



Profibus

Catalogue



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OMRON: your global-local partner

Since 1933, we have grown to become a global leader in the field of industrial automation. Although we are a global company we embrace a local approach. We understand that different regions around the world have different needs, concerns and ambitions. To best meet these different needs we position ourselves in five major regions: North America, Europe, Asia Pacific, China and Japan. Each region maintains independent, yet highly integrated, sales, technical support, product development and manufacturing resources. We call it our multi-local strategy. It forms the foundation of our core belief to build firm roots within the communities we serve.



Throughout the continent, Omron Europe BV has 1,700 employees serving 19 sales companies and over 60 national and regional offices. In addition, Omron Europe BV has two manufacturing sites located in The Netherlands and Germany; three R&D sites located in The Netherlands, Germany, United Kingdom and the European Logistic Centre based in The Netherlands.

As one of the world's leading investors in automation R&D, we pioneer developments in numerous areas including networking, with for example our products for Profibus.



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OMRON & Profibus

OMRON and communication

Traditional OMRON has its strengths in factory automation. Besides a high demand on the quality of the systems themselves, it also means a high demand on speed, determinism, reliability and easy-to-use of communication between its factory automation equipment.

Proprietary and open communication

But the world of industrial communication is a complex one. A large number of open and proprietary fieldbus systems compete for the end-user's favor. When you implement a fieldbus in your factory, the first question is if it should be an open, or a proprietary solution. More and more users want to be able to integrate different disciplines into one, total solution. An open fieldbus enables such an infrastructure in which products of different vendors can communicate with each other.

The power of Profibus

Whereas proprietary systems are promoted by a single vendor, open fieldbus systems are promoted by vendor-independent organisations. Among these open solutions, Profibus is without any doubt the market leader. Over the years Profibus has become one of the most favoured industry standards for accomplishing a wide variety of process automation tasks.



OMRON, Profibus member from the start

The Profibus standards are set and maintained by the Profibus Nutz Organisation (PNO) since 1990. The importance of this common ground for engineers and process automation specialists was immediately recognised by the OMRON company. OMRON became a member of PNO in 1991.

OMRON open solution in any industrial field

OMRON is one of the major worldwide suppliers of process automation components. Our products all answer to the high quality standards set within the OMRON company. On every continent of our world, in any type of industry you will find OMRON factory control applications.

Profibus-DP introduction

Profibus is a vendor-independent, open fieldbus standard for a wide range of applications in manufacturing-, process- and building automation. Vendor independence and openness are guaranteed by the Profibus standard EN50170. With Profibus, devices of different manufacturers can communicate without special interface adjustments.

DP stands for Decentralised Periphery. It is optimised for high speed and low-cost interfacing, especially designed for communication between automation control systems and distributed I/O at the device level.

Protocol architecture

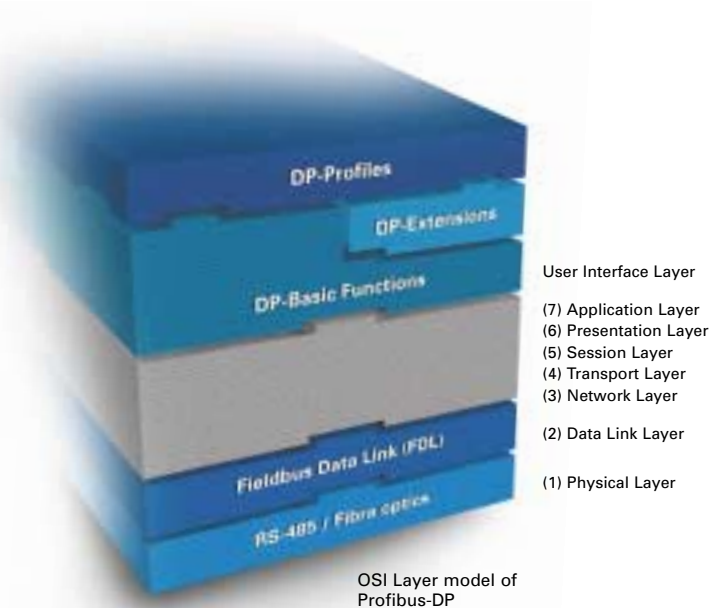
The Profibus protocol architecture is oriented on the Open System Interconnection (OSI) reference model in accordance with the international standard ISO 7498.

Profibus-DP uses layers 1 and 2, and the user interface. Layers 3 to 7 are not defined.

Layer 1 (physical layer) defines the physical transmission characteristics.

Layer 2 (data link layer) defines the bus access control.

This streamlined architecture ensures fast and efficient data transmission. The application functions which are available to the user, as well as the system and device behaviour of the various Profibus-DP device-types are specified in the user interface.



Transmission medium

RS-485 transmission technology or fibre optics are defined as transmission media. RS-485 transmission is the most frequently used transmission technology. Its application includes all areas in which high transmission speed and simple inexpensive installation are required. Twisted pair shielded copper cable with one conductor pair is used.

Easy installation

The RS-485 transmission technology is very easy to handle. Installation of the twisted pair cable does not require expert knowledge. The bus structure permits addition and removal of stations or step-by-step commissioning of the system without influencing the other stations. Later expansions have no effect on stations which are already in operation.

Various transmission speeds between 9.6 kbit/s and 12 Mbit/s can be selected. One unique transmission speed is selected for all devices on the bus when the system is commissioned.

Cable length

The maximum cable length depends on the transmission speed. The specified cable lengths are based on type-A cable. The length can be increased by the use of repeaters. The use of more than 3 repeaters in series is not recommended.

Profibus Product line-up

MASTER UNIT



C200HW-PRM21

- The C200HW-PRM21 is the Profibus-DP master unit for OMRON's CS1 and C200H-series
- Several fieldbus masters can be mounted in the same PLC system
- Supports up to 124 slaves
- Allows mapping of slave data to any PLC data area
- Default mode requires no PLC settings
- Switch-selectable bus termination

CONFIGURATOR



WS02-PDC1-E

- Configures the bus system
- Download via simple serial link
- Overall bus communication settings
- Data of all connected slaves is available
- Configuration can be prepared off-line
- Device Database is included
- Debugging facilities are included

SLAVE UNIT



C200HW-PRT21

- OMRON's C200HS, C200HE, C200HG, C200HX and CS1 PLC's can be used as an intelligent slave on a Profibus-DP network
- Default 2 words in + 2 words out, maximum 100 words in + 100 words out
- Simple Profibus-DP node address setting by rotary switches
- Supports SYNC/FREEZE and Fail/Safe functions

COMMUNICATION UNIT



PRT1-COM

- Profibus-DP compliant slave unit
- Allows flexible combinations of I/O points
- A wide range of I/O types available
- DIN rail mounting
- High/low byte swap mechanism

DIGITAL UNITS



GT1-ID16 (-1)
GT1-OD16 (-1)



GT1-ID16MX (-1)
GT1-OD16MX (-1)



GT1-ID32ML (-1)
GT1-OD32ML (-1)



GT1-ID/OD16ML (-1)
GT1-ID/OD16DS (-1)

- The circuit block of the terminal model can be mounted or dismantled without disconnecting the wires
- Connectivity via a standard screw terminal block or easy-to-use connector for the 16 point model
- Compact high density (32 I/O-points) model saves space on the DIN-rail

ANALOG UNITS



GT1-DAMX



GT1-DA04



GT1-ADMX



GT1-AD04

- A high resolution of 1/6000 on the analog signals
- Conversion time of 4ms/4 points and 8ms/8 points
- To be able to connect via screw terminal blocks or easy-to-use connectors

TEMPERATURE INPUT UNITS



GT1-TS04P



GT1-TS04T

- Thermocouples and platinum resistance thermometer models are available
- The circuit section can be removed, so rewiring isn't required during maintenance
- 4 inputs with a 0,3% accuracy

RELAY UNITS



GT1-ROS16



GT1-ROPO8

- All relays on the units can be replaced easily when needed
- Applicable relays: G2R-1 SN (8 points model) 5A per channel
- G6D-1A (16 points model) 2A per channel

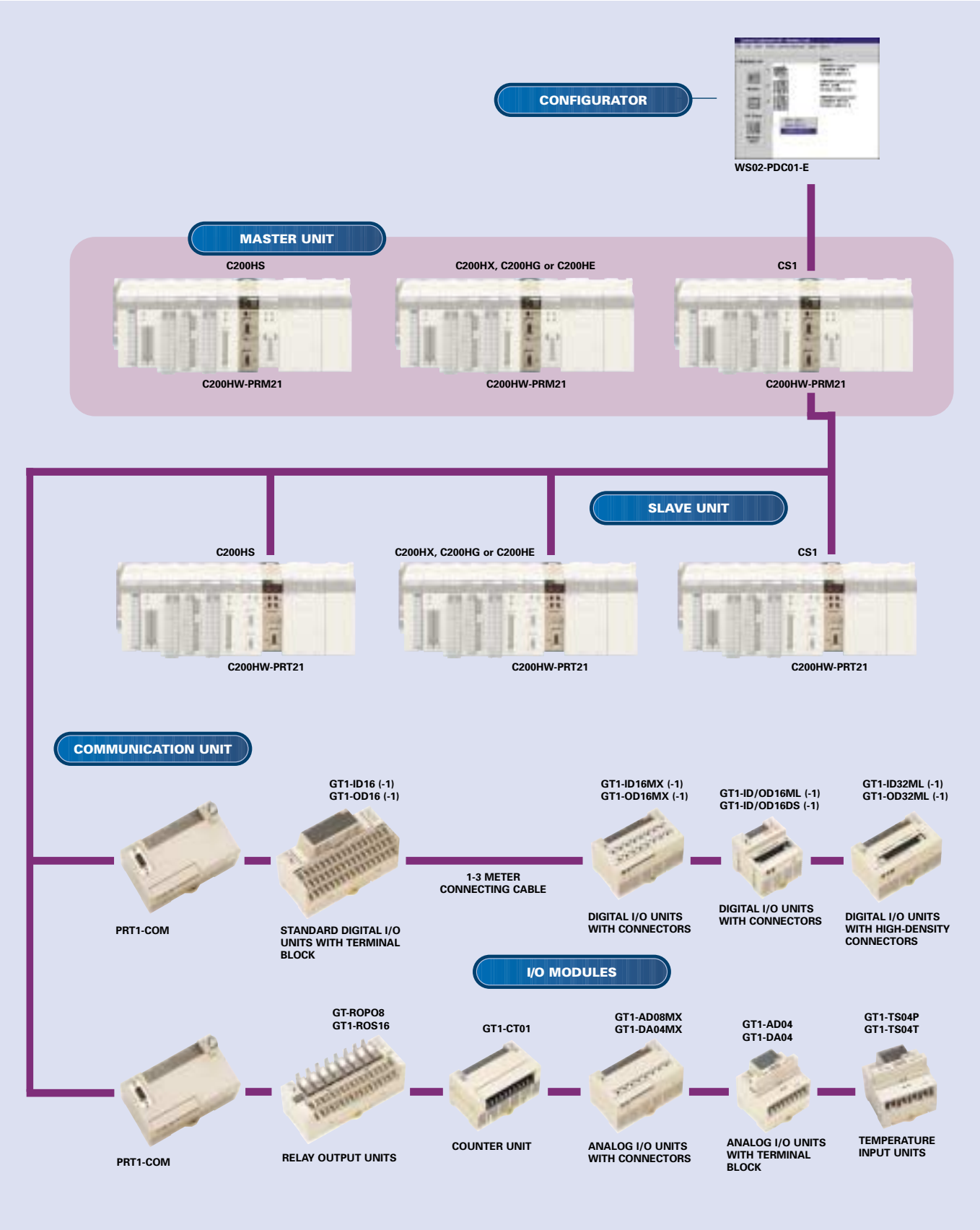
COUNTER UNIT



GT1-CT01

- High-speed pulse reading at 50 kHz.
- One input and two outputs
- A/B/Z encoder inputs

Profibus Network Configuration

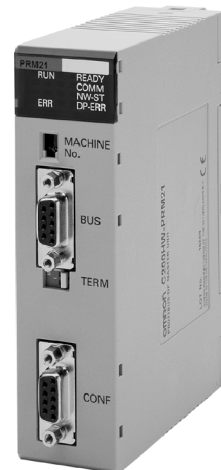


Master Unit

C200HW-PRM21

Master Unit for C200HX, C200HG, C200HE, C200HS and CS1

- The C200HW-PRM21 is the Profibus-DP master unit for OMRON's CS1 and C200H-series.
- Multiple fieldbus masters can be mounted in the same PLC system.
- Switch-selectable bus termination.
- Supports up to 124 slaves.
- Allows mapping of slave data to any PLC data area.
- Default mode requires no PLC settings.



