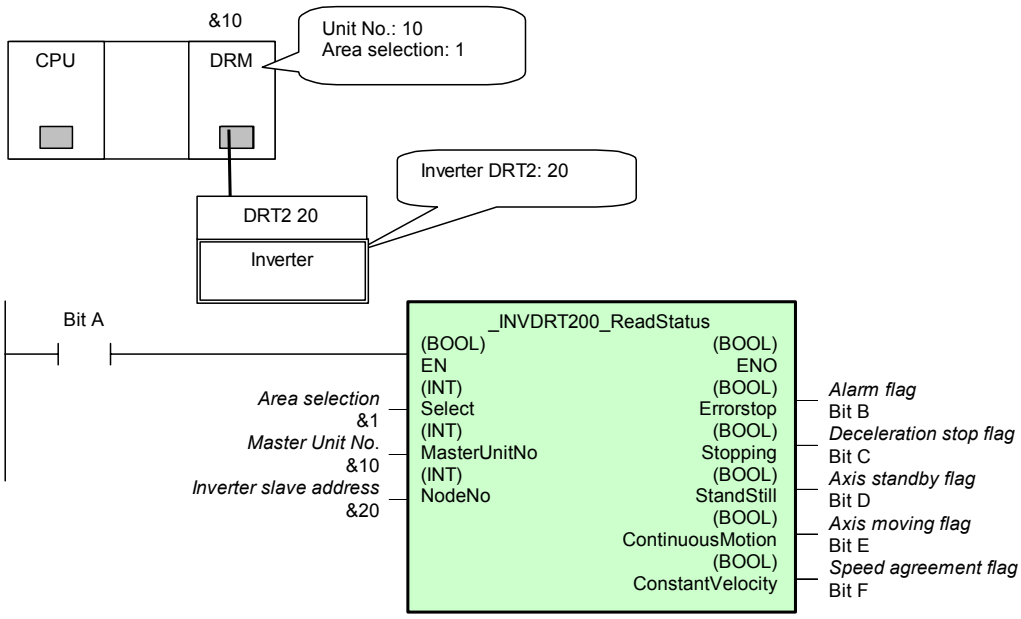
■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

INVDRT -200	Read Inverter Status: _INVDRT200_ReadStatus

Basic function	Reads status information from the Inverter.
Symbol	
File name	Lib\FBL\omronlib\Inverter\INVRT\Dnet_INVDRT200_ReadStatus10.cxf
Applicable models	3G3MV-series and 3G3RV-series Inverters
Conditions for usage	Inverter Settings The following are necessary for the Inverter connected to DeviceNet. • It must use standard remote I/O. (This is the default setting for the 3G3xV-PDRT2 DeviceNet Unit.) • Fixed allocations must be used for I/O memory allocations. If the Configurator software is used to set any allocation different from the fixed allocation, this FB cannot find the specific inverter and FB does not work properly. The Fixed Allocation Procedure • Software switch 2 in the DeviceNet Unit is used to set fixed allocations. Refer to section 3 of the *DeviceNet Unit Operation Manual* for details. Bits in n where n = 1500 + (Master Unit No. × 25) Bit 08: Slave Fixed Allocation Area Setting 1 IN1 (PLC←INV) Area CIO 3300 to CIO 3363 (Inverter uses 2 words from unit No. word) OUT1 (PLC→INV) Area CIO 3200 to CIO 3263 (Inverter uses 2 words from unit No. word) Bit 09: Slave Fixed Allocation Area Setting 2 IN2 (PLC←INV) Area CIO 3500 to CIO 3563 (Inverter uses 2 words from unit No. word) OUT2 (PLC→INV) Area CIO 3400 to CIO 3463 (Inverter uses 2 words from unit No. word) Bit 10: Slave Fixed Allocation Area Setting 3 IN3 (PLC←INV) Area CIO 3700 to CIO 3763 (Inverter uses 2 words from unit No. word) OUT3 (PLC→INV) Area CIO 3600 to CIO 3663 (Inverter uses 2 words from unit No. word) Note 1: The settings for bits 08 to 10 are effective when they are turned ON and then OFF. (The Master Unit will automatically turn OFF these bits when it detects they have been turned ON.) Refer to section 2 in the *SYSDRIVE DeviceNet Communications Unit/Card User's Manual* for the complete procedure.
Function description	The status is read from the Inverter specified by the Master Unit No. and the Inverter Slave Address.
FB precautions	• The words allocated to the Inverter depend on the settings in the DeviceNet Unit. • Set the *Area selection* to the slave area set in the DeviceNet Unit, i.e., area 1, 2 or 3. The default setting is for area 1.
EN input condition	Any bit can be specified.
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.

Application example	When bit A turns ON, the status is read from Inverter 20 connected to the DeviceNet Unit with a unit number of 10.
Related manuals	SYSDRIVE 3G3MV Multi-function Compact Inverters User's Manual (I527) SYSDRIVE 3G3RV High-function General-purpose Inverters User's Manual (I532) SYSDRIVE DeviceNet Communications Unit/Card User's Manual (I539) 2-3-1 Mounting and Setting the DeviceNet (Master) Unit CS/CJ Series DeviceNet Units Operation Manual (W380) Section 3 Allocated CIO and DM Words Section 4 Remote I/O Master Communications



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Area selection	Select	INT	&1	&1 to &3	Specifies the DeviceNet I/O memory area. Specify the area set using the software switch in the DeviceNet Unit. &1: Fixed allocations, IN: CIO 3300, OUT: CIO 3200 &2: Fixed allocations, IN: CIO 3500, OUT: CIO 3400 &3: Fixed allocations, IN: CIO 3700, OUT: CIO 3600
Master Unit No.	MasterUnitNo	INT	0	&0 to &15 #0 to #F	The unit number of the DeviceNet Unit
Inverter slave address	NodeNo	INT	&0	&0 to &63	The address of the slave

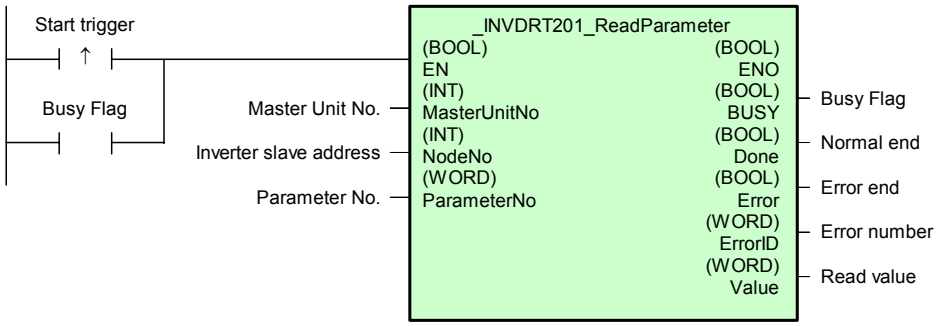
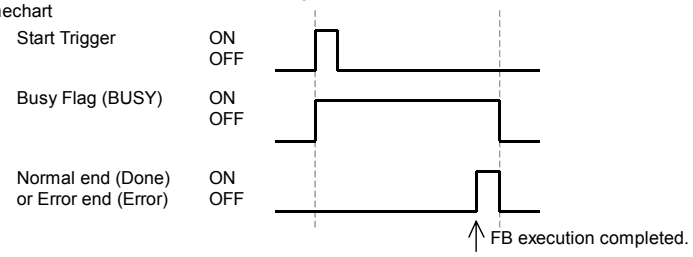
Output Variables

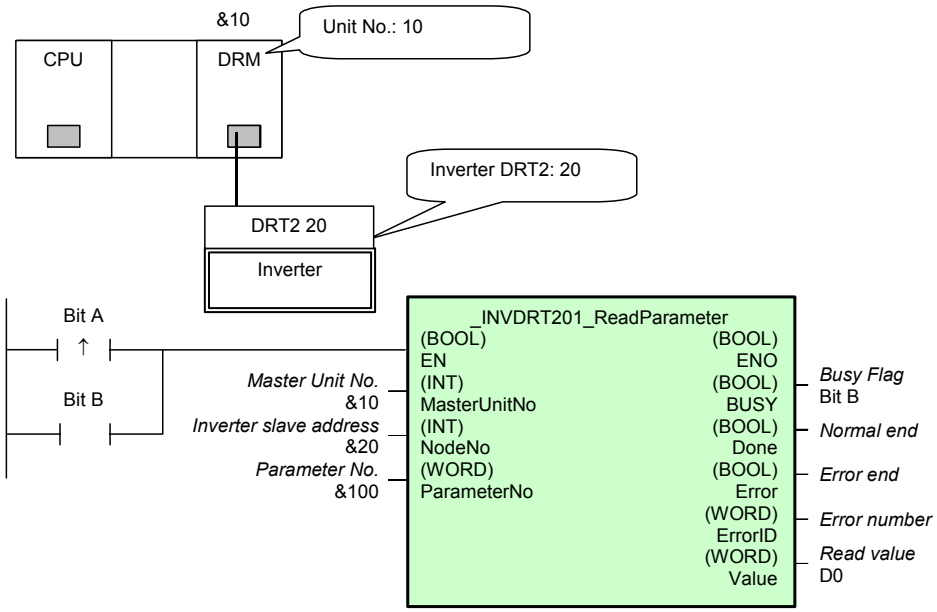
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		0 (OFF): Status invalid 1 (ON): Status valid
Alarm flag	ErrorStop	BOOL		0 (OFF): Driver normal 1 (ON): An alarm has occurred.
Deceleration stop flag	Stopping	BOOL		0 (OFF): Other status 1 (ON): Operating with forward and reverse commands of 0.
Axis standby flag	StandStill	BOOL		0 (OFF): Stopping with forward and reverse commands of 0. 1 (ON): Alarm with forward and reverse commands of 0.
Axis moving flag	ContinuousMotic	BOOL		0 (OFF): Other status 1 (ON): Inverter is moving for a forward or reverse command.
Speed agreement flag	ConstantVelocity	BOOL		0 (OFF): Inverter frequency disagreement 1 (ON): Inverter frequency agreement

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

INVDRT -201	Read Inverter Parameter: _INVDRT201_ReadParameter

Basic function	Reads the setting of a parameter in an Inverter connected to DeviceNet.
Symbol	
File name	Lib\FBL\omronlib\Inverter\INVRT\Dnet_INVDRT201_ReadParameter10.cxf
Applicable models	3G3MV-series and 3G3RV-series Inverters
Conditions for usage	Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Inverter Settings The following are necessary for the Inverter connected to DeviceNet. • It must use standard remote I/O. (This is the default setting for the 3G3xV-PDRT2 DeviceNet Unit.) • Use Fixed allocation for I/O memory allocation. This FB does not use I/O memory for read but is designed to be used under Fixed allocation. If the Configurator software is used to set any allocation different from the fixed allocation, some FB cannot be used. Refer to section 2 in the *SYSDRIVE DeviceNet Communications Unit/Card User's Manual* for the complete procedure.
Function description	The value is read from the Inverter specified by the Master Unit No. and the Inverter Slave Address. Refer to the manual for the Inverter for parameter register numbers and settings.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	Parameter 100 is read from Inverter 20 connected to the DeviceNet Unit with a unit number of 10. 
Related manuals	SYSDRIVE 3G3MV Multi-function Compact Inverters User's Manual (I527) SYSDRIVE 3G3RV High-function General-purpose Inverters User's Manual (I532) SYSDRIVE DeviceNet Communications Unit/Card User's Manual (I539) 8-4 Inverter Faults

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	0	&0 to &15 #0 to #F	The unit number of the DeviceNet Unit
Inverter slave address	NodeNo	INT	&0	&0 to &63	The address of the slave
Parameter No.	ParameterNo	WORD	&0		The register number in the Inverter

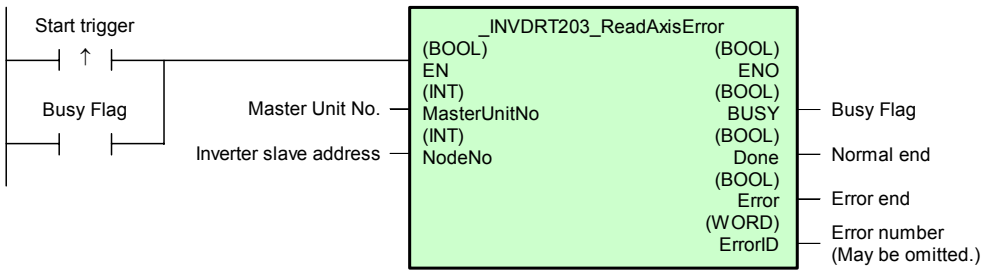
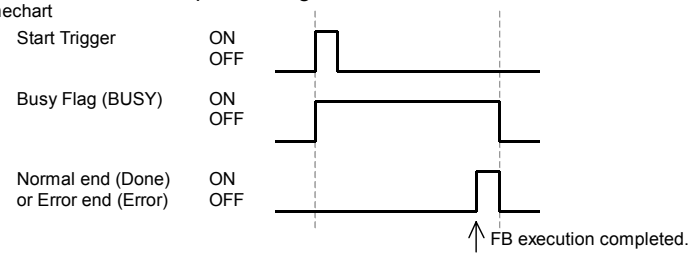
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		0 (OFF): Communication completed (turns OFF for 1 cycle) 1 (ON): Communicating
Normal end	Done	BOOL		0 (OFF): Other status 1 (ON): Communications completed with no error
Error end	Error	BOOL		0 (OFF): Other status 1 (ON): An error occurred in the Inverter.
Error number	ErrorID	WORD		#0000: No error or communications error prevented getting the error number #0001 to #FFFF: Error number from Inverter Refer to the *Related Manuals* for details.
Read value	Value	WORD		Read value

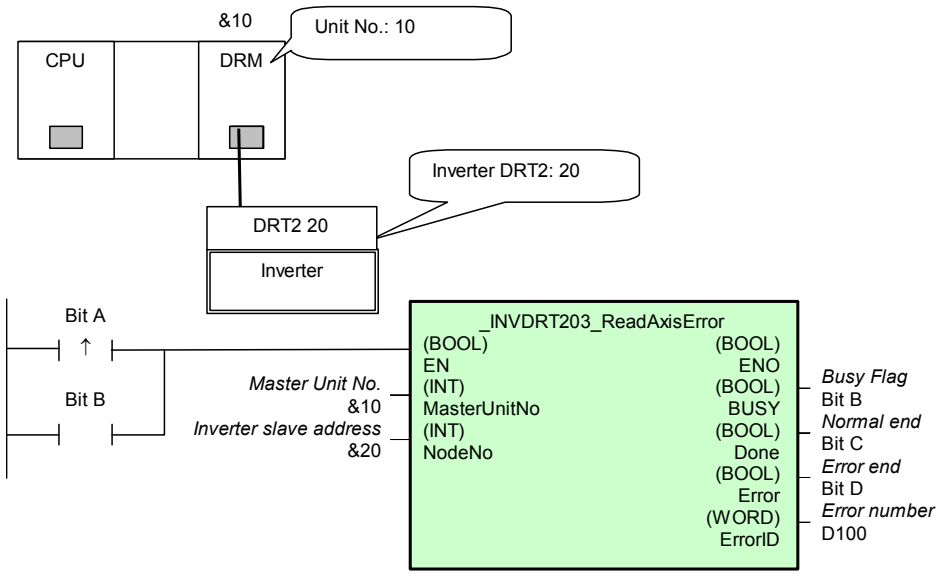
■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

INVDRT -203	Read Inverter Error Information: _INVDRT203_ReadAxisError

Basic function	Reads the error information from an Inverter connected to DeviceNet.
Symbol	
File name	Lib\FBL\omronlib\Inverter\INVRT\Dnet_INVDRT203_ReadAxisError10.cxf
Applicable models	3G3MV-series and 3G3RV-series Inverters
Conditions for usage	Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Inverter Settings The following are necessary for the Inverter connected to DeviceNet. • It must use standard remote I/O. (This is the default setting for the 3G3xV-PDRT2 DeviceNet Unit.) • Use Fixed allocation for I/O memory allocation. This FB does not use I/O memory for read but is designed to be used under Fixed allocation. If the Configurator software is used to set any allocation different from the fixed allocation, some FB cannot be used. Refer to section 2 in the *SYSDRIVE DeviceNet Communications Unit/Card User's Manual* for the complete procedure.
Function description	The error information is read from the Inverter specified by the Master Unit No. and the Inverter Slave Address.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	When bit A turns ON, the error information is read from Inverter 20 connected to the DeviceNet Unit with a unit number of 10.
Related manuals	SYSDRIVE 3G3MV Multi-function Compact Inverters User's Manual (I527) SYSDRIVE 3G3RV High-function General-purpose Inverters User's Manual (I532) SYSDRIVE DeviceNet Communications Unit/Card User's Manual (I539) 8-4 Inverter Faults



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	0	&0 to &15 #0 to #F	The unit number of the DeviceNet Unit
Inverter slave address	NodeNo	INT	&0	&0 to &63	The address of the slave

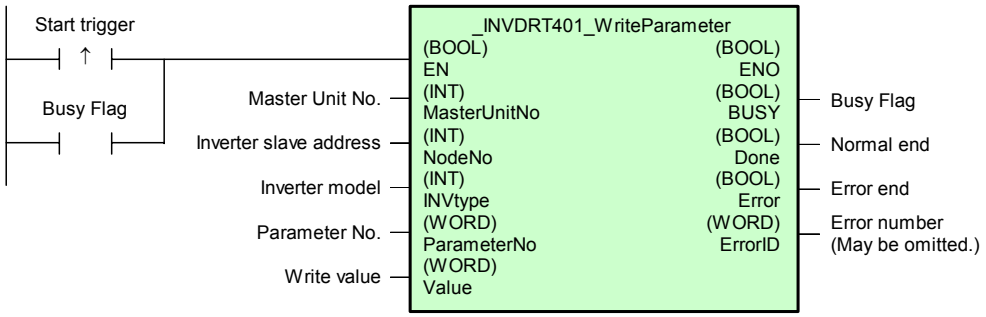
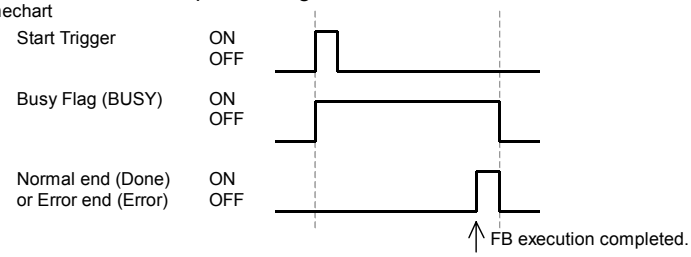
Output Variables

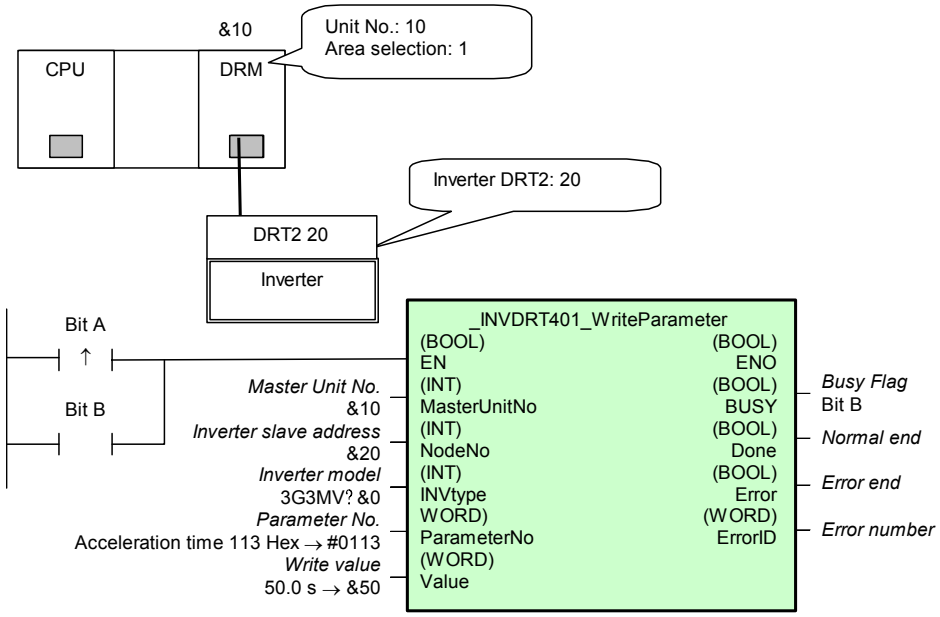
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		0 (OFF): Communication completed (turns OFF for 1 cycle) 1 (ON): Communicating
Normal end	Done	BOOL		0 (OFF): Other status 1 (ON): Communications completed with no error
Error end	Error	BOOL		0 (OFF): Other status 1 (ON): An error occurred in the Inverter.
Error number	ErrorID	WORD		#0000: No error or communications error prevented getting the error number #0001 to #FFFF: Error number from Inverter Refer to the *Related Manuals* for details.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

INVDRT -401	Write Inverter Parameter: _INVDRT401_WriteParameter

Basic function	Writes the setting of a parameter in an Inverter connected to DeviceNet.
Symbol	
File name	Lib\FBL\omronlib\Inverter\INVRT\Dnet_INVDRT401_WriteParameter10.cxf
Applicable models	3G3MV-series and 3G3RV-series Inverters
Conditions for usage	Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Inverter Settings The followings are necessary for the Inverter connected to DeviceNet. • It must use standard remote I/O. (This is the default setting for the 3G3xV-PDRT2 DeviceNet Unit.) • Use Fixed allocation for I/O memory allocation. This FB does not use I/O memory for read but is designed to be used under Fixed allocation. If the Configurator software is used to set any allocation different from the fixed allocation, some FB cannot be used. EEPROM Write This FB will write data into RAM. Turning the power off would return the parameter to the previous value. Please write into the ENTER command when those value are needed to be saved after turn off the power. Please refer to Chapter 7-4 *Entar instruction* in *SYSDRIVE 3G3MV user's manual* for address to write in. Refer to section 2 in the *SYSDRIVE DeviceNet Communications Unit/Card User's Manual* for the complete procedure.
Function description	The value of the specified parameter is written to the Inverter specified by the Master Unit No. and the Inverter Slave Address. Refer to the manual for the Inverter for parameter register numbers and settings. (For Inverters other than the 3G3MV-series Inverters, the Enter command (FFDD) will be sent immediately after the parameter to automatically enable the new parameter setting.)
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	The acceleration time (register #0113) in Inverter 20 (3G3MV) connected to the DeviceNet Unit with a unit number of 10 is changed to 5 s (&50). 
Related manuals	SYSDRIVE 3G3MV Multi-function Compact Inverters User's Manual (I527) SYSDRIVE 3G3RV High-function General-purpose Inverters User's Manual (I532)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	0	&0 to &15 #0 to #F	The unit number of the DeviceNet Unit
Inverter slave address	NodeNo	INT	&0	&0 to &63	The address of the slave
Inverter model	INVtype	INT	&0	&0 to &1	&0: 3G3MV &1: 3G3RV
Parameter No.	ParameterNo	WORD	&0		The register number in the Inverter
Write value	Value	WORD	&0		Write value

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		0 (OFF): Communication completed (turns OFF for 1 cycle) 1 (ON): Communicating
Normal end	Done	BOOL		0 (OFF): Other status 1 (ON): Communications completed with no error
Error end	Error	BOOL		0 (OFF): Other status 1 (ON): An error occurred in the Inverter.
Error number	ErrorID	WORD	0 to FFFF	#0000: No error or communications error prevented getting the error number #0001 to #FFFF: Error number from Inverter Refer to the *Related Manuals* for details.

■ **Version History**

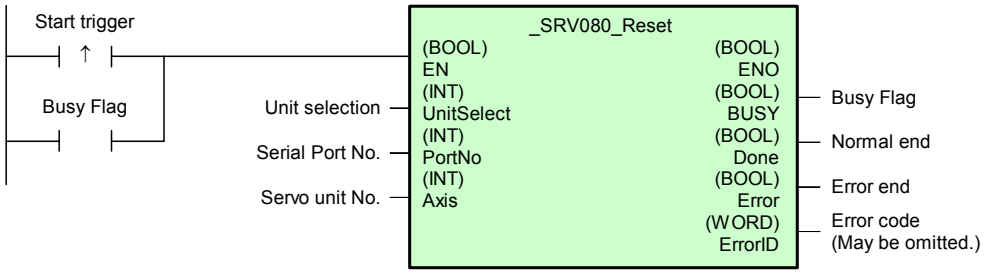
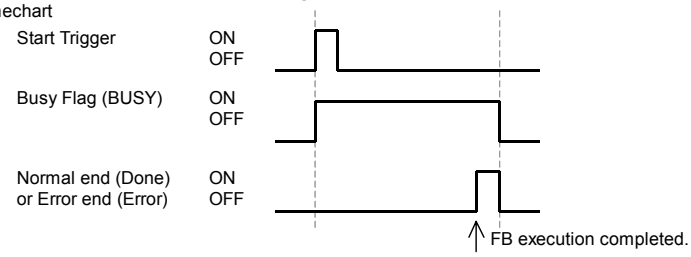
Version	Date	Contents
1.00	2004.6.	Original production

3-9 Servo Driver

OMNUC W series / SmartStep A series

FB Name	Function	Page
_SRV080_Reset	Reset Servo Error	3-291
_SRV201_ReadParameter	Read Servo Parameter	3-294
_SRV203_ReadAxisError	Read Servo Error	3-296
_SRV206_ReadValue	Read Servomotor Value	3-299
_SRV401_WriteParameter	Write Servo Parameter	3-302

SRV -080	Reset Servo Error: _SRV080_Reset

Basic function	Resets an error in the Servo Driver.
Symbol	
File name	Lib\FBL\omronlib\ServoDriver\SRV\ _SRV080_Reset10.cxf
Applicable models	OMNUC W Series or SmartStep A Series Servo Driver
Conditions for usage	External Connections • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Servo Driver. 1. Serial Gateway mode, or Protocol macro mode must be set. 2. Baud rate = 9,600 bits/s, Data = 7-bit, Start bits = 1, Stop bits = 1, Parity = even Electrically, an RS-422 connection is possible. Refer to the *Related Manuals* for information on connection cables and other information.) • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	An error is reset for the Servo Driver specified by the *Unit Selection* and *Serial Port No.* This FB is executed over multiple cycles. Normal end (Done) will turn ON when processing has been completed. If EN is still ON after Normal end (Done) turns ON, an error will be cleared again.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Related manuals	Serial Communications Boards/Units Operation Manual (W336) SMARTSTEP A Series Servomotors/Servo Drivers User's Manual (I533) OMNUC W Series AC Servomotors/Servo Drivers User's Manual (I531)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connected Unit and serial port. ■Connected to CPU Unit Connection not possible to CPU Unit. ■Connected to SCB Unit selection (UnitSelect) #BBBB Serial Port No. (PortNo) &1: Port 1, &2: Port 2 ■Connected to SCU Unit selection (UnitSelect) Unit No. (&0 to &15) Serial Port No. (PortNo) &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Servo unit No.	Axis	INT		&0 to &15	The communications unit number of the Servo Driver. (W Series: Pn000.2) (SmartStep: Front-panel rotary switch)

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Deceleration stop completed flag	Done	BOOL		0 (OFF): Other end status 1 (ON): Deceleration stop completed flag
Error end	Error	BOOL		0 (OFF): Other end status 1 (ON): An error occurred in the Servo Driver.
Error code	ErrorID	WORD		The error that occurred in the Servo Driver. See details below.

■ **Error Codes**

W Series

Read value	W Series	Read value	Alarm
#0000	Other end status	#0083	Battery error (ABS)
#0002	Parameter corruption	#0084	Absolute error (ABS)
#0003	Main circuit detection error	#0085	Overspeed error (ABS)
#0004	Parameter setting error	#0086	Encoder overheating (ABS)
#0005	Motor mismatch	#00B1	Speed command input reading error
#0010	Overcurrent	#00B2	Torque command input reading error
#0030	Regeneration error	#00BF	System error
#0032	Regenerative overload	#00C1	Runaway detected
#0040	Overvoltage	#00C8	Multi-turn data error (ABS)
#0041	Undervoltage	#00C9	Encoder communications error
#0051	Overspeed	#00CA	Encoder parameter error
#0071	Overload	#00CB	Encoder data error
#0072	Overload	#00CC	Multi-turn limit discrepency
#0073	Dynamic brake overload	#00D0	Deviation counter overflow
#0074	Inrush resistance overload	#00F1	Missing phase detected
#007A	Overheat	#0091	Overload alarm
#0081	Backup error (ABS)	#0092	Regenerative overload alarm
#0082	Checksum error (ABS)		

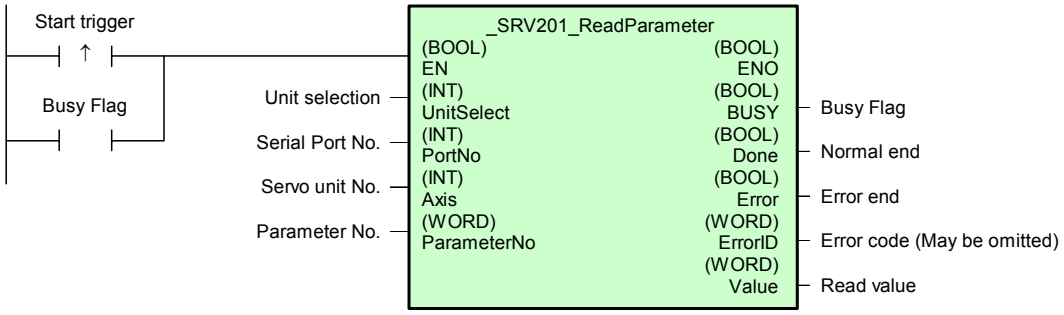
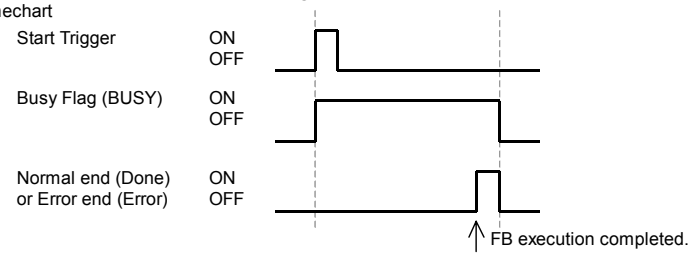
SmartStep A Series

Read value	SmartStep A Series	Read value	Alarm
#0000	Other end status	#0074	Inrush resistance overload
#0004	Parameter setting error	#007A	Overheat
#0010	Overcurrent	#00BF	System error
#0030	Regeneration error	#00C1	Runaway detected
#0032	Regenerative overload	#00C2	Phase error detected
#0040	Overvoltage/Undervoltage	#00C3	Encoder disconnection detected
#0051	Overspeed	#00D0	Deviation counter overflow
#0070	Overload	#0091	Overload alarm
#0073	Dynamic brake overload	#0092	Regenerative overload alarm

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

SRV -201	Read Servo Parameter: _SRV201_ReadParameter

Basic function	Reads parameter information from the Servo Driver.
Symbol	
File name	Lib\FBL\omronlib\ServoDriver\SRV_SRV201_ReadParameter10.cxf
Applicable models	OMNUC W Series or SmartStep A Series Servo Driver
Conditions for usage	External Connections • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Servo Driver. 1. Serial Gateway mode, or Protocol macro mode must be set. 2. Baud rate = 9,600 bits/s, Data = 7-bit, Start bits = 1, Stop bits = 1, Parity = even Electrically, an RS-422 connection is possible. (Refer to the *Related Manuals* for information on connection cables and other information.) • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Basic function	The specified parameter is read from the Servo Driver specified by the *Unit Selection* and *Serial Port No.* This FB is executed over multiple cycles. *Normal end* will turn ON when processing has been completed. If EN is still ON after *Normal end* turns ON, the output value will be cleared and the parameter will be read again.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Related manuals	Serial Communications Boards/Units Operation Manual (W336) SMARTSTEP A Series Servomotors/Servo Drivers User's Manual (I533) 4-4-2 Parameters OMNUC W Series AC Servomotors/Servo Drivers User's Manual (I531) 6-4 Parameter Setting Tables

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connected Unit and serial port. ■Connected to CPU Unit Connection not possible to CPU Unit. ■Connected to SCB Unit selection (UnitSelect) #BBBB Serial Port No. (PortNo) &1: Port 1, &2: Port 2 ■Connected to SCU Unit selection (UnitSelect) Unit No. (&0 to &15) Serial Port No. (PortNo) &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Axis No.	Axis	INT	&0	&0 to &15	The communications unit number of the Servo Driver. (W Series: Pn000.2) (SmartStep: Front-panel rotary switch)
Parameter No.	ParameterNo	WORD	&0	#0 to #FFF	Specifies the parameter to read as a hexadecimal number #0XXX where XXX is the numeric portion of the parameter number PnXXX. Refer to the *Related Manuals* for details on parameter numbers.

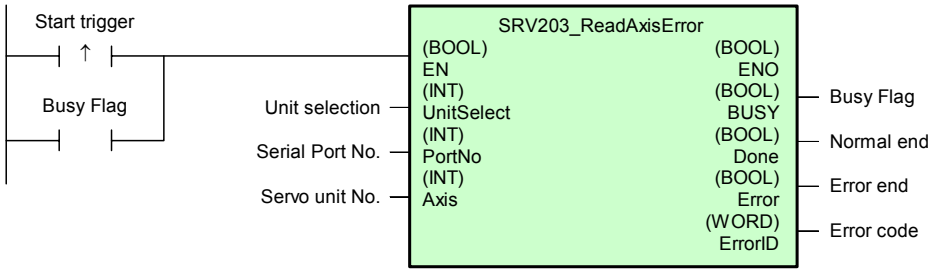
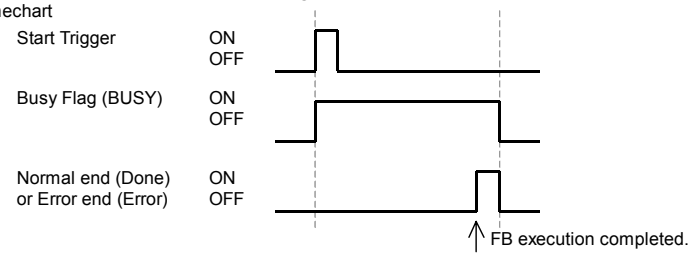
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	Done	BOOL		0 (OFF): Other end status 1 (ON): Communications completed with no error
Error end	Error	BOOL		0 (OFF): Other end status 1 (ON): One of the following error occurred. • CMND instruction could not be executed (other message being processed). • An input variable is out of range. • The corresponding parameter number is not supported.
Error code	ErrorID	WORD		#0000: Normal end
Read value	Value	WORD		The value returned from the Servo Driver.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

SRV -203	Read Servo Error: _SRV203_ReadAxisError

Basic function	Reads Servo Driver error information.
Symbol	
File name	Lib\FBL\omronlib\ServoDriver\SRV_SRV203_ReadAxisError10.cxf
Applicable models	OMNUC W Series or SmartStep A Series Servo Driver
Conditions for usage	External Connections • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Servo Driver. 1. Serial Gateway mode, or Protocol macro mode must be set. 2. Baud rate = 9,600 bits/s, Data = 7-bit, Start bits = 1, Stop bits = 1, Parity = even Electrically, an RS-422 connection is possible. (Refer to the *Related Manuals* for information on connection cables and other information.) • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	The error code is read from the Servo Driver specified by the *Unit Selection* and *Serial Port No*. This FB is executed over multiple cycles. *Normal end* will turn ON when processing has been completed. If EN is still ON after *Normal end* turns ON, the output value will be cleared and the parameter will be read again.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Related manuals	Serial Communications Boards/Units Operation Manual (W336) SMARTSTEP A Series Servomotors/Servo Drivers User's Manual (I533) OMNUC W Series AC Servomotors/Servo Drivers User's Manual (I531)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connected Unit and serial port. ■Connected to CPU Unit Connection not possible to CPU Unit. ■Connected to SCB Unit selection (UnitSelect) #BBBB Serial Port No. (PortNo) &1: Port 1, &2: Port 2 ■Connected to SCU Unit selection (UnitSelect) Unit No. (&0 to &15) Serial Port No. (PortNo) &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Axis No.	Axis	INT	&0	&0 to &15	The communications unit number of the Servo Driver. (W Series: Pn000.2) (SmartStep: Front-panel rotary switch)

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	Done	BOOL		0 (OFF): Other end status 1 (ON): Processing completed with no error
Error end	Error	BOOL		0 (OFF): Other end status 1 (ON): An error occurred in the Servo Driver.
Error code	ErrorID	WORD		The error that occurred in the Servo Driver. See details below.

■ **Error Codes**

W Series

Read value	W Series	Read value	Alarm
#0000	Other end status	#0083	Battery error (ABS)
#0002	Parameter corruption	#0084	Absolute error (ABS)
#0003	Main circuit detection error	#0085	Overspeed error (ABS)
#0004	Parameter setting error	#0086	Encoder overheating (ABS)
#0005	Motor mismatch	#00B1	Speed command input reading error
#0010	Overcurrent	#00B2	Torque command input reading error
#0030	Regeneration error	#00BF	System error
#0032	Regenerative overload	#00C1	Runaway detected
#0040	Overvoltage	#00C8	Multi-turn data error (ABS)
#0041	Undervoltage	#00C9	Encoder communications error
#0051	Overspeed	#00CA	Encoder parameter error
#0071	Overload	#00CB	Encoder data error
#0072	Overload	#00CC	Multi-turn limit discrepency
#0073	Dynamic brake overload	#00D0	Deviation counter overflow
#0074	Inrush resistance overload	#00F1	Missing phase detected
#007A	Overheat	#0091	Overload alarm
#0081	Backup error (ABS)	#0092	Regenerative overload alarm
#0082	Checksum error (ABS)		

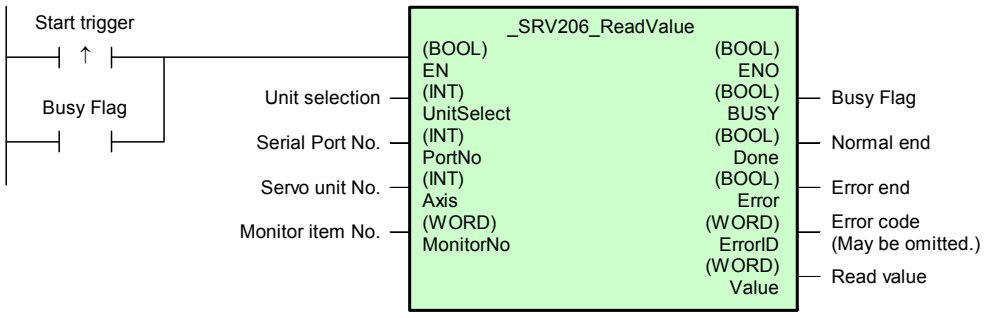
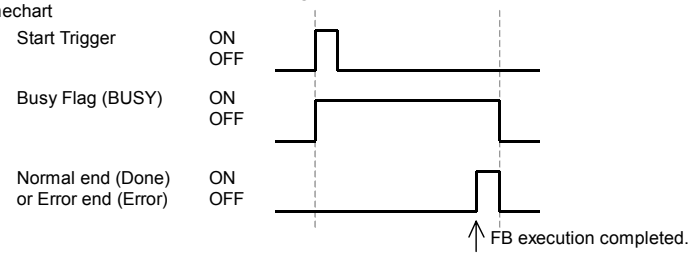
SmartStep A Series

Read value	W Series	Read value	Alarm
#0000	Other end status	#0074	Inrush resistance overload
#0004	Parameter setting error	#007A	Overheat
#0010	Overcurrent	#00BF	System error
#0030	Regeneration error	#00C1	Runaway detected
#0032	Regenerative overload	#00C2	Phase error detected
#0040	Overvoltage/Undervoltage	#00C3	Encoder disconnection detected
#0051	Overspeed	#00D0	Deviation counter overflow
#0070	Overload	#0091	Overload alarm
#0073	Dynamic brake overload	#0092	Regenerative overload alarm

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

SRV -206	Read Servomotor Value: _SRV206_ReadValue

Basic function	Reads a monitor value from the servo driver.
Symbol	
File name	Lib\FBL\omronlib\ServoDriver\SRV_SRV206_ReadValue10.cxf
Applicable models	OMNUC W Series or SmartStep A Series Servo Driver
Conditions for usage	External Connections • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Servo Driver. 1. Serial Gateway mode, or Protocol macro mode must be set. 2. Baud rate = 9,600 bits/s, Data = 7-bit, Start bits = 1, Stop bits = 1, Parity = even Electrically, an RS-422 connection is possible. (Refer to the *Related Manuals* for information on connection cables and other information.) • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	A monitor value is read from the Servo Driver specified by the *Unit Selection* and *Serial Port No.* This FB is executed over multiple cycles. *Normal end* will turn ON when processing has been completed. If EN is still ON after *Normal end* turns ON, the output value will be cleared and the monitor value will be read again.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Related manuals	Serial Communications Boards/Units Operation Manual (W336) SMARTSTEP A Series Servomotors/Servo Drivers User's Manual (I533) OMNUC W Series AC Servomotors/Servo Drivers User's Manual (I531)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connected Unit and serial port. ■Connected to CPU Unit Connection not possible to CPU Unit. ■Connected to SCB Unit selection (UnitSelect) #BBBB Serial Port No. (PortNo) &1: Port 1, &2: Port 2 ■Connected to SCU Unit selection (UnitSelect) Unit No. (&0 to &15) Serial Port No. (PortNo) &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Servo unit No.	Axis	INT		&0 to &15	The communications unit number of the Servo Driver. (W Series: Pn000.2) (SmartStep: Front-panel rotary switch)
Monitor item No.	MonitorNo	WORD		#0000	Specify the monitor item number from the *Monitor Item Tables*.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	Done	BOOL		0 (OFF): Other end status 1 (ON): Communications completed with no error
Error end	Error	BOOL		0 (OFF): Other end status 1 (ON): One of the following error occurred. • CMND instruction could not be executed (other message being processed). • An input variable is out of range. • The corresponding parameter number is not supported.
Error code	ErrorID	WORD		#0000: Normal end
Read value	Value	WORD		The value returned from the Servo Driver.

Monitor Item Tables

The UnXXX and FnXXX parameters listed in the following tables can be read.

W Series

Monitor No.		Monitor item	Unit	Sign
#000	Un000	Speed feedback	r/min	S
#001	Un001	Speed command	r/min	S
#002	Un002	Torque command	%	S
#003	Un003	No. of pulses from phase Z	Pulses	U
#004	Un004	Electrical angle	Degrees	U
#005	Un005	Input signal monitor	-	-
#006	Un006	Output signal monitor	-	-
#007	Un007	Command pulse speed display	r/min	S
#008	Un008	Position error (deviation counter)	Command units	S
#009	Un009	Cumulative load rate	%	U
#00A	Un00A	Regenerative load rate	%	U
#00B	Un00b	Dynamic brake resistance load rate	%	U
#00C	Un00C	Input pulse counter (lower 16 bits)	Command units	U
#00D	Un00C	Input pulse counter (upper 16 bits)	Command units	U
#00E	Un00d	Feedback pulse counter (lower 16 bits)	Pulses	U
#00F	Un00d	Feedback pulse counter (upper 16 bits)	Pulses	U
#500	Fn000-0	Alarm history, error number = 0	Alarm code	-
#501	Fn000-1	Alarm history, error number = 1	Alarm code	-
#502	Fn000-2	Alarm history, error number = 2	Alarm code	-
#503	Fn000-3	Alarm history, error number = 3	Alarm code	-
#504	Fn000-4	Alarm history, error number = 4	Alarm code	-
#505	Fn000-5	Alarm history, error number = 5	Alarm code	-
#506	Fn000-6	Alarm history, error number = 6	Alarm code	-
#507	Fn000-7	Alarm history, error number = 7	Alarm code	-
#508	Fn000-8	Alarm history, error number = 8	Alarm code	-

#509	Fn000-9	Alarm history, error number = 9	Alarm code	-
#50A		Current alarm status	Alarm code	-
#514	Fn011-F	Motor type	Motor code	-
#515	Fn011-P	Motor capacity	10 W	U
#516	Fn011-E	Encoder type	Encoder code	-
#517	Fn011-Y	Special specifications	-	U
#518	Fn012-R	Servo Driver version	-	U
#519	Fn012-E	Encoder software version	-	U

SmartStep A Series

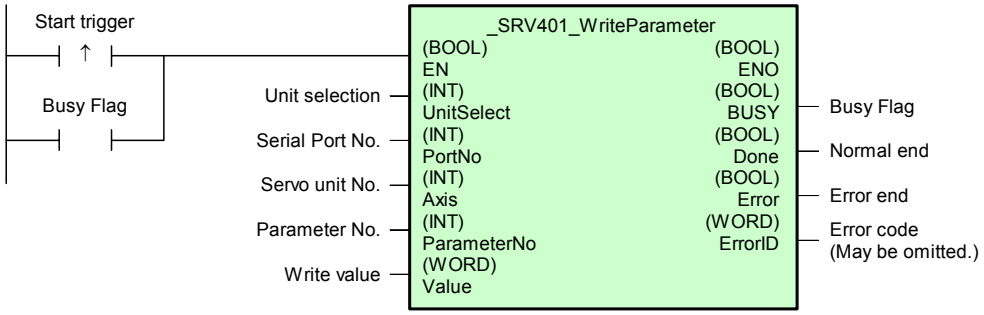
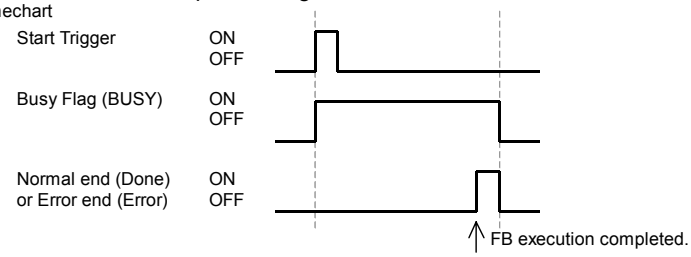
Monitor No.		Monitor item	Unit	Sign
#000	Un000	Speed feedback	r/min	S
#001	Un001	Speed command	r/min	S
#002	Un002	Torque command	%	S
#003	Un003	No. of pulses from phase Z	Pulses	U
#004	Un004	Electrical angle	Degrees	U
#005	Un005	Input signal monitor	-	-
#006	Un006	Output signal monitor	-	-
#007	Un007	Command pulse speed display	r/min	S
#008	Un008	Position error (deviation counter)	Command units	S
#009	Un009	Cumulative load rate	%	U
#00A	Un00A	Regenerative load rate	%	U
#00B	Un00B	Dynamic brake resistance load rate	%	U
#00C	Un00C	Input pulse counter (lower 16 bits)	Command units	U
#00D	Un00C	Input pulse counter (upper 16 bits)	Command units	U
#00E	Un00D	Feedback pulse counter (lower 16 bits)	Pulses	U
#00F	Un00D	Feedback pulse counter (upper 16 bits)	Pulses	U
#105		Gain rotary switch setting	-	
#106		Function selection switch setting	-	
#500	Fn000-0	Alarm history, error number = 0	Alarm code	-
#501	Fn000-1	Alarm history, error number = 1	Alarm code	-
#502	Fn000-2	Alarm history, error number = 2	Alarm code	-
#503	Fn000-3	Alarm history, error number = 3	Alarm code	-
#504	Fn000-4	Alarm history, error number = 4	Alarm code	-
#505	Fn000-5	Alarm history, error number = 5	Alarm code	-
#506	Fn000-6	Alarm history, error number = 6	Alarm code	-
#507	Fn000-7	Alarm history, error number = 7	Alarm code	-
#508	Fn000-8	Alarm history, error number = 8	Alarm code	-
#509	Fn000-9	Alarm history, error number = 9	Alarm code	-
#50A		Current alarm status	Alarm code	-
#50B	Fn007	Autotuning results	%	U
#518	Fn012-R	Servo Driver version	-	U
#800		Driver type		-

Note: Sign: S = Signed data, U = Unsigned data, - = Code or other

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

SRV -401	Write Servo Parameter: _SRV401_WriteParameter

Basic function	Changes a parameter in the Servo Driver.
Symbol	
File name	Lib\FBL\omronlib\ServoDriver\SRV_SRV401_WriteParameter10.cxf
Applicable models	OMNUC W Series or SmartStep A Series Servo Driver
Conditions for usage	External Connections • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Servo Driver. 1. Serial Gateway mode, or Protocol macro mode must be set. 2. Baud rate = 9,600 bits/s, Data = 7-bit, Start bits = 1, Stop bits = 1, Parity = even Electrically, an RS-422 connection is possible. (Refer to the *Related Manuals* for information on connection cables and other information.) • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	The specified parameter is written to the Servo Driver specified by the *Unit Selection* and *Serial Port No.* This FB is executed over multiple cycles. *Normal end* will turn ON when processing has been completed. The parameter set in the Servo Driver will be deleted when power is turned OFF, so parameters that require cycling the power supply cannot be changed with this FB.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • *Done* or *Error* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Related manuals	Serial Communications Boards/Units Operation Manual (W336) SMARTSTEP A Series Servomotors/Servo Drivers User's Manual (I533) 4-4-2 Parameters OMNUC W Series AC Servomotors/Servo Drivers User's Manual (I531) 6-4 Parameter Setting Tables

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connected Unit and serial port. ■Connected to CPU Unit Connection not possible to CPU Unit. ■Connected to SCB Unit selection (UnitSelect) #BBBB Serial Port No. (PortNo) &1: Port 1, &2: Port 2 ■Connected to SCU Unit selection (UnitSelect) Unit No. (&0 to &15) Serial Port No. (PortNo) &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Axis No.	Axis	INT	&0	&0 to &15	The communications unit number of the Servo Driver. (W Series: Pn000.2) (SmartStep: Front-panel rotary switch)
Parameter No.	ParameterNo	WORD	&0	&0 to &4095	Specifies the parameter to written as a decimal number or hexadecimal number #0XXX where XXX is the numeric portion of the parameter number PnXXX. Refer to the *Related Manuals* for details on parameter numbers.
Write value	Value	WORD			Parameter value

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	Done	BOOL		0 (OFF): Other end status 1 (ON): Processing completed with no error
Error end	Error	BOOL		0 (OFF): Other end status 1 (ON): One of the following error occurred. • CMND instruction could not be executed (other message being processed). • An input variable is out of range. • The corresponding parameter number is not supported.
Error code	ErrorID	WORD		#0000: Normal end

■ **Version History**

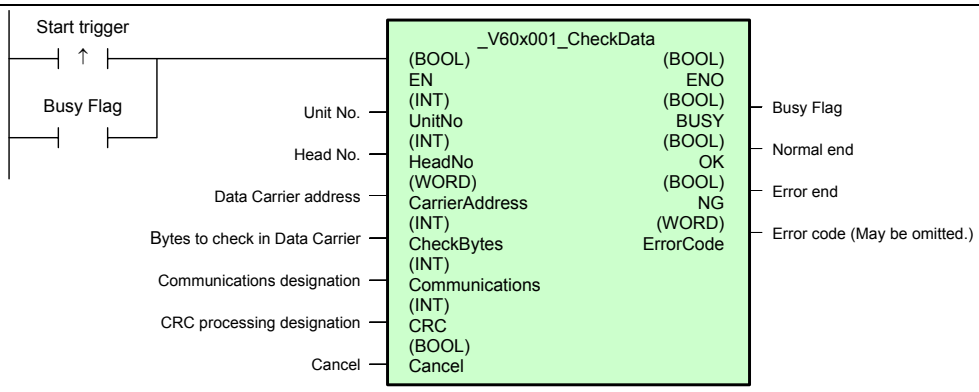
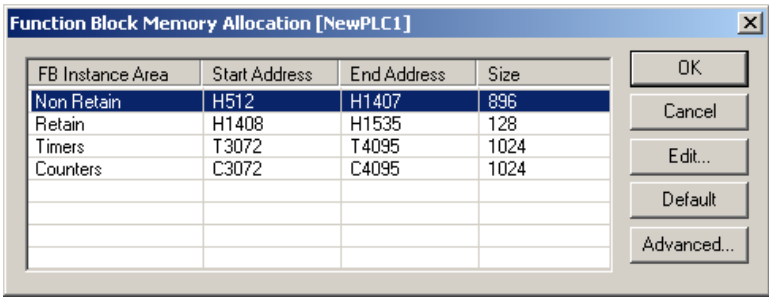
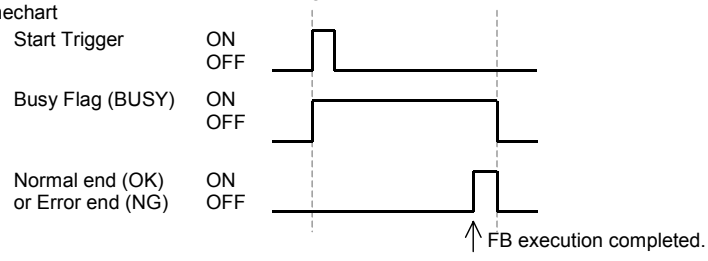
Version	Date	Contents
1.00	2004.6.	Original production

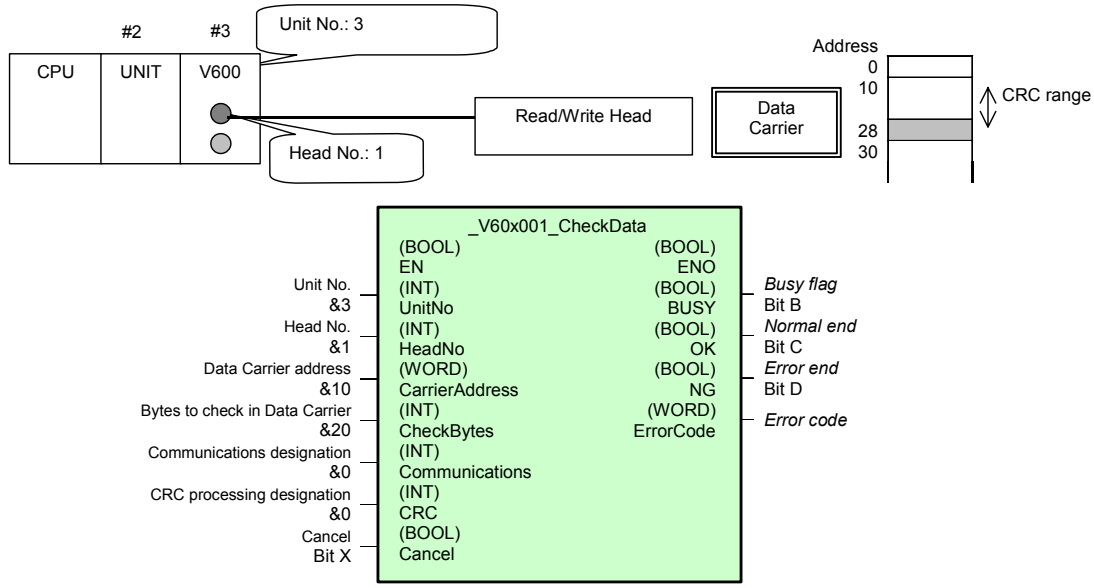
3-10 ID Sensor Unit

CS1W-V600, CJ1W-V600 series

FB Name	Function	Page
_V60x001_CheckData	Check Data Carrier Data	3-305
_V60x002_ControlWrites	Number of Writes Control	3-308
_V60x200_ReadData	Read Data Carrier Data	3-311
_V60x400_WriteData	Write Data to Data Carrier	3-314
_V60x401_SetBit	Set Data Carrier Bit	3-317
_V60x402_ClearBit	Bit Carrier Bit Clear	3-320
_V60x403_WriteMaskBit	Write Data Carrier Mask Bits	3-323
_V60x404_WriteCalculation	Write Calculation	3-326
_V60x405_FillData	Fill Data in Data Carrier	3-329
_V60x406_Copy	Copy Data Carrier	3-332
_V60x600_SetSystemSetting	Set System Settings	3-335

V60x -001	Check Data Carrier Data: _V60x001_CheckData

Basic function	The CRC is calculated and written for the data in the Data Carrier.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600\V60x001_CheckData10.cxf
Applicable models	CS1W-V600C11/V600C12 and CJ1W-V600C11/V600C12 ID Sensor Units
Conditions for usage	CX-Programmer Settings Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	The CRC is found and written for the Data Carrier specified by the unit number and head number from the specified address to 2 bytes less that the specified number of bytes. Between 3 and 2,048 bytes of data can be handled at one time. Observe the following precautions for the ID Sensor Unit. Refer to the *Related Manuals* for details. • The last 2 bytes of the check area are used as the check code area. Leave these two bytes empty (i.e., do not write user data to them). • Verification will not be performed unless it is specified when writing.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.

Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO flag will turn OFF and the FB will not be processed. • Always specify a head number of &1 for One-Head ID Sensor Units (CS1W-V600C11 and CJ1W-V600C11). • Check the memory capacity of the Data Carrier when specifying the address and number of bytes to process. An address error will be output if the specified address and number of bytes to process are not suitable for the memory capacity of the Data Carrier being communicated with.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON in the following example, the CRC for the data from address 10 through address 18 in the Data Carrier connected to Head 1 of the ID Sensor Unit with unit number 3 and the resulting CRC will be written to address 28. 
Related manuals	ID Sensor Unit Operation Manual (Z174) 4-3 I/O Data Allocations, Error Codes 6-2 Communications Commands, Data Check

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2 (Two-Head Controllers only)
Data Carrier address	CarrierAddress	WORD	#0		Specify the address in the Data Carrier.
Bytes to check in Data Carrier	CheckBytes	INT	&0	&3 to &2048	Consider the Data Carrier capacity when setting.
Communications designation	Communications	INT	&0	&0 to &1	&0: Trigger &1: Auto
CRC processing designation	CRC	INT	&0	&0 to &1	Specify the process to be performed. &0: CRC calculation&1: CRC verification
Cancel	Cancel	BOOL	0 (OFF)		0→1: Cancels processing.

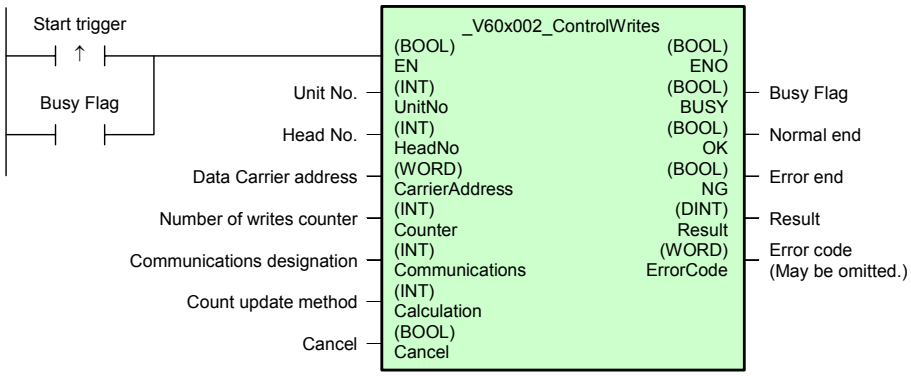
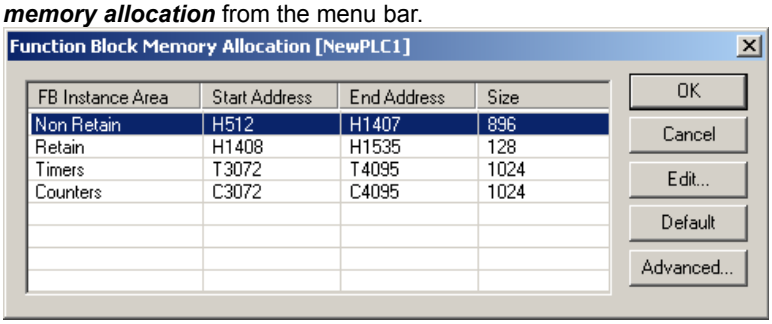
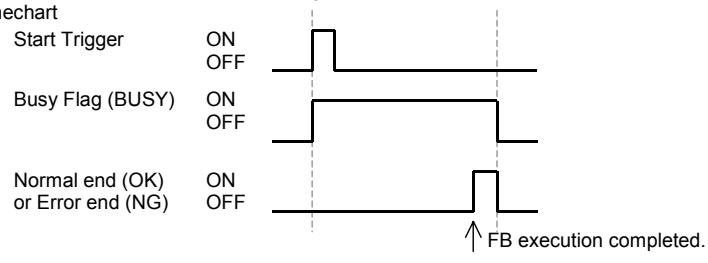
Output Variables

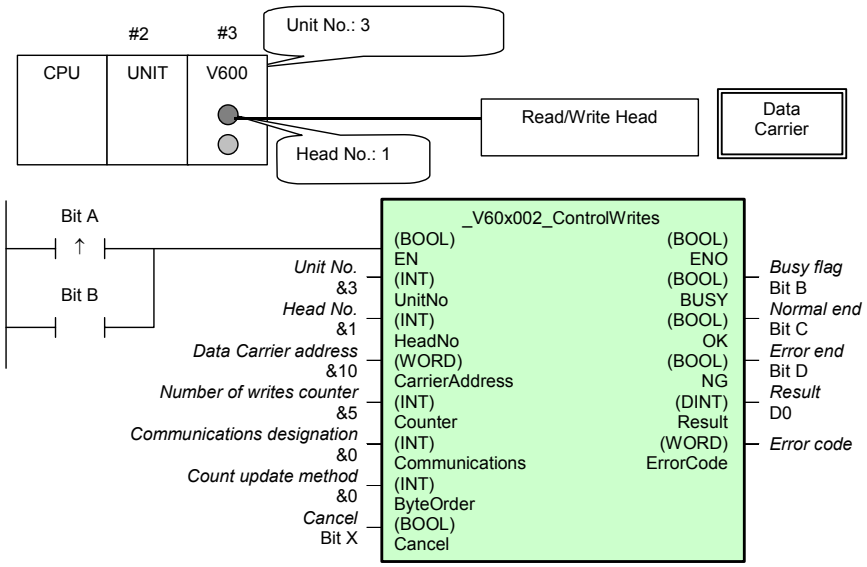
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the results from the ID Sensor Unit. Refer to the *Related Manuals* for details. #0070: Data Carrier communications error #0071: Verification error #0072: Data Carrier missing error #0076: Status Flag #007A: Data Carrier address error #007B: Battery warning #007C: Head error #007D: Write protection error #FFFF: Input parameter error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

V60x -002	Number of Writes Control: _V60x002_ControlWrites

Basic function	Updates the number of writes stored in the Data Carrier.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600_V60x002_WriteCalculation10.cxf
Applicable models	CS1W-V600C11/V600C12 and CJ1W-V600C11/V600C12 ID Sensor Units
Conditions for usage	CX-Programmer Settings • Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	For the Data Carrier specified by the *Unit No.* and *Vendor No.,* sets 3 bytes of data from the specified start address as the Number of Writes Control Area, writes the result of adding to or subtracting from the number of writes counter to the Data Carrier, and outputs the result of adding or subtracting. Observe the following precautions for the ID Sensor Unit. Refer to the *Related Manuals* for details. • Verification will not be performed unless it is specified when writing. • Do not write to more than one page at the same time with an EEPROM Data Carrier. The command will not be processed across page boundaries and an address error will be output.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.

Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Always specify a head number of &1 for One-Head ID Sensor Units (CS1W-V600C11 and CJ1W-V600C11). • Check the memory capacity of the Data Carrier when specifying the address and number of bytes to process. An address error will be output if the specified address or number of bytes to process is not suitable for the memory capacity of the Data Carrier being communicated with.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON in the following example, three bytes of data are starting at address 10 is set as the Number of Writes Control Area, 5 is added to the value and then written again for the Data Carrier connected to Head 1 of the ID Sensor Unit with unit number 3. The value is also output to D0. 
Related manuals	ID Sensor Unit Operation Manual (Z174) 4-3 I/O Data Allocations, Error Codes 6-2-2 Command Descriptions, Number of Writes Control

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2 (Two-Head Controllers only)
Data Carrier address	CarrierAddress	WORD	#0		Specify the address in the Data Carrier.
Number of writes counter	Counter	INT	&0	&0 to &255	
Communications designation	Communications	INT	&0	&0 to &1	&0: Trigger &1: Auto
Count update method	Calculation	INT	&0	&0 to &1	Specify the count update method. &0: Addition &1: Subtraction
Cancel	Cancel	BOOL	0 (OFF)		0→1: Cancels processing.

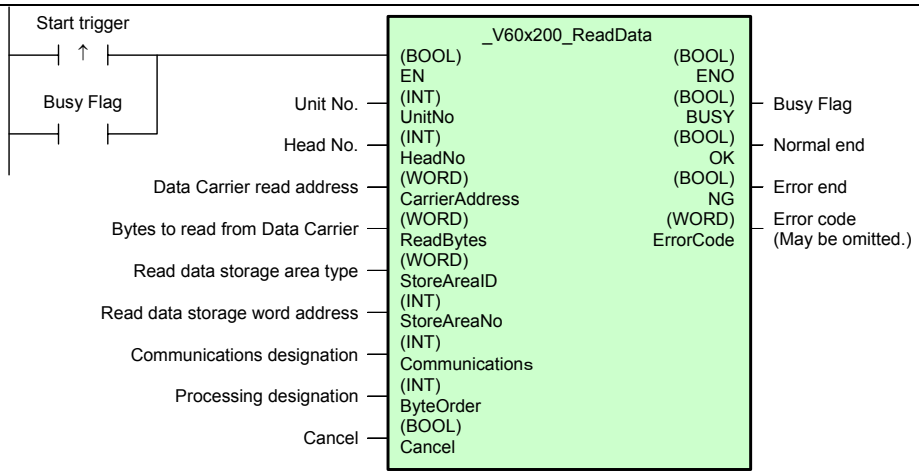
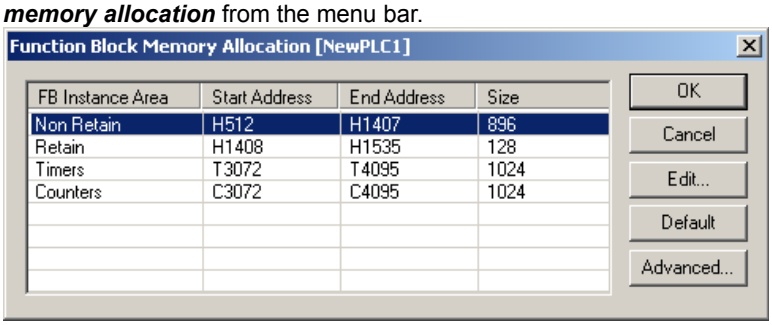
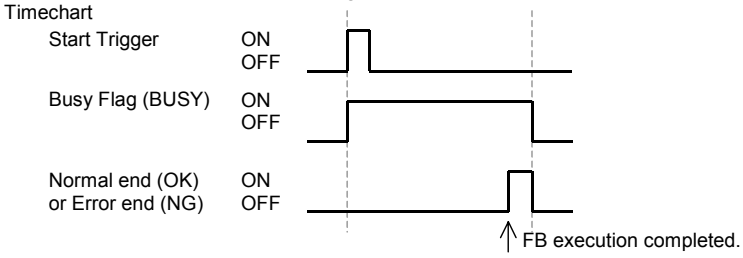
Output Variables

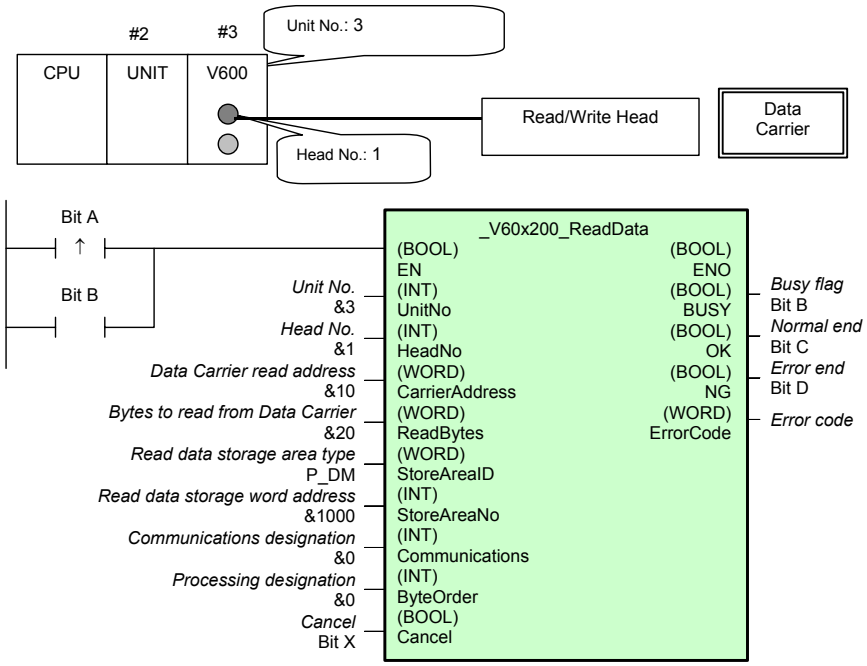
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Result	Result	DINT		Outputs the total number of writes stored in the Data Carrier.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the results from the ID Sensor Unit. Refer to the *Related Manuals* for details. #0070: Data Carrier communications error #0071: Verification error #0072: Data Carrier missing error #0076: Status Flag #007A: Data Carrier address error #007B: Battery warning #007C: Head error #007D: Write protection error #FFFF: Input parameter error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

V60x -200	Read Data Carrier Data: _V60x200_ReadData

Basic function	Reads data from a Data Carrier.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600_V60x200_ReadData10.cxf
Applicable models	CS1W-V600C11/V600C12 and CJ1W-V600C11/V600C12 ID Sensor Units
Conditions for usage	CX-Programmer Settings • Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	Data is read from the specified area of the Data Carrier specified by the *Unit No.* and *Vendor No.* Up to 2048 bytes (1024 words) can be read at one time. The word designation for storing the data is specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Always specify a head number of &1 for One-Head ID Sensor Units (CS1W-V600C11 and CJ1W-V600C11). • Check the memory capacity of the Data Carrier when specifying the address and number of bytes to process. An address error will be output if the specified address or number of bytes to process is not suitable for the memory capacity of the Data Carrier being communicated with.

Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON in the following example, data in the Data Carrier connected to Head 1 of the ID Sensor Unit with unit number 3 will be stored in D1000. 
Related manuals	ID Sensor Unit Operation Manual (Z174) 4-3 I/O Data Allocations, Error Codes 6-2-2 Command Descriptions, Read

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2 (Two-Head Controllers only)
Data Carrier read address	CarrierAddress	WORD	#0		Specify the address in the Data Carrier.
Bytes to read from Data Carrier	ReadBytes	INT	&0	&0 to &2048	Consider the Data Carrier capacity when setting. Nothing will be performed and a normal end will be output for &0.
Read data storage area type	RecvAreaID	WORD	#00B0	At right.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Read data storage word address	RecvAreaNo	INT	&0	Not checked.	
Communications designation	Communications	INT	&0	&0 to &2	&0: Trigger &1: Auto &2: Repeat auto
Processing designation	ByteOrder	INT	&0	&0 to &1	Specify the storage order of the read data &0: Upper to lower&1: Lower to upper 0: Upper to lower Address / Data Carrier memory: 0010 01, 0011 02, 0012 03, 0013 04 ⟷ CPU Unit memory: 01 02, 03 04 1: Lower to upper Address / Data Carrier memory: 0010 01, 0011 02, 0012 03, 0013 04 ⟷ CPU Unit memory: 02 01, 04 03
Cancel	Cancel	BOOL	0 (OFF)		0→1: Cancels processing.

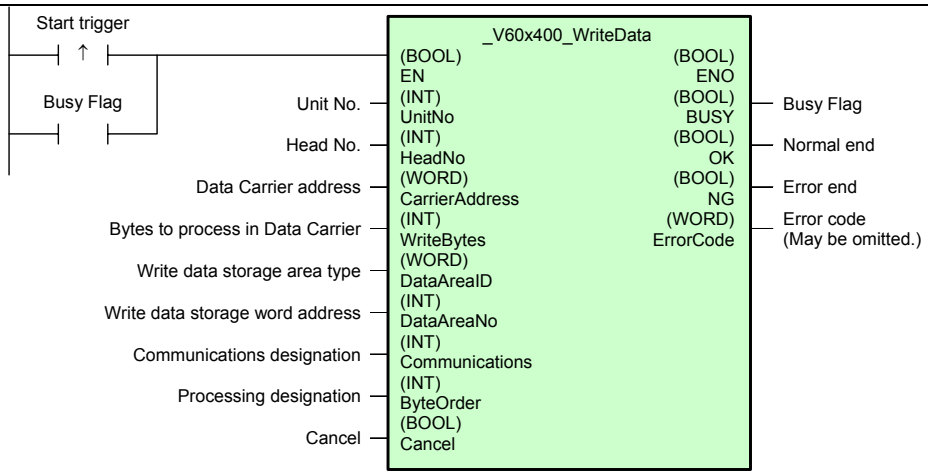
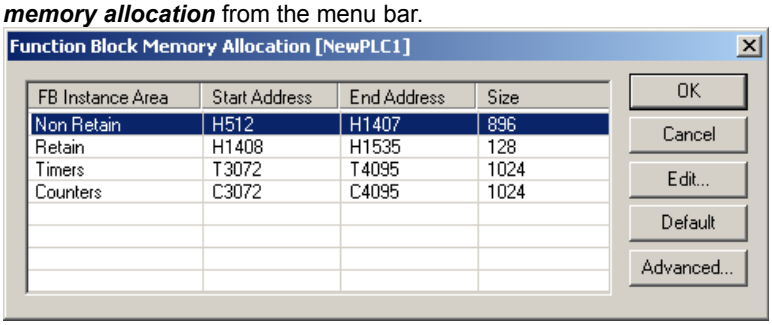
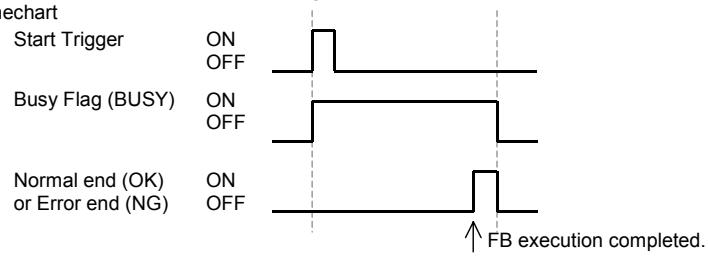
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the results from the ID Sensor Unit. Refer to the *Related Manuals* for details. #0070: Data Carrier communications error #0071: Verification error #0072: Data Carrier missing error #0076: Status Flag #007A: Data Carrier address error #007B: Battery warning #007C: Head error #007D: Write protection error #FFFF: Input parameter error

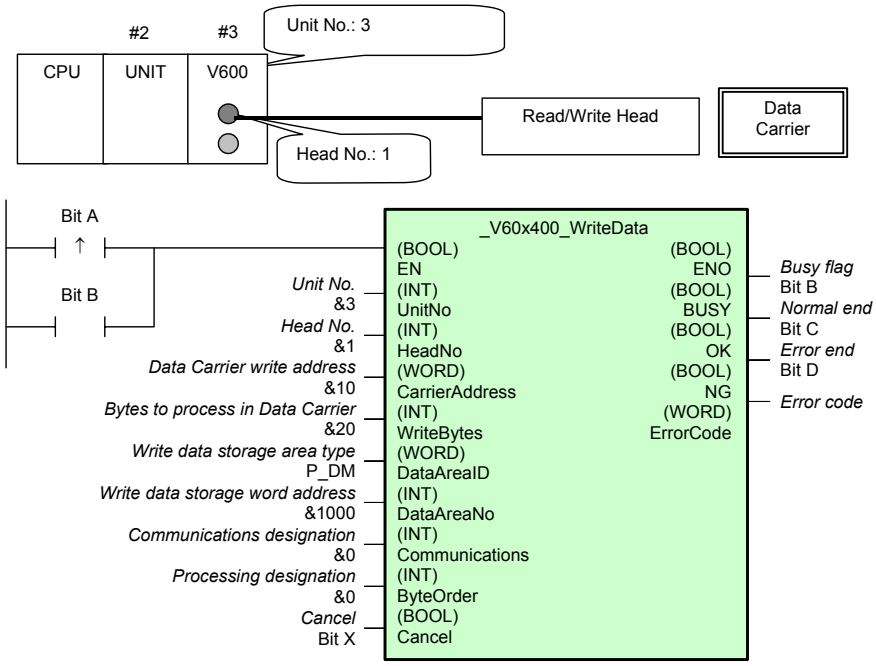
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

V60x -400	Write Data to Data Carrier: _V60x400_WriteData

Basic function	Writes data to a Data Carrier.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600_V60x400_WriteData10.cxf
Applicable models	CS1W-V600C11/V600C12 and CJ1W-V600C11/V600C12 ID Sensor Units
Conditions for usage	CX-Programmer Settings • Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	Data is written to the specified area of the Data Carrier specified by the *Unit No.* and *Vendor No.* Up to 2048 bytes (1024 words) can be written at one time. The word designation for storing the data is specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000. Observe the following precautions for the ID Sensor Unit. Refer to the *Related Manuals* for details. • Verification will not be performed unless it is specified when writing.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.

Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Always specify a head number of &1 for One-Head ID Sensor Units (CS1W-V600C11 and CJ1W-V600C11). • Check the memory capacity of the Data Carrier when specifying the Data Carrier write address and the number of bytes to write to the Data Carrier. An address error will be output if the specified address or number of bytes to process is not suitable for the memory capacity of the Data Carrier being communicated with.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON in the following example, data stored in D1000 will be written to the Data Carrier connected to Head 1 of the ID Sensor Unit with unit number 3.



Related manuals	ID Sensor Unit Operation Manual (Z174) 4-3 I/O Data Allocations, Error Codes 6-2-2 Command Descriptions, Write

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2 (Two-Head Controllers only)
Data Carrier write address	CarrierAddress	WORD	#0		Specify the address in the Data Carrier.
Bytes to process in Data Carrier	WriteBytes	INT	&0	&0 to &2048	Nothing will be performed and a normal end will be output for &0. Consider the Data Carrier capacity when setting.
Write data storage area type	DataAreaID	WORD	#00B0	At right.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Write data storage word address	DataAreaNo	INT	&0	Not checked.	
Communications designation	Communications	INT	&0	&0 to &2	&0: Trigger &1: Auto &2: Repeat auto
Processing designation	ByteOrder	INT	&0	&0 to &1	Specify the storage order of the write data &0: Upper to lower &1: Lower to upper 0: Upper to lower Address / CPU Unit memory / Data Carrier memory n: 01 02 ↔ 01 n+1: 03 04 ↔ 02 n+2: 03 n+3: 04 1: Lower to upper Address / CPU Unit memory / Data Carrier memory n: 02 01 ↔ 01 n+1: 04 03 ↔ 02 n+2: 03 n+3: 04
Cancel	Cancel	BOOL	0 (OFF)		0→1: Cancels processing.

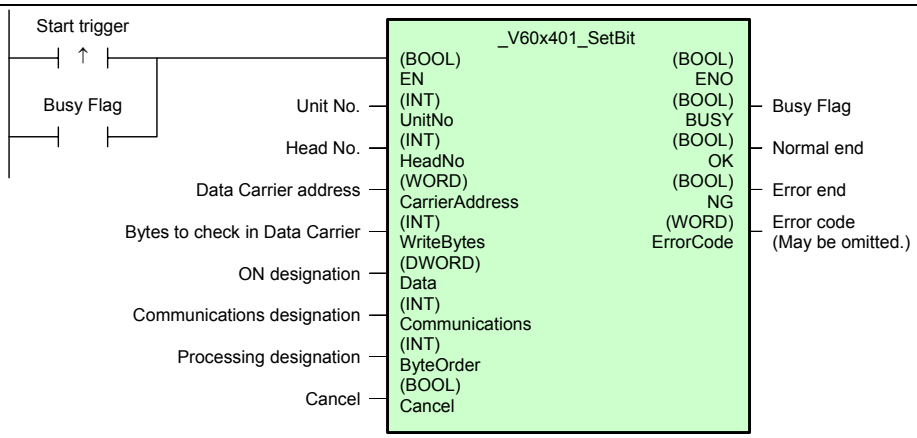
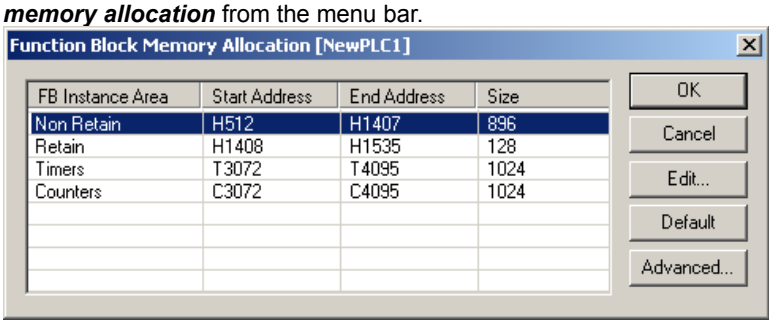
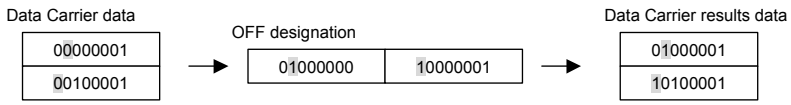
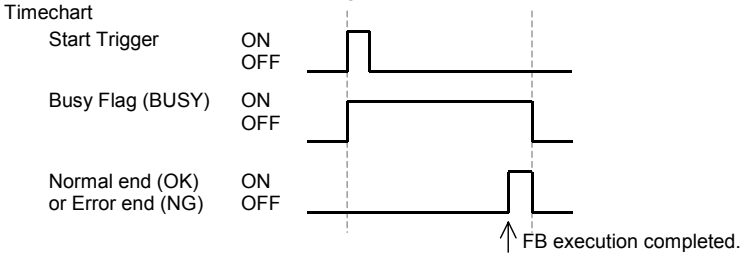
Output Variables

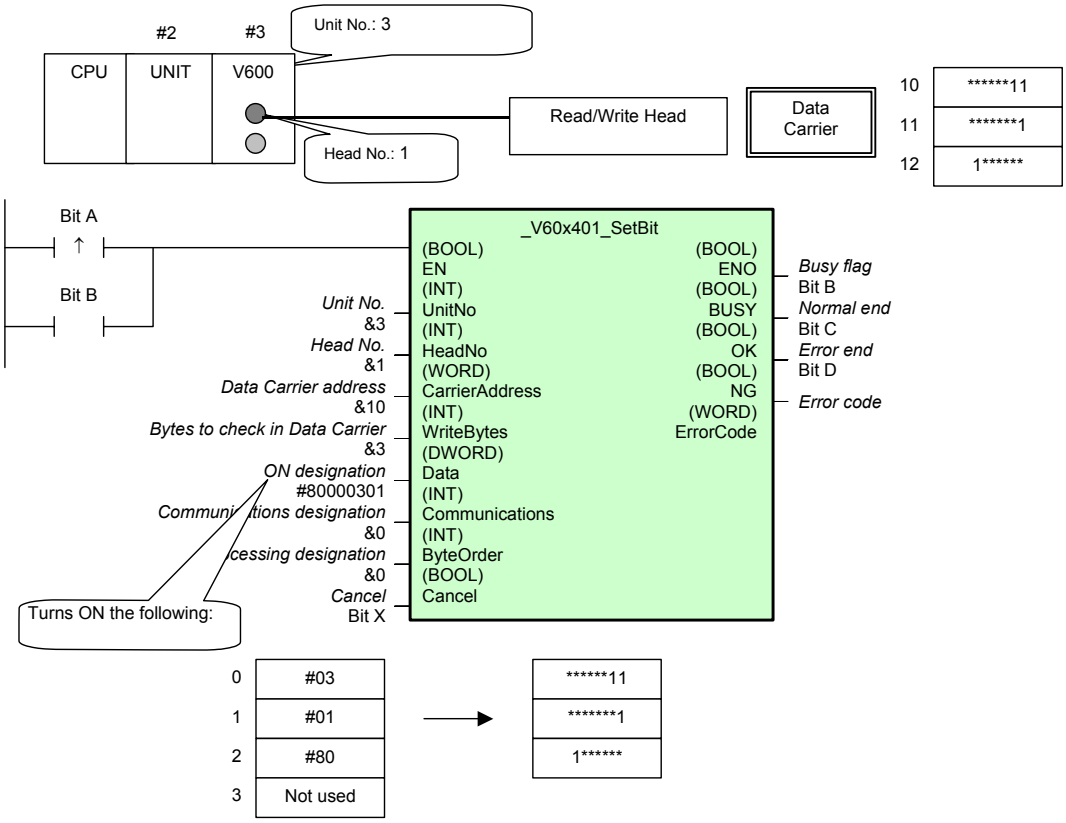
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the results from the ID Sensor Unit. Refer to the *Related Manuals* for details. #0070: Data Carrier communications error #0071: Verification error #0072: Data Carrier missing error #0076: Status Flag #007A: Data Carrier address error #007B: Battery warning #007C: Head error #007D: Write protection error #FFFF: Input parameter error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

V60x -401	Set Data Carrier Bit: _V60x401_SetBit

Basic function	Turns ON the specified bit in the Data Carrier.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600_V60x401_SetBit10.cxf
Applicable models	CS1W-V600C11/V600C12 and CJ1W-V600C11/V600C12 ID Sensor Units
Conditions for usage	CX-Programmer Settings • Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	Turns ON the specified data for the bits specified in the ON designation for the Data Carrier specified by the unit number and head number. Up to 4 bytes (2 words) can be written at one time. Bytes To Be Processed: 2, Byte Order: Upper to Lower  Observe the following precautions for the ID Sensor Unit. Refer to the *Related Manuals* for details. • Verification will not be performed unless it is specified when writing. • Do not write to more than one page at the same time with an EEPROM Data Carrier. The command will not be processed across page boundaries and an address error will be output.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 

EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Always specify a head number of &1 for One-Head ID Sensor Units (CS1W-V600C11 and CJ1W-V600C11). • Check the memory capacity of the Data Carrier when specifying the address and number of bytes to process. An address error will be output if the specified address or number of bytes to process is not suitable for the memory capacity of the Data Carrier being communicated with.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON in the following example, bits in the Data Carrier connected to Head 1 of the ID Sensor Unit with unit number 3 will be turned ON as shown below. 
Related manuals	ID Sensor Unit Operation Manual (Z174) 4-3 I/O Data Allocations, Error Codes 6-2-2 Command Descriptions, Bit Set

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2 (Two-Head Controllers only)
Data Carrier address	CarrierAddress	WORD			Specify the address in the Data Carrier.
Bytes to check in Data Carrier	WriteBytes	INT		&0 to &4	Consider the Data Carrier capacity when setting. Nothing will be performed and a normal end will be output for &0.
ON designation	Data	DWORD	#00000000		The status of any bits that are OFF in the ON Designation will not be changed. The byte order is specified in the Processing Designation.
Communications designation	Communications	INT	&0	&0 to &2	&0: Trigger &1: Auto &2: Repeat auto
Processing designation	ByteOrder	INT	&0	&0 to &1	Specify the byte order of the designation data. &0: Upper to lower &1: Lower to upper 0: Upper to lower Address / CPU Unit memory / Data Carrier memory n: 01 02 ↔ 01 n+1: 03 04 ↔ 02 n+2: 03 n+3: 04 1: Lower to upper Address / CPU Unit memory / Data Carrier memory n: 02 01 ↔ 01 n+1: 04 03 ↔ 02 n+2: 03 n+3: 04
Cancel	Cancel	BOOL	0 (OFF)		0→1: Cancels processing.

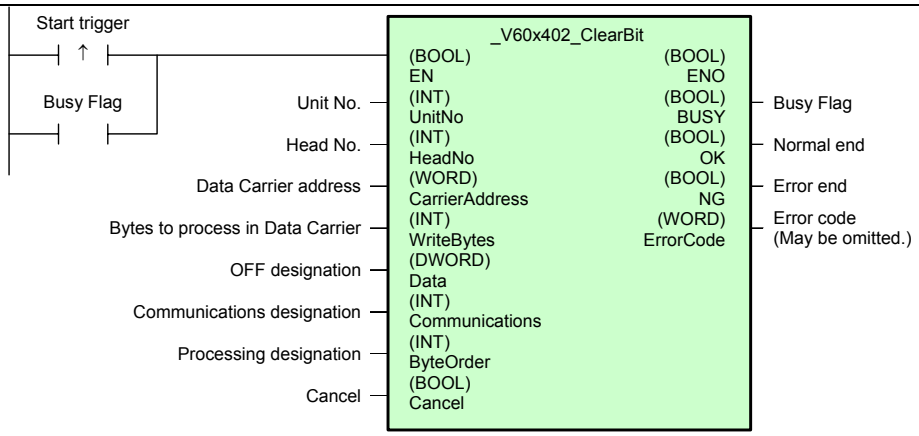
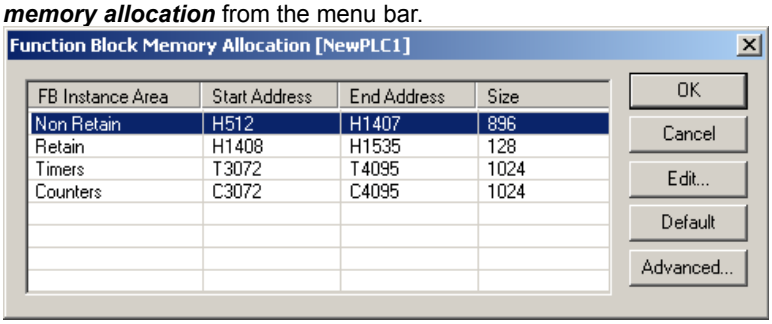
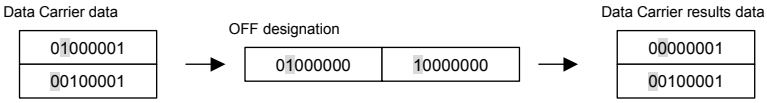
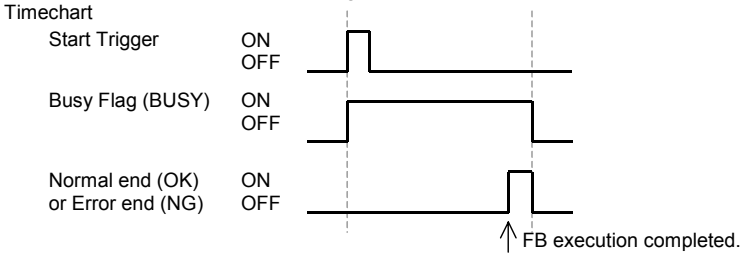
Output Variables

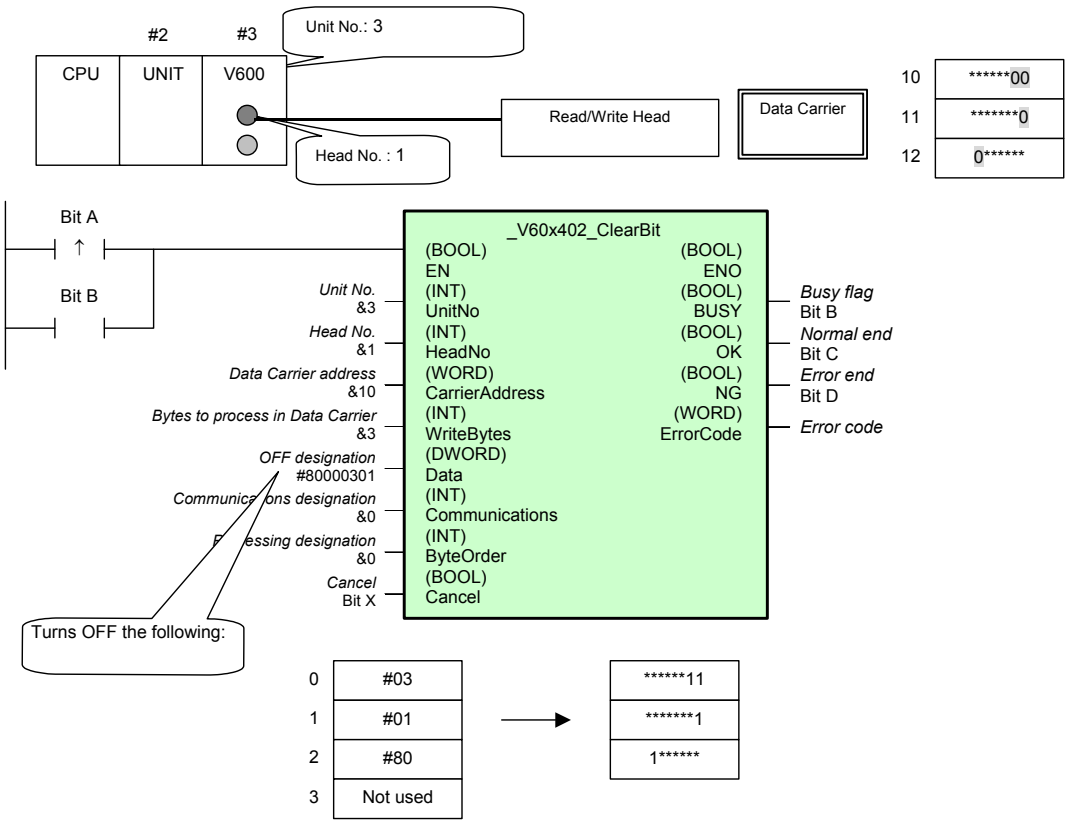
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the results from the ID Sensor Unit. Refer to the *Related Manuals* for details. #0070: Data Carrier communications error #0071: Verification error #0072: Data Carrier missing error #0076: Status Flag #007A: Data Carrier address error #007B: Battery warning #007C: Head error #007D: Write protection error #FFFF: Input parameter error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

V60x -402	Bit Carrier Bit Clear: _V60x402_ClearBit

Basic function	Turns OFF the specified bits in the Data Carrier.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600_V60x402_SetBit10.cxf
Applicable models	CS1W-V600C11/V600C12 and CJ1W-V600C11/V600C12 ID Sensor Units
Conditions for usage	CX-Programmer Settings • Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	Turns OFF the specified data for the bits specified in the OFF designation for the Data Carrier specified by the unit number and head number. Up to 4 bytes (2 words) can be processed at one time. Bytes To Be Processed: 2, Byte Order: Upper to Lower  Observe the following precautions for the ID Sensor Unit. Refer to the *Related Manuals* for details. • Verification will not be performed unless it is specified when writing. • Do not write to more than one page at the same time with an EEPROM Data Carrier. The command will not be processed across page boundaries and an address error will be output.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 

EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO flag will turn OFF and the FB will not be processed. • Always specify a head number of &1 for One-Head ID Sensor Units (CS1W-V600C11 and CJ1W-V600C11). • Check the memory capacity of the Data Carrier when specifying the address and number of bytes to process. An address error will be output if the specified address and number of bytes to process are not suitable for the memory capacity of the Data Carrier being communicated with.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON in the following example, bits in the Data Carrier connected to Head 1 of the ID Sensor Unit with unit number 3 will be turned OFF as shown below. 
Related manuals	ID Sensor Unit Operation Manual (Z174) 4-3 I/O Data Allocations, Error Codes 6-2-2 Command Descriptions, Bit Clear

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2 (Two-Head Controllers only)
Data Carrier address	CarrierAddress	WORD	#0		Specify the address in the Data Carrier in hexadecimal.
Bytes to process in Data Carrier	WriteBytes	INT	&0	&0 to &4	Consider the Data Carrier capacity when setting. Nothing will be performed and a normal end will be output for &0.
OFF designation	Data	DWORD	#00000000		Specify the positions of the bits to turn OFF. The status of any bits that are OFF in the OFF Designation will not be changed. Turn ON the bits to be cleared. The byte order is specified in the Processing Designation.
Communications designation	Communications	INT	&0	&0 to &2	&0: Trigger &1: Auto &2: Repeat auto
Processing designation	ByteOrder	INT	&0	&0 to &1	Specify the byte order of the designation data. &0: Upper to lower &1: Lower to upper 0: Upper to lower Address / CPU Unit memory / Data Carrier memory n: 01 02 ↔ 01 n+1: 03 04 ↔ 02 n+2: 03 n+3: 04 1: Lower to upper Address / CPU Unit memory / Data Carrier memory n: 02 01 ↔ 01 n+1: 04 03 ↔ 02 n+2: 03 n+3: 04
Cancel	Cancel	BOOL	0 (OFF)		0→1: Cancels processing.

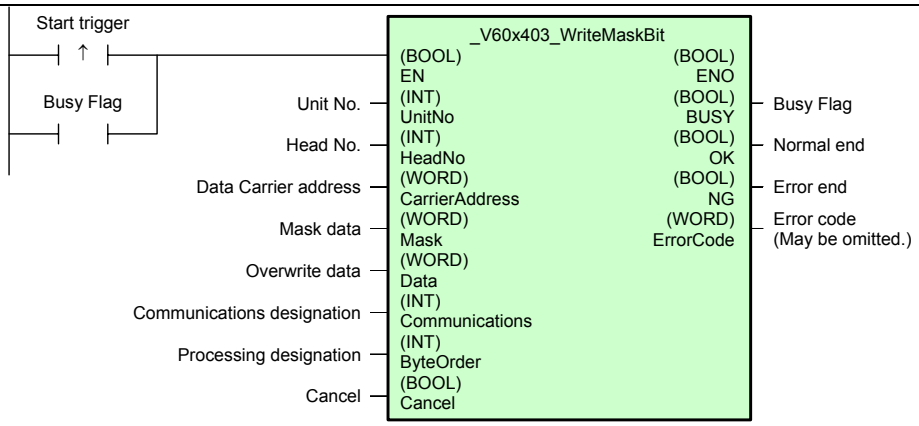
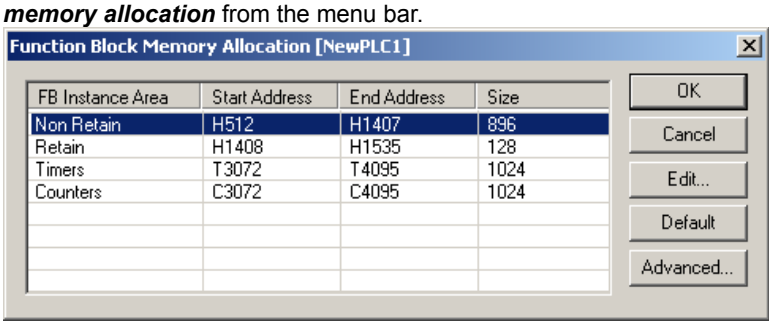
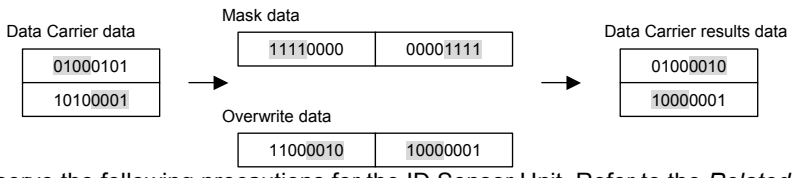
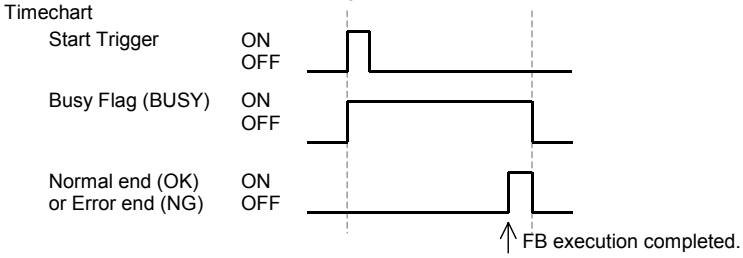
Output Variables

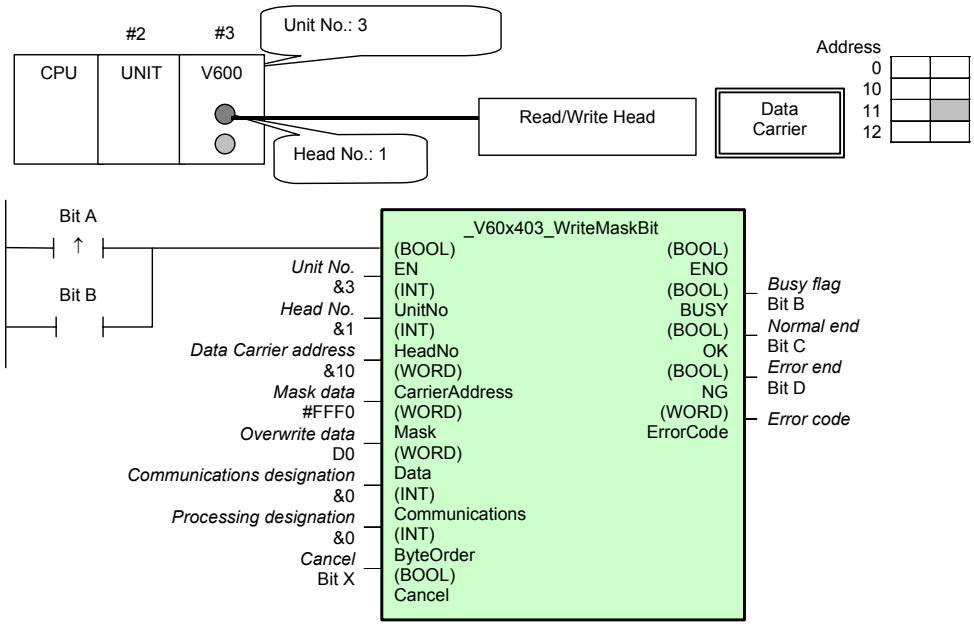
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the results from the ID Sensor Unit. Refer to the *Related Manuals* for details. #0070: Data Carrier communications error #0071: Verification error #0072: Data Carrier missing error #0076: Status Flag #007A: Data Carrier address error #007B: Battery warning #007C: Head error #007D: Write protection error #FFFF: Input parameter error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

V60x -403	Write Data Carrier Mask Bits: _V60x403_WriteMaskBit

Basic function	Writes the specified data to a Data Carrier using the specified mask data.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600_V60x403_WriteMaskBit10.cxf
Applicable models	CS1W-V600C11/V600C12 and CJ1W-V600C11/V600C12 ID Sensor Units
Conditions for usage	CX-Programmer Settings • Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	The specified 2-byte data is written using the specified mask data (i.e., unmasked bits are written) for the Data Carrier specified by the *Unit No.* and *Vendor No.* Only 2 bytes (1 word) can be written at one time. Bytes To Be Processed: 2, Byte Order: Upper to Lower  Observe the following precautions for the ID Sensor Unit. Refer to the *Related Manuals* for details. • Verification will not be performed unless it is specified when writing. • Do not write to more than one page at the same time with an EEPROM Data Carrier. The command will not be processed across page boundaries and an address error will be output.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 

EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Always specify a head number of &1 for One-Head ID Sensor Units (CS1W-V600C11 and CJ1W-V600C11). • Check the memory capacity of the Data Carrier when specifying the address and number of bytes to process. An address error will be output if the specified address or number of bytes to process is not suitable for the memory capacity of the Data Carrier being communicated with.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON in the following example, bits 00 to 03 of the data stored in D0 will be written to the Data Carrier connected to Head 1 of the ID Sensor Unit with unit number 3. 
Related manuals	ID Sensor Unit Operation Manual (Z174) 4-3 I/O Data Allocations, Error Codes 6-2-2 Command Descriptions, Mask Bit Write

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2 (Two-Head Controllers only)
Data Carrier address	CarrierAddress	WORD	#0		Specify the address in the Data Carrier.
Mask data	Mask	WORD	#0000		Turn ON the bits to be masked. The original data in the Data Carrier will be maintained for any bits that are ON in the mask data.
Overwrite data	Data	WORD	#0000		
Communications designation	Communications	INT	&0	&0 to &2	&0: Trigger &1: Auto &2: Repeat auto
Processing designation	ByteOrder	INT	&0	&0 to &1	Specify the byte order of the designation data. &0: Upper to lower &1: Lower to upper 0: Upper to lower Address / CPU Unit memory / Data Carrier memory n: 01 02 ↔ 01 n+1: 03 04 ↔ 02 n+2: 03 n+3: 04 1: Lower to upper Address / CPU Unit memory / Data Carrier memory n: 02 01 ↔ 01 n+1: 04 03 ↔ 02 n+2: 03 n+3: 04
Cancel	Cancel	BOOL	0 (OFF)		0→1: Cancels processing.

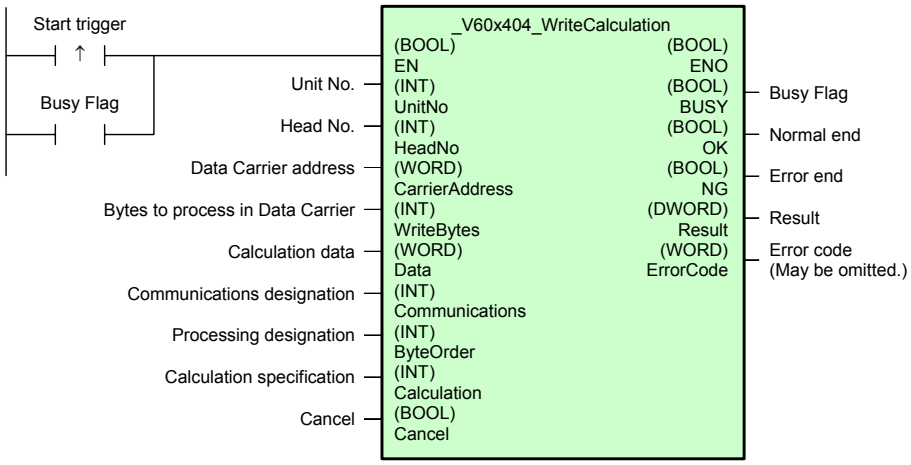
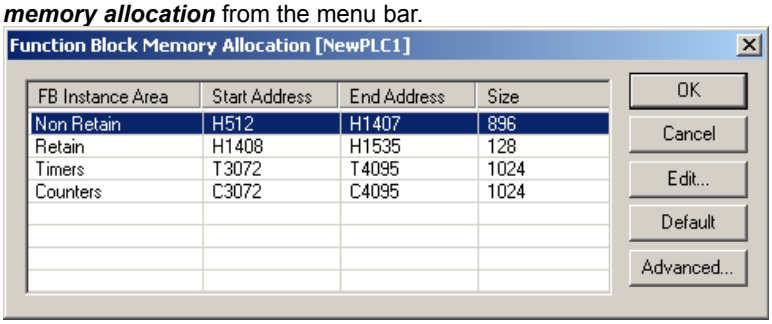
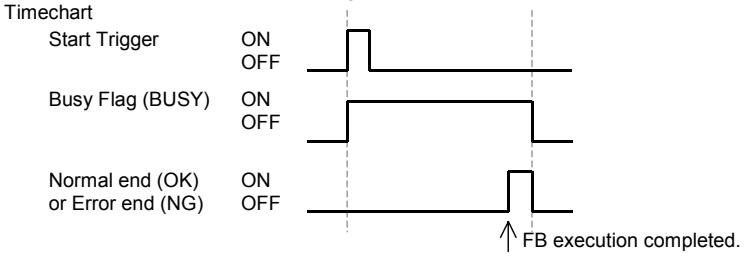
Output Variables

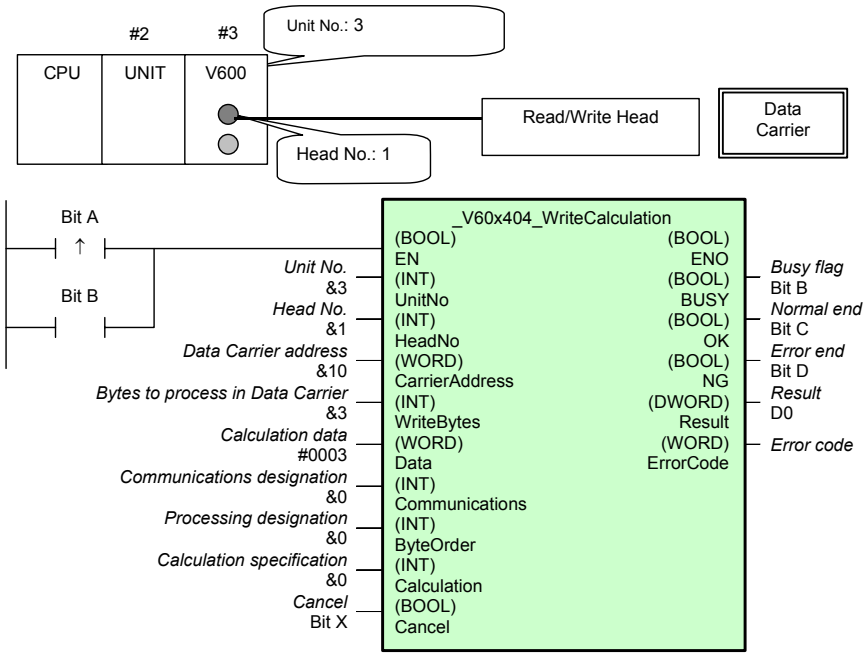
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the results from the ID Sensor Unit. Refer to the *Related Manuals* for details. #0070: Data Carrier communications error #0071: Verification error #0072: Data Carrier missing error #0076: Status Flag #007A: Data Carrier address error #007B: Battery warning #007C: Head error #007D: Write protection error #FFFF: Input parameter error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

V60x -404	Write Calculation: _V60x404_WriteCalculation

Basic function	Performs a calculation between Data Carrier data and specified data and writes the result to the Data Carrier.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600_V60x404_WriteCalculation10.cxf
Applicable models	CS1W-V600C11/V600C12 and CJ1W-V600C11/V600C12 ID Sensor Units
Conditions for usage	CX-Programmer Settings • Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	The specified data is read, the specified calculation is performed the data, and the result is written to the Data Carrier specified by the unit number and head number. Up to 4 bytes (2 words) can be written at one time. Observe the following precautions for the ID Sensor Unit. Refer to the *Related Manuals* for details. • The *ErrorCode* will be 76 if an overflow occurs for addition or an underflow occurs for subtraction. • Verification will not be performed unless it is specified when writing. • Do not write to more than one page at the same time with an EEPROM Data Carrier. The command will not be processed across page boundaries and an address error will be output.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.

Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Always specify a head number of &1 for One-Head ID Sensor Units (CS1W-V600C11 and CJ1W-V600C11). • Check the memory capacity of the Data Carrier when specifying the address and number of bytes to process. An address error will be output if the specified address or number of bytes to process is not suitable for the memory capacity of the Data Carrier being communicated with.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON in the following example, three bytes of data are read starting from address 10, #0003 is added to the data, and the result is written to D0 and to the Data Carrier connected to Head 1 of the ID Sensor Unit with unit number 3. 
Related manuals	ID Sensor Unit Operation Manual (Z174) 4-3 I/O Data Allocations, Error Codes 6-2-2 Command Descriptions, Calculation Write

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2 (Two-Head Controllers only)
Data Carrier address	CarrierAddress	WORD	#0		Specify the address in the Data Carrier.
Bytes to process in Data Carrier	WriteBytes	INT	&0	&0 to &4	A normal end will be output for &0. Consider the Data Carrier capacity when setting.
Calculation data	Data	WORD	#0		
Communications designation	Communications	INT	&0	&0 to &2	&0: Trigger &1: Auto &2: Repeat auto
Processing designation	ByteOrder	INT	&0	&0 to &1	Specify the byte order of the designation data. &0: Upper to lower &1: Lower to upper 0: Upper to lower Address / CPU Unit memory / Data Carrier memory n: 01 02 ↔ 01 n+1: 03 04 ↔ 02 n+2: 03 n+3: 04 1: Lower to upper Address / CPU Unit memory / Data Carrier memory n: 02 01 ↔ 01 n+1: 04 03 ↔ 02 n+2: 03 n+3: 04
Calculation specification	Calculation	INT	&0	&0 to &1	Specify the calculation method. &0: Addition &1: Subtraction
Cancel	Cancel	BOOL	0 (OFF)		0→1: Cancels processing.

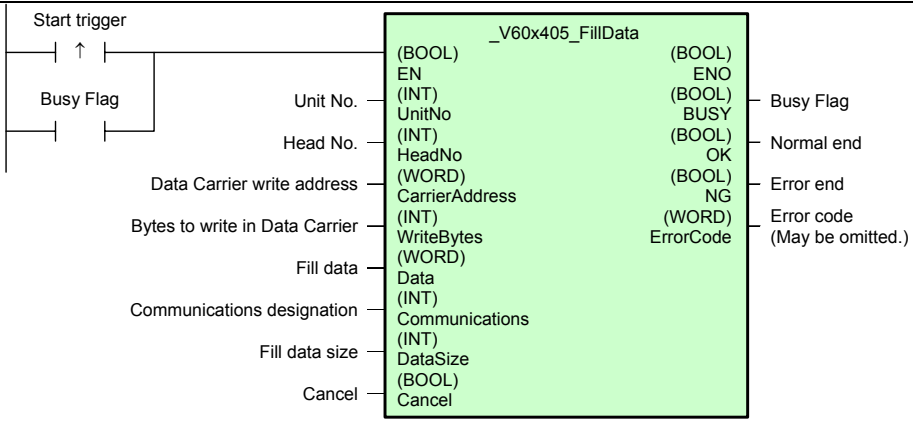
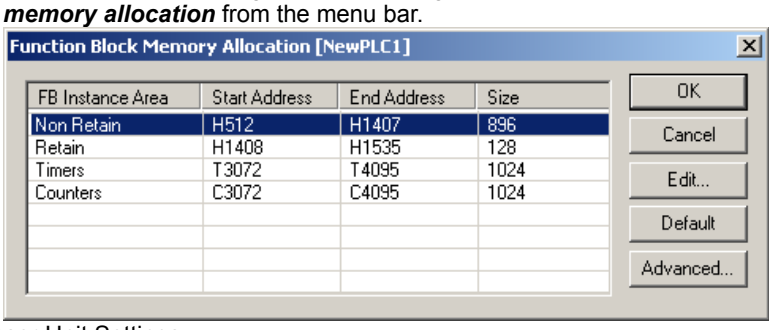
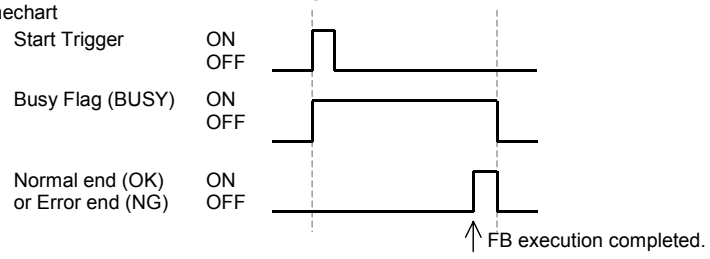
Output Variables

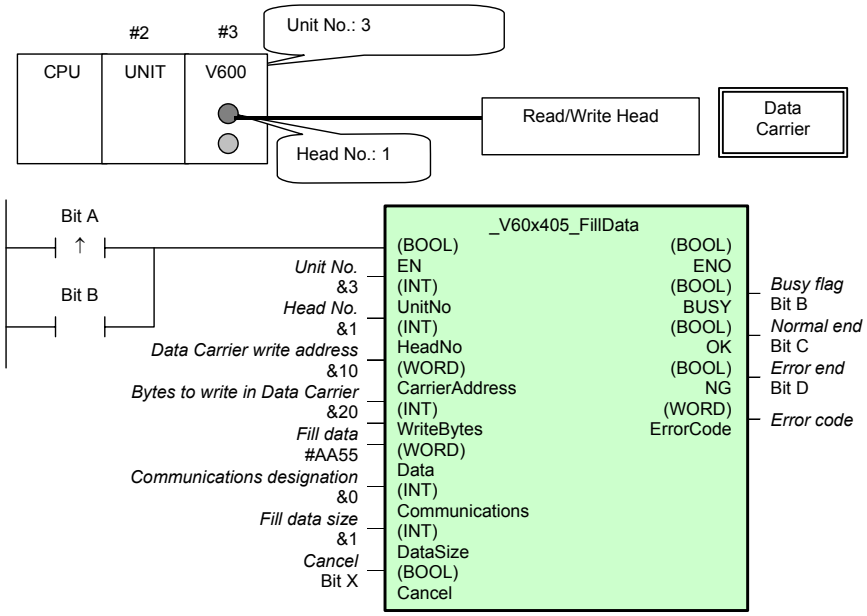
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Result	Result	DWORD		If the number of bytes to process is between 1 and 3, the data in the lower address is valid. 31 24 23 16 15 08 07 00 1 byte specified 3 bytes specified
Error code (May be omitted.)	ErrorCode	WORD		Outputs the results from the ID Sensor Unit. Refer to the *Related Manuals* for details. #0070: Data Carrier communications error #0071: Verification error #0072: Data Carrier missing error #0076: Status Flag #007A: Data Carrier address error #007B: Battery warning #007C: Head error #007D: Write protection error #FFFF: Input parameter error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

V60x -405	Fill Data in Data Carrier: _V60x405_FillData

Basic function	Writes fill data to a Data Carrier.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600_V60x405_FillData10.cxf
Applicable models	CS1W-V600C11/V600C12 and CJ1W-V600C11/V600C12 ID Sensor Units
Conditions for usage	CX-Programmer Settings • Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	The same data is written to the specified area of the Data Carrier specified by the *Unit No.* and *Vendor No.* Up to 2,048 bytes (1,024 words) can be written at one time or the entire area from the specified first address can be written . Observe the following precautions for the ID Sensor Unit. Refer to the *Related Manuals* for details. • If the specified number of bytes to process is 0, the data will be written to the Data Carrier from the specified first address to the last address in the user area. • The user area in the Data Carrier will be written even if write protection is set. • Verification will not be performed unless it is specified when writing.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.

Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Always specify a head number of &1 for One-Head ID Sensor Units (CS1W-V600C11 and CJ1W-V600C11). • Check the memory capacity of the Data Carrier when specifying the address and number of bytes to process. An address error will be output if the specified address or number of bytes to process is not suitable for the memory capacity of the Data Carrier being communicated with.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON in the following example, #AA55 will be written to 20 bytes beginning with address 10 in the Data Carrier connected to Head 1 of the ID Sensor Unit with unit number 3. 
Related manuals	ID Sensor Unit Operation Manual (Z174) 4-3 I/O Data Allocations, Error Codes 6-2-2 Command Descriptions, Data Fill

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2 (Two-Head Controllers only)
Data Carrier write address	CarrierAddress	WORD	#0		Specify the address in the Data Carrier.
Bytes to write in Data Carrier	WriteBytes	INT	&0	&0 to &2048	If the specified number of bytes to process is 0, the data will be written from the specified first address to the last address.
Fill data	Data	WORD	#0		
Communications designation	Communications	INT	&0	&0 to &2	&0: Trigger &1: Auto &2: Repeat auto
Fill data size	DataSize	INT	&0	&0 to &1	Specify the size of the fill data. &0: Byte &1: Word
Cancel	Cancel	BOOL	0 (OFF)		0→1: Cancels processing.

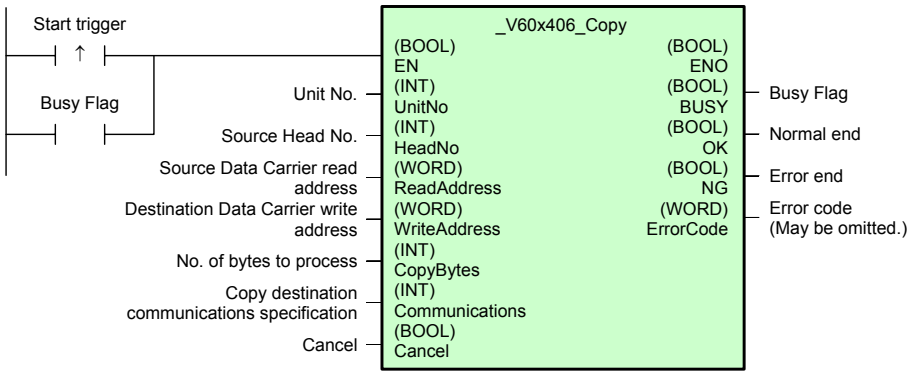
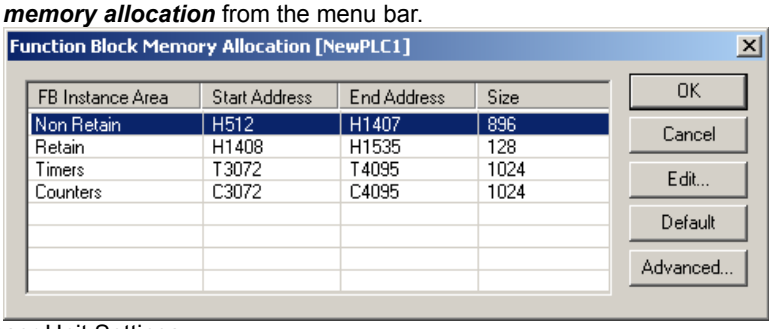
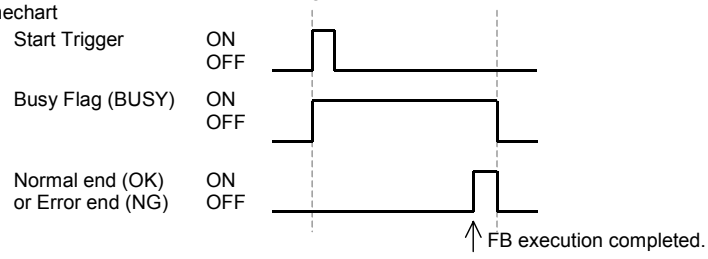
Output Variables

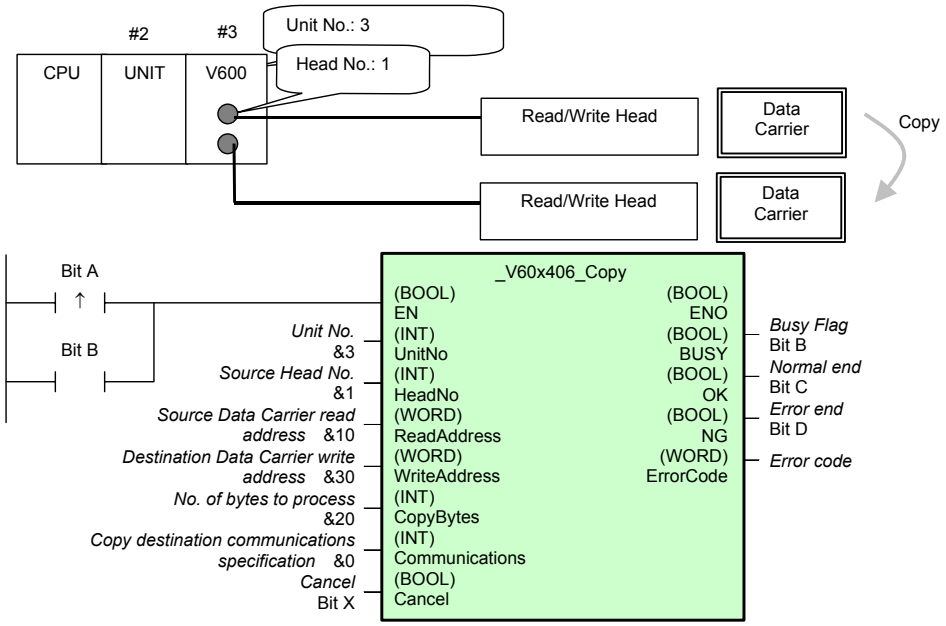
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the results from the ID Sensor Unit. Refer to the *Related Manuals* for details. #0070: Data Carrier communications error #0071: Verification error #0072: Data Carrier missing error #0076: Status Flag #007A: Data Carrier address error #007B: Battery warning #007C: Head error #007D: Write protection error #FFFF: Input parameter error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

V60x -406	Copy Data Carrier: _V60x406_Copy

Basic function	Copies the data from one Data Carrier and writes it to another Data Carrier.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600_V60x406_Copy10.cxf
Applicable models	CS1W-V600C12 and CJ1W-V600C12 ID Sensor Units only
Conditions for usage	CX-Programmer Settings • Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	Data is copied from the specified area of the Data Carrier specified by the *Unit No.* and *Vendor No.* and written to the specified area of another Data Carrier. ID Sensor Unit Precautions Refer to *Copy (Double-head Unit ID Sensor Units Only)* under *6-2-2 Command Descriptions* in the *ID Sensor Unit Operation Manual* (Z174) for details. • Verification will not be performed unless it is specified when writing. • The update method for the Data Carrier that receives the copy will be set to a trigger. • The Status Flag in the error information will turn ON if an error occurs for the Head receiving the copy.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.

Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF, the NG Flag will turn ON, and the FB will not be processed. • Check the memory capacity of the Data Carrier when specifying the address and number of bytes to process at both the copy source and destination. An address error will be output if the specified address or number of bytes to process is not suitable for the memory capacity of the Data Carrier being communicated with.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON in the following example, 20 bytes of data beginning with address 10 in the Data Carrier connected to Head 1 of the ID Sensor Unit with unit number 3 will be copied beginning with address 30 of the Data Carrier connected to Head 2. 
Related manuals	ID Sensor Unit Operation Manual (Z174) 4-3 I/O Data Allocations, Error Codes 6-2-2 Command Descriptions, Copy (Double-head Unit ID Sensor Units Only)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Source Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2
Source Data Carrier read address	ReadAddress	INT	#0		Specify the address in the Data Carrier.
Destination Data Carrier write address	WriteAddress	INT	&0		Specify the address in the Data Carrier.
No. of bytes to process	CopyBytes	INT	&0	&0 to &2048	Nothing will be performed and a normal end will be output for &0.
Copy destination communications specification	Communications	INT	&0	&0 to &1	&0: Trigger &1: Auto The communications specification for the destination will be set to a trigger.
Cancel	Cancel	BOOL	0 (OFF)		0→1: Cancels processing.

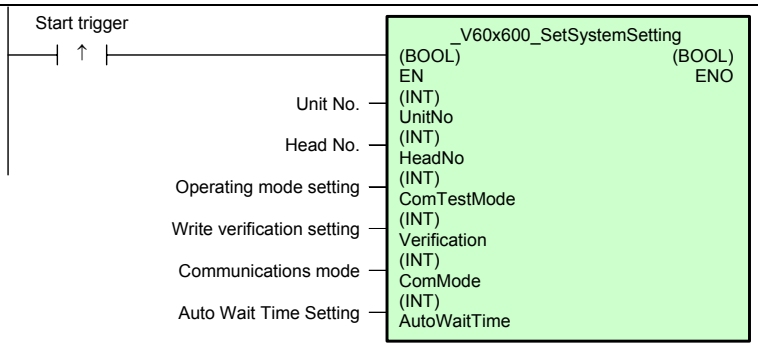
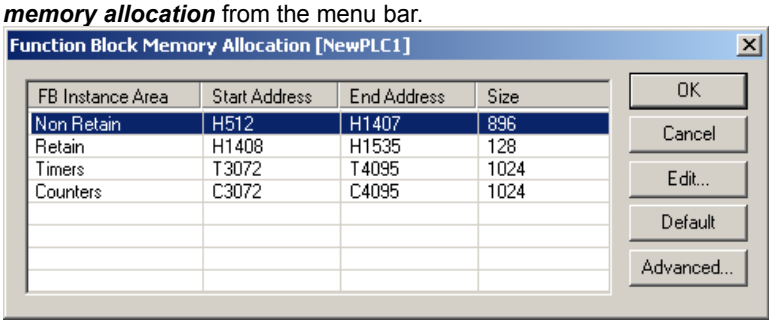
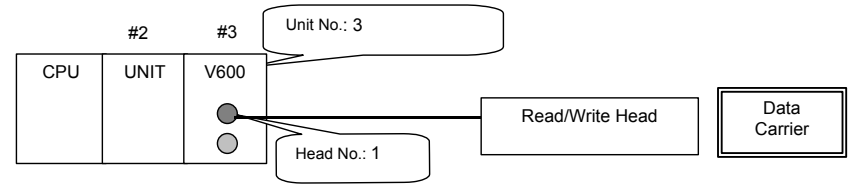
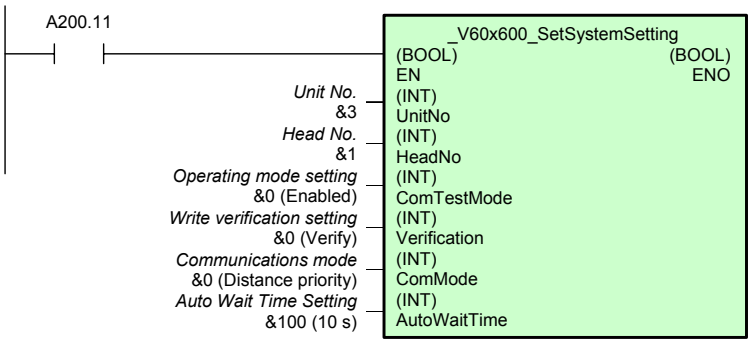
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	WORD		Outputs the results from the ID Sensor Unit. Refer to the *Related Manuals* for details. #0070: Data Carrier communications error #0071: Verification error #0072: Data Carrier missing error #0076: Status Flag #007A: Data Carrier address error #007B: Battery warning #007C: Head error #007D: Write protection error #FFFF: Input parameter error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

V60x -600	Set System Settings: _V60x600_SetSystemSetting

Basic function	Sets the mode of the ID Sensor Unit.
Symbol	
File name	Lib\FBL\omronlib\RFID\V600_V60x600_SetSysetmSetting10.cxf
Applicable models	CS1W-V600C11/V600C12 and CJ1W-V600C11/V600C12 ID Sensor Units
Conditions for usage	CX-Programmer Settings • Function blocks for ID Sensor Units will not work if the Start Address of the Non Retain area allocated for the FB Instance Area is set to H512 (the default setting). Always change this setting from the CX-Programmer when using function blocks for Position Control Units. This value can be changed after selecting ***PLC - Function block memory - Function block memory allocation*** from the menu bar.  ID Sensor Unit Settings • This FB cannot be executed if the ID Sensor Unit is busy. The NG Flag will turn ON if an attempt is made.
Function description	The operating mode is set for the Data Carrier specified by the *Unit No.* and *Vendor No.* When the *Start Trigger* turns ON, the operating mode is set and a Unit restart is begun. A restart completion check is not performed for this FB. To confirm completion, program it using the Serial Communications Board Settings Changed Flag in the AR Area.
EN input condition	Any bit can be specified.
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Always specify a head number of &1 for One-Head ID Sensor Units (CS1W-V600C11 and CJ1W-V600C11).
Application example	The following example sets head 1 of the ID Sensor Unit with unit number 3 at the start of operation.  

Related manuals	ID Sensor Unit Operation Manual (Z174) 4-2-1 DM Area Allocations and Contents

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &95	
Head No.	HeadNo	INT	&1	&1 to &2	&1: Head 1 &2: Head 2 (Two-Head Controllers only)
Operating mode setting	ComTestMode	INT	0	&0 to &1	&0: Enabled &1: Disabled
Write verification setting	Verification	INT	0	&0 to &1	&0: Verify &1: Do not verify
Communications mode	ComMode	INT	0	&0 to &1	&0: Distance priority &1: Time priority
Auto Wait Time Setting	AutoWaitTime	INT	0	&0 to &9999	&0: Infinite Unit: 0.1 s

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ **Version History**

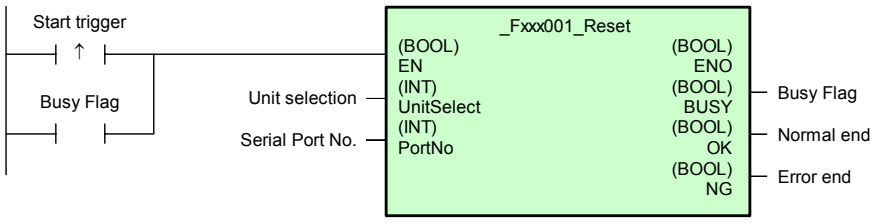
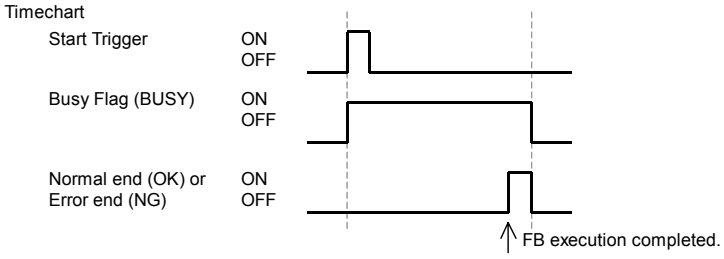
Version	Date	Contents
1.00	2004.6.	Original production

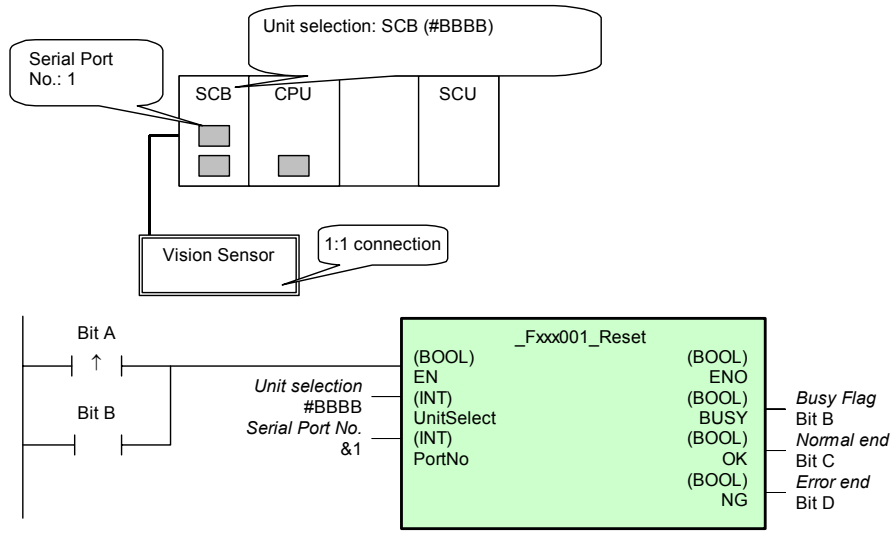
3-11 Vision Sensor

F160, F210 series

FB Name	Function	Page
_Fxxx001_Reset	Reset	3-338
_Fxxx200_GetSceneNo	Get Scene Number	3-340
_Fxxx201_ChangeSceneNo	Change Scene	3-342
_Fxxx202_GetSceneGrNo	Get Scene Group Number	3-344
_Fxxx203_ChangeSceneGrNo	Switch Scene Group	3-346
_Fxxx401_ExecMeasure	Execute Measurement	3-348
_Fxxx402_ExecPictureMeasure	Execute Picture Measurement	3-351

Fxxx -001	Reset: _Fxxx001_Reset

Basic function	Restarts the Vision Sensor.
Symbol	
File name	Lib\FBL\omronlib\VisionSensor\Fxxx_Fxxx001_Reset10.cxf
Applicable models	F160/F210
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Vision Sensor (normal/no-protocol). • When connected to the built-in RS-232C port on the CPU Unit, set the RS-232C communications port settings (no-protocol) in the PLC Setup to the same communications specifications as the Vision Sensor (normal/no-protocol). • Communications must be within one network and cannot cross to another network. • This FB is invalid when the serial port error is happend. • Multiple FBs cannot simultaneously perform processing for one Vision Sensor. • Communication error may occur as PLC serial port receives unexpected data when power is ON. Would recommend restart of the serial port after PLC system is activated Vision Sensor Settings • Do not reset the Vision Sensor while a message is displayed indicating that processing is being performed to save or load data. Data will be corrupted and the Vision Sensor will not start normally the next time.
Function description	When the Start Trigger turns ON, the Vision Sensor connected to the serial port specified by the *Unit selection* and *Serial port No.* is restarted.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Vision Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the Vision Sensor is restarted. 
Related manuals	F160 Vision Sensor Manual 4:Communications Reference Manual (Z140) Section 3 Normal Serial Interface

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection #FFFF Serial port No. Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

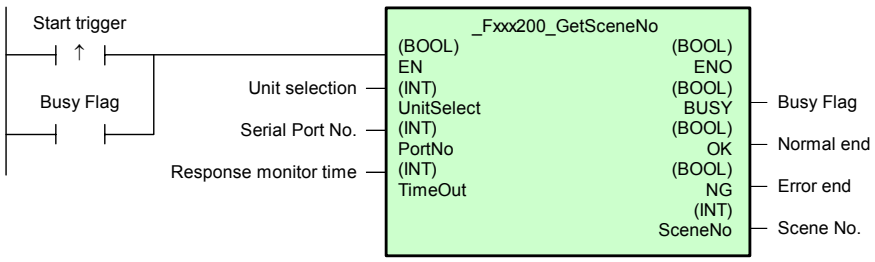
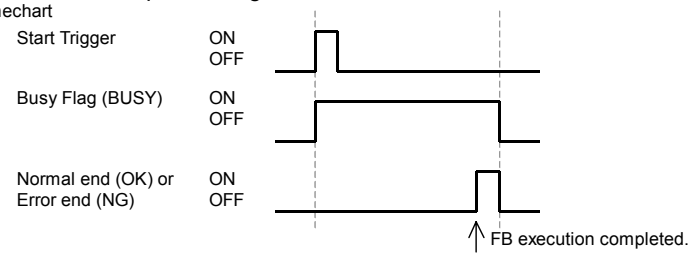
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

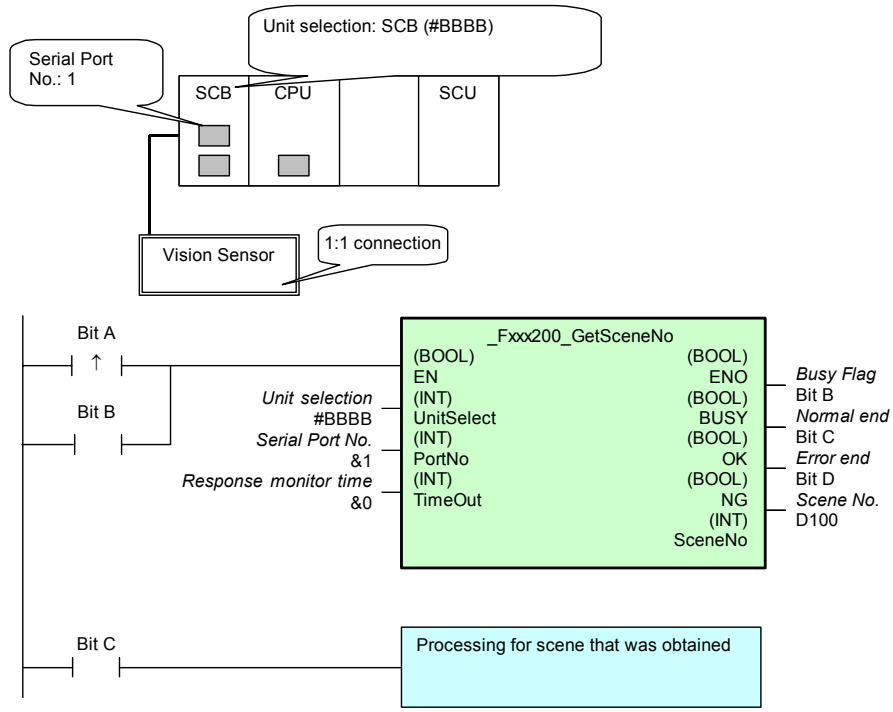
■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Fxxx -200	Get Scene Number: _Fxxx200_GetSceneNo

Basic function	Reads the scene number.
Symbol	
File name	Lib\FBL\omronlib\VisionSensor\Fxxx_Fxxx200_GetSceneNo10.cxf
Applicable models	F160/F210
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Vision Sensor (normal/no-protocol). • When connected to the built-in RS-232C port on the CPU Unit, set the RS-232C communications port settings (no-protocol) in the PLC Setup to the same communications specifications as the Vision Sensor (normal/no-protocol). • Communications must be within one network and cannot cross to another network. • This FB is invalid when the serial port error is happend. Vision Sensor Settings • Set the Vision Sensor output to the serial interface ASCII format.
Function description	When the Start Trigger turns ON, the scene number is read for the Vision Sensor connected to the serial port specified by the *Unit selection* and *Serial port No.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Vision Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the scene number is stored in D100.
Related manuals	F160 Vision Sensor Manual 4:Communications Reference Manual (Z140) Section 3 Normal Serial Interface



■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection #FFFF Serial port No. Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Response monitor time	TimeOut	INT	&0	&0 to &1200	Specify the response monitor time (unit: 100 ms). For example, &100 means 10 seconds. &0: Default (5 seconds)

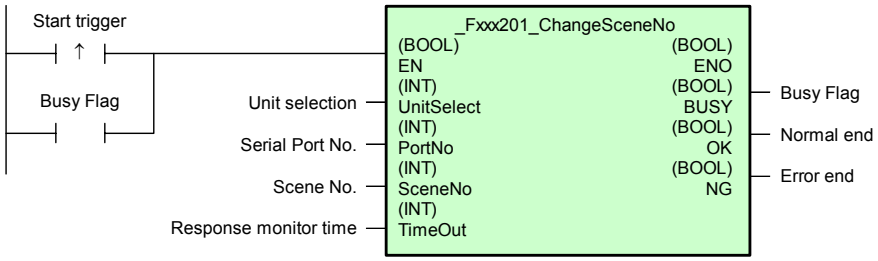
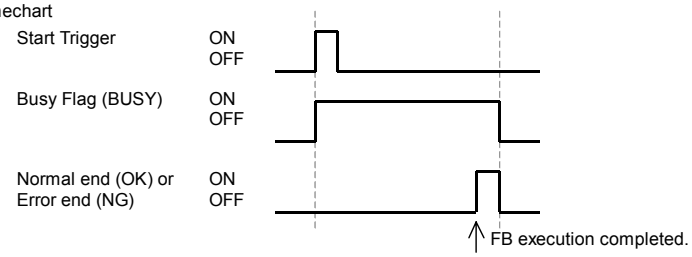
Output Variables

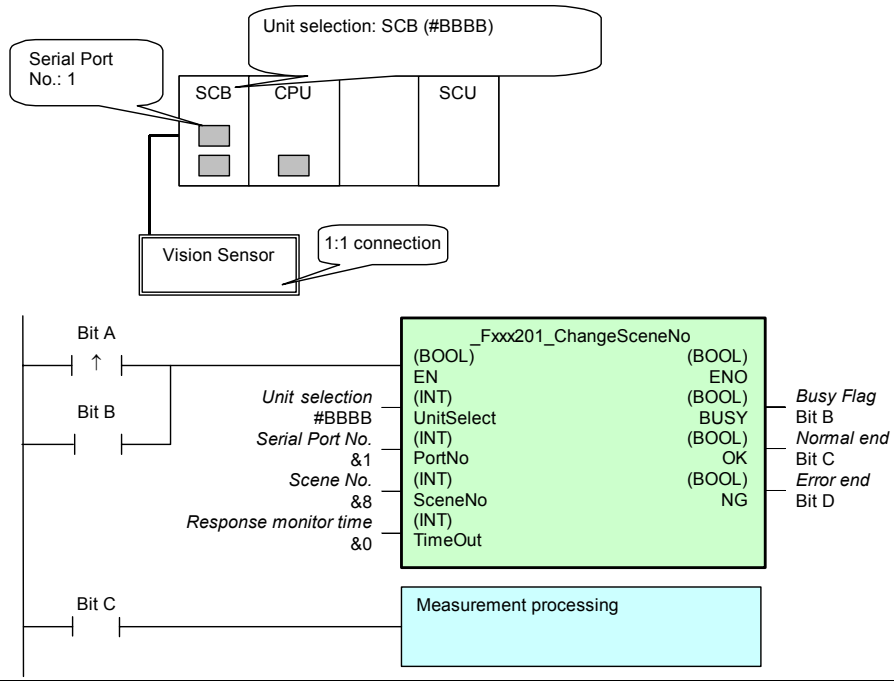
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Scene No.	SceneNo	INT	&0 to &31	

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Fxxx -201	Change Scene: _Fxxx201_ChangeSceneNo

Basic function	Changes the scene.
Symbol	
File name	Lib\FBL\omronlib\VisionSensor\Fxxx_Fxxx201_ChangeSceneNo10.cxf
Applicable models	F160/F210
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Vision Sensor (normal/no-protocol). • When connected to the built-in RS-232C port on the CPU Unit, set the RS-232C communications port settings (no-protocol) in the PLC Setup to the same communications specifications as the Vision Sensor (normal/no-protocol). • Communications must be within one network and cannot cross to another network. • This FB is invalid when the serial port error is happend. • Multiple FBs cannot simultaneously perform processing for one Vision Sensor. • Communication error may occur as PLC serial port receives unexpected data when power is ON. Would recommend restart of the serial port after PLC system is activated
Function description	When the Start Trigger turns ON, the scene is changed to the specified scene number for the Vision Sensor connected to the serial port specified by the *Unit selection* and *Serial port No.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Vision Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the scene is change to scene 8 for the Vision Sensor. 
Related manuals	F160 Vision Sensor Manual 4:Communications Reference Manual (Z140) Section 3 Normal Serial Interface F400 Color Vision Sensor Operation Manual (Z135) 6-2 RS-232C Port

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port.
Serial Port No.	PortNo	INT	&1	&1 to &2	■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Scene No.	SceneNo	INT	&0	&0 to &31	Specify the scene number.
Response monitor time	TimeOut	INT	&0	&0 to &1200	Specify the response monitor time (unit: 100 ms). For example, &100 means 10 seconds. &0: Default (5 seconds)

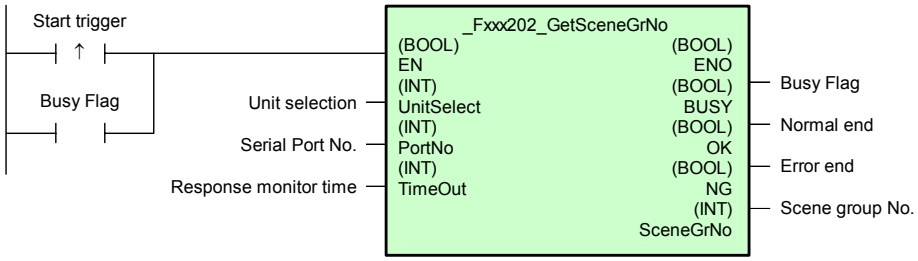
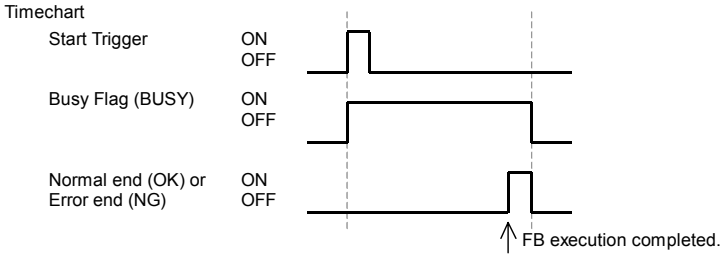
Output Variables

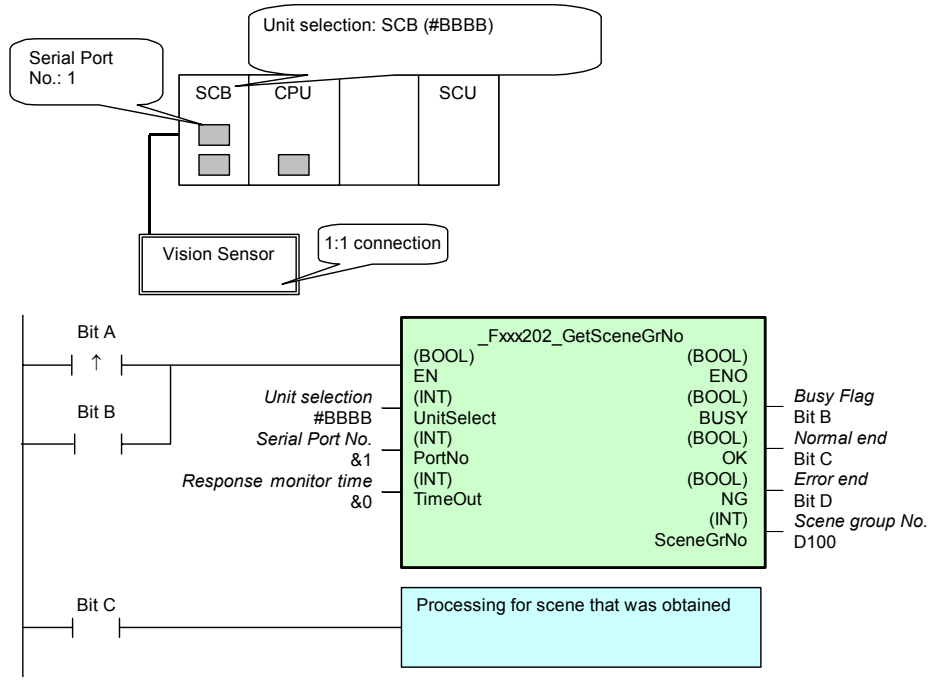
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

Fxxx -202	Get Scene Group Number: _Fxxx202_GetSceneGrNo

Basic function	Gets the scene group number.
Symbol	
File name	Lib\FBL\omronlib\VisionSensor\Fxxx_Fxxx202_GetSceneGrNo10.cxf
Applicable models	F160/F210
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Vision Sensor (normal/no-protocol). • When connected to the built-in RS-232C port on the CPU Unit, set the RS-232C communications port settings (no-protocol) in the PLC Setup to the same communications specifications as the Vision Sensor (normal/no-protocol). • Communications must be within one network and cannot cross to another network. • This FB is invalid when the serial port error is happend. • Multiple FBs cannot simultaneously perform processing for one Vision Sensor. • Communication error may occur as PLC serial port receives unexpected data when power is ON. Would recommend restart of the serial port after PLC system is activated Vision Sensor Settings • Set the Vision Sensor output to the serial interface ASCII format.
Function description	When the Start Trigger turns ON, the scene group number is read for the Vision Sensor connected to the serial port specified by the *Unit selection* and *Serial port No.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Vision Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the scene group number is stored in D100. 
Related manuals	F160 Vision Sensor Manual 4:Communications Reference Manual (Z140) Section 3 Normal Serial Interface

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Response monitor time	TimeOut	INT	&0	&0 to &1200	Specify the response monitor time (unit: 100 ms). For example, &100 means 10 seconds. &0: Default (5 seconds)

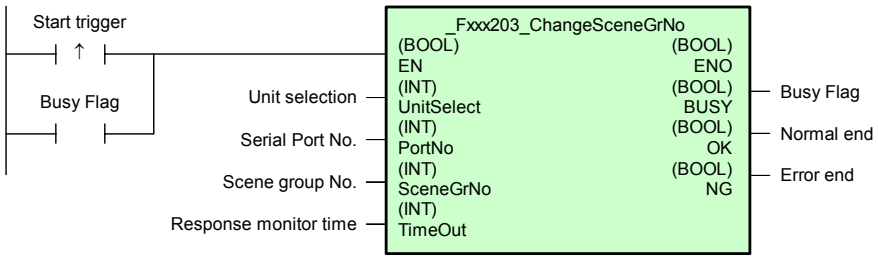
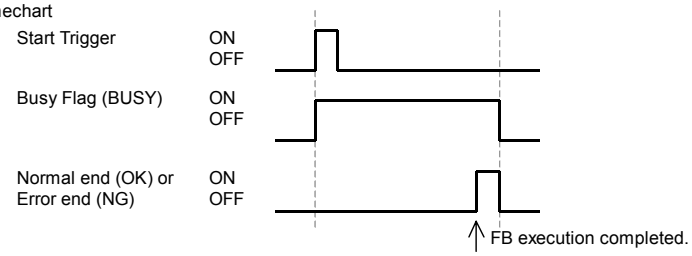
Output Variables

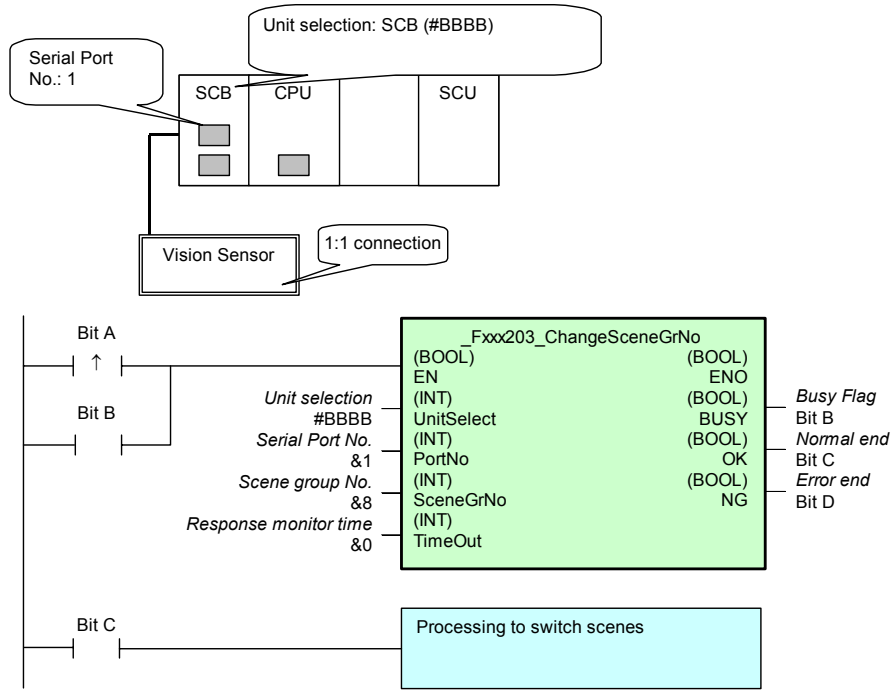
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Scene group No.	SceneGrNo	INT	&0 to &31	

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

Fxxx -203	Switch Scene Group: _Fxxx203_ChangeSceneGrNo

Basic function	Switches the scene group.
Symbol	
File name	Lib\FBL\omronlib\VisionSensor\Fxxx_Fxxx203_ChangeSceneGrNo10.cxf
Applicable models	F160/F210
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Vision Sensor (normal/no-protocol). • When connected to the built-in RS-232C port on the CPU Unit, set the RS-232C communications port settings (no-protocol) in the PLC Setup to the same communications specifications as the Vision Sensor (normal/no-protocol). • Communications must be within one network and cannot cross to another network. • This FB is invalid when the serial port error is happend. • Multiple FBs cannot simultaneously perform processing for one Vision Sensor. • Communication error may occur as PLC serial port receives unexpected data when power is ON. Would recommend restart of the serial port after PLC system is activated
Function description	When the Start Trigger turns ON, the scene group is changed to the specified scene group for the Vision Sensor connected to the serial port specified by the *Unit selection* and *Serial port No.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Vision Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the scene group is change to group 8 for the Vision Sensor. 
Related manuals	F160 Vision Sensor Manual 4:Communications Reference Manual (Z140) Section 3 Normal Serial Interface

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Scene group No.	SceneGrNo	INT	&0	&0 to &31	Specify the scene group number.
Response monitor time	TimeOut	INT	&0	&0 to &1200	Specify the response monitor time (unit: 100 ms). For example, &100 means 10 seconds. &0: Default (5 seconds)

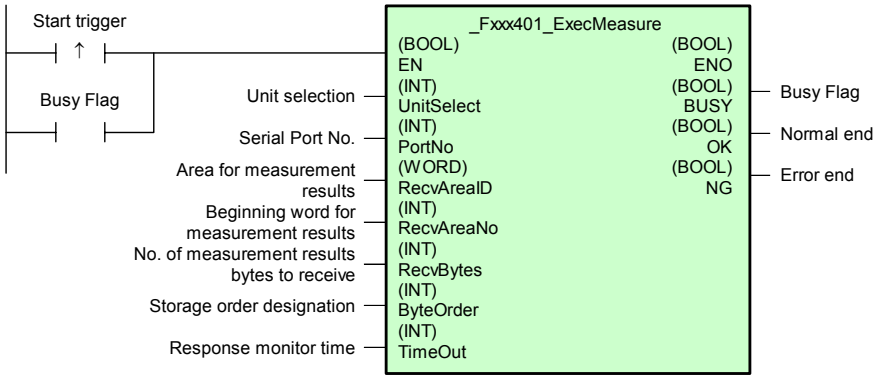
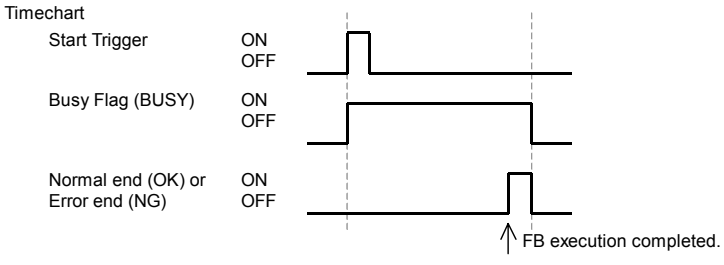
Output Variables

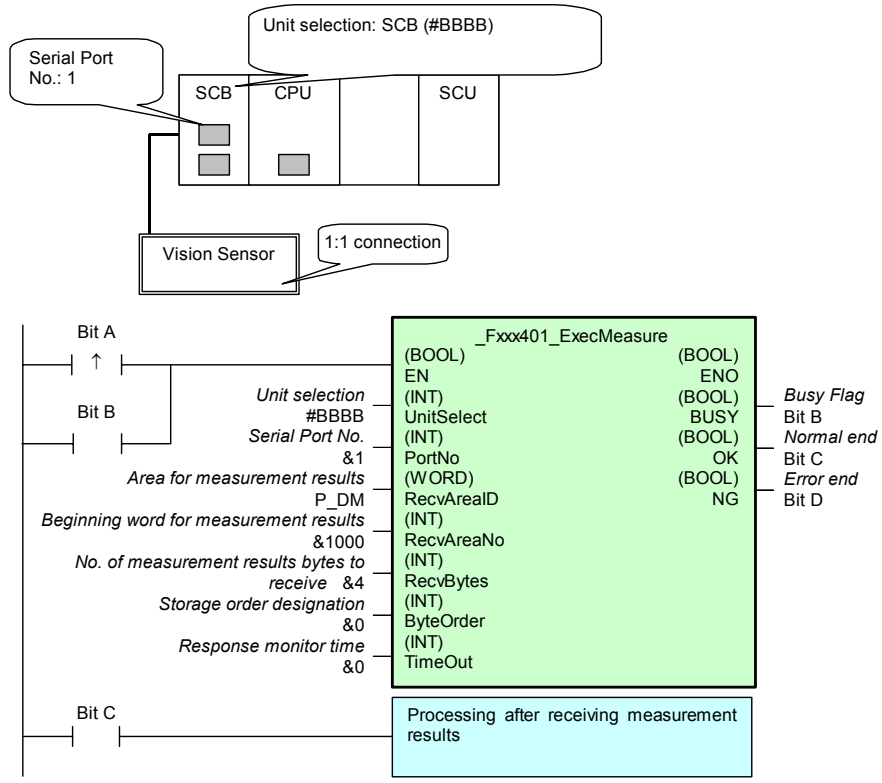
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

Fxxx -401	Execute Measurement: _Fxxx401_ExecMeasure

Basic function	Executes one measurement.
Symbol	
File name	Lib\FBL\omronlib\VisionSensor\Fxxx_Fxxx401_ExecMeasure10.cxf
Applicable models	F160/F210
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Vision Sensor (normal/no-protocol). • When connected to the built-in RS-232C port on the CPU Unit, set the RS-232C communications port settings (no-protocol) in the PLC Setup to the same communications specifications as the Vision Sensor (normal/no-protocol). • Communications must be within one network and cannot cross to another network. • This FB is invalid when the serial port error is happend. • Multiple FBs cannot simultaneously perform processing for one Vision Sensor. • Communication error may occur as PLC serial port receives unexpected data when power is ON. Would recommend restart of the serial port after PLC system is activated Vision Sensor Settings • Set the Vision Sensor output to the serial interface ASCII format. The measurement results output by the FB will be in ASCII format.
Function description	When the Start Trigger turns ON, one measurement is executed and the specified number of bytes of the results are stored in the measurement results storage word for the Vision Sensor connected to the specified serial port for the specified *Unit selection* and *Serial port No.* The word designation for storing the measurement results is specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB. • If this FB is used in Verify Mode, input &0 for the No. of Measurement Results Bytes to Receive (RecvBytes). The measurement results will not be output if this FB is executed in Verify Mode.

Application example	A Vision Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, one measurement is executed by the Vision Sensor. When the measurement has been completed, the measurement results are received at serial port 1 of the Serial Communications Board and stored in D1000. 
Related manuals	F160 Vision Sensor Manual 4:Communications Reference Manual (Z140) Section 3 Normal Serial Interface

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Area for measurement results	RecvAreaID	WORD	#0082	At right.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Beginning word for measurement results	RecvAreaNo	INT	&0		
No. of measurement results bytes to receive	RecvBytes	INT	&0	&0 to &256	&0: Verify Mode &1 to &256: RUN Mode
Storage order designation	ByteOrder	INT	&0	&0 to &1	Order for storing measurement results &0: Upper byte to lower byte &1: Lower byte to upper byte 0: Upper to lower Address / Measurement results: 01, 02, 03, 04 ⟷ CPU Unit memory: 01 02 / 03 04 1: Lower to upper Address / Measurement results: 01, 02, 03, 04 ⟷ CPU Unit memory: 02 01 / 04 03
Response monitor time	TimeOut	INT	&0	&0 to &1200	Specify the response monitor time (unit: 100 ms). For example, &100 means 10 seconds. &0: Default (5 seconds)

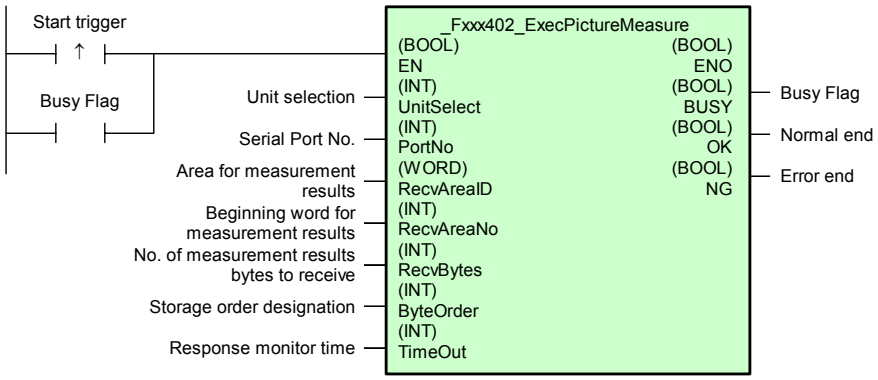
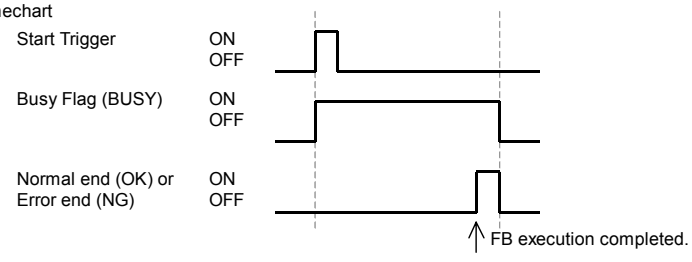
Output Variables

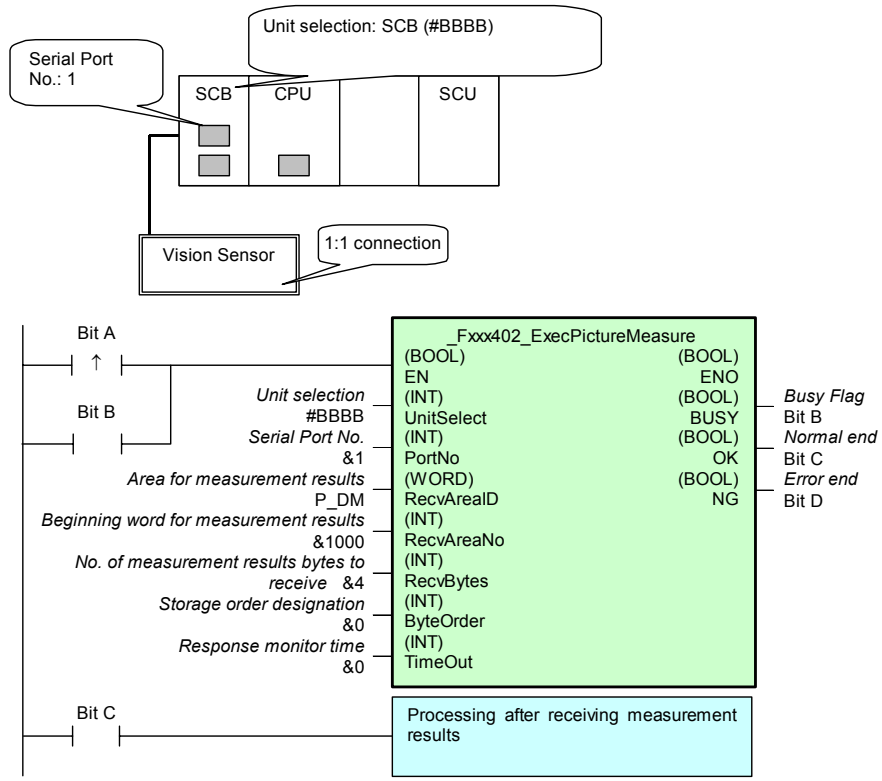
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

Fxxx -402	Execute Picture Measurement: _Fxxx402_ExecPictureMeasure

Basic function	Executes one measurement on the image being displayed.
Symbol	
File name	Lib\FBL\omronlib\VisionSensor\Fxxx_Fxxx402_ExecPictureMeasure10.cxf
Applicable models	F160/F210
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Vision Sensor (normal/no-protocol). • When connected to the built-in RS-232C port on the CPU Unit, set the RS-232C communications port settings (no-protocol) in the PLC Setup to the same communications specifications as the Vision Sensor (normal/no-protocol). • Communications must be within one network and cannot cross to another network. • This FB is invalid when the serial port error is happend. • Multiple FBs cannot simultaneously perform processing for one Vision Sensor. • Communication error may occur as PLC serial port receives unexpected data when power is ON. Would recommend restart of the serial port after PLC system is activated Vision Sensor Settings • Set the Vision Sensor output to the serial interface ASCII format. The measurement results output by the FB will be in ASCII format.
Function description	When the Start Trigger turns ON, one measurement on the image being displayed is executed and the specified number of bytes of the results are stored in the measurement results storage word for the Vision Sensor connected to the specified serial port for the specified *Unit selection* and *Serial port No.* The word designation for storing the measurement results is specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB. • If this FB is used in Verify Mode, input &0 for the No. of Measurement Results Bytes to Receive (RecvBytes). The measurement results will not be output if this FB is executed in Verify Mode.