Ordering Information

Product Code	Description
C200HW-PRM21	Profibus master unit for C200Hα and CS1 PLCs
W349-E2-02	User Manual for Profibus unit + configurator
WS02-PDC2-E	Configurator Software

Specifications

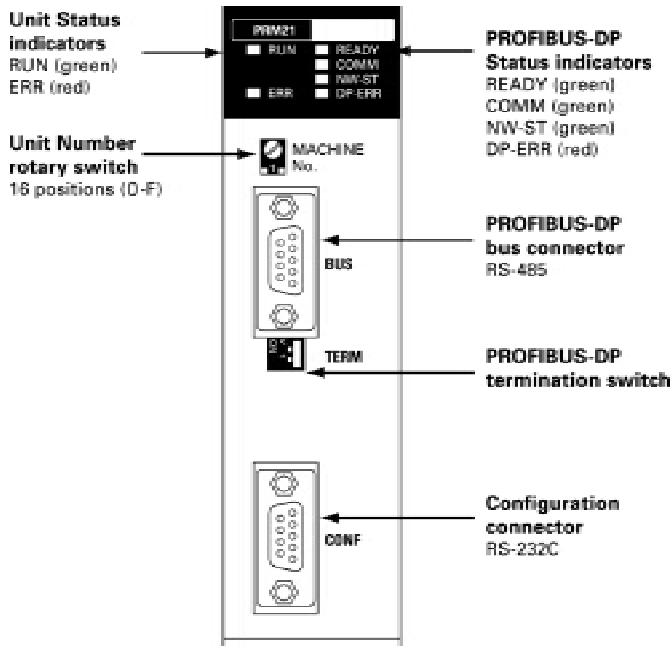
■ Communication Specification

Applicable standard	EN 50170 vol.2
Network topology	Line, max. 125 node addresses
Bus connector	9-pin sub-D female
Bus termination	Built in, switch selectable
Baud rates	9.6k, 19.2k, 93.75k, 187.5k, 500k, 1.5M, 3M, 6M, 12M bits/s, set by configurator (default 1.5M).
Communication distance	100m (at 12 Mbit/s) to 1200m (at 9.6 kbit/s) per segment. Extendible to 4800 m (at 9.6 kbit/s) using 3 repeaters.
Communication cable	Type A (EN 50170 vol. 2).
Fieldbus cycle time	Minimum 1 ms (at 12 Mbit/s)
Supported DP functions as responder as requester	<p>Get_Master_Diag</p> <p>Data_Exchange</p> <ul style="list-style-type: none"> - synchronous with PLC cycle. - asynchronous, independent of PLC cycle (default). <p>Slave_Diag</p> <ul style="list-style-type: none"> - by configurator s/w (all CPU's) - by IOWR/IORD (C200HE/-G/-X and higher CPU models only). <p>Set_Prm - automatic, at start-up.</p> <p>Chk_Cfg - automatic, at start-up.</p> <p>Global_Control</p> <ul style="list-style-type: none"> - Multi-cast / Broadcast of Sync, Freeze and Clear_Data
Profibus-DP GSD file	OC_1656.GSD

■ Unit Specification

		C200HS	C200HE/HG/HX/CS1	
Model code		C200HW-PRM21		
Maximum. number of Master Units (with user defined I/O mapping)		10	C200HE-CPU11/32/42 C200HG-CPU33/43 C200HX-CPU34/44	10
			C200HG-CPU53/63 C200HX-CPU54/64 CS1	16
Master Unit mounting position		CPU Rack or Expansion I/O Rack (classified as Special I/O Unit) Unit cannot be mounted to SYSMAC BUS Slave Racks. Unit cannot be used on a C200H PLC system.		
Settings		Rotary switch : Unit number Toggle switch : Bus termination		
Displays		Unit status : RUN (green LED), ERR (red LED) Network status : READY (green LED), COMM (green LED), NW-ST (green LED), DP-ERR (red LED)		
External connectors		9-pin female sub-D connector (fieldbus connector, RS-485) 9-pin female sub-D connector (configurator connector, RS-232C)		
No. of IR words		2 words of control data out + 3 words of unit status in		
No. of DM settings		18 words of unit setup information		
No. of slave status words		16 words of status + diagnostic bits (location is user definable)		
Remote I/O communications	Max. No. of Slaves per Master Unit	124		
	Max. No. of I/O words per Master Unit	With default DM settings: 32 words in, 32 words out With user defined DM settings: 80 words, in up to 4 areas	With default DM settings: 50 words in, 50 words out With user defined DM settings: 300 words in up to 4 areas; maximum 100 words per area	
Slave diagnostics		Not supported	via IOWR / IORD instructions	
Profibus-DP	Baud rate	9.6 / 19.2 / 93.75 / 187.5 / 500 kbit/s, 1.5 / 3 / 6 / 12 Mbit/s		
	Supported functions	as client : Data_Exchange, Slave_Diag, Set_Prm, Chk_Cfg, Global_Control as server : Get_Master_Diag		
Network configuration		Configurator program (SyConDP V.2.x) for WIN 95 and WIN NT		
Current consumption		600 mA at 5 V DC (from PLC power supply)		
Storage temperature		-20 to +75°C		
Operating temperature		0 to +55°C		
Operating humidity		10% to 90% (non-condensing)		
Conformance to EMC- and environmental standards		EN 50081-2 EN 61131-2		
Weight		250 g		

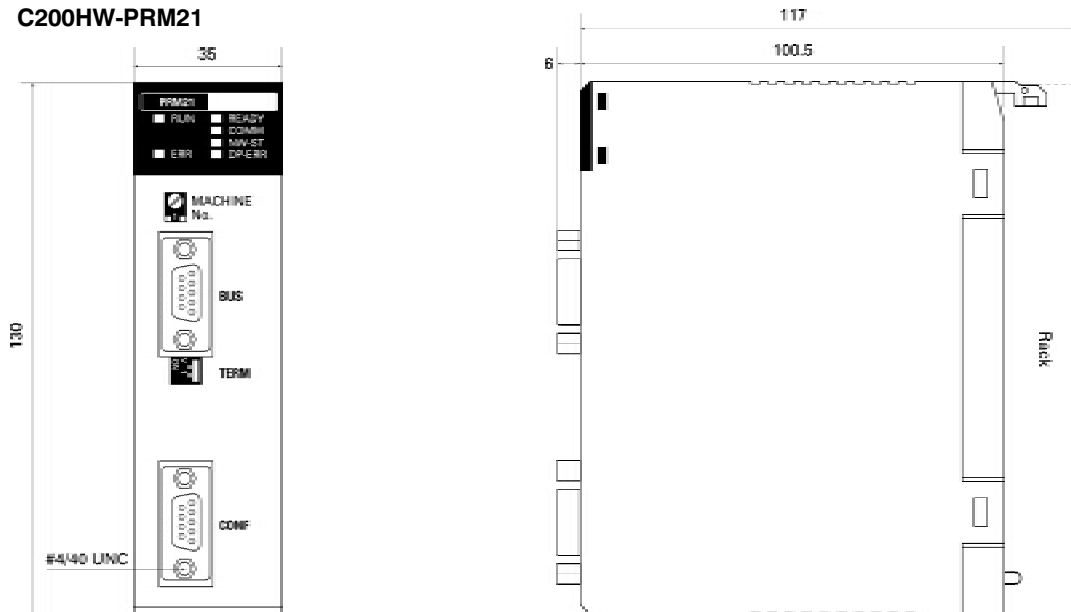
Nomenclature



Dimensions

Note: All units are in millimeters unless otherwise indicated.

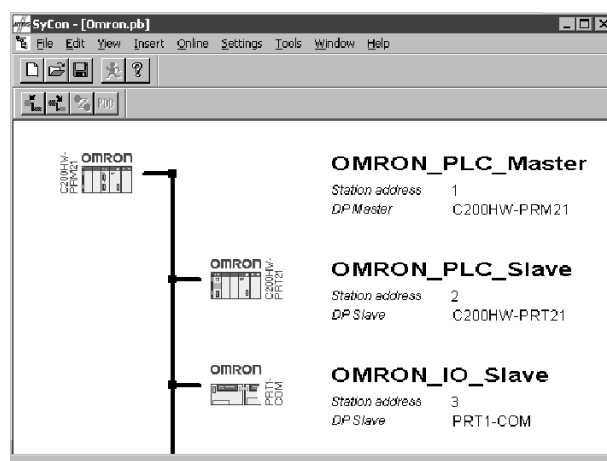
C200HW-PRM21



Note: Refer to the *C200HX/C200HG/C200HE, C200HS or CS1 PLCs Operation Manual* for details on the dimensions when the Master Unit is mounted to the PLC's Backplane.

Configurator Software for C200HW-PRM21 Profibus-DP Master Unit

- Configures the bus system.
- Download via simple serial link.
- Overall bus communication settings.
- Data of all connected slaves is available.
- Configuration can be prepared off-line.
- Device Database is included.
- Debugging facilities are included.



Ordering Information

Product Code	Description
WS02-PDC2-E	Configurator Software (SyConDP V.2.x) for WIN 95 and WIN NT
W349-E2-02	Operation Manual for Profibus Master and configurator

Specifications

Configurator Software (SyConDP V.2.x)	The Profibus-DP network topology and system characteristics are defined and downloaded in Omron's C200HW-PRM21 Profibus-DP Master Unit, by means of the configuration software SyConDP (V.2.x). It is not possible to use other (general-purpose) Profibus-DP Configurator software packages for this purpose.	
General Description	<p>The configuration software package for the C200HW-PRM21 Profibus-DP master is used to define:</p> <ul style="list-style-type: none"> • The configuration of the bus system connected to the C200HW-PRM21. • Configuration- and parameter data of all connected slave stations. • Overall bus communication settings. <p>All configuration data can be prepared off-line. A serial communication link with the C200HW-PRM21 is only necessary to download the configuration file to the unit, and for debugging purposes.</p> <p>After the initial configuration has been downloaded, the software package can be used for:</p> <ul style="list-style-type: none"> • Addition / deletion of slave units or -modules. • Monitoring the Profibus system status. • Troubleshooting communication problems. 	
System Requirements	Processor:	486DX50 or higher
	RAM:	16 MB
	Hard disk space:	10 MB
	Operating System:	Windows 95, Windows 98, Windows NT 3.51, NT 4.0 (see note)
	Graphics:	800 x 600 x 256 or more recommended
	Serial port:	RS-232C; COM1 ~ COM4 supported

Note: Administrator rights are required for installation.

Profibus-DP Slave Unit

C200HW-PRT21

I/O Link Unit for C200H_ and CS1 PLC
Ideal for distributed control.

- OMRON's C200HS, C200HE, C200HG, C200HX and CS1 PLCs can be used as an intelligent Slave on a Profibus-DP network.
- Default 2 words in + 2 words out, maximum 100 words in + 100 words out.
- Simple Profibus-DP node address setting by rotary switches.
- Supports SYNC/FREEZE and Fail-Safe functions.