Application example	A Vision Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, one measurement for displayed picture is executed by the Vision Sensor. When the measurement has been completed, the measurement results are received at serial port 1 of the Serial Communications Board and stored in D1000. 
Related manuals	F160 Vision Sensor Manual 4:Communications Reference Manual (Z140) Section 3 Normal Serial Interface

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Area for measurement results	RecvAreaID	WORD	#0082	At right.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Beginning word for measurement results	RecvAreaNo	INT	&0		
No. of measurement results bytes to receive	RecvBytes	INT	&0	&0 to &256	&0: Verify Mode &1 to &256: RUN Mode
Storage order designation	ByteOrder	INT	&0	&0 to &1	Order for storing measurement results &0: Upper byte to lower byte &1: Lower byte to upper byte 0: Upper to lower Address: 01, 02, 03, 04 (Measurement results) ⟷ CPU Unit memory: 01 02 / 03 04 1: Lower to upper Address: 01, 02, 03, 04 (Measurement results) ⟷ CPU Unit memory: 02 01 / 04 03
Response monitor time	TimeOut	INT	&0	&0 to &1200	Specify the response monitor time (unit: 100 ms). For example, &100 means 10 seconds. &0: Default (5 seconds)

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

■ **Version History**

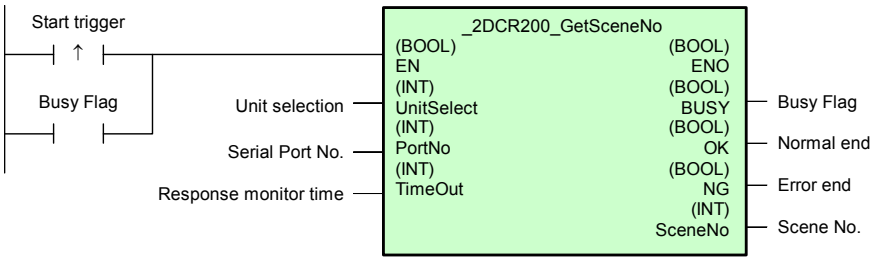
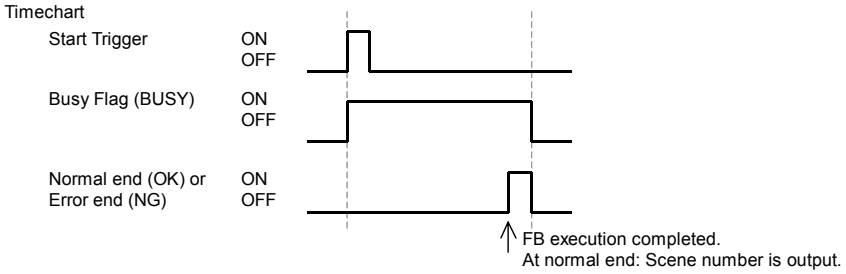
Version	Date	Contents
1.00	2004.6.	Original production

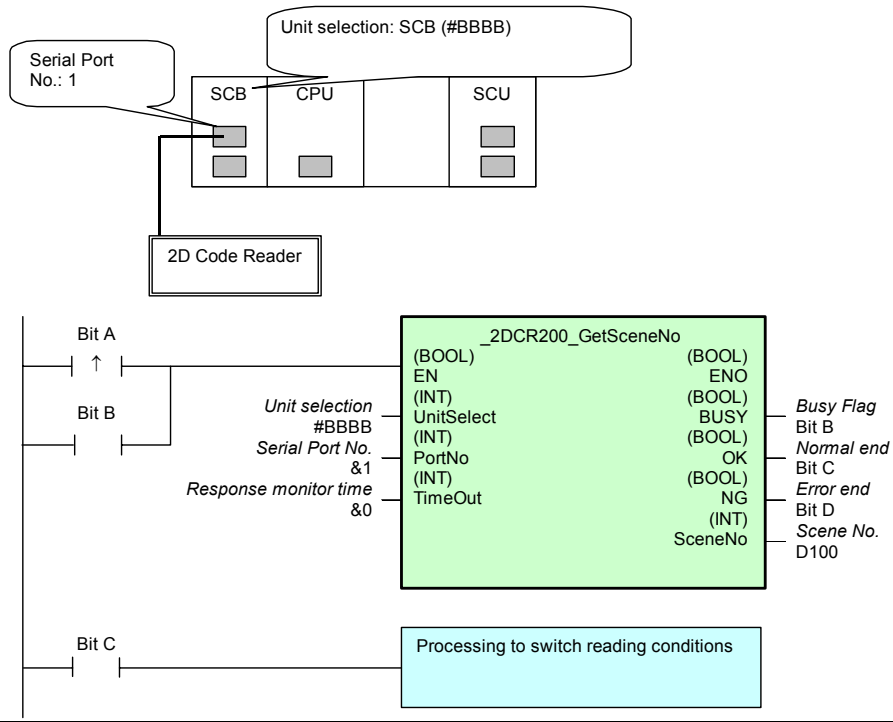
3-12 Code Reader

V530-R2000/R160/R150V3 series

FB Name	Function	Page
_2DCR200_GetSceneNo	Get Scene Number	3-355
_2DCR201_ChangeSceneNo	Change Scene Number	3-358
_2DCR401_ExecRead	Execute Read	3-361

2DCR -200	Get Scene Number: _2DCR200_GetSceneNo

Basic function	Reads the scene number.
Symbol	
File name	Lib\FBL\omronlib\Barcode Scanner\2DCR_2DCR200_GetSceneNo10.cxf
Applicable models	V530-R2000 Series, V530-R160 Series, and V530-R150V3 Series
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the 2D Code Reader (normal/no-protocol). • When connected to the built-in RS-232C port on the CPU Unit, set the RS-232C communications port settings (no-protocol) in the PLC Setup to the same communications specifications as the 2D Code Reader (normal/no-protocol). • Communications must be within one network and cannot cross to another network. • This FB is invalid when the serial port error is happend. • Multiple FBs cannot simultaneously perform processing for one Code Reader. • When the PLC system is turned ON, the serial port may receive unexpected data, resulting in a communication error. It is recommended to restart the serial port one time after starting up the PLC system. Shared Resources • When a Serial Communications Unit is specified: Communications ports (internal logical ports) Code Reader Settings • Always set the 2D Code Reader scene number before using this FB.
Function description	When the Start Trigger turns ON, the scene number is read for the 2D Code Reader connected to the serial port and specified by the Unit Selection and Serial Port Number.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A 2D Code Reader is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the scene number of the 2D Code Reader is stored in D100. 
Related manuals	2D Code Reader V530-R2000 User's Manual (Q134) Section 7 Host Communications, Serial Interface 2D Code Reader V530-R160E/V530-R160EP User's Manual (Z169) Section 8 Communications with the Host, Serial Interface (Normal) V530-R150E-3, V530-R150EP-3 2-Dimensional Code Reader (Fixed Type) Operation Manual (Z155) Section 4 RS-232C

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Response monitor time	TimeOut	INT	&0	&0 to &990	Specify the response monitor time (unit: 100 ms). &0: Default (99 seconds)

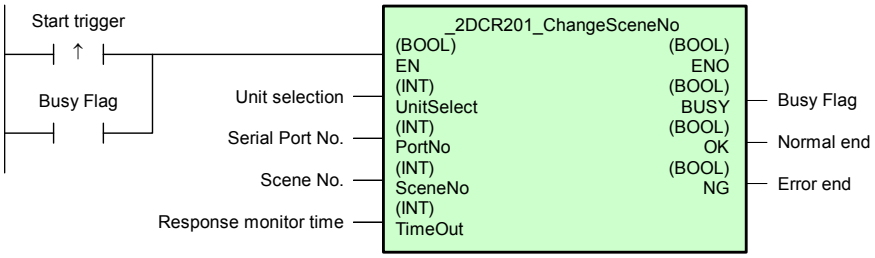
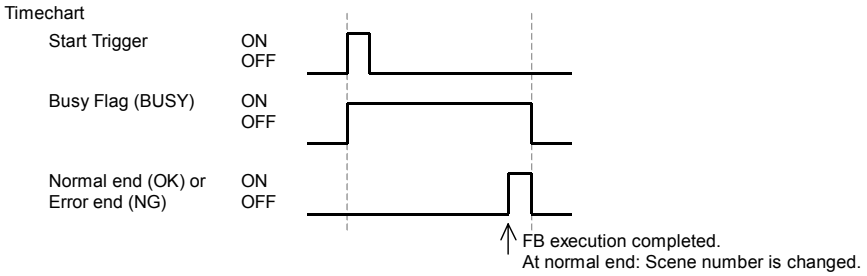
Output Variables

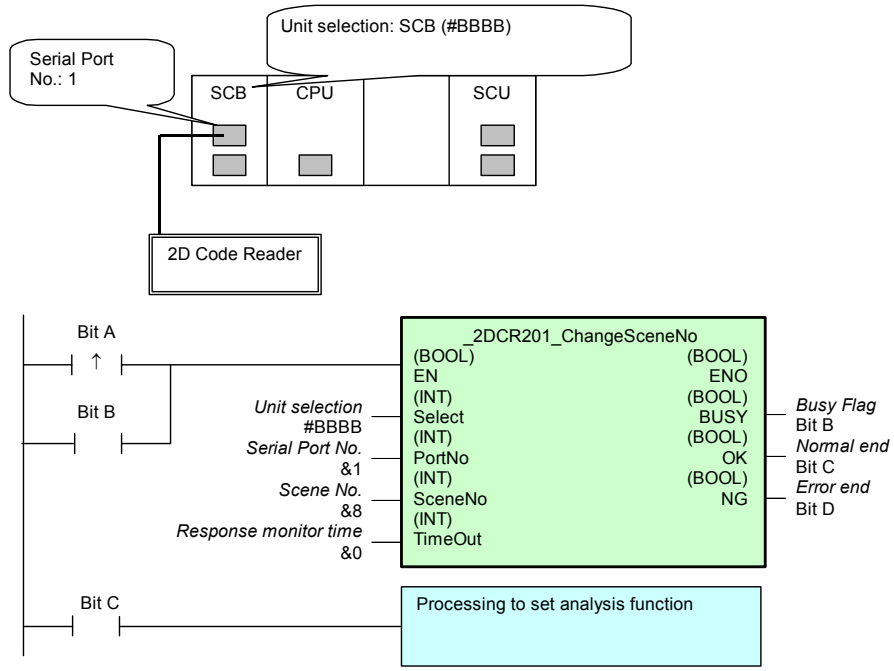
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Scene No.	SceneNo	INT	&0 to &9	

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

2DCR -201	Change Scene Number: _2DCR201_ChangeSceneNo

Basic function	Changes the scene number of the 2D Code Reader.
Symbol	
File name	Lib\FBL\omronlib\Barcode Scanner\2DCR_2DCR201_ChangeSceneNo10.cxf
Applicable models	V530-R2000 Series, V530-R160 Series, and V530-R150V3 Series
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the 2D Code Reader (normal/no-protocol). • When connected to the built-in RS-232C port on the CPU Unit, set the RS-232C communications port settings (no-protocol) in the PLC Setup to the same communications specifications as the 2D Code Reader (normal/no-protocol). • Communications must be within one network and cannot cross to another network. • This FB is invalid when the serial port error is happend. • Multiple FBs cannot simultaneously perform processing for one Code Reader. • When the PLC system is turned ON, the serial port may receive unexpected data, resulting in a communication error. It is recommended to restart the serial port one time after starting up the PLC system Shared Resources • When a Serial Communications Unit is specified: Communications ports (internal logical ports). Code Reader Settings • Always set the 2D Code Reader scene number before using this FB.
Function description	When the Start Trigger turns ON, the scene number is changed for the 2D Code Reader connected to the serial port and specified by the Unit Selection and Serial Port Number.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A 2D Code Reader is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the scene number is changed to scene 8 for the 2D Code Reader. 
Related manuals	2D Code Reader V530-R2000 User's Manual (Q134) Section 7 Host Communications, Serial Interface 2D Code Reader V530-R160E/V530-R160EP User's Manual (Z169) Section 8 Communications with the Host, Serial Interface (Normal) V530-R150E-3, V530-R150EP-3 2-Dimensional Code Reader (Fixed Type) Operation Manual (Z155) Section 4 RS-232C

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit selection and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Scene No.	SceneNo	INT	&0	&0 to &9	Specify the scene number.
Response monitor time	TimeOut	INT	&0	&0 to &990	Specify the response monitor time (unit: 100 ms). &0: Default (99 seconds)

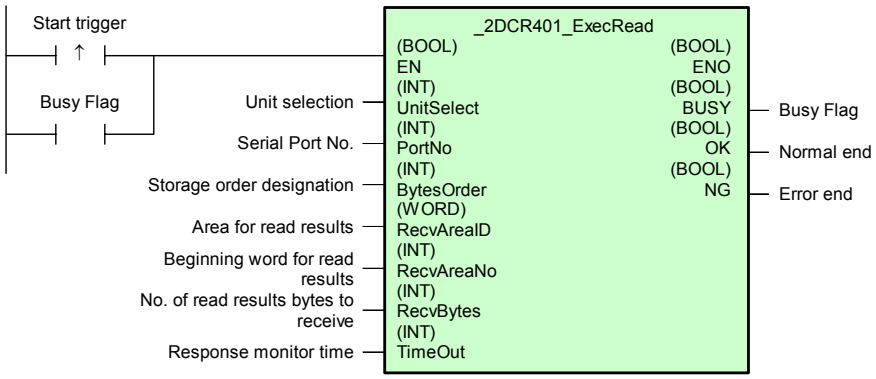
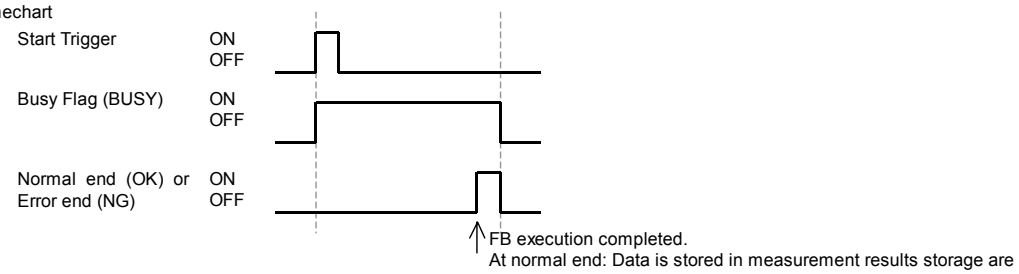
Output Variables

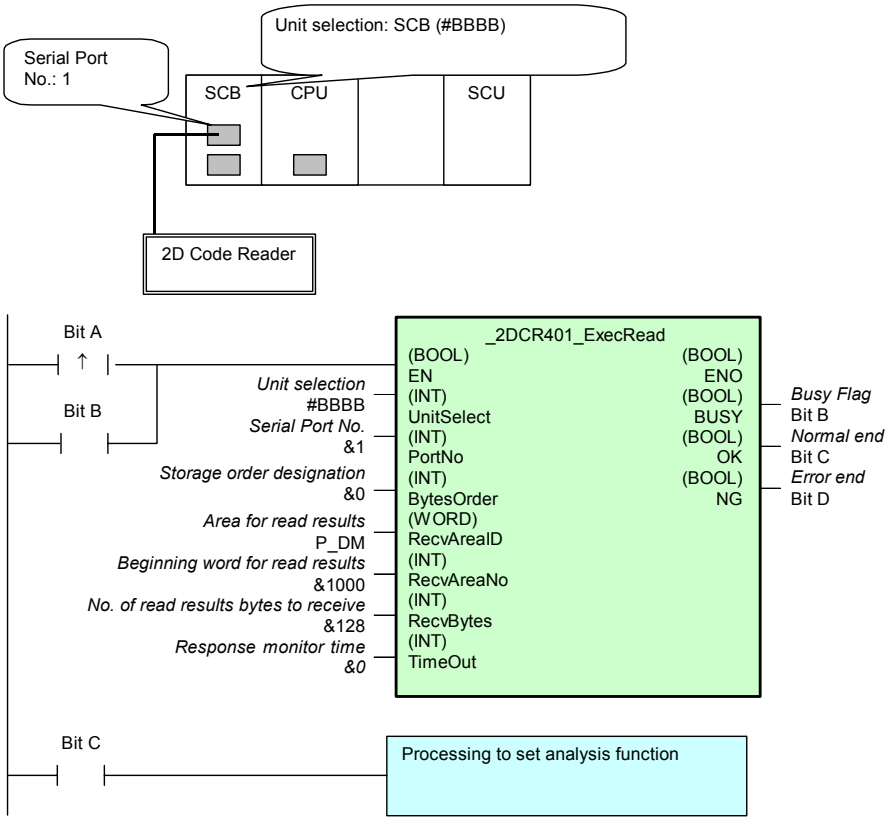
Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

2DCR -401	Execute Read: _2DCR401_ExecRead

Basic function	Executes one read for a 2D Code Reader.
Symbol	
File name	Lib\FBL\omronlib\Barcode Scanner\2DCR_2DCR401_ExecRead10.cxf
Applicable models	V530-R2000 Series, V530-R160 Series, and V530-R150V3 Series
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the 2D Code Reader (normal/no-protocol). • When connected to the built-in RS-232C port on the CPU Unit, set the RS-232C communications port settings (no-protocol) in the PLC Setup to the same communications specifications as the 2D Code Reader (normal/no-protocol). • Communications must be within one network and cannot cross to another network. • This FB is invalid when the serial port error is happend. • Multiple FBs cannot simultaneously perform processing for one Code Reader. • When the PLC system is turned ON, the serial port may receive unexpected data, resulting in a communication error. It is recommended to restart the serial port one time after starting up the PLC system Shared Resources • When a Serial Communications Unit is specified: Communications ports (internal logical ports). Code Reader Settings • Always set the 2D Code Reader scene number before using this FB. • This FB can be used only when the trigger input mode is set to the one-shot mode or the level mode.
Function description	When the Start Trigger turns ON, one read is executed and the specified number of read data reception bytes are stored in the measurement results storage words for the 2D Code Reader connected to the specified serial port for the specified Unit Selection and serial port number. The word designation for storing the measurement results is specified using the area type and beginning word address. For example, for D1000, the area type is set to P_DM and the beginning word address is set to &1000.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Up to 256 read data reception bytes can be read.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A 2D Code Reader is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, one read is executed by the 2D Code Reader. When the read has been completed, 128 bytes of read data is received at serial port 1 of the Serial Communications Board and stored in D1000. 
Related manuals	2D Code Reader V530-R2000 User's Manual (Q134) Section 7 Host Communications, Serial Interface 2D Code Reader V530-R160E/V530-R160EP User's Manual (Z169) Section 8 Communications with the Host, Serial Interface (Normal) V530-R150E-3, V530-R150EP-3 2-Dimensional Code Reader (Fixed Type) Operation Manual (Z155) Section 4 RS-232C

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit selection and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Storage order designation	BytesOrder	INT	&0	&0 to &1	Storage order for read data &0: Upper byte to lower byte &1: Lower byte to upper byte 0: Upper to lower Address / Read data: 0010 01, 0011 02, 0012 03, 0013 04 ↔ CPU Unit memory: 01 02, 03 04 1: Lower to upper Address / Read data: 0010 01, 0011 02, 0012 03, 0013 04 ↔ CPU Unit memory: 02 01, 04 03
Area for read results	RecvAreaID	WORD	#0082	At left.	P_CIO (#00B0): CIO Area P_WR (#00B1): Work Area P_HR (#00B2): Holding Area P_DM (#0082): DM Area P_EM0 (#0050) to P_EMC (#005C): EM Area bank 0 to C
Beginning word for read results	RecvAreaNo	INT	&0		
No. of read results bytes to receive	RecvBytes	INT	&0	&0 to &256	
Response monitor time	TimeOut	INT	&0	&0 to &990	Specify the response monitor time (unit: 100 ms). &0: Default (99 seconds)

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

■ **Version History**

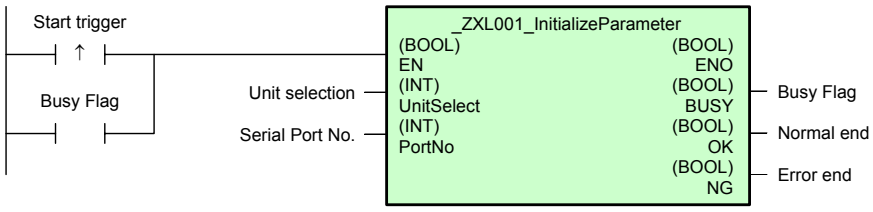
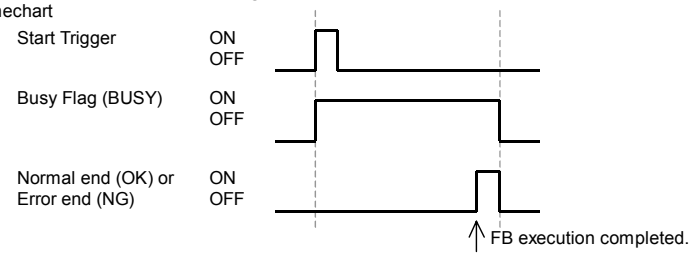
Version	Date	Contents
1.00	2004.6.	Original production

3-13 Laser Sensor

ZX-LDA-N series

FB Name	Function	Page
_ZXL001_InitializeParameter	Initialize Settings	3-365
_ZXL002_StartAutoTeach	Start Autoteaching	3-367
_ZXL003_StopAutoTeach	Stop Autoteaching	3-370
_ZXL004_ExeZeroReset	Execute Zero Reset	3-373
_ZXL005_StopZeroReset	Release Zero Reset	3-376
_ZXL006_StartLDOFF	Start Load OFF Status	3-379
_ZXL007_StopLDOFF	Stop Load OFF Status	3-382
_ZXL008_Teach1HighThreshold	Teach 1-point High Threshold	3-385
_ZXL009_Teach1LowThreshold	Teach 1-point Low Threshold	3-388
_ZXL010_Teach2HighThreshold	Teach 2-point High Threshold	3-391
_ZXL011_Teach2LowThreshold	Teach 2-point Low Threshold	3-394
_ZXL200_ReadMemArea	Read Memory Area	3-397
_ZXL201_ReadMainDisplay	Read Main Display Value	3-401
_ZXL202_ReadDecimalPoint	Read Decimal Point Position	3-404
_ZXL203_ReadIncidentLevel	Read Incident Light	3-407
_ZXL204_ReadResolution	Read Resolution	3-410
_ZXL205_ReadOutputs	Read Control Output	3-413
_ZXL206_ReadEnableData	Read Enable Data	3-416
_ZXL207_ReadHighThreshold	Read High Threshold	3-419
_ZXL208_ReadLowThreshold	Read Low Threshold	3-422
_ZXL407_WriteHighThreshold	Write High Threshold Data	3-425
_ZXL408_WriteLowThreshold	Write Low Threshold Data	3-428

ZXL -001	Initialize Settings: _ZXL001_InitializeParameter

Basic function	Initializes the settings in the Smart Sensor.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL001_InitializeParameter10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, all settings are returned to their default values for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).
Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the Smart Sensor is initialized.
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) Section 6 Auxiliary Functions ZX Series Smart Sensors Operation Manual (Z157)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

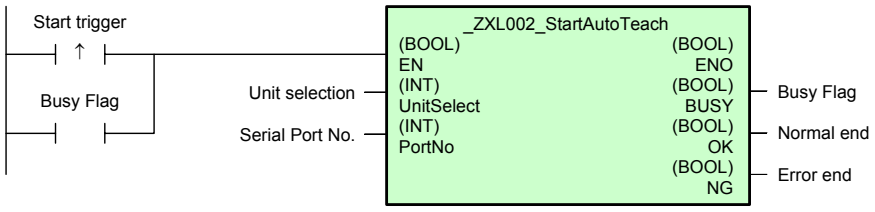
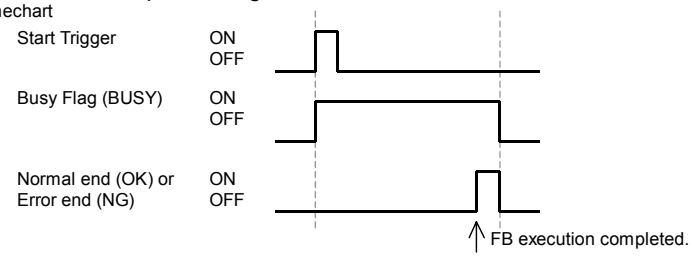
Error Code Details

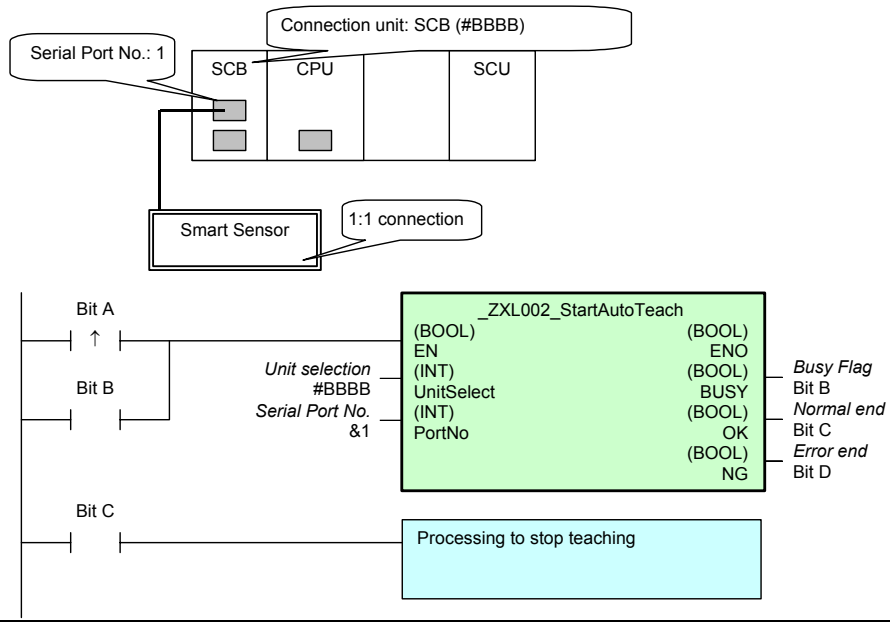
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• There is an error in the setting for the model, teaching, or zero reset function. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -002	Start Autoteaching: _ZXL002_StartAutoTeach

Basic function	Starts automatic teaching.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL002_StartAutoTeach10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, automatic teaching is started for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. Use this FB together with the Stop Autoteaching FB (_ZXL003_StopAutoTeach). The highest value achieved between starting and stopping teaching is set as the high threshold and the lowest value is set as the low threshold. Execute the Stop Autoteaching FB (_ZXL003_StopAutoTeach) after the Normal End flag for this FM turns ON. An execution error will occur if the display value is not being held or if the resulting high threshold is lower than the low threshold.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit B turns ON, automatic teaching is started. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Stop Autoteaching (_ZXL003_StopAutoTeach)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

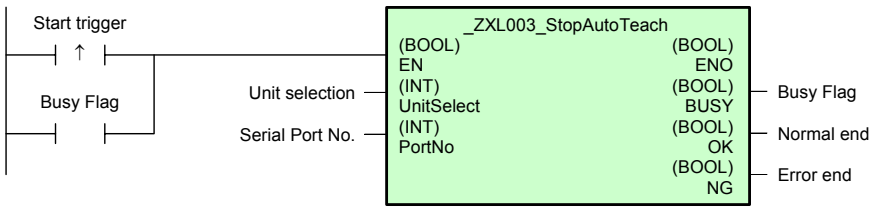
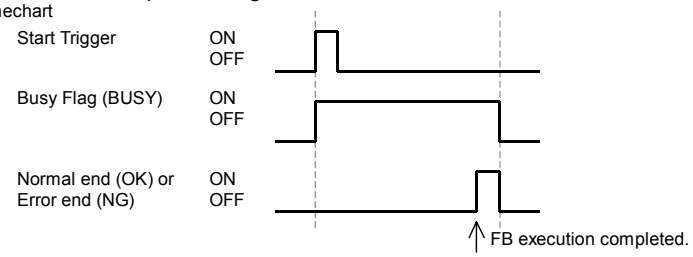
Error Code Details

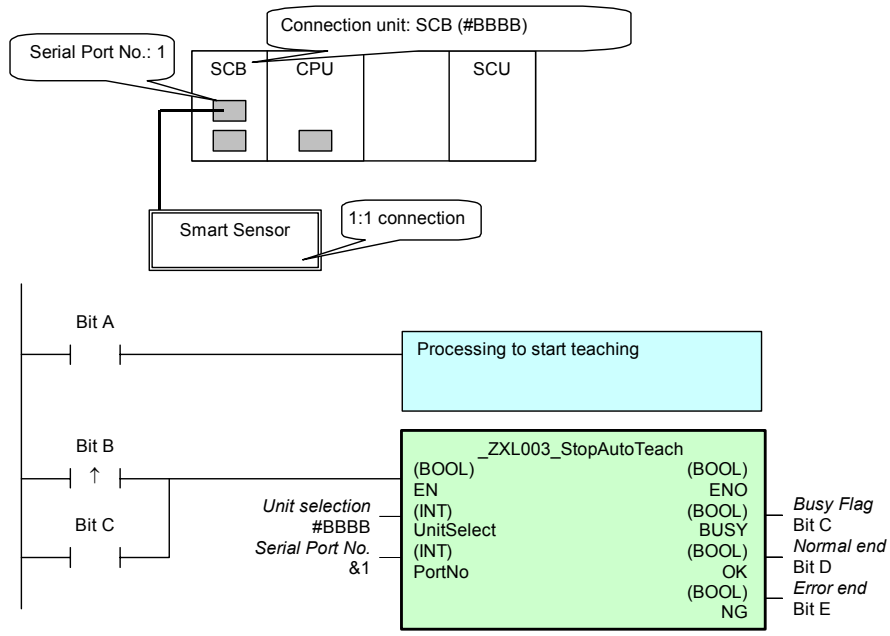
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -003	Stop Autoteaching: _ZXL003_StopAutoTeach

Basic function	Ends automatic teaching.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL003_StopAutoTeach10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, automatic teaching is stopped for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. Use this FB together with the Start Autoteaching FB (_ZXL002_StartAutoTeach). The highest value achieved between starting and stopping teaching is set as the high threshold and the lowest value is set as the low threshold. Execute this FM after the Normal End flag for the Start Autoteaching FB (_ZXL002_StartAutoTeach) turns ON. An execution error will occur if the display value is not being held or if the resulting high threshold is lower than the low threshold.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit B turns on, automatic teaching is stopped. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Start Autoteaching (_ZXL002_StartAutoTeach)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

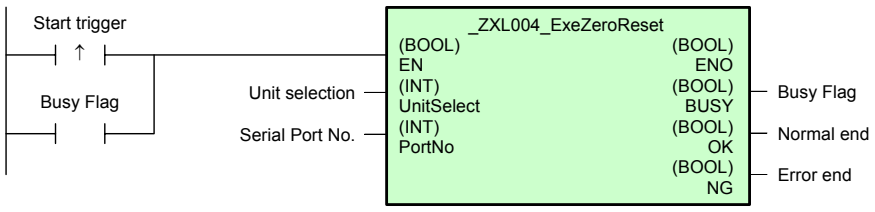
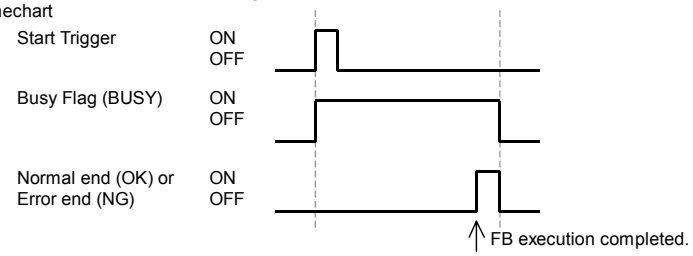
Error Code Details

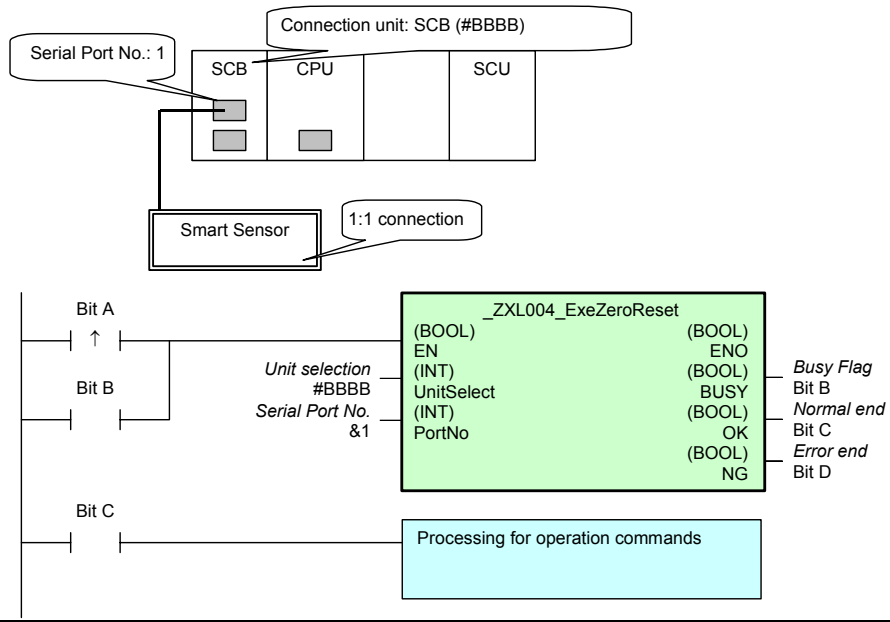
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -004	Execute Zero Reset: _ZXL004_ExeZeroReset

Basic function	Executes a zero reset for the Smart Sensor.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL004_ExeZeroReset10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, a zero reset is executed for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No.*
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON). • Whether the zero reset value is written to EEPROM is determined by the Zero Reset Memory Setting, just as it is when the zero reset is used for the Smart Sensor. • Set the Zero Reset Memory Setting to OFF. There is a limit on the number of times that the zero reset value can be written by executing a zero reset, just as there is for writing parameters (1 million writes). • An execution error will occur if the Smart Sensor cannot execute the zero reset function, e.g., if the display value is not being held or the detection range would be exceeded. Additional Information: *Section 6 Auxiliary Functions* in the *ZX-L-N Series Smart Sensors Laser Type User's Manual* (Z197)

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, a zero reset is performed for the Smart Sensor. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) Using the Zero Reset Function in Section 6 AUXILIARY FUNCTIONS ZX Series Smart Sensors Operation Manual (Z157) 3-3-4 Zero Reset Function 4-3-4 Zero Reset Function
Related FBs	Release Zero Reset (_ZXL005_StopZeroReset)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

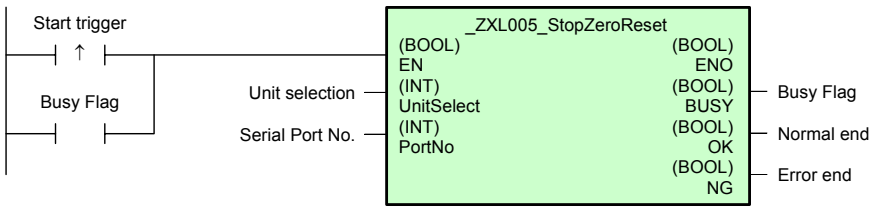
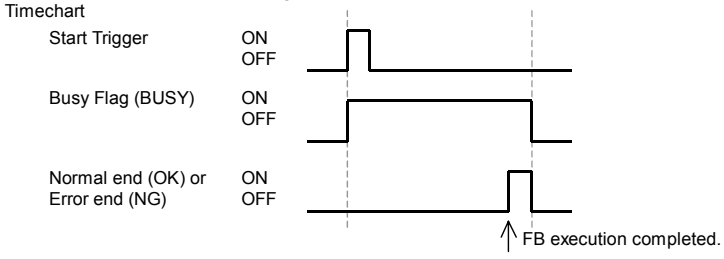
Error Code Details

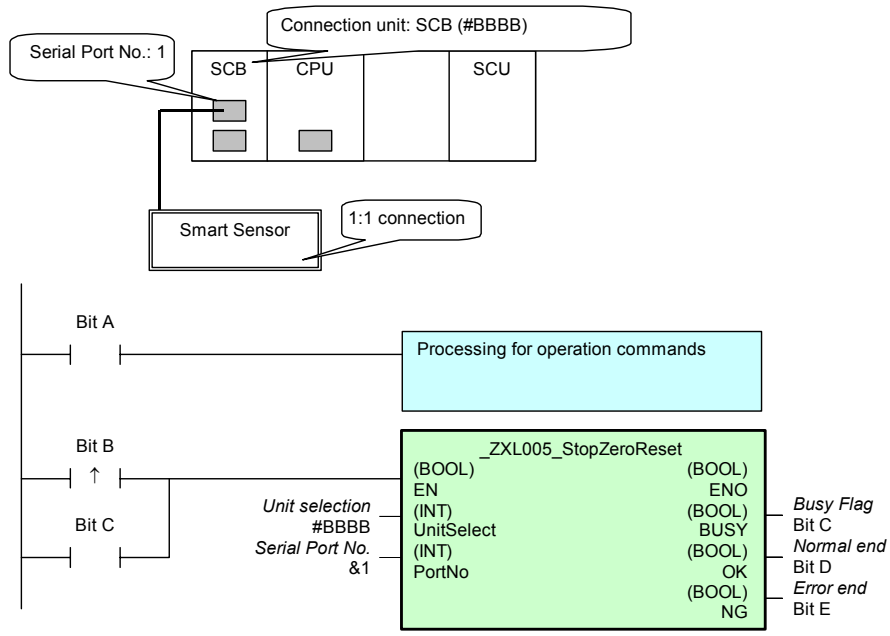
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -005	Release Zero Reset: _ZXL005_StopZeroReset

Basic function	Releases the zero reset status of the Smart Sensor.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZX005_StopZeroReset10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Set the Zero Reset Memory Setting to OFF. There is a limit on the number of times that the zero reset value can be written by executing a zero reset, just as there is for writing parameters (1 million writes).
Function description	When the Start Trigger turns ON, the zero reset status is released for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No.* Whether the zero reset value is written to EEPROM is determined by the Zero Reset Memory Setting, just as it is when the zero reset is used for the Smart Sensor. An execution error will occur if the Smart Sensor cannot execute the zero reset function, e.g., if the display value is not being held or the detection range would be exceeded. Additional Information: *Section 6 Auxiliary Functions* in the *ZX-L-N Series Smart Sensors Laser Type User's Manual* (Z197)
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit B turns ON, the zero reset status is cleared. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) Using the Zero Reset Function in Section 6 Auxiliary Functions ZX Series Smart Sensors Operation Manual (Z157) 3-6-3 Zero Reset/Release 4-3-4 Zero Reset Function
Related FBs	Execute Zero Reset (_ZXL004_ExeZeroReset)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

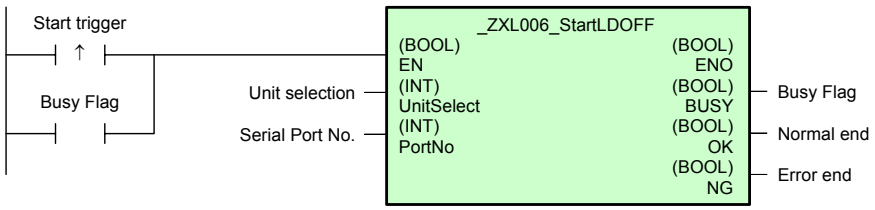
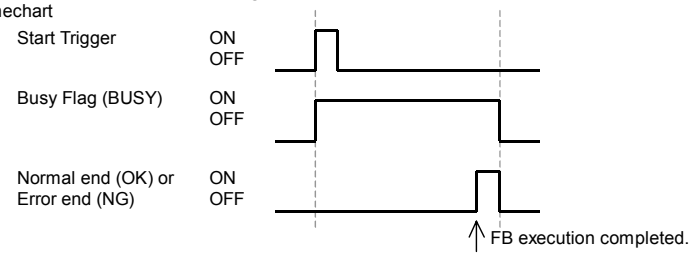
Error Code Details

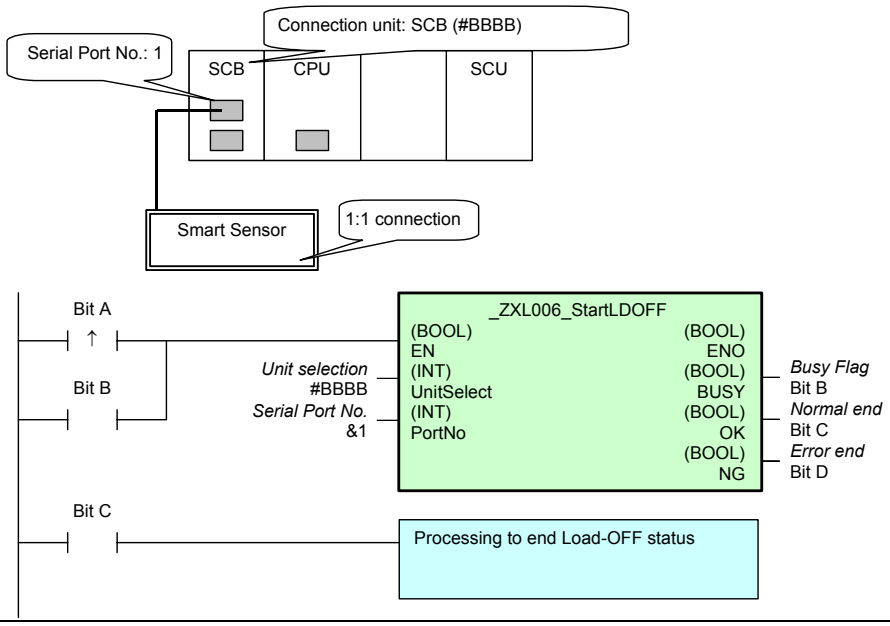
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -006	Start Load OFF Status: _ZXL006_StartLDOFF

Basic function	Starts the Load-OFF status.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL006_StartLDOFF10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the Load-OFF status is started (i.e., the laser is turned OFF) for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the Load-OFF status is started. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Stop Load OFF Status (_ZXL007_StopLDOFF)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

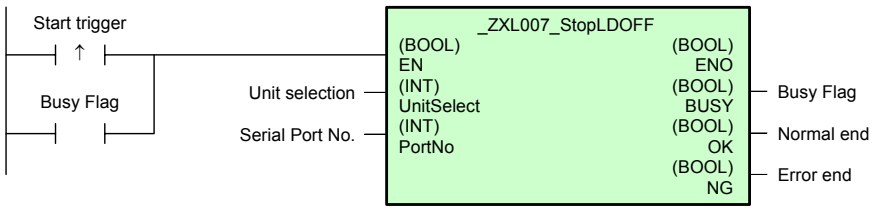
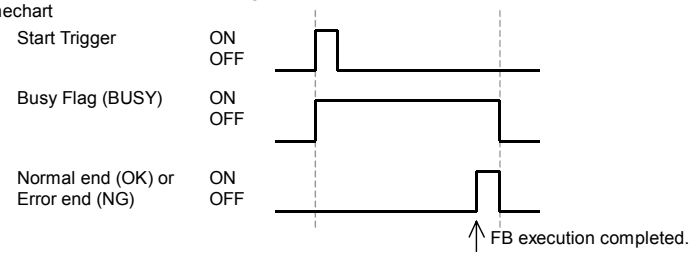
Error Code Details

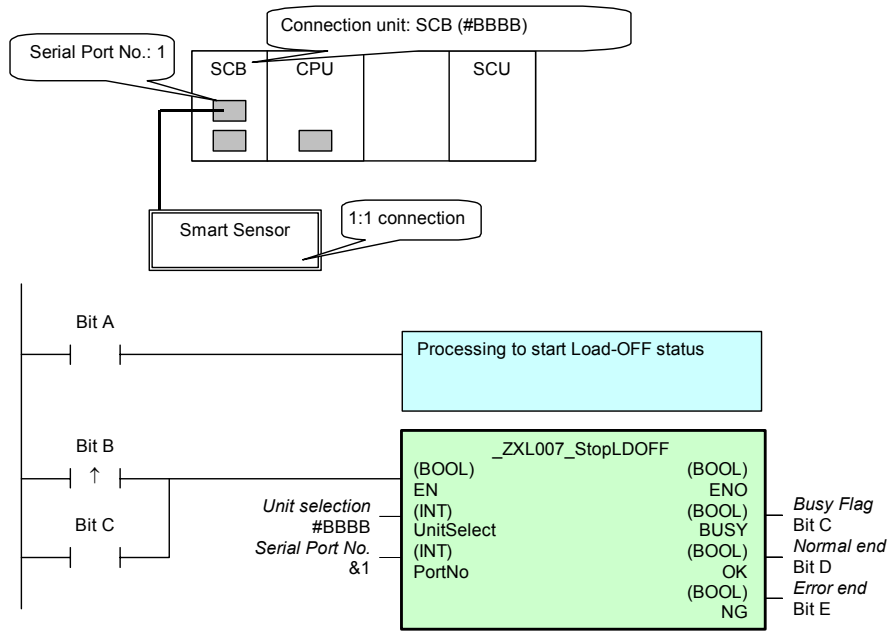
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -007	Stop Load OFF Status: _ZXL007_StopLDOFF

Basic function	Ends the Load-OFF status.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL007_StopLDOFF10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the Load-OFF status is stopped (i.e., the laser is turned ON) for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit B turns on, the Load-OFF status is ended. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Start Load OFF Status (_ZXL006_StartLDOFF)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

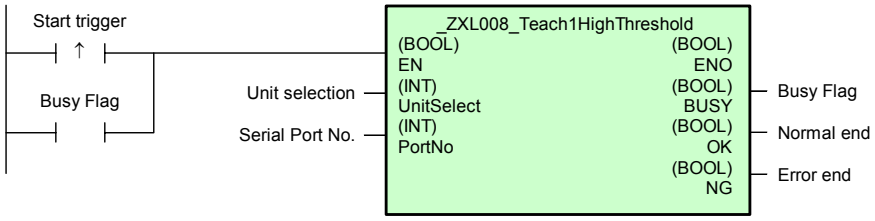
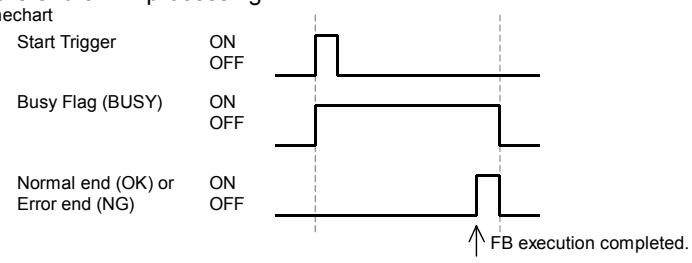
Error Code Details

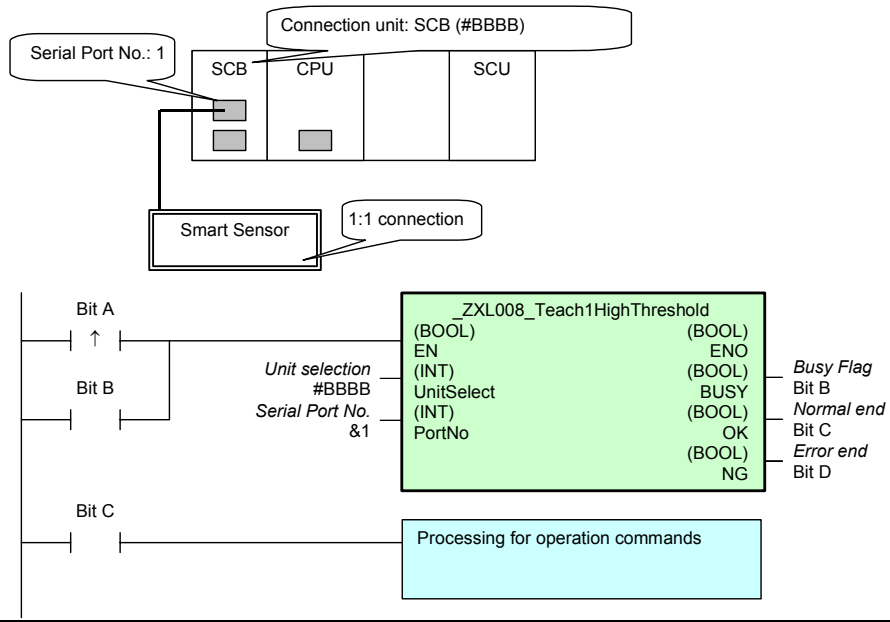
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -008	Teach 1-point High Threshold: _ZXL008_Teach1HighThreshold

Basic function	Uses one point to teach the high threshold.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL008_Teach1HighThreshold10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the high threshold is taught using 1 point for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. This FB sets to high threshold to the value currently displayed on the main digital display. An execution error will occur if the display value is not being held or if the resulting high threshold would be lower than the low threshold.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the high threshold is taught using one point. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Teach 2-point High Threshold (_ZXL010_Teach2HighThreshold) Teach 1-point Low Threshold (_ZXL009_Teach1LowThreshold) Teach 2-point Low Threshold (_ZXL011_Teach2LowThreshold)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

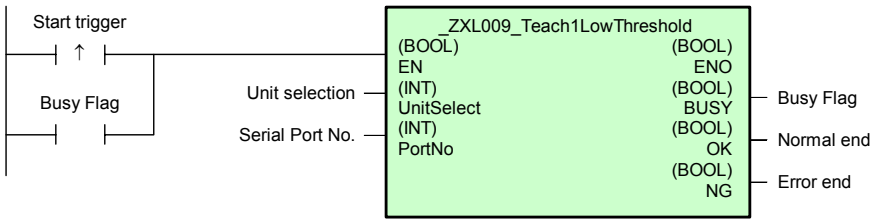
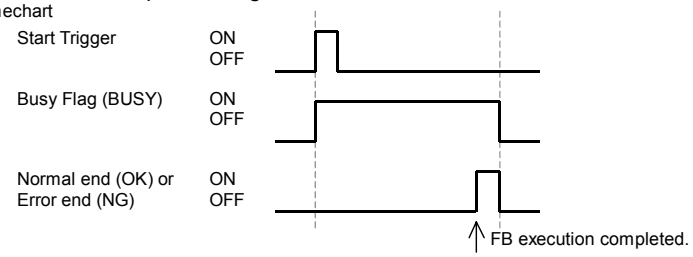
Error Code Details

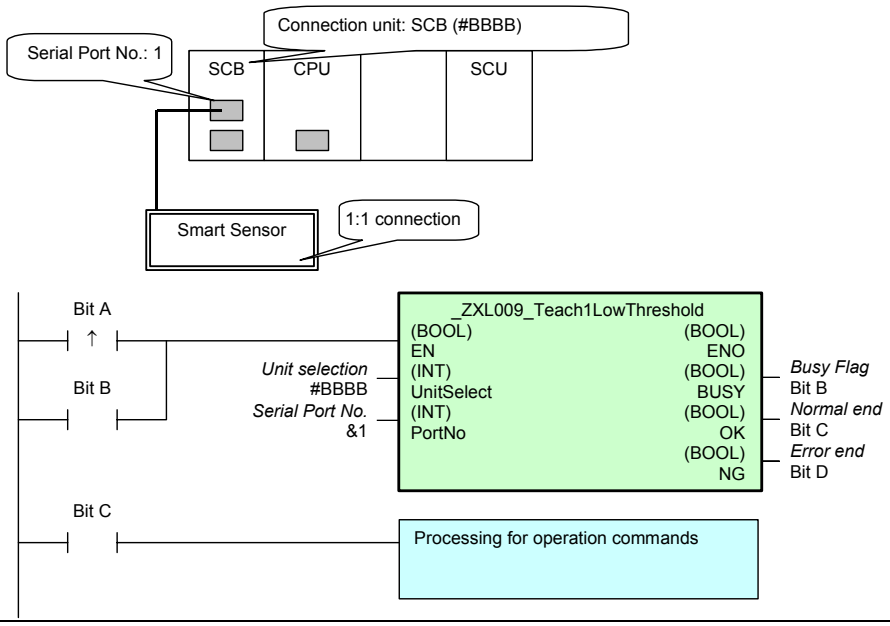
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -009	Teach 1-point Low Threshold: _ZXL009_Teach1LowThreshold

Basic function	Uses one point to teach the low threshold.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL009_Teach1LowThreshold10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the low threshold is taught using 1 point for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. This FB sets to low threshold to the value currently displayed on the main digital display. An execution error will occur if the display value is not being held or if the resulting low threshold would be higher than the high threshold.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the low threshold is taught using one point. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Teach 1-point High Threshold (_ZXL008_Teach1HighThreshold) Teach 2-point High Threshold (_ZXL010_Teach2HighThreshold) Teach 2-point Low Threshold (_ZXL011_Teach2LowThreshold)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

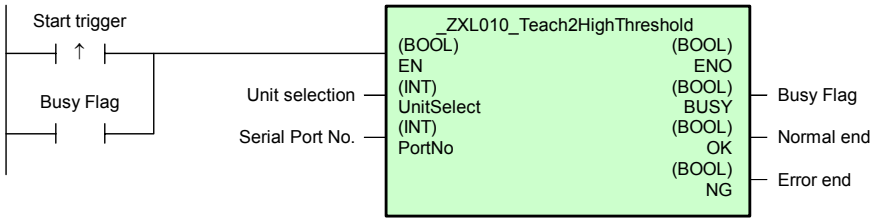
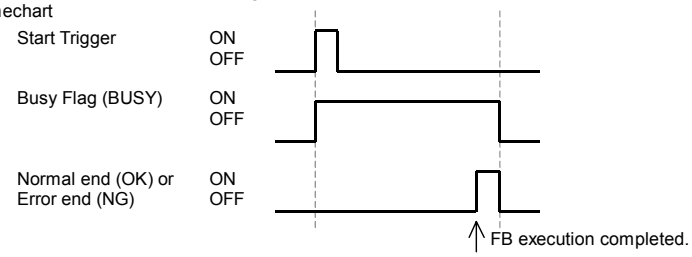
Error Code Details

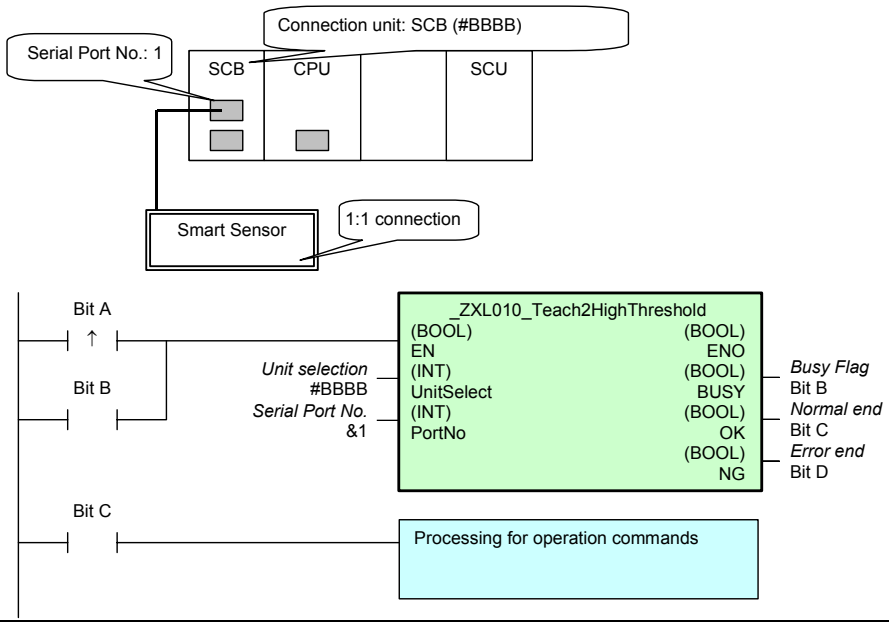
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -010	Teach 2-point High Threshold: _ZXL010_Teach2HighThreshold

Basic function	Uses two points to teach the high threshold.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL010_Teach2HighThreshold10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the high threshold is taught using 2 points for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. This FB sets to high threshold to the value midway between the value currently displayed on the main digital display and the currently set high threshold. An execution error will occur if the display value is not being held or if the resulting high threshold would be lower than the low threshold.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the high threshold is taught using two points. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Teach 1-point High Threshold (_ZXL008_Teach1HighThreshold) Teach 1-point Low Threshold (_ZXL009_Teach1LowThreshold) Teach 2-point Low Threshold (_ZXL011_Teach2LowThreshold)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

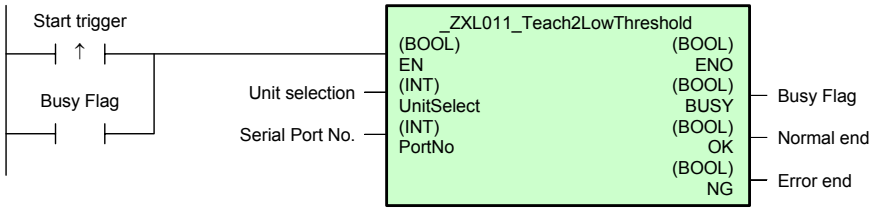
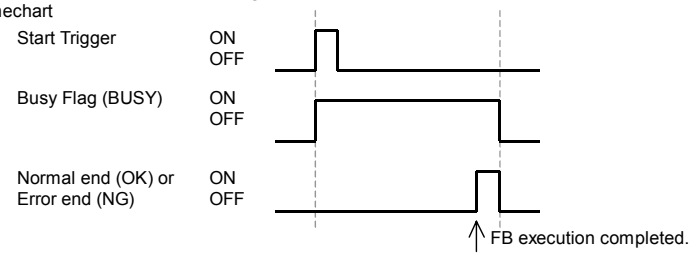
Error Code Details

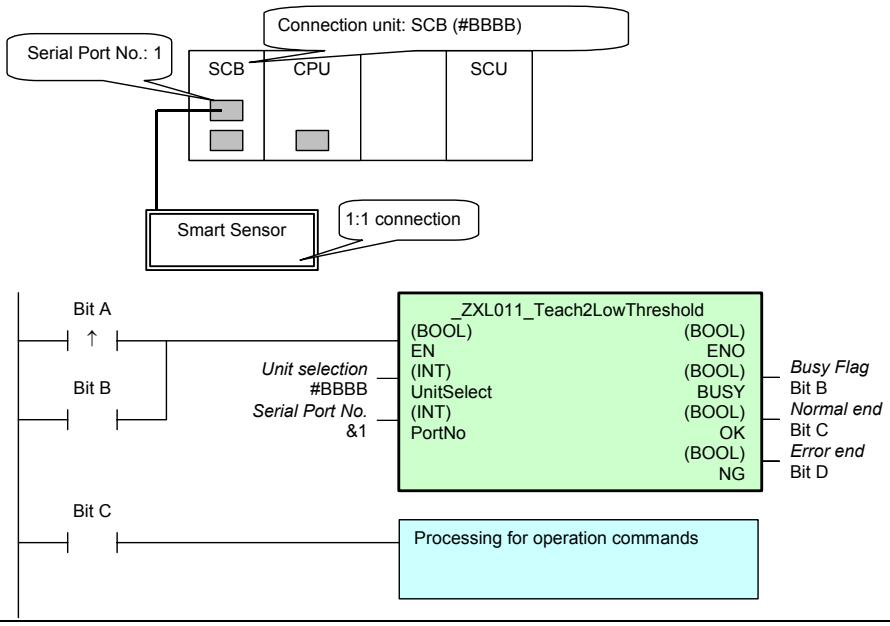
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -011	Teach 2-point Low Threshold: _ZXL011_Teach2LowThreshold

Basic function	Uses two points to teach the low threshold.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ ZXL011_Teach2LowThreshold10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the low threshold is taught using 2 points for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. This FB sets to low threshold to the value midway between the value currently displayed on the main digital display and the currently set low threshold. An execution error will occur if the display value is not being held or if the resulting low threshold would be higher than the high threshold.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the low threshold is taught using two points. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Teach 1-point High Threshold (_ZXL008_Teach1HighThreshold) Teach 1-point Low Threshold (_ZXL009_Teach1LowThreshold)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

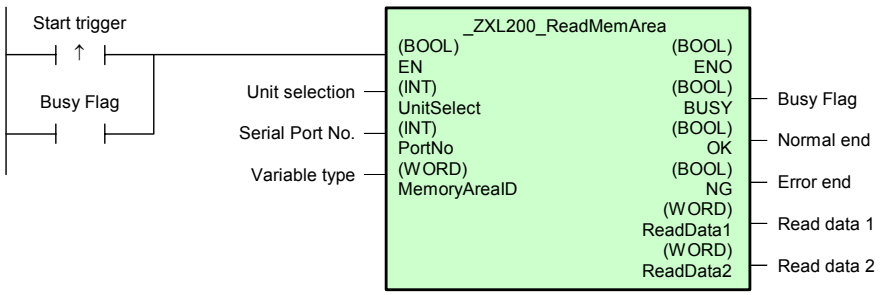
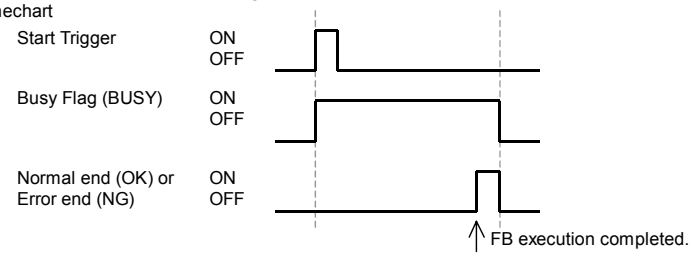
Error Code Details

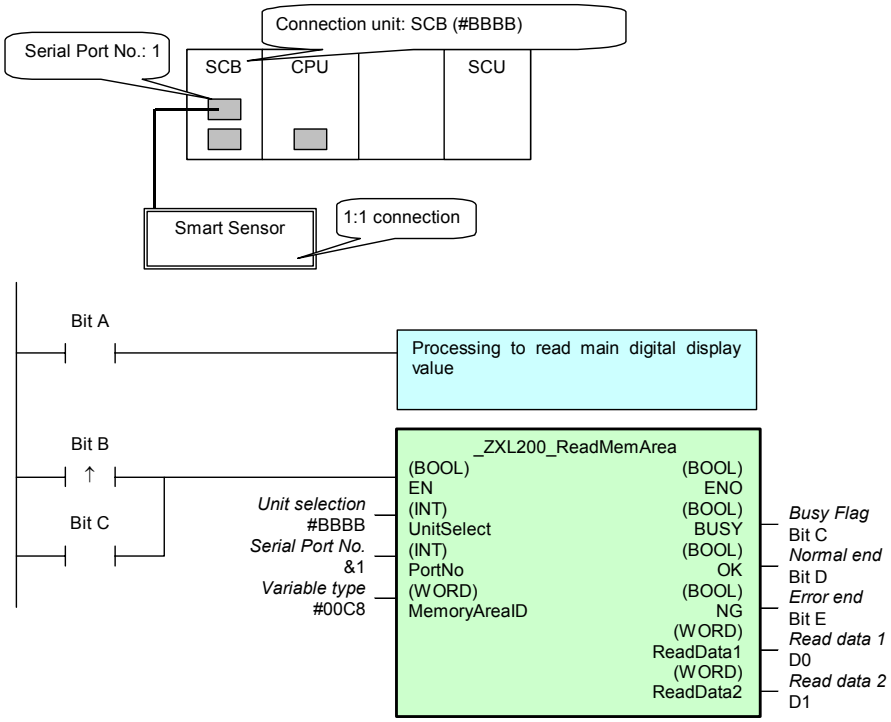
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -200	Read Memory Area: _ZXL200_ReadMemArea

Basic function	Reads data from the variable area.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL200_ReadMemArea10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the specified variable area data is read from the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. The data read with this FB does not include the decimal point position. Use the Read Decimal Point Position FB (_ZXL202_ReadDecimalPoint) to read the decimal point when using this FB to read the main digital display.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed. • Do not execute commands other than for the specified variable types. Internal parameters may be rewritten if this FB is used incorrectly. If internal parameters in the connected Sensor are rewritten by mistake, execute the Initialize *Settings* (_ZXL001_InitializeParameter) FB.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the incident light level is read from a ZX-LDA-N Smart Sensor and stored in D0 and D1. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Read Decimal Point FB (_ZXL202_ReadDecimalPoint) Initialize Settings (_ZXL001_ParameterReset)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Variable type	ReadMemID	WORD		Not checked.	Specify the command. Unexpected operation may result if a variable type not listed below is specified. Use only the specified variable types.

■ **Variable Types**

Data	Type
Incident level	#00C8
Resolution	#00CA
Control output status	#00CE
Enable status	#00CF
Decimal point position	#00D3

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Read data 1	ReadData1	WORD		See below.
Read data 2	ReadData2	WORD		See below.

■ **Read Data**

	Read data 1	Read data 2
Incident level	Outputs the sign of the incident light level. #0000:+ #0100:-	Outputs the incident light level in hexadecimal.
Resolution	Outputs the sign of the resolution. #0000:+ #0100:-	Outputs the resolution in hexadecimal.
Control output status	Outputs the control output status. #0000: All outputs OFF #0100: Low output ON #0200: High output ON #0300: Pass output ON #0400: Alarm output ON	Outputs #0000 when reading the control output status.
Enable status	Outputs the enable status. #0000: Enable lit #0100: Enable not lit	Outputs #0000 when reading the enable status.
Decimal point position	Outputs #0000 when reading the decimal point position.	Outputs the decimal point position of the value displayed on the main display. #0000: Leftmost position #0001: 2nd digit from left #0002: 3rd digit from left #0003: 4th digit from left #0004: No decimal point displayed

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

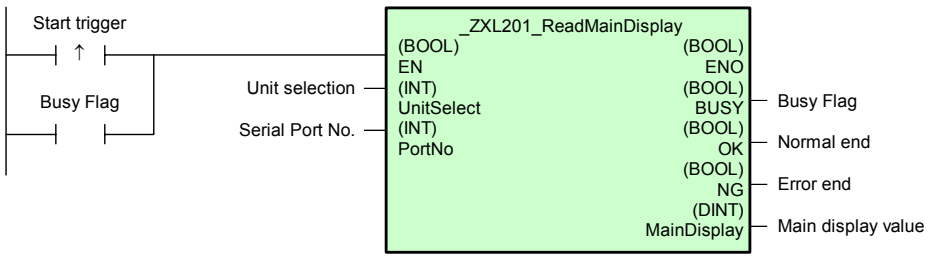
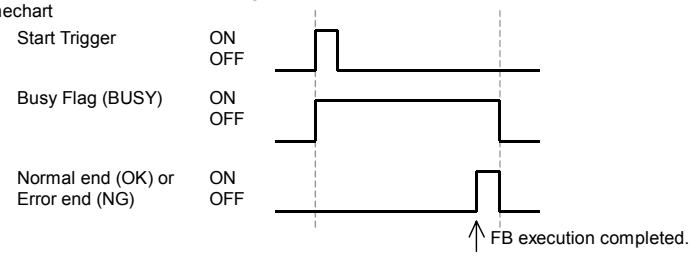
Error Code Details

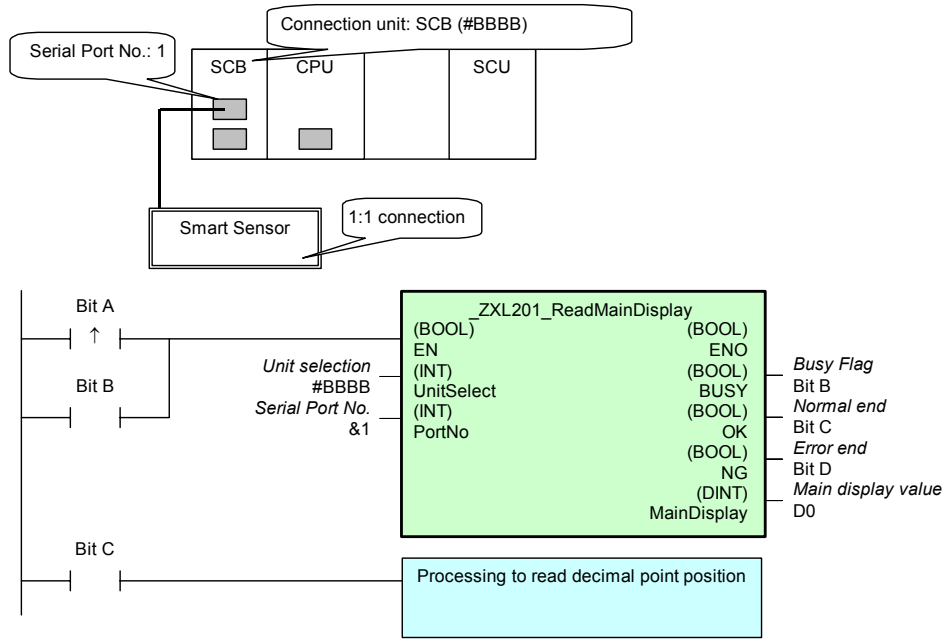
Code	Contents	Meaning
#0000	Normal end	
#1101	Variable type error	• The variable type is incorrect.
#2203	Operation error	• The value displayed on the main digital display is read when an error has occurred, e.g., an incident level error.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -201	Read Main Display Value: _ZXL201_ReadMainDisplay

Basic function	Reads the numeric value displayed on the main digital display of a Smart Sensor.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL201_ReadMainDisplay10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, numeric value displayed on the main digital display is read for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No.* The data read from the main digital display with this FB does not include the decimal point position. Use the Read Decimal Point Position FB (_ZXL202_ReadDecimalPoint) in combination with this FB to read the decimal point.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the value displayed on the main digital display of the Smart Sensor is stored in D0 and D1. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Read Decimal Point FB (_ZXL202_ReadDecimalPoint)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Main display value	MainDisplay	DINT		Outputs the value displayed on the main digital display.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

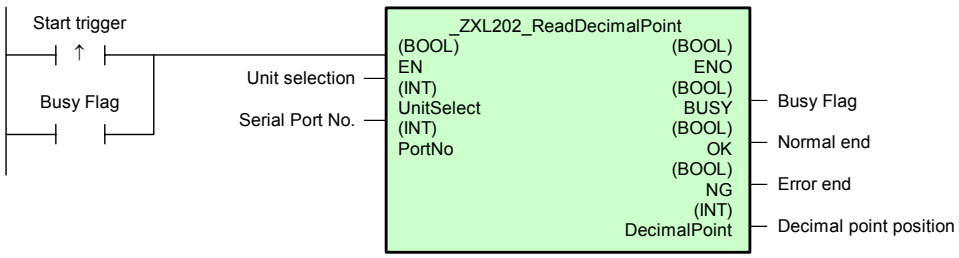
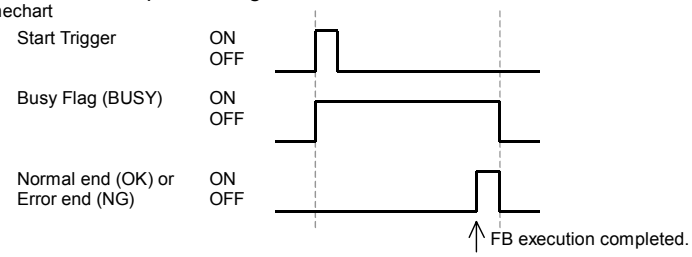
Error Code Details

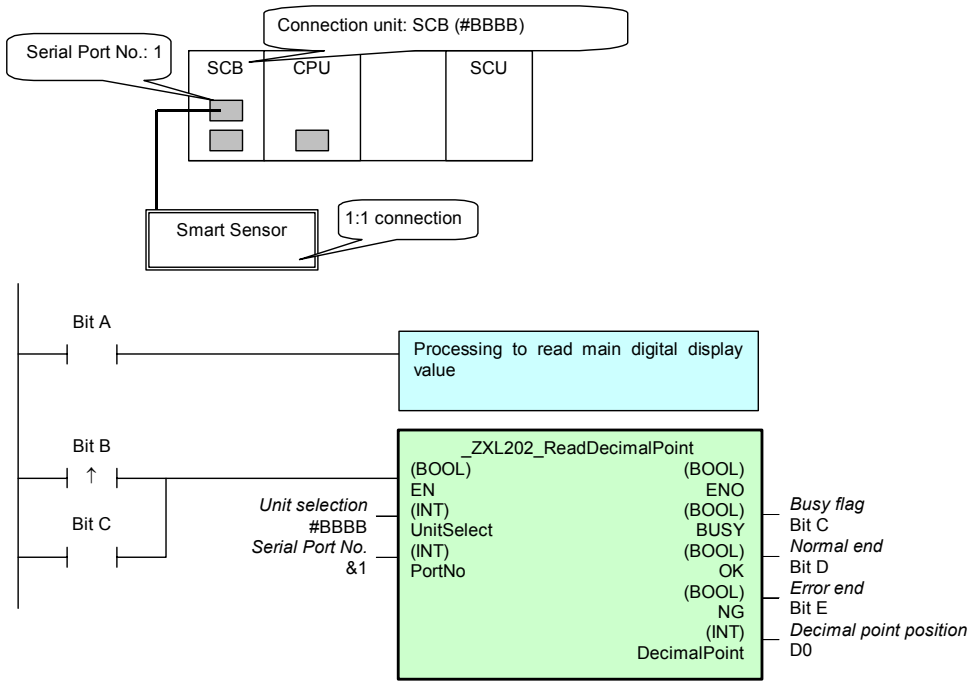
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• The value displayed on the main digital display is read when an error has occurred, e.g., an incident level error.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -202	Read Decimal Point Position: _ZXL202_ReadDecimalPoint

Basic function	Reads the decimal point position set for the main digital display of a Smart Sensor.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL202_ReadDecimalPoint10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Related FBs • The FB can be used for the following operations. Read Main Display Value Read Resolution Read Flow Data Read/Write High/Low Threshold Read/Write Hysteresis Width Read/Write Self-trigger Level Read/Write Self-trigger Hysteresis Width Data (Intensity OFF)
Function description	When the Start Trigger turns ON, the decimal position of the main digital display is read for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. This FB reads only the decimal point position of the main digital display.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the decimal point position is stored in D0. For example, if the read data for the Read Main Display FM (_ZXL201_ReadMainDisplay) is &30000 and the read data for the Read Decimal Point Position (_ZXL202_ReadDecimalPoint), the value displayed on the main digital display would be 3.0000. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Decimal point position	DecimalPoint	INT		Outputs the decimal point position of the value displayed on the main display. &0: No decimal point displayed &1: Leftmost position &2: 2nd digit from left &3: 3rd digit from left &4: 4th digit from left

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

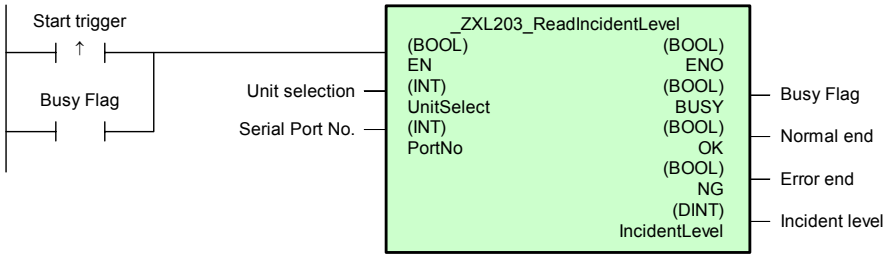
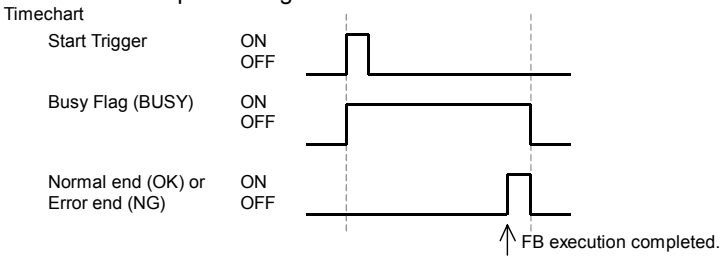
Error Code Details

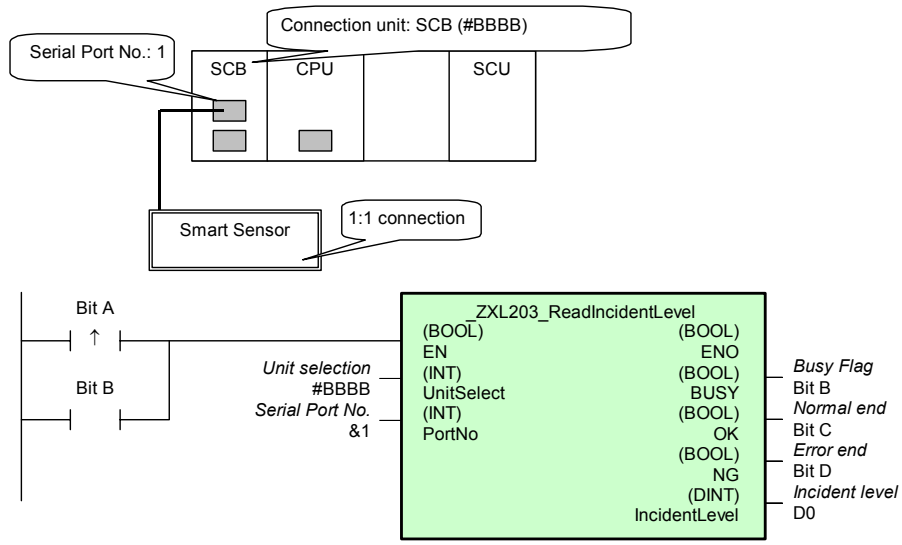
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• The value displayed on the main digital display is read when an error has occurred, e.g., an incident level error.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -203	Read Incident Light: _ZXL203_ReadIncidentLevel

Basic function	Reads the incident light for a Smart Sensor.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL203_ReadIncidentLevel10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the incident light is read for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. The Incident Light output variable is always output as an integer. The decimal point is disregarded.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the incident light of the Smart Sensor is stored in D0. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Incident level	IncidentLevel	DINT		Outputs the incident level.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

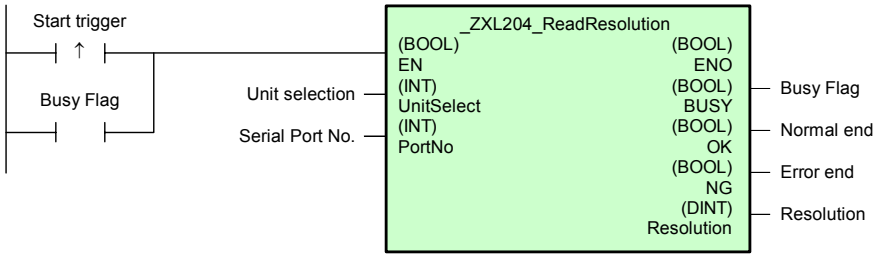
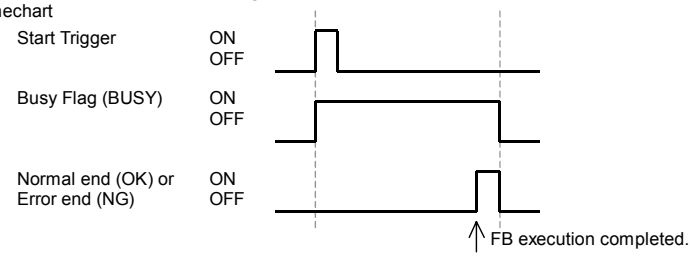
Error Code Details

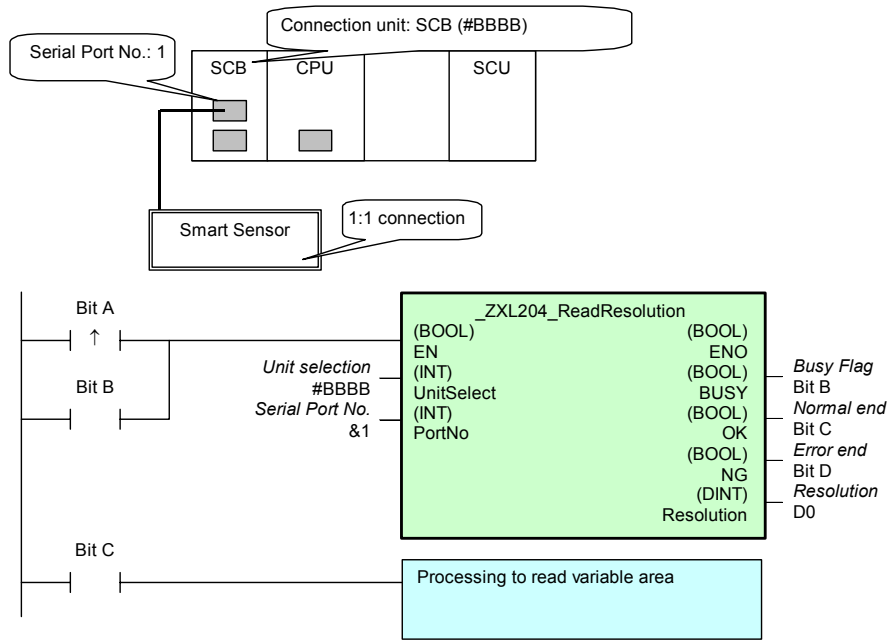
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	•The value displayed on the main digital display is read when an error has occurred, e.g., an incident level error.
#2204	Operation error	•The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -204	Read Resolution: _ZXL204_ReadResolution

Basic function	Reads the resolution for a Smart Sensor.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL204_ReadResolution10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the current resolution is read for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No.*. Use the Read Decimal Point Position FB (_ZXL_ReadDecimalPoint.cxf) to read the decimal point.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the resolution of the Smart Sensor is stored in D0 and D1. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Read Decimal Point FB (_ZXL202_ReadDecimalPoint)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Resolution	Resolution	DINT		Outputs the resolution.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

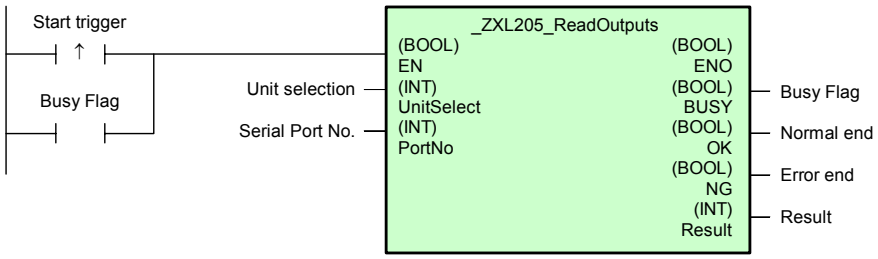
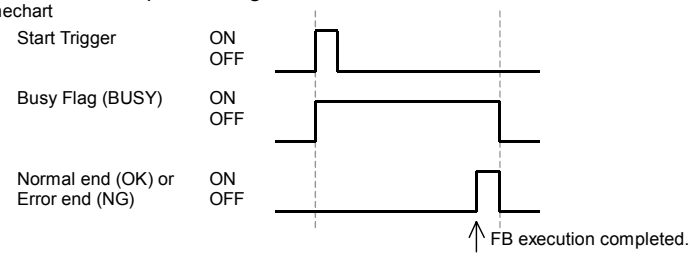
Error Code Details

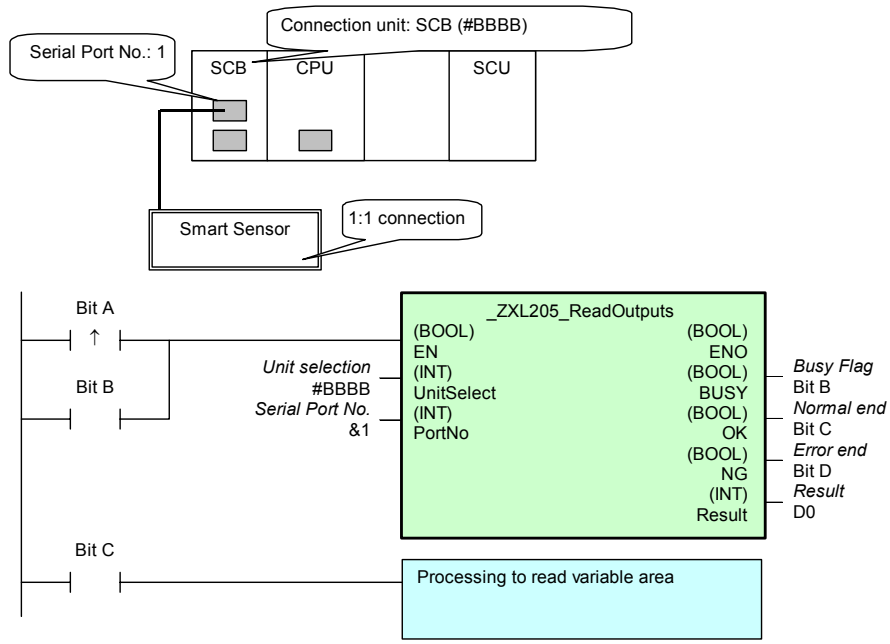
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• The value displayed on the main digital display is read when an error has occurred, e.g., an incident level error.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -205	Read Control Output: _ZXL205_ReadOutputs

Basic function	Reads the high, pass, and low control outputs.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL205_ReadOutputs10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the high, pass, and low control outputs are read for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. The status of the high, pass, and low control outputs can be checked using the *Result*.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the control output status of the Smart Sensor is stored in D0. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Result	Result	INT		&0: All OFF &1: Low output ON &2: High output ON &3: Pass output ON

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

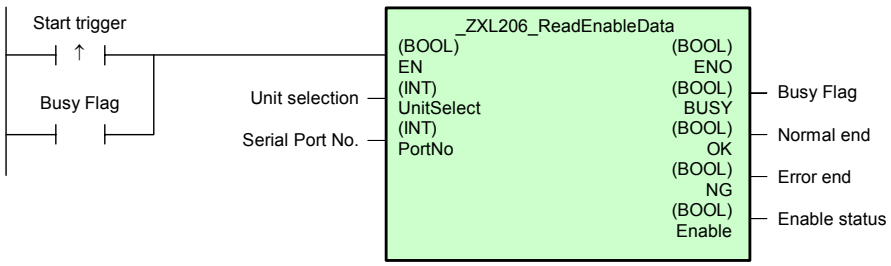
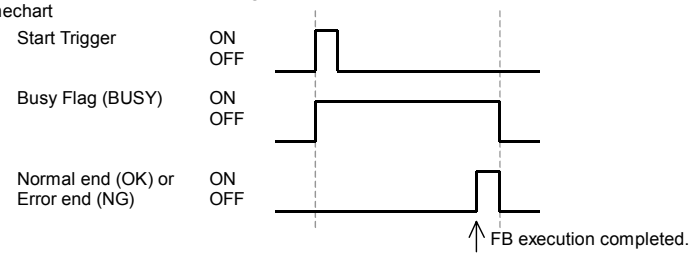
Error Code Details

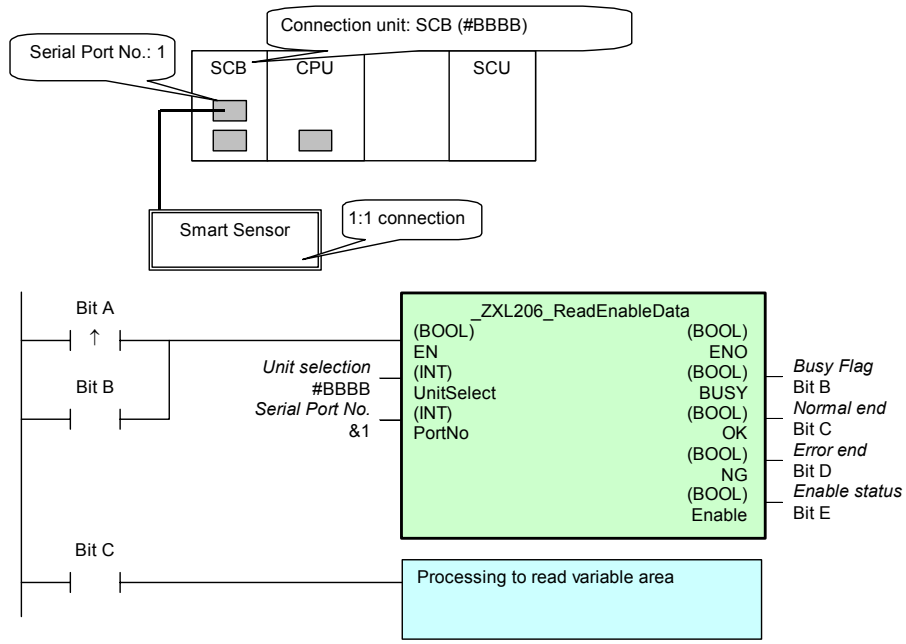
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• The value displayed on the main digital display is read when an error has occurred, e.g., an incident level error.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -206	Read Enable Data: _ZXL206_ReadEnableData

Basic function	Checks if the Smart Sensor is currently in enable status.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL206_ReadEnableData10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No.* is checked to see if it is enabled.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the bit E is turned ON if the Smart Sensor is enabled. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Enable status	Enable	BOOL		Outputs the enable status. 1 (ON): Enable lit 0 (OFF): Enable not lit

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

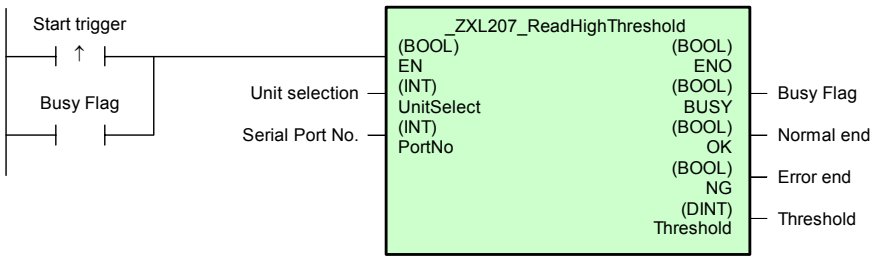
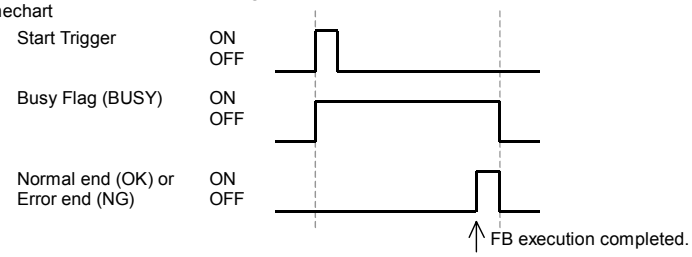
Error Code Details

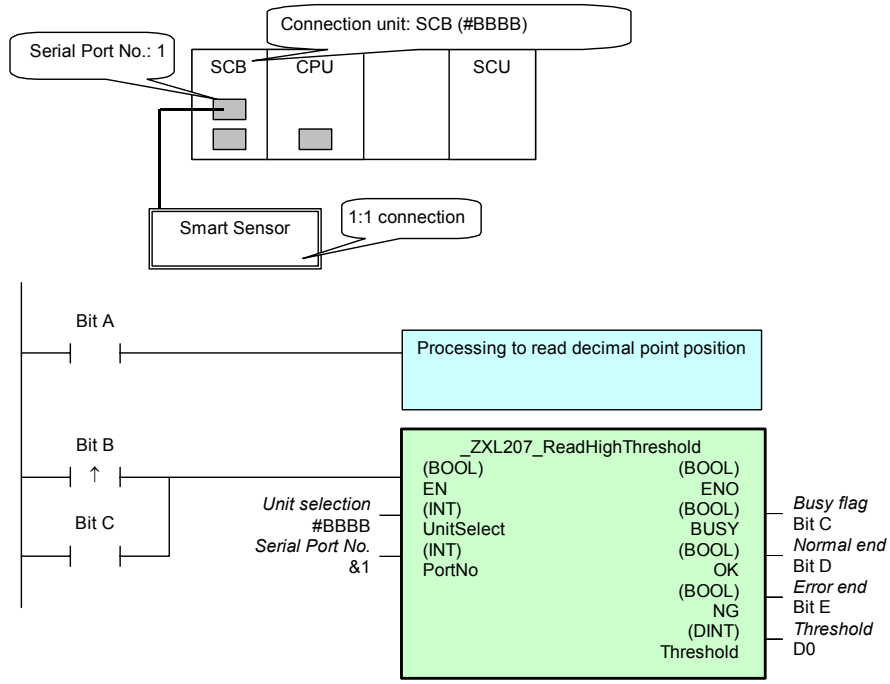
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• The value displayed on the main digital display is read when an error has occurred, e.g., an incident level error.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -207	Read High Threshold: _ZXL207_ReadHighThreshold

Basic function	Reads the high threshold value from the Smart Sensor.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL207_ReadHighThreshold10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the high threshold value is read from the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No.* The threshold data read with this FB does not include the decimal point position. Use the Read Decimal Point Position FB (_ZXL202_ReadDecimalPoint) to read the decimal point.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the value of the high threshold of the Smart Sensor is stored in D0 and D1. If the stored value is &30000 and the decimal point position is &1, the actual value is 3.0000. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Read Decimal Point FB (_ZXL202_ReadDecimalPoint) Read Low Threshold Data (_ZXL208_ReadLowThreshold)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Threshold	Threshold	DINT	19999 to 59999	Outputs the value of the high threshold.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

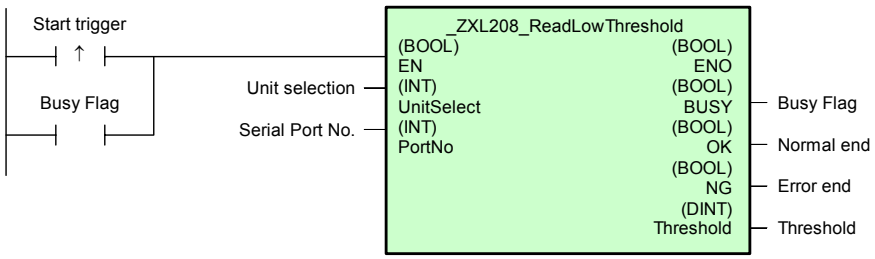
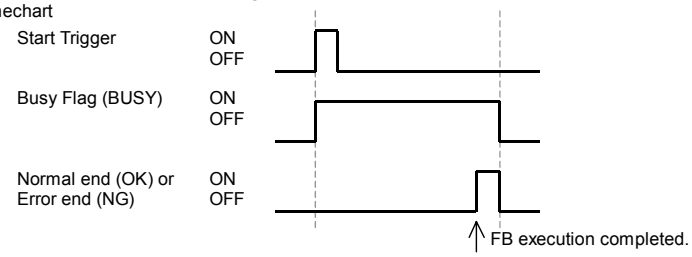
Error Code Details

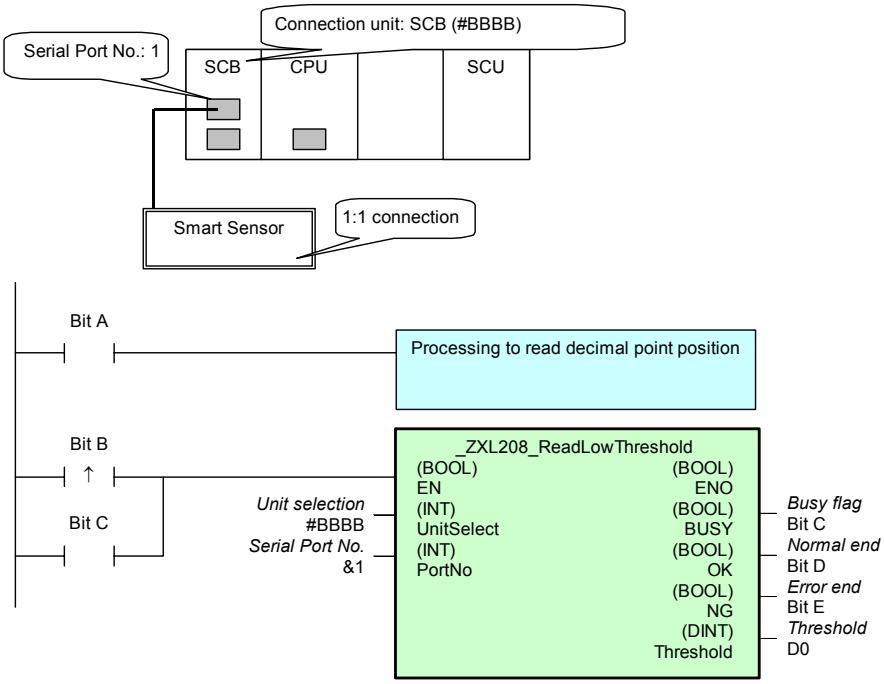
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for thresholds, hystereses, and other parameters.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -208	Read Low Threshold: _ZXL208_ReadLowThreshold

Basic function	Reads the low threshold value from the Smart Sensor.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL208_ReadLowThreshold10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the low threshold value is read from the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No.* The threshold data read with this FB does not include the decimal point position. Use the Read Decimal Point Position FB (_ZXL202_ReadDecimalPoint) to read the decimal point.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the value of the low threshold of the Smart Sensor is stored in D0 and D1. If the stored value is &30000 and the decimal point position is &1, the actual value is 3.0000. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Read Decimal Point FB (_ZXL202_ReadDecimalPoint) Read High Threshold (_ZXL207_ReadHighThreshold)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Threshold	Threshold	DINT	19999 to 59999	Outputs the value of the low threshold.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

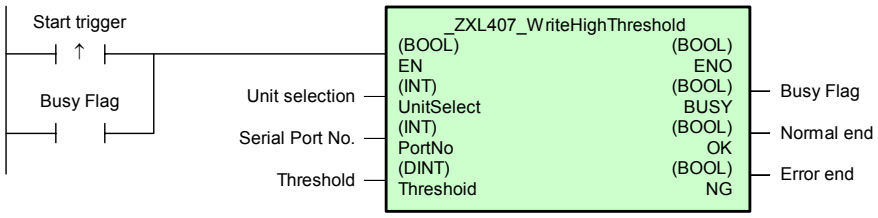
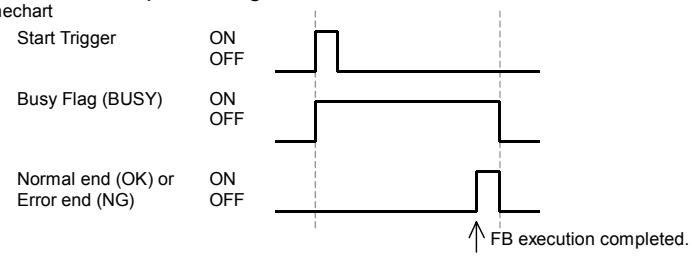
Error Code Details

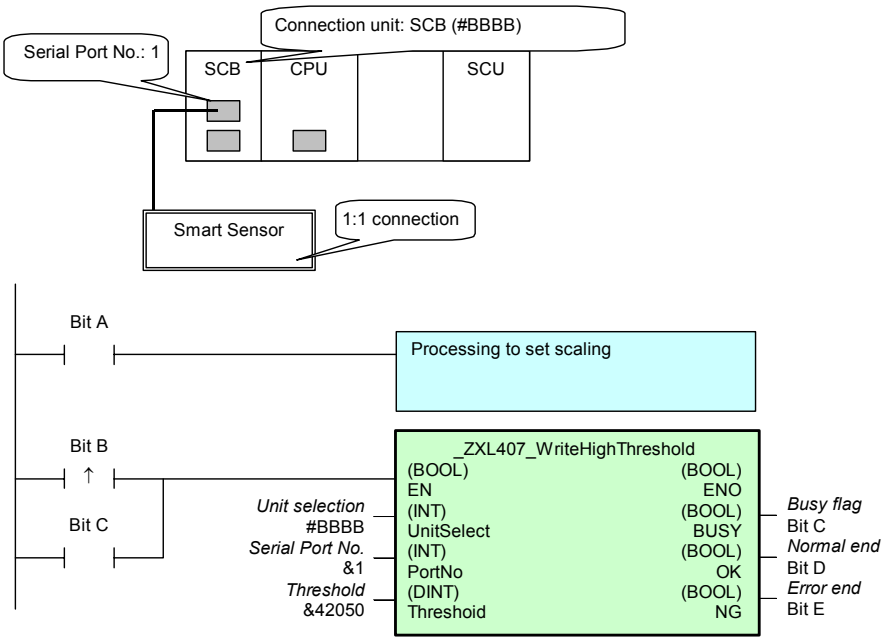
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for thresholds, hystereses, and other parameters.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -407	Write High Threshold Data: _ZXL407_WriteHighThreshold

Basic function	Writes the high threshold value.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL407_WriteHighThreshold10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the value specified for the high threshold is written to the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No.* When a parameter area write command is executed, the setting is written to internal memory. There is, however, a limit to the number to times that internal memory can be written. If a parameter is written more than 1 million times for the same Sensor, internal memory may be destroyed. Do not execute this FB more than 1 million times for the same parameter for any one Sensor.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • An error will occur if the high threshold minus the low threshold is less than the hysteresis. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit B turns ON, the value specified for *threshold* is written to the Smart Sensor. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Write Low Threshold Data (_ZXL408_WriteLowThreshold)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Threshold	Threshold	DINT	0	-19999 to +59999	Specify the value for the high threshold.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

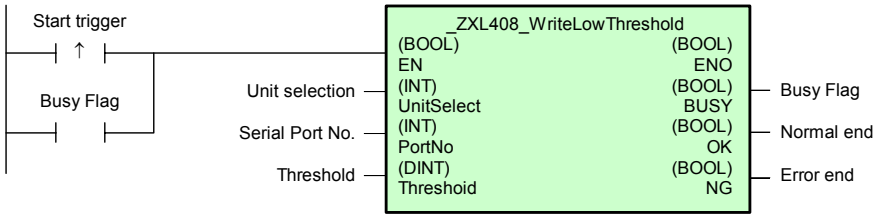
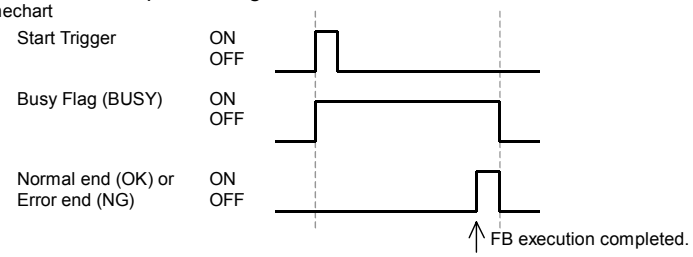
Error Code Details

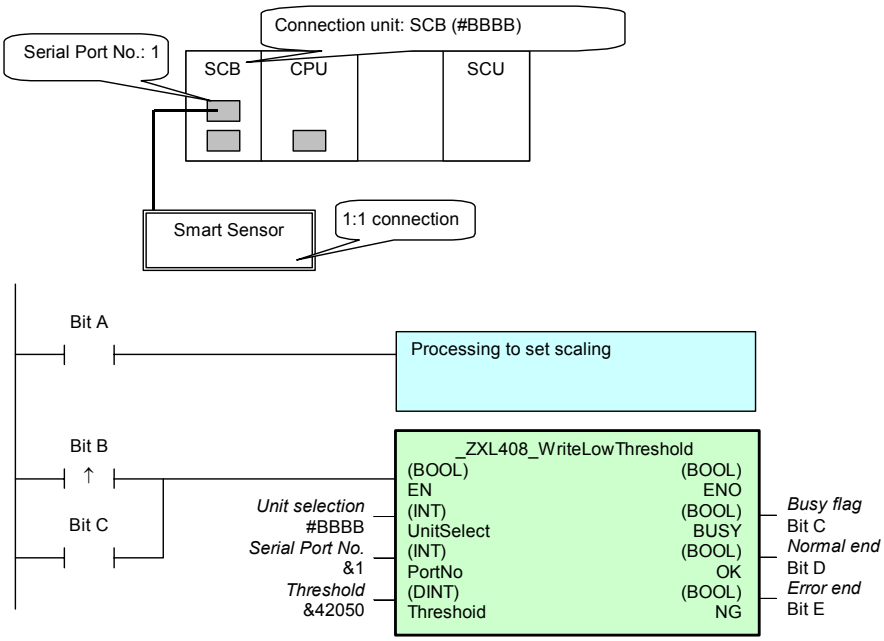
Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for thresholds, hystereses, and other parameters.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

ZXL -408	Write Low Threshold Data: _ZXL408_WriteLowThreshold

Basic function	Writes the low threshold value.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ZXL408_WriteLowThreshold10.cxf
Applicable models	ZX-LDA-N
Conditions for usage	External Connections • Can be used only for 1:1 connections. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Smart Sensor (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Smart Sensor (CompoWay/F). • Communications must be within one network and cannot cross to another network. CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the Start Trigger turns ON, the value specified for the low threshold is written to the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No.* When a parameter area write command is executed, the setting is written to internal memory. There is, however, a limit to the number to times that internal memory can be written. If a parameter is written more than 1 million times for the same Sensor, internal memory may be destroyed. Do not execute this FB more than 1 million times for the same parameter for any one Sensor.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • An error will occur if the high threshold minus the low threshold is less than the hysteresis. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit B turns ON, the value specified for *threshold* is written to the Smart Sensor. 
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Write High Threshold (_ZXL407_WriteHighThreshold)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Threshold	Threshold	DINT	0	-19999 to +59999	Specify the value for the low threshold.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

Error Code Details

Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for thresholds, hystereses, and other parameters.
#2204	Operation error	• The Sensor is not in RUN mode.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

3-14 Temperature Controller (Serial)

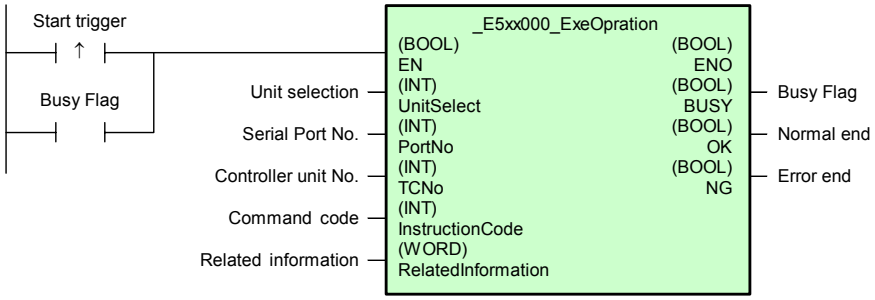
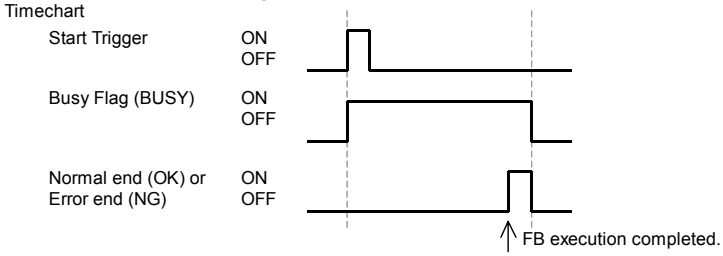
E5AR/E5ER series

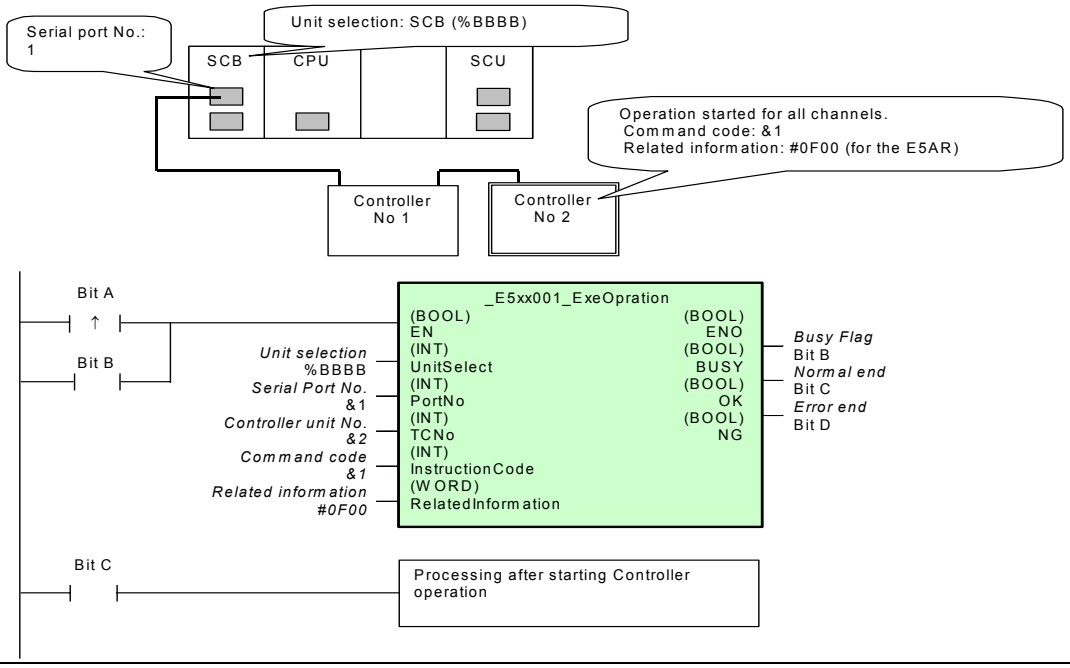
FB Name	Function	Page
_E5xx001_ExeOperation	Operation Command	3-432
_E5xx002_Run	Start Operation	3-435
_E5xx003_Stop	Stop Operation	3-438
_E5xR004_ExecuteAT	Autotune	3-469
_E5xR005_CancelAT	Stop Autotuning	3-472
_E5xx200_ReadVariable	Read Variable Area	3-441
_E5xx201_ReadStatus	Read Status	3-444
_E5xx202_ReadPV	Read Process Value	3-447
_E5xx203_ReadSP	Read Set Point	3-450
_E5xx204_ReadCoolingMV	Read Cooling MV	3-453
_E5xx205_ReadHeatingMV	Read Heating MV	3-456
_E5xR206_ReadValveOpening	Read Valve Opening	3-459
_E5xx400_WriteVariable	Write Variable Area	3-462
_E5xx403_WriteSP	Write Set Point	3-465

E5ZN/E5CN/CN-U series

FB Name	Function	Page
_E5xx001_ExeOperation	Operation Command	3-432
_E5xx002_Run	Start Operation	3-435
_E5xx003_Stop	Stop Operation	3-438
_E5xN004_ExecuteAT	Autotune	3-475
_E5xN005_CancelAT	Stop Autotuning	3-478
_E5xx200_ReadVariable	Read Variable Area	3-441
_E5xx201_ReadStatus	Read Status	3-444
_E5xx202_ReadPV	Read Process Value	3-447
_E5xx203_ReadSP	Read Set Point	3-450
_E5xx204_ReadCoolingMV	Read Cooling MV	3-453
_E5xx205_ReadHeatingMV	Read Heating MV	3-456
_E5xx400_WriteVariable	Write Variable Area	3-462
_E5xx403_WriteSP	Write Set Point	3-465

E5xx -001	Operation Command: _E5xx001_ExeOperation

Basic function	Executes the specified operation command.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E□R\Serial_E5xx000_ExeOperation10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_E5xx000_ExeOperation10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_E5xx000_ExeOperation10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, the operation command specified by the *Command code* and *Related information* is executed. Refer to the manual for the Controller being used for details on command codes and related information. (See *Related manuals*.)
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller. • Unable to specify the Reset Command (command code: #06).
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	Controllers are connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, operation is started for all channels of the Controller with unit number 2. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) 6.7 Operation Commands (Communications/CompoWay/F) E5AN/E5EN/E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Operation Command E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.7 Operation Commands

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connected Unit and serial port.
Serial Port No.	PortNo	INT	&1	&1 to &2	■ Connected to CPU Unit Unit selection (UnitSelect): #FFFF Serial Port No. (PortNo): Not accessed. (&1 recommended) ■ Connected to SCB Unit selection (UnitSelect): #BBBB Serial Port No. (PortNo): &1: Port 1, &2: Port 2 ■ Connected to SCU Unit selection (UnitSelect): Unit No. (&0 to &15) Serial Port No. (PortNo): &1: Port 1, &2: Port 2
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Command code	InstructionCode	INT	0	Not checked.	Depends on the model of Controller. Refer to the pages provided in *Related Manuals* for details.
Related information	RelatedInformation	WORD	0	Not checked.	Same as above.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details..