Ordering Information

Product Code	Description
C200HW-PRT21	Profibus-DP slave unit
W901-E2-1	Operation Manual

Specifications

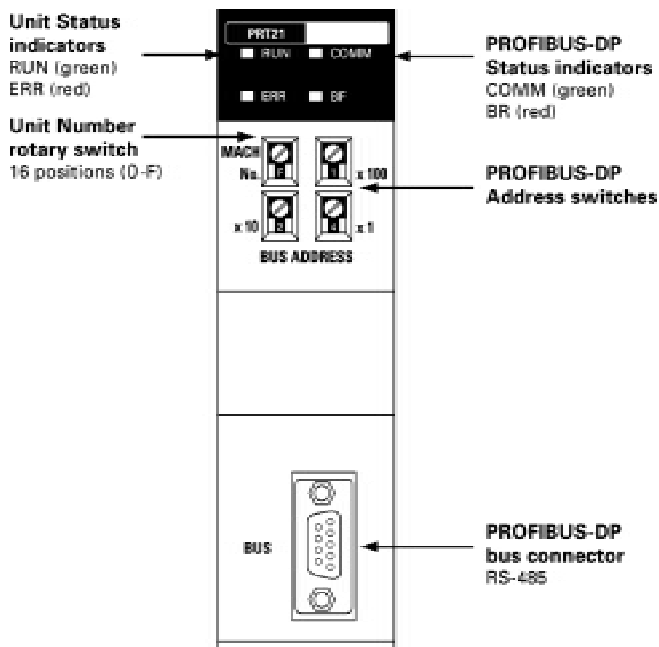
■ Communication Specification

Applicable standard	EN 50170 vol. 2
Station type	Modular station, max. 32 modules Configurable with In-, Out- and I/O-modules of 1, 2, 4, 8 and 16 words Total of 0 to 100 words in + 0 to 100 words out, with consistency over the full length
Bus connector	9-pin female sub-D connector (RS-485 Profibus connector)
Bus termination	External
Baud rate (auto-detect)	9.6 / 19.2 / 45.45 / 93.75 / 187.5 / 500 kbit/s, 1.5 / 3 / 6 / 12 Mbit/s
Profibus address range	0 to 125, Remote setting not supported
Communication cable	Type A (EN 50170 vol. 2)
Minimum slave interval time	0.5 ms
Supported DP functions	<ul style="list-style-type: none"> • Data_Exchange • Slave_Diag • Set_Prm • Chk_Cfg • Global_Control (SYNC, FREEZE, CLEAR) • Get_Cfg • RD_Inp • RD_Outp
Profibus-DP GSD file	OC_04AC.GSD

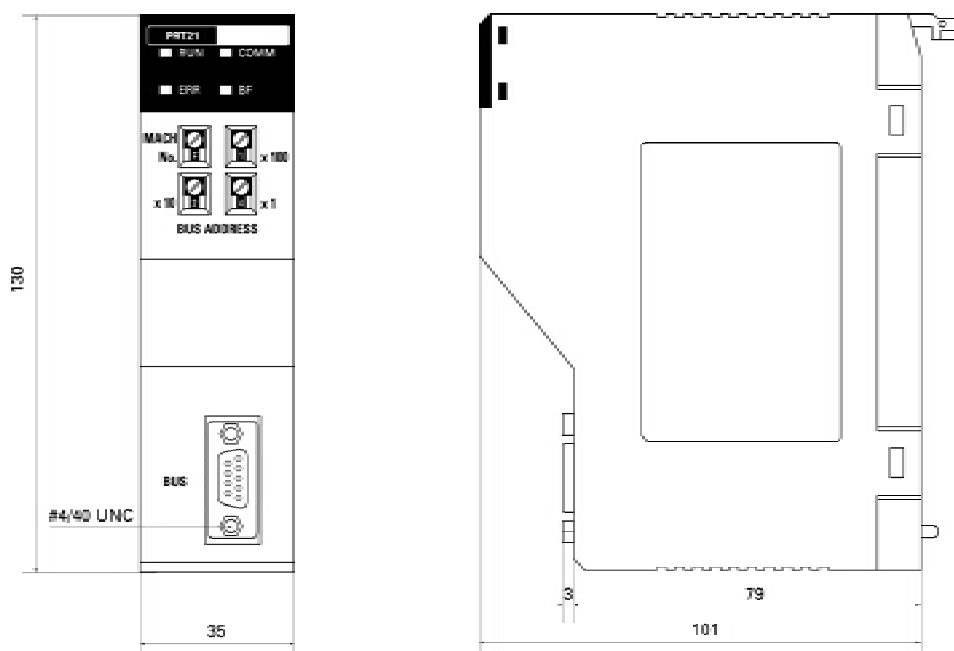
■ Unit Specification

Host PLC system	C200HS, C200HE, C200HG, C200HX, CS1	
Maximum number of Units per PLC system	C200HS C200HE-CPU11/32/42 C200HG-CPU33/43 C200HX-CPU34/44	10
	All others	16
Slave Unit mounting position	CPU Rack or Expansion I/O Rack Unit cannot be mounted to SYSMAC BUS Slave Racks. Unit cannot be used on a C200H PLC system	
Current consumption	250 mA at 5 V DC (from PLC power supply)	
Weight	180 g	
Switch settings	Special I/O Unit number (0-F) by rotary switch Profibus-DP node address (0 to 125) by 3 rotary switches	
LED indicators	Unit status : RUN (green LED), ERR (red LED) Network status : COMM (green LED), BF (red LED)	
No. of IR words	PLC to Slave Unit : 3 words (1 word of control data + 2 words slave input data) Slave Unit to PLC : 5 words (3 words of unit status + 2 words slave output data)	
No. of DM settings	8 words of Unit setup information	
Amount of I/O data per Unit	Default [DM settings all 0000]	all PLC's : 2 words in + 2 words out
	With user defined DM settings	C200HS : up to 80 words in + out all others : up to 100 words in + 100 words out
Storage temperature	-20 to +75 °C	
Operating temperature	0 to +55 °C	
Operating humidity	10% to 90% (non-condensing)	
Conformance to EMC- and environmental standards	EN50081-2 EN61131-2	

Nomenclature



Dimensions



Note: Refer to the *C200HX/C200HG/C200HE, C200HS or CS1 PLCs Operation Manual* for details on the dimensions when the Slave Unit is mounted to the PLC's Backplane.

Profibus-DP Slave Unit

CQM1-PRT21

Profibus-DP Slave for CQM1(H) PLCs

- No PLC settings need to be made.
- Auto-detect all Profibus-DP baud rates from 9.6 kbit/s to 12 Mbit/s.
- Slave address setting, selectable from 0 to 99.
- Support and indication of Profibus-DP broadcast functions (Sync/Freeze/Clear).
- Communication status available externally via relay output.
- Configurable for 2, 4, 6 or 8 words.



Ordering Information

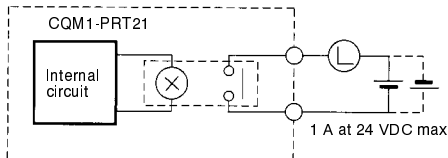
Product Code	Description
CQM1-PRT21	Profibus-DP slave unit for CQM1(H) PLCs

Specifications

■ Communication Specification

Applicable standard	EN 50170 vol. 2
Station type	Modular station, max. 1 module Configurable with I/O-modules of 2, 4, 6 or 8 words
Data consistency	By word
Bus connector	9-pin female sub-D connector (RS-485 Profibus connector)
Bus termination	External
Baud rate (auto-detect)	9.6 / 19.2 / 45.45 / 93.75 / 187.5 / 500 kbit/s, 1.5 / 3 / 6 / 12 Mbit/s
Profibus address range	0 to 99, Remote setting not supported
Communication cable	Type A (EN 50170 vol. 2)
Minimum slave interval time	0.5 ms
Watchdog base	10 ms, 1 ms selectable by parameter setting
Supported DP functions	<ul style="list-style-type: none"> Data_Exchange Slave_Diag Set_Prm Chk_Cfg Global_Control (SYNC, FREEZE, CLEAR) Get_Cfg RD_Inp RD_Outp
Profibus-DP GSD file	OC_054D.GSD

■ Unit Specification

Host PLC system	CQM1, CQM1H
Switch settings	Number of I/O words Motorola/Intel data format Profibus-DP address
LED indicators	Unit status : RUN (green LED), ERR (red LED) Network status : COMM (green LED), BF (red LED) WD OFF (yellow LED), CLEAR (yellow LED) SYNC (yellow LED), FREEZE (yellow LED)
No. of occupied words	Configurable by DIP switches (see note) <ul style="list-style-type: none"> • 2 words in + 2 words out • 4 words in + 4 words out • 6 words in + 6 words out • 8 words in + 8 words out
I/O refresh time (data exchange with CPU)	Max. 0.16 ms
Current consumption (max)	350 mA at 5 V DC (at CQM1 I/O bus)
Weight	170 g
Storage temperature	-20 to +75 °C
Operating temperature	0 to +55 °C
Operating humidity	10% to 90% (non-condensing)
EMC compliance	EN50081-2, EN61131-2
Circuit configuration	Communication status output (COMM) terminal 

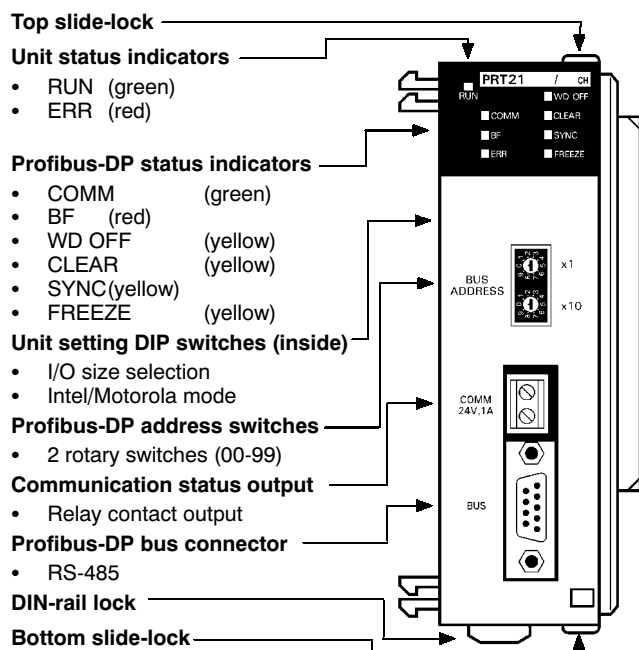
Note: The CQM1-PRT21 can be mounted to any CQM1- or CQM1H-series CPU. The maximum amount of I/O data that can be exchanged with the CPU depends on the selected CPU type, and on the number and type(s) of any additional I/O unit(s). To operate with the Unit's maximum I/O capacity, a CQM1H-CPU51 or CQM1H-CPU61 is required.

■ Communication status output

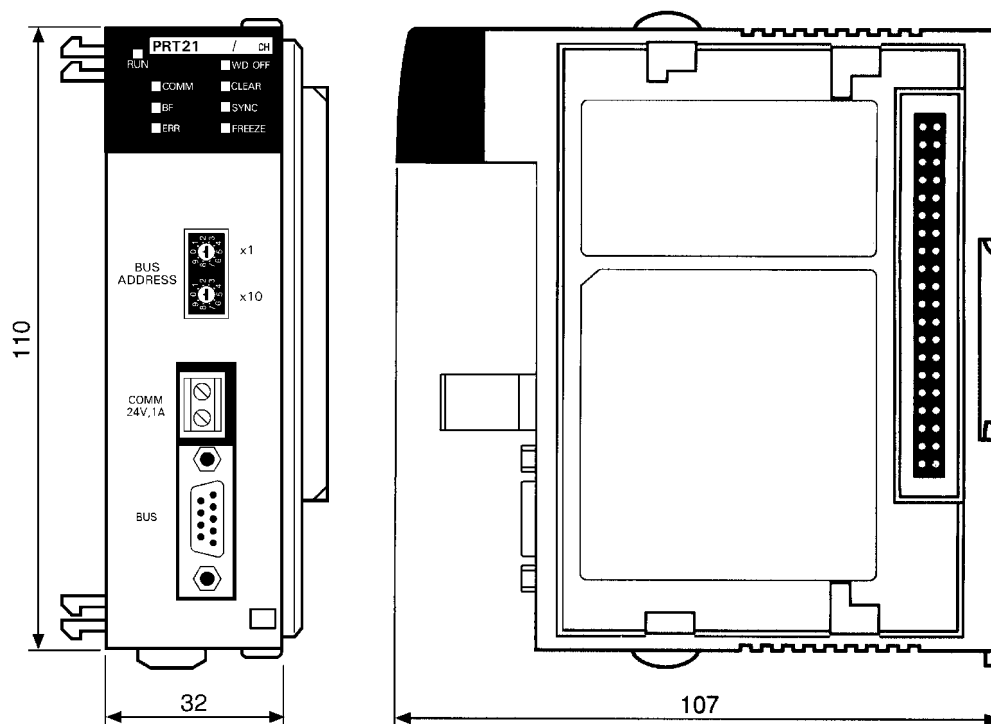
The COMM relay contact output indicates if data exchange with the Profibus-DP master unit is active. This signal can be connected to a PLC input or external signalling device. It is recommended to use this information in the PLC to judge the validity of the received data.