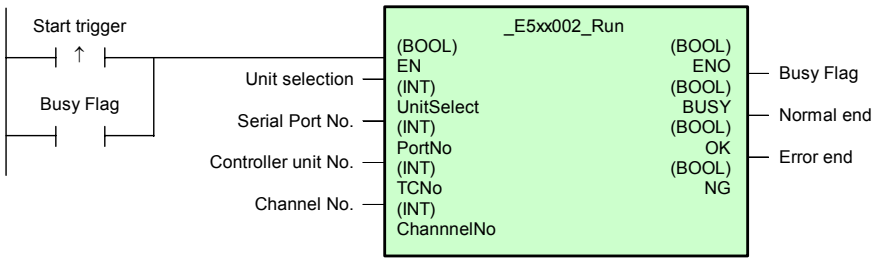
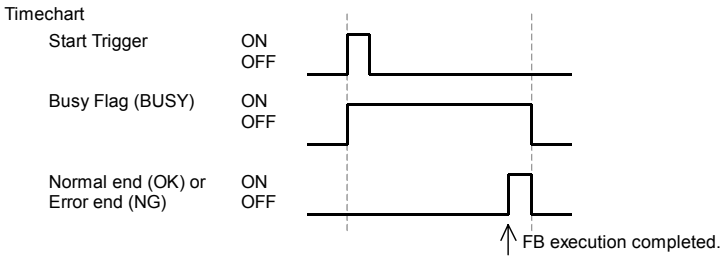
Error Code Details

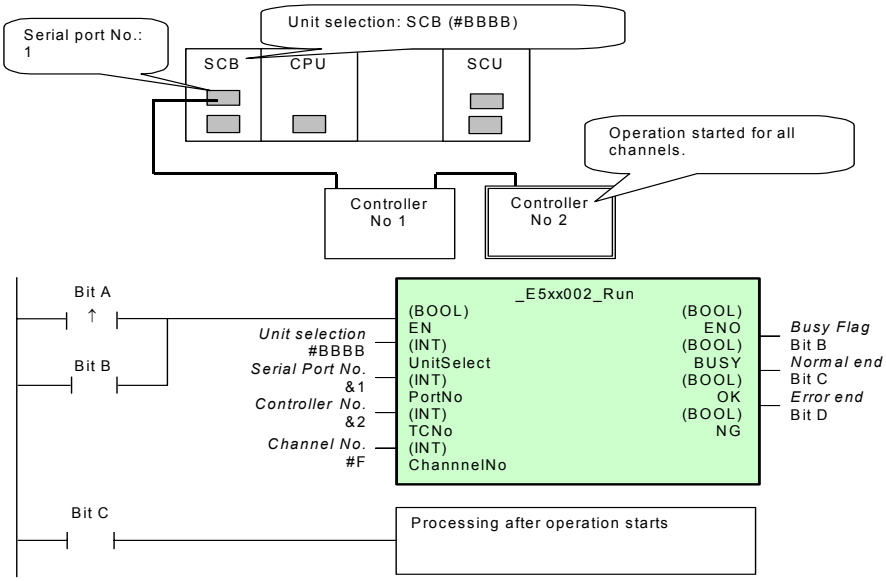
Code	Contents	Meaning
0000	Normal end	
1100	Variable setting error	• The value of the input variable is outside of specifications.
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xx -002	Start Operation: _E5xx002_Run

Basic function	Starts operation for the specified channel of the specified Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xx002_Run10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_E5xx002_Run10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_E5xx002_Run10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, operation is started for the specified channel of the specified Controller.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, operation is started for all channels of the Controller with unit number 2. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) 6.7 Operation Commands (Communications/CompoWay/F) E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.7 Operation Commands E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Operation Command

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Channel No.	ChannelNo	INT	&1	At right.	E5AR/E5ER Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 #F: All channels E5ZN Specify the channel number. &1: Channel 1 &2: Channel 2 #F: All channels E5CN/E5CN-U Always &1.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.
If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

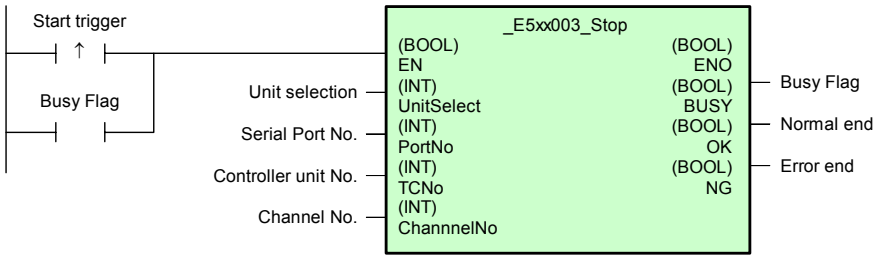
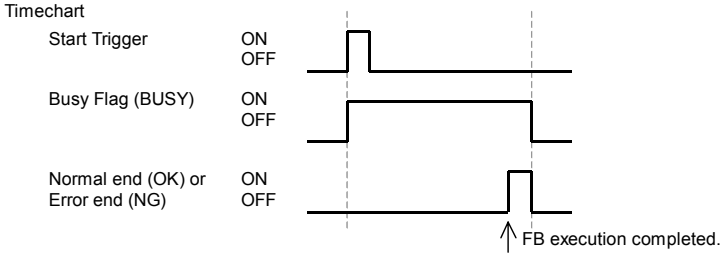
Error Code Details

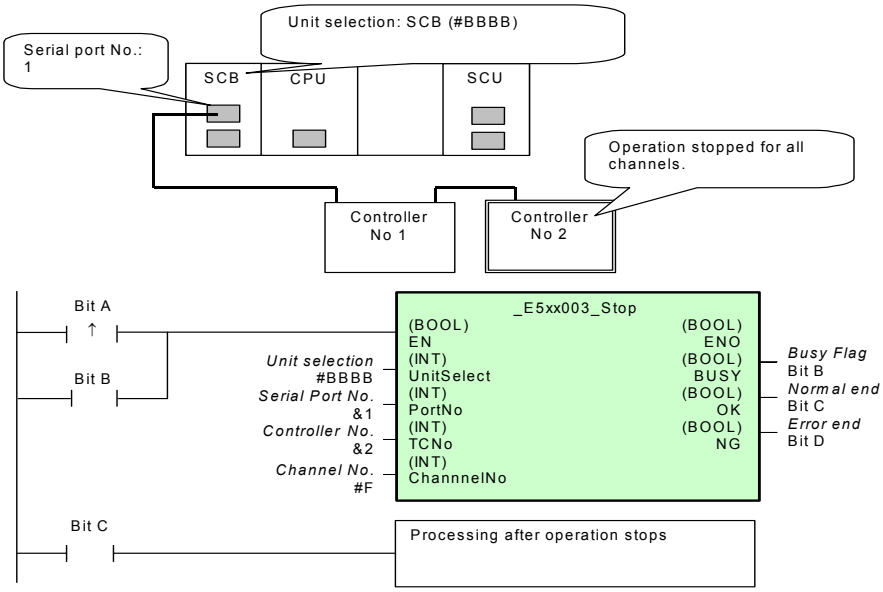
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

E5xx -003	Stop Operation: _E5xx003_Stop

Basic function	Stops operation for the specified channel of the specified Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xx003_Stop10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_E5xx003_Stop10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_E5xx003_Stop10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, operation is stopped for the specified channel of the specified Controller.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, operation is stopped for all channels of the Controller with unit number 2. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) 6.7 Operation Commands (Communications/CompoWay/F) E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.7 Operation Commands E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Operation Command

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Channel No.	ChannelNo	INT	&1	At right.	E5AR/E5ER Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 #F: All channels E5ZN Specify the channel number. &1: Channel 1 &2: Channel 2 #F: All channels E5CN/E5CN-U Always &1.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.
If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

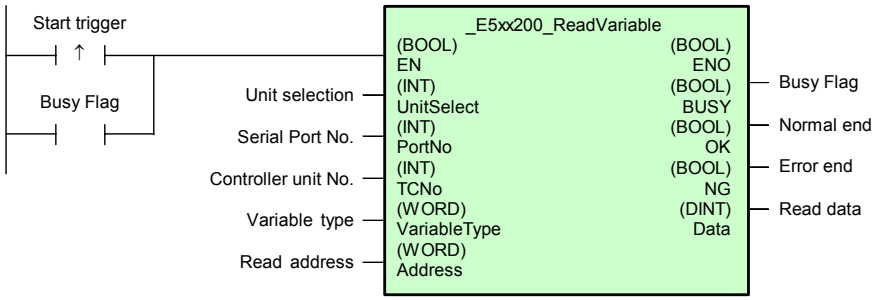
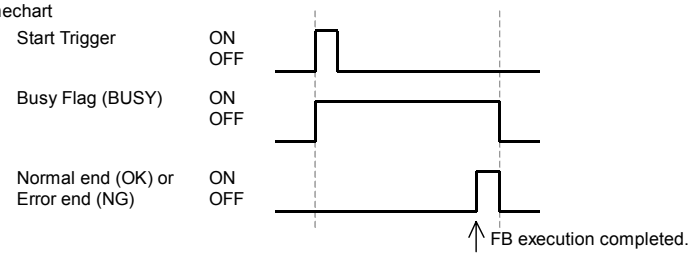
Error Code Details

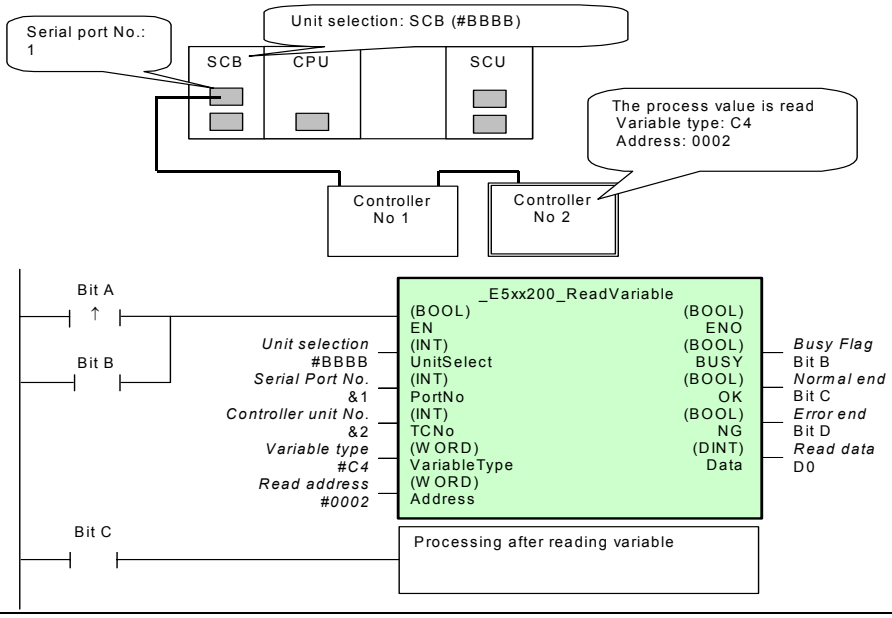
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

E5xx -200	Read Variable Area: _E5xx200_ReadVariable

Basic function	Reads one element from the specified variable area.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xx200_ReadVariable10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_E5xx000_ReadVariable10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_E5xx000_ReadVariable10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, one element, a present value or set value, is read from the specified *Variable Type* and *Read Address*. Refer to the manual for the Controller being used for details on variable types and read addresses. (See *Related manuals*.)
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the process value of the Controller with unit number 2 is read. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Read Variable Area 3.1 Variable Area (Setting Range) List E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map
Related FBs	Use the following FB to read status. Read Status: _E5xx201_ReadStatus

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Variable type	VariableType	WORD	#0		Specify the variable type. Refer to the *Related Manuals* for details on variable types.
Read address	Address	WORD	#0		Specify the address to write. Refer to the *Related Manuals* for details on addresses.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Read data	Data	DINT		Outputs the read data. Refer to the *Related Manuals* for details on read data.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

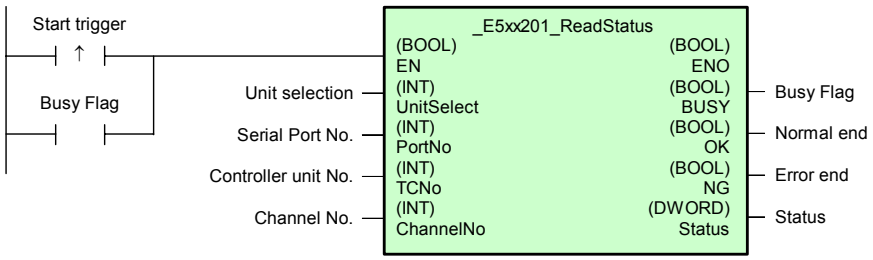
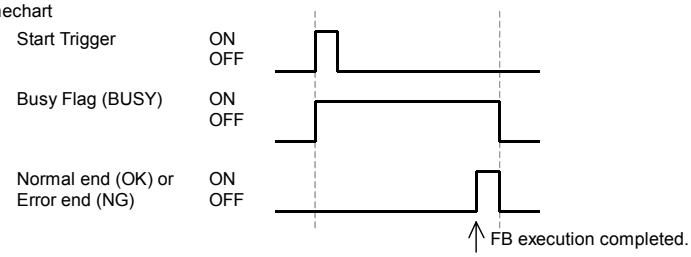
Error Code Details

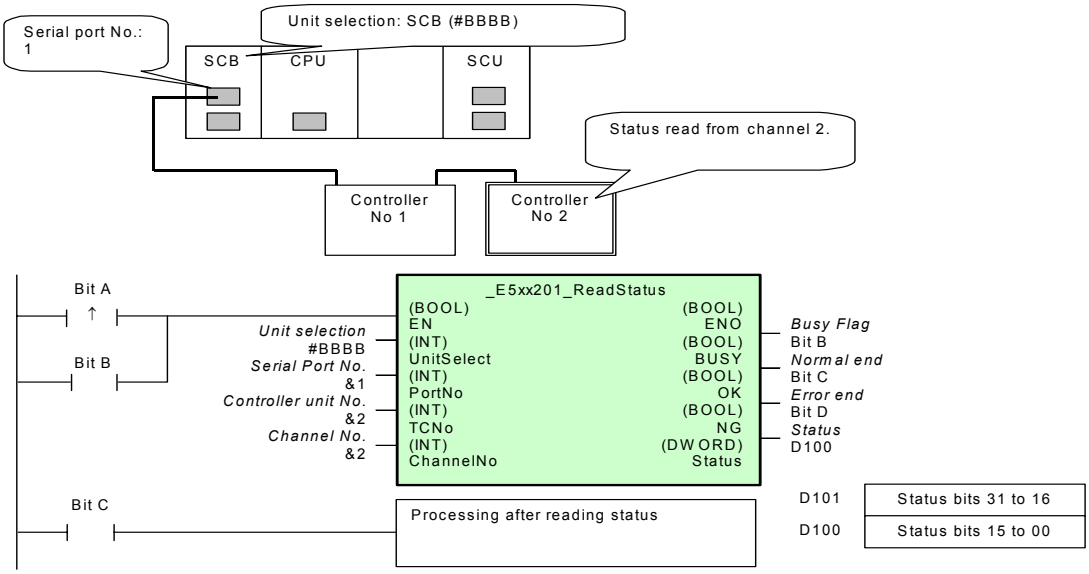
Code	Contents	Meaning
0000	Normal end	
1002	Variable setting error	• A variable area that is not supported was input.
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xx -201	Read Status: _E5xx201_ReadStatus

Basic function	Reads the status of the specified channel of a Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xx201_ReadStatus10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_E5xx201_ReadStatus10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_E5xx201_ReadStatus10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, the status of the specified channel of a Controller is read.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the status of channel 2 of the Controller with unit number 2 is stored in D100 and D101. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) Appendix Setting List E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.10 Variable Area Map E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 3.1 Variable Area (Setting Range) List

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Channel No.	ChannelNo	INT	&1	At right.	E5AR/E5ER Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 E5ZN Specify the channel number. &1: Channel 1 &2: Channel 2 E5CN/E5CN-U Always &1.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Status	Status	DWORD		The format depends on the model of Controller. Refer to the manual given in *Related Manuals* for details.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

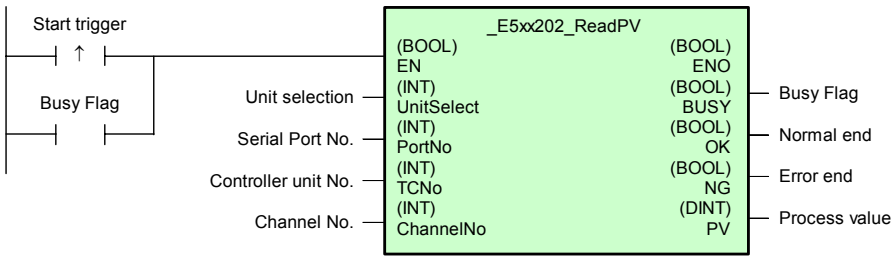
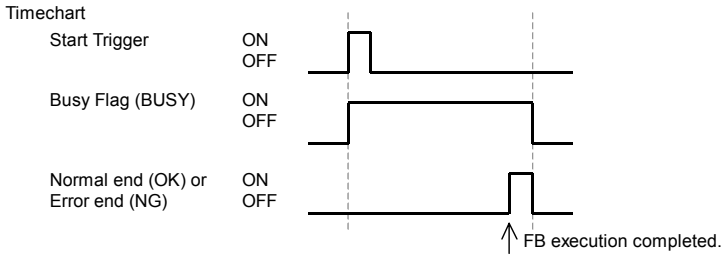
Error Code Details

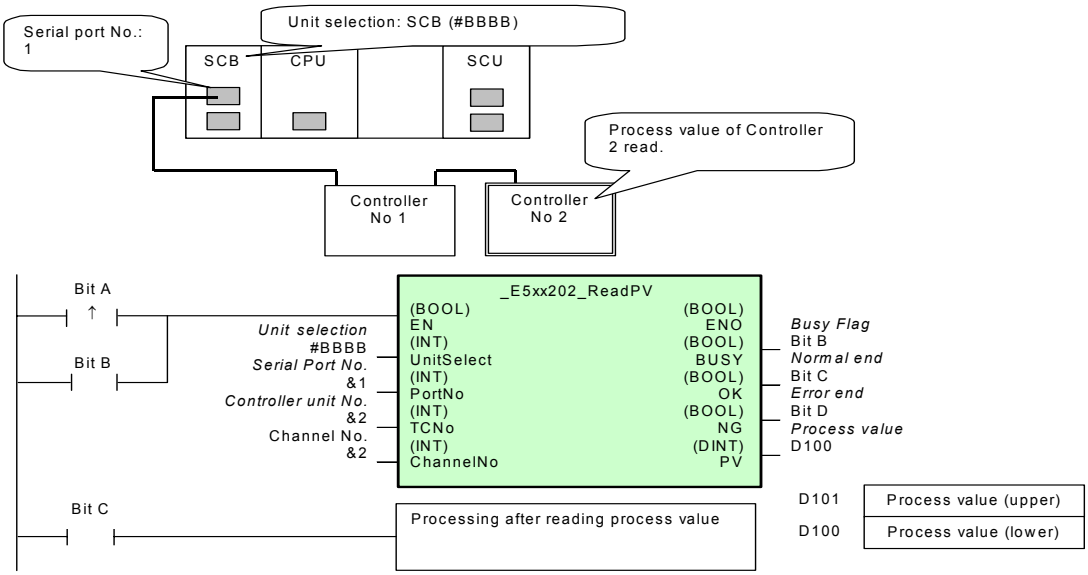
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

E5xx -202	Read Process Value: _E5xx202_ReadPV

Basic function	Reads the process value of the specified channel of a Controller.
Symbol	
File name	Lib \FBL\omronlib\TemperatureController\Serial\All_E5xx202_ReadPV10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) • Number of retries (default: 3) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, the process value of the specified channel of a Controller is read.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the process value of channel 2 of the Controller with unit number 2 is stored in D100 and D101. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Read Variable Area 3.1 Variable Area (Setting Range) List

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection #FFFF Serial port No. Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Channel No.	ChannelNo	INT	&1	At right.	E5AR/E5ER Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 E5ZN Specify the channel number. &1: Channel 1 &2: Channel 2 E5CN/E5CN-U Always &1.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Process value	PV	DINT		The unit depends on the input type.

Internal Variables

Internal variables are not output from the FB.
If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		Output the results of the command for the Controller. See below for details.

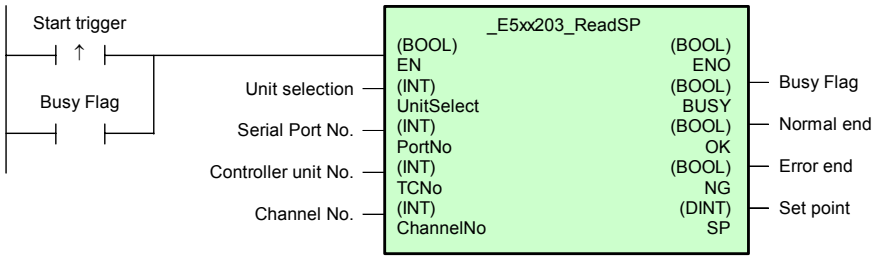
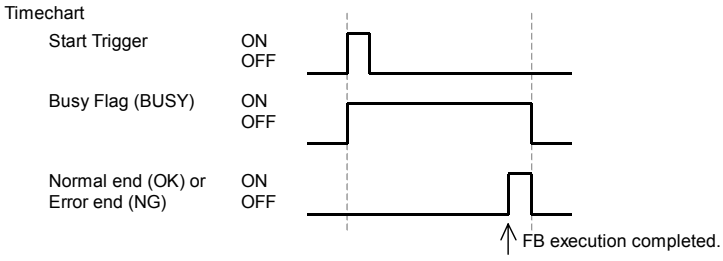
Error Code Details

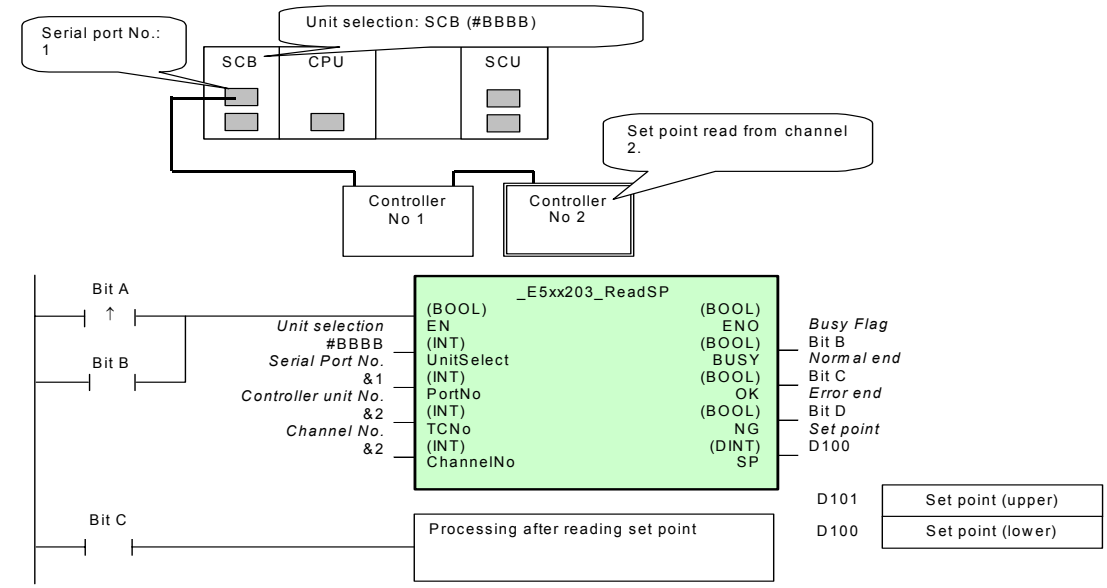
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

E5xx -203	Read Set Point: _E5xx203_ReadSP

Basic function	Reads the set point of the specified channel of a Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xx203_ReadSP10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_E5xx203_ReadSP10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_E5xx203_ReadSP10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, the set point of the specified channel of a Controller is read.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the set point of channel 2 of the Controller with unit number 2 is stored in D100 and D101. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Read Variable Area 3.1 Variable Area (Setting Range) List

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Channel No.	ChannelNo	INT	&1	At right.	E5AR/E5ER Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 E5ZN Specify the channel number. &1: Channel 1 &2: Channel 2 E5CN/E5CN-U Always &1.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Set point	SP	DINT		The unit depends on the input type.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

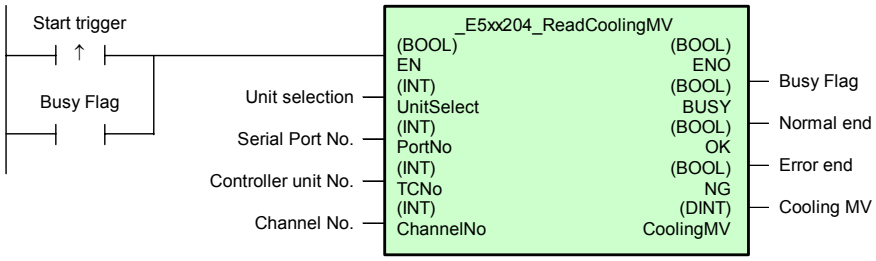
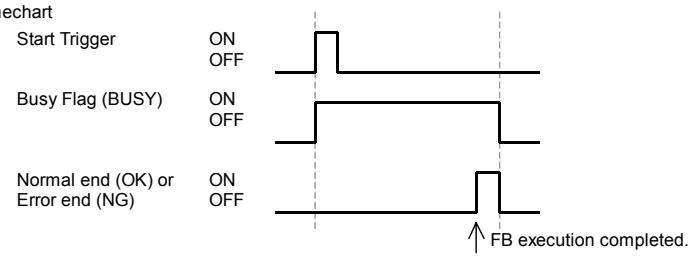
Error Code Details

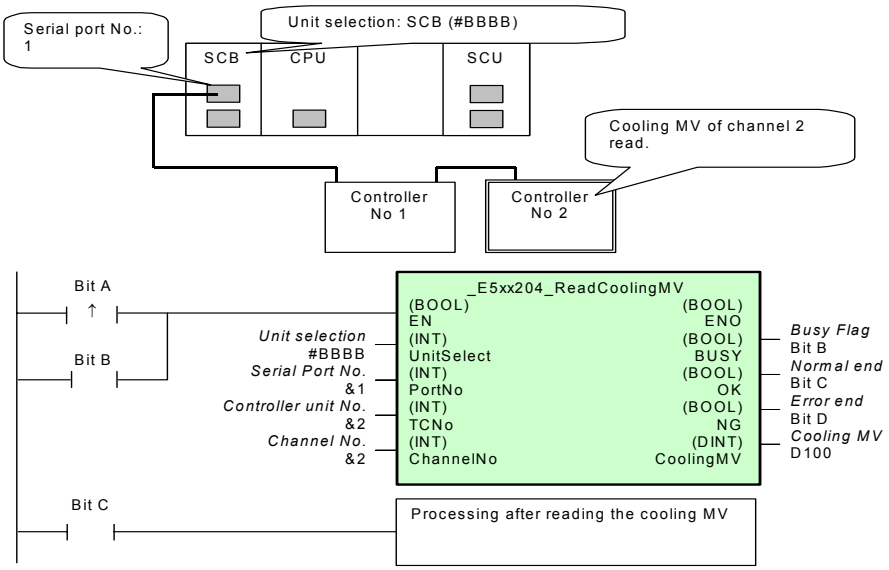
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xx -204	Read Cooling MV: _E5xx204_ReadCoolingMV

Basic function	Reads the cooling MV of the specified channel of a Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xx204_ReadCoolingMV10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_E5xx204_ReadCoolingMV10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_E5xx204_ReadCoolingMV10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, the cooling MV of the specified channel of a Controller is read.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart  • When using E5CN/E5CN-U, it is possible to read out the cooling MV when performing heating/cooling control with the reverse operation setting. Also, it is possible to read out heating MV when performing heating/cooling control with the direct operation setting. This FB is not used with the standard control setting.
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the cooling MV of channel 2 of the Controller with unit number 2 is stored in D100 and D101. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Read Variable Area 3.1 Variable Area (Setting Range) List

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Channel No.	ChannelNo	INT	&1	At right.	E5AR/E5ER Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 E5ZN Specify the channel number. &1: Channel 1 &2: Channel 2 E5CN/E5CN-U Always &1.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Cooling MV	CoolingMV	DINT		Unit: 0.1% For example, &100 means 10.0%.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

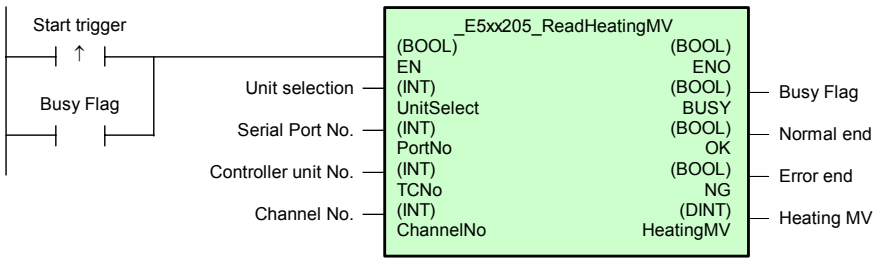
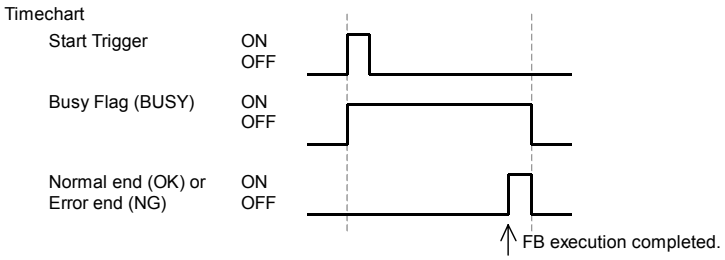
Error Code Details

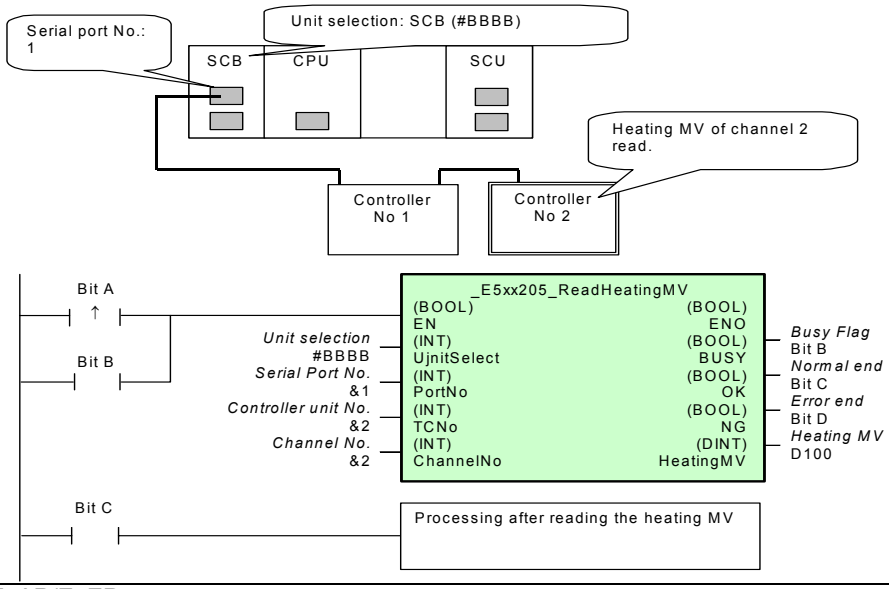
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xx -205	Read Heating MV: _E5xx205_ReadHeatingMV

Basic function	Reads the heating MV of the specified channel of a Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xx205_ReadHeatingMV10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_E5xx205_ReadHeatingMV10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_E5xx205_ReadHeatingMV10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, the heating MV of the specified channel of a Controller is read.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing.  • When using E5CN/E5CN-U, it is possible to read out heating MV when using the reverse operation setting. Also, cooling MV can be read out when using the direct operation setting.
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the heating MV of channel 2 of the Controller with unit number 2 is stored in D100 and D101. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Read Variable Area 3.1 Variable Area (Setting Range) List

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Channel No.	ChannelNo	INT	&1	At right.	E5AR/E5ER Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 E5ZN Specify the channel number. &1: Channel 1 &2: Channel 2 E5CN/E5CN-U Always &1.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Heating MV	HeatingMV	DINT		Unit: 0.1% For example, &100 means 10.0%.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

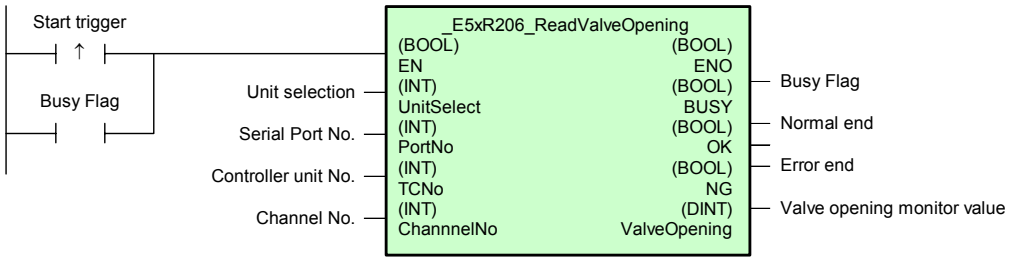
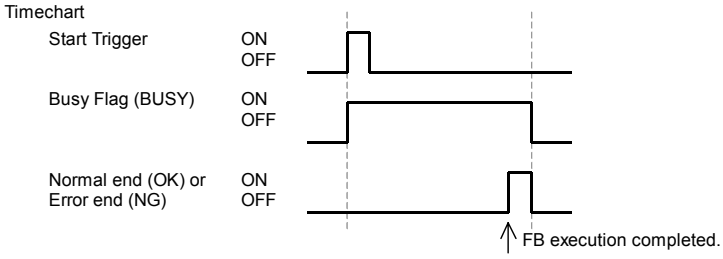
Error Code Details

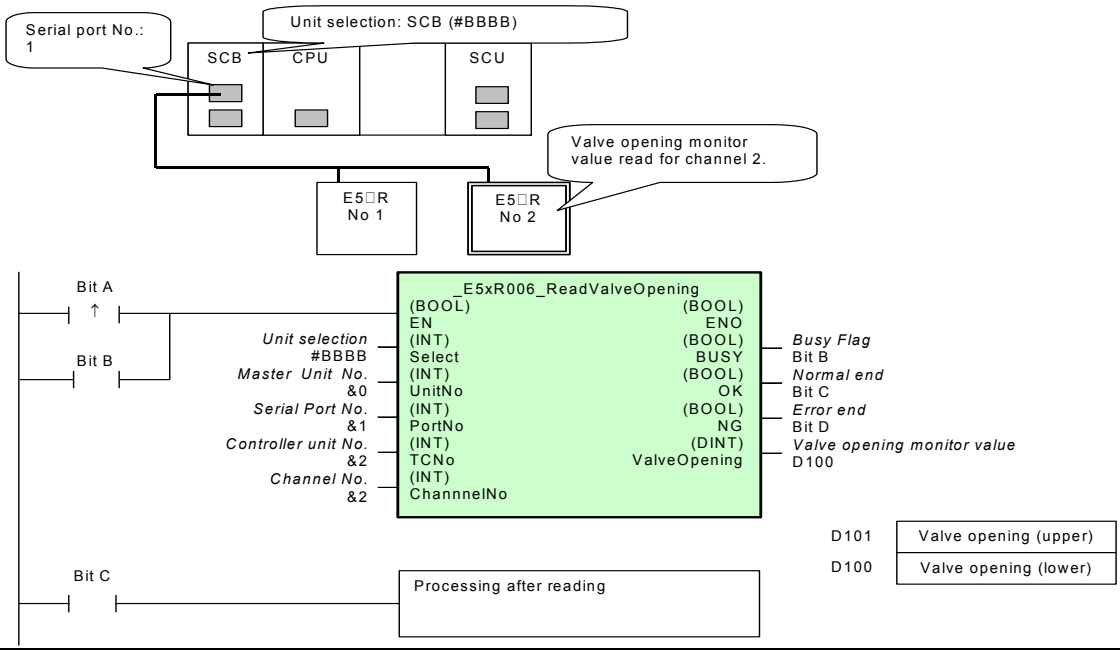
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xR -206	Read Valve Opening: _E5xR206_ReadValveOpening

Basic function	Reads the monitor value for valve opening for the specified channel of a Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_ E5xR206_ReadValveOpening10.cxf
Applicable models	E5AR/E5ER
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, the valve opening monitor value of the specified channel of a Controller is read.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the valve opening monitor value for the Controller in the following diagram is stored in D100 and D101. 
Related manuals	E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection #FFFF Serial port No. Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	&0 to &99	Specify the unit number of the Controller.
Channel No.	ChannelNo	INT	&1	&1 to &4	Specify the channel number. &1: Channel 1 Etc. &4: Channel 4

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Valve opening monitor value	ValveOpening	DINT		Unit: For example, &100 means 10.0%.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

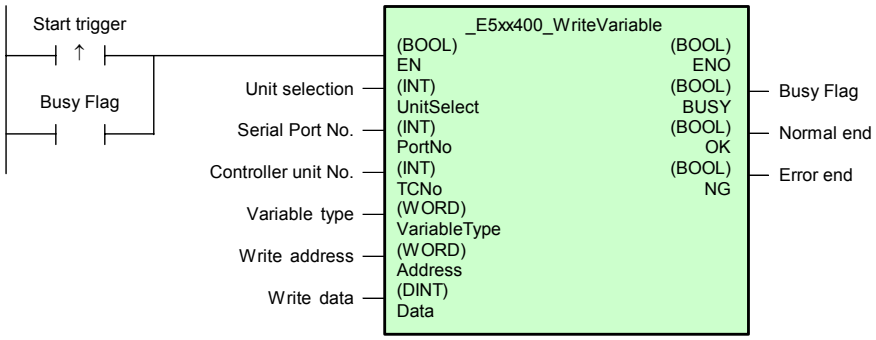
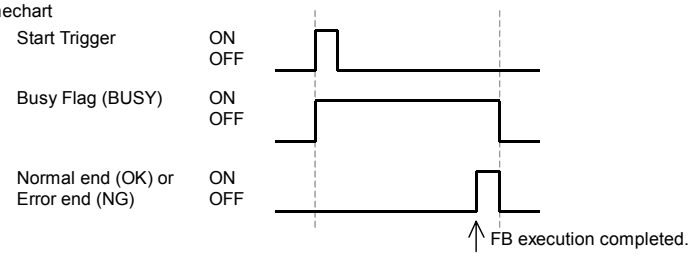
Error Code Details

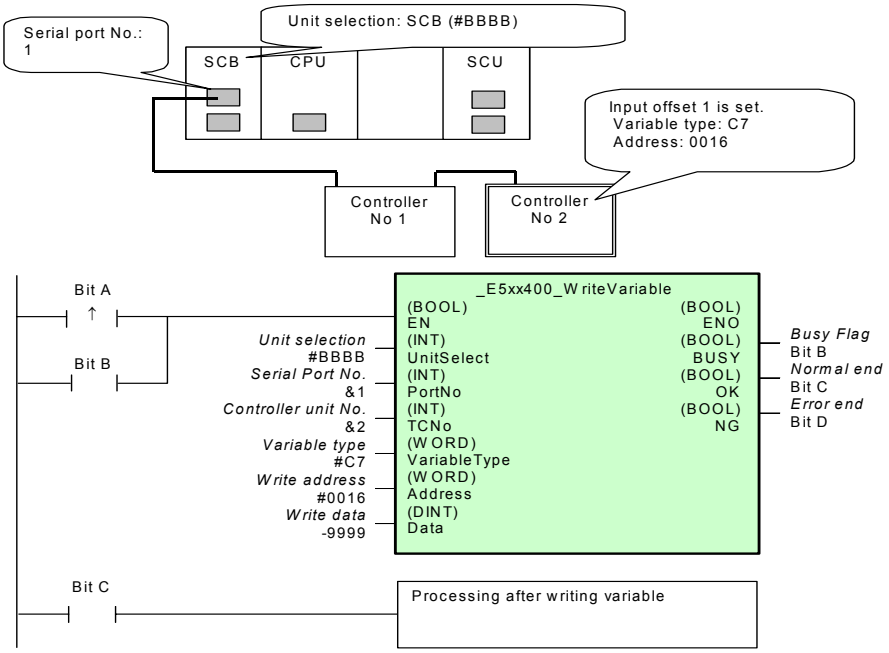
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xx -400	Write Variable Area: _E5xx400_WriteVariable

Basic function	Writes one element to the specified variable area.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xx400_WriteVariable10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_E5xx400_WriteVariable10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_E5xx400_WriteVariable10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, one element, a present value or set value, is written to the specified *Variable Type* and *Write Address*. Refer to the manual for the Controller being used for details on variable types and read addresses. (See *Related manuals*.)
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, input offset value 1 of the Controller with unit number 2 is set to 99.99. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) 6.6 Writing Variable Areas Appendix Setting List E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Write Variable Area 3.1 Variable Area (Setting Range) List E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.6 Writing Variable Areas and 5.10 Variable Area Map

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Variable type	VariableType	WORD	#0		Specify the variable type. Refer to the *Related Manuals* for details on variable types.
Write address	Address	WORD	#0		Specify the address to write. Refer to the *Related Manuals* for details on addresses.
Write data	Data	DINT	&0		Specify the data to write.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

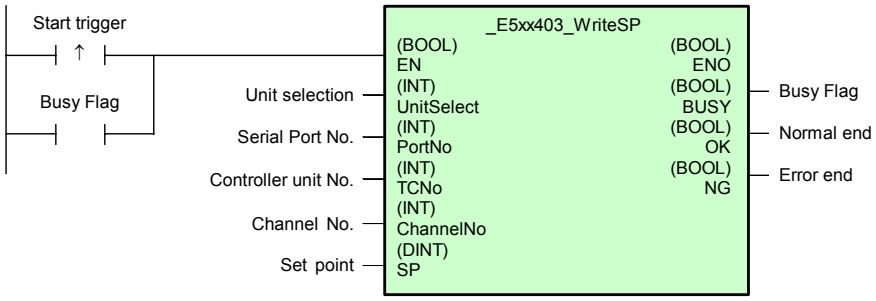
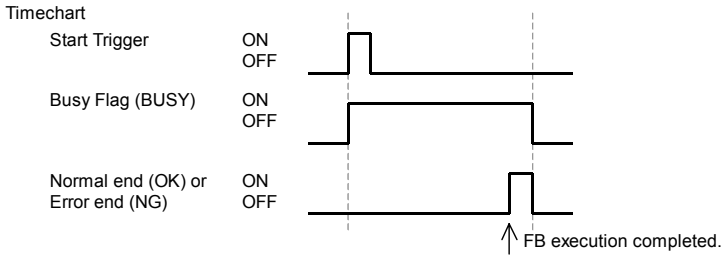
Error Code Details

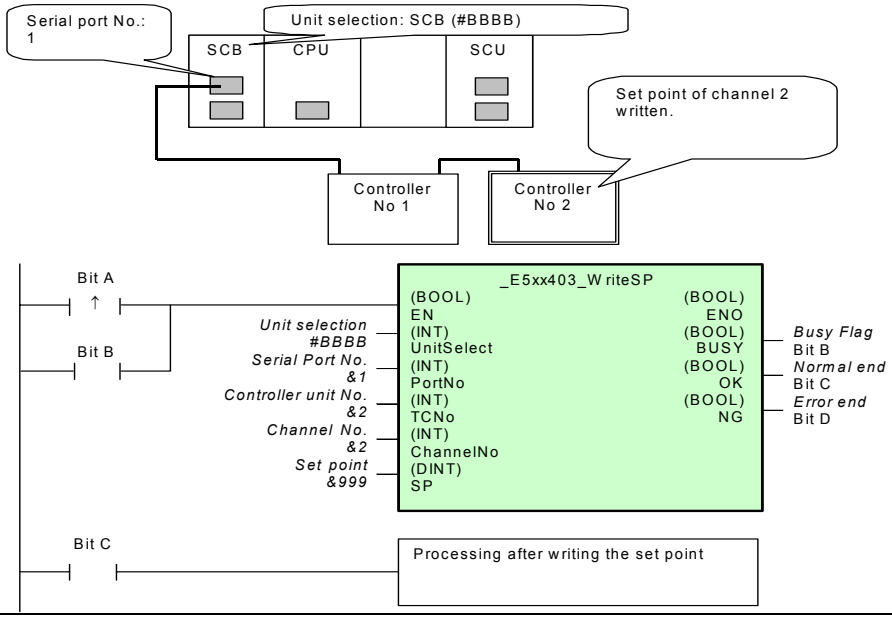
Code	Contents	Meaning
0000	Normal end	
1100	Variable setting error	•The value of the input variable is outside of specifications.
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xx -403	Write Set Point: _E5xx403_WriteSP

Basic function	Writes the set point of the specified channel of a Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xx403_WriteSP10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_E5xx403_WriteSP10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_E5xx403_WriteSP10.cxf
Applicable models	E5AR/E5ER/E5ZN/E5CN/E5CN-U
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, the set point is written for the specified channel of a Controller.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the set point of channel 2 of the Controller with unit number 2 is set to 99.9. Note: The position of the decimal point depends on the input type. 
Related manuals	E5AR/E5ER E5AR/E5ER Digital Controller User's Manual (Z182) 6.6 Writing Variable Areas Appendix Setting List E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.6 Writing Variable Areas and 5.10 Variable Area Map E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Write Variable Area 3.1 Variable Area (Setting Range) List

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5AR/E5ER &0 to &99 E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Channel No.	ChannelNo	INT	&1	At right.	E5AR/E5ER Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 E5ZN Specify the channel number. &1: Channel 1 &2: Channel 2 E5CN/E5CN-U Always &1.
Set point	SP	DINT	&0		Depends on the input type.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

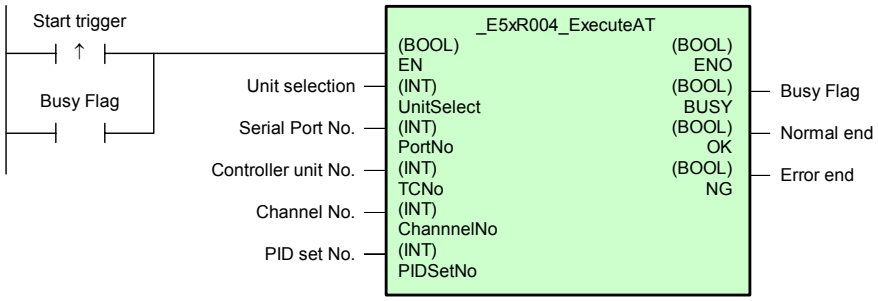
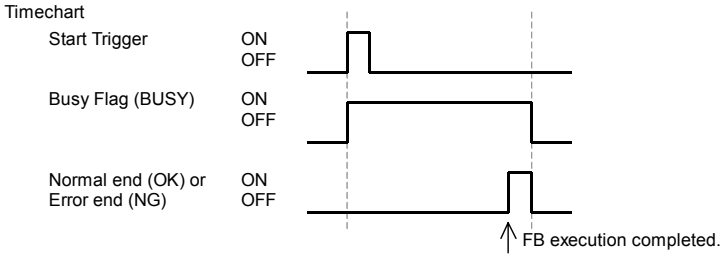
Error Code Details

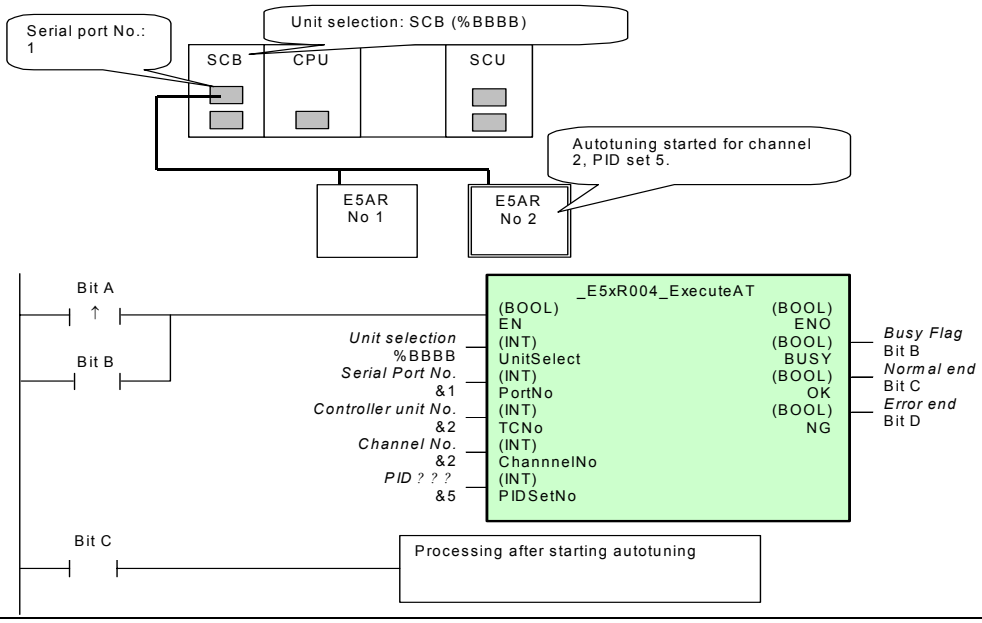
Code	Contents	Meaning
0000	Normal end	
1100	Variable setting error	• The value of the input variable is outside of specifications.
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xR -004	Autotune: _E5xR004_ExecuteAT

Basic function	Starts autotuning for the specified channel of the specified Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xR004_ExecuteAT10.cxf
Applicable models	E5AR/E5ER Use the Start Autotuning FB (_E5xN004_ExecuteAT) for the E5ZN/E5CN/E5CN-U.
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, autotuning is started for the specified channel of the specified Controller.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, autotuning is started for the Controller in the following diagram. 
Related manuals	E5AR/E5ER Digital Controller User's Manual (Z182) 6.7 Operation Commands (Communications/CompoWay/F)
Related FBs	E5AR/E5ER Use this version of the FB. E5ZN/E5CN/E5CN-U Autotune (_E5xN004_ExecuteAT)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection #FFFF Serial port No. Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Port 1 &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Port 1 &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	&0 to &99	Specify the unit number of the Controller.
Channel No.	ChannelNo	INT	&1	&1 to &4 #F	Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 &F: All channels
PID set No.	PIDSetNo	INT	&1	&1 to &8	Specify the PID set number. &0: Currently selected PID set &1: PID1 Etc. &8: PID8

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.
If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

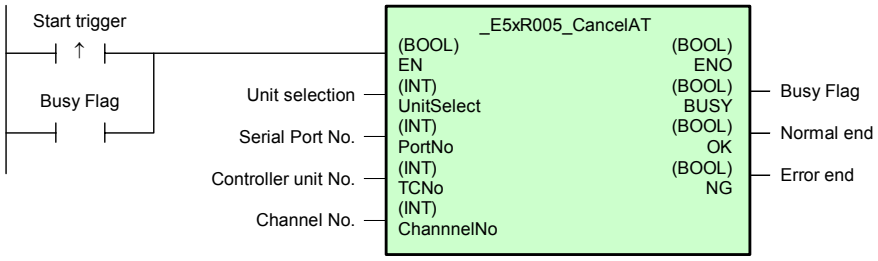
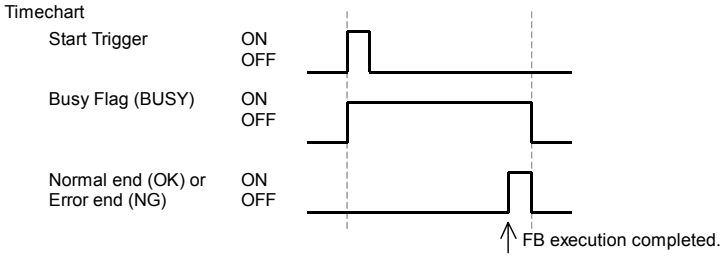
Error Code Details

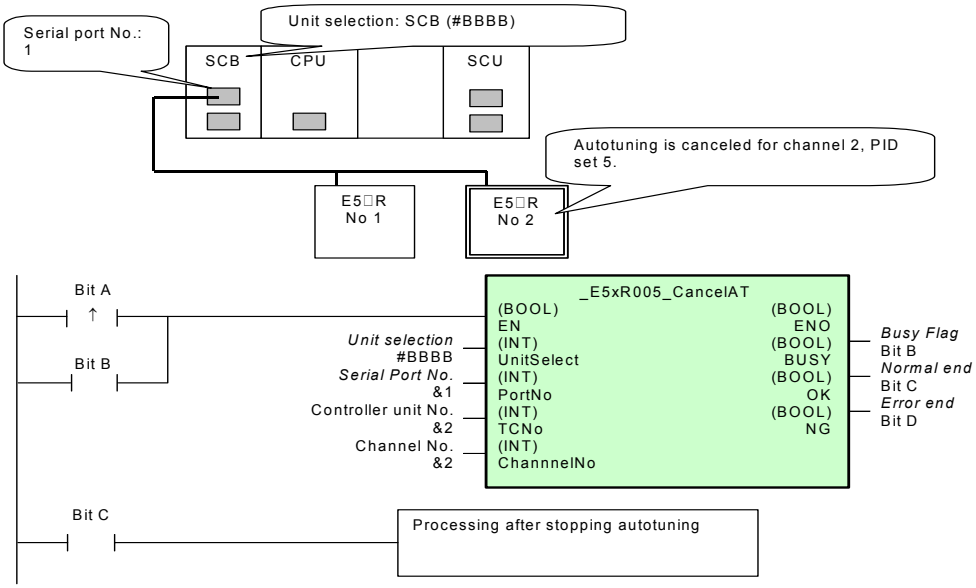
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xR -005	Stop Autotuning: _E5xR005_CancelAT

Basic function	Cancels autotuning for the specified channel of the specified Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Serial_E5xR005_CancelAT10.cxf
Applicable models	E5AR/E5ER Use the Stop Autotuning FB (_E5xN005_CancelAT) for the E5ZN/E5CN/E5CN-U.
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, autotuning is stopped for the specified channel of the specified Controller.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, autotuning is cancelled in the Controller in the following diagram. 
Related manuals	E5AR/E5ER Digital Controller User's Manual (Z182) 6.7 Operation Commands (Communications/CompoWay/F)
Related FBs	E5AR/E5ER Use this version of the FB. E5ZN/E5CN/E5CN-U Stop Autotuning for E5ZN (_E5xN005_CancelAT)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	&0 to &99	Specify the unit number of the Controller.
Channel No.	ChannelNo	INT	&1	&1 to &4 #F	Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 &F: All channels

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

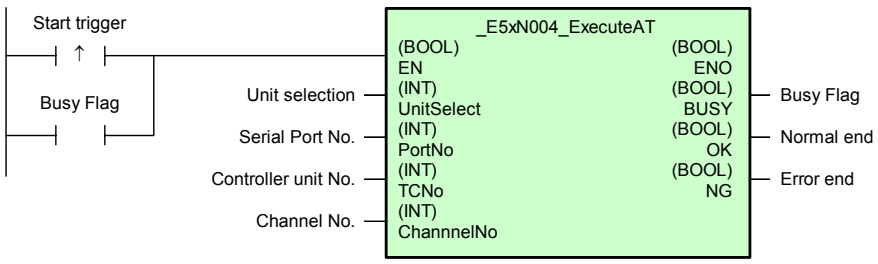
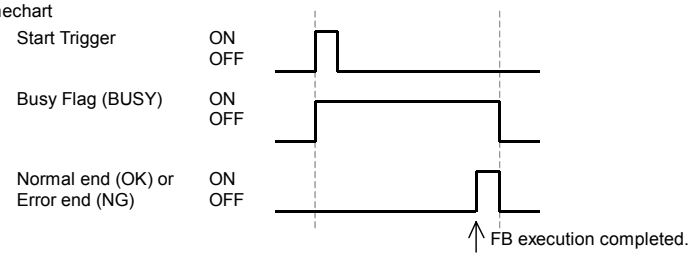
Error Code Details

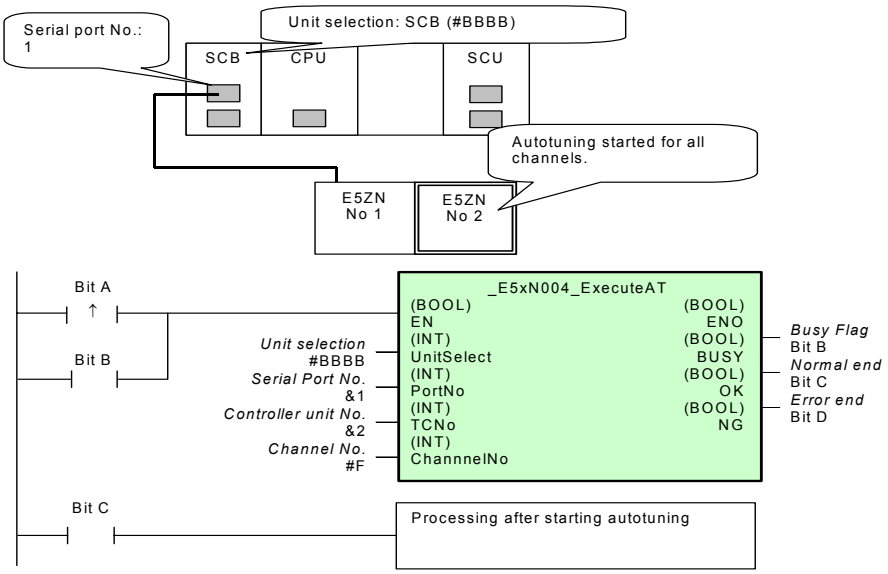
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ Version History

Version	Date	Contents
1.00	2005.6.	Original production

E5xN -004	Autotune: _E5xN004_ExecuteAT

Basic function	Starts autotuning for the specified channel of the specified Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\Serial\E5ZN_E5xN004_ExecuteAT10.cxf Lib \FBL\omronlib\TemperatureController\Serial\E5CN_E5xN004_ExecuteAT10.cxf
Applicable models	E5ZN/E5CN/E5CN-U Use the Stop Autotuning FB (_E5xR005_CancelAT) for the E5AR/E5ER.
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, autotuning is started for the specified channel of the specified Controller.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, autotuning is started for all channels of the Controller with unit number 2. 
Related manuals	E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.7 Operation Commands E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Operation Command
Related FBs	E5AR/E5ER Start Autotuning (_E5xR004_ExecuteAT) E5ZN/E5CN/E5CN-U Use this version of the FB.