ON state	<ul style="list-style-type: none"> • I/O data exchange with the Profibus-DP master is active.
OFF state	<ul style="list-style-type: none"> • PLC Power OFF • Fatal error in PLC CPU or I/O bus. • No I/O data exchange with Profibus-DP master (check LED indication).
Relay type	OMRON G6H-2F, non-replaceable
Maximum load	1 A at 24 V DC
ON/OFF delay	less than 10 ms
Connector	Phoenix MSTBA 2,5/2-G

Nomenclature



Dimensions



Communication Unit

PRT1-COM

Connects up to Eight Multiple I/O Units to Profibus-DP

- Profibus-DP compliant slave unit.
- Allows flexible combinations of I/O points.
- A wide range of I/O-types available.
- DIN rail mounting.
- High/low byte swap mechanism.



Ordering Information

Product Code	Description
PRT1-COM	Profibus-DP multiple I/O terminal
W900-E2-1	Operation Manual

Specifications

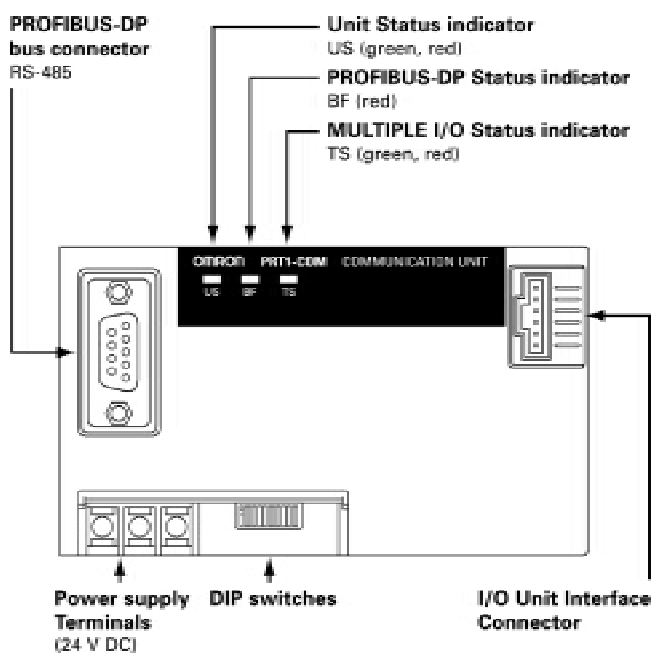
■ Communication Specification

Applicable standard	EN 50170 vol. 2
Type	Profibus-DP Slave
Bus connector	9-pin sub-D female
Bus termination	External
Baud rate (auto-detect)	9.6 / 19.2 / 45.45 / 93.75 / 187.5 / 500 kbit/s, 1.5 / 3 / 6 / 12 Mbit/s
Profibus address range	0 to 125
Communication cable	Type A (EN 50170 vol. 2)
Minimum slave interval time	0.5 ms
Input data	4 status bytes + max. 128 data bytes
Output data	max. 128 data bytes
Supported DP functions	<ul style="list-style-type: none"> Data_Exchange Slave_Diag Set_Prm Chk_Cfg Global_Control (SYNC, FREEZE, CLEAR) Get_Cfg RD_Inp RD_Outp
Profibus-DP GSD file	OC_047D.GSD

■ Unit Specification

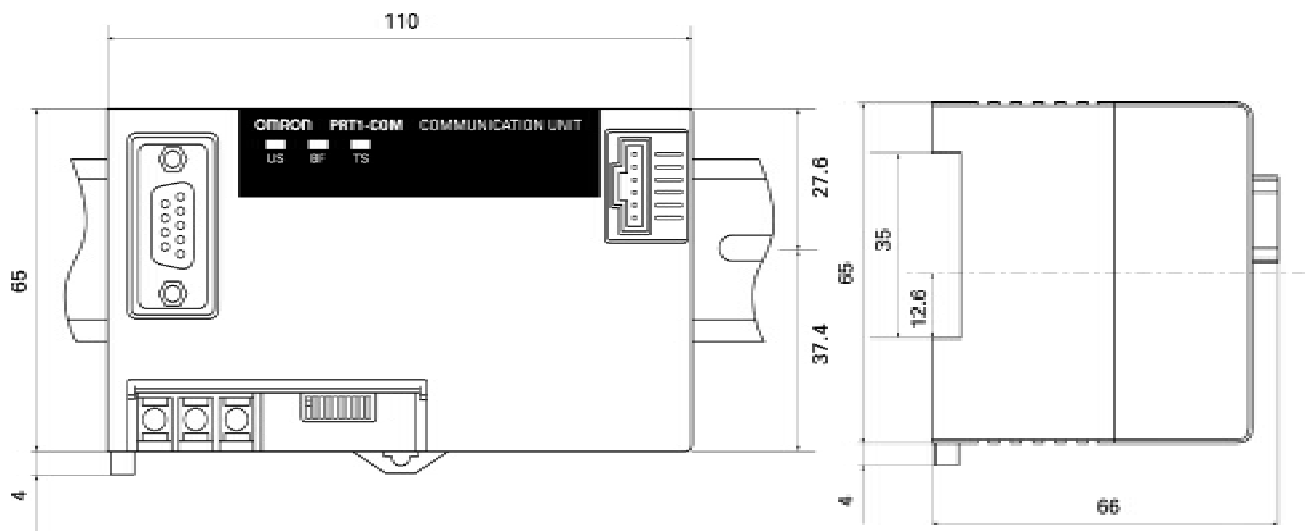
Number of MULTIPLE I/O Units		8 max.
Input data		128 bytes max.
Output data		128 bytes max.
MULTIPLE I/O power supply		0.3 A max.
Indicators	Unit Status LED green / red	OFF: Power not OK Green ON: Unit OK Green BLINK: Initialising Red ON: Unit error
	Bus Failure LED (Profibus-DP) red	OFF: No errors ON: <ul style="list-style-type: none"> Response monitoring time has elapsed. The master did not address PRT1-COM within the configured watchdog time. PRT1-COM was not parameterised or not properly configured.
	Terminal Status LED (MULTIPLE I/O) green / red	OFF: Power overload Green ON: Communication OK Green BLINK: Special I/O Unit Error Red ON: <ul style="list-style-type: none"> Bus fault Configuration fault End station fault I/O Unit over Basic I/O Unit Error
Storage temperature		-20 to +65 °C
Ambient temperature		-10 to +55 °C
Ambient humidity		25 to 85% (non-condensing)
EMC compliance		EN 50081-2, EN 61131-2
Dielectric strength		500 VAC for 1 min.
Power supply		20.4 to 26.4 V DC
Current consumption on 24 V DC power supply		Multiple I/O current consumption + 0.15 [A]
Inrush current		30 A max.
Weight		165 g (typical)

Nomenclature



Dimensions

Note: All units are in millimeters unless otherwise indicated.

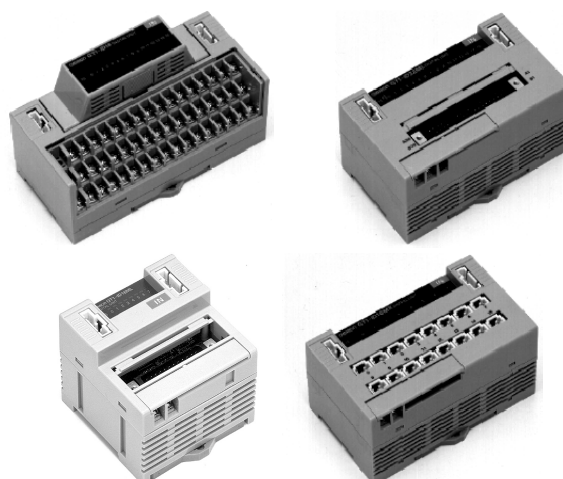


Digital I/O Unit

GT1-ID/OD

Digital I/O Unit Compatible with MULTIPLE I/O TERMINAL

- Terminal block, connector, and high-density connector models are available.
- The circuit block of the terminal block model can be mounted or dismounted for ease of maintenance without disconnecting the wires.
- Dimensions of terminal block model:
140 x 80 x 65 (W x H x D)
Dimensions of connector model:
110 x 60 x 65 (W x H x D)
Dimensions of high-density connector model:
110 x 60 x 65 (W x H x D)
- DIN track mounting.



Ordering Information

Unit	I/O classification	Internal I/O circuit common	I/O points	Terminal	Power supply voltage	I/O specification	Model
Terminal block model	Digital input	NPN (+ common)	16	M3 terminal board	24 VDC	DC/transistor	GT1-ID16
		PNP (− common)					GT1-ID16-1
	Digital output	NPN (+ common)				0.5 A, DC/transistor	GT1-OD16
		PNP (− common)					GT1-OD16-1
Connector model	Digital input	NPN (+ common)		Molex connector		DC/transistor	GT1-ID16MX
		PNP (− common)					GT1-ID16MX-1
	Digital output	NPN (+ common)				0.5 A, DC/transistor	GT1-OD16MX
		PNP (− common)					GT1-OD16MX-1
	Digital input	NPN (+ common)	Fujitsu connector	DC/transistor	GT1-ID16ML		
		PNP (− common)			GT1-ID16ML-1		
	Digital output	NPN (+ common)		0.5 A, DC/transistor	GT1-OD16ML		
		PNP (− common)			GT1-OD16ML-1		
	Digital input	NPN (+ common)	D-sub 25-pin connector	DC/transistor	GT1-ID16DS		
		PNP (− common)			GT1-ID16DS-1		
	Digital output	NPN (+ common)		0.5 A, DC/transistor	GT1-OD16DS		
		PNP (− common)			GT1-OD16DS-1		
High-density connector model	Digital input	NPN (+ common)	32	Fujitsu connector		DC/transistor	GT1-ID32ML
		PNP (− common)					GT1-ID32ML-1
	Digital output	NPN (+ common)				0.5 A, DC/transistor	GT1-OD32ML
		PNP (− common)					GT1-OD32ML-1

Specifications

■ Ratings

Input

Item	GT1-ID□□
ON delay time	1.5 ms max.
OFF delay time	1.5 ms max.
ON voltage	15 V min. between each input terminal and V
OFF voltage	5 V min. between each input terminal and V
OFF current	1 mA max.
Insulation method	Photocoupler
Input indicators	LED (yellow)

Note: Ensure that the total external load current does not exceed the values given in the following table.

Model	Total external load current
GT1-OD16/16MX/32ML (-1)	4 A
GT1-OD16ML/16DS (-1)	2.5 A

Output

Item	GT1-OD□□
Rated output current	0.5 A/point (see note)
ON delay time	0.5 ms max.
OFF delay time	1.0 ms max.
Residual voltage	1.2 V max.
Leakage current	0.1 mA max.
Insulation method	Photocoupler
Output indicators	LED (yellow)

■ Characteristics

I/O power supply voltage	24 VDC +10%/-15%		
Current consumption (see note)	Model	I/O Interface	Internal circuit
	GT1-ID16 (-1)	35 mA max.	---
	GT1-OD16 (-1)	35 mA max.	9 mA max.
	GT1-ID16MX (-1)	35 mA max.	---
	GT1-OD16MX (-1)	35 mA max.	9 mA max.
	GT1-ID16ML (-1)	35 mA max.	---
	GT1-OD16ML (-1)	35 mA max.	9 mA max.
	GT1-ID16DS (-1)	35 mA max.	---
	GT1-OD16DS (-1)	35 mA max.	9 mA max.
	GT1-ID32ML (-1)	55 mA max.	---
	GT1-OD32ML (-1)	65 mA max.	11 mA max.
Dielectric strength	500 VAC		
Noise immunity	±1,500 V (p-p) with a pulse with of 0.1 to 1 μs		
Vibration resistance	10 to 150 Hz, 1.0-mm double amplitude or 70 m/s ²		
Shock resistance	200 m/s ²		
Mounting method	35-mm DIN track mounting		
Mounting strength	No damage when 100 N pull load was applied in all directions (10 N min. in the DIN track direction)		
Terminal strength	No damage when 100 N pull load was applied		
Screw tightening torque	0.3 to 0.5 N • m		
Ambient temperature	Operating: -10°C to 55°C (with no icing or condensation) Storage: -25°C to 65°C (with no icing or condensation)		
Ambient humidity	Operating: 25% to 85%		

Note: The above current consumption is a value with all 16 and 32 points turned ON excluding the current consumption of the external sensor connected to the Input Unit and the current consumption of the load connected to the Output Unit.

■ Connectors

Type			Model	Remarks
Molex connector	Press-fit terminal	Housing	52109-390	Corresponding to 24 AWG
	Solderless terminal	Housing	51030-0330	(See note.)
		Chain terminal	50083-8014	Corresponding to 24 to 30 AWG
			50084-8014	Corresponding to 22 to 24 AWG
		Loose terminal	50083-8114	Corresponding to 24 to 30 AWG (see note)
			50084-8014	Corresponding to 22 to 24 AWG
	Press-fit tool	57037-5000	(See note.)	
Fujitsu connector (16 points)	Solder terminal		FCN361J024-AU	---
	Press-fit terminal		FCN367J024-AU/F	---
	Solderless terminal		FCN363J024-AU	---
Fujitsu connector (32 points)	Solder terminal		FCN361J024-AU	---
	Press-fit terminal		FCN367J040-AU/F	---
	Solderless terminal		FCN363J040-AU	---
OMRON D-sub Connector	Plug		XM2A-2501	---
	Hood		XM2S-2513	#4-40UNC inch screws

Note: Contact your OMRON representatives for the above connectors.

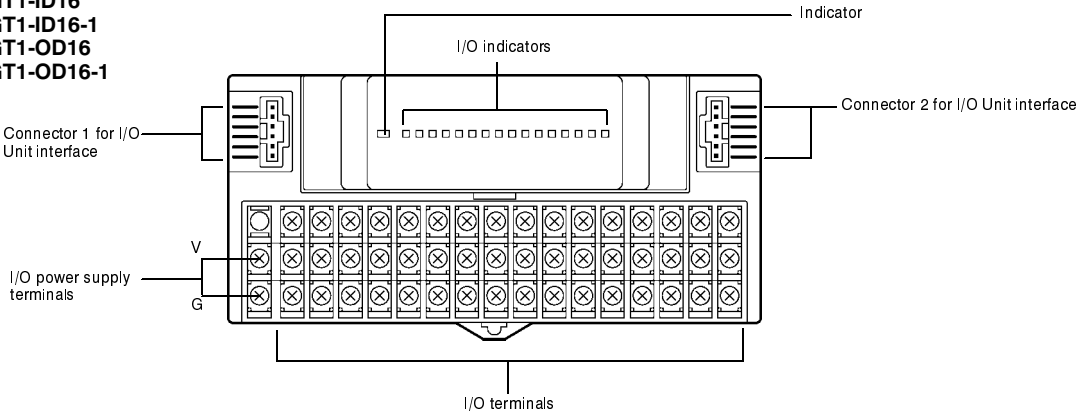
Cables with High-density Connectors

I/O type	Model
Digital input (16 points)	XW2Z-□□□A
	G79-□C
Digital output (16 points)	XW2Z-□□□A
	G79-□C
Digital input (32 points)	XW2Z-□□□B
	G79-I□C□
Digital output (32 points)	XW2Z-□□□B
	G79-O□C-□

Note: Refer to page NO TAG for ordering information.

Nomenclature

- Terminal Block Model
GT1-ID16
GT1-ID16-1
GT1-OD16
GT1-OD16-1

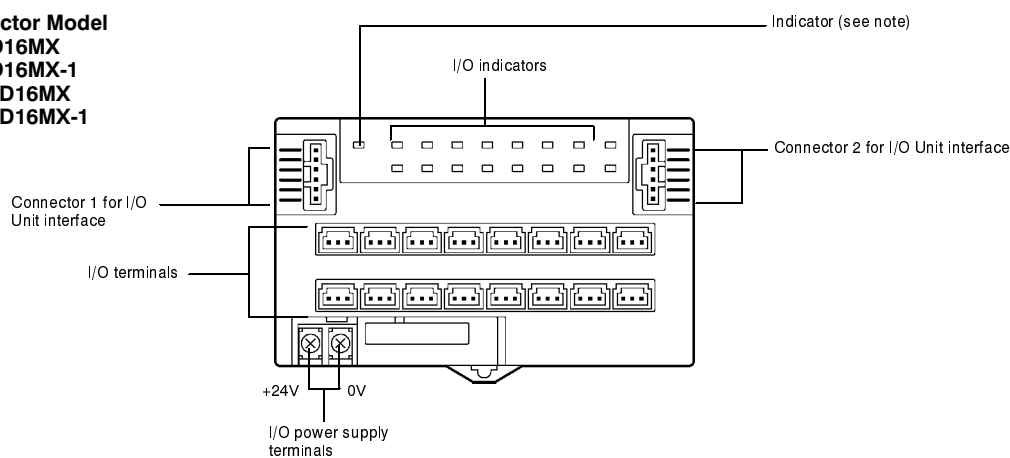


Indicator

Indicator	Display	Color	Meaning
TS	Lit	Green	The Unit is normal.
	Lit	Red	The I/O Unit Interface has an error.
	Not lit	---	No power is supplied to the Unit or the Unit is being initialized.

- Connector Model**

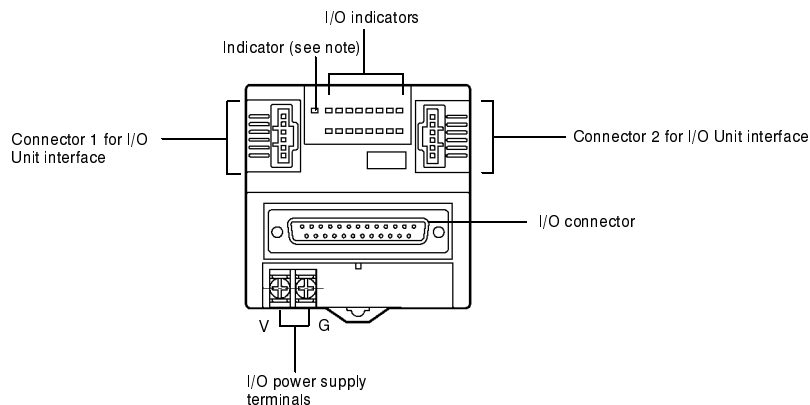
GT1-ID16MX
GT1-ID16MX-1
GT1-OD16MX
GT1-OD16MX-1



Note: The indicator display for the connector model and high-density connector model is the same as for the terminal block model.

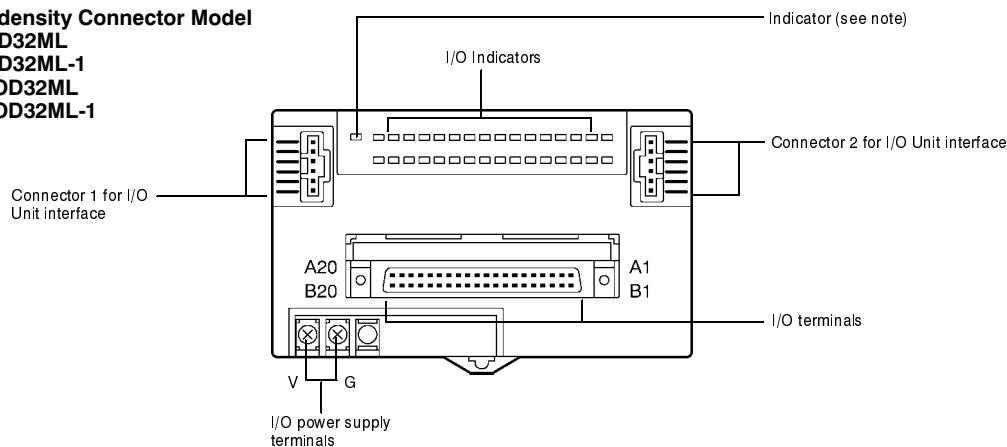
- Connector Model**

GT1-ID16ML
GT1-ID16ML-1
GT1-OD16ML
GT1-OD16ML-1
GT1-ID16DS
GT1-ID16DS-1
GT1-OD16DS
GT1-OD16DS-1



- High-density Connector Model**

GT1-ID32ML
GT1-ID32ML-1
GT1-OD32ML
GT1-OD32ML-1

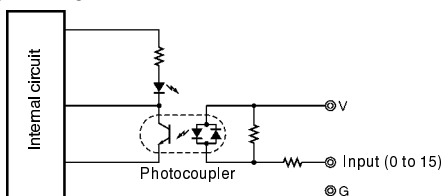


Note: The indicator display for the high-density connector model and the connector model is the same as for the terminal block model.

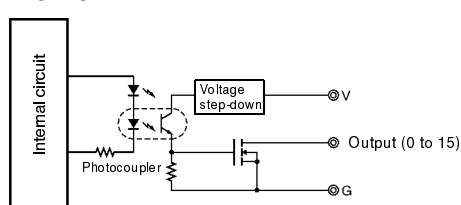
Operation

■ Internal Circuit Configuration

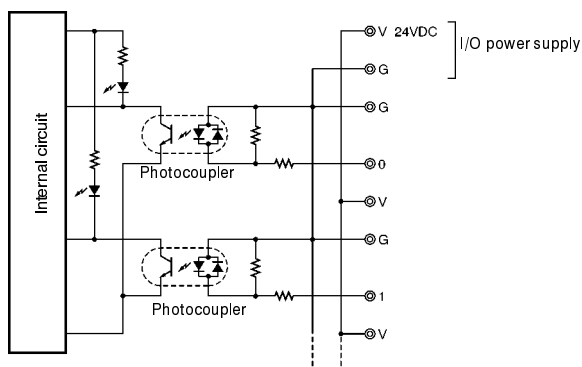
GT1-ID16



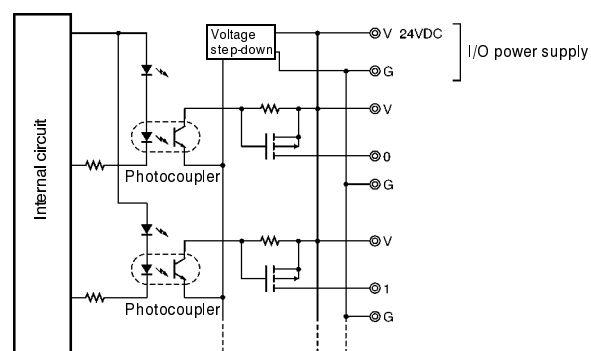
GT1-OD16



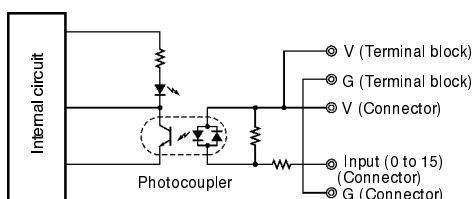
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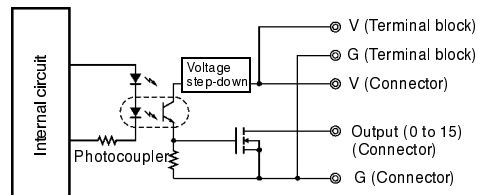
GT1-OD16-1