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Channel No.	ChannelNo	WORD	&1	At right.	E5ZN Specify the channel number. &1: Channel 1 &2: Channel 2 &F: All channels E5CN/E5CN-U Always &1.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.
If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

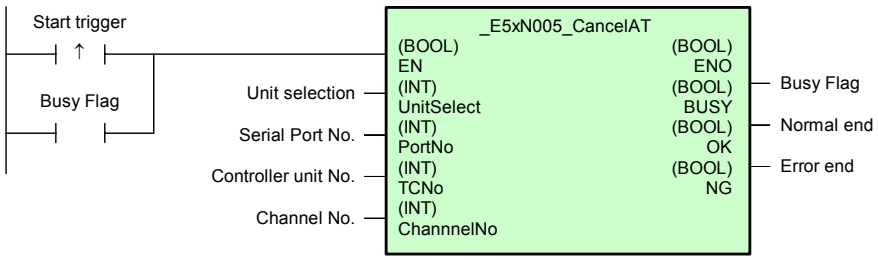
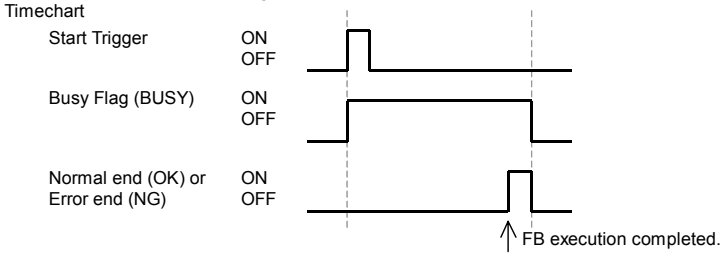
Error Code Details

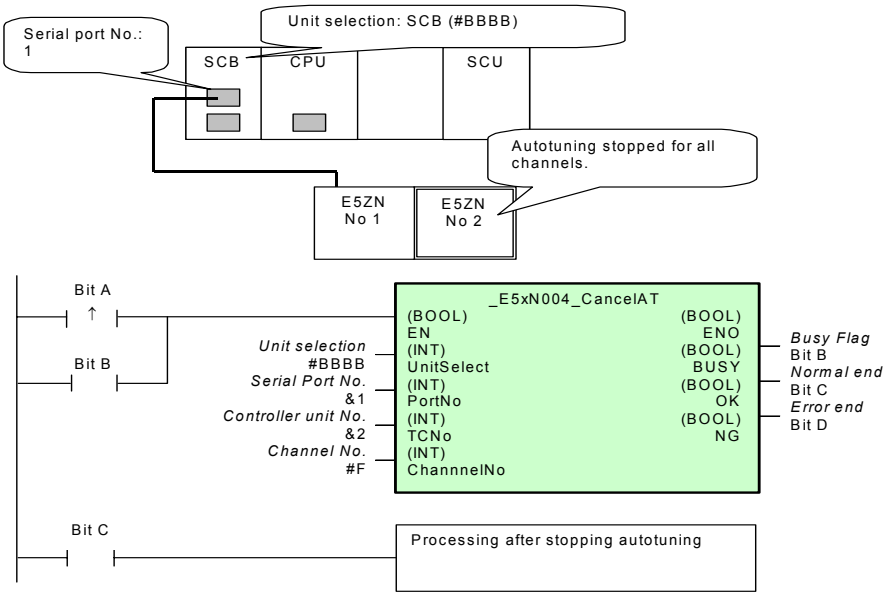
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xN -005	Stop Autotuning: _E5xN005_CancelAT

Basic function	Cancels autotuning for the specified channel of the specified Controller.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\E5ZN\Serial_ E5xN_005CancelAT10.cxf Lib\FBL\omronlib\TemperatureController\E5CN\Serial_ E5xN_005CancelAT10.cxf
Applicable models	E5ZN/E5CN/E5CN-U Use the Stop Autotuning FB (_E5xR005_CancelAT) for the E5AR/E5ER.
Conditions for usage	External Connections • 1:1 connection is possible. • When connected via a Serial Communications Unit (SCU) or Serial Communications Board (SCB), set the serial port to the same communications specifications as the Controller (CompoWay/F). Use Serial Communications Unit (SCU) or Serial Communications Board (SCB) version 1.2 or higher. • When connected to an RS-232C port on the CPU Unit, set the RS-232C communications port settings (CompoWay/F) in the PLC Setup to the same communications specifications as the Controller (CompoWay/F). Settings PLC Setup: Shared Settings for Communications Instructions in FBs • Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports)
Function description	When the start trigger turns ON, autotuning is stopped for the specified channel of the specified Controller.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.

Application example	A Controller is connected 1:N to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, autotuning is stopped for all channels of the Controller with unit number 2. 
Related manuals	E5ZN E5ZN Temperature Controller Operation Manual (H113) 5.7 Operation Commands E5CN/E5CN-U E5CN/E5CN-U Digital Temperature Controller Communications Manual (H130) 2.3 Detailed Description of the Services, Operation Command
Related FBs	E5AR/E5ER Stop Autotuning (_E5xR005_CancelAT) E5ZN/E5CN/E5CN-U Use this version of the FB.

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the connection Unit and the serial port. ■ Connected to CPU Unit Unit selection: #FFFF Serial port No.: Not accessed. (&1 recommended) ■ Connected to Serial Communication Board(SCB) Unit selection: #BBBB Serial port No.: &1: Port 1, &2: Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection: SCU Unit No. (&0 to &15) Serial port No.: &1: Port 1, &2: Port 2
Serial Port No.	PortNo	INT	&1	&1 to &2	
Controller unit No.	TCNo	INT	&0	At right.	Specify the unit number of the Controller. E5ZN &0 to &15 (#0 to #F) E5CN/E5CN-U &0 to &99
Channel No.	ChannelNo	WORD	&1	At right.	E5ZN Specify the channel number. &1: Channel 1 &2: Channel 2 &F: All channels E5CN/E5CN-U Always &1.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Compoway/F error code	CompowayF_Error Code	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. See below for details.

Error Code Details

Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2005.6.	Original production

3-15 Temperature Controller (DeviceNet)

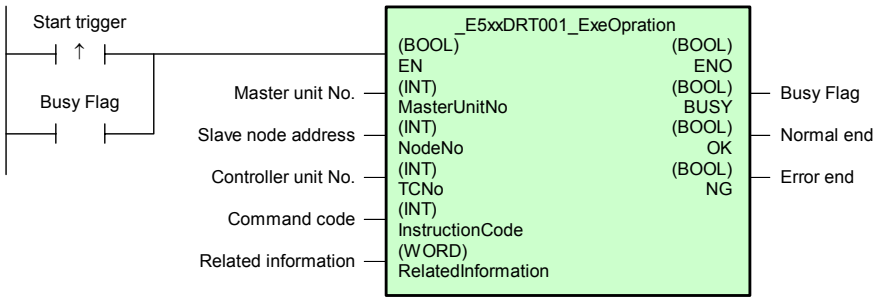
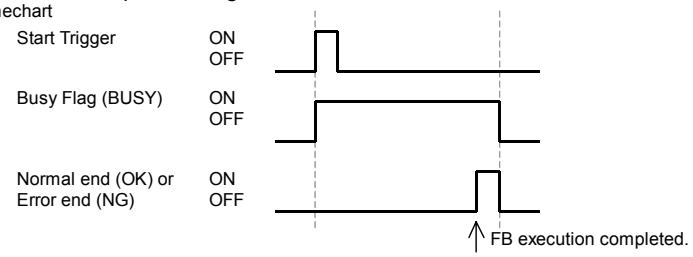
E5AR/E5ER series

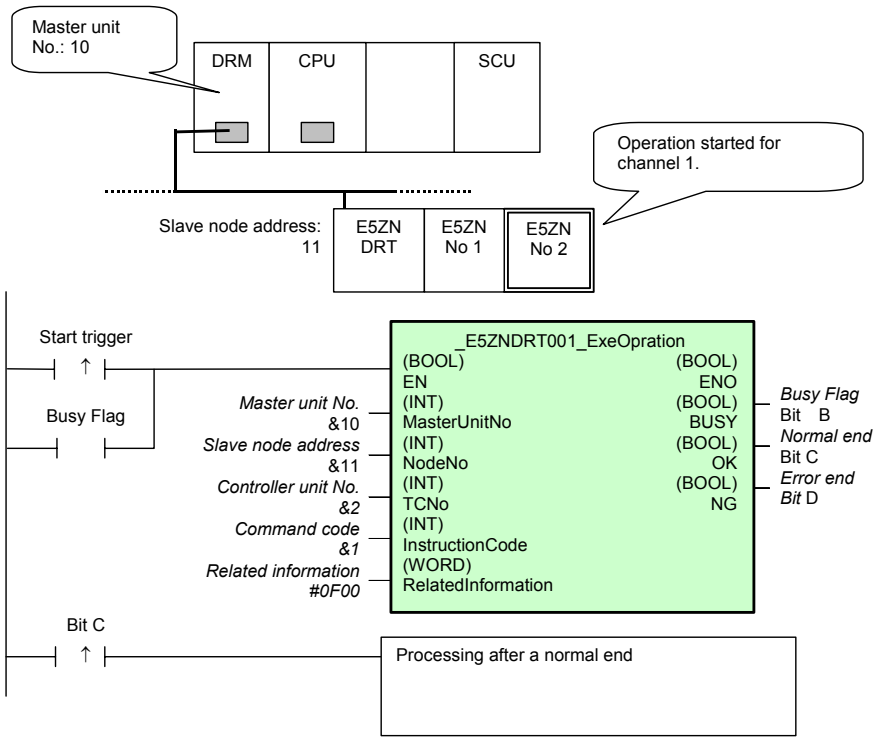
FB Name	Function	Page
_E5xxDRT001_ExeOperation	Operation Command	3-482
_E5xxDRT002_Run	Start Operation	3-485
_E5xxDRT003_Stop	Stop Operation	3-488
_E5xRDRT004_ExecuteAT	Autotune	3-518
_E5xRDRT005_CancelAT	Stop Autotuning	3-521
_E5xxDRT200_ReadVariable	Read Variable Area	3-491
_E5xxDRT201_ReadStatus	Read Status	3-494
_E5xxDRT202_ReadPV	Read Process Value	3-497
_E5xxDRT203_ReadSP	Read Set Point	3-500
_E5xxDRT204_ReadCoolingMV	Read Cooling MV	3-503
_E5xxDRT205_ReadHeatingMV	Read Heating MV	3-506
_E5xRDRT206_ReadValveOpening	Read Valve Opening	3-509
_E5xxDRT400_WriteVariable	Write Variable Area	3-512
_E5xxDRT403_WriteSP	Write Set Point	3-515

E5ZN series

FB Name	Function	Page
_E5xxDRT001_ExeOperation	Operation Command	3-482
_E5xxDRT002_Run	Start Operation	3-485
_E5xxDRT003_Stop	Stop Operation	3-488
_E5ZNDRT004_ExecuteAT	Autotune	3-524
_E5ZNDRT005_CancelAT	Stop Autotuning	3-527
_E5xxDRT200_ReadVariable	Read Variable Area	3-491
_E5xxDRT201_ReadStatus	Read Status	3-494
_E5xxDRT202_ReadPV	Read Process Value	3-497
_E5xxDRT203_ReadSP	Read Set Point	3-500
_E5xxDRT204_ReadCoolingMV	Read Cooling MV	3-503
_E5xxDRT205_ReadHeatingMV	Read Heating MV	3-506
_E5xxDRT400_WriteVariable	Write Variable Area	3-512
_E5xxDRT403_WriteSP	Write Set Point	3-515

E5xxDRT -001	Operation Command: _E5xxDRT001_ExeOperation

Basic function	Executes the specified operation command for a Controller on DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT001_ExeOperation10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT001_ExeOperation10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT, E5ER-DRT, and E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, the operation command specified by the *Command code* and *Related information* is executed for the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.* Refer to the manual for the Controller being used for details on command codes and related information. (See *Related manuals*.)	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller. • Unable to specify the Reset Command (command code: #06).	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, operation (RUN) is started for all channels for the Controller in the configuration. 
Related manuals	E5xR-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.7 Operation Commands (Communications/CompoWay/F) E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.7 Operation Commands

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Command code	InstructionCode	INT	&0		Refer to the pages provided in *Related Manuals* for details.
Related information	RelatedInformation	WORD	&0		Same as above.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_Error Code	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

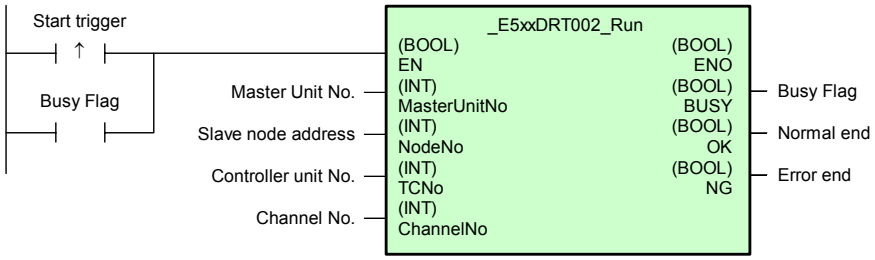
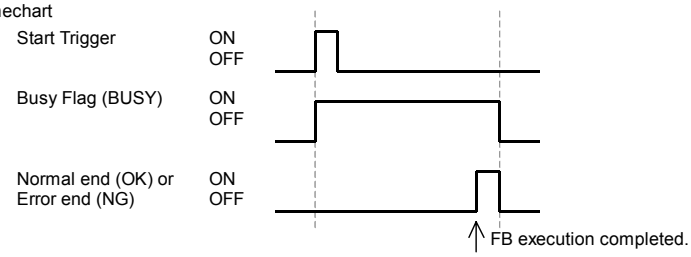
Error Code Details

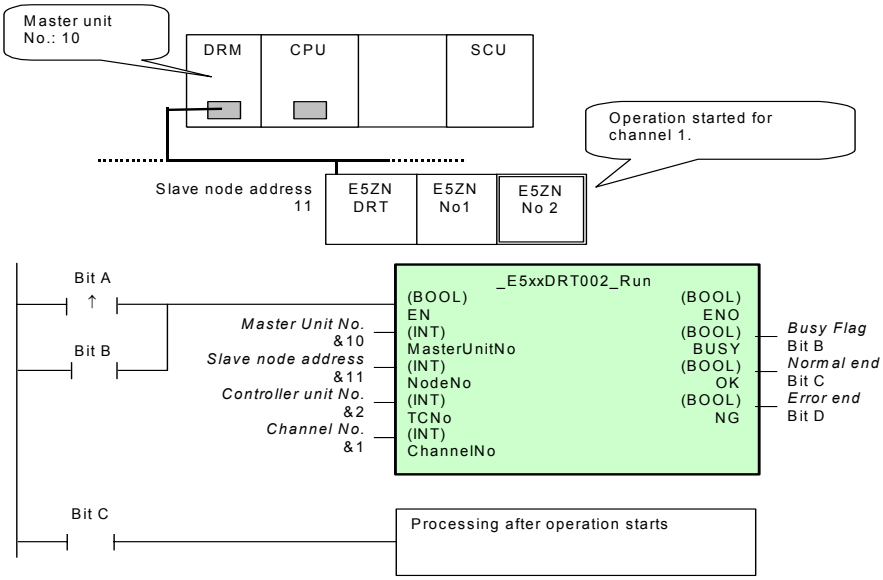
Code	Contents	Meaning
0000	Normal end	
1100	Variable setting error	• The value of the input variable is outside of specifications.
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xxDRT -002	Start Operation: _E5xxDRT002_Run

Basic function	Starts operation for a channel of a Controller on DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT002_Run10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT002_Run10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, operation is started for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, operation is started for channel 1 of the Controller with unit number 2. 
Related manuals	E5xR-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.7 Operation Commands (Communications/CompoWay/F) E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.7 Operation Commands

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Channel No.	ChannelNo	INT	&1	&1 to &2 #F	Specify the channel number. &1: Channel 1 &2: Channel 2 #F: All channels

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.
If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

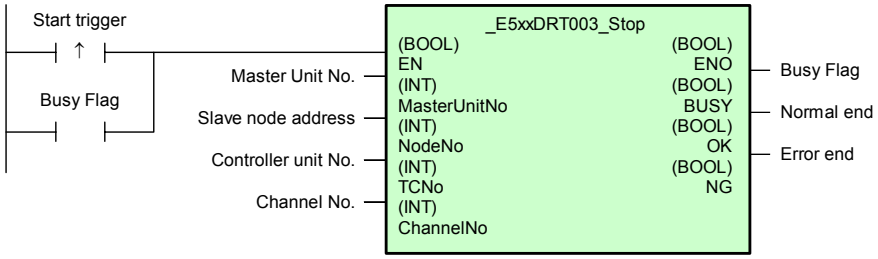
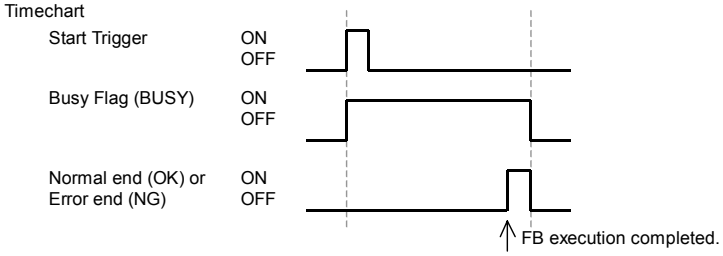
Error Code Details

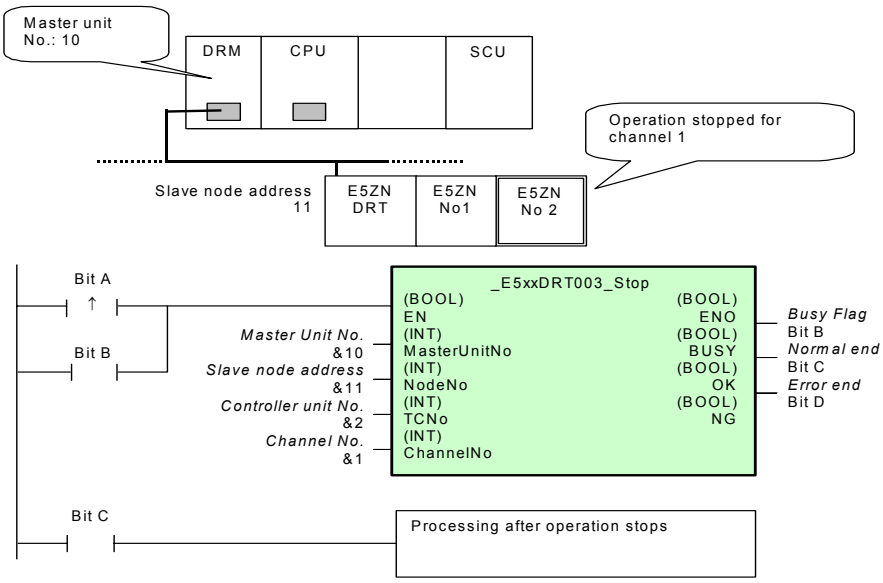
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xxDRT -003	Stop Operation: _E5xxDRT003_Stop

Basic function	Stops operation for a channel of a Controller on DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT003_Stop10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT003_Stop10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, operation is stopped for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, operation is stopped for channel 1 of the Controller with unit number 2. 
Related manuals	E5xR-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.7 Operation Commands (Communications/CompoWay/F) E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.7 Operation Commands

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Channel No.	ChannelNo	INT	&1	&1 to &2 #F	Specify the channel number. &1: Channel 1 &2: Channel 2 #F: All channels

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

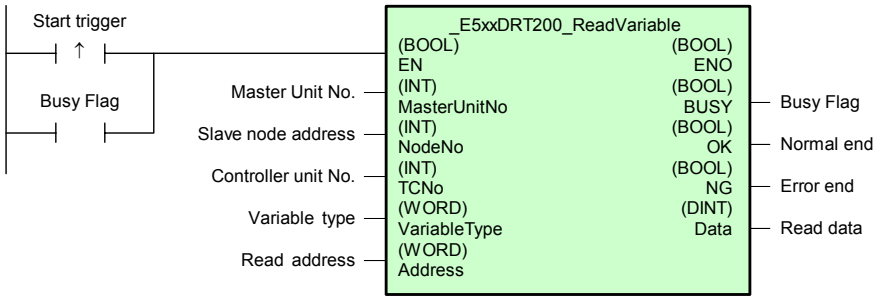
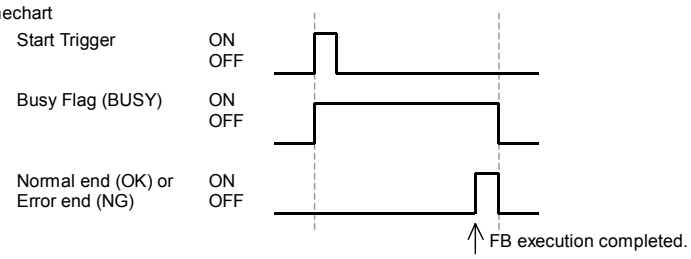
Error Code Details

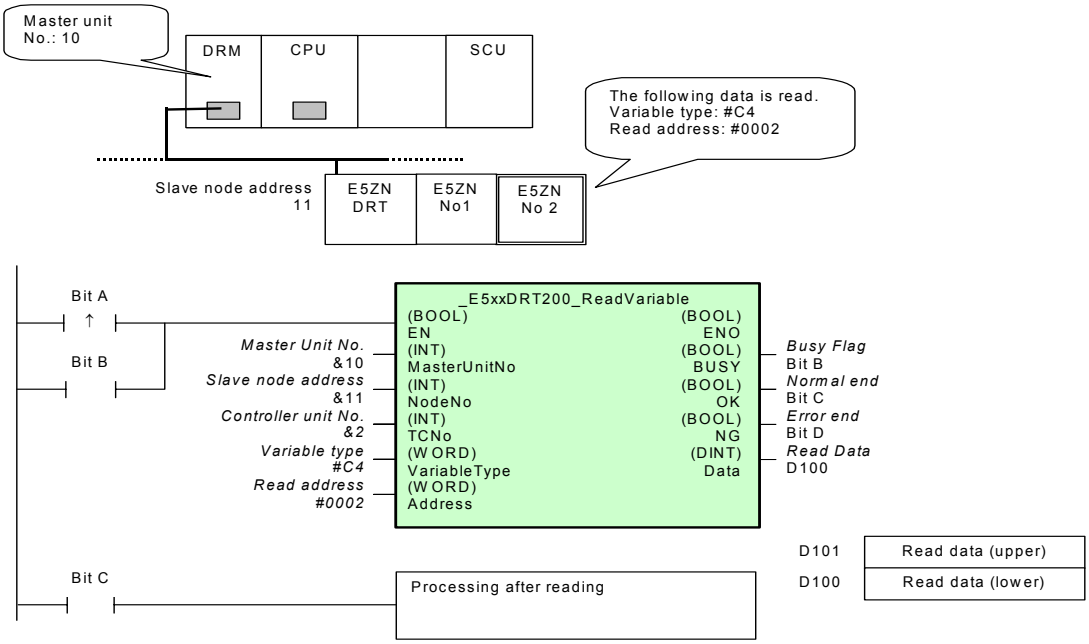
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xxDRT -200	Read Variable Area: _E5xxDRT200_ReadVariable

Basic function	Reads one element from the variable area of a Controller on DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT200_ReadVariable10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT200_ReadVariable10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, one element, a present value or set value, is read from the specified *Variable Type* and *Read Address* in the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.* Refer to the manual for the Controller being used for details on variable types and read addresses. (See *Related manuals*.)	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. The bit A turns ON, the data in the specified variable area at the specified address is stored in D100 and D101. 
Related manuals	E5AR/E5ER-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Variable type	VariableType	WORD	#0		Specify the variable type. Refer to the *Related Manuals* for details on variable types.
Read address	Address	WORD	#0		Specify the address to read. Refer to the *Related Manuals* for details on addresses.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Read data	Data	DINT		Outputs the read data. Refer to the *Related Manuals* for details on read data.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

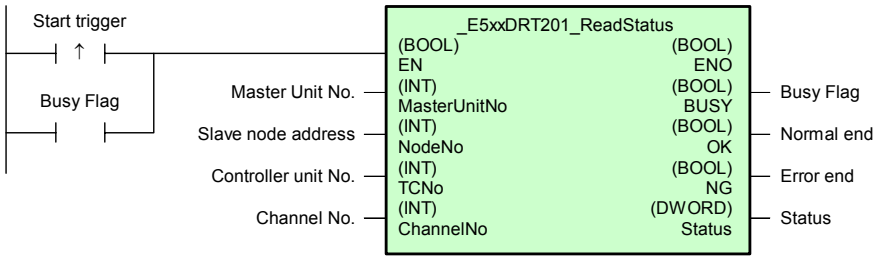
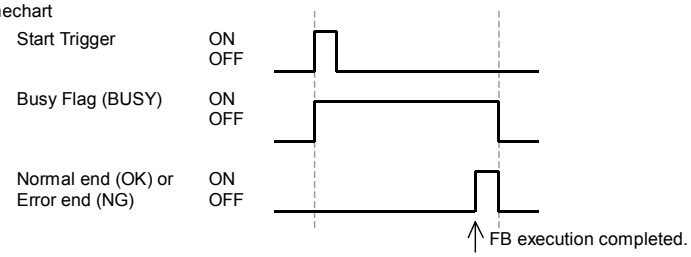
Error Code Details

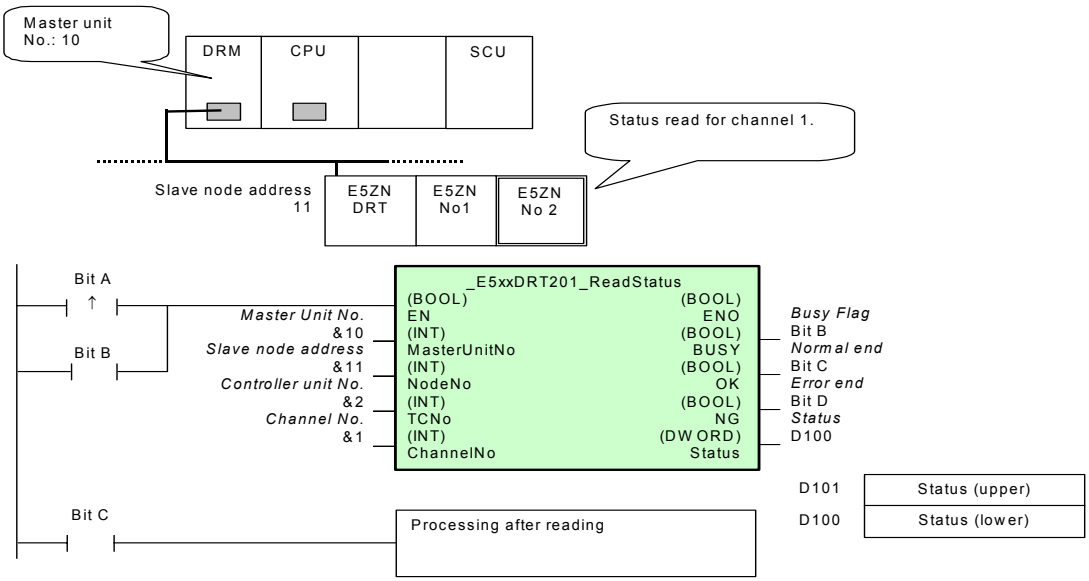
Code	Contents	Meaning
0000	Normal end	
1002	Variable setting error	• A variable area that is not supported was input.
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xxDRT -201	Read Status: _E5xxDRT201_ReadStatus

Basic function	Reads the status of the specified channel of a Controller connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT201_ReadStatus10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT201_ReadStatus10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, status is read for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, the status of channel 1 of the Controller with unit number 2 is stored in D100 and D101. 
Related manuals	E5AR/E5ER-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Channel No.	ChannelNo	INT	&1	&1 to &2	Specify the channel number. &1: Channel 1 &2: Channel 2

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Status	Status	DWORD		Refer to the *Related Manuals* for the format.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

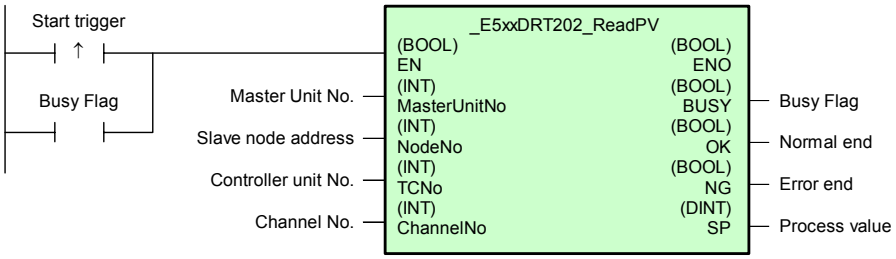
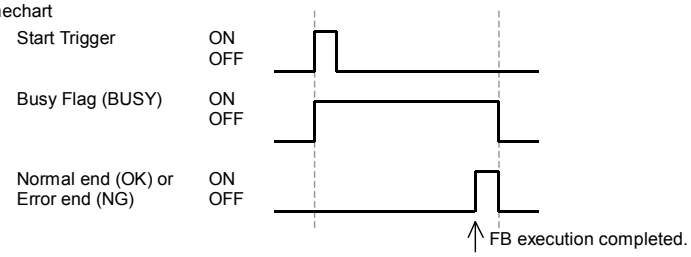
Error Code Details

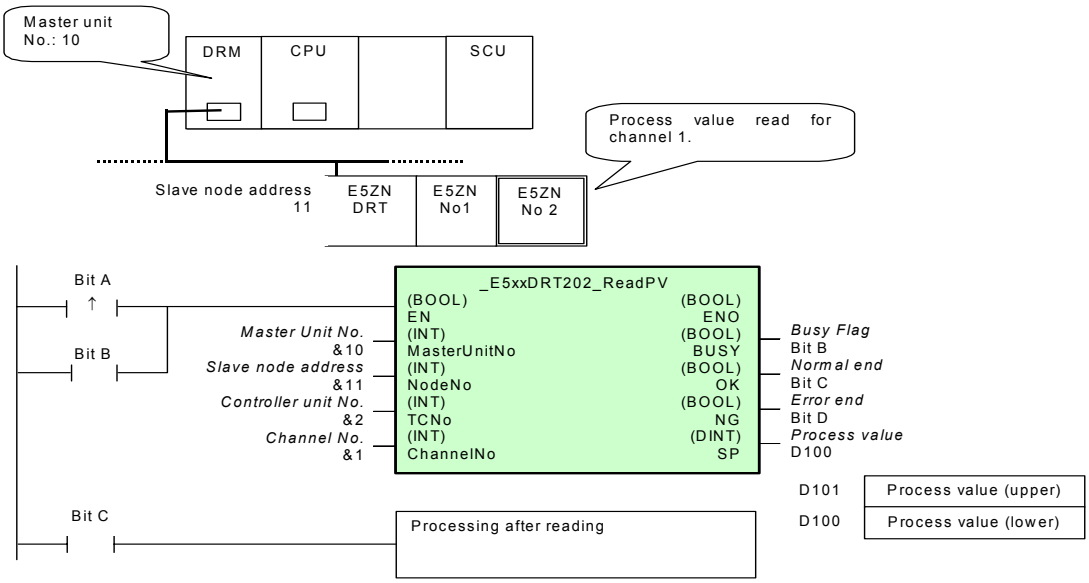
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xxDRT -202	Read Process Value: _E5xxDRT202_ReadPV

Basic function	Reads the process value of the specified channel of a Controller connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT202_ReadPV10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT202_ReadPV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, the process value is read for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, the process value of channel 1 of the Controller with unit number 2 is stored in D100 and D101. 
Related manuals	E5AR/E5ER-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Channel No.	ChannelNo	INT	&1	&1 to &2	Specify the channel number. &1: Channel 1 &2: Channel 2

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Process value	PV	DINT		The unit depends on the input type.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

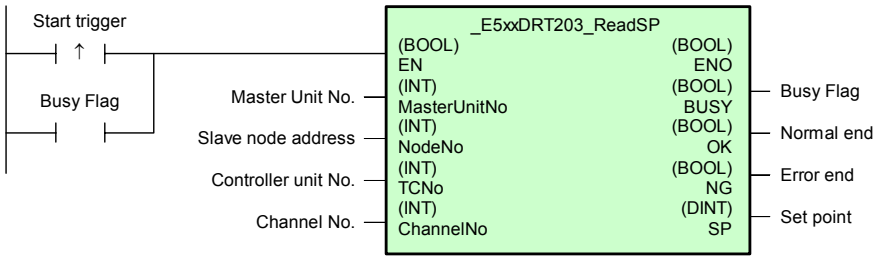
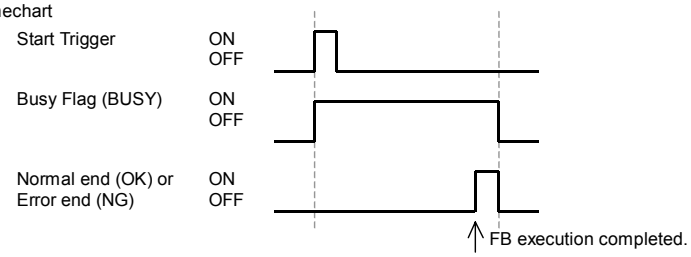
Error Code Details

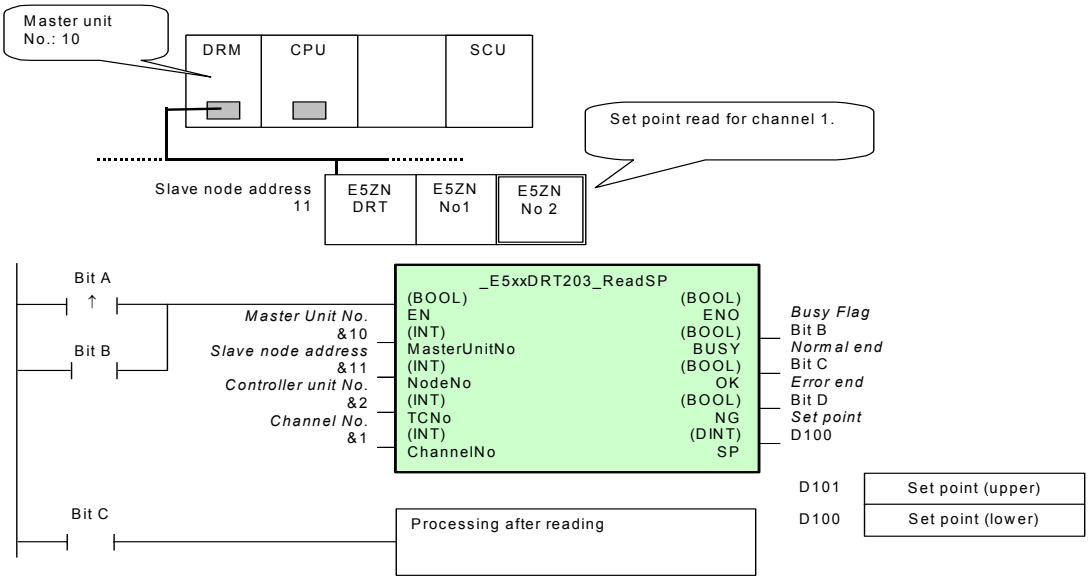
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xxDRT -203	Read Set Point: _E5xxDRT203_ReadSP

Basic function	Reads the set point of the specified channel of a Controller connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT203_ReadSP10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT203_ReadSP10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, the set point is read of the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, the set point of channel 1 of the Controller with unit number 2 is stored in D100 and D101. 
Related manuals	E5AR/E5ER-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Channel No.	ChannelNo	INT	&1	&1 to &2	Specify the channel number. &1: Channel 1 &2: Channel 2

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Set point	SP	DINT		The unit depends on the input type.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

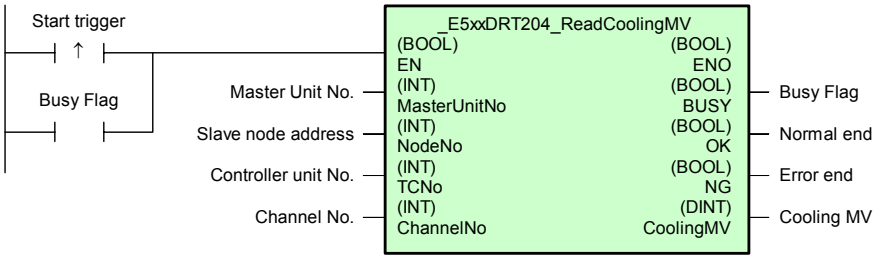
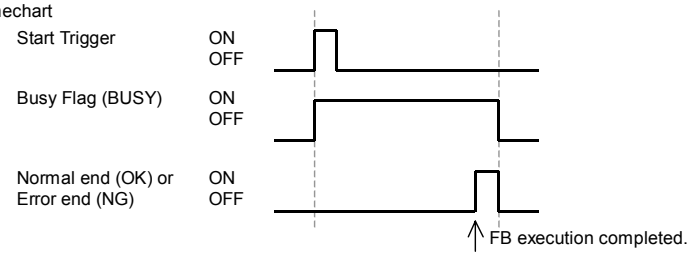
Error Code Details

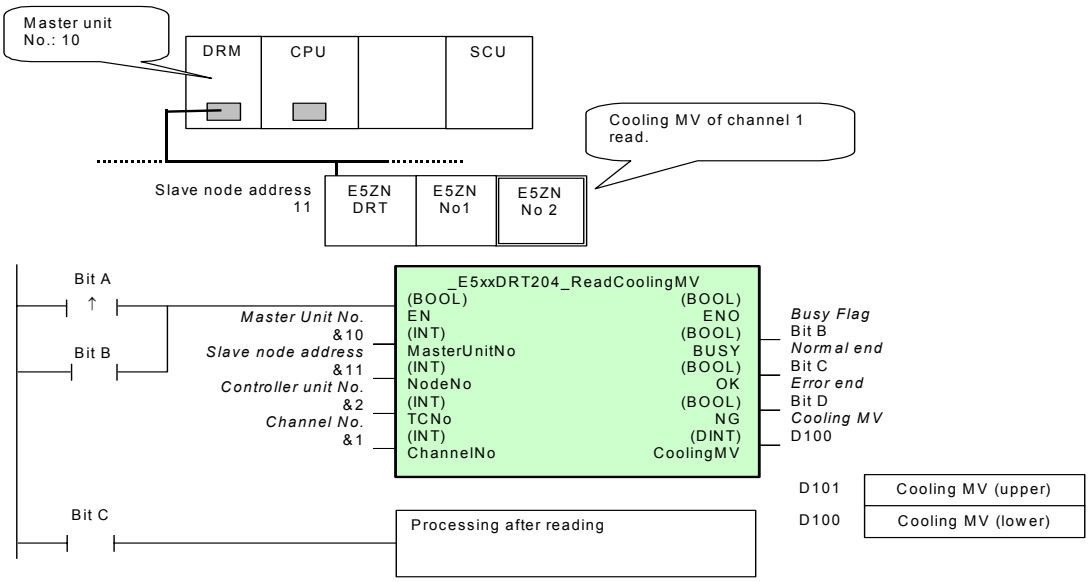
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xxDRT -204	Read Cooling MV: _E5xxDRT204_ReadCoolingMV

Basic function	Reads the cooling MV of the specified channel of a Controller connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT204_ReadCoolingMV10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT204_ReadCoolingMV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, the cooling MV is read for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, the cooling MV of channel 1 of the Controller with unit number 2 is stored in D100 and D101. 
Related manuals	E5AR/E5ER-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Channel No.	ChannelNo	INT	&1	&1 to &2	Specify the channel number. &1: Channel 1 &2: Channel 2

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Cooling MV	CoolingMV	DINT		Unit: 0.1% For example, &100 means 10.0%.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

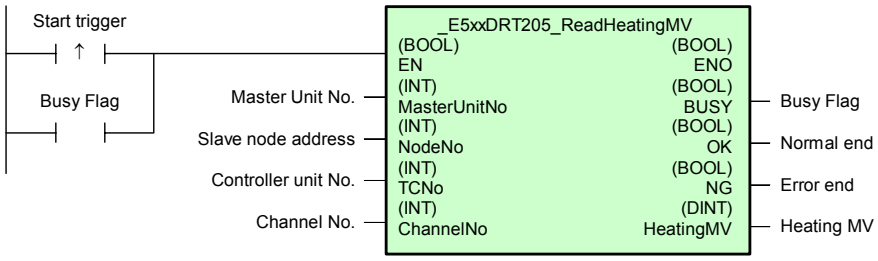
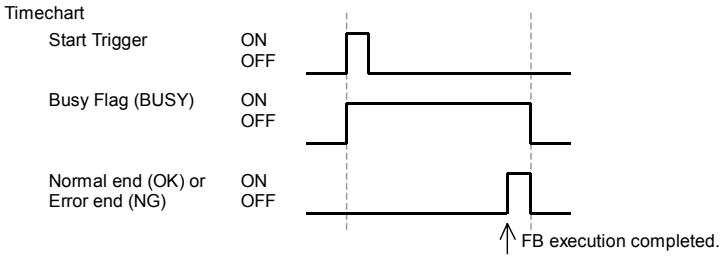
Error Code Details

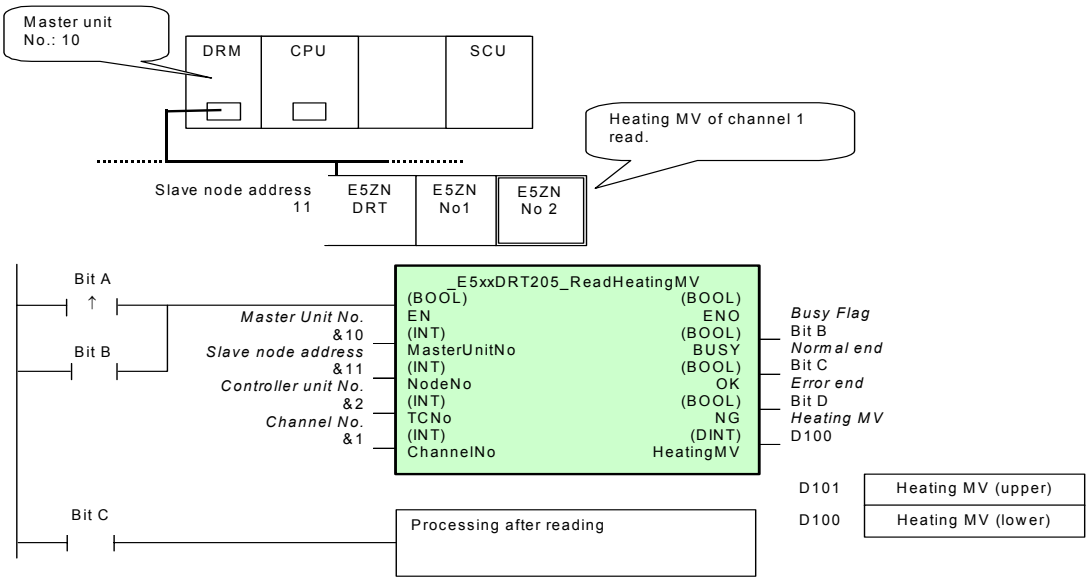
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xxDRT -205	Read Heating MV: _E5xxDRT205_ReadHeatingMV

Basic function	Reads the heating MV of the specified channel of a Controller connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT205_ReadHeatingMV10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT205_ReadHeatingMV10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, the heating MV is read for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, the heating MV of channel 1 of the Controller with unit number 2 is stored in D100 and D101. 
Related manuals	E5AR/E5ER-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.5 Reading Variable Areas and 5.10 Variable Area Map

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Channel No.	ChannelNo	INT	&1	&1 to &2	Specify the channel number. &1: Channel 1 &2: Channel 2

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Heating MV	HeatingMV	DINT		Unit: 0.1% For example, &100 means 10.0%.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

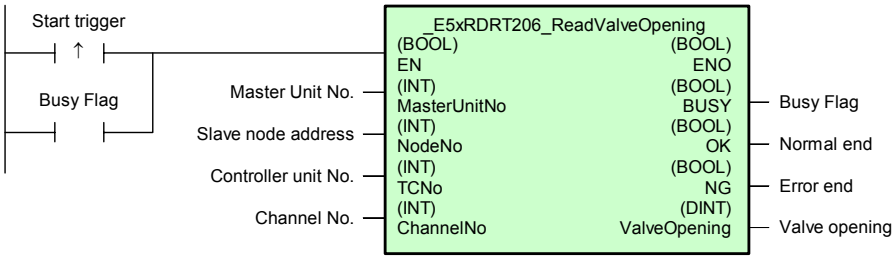
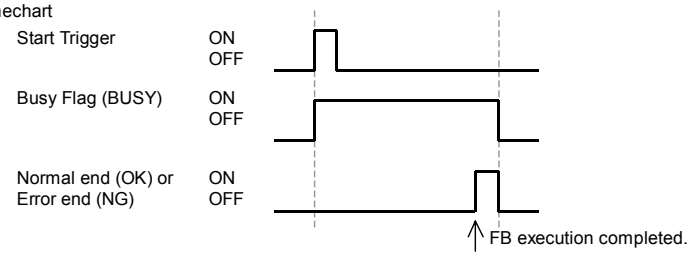
Error Code Details

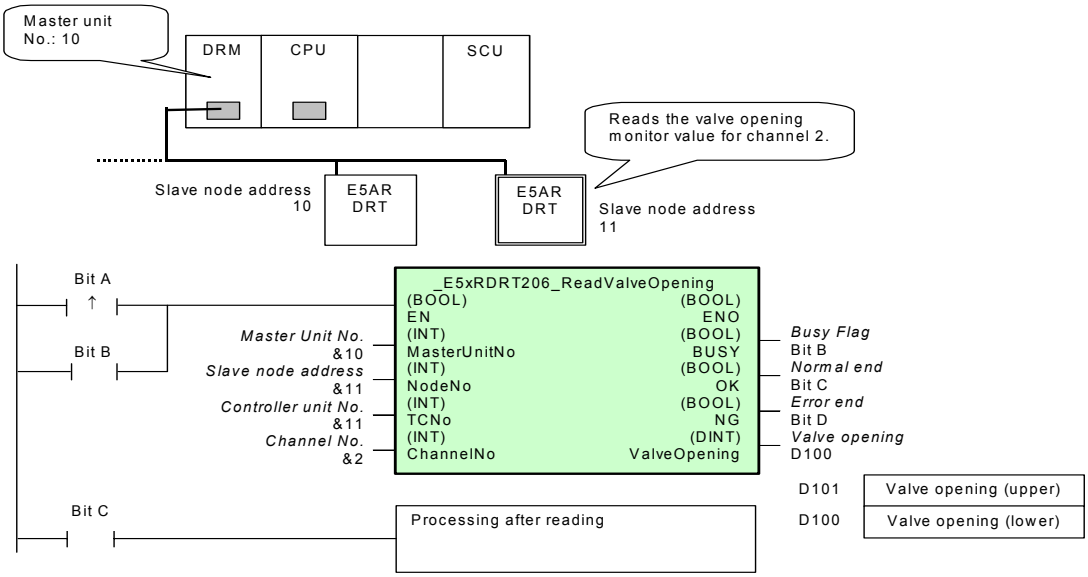
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xRDRT -206	Read Valve Opening: _E5xRDRT206_ReadValveOpening

Basic function	Reads the valve opening monitor value for the specified channel of a Controller connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xRDRT206_ReadValveOpening10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, the monitor value for the amount of value opening is read for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, the valve opening monitor value of channel 2 of the Controller is stored in D100 and D101. 
Related manuals	E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.5 Operation Commands (Communications/CompoWay/F) Appendix Setting List

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	Set the same value as for the slave node address.
Channel No.	ChannelNo	INT	&1	&1 to &4	Specify the channel number. &1: Channel 1 Etc. &4: Channel 4

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Valve opening	ValveOpening	DINT		Unit: For example, &100 means 10.0%.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

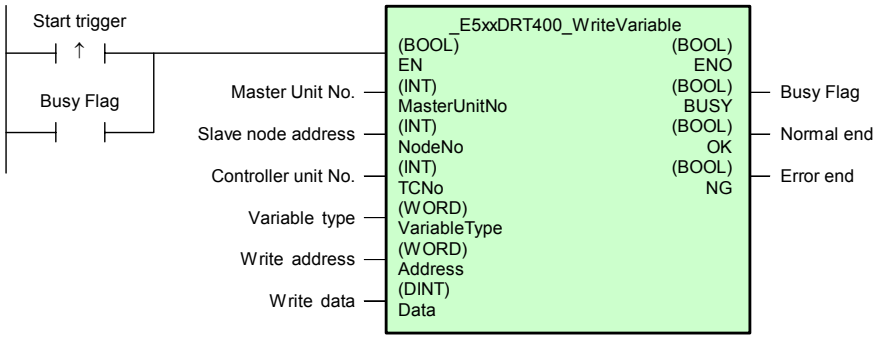
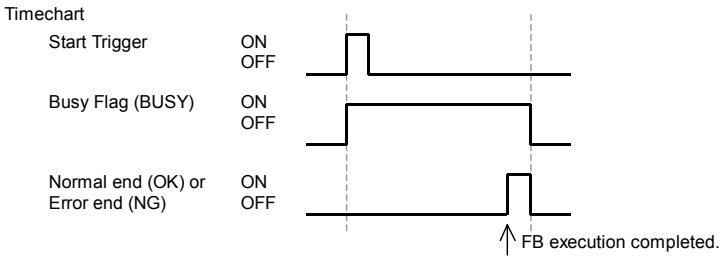
Error Code Details

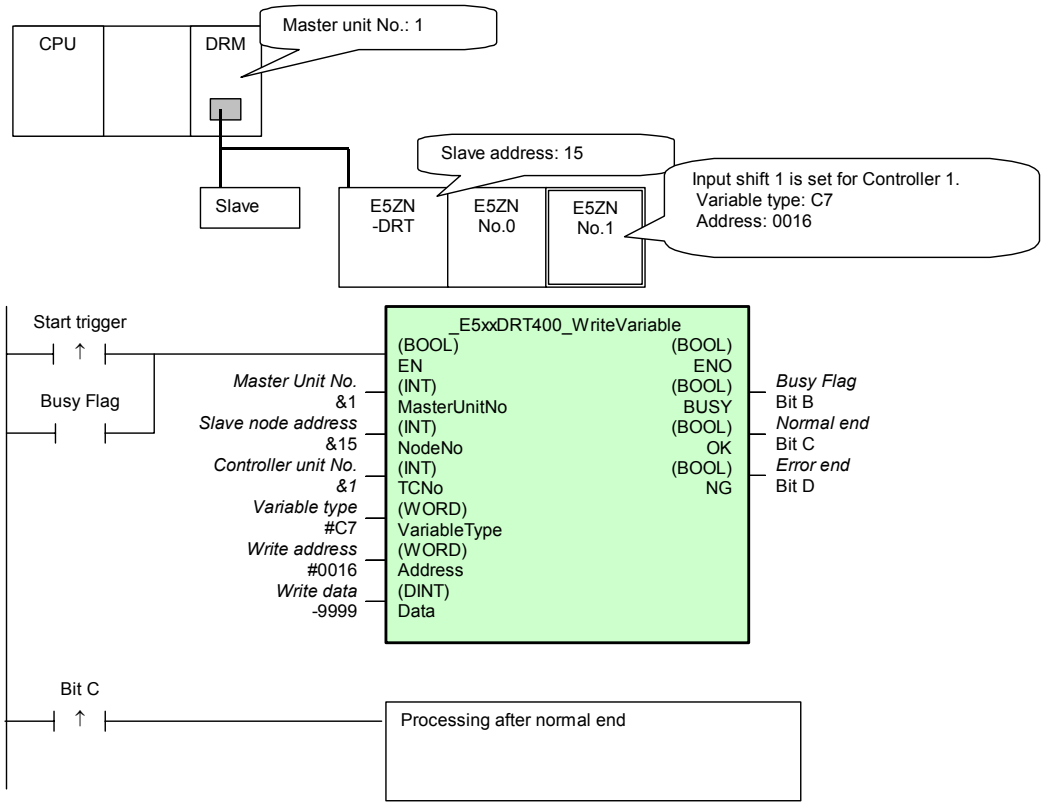
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xxDRT -400	Write Variable Area: _E5xxDRT400_WriteVariable

Basic function	Writes one element to the specified variable area of a Controller on DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT400_WriteVariable10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT400_WriteVariable10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT E5ZN-DRT
Conditions for usage	Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, one element, a present value or set value, is written to the specified *Variable Type* and *Write Address* in the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.* Refer to the manual for the Controller being used for details on variable types and read addresses. (See *Related manuals*.)	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	When bit A turns ON, the input offset value 1 is set to 99.99 for the Controller 1 in the following configuration. 
Related manuals	E5AR/E5ER-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.6 Writing Variable Areas Appendix Setting List E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.6 Writing Variable Areas and 5.10 Variable Area Map

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Variable type	VariableType	WORD	#0		Specify the variable type. Refer to the *Related Manuals* for details on variable types.
Write address	Address	WORD	#0		Specify the address to write. Refer to the *Related Manuals* for details on addresses.
Write data	Data	DINT	&0		Specify the data to write.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

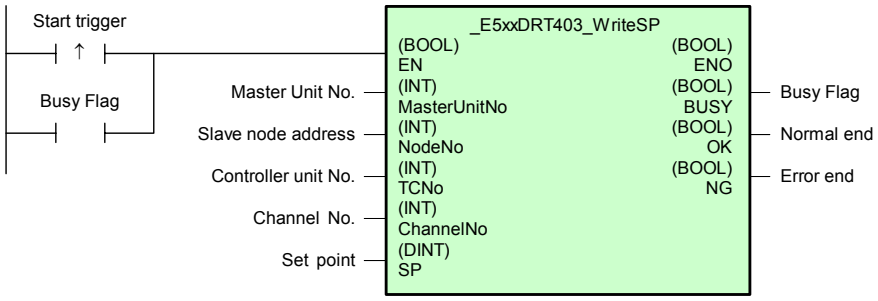
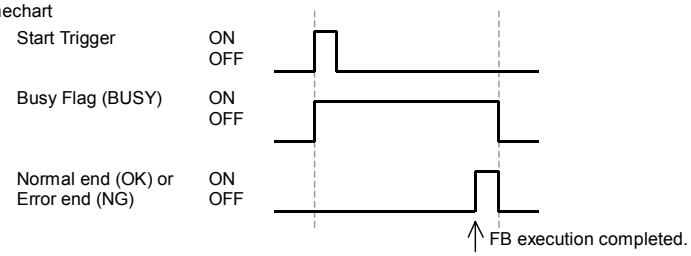
Error Code Details

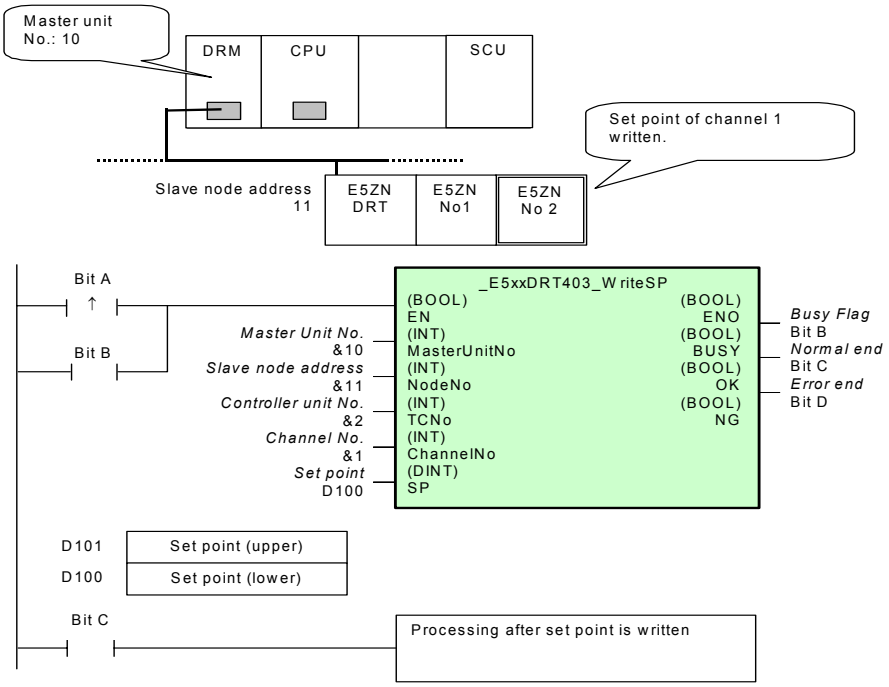
Code	Contents	Meaning
0000	Normal end	
1100	Variable setting error	• The value of the input variable is outside of specifications.
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xxDRT -403	Write Set Point: _E5xxDRT403_WriteSP

Basic function	Writes the set point of the specified channel of a Controller connected to DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xxDRT403_WriteSP10.cxf Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xxDRT403_WriteSP10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, the set point is written for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, the set point of channel 1 of the Controller with unit number 2 is set to the value in D100 and D101. 
Related manuals	E5AR/E5ER-DRT E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.6 Writing Variable Areas Appendix Setting List E5ZN-DRT DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.6 Writing Variable Areas and 5.10 Variable Area Map

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	E5AR-DRT/E5ER-DRT Set the same value as for the slave node address. E5ZN-DRT Specify the unit number of the Controller between &0 and &15 (#0 to #F).
Channel No.	ChannelNo	INT	&1	&1 to &2	Specify the channel number. &1: Channel 1 &2: Channel 2
Set point	SP	DINT	&0		Depends on the input type.

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

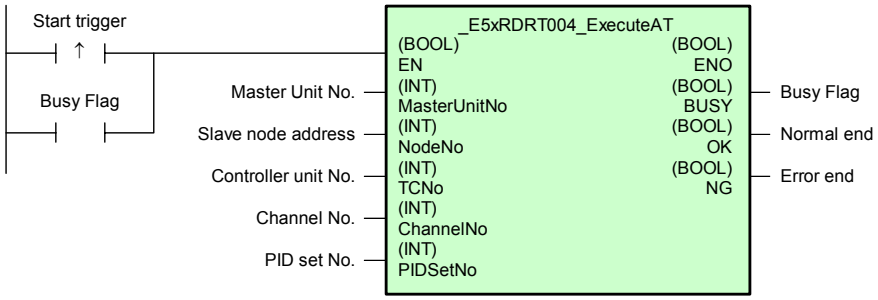
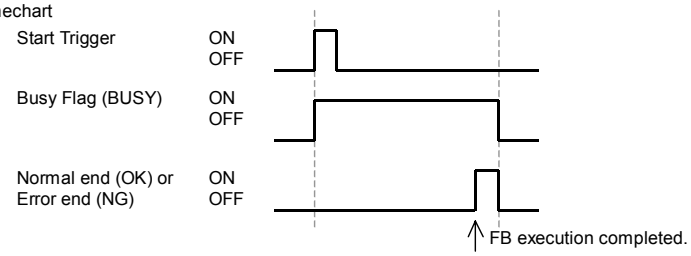
Error Code Details

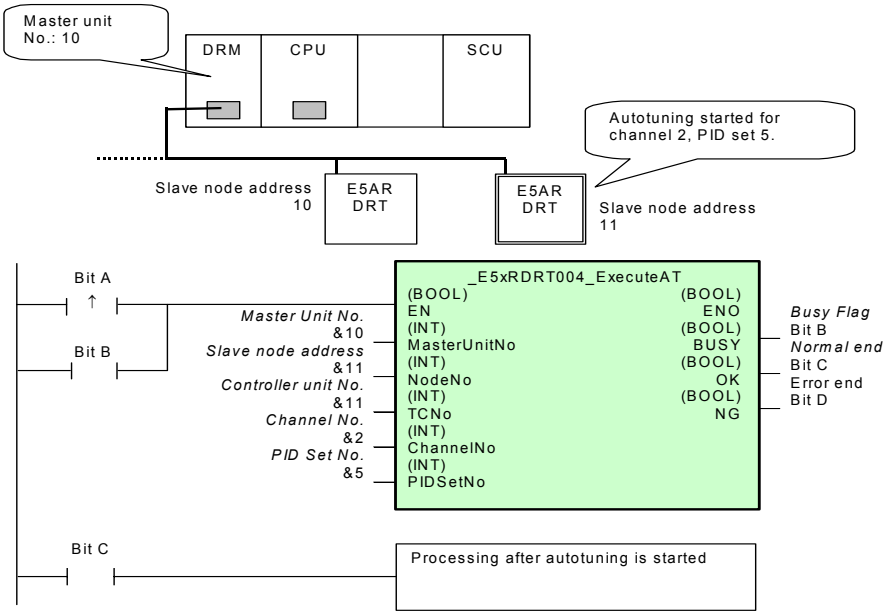
Code	Contents	Meaning
0000	Normal end	
1100	Variable setting error	• The value of the input variable is outside of specifications.
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xRDRT -004	Autotune: _E5xRDRT004_ExecuteAT

Basic function	Starts autotuning for a channel of a Controller on DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xRDRT004_ExecuteAT10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, autotuning is started for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions		
Input variables	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, autotuning is started for all channels of the Controller. 
Related manuals	E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.7 Operation Commands (Communications/CompoWay/F)
Related FBs	E5AR-DRT/E5ER-DRT Use this version of the FB. E5ZN-DRT Autotune (_E5ZNDRT004_ExecuteAT)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	Set the same value as for the slave node address.
Channel No.	ChannelNo	WORD	&1	&1 to &4 #F	Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 &F: All channels
PID set No.	PIDSetNo	INT	&1	&1 to &8	Specify the PID set number. &0: Currently selected PID set &1: PID1 Etc. &8: PID8

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

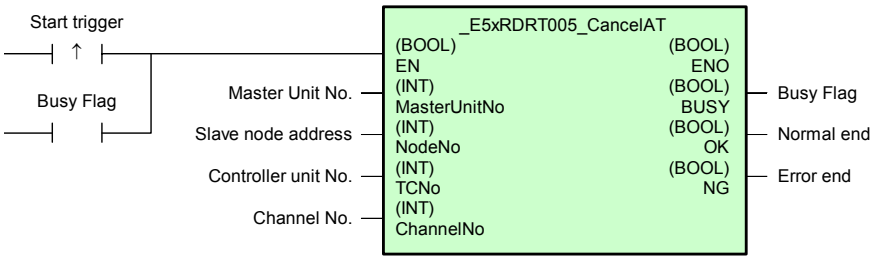
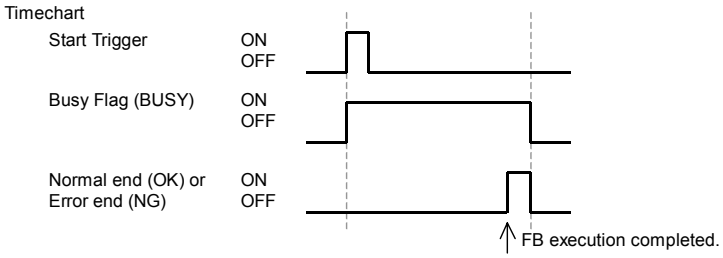
Error Code Details

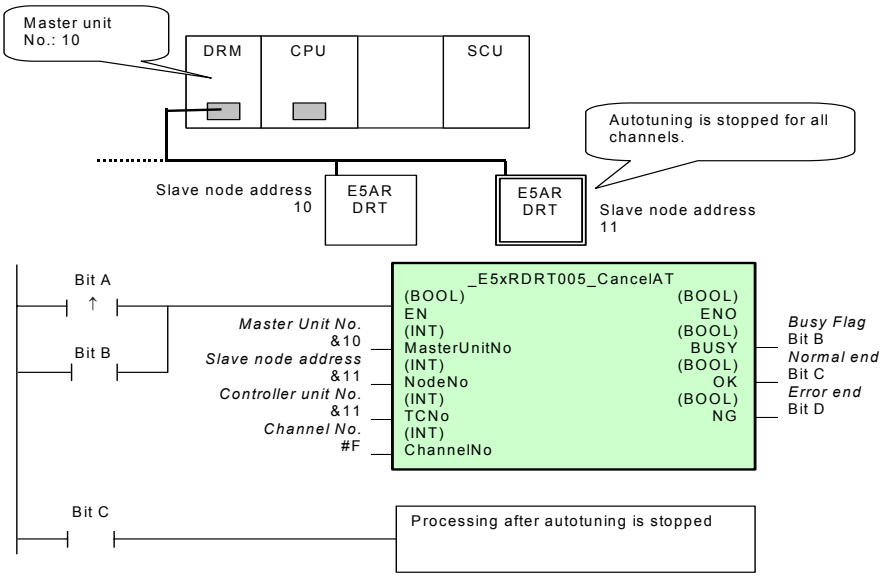
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5xRDRT -005	Stop Autotuning: _E5xRDRT005_CancelAT

Basic function	Cancels autotuning for a channel of a Controller on DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5□R\Dnet_E5xRDRT005_CancelAT10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5AR-DRT/E5ER-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, autotuning is cancelled for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, autotuning is cancelled for all channels of the Controller. 
Related manuals	E5AR/E5ER Digital Controller DeviceNet Communications User's Manual (H124) 5-2 Sending CompoWay/F Commands to the Digital Controller E5AR/E5ER Digital Controller User's Manual (Z182) 6.7 Operation Commands (Communications/CompoWay/F)
Related FBs	E5AR-DRT/E5ER-DRT Use this version of the FB. E5ZN-DRT Stop Autotuning (_E5ZNDRT005_CancelAT)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	At right.	Set the same value as for the slave node address.
Channel No.	ChannelNo	WORD	&1	&1 to &4 #F	Specify the channel number. &1: Channel 1 Etc. &4: Channel 4 #F: All channels

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

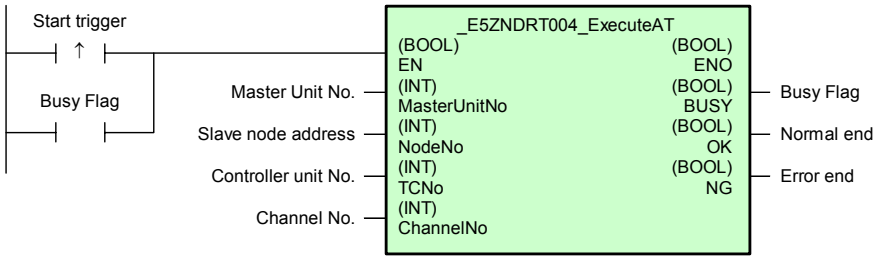
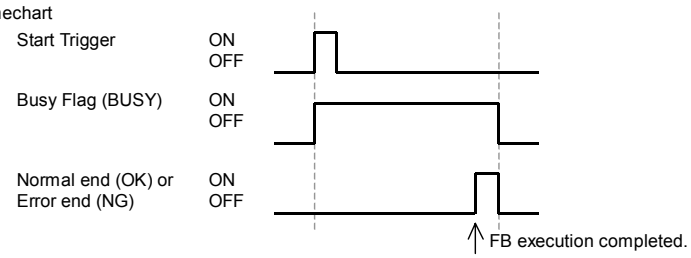
Error Code Details

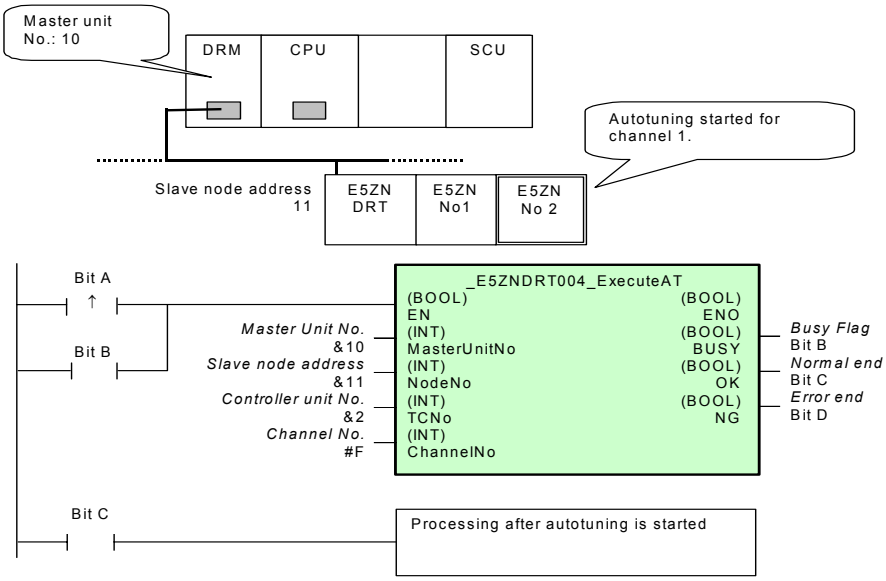
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5ZNDRT -004	Autotune: _E5ZNDRT004_ExecuteAT

Basic function	Starts autotuning for a channel of a Controller on DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5xNDRT004_ExecuteAT10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, autotuning is started for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, autotuning is started for channel 1 of the Controller with unit number 2. 
Related manuals	DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.7 Operation Commands
Related FBs	E5AR-DRT/E5ER-DRT Autotune (_E5xRDRT004_ExecuteAT) E5ZN-DRT Use this version of the FB.

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the Controller.
Channel No.	ChannelNo	INT	&1	&1 to &2 #F	Specify the channel number. &1: Channel 1 &2: Channel 2 #F: All channels

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

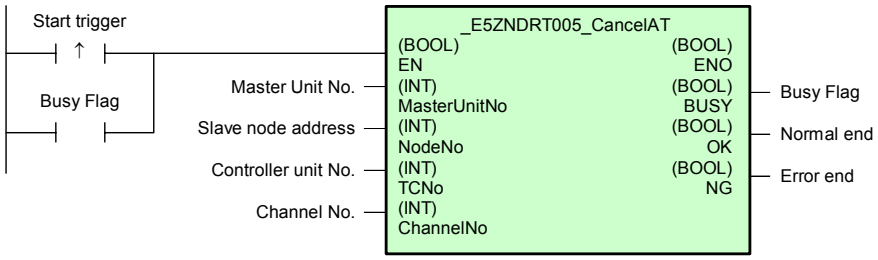
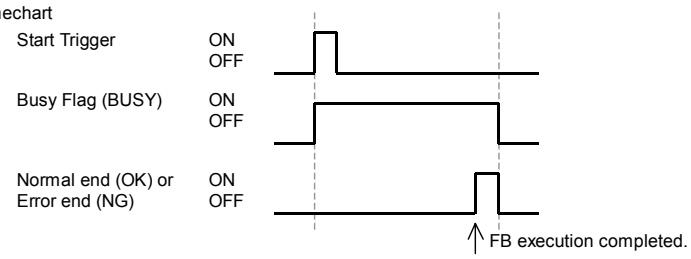
Error Code Details

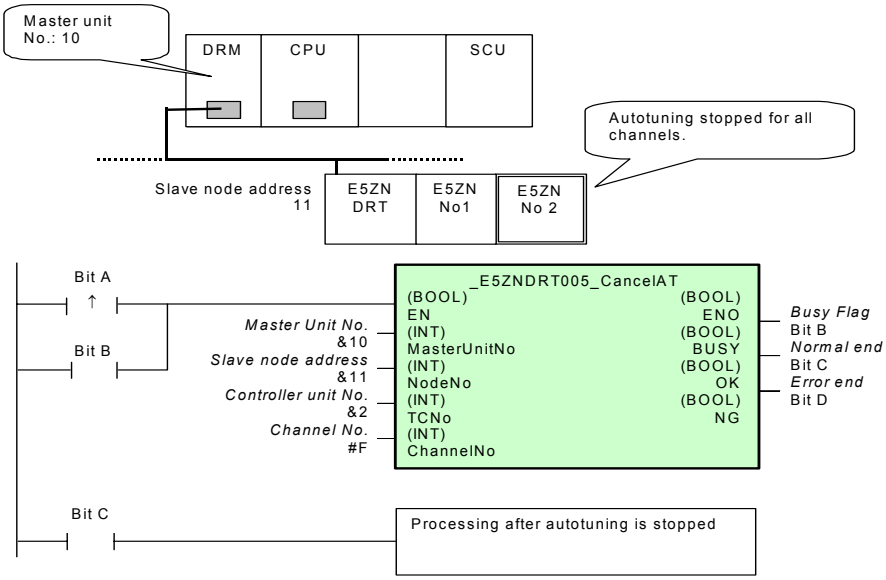
Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

E5ZNDRT -005	Stop Autotuning: _E5ZNDRT005_CancelAT

Basic function	Cancels autotuning for a channel of a Controller on DeviceNet.	
Symbol		
File name	Lib\FBL\omronlib\TemperatureController\E5ZN\Dnet_E5ZNDRT005_CancelAT10.cxf	
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E5ZN-DRT
Conditions for usage	CPU Unit Settings PLC Setup: Shared Settings for Communications Instructions in FBs • DeviceNet Response Timeout Time (default: 2 s) 10 s recommended • Number of retries (default: 0) Shared Resources • Communications ports (internal logical ports) Other • Communications must be within one network and cannot cross to another network.	
Function description	When the start trigger turns ON, autotuning is cancelled for the specified channel of the Controller on the DeviceNet specified by the *Master unit No., Slave node address,* and *Controller unit No.*	
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 	
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.	
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • The applicable ranges for input variables depend on the Controller being used. Set values that are appropriate for the Controller.	
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.	

Application example	A Controller is connected as slave 11 to a DeviceNet Unit with unit number 10. When bit A turns ON, autotuning is stopped for all channels of the Controller with unit number 2. 
Related manuals	DeviceNet Communications Unit for E5ZN Temperature Controllers Operation Manual (H119) 6-2 Sending CompoWay/F Commands to a Temperature Controller E5ZN Temperature Controller Operation Manual (H113) 5.7 Operation Commands
Related FBs	E5AR-DRT/E5ER-DRT Stop Autotuning (_E5xRDRT005_CancelAT) E5ZN-DRT Use this version of the FB.

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Controller unit No.	TCNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the Controller.
Channel No.	ChannelNo	INT	&1	&1 to &2 #F	Specify the channel number. &1: Channel 1 &2: Channel 2 #F: All channels

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
CompoWay/F error code	CompowayF_ErrorCode	WORD		Outputs the CompoWay/F error code. A code of #0000 is output for a normal end. See below for details on errors.

Error Code Details

Code	Contents	Meaning
0000	Normal end	
2203	Operation error	• Writing via communications is prohibited. • An attempt was made to write protect level setting data from outside of protect level. • Autotuning is being executed. • Calibration is being executed. • Unit error, unit change, display unit error, or internal non-volatile memory error

■ **Version History**

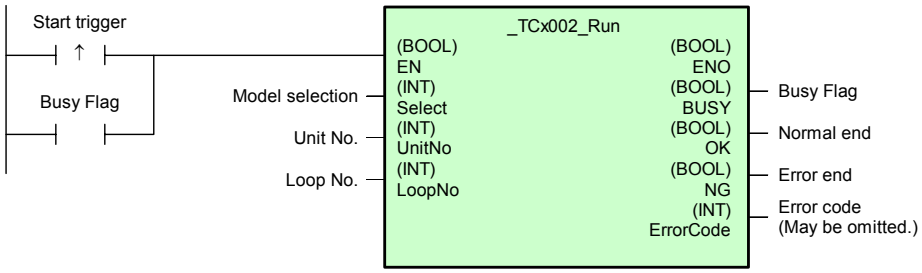
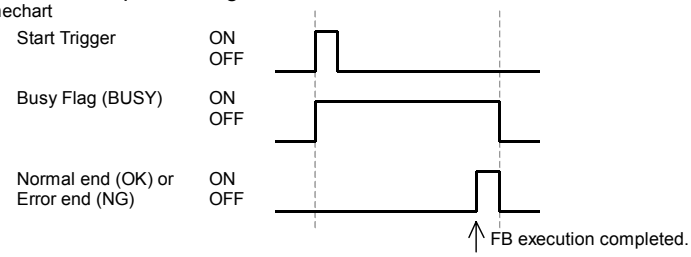
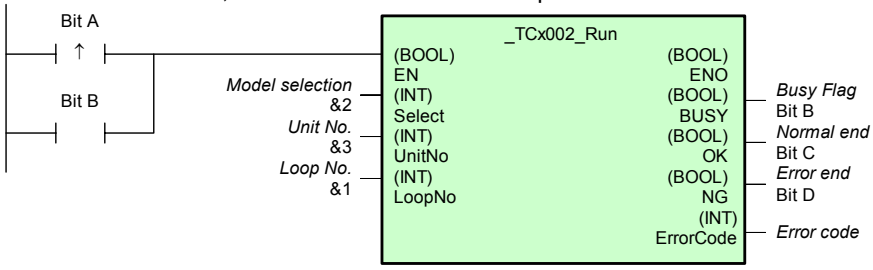
Version	Date	Contents
1.00	2004.6.	Original production

3-16 Temperature Controller (Unit)

CJ1W-TC series

FB Name	Function	Page
_TCx002_Run	Start Control	3-531
_TCx003_Stop	Stop Control	3-533
_TCx004_ExecuteAT	Autotune	3-535
_TCx005_CancelAT	Cancel Autotuning	3-537
_TCx201_ReadStatus	Read Status	3-539
_TCx202_ReadPV	Read Process Value	3-540
_TCx203_ReadSP	Read Set Point	3-542
_TCx403_WriteSP	Write Set Point	3-544

TCx -002	Start Control: _TCx002_Run

Basic function	Starts control for the specified loop.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\TC_TCx002_Run10.cxf
Applicable Units	CJ1W-TC0x0 Temperature Control Unit
Conditions for usage	Temperature Control Unit Settings • The operation of the Temperature Control Unit when CPU Unit is in PROGRAM mode (pin 1 on the DIP switch) must be set to continue operation (ON).
Function description	Control is started for the specified loop for the Temperature Control Unit specified by the Model Selection and Unit No.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON, control is started for the Temperature Control Unit with unit number 3. 
Related manuals	Temperature Control Unit Operation Manual (W396) 3-12 Starting and Starting Temperature Control 5-1 Error and Alarm Processing
Related FBs	Stop Control (_TCx003_Stop)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Model selection	Select	INT	&2	&2, &4	&2: Two-loop Unit &4: Four-loop Unit
Unit No.	UnitNo	INT	&0	&0 to &94	
Loop No.	LoopNo	INT	&1	&1 to &4	The number of loops depends on the Unit.

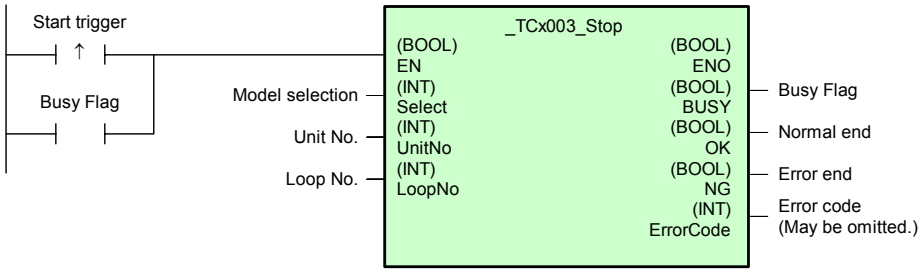
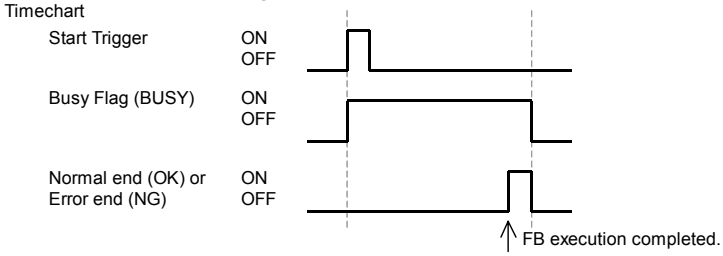
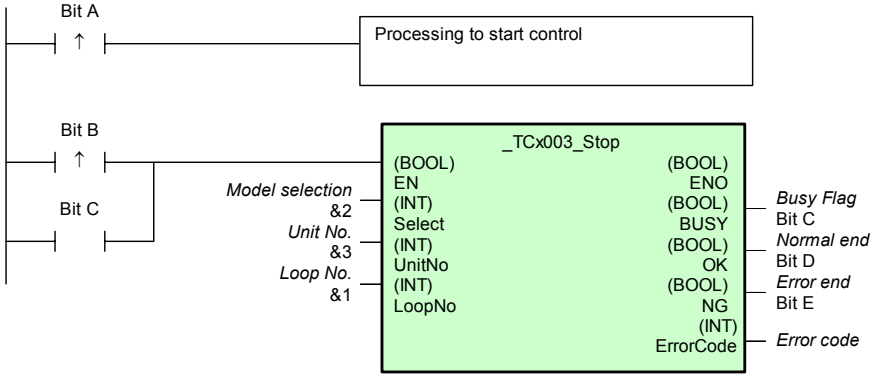
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	INT		Outputs the error code. &0: Normal end &1: Sensor error &2: CT overflow &3: Heater burnout &4: Setting error, alarm mode 1 &6: Setting error, alarm mode 2 &7: Setting error, alarm 1 hysteresis &8: Setting error, alarm 2 hysteresis &9: Setting error, set point &10: Setting error, alarm 1 set value &11: Setting error, alarm 2 set value &12: Setting error, input compensation &13: Setting error, control period &14: Setting error, control sensitivity &15: Setting error, proportional band &16: Setting error, integral time &17: Setting error, derivative time &18: Setting error, heater burnout set value Refer to the *Related Manuals* for details on errors. Temperature Control Unit Operation Manual (W396), 5-1 Error and Alarm Processing

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

TCx -003	Stop Control: _TCx003_Stop

Basic function	Stops control for the specified loop.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\TC_TCx003_Stop10.cxf
Applicable Units	CJ1W-TC0x0 Temperature Control Unit
Conditions for usage	Temperature Control Unit Settings • The operation of the Temperature Control Unit when CPU Unit is in PROGRAM mode (pin 1 on the DIP switch) must be set to continue operation (ON).
Function description	Control is stopped for the specified loop for the Temperature Control Unit specified by the Model Selection and Unit No.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit B turns ON, control is stopped for the Temperature Control Unit with unit number 3. 
Related manuals	Temperature Control Unit Operation Manual (W396) 3-12 Starting and Starting Temperature Control 5-1 Error and Alarm Processing
Related FBs	Start Control (_TCx002_Run)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Model selection	Select	INT	&2	&2, &4	&2: Two-loop Unit &4: Four-loop Unit
Unit No.	UnitNo	INT	&0	&0 to &94	
Loop No.	LoopNo	INT	&1	&1 to &4	The number of loops depends on the Unit.

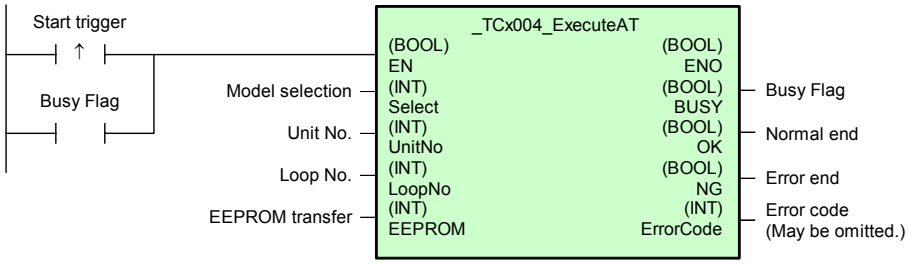
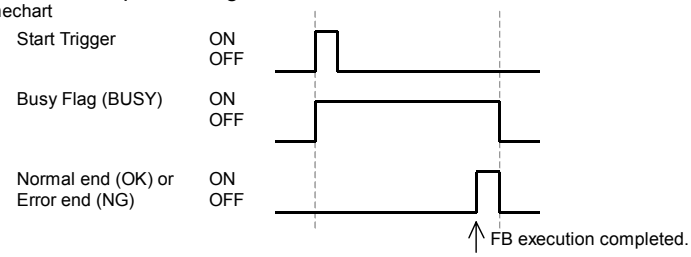
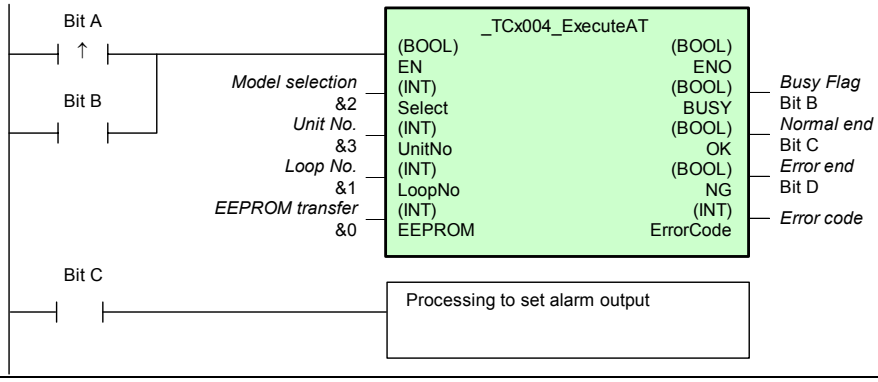
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	INT		Outputs the error code. &0: Normal end &1: Sensor error &2: CT overflow &3: Heater burnout &4: Setting error, alarm mode 1 &6: Setting error, alarm mode 2 &7: Setting error, alarm 1 hysteresis &8: Setting error, alarm 2 hysteresis &9: Setting error, set point &10: Setting error, alarm 1 set value &11: Setting error, alarm 2 set value &12: Setting error, input compensation &13: Setting error, control period &14: Setting error, control sensitivity &15: Setting error, proportional band &16: Setting error, integral time &17: Setting error, derivative time &18: Setting error, heater burnout set value Refer to the *Related Manuals* for details on errors. Temperature Control Unit Operation Manual (W396), 5-1 Error and Alarm Processing

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

TCx -004	Autotune: _TCx004_ExecuteAT

Basic function	Executes autotuning for the specified loop.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\TC_TCx004_ExecuteAT 10.cxf
Applicable Units	CJ1W-TC0x0 Temperature Control Units
Conditions for usage	Temperature Control Unit Settings • The meaning of the data depends on the setting of the data format on pin 3 of the DIP switch. • The control method of the Temperature Control Unit (pin 6 on the DIP switch) must be set to PID control (OFF). • This FB cannot be executed when operation is stopped or during ON/OFF control.
Function description	Autotuning is executed for the specified loop for the Temperature Control Unit specified by the Model Selection and Unit No. When this FB is executed, optimum PID constants for the current set point will be automatically calculated and written to the output area. The calculated PID constants will also be transferred to EEPROM.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit A turns ON, autotuning is performed for the Temperature Control Unit with unit number 3. 
Related manuals	Temperature Control Unit Operation Manual (W396) 3-9 Setting the PID Constants 5-1 Error and Alarm Processing
Related FBs	Cancel Autotuning (_TCx005_CancelAT)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Model selection	Select	INT	&2	&2, &4	&2: Two-loop Unit &4: Four-loop Unit
Unit No.	UnitNo	INT	&0	&0 to &94	
Loop No.	LoopNo	INT	&1	&1 to &4	The number of loops depends on the Unit.
EEPROM transfer	EEPROM	INT	&0	&0 to &1	Specify whether to transfer the calculated PID constants to EEPROM. &0: Do not transfer. (See note 1.) &1: Transfer. (See note 2.) Note 1: The “Transfer settings in EEPROM” setting (pin 8 of the DIP switch) must be set to not transfer (OFF). Note 2: The “Transfer settings in EEPROM” setting (pin 8 of the DIP switch) must be set to transfer (ON).

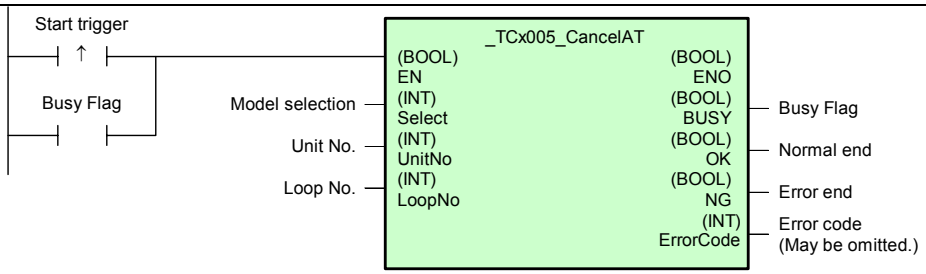
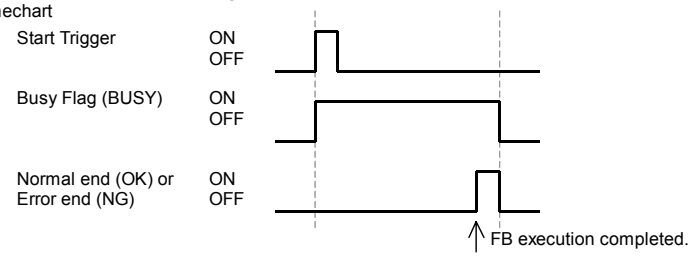
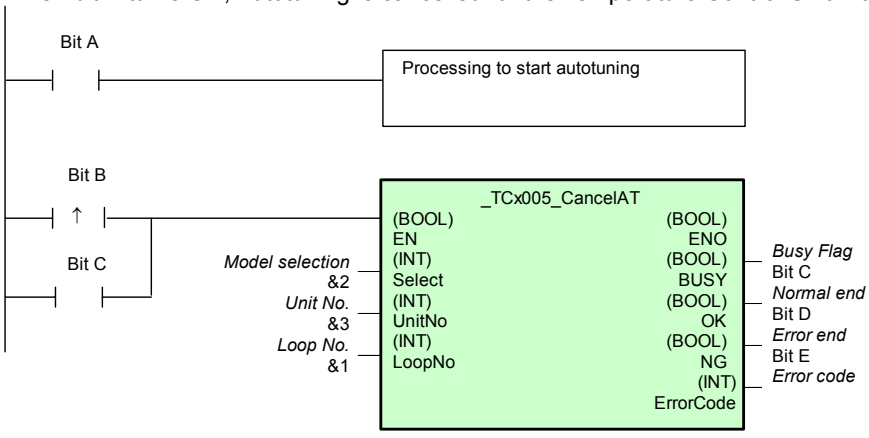
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	INT		Outputs the error code. &0: Normal end &1: Sensor error &2: CT overflow &3: Heater burnout &4: Setting error, alarm mode 1 &5: Setting error, alarm mode 2 &6: Setting error, alarm 1 hysteresis &7: Setting error, alarm 2 hysteresis &8: Setting error, set point &9: Setting error, alarm 1 set value &10: Setting error, alarm 2 set value &11: Setting error, input compensation &12: Setting error, control period &13: Setting error, control sensitivity &14: Setting error, proportional band &15: Setting error, integral time &16: Setting error, derivative time &17: Setting error, heater burnout set value &18: Status error, autotuning stopped &19: Status error, control stopped &20: Status error, PID constants changed &21: Status error, PID constants compensated &22: Status error, autotuning being executed Refer to the *Related Manuals* for details on errors. Temperature Control Unit Operation Manual (W396), 5-1 Error and Alarm Processing

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

TCx -005	Cancel Autotuning (_TCx005_CancelAT)

Basic function	Cancels autotuning for the specified loop.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\TC_TCx005_CancelAT 10.cxf
Applicable Units	CJ1W-TC0x0 Temperature Control Units
Conditions for usage	Temperature Control Unit Settings • The meaning of the data depends on the setting of the data format on pin 3 of the DIP switch. • The control method of the Temperature Control Unit (pin 6 on the DIP switch) must be set to PID control (OFF).
Function description	Autotuning is cancelled for the specified loop for the Temperature Control Unit specified by the Model Selection and Unit No.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NG will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. Timechart 
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions **Input variables**	• Always use an upwardly differentiated condition for EN.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Application example	When bit B turns ON, Autotuning is cancelled for the Temperature Control Unit with unit number 3. 
Related manuals	Temperature Control Unit Operation Manual (W396) 3-9 Setting the PID Constants 5-1 Error and Alarm Processing
Related FBs	Autotune (_TCx004_ExecutelAT)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Model selection	Select	INT	&2	&2, &4	&2: Two-loop Unit &4: Four-loop Unit
Unit No.	UnitNo	INT	&0	&0 to &94	
Loop No.	LoopNo	INT	&1	&1 to &4	The number of loops depends on the Unit.

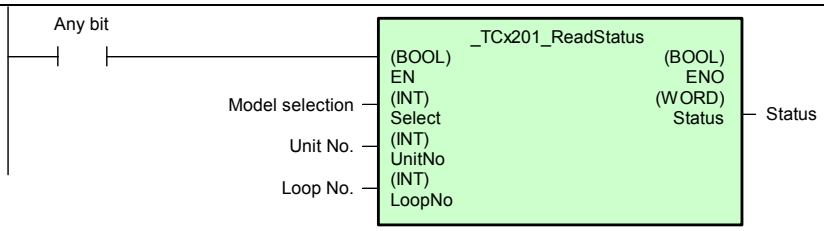
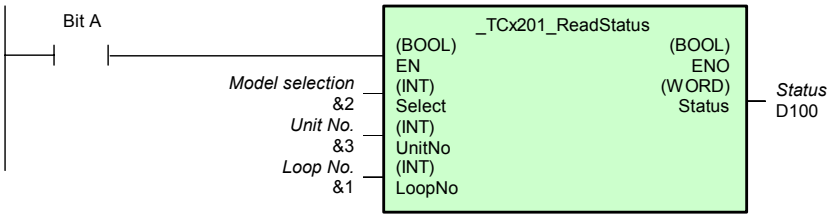
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.
Error code (May be omitted.)	ErrorCode	INT		Outputs the error code. &0: Normal end &1: Sensor error &2: CT overflow &3: Heater burnout &4: Setting error, alarm mode 1 &5: Setting error, alarm mode 2 &6: Setting error, alarm 1 hysteresis &7: Setting error, alarm 2 hysteresis &8: Setting error, set point &9: Setting error, alarm 1 set value &10: Setting error, alarm 2 set value &11: Setting error, input compensation &12: Setting error, control period &13: Setting error, control sensitivity &14: Setting error, proportional band &15: Setting error, integral time &16: Setting error, derivative time &17: Setting error, heater burnout set value &18: Status error, autotuning stopped &19: Status error, control stopped &20: Status error, PID constants changed &21: Status error, PID constants compensated &22: Status error, autotuning being execute Refer to the *Related Manuals* for details on errors. Temperature Control Unit Operation Manual (W396), 5-1 Error and Alarm Processing

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

TCx -201	Read Status: _TCx201_ReadStatus

Basic function	Reads the status of the specified loop.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\TC_TCx201_ReadStatus10.cxf
Applicable Units	CJ1W-TC0x0 Temperature Control Units
Conditions for usage	Temperature Control Unit Settings • The meaning of the data depends on the setting of the data format on pin 3 of the DIP switch.
Function description	Status is read for the specified loop for the Temperature Control Unit specified by the Model Selection and Unit No.
EN input condition	Any bit can be specified.
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When bit A turns ON, the set point of loop 1 of the Temperature Control Unit with unit number 3 is output to D100. 

■ Variable Tables

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Model selection	Select	INT	&2	&2, &4	&2: Two-loop Unit &4: Four-loop Unit
Unit No.	UnitNo	INT	&0	&0 to &94	
Loop No.	LoopNo	INT	&1	&1 to &4	The number of loops depends on the Unit.

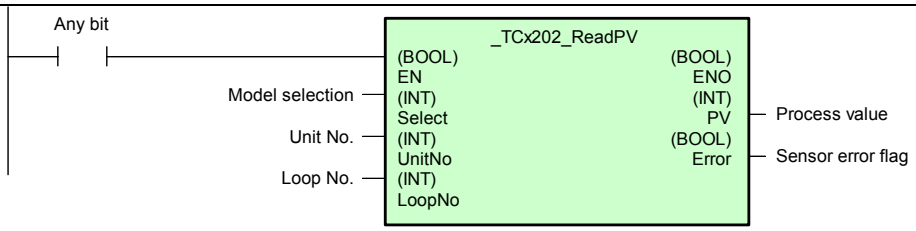
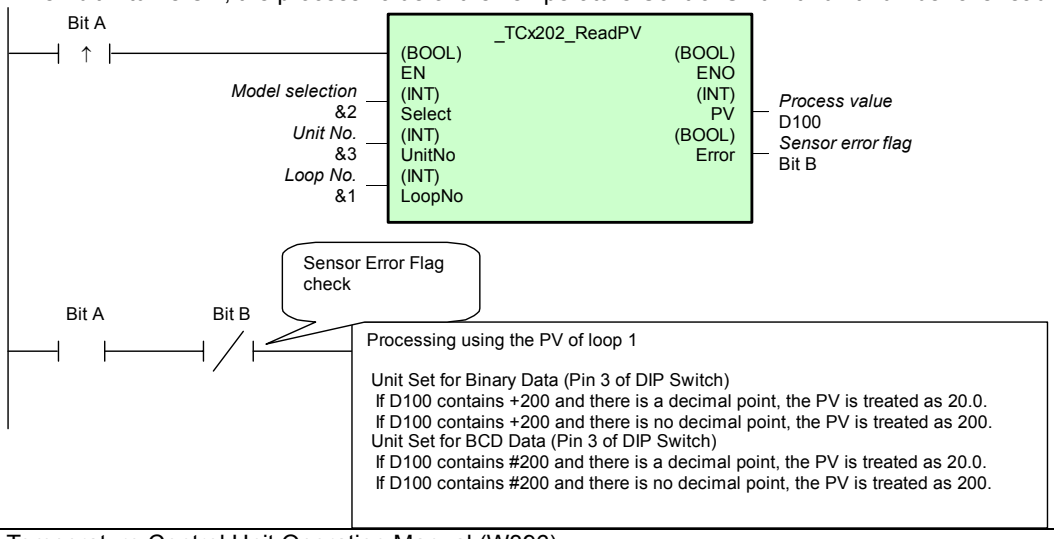
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Status	Status	WORD		Refer to *2-5-4 Operation Data* in *Temperature Control Unit Operation Manual* (W396) for the status format.

■ Version History

Version	Date	Contents
1.00	2004.6.	Original production

TCx -202	Read Process Value _TCx202_ReadPV

Basic function	Reads a process value (PV).
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\TC_TCx202_ReadPV10.cxf
Applicable Units	CJ1W-TC0x0 Temperature Control Unit
Conditions for usage	Temperature Control Unit Settings • The meaning of the data depends on the setting of the data format on pin 3 of the DIP switch.
Function description	The process value of the specified loop is read for the Temperature Control Unit specified by the Model Selection and Unit No. A flag is turned ON if a sensor error has occurred. This FB reads with process value without considering if there is a decimal point.
EN input condition	Any bit can be specified.
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When bit A turns ON, the process value of the Temperature Control Unit with unit number 3 is read. 
Related manuals	Temperature Control Unit Operation Manual (W396) 2-1-3 Input Specifications

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Model selection	Select	INT	&2	&2, &4	&2: Two-loop Unit &4: Four-loop Unit
Unit No.	UnitNo	INT	&0	&0 to &94	
Loop No.	LoopNo	INT	&1	&1 to &4	The number of loops depends on the Unit.

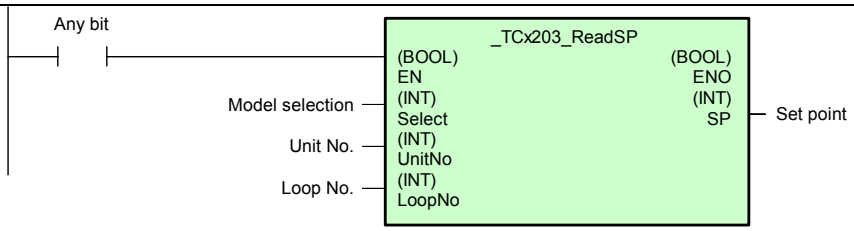
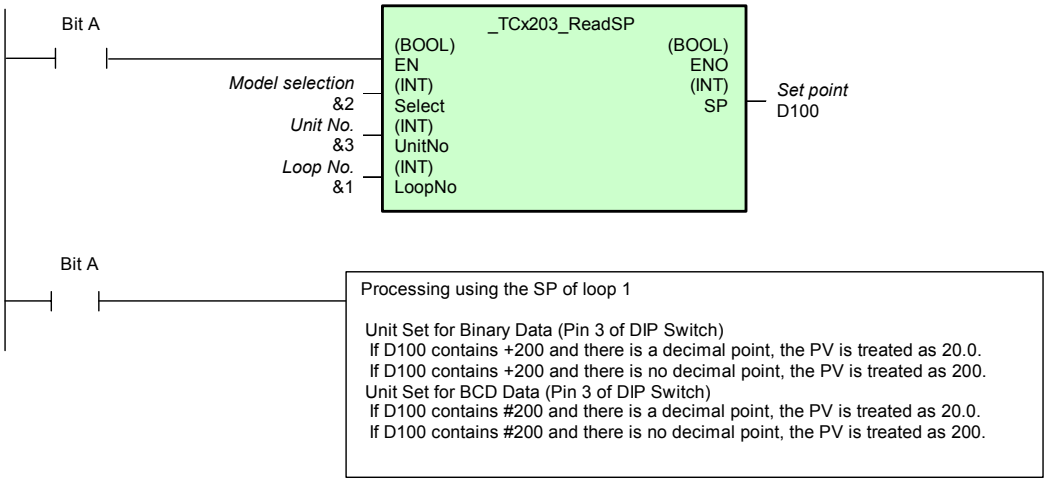
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Process value	PV	INT		If there is a sensor error, 16#CCCC will be output.
Sensor error flag	Error	BOOL		Turns ON if there is a sensor error.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

TCx -203	Read Set Point: _TCx203_ReadSP

Basic function	Reads the set point (SP) of the specified loop.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\TC_TCx203_ReadSP10.cxf
Applicable models	CJ1W-TC0x0 Temperature Control Unit
Conditions for usage	Temperature Control Unit Settings • The meaning of the data depends on the setting of the data format on pin 3 of the DIP switch.
Function description	The set point (SP) of the specified loop is read for the specified Unit. This FB reads with set point without considering if there is a decimal point.
EN input condition	Any bit can be specified.
Restrictions Input variables	• If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When bit A turns ON, the set point of loop 1 of the Temperature Control Unit with unit number 3 is output to D100. 
Related manuals	Temperature Control Unit Operation Manual (W396) 2-1-3 Input Specifications

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Model selection	Select	INT	&2	&2, &4	&2: Two-loop Unit &4: Four-loop Unit
Unit No.	UnitNo	INT	&0	&0 to &94	
Loop No.	LoopNo	INT	&1	&1 to &4	The number of loops depends on the Unit.

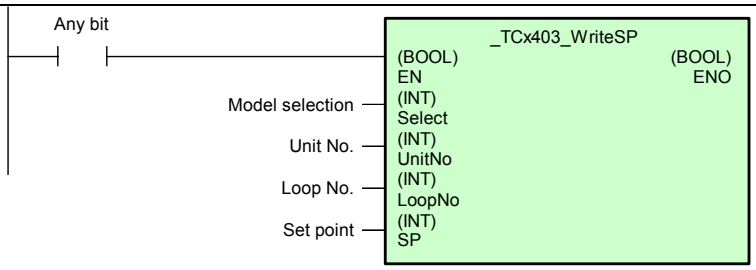
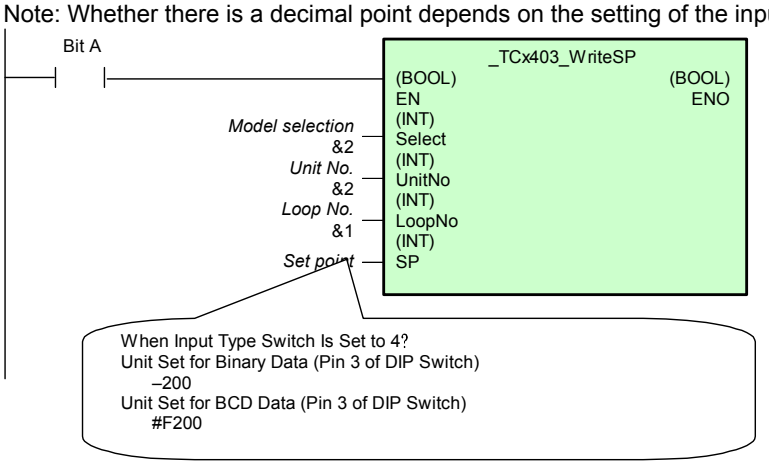
Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Set point	SP	INT		

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production

TCx -403	Write Set Point: _TCx403_WriteSP

Basic function	Writes the set point (SP) of the specified loop.
Symbol	
File name	Lib\FBL\omronlib\TemperatureController\TC_TCx403_WriteSP10.cxf
Applicable Units	CJ1W-TC0x0 Temperature Control Unit
Conditions for usage	Temperature Control Unit Settings • The meaning of the data depends on the setting of the data format on pin 3 of the DIP switch. • Whether there is a decimal point depends on the setting of the input type switch.
Function description	The set point is written for the specified loop for the Temperature Control Unit specified by the Model Selection and Unit No.
EN input condition	Any bit can be specified.
Restrictions Input variables	• The setting range for the set point depends on the setting of the data format on pin 3 of the DIP switch. The range is not checked in the FB. Be sure to set a value within the correct range. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Application example	When bit A turns ON, the set point of loop 1 of the Temperature Control Unit with unit number 2 is set to 20.0. Note: Whether there is a decimal point depends on the setting of the input type switch. 
Related manuals	Temperature Control Unit Operation Manual (W396) 2-1-3 Input Specifications 3-7 Setting the Set Point

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Model selection	Select	INT	&2	&2, &4	&2: Two-loop Unit &4: Four-loop Unit
Unit No.	UnitNo	INT	&0	&0 to &94	
Loop No.	LoopNo	INT	&1	&1 o &4	The number of loops depends on the Unit.
Set point	SP	INT	&0	At right.	The range depends on the input type. Temperature Control Unit Operation Manual (W396), 2-1-3 Input Specifications

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.

■ **Version History**

Version	Date	Contents
1.00	2004.6.	Original production