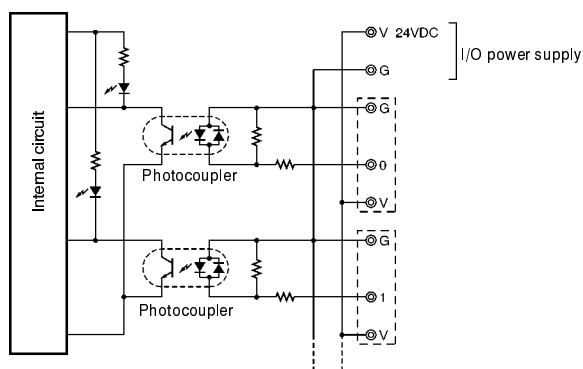
GT1-ID16MX



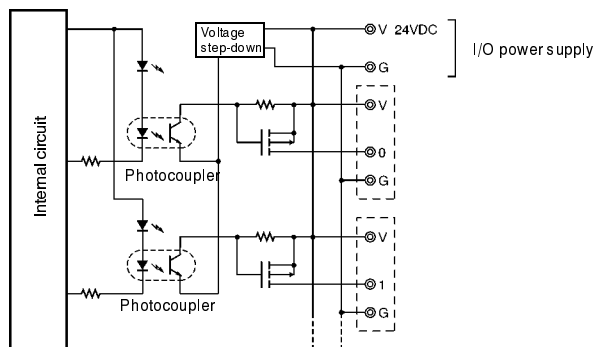
GT1-OD16MX



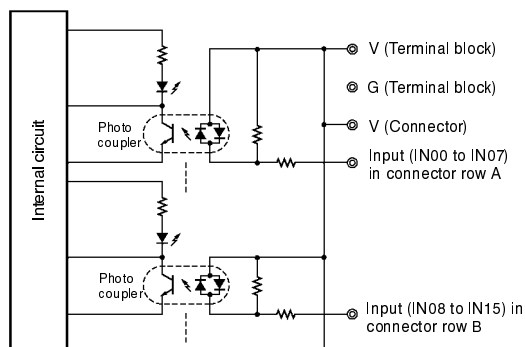
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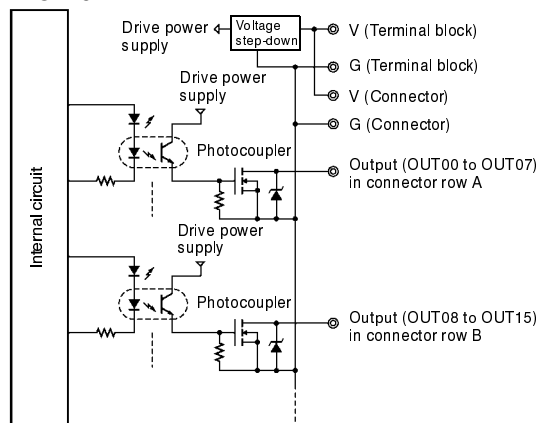
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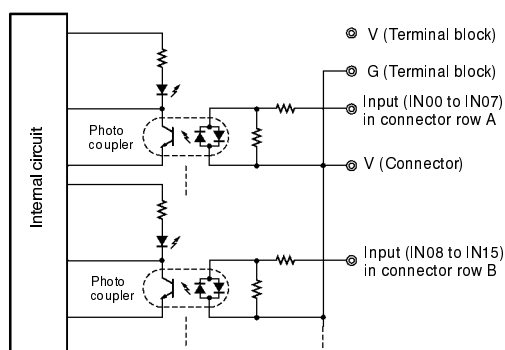
GT1-ID16ML



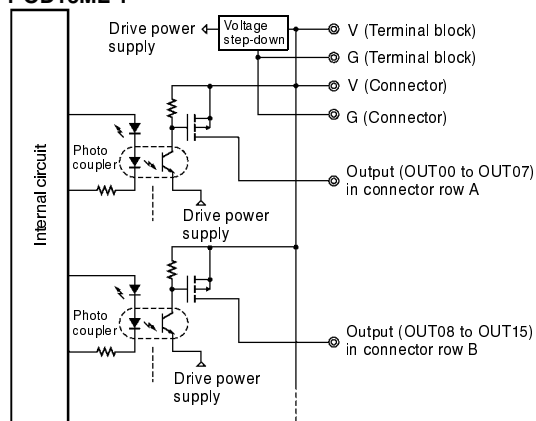
GT1-OD16ML



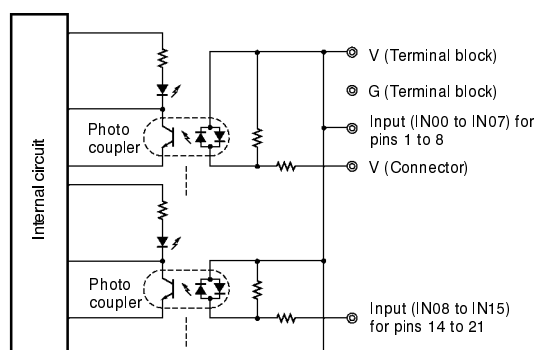
GT1-ID16ML-1



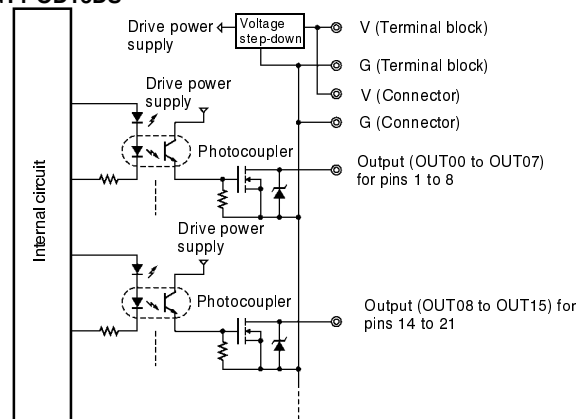
GT1-OD16ML-1



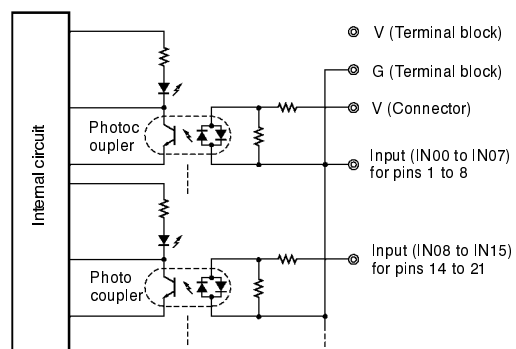
GT1-ID16DS



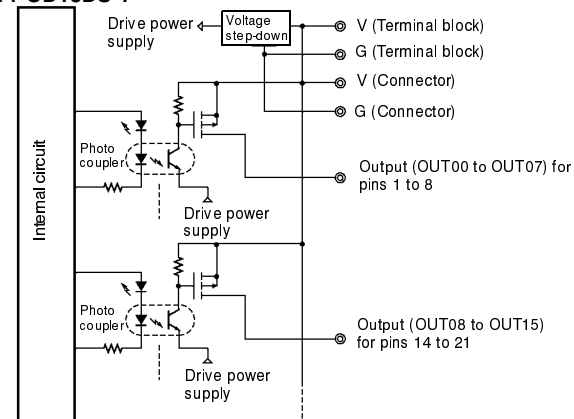
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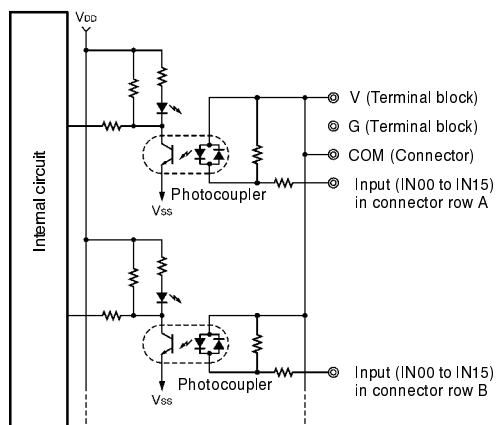
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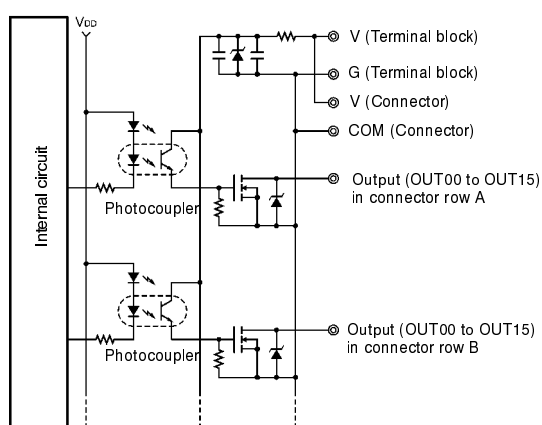
GT1-OD16DS-1



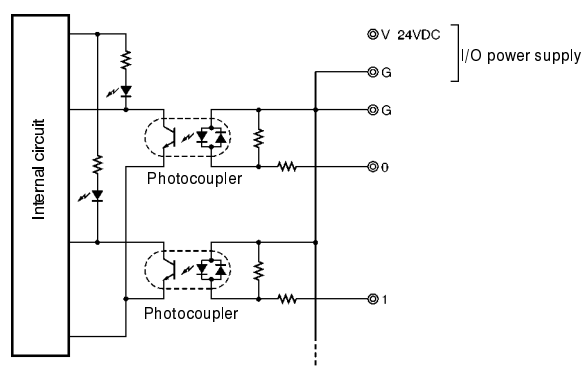
GT1-ID32ML



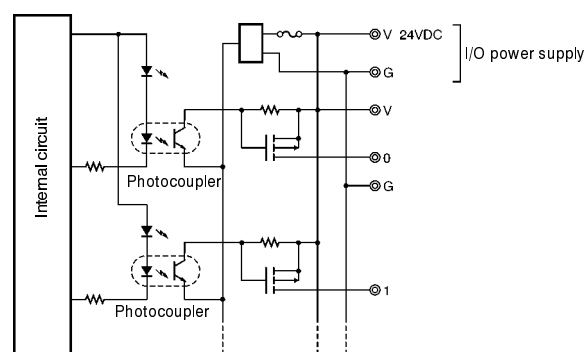
GT1-OD32ML



GT1-ID32ML-1



GT1-OD32ML-1

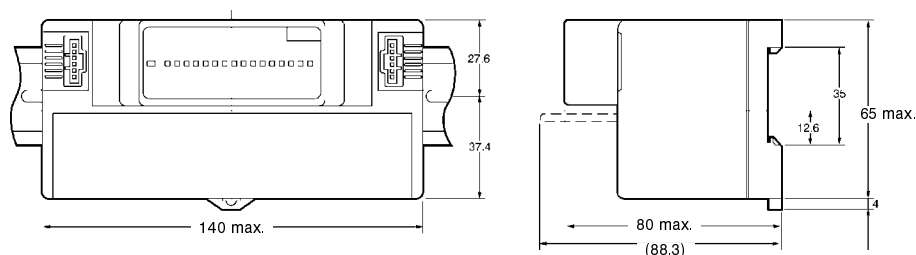
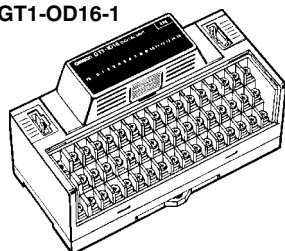


Dimensions

Note: All units are in millimeters unless otherwise indicated.

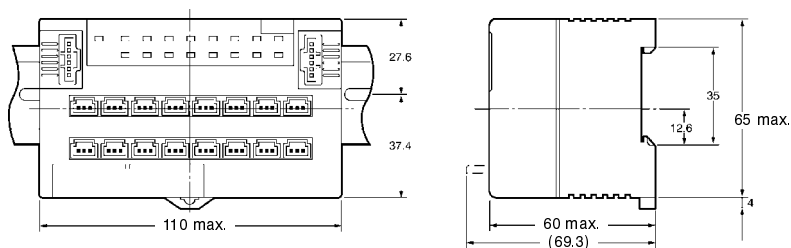
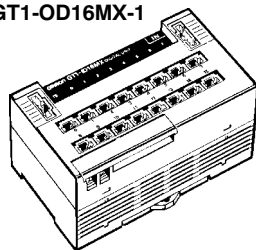
• Terminal Block Model

GT1-ID16
GT1-ID16-1
GT1-OD16
GT1-OD16-1

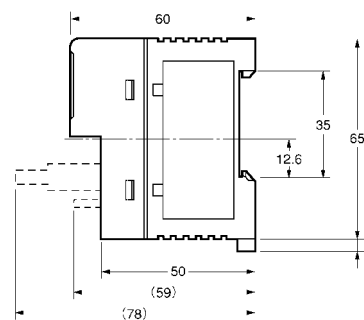
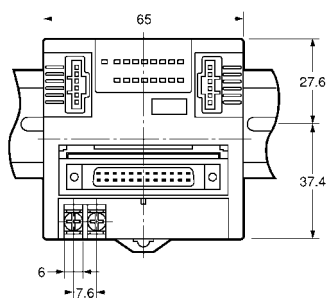
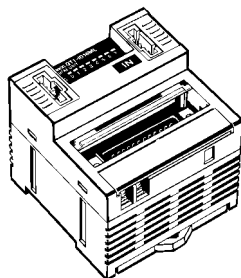


• Connector Model

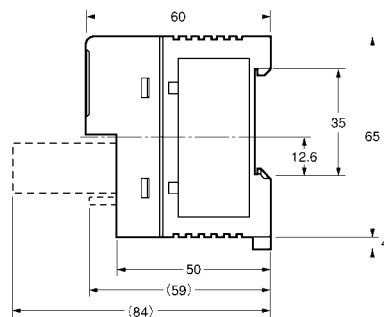
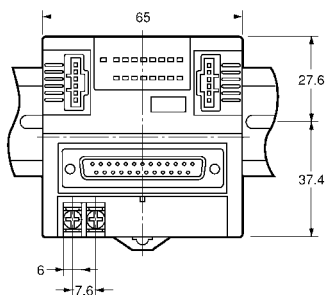
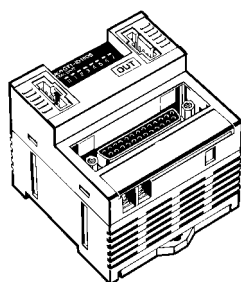
GT1-ID16MX
GT1-ID16MX-1
GT1-OD16MX
GT1-OD16MX-1



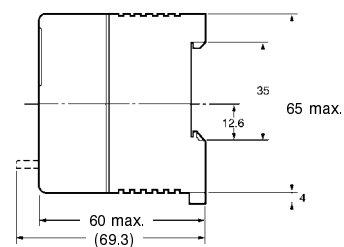
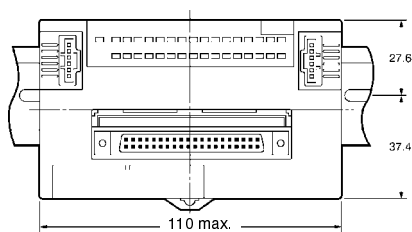
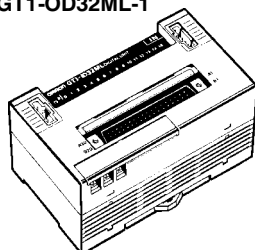
- Connector Model
GT1-ID16ML
GT1-ID16ML-1
GT1-OD16ML
GT1-OD16ML-1



- Connector Model
GT1-ID16DS
GT1-ID16DS-1
GT1-OD16DS
GT1-OD16DS-1



- High-density Connector Model
GT1-ID32ML
GT1-ID32ML-1
GT1-OD32ML
GT1-OD32ML-1

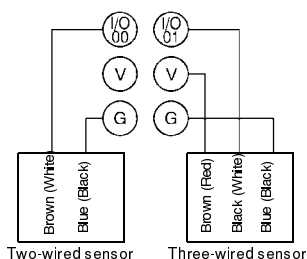


Installation

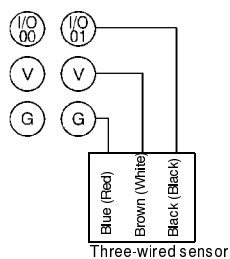
■ Wiring

• Terminal Block Models

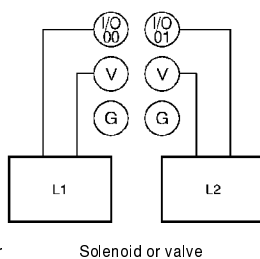
GT1-ID16 Input Unit



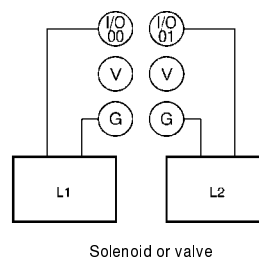
GT1-ID16-1 Input Unit



GT1-OD16 Output Unit

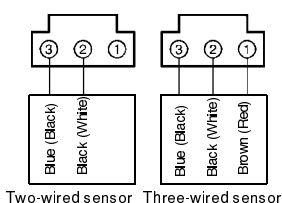


GT1-OD16-1 Output Unit

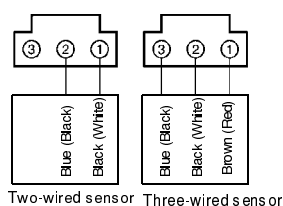


• Connector Models

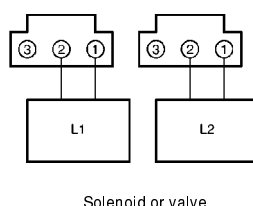
GT1-ID16MX Input Unit



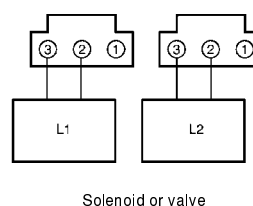
GT1-ID16MX-1 Input Unit



GT1-OD16MX Output Unit



GT1-OD16MX-1 Output Unit



• Connector Model Terminal Arrangement

GT1-ID16ML Input Unit

A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
NC	NC	NC	V	7	6	5	4	3	2	1	0
B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
NC	NC	NC	V	15	14	13	12	11	10	9	8

GT1-ID16ML-1 Input Unit

A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
NC	NC	NC	G	7	6	5	4	3	2	1	0
B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
NC	NC	NC	G	15	14	13	12	11	10	9	8

GT1-OD16ML (-1) Output Unit

A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
NC	NC	V	G	7	6	5	4	3	2	1	0
B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
NC	NC	V	G	15	14	13	12	11	10	9	8

GT1-ID16DS (-1)/OD16DS (-1) I/O Unit

13	12	11	10	9	8	7	6	5	4	3	2	1
NC	NC	NC	V	G	7	6	5	4	3	2	1	0

25	24	23	22	21	20	19	18	17	16	15	14
NC	NC	V	G	15	14	13	12	11	10	9	8

• High-density Connector Model Terminal Arrangement

GT1-ID32ML Input Unit

Pin number	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
Function	IN 00	IN 01	IN 02	IN 03	IN 04	IN 05	IN 06	IN 07	V	IN 08	IN 09	IN 10	IN 11	IN 12	IN 13	IN 14	IN 15	V	NC	NC

Pin number	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
Function	IN 00	IN 01	IN 02	IN 03	IN 04	IN 05	IN 06	IN 07	V	IN 08	IN 09	IN 10	IN 11	IN 12	IN 13	IN 14	IN 15	V	NC	NC

GT1-ID32ML-1 Input Unit

Pin number	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
Function	IN 00	IN 01	IN 02	IN 03	IN 04	IN 05	IN 06	IN 07	G	IN 08	IN 09	IN 10	IN 11	IN 12	IN 13	IN 14	IN 15	G	NC	NC

Pin number	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
Function	IN 00	IN 01	IN 02	IN 03	IN 04	IN 05	IN 06	IN 07	G	IN 08	IN 09	IN 10	IN 11	IN 12	IN 13	IN 14	IN 15	G	NC	NC

GT1-OD32ML (-1) Output Unit

Pin number	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
Function	OUT 00	OUT 01	OUT 02	OUT 03	OUT 04	OUT 05	OUT 06	OUT 07	G	V	OUT 08	OUT 09	OUT 10	OUT 11	OUT 12	OUT 13	OUT 14	OUT 15	G	V

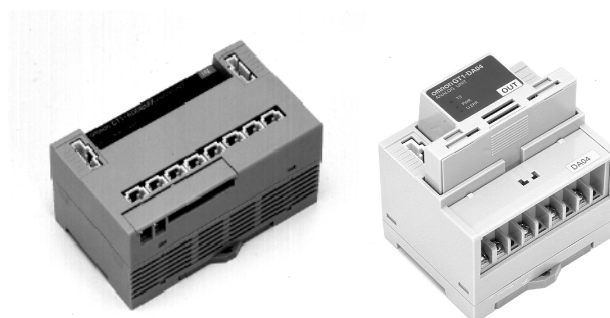
Pin number	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
Function	OUT 00	OUT 01	OUT 02	OUT 03	OUT 04	OUT 05	OUT 06	OUT 07	G	V	OUT 08	OUT 09	OUT 10	OUT 11	OUT 12	OUT 13	OUT 14	OUT 15	G	V

Analog Input Unit

GT1-AD

Analog Input Unit Compatible with MULTIPLE I/O TERMINAL

- Input block incorporates connectors that can be easily mounted or dismounted.
- 8 inputs
- High resolution of 1/6,000
- High conversion speed of 8 ms/8 points or 4 ms/4 points.
- Dimensions of connector model:
110 × 60 × 65 (W × H × D)
- Dimensions of terminal block model:
80 × 80 × 65 (W × H × D)
- DIN track mounting.



Ordering Information

I/O classification	I/O points	Terminal	Power supply voltage	I/O specification	Model
Analog input	8	Molex connector	24 VDC	4 to 20 mA, 0 to 20 mA, 0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V	GT1-AD08MX
	4	Terminal block			GT1-AD04

Specifications

■ Input

Item		Voltage input	Current input
Input points		8	
Input type		0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V	0 to 20 mA, 4 to 20 mA
Max. signal input		±15 V	±30 mA
Input impedance		1 MΩ min.	Approx. 250 Ω
Resolution		1/6,000 (FS)	
Overall accuracy	25°C	±0.3% FS	±0.4% FS
	-10°C to 55°C	±0.6% FS	±0.8% FS
Conversion speed		8 ms/8 points, 4 ms/4 points	
Conversion output data		Binary data -10- to 10-V range: F448 to 0BB8 full scale Other signal ranges: 0000 to 1770 full scale	
Insulation method		Transistor or photocoupler insulation between inputs and power lines.	

■ Characteristics

I/O power supply voltage	20.4 to 26.4 VDC (24 VDC +10%/–15%)	
Current consumption	I/O Unit interface	Internal circuitry power supply
	50 mA max.	100 mA max.
Noise immunity	±1,500 V (p-p) with a pulse width of 0.1 to 1 μs	
Vibration resistance	10 to 150 Hz, 1.0-mm double amplitude or 70 m/s ²	
Shock resistance	200 m/S ²	
Dielectric strength	500 VAC	
Mounting method	35-mm DIN track mounting	
Mounting strength	No damage when 100 N pull load was applied in all directions (10 N min. in the DIN track direction)	
Terminal strength	No damage when 100 N pull load was applied	
Ambient temperature	Operating: –10°C to 55°C (with no icing or condensation)	
	Storage: –25°C to 65°C (with no icing or condensation)	
Ambient humidity	Operating: 25% to 85%	

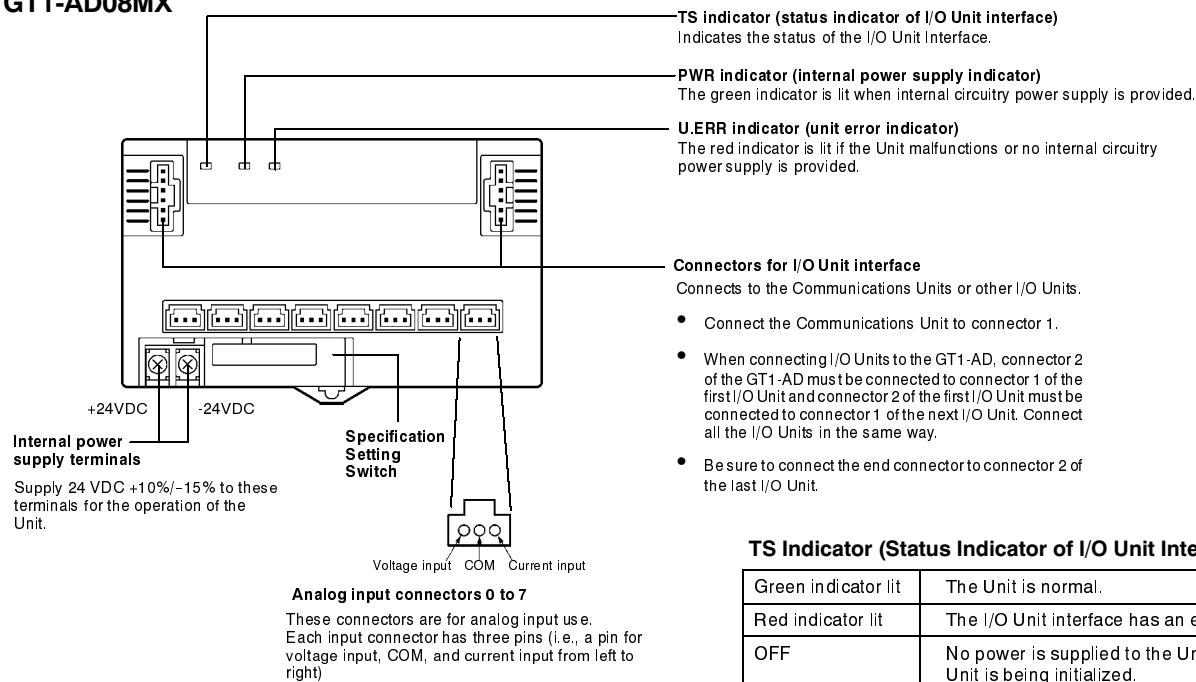
■ Connector

Type			Model	Remarks
Molex connector	Press-fit terminal	Housing	52109-390	Corresponding to 24 AWG
		Solderless terminal	51030-0330	(See Note.)
	Solderless terminal	Chain terminal	50083-8014	Corresponding to 24 to 30 AWG
			50084-8014	Corresponding to 22 to 24 AWG
		Loose terminal	50083-8114	Corresponding to 24 to 30 AWG (see note)
			50084-8014	Corresponding to 22 to 24 AWG
		Press-fit tool	57037-5000	(See Note.)

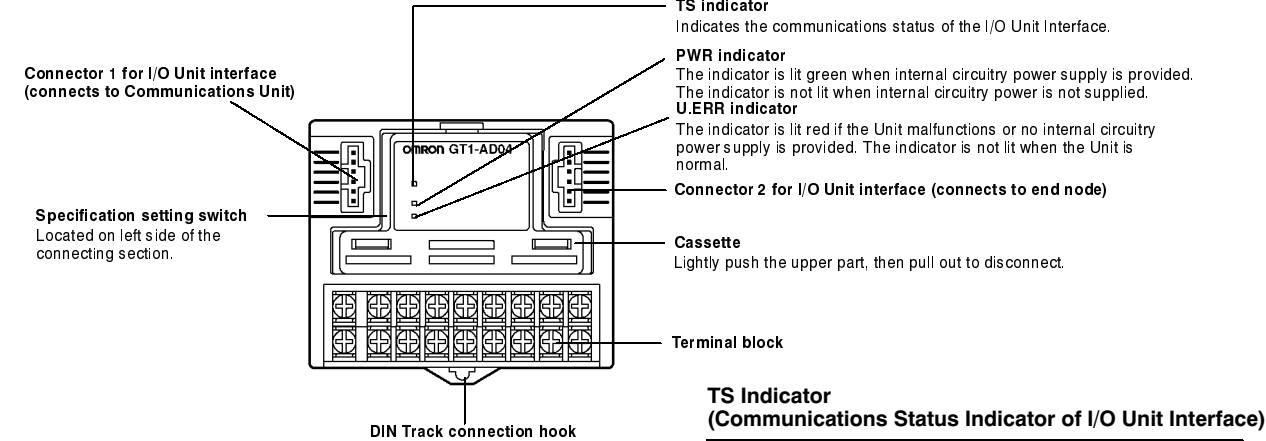
Note: Contact your OMRON representatives for the above connectors.

Nomenclature

GT1-AD08MX



GT1-AD04



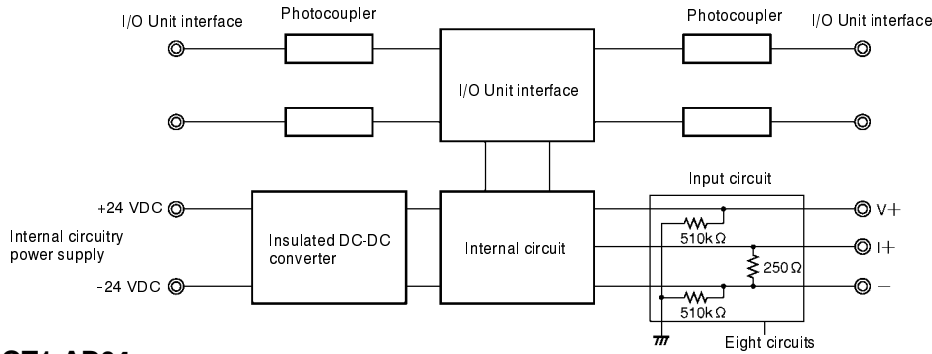
**TS Indicator
(Communications Status Indicator of I/O Unit Interface)**

Green indicator lit	The Unit is normal.
Red indicator lit	The I/O Unit interface has an error.
Not lit	No power is supplied to the Unit or the Unit is being initialized.

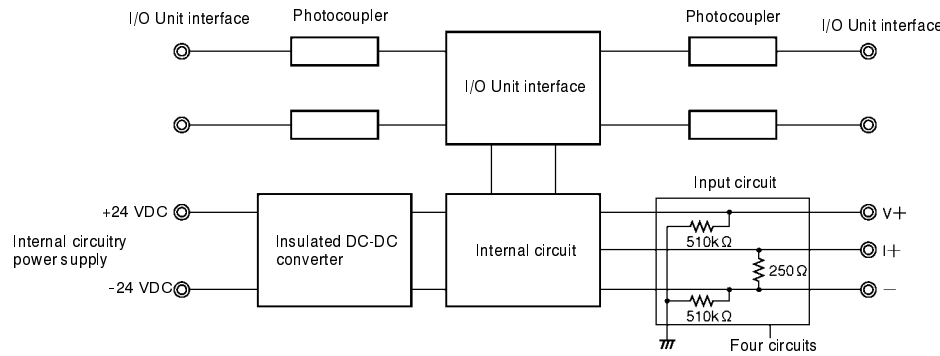
Operation

■ Internal Circuit Configuration

GT1-AD08MX



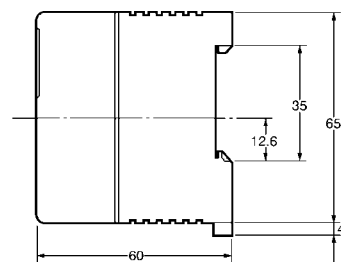
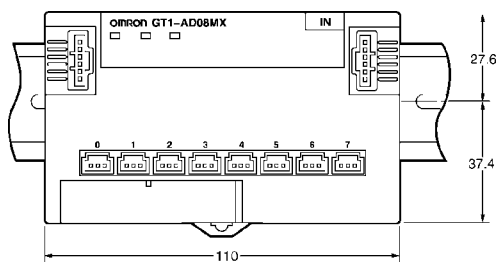
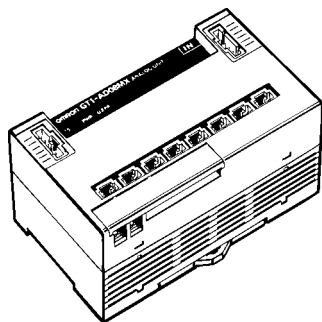
GT1-AD04



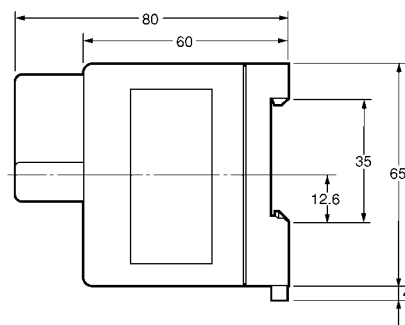
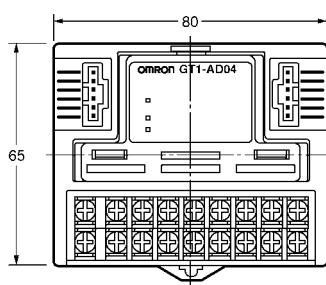
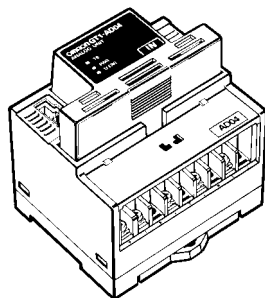
Dimensions

Note: All units are in millimeters unless otherwise indicated.

GT1-AD08MX



GT1-AD04

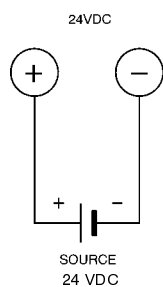


Installation

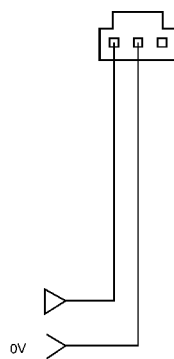
■ Wiring

Be sure to connect Molex-made connectors for analog input wires and connect the wires as shown below.

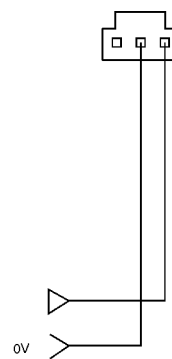
Internal Circuitry Power Supply



Voltage Input



Current Input



Precautions

Refer to the *CompoBus/D Operation Manual (W267)* before using the Unit.

Wiring

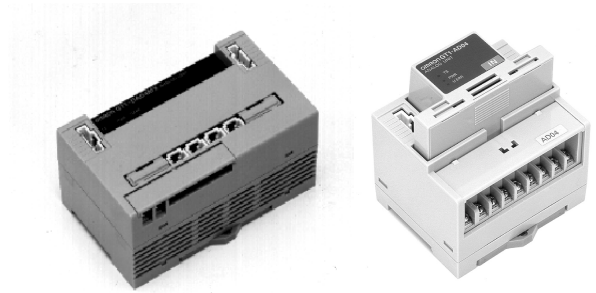
- To prevent inductive noise, do not wire power lines or high-tension lines along with or near the cables. Other noise-prevention techniques, such as using shielding or separate conduit/ducting, are also effective.
- Install the Unit as far as possible from equipment that generates strong high-frequency signals (such as high-frequency welders) and equipment that generates surges. Such equipment can cause the Unit to malfunction.
- Install surge absorbers or noise filters on nearby equipment that generates noise, particularly equipment that has inductive components such as motors, transformers, solenoids, or magnetic coils.
- When using a noise filter in the power supply, check the voltage and current and install the noise filter as close as possible to the Unit.

Analog Output Unit

GT1-DA

Analog Output Unit Compatible with MULTIPLE I/O TERMINAL

- Output block incorporates connectors that can be easily mounted or dismounted.
- 4 inputs
- High resolution of 1/6,000.
- High conversion speed of 4 ms/4 points.
- Dimensions of connector model:
110 × 60 × 65 (W × H × D)
Dimensions of terminal block model:
80 × 80 × 65 (W × H × D)
- DIN track mounting



Ordering Information

I/O classification	I/O points	Terminal	Power supply voltage	I/O specification	Model
Analog output	4	Connector	24 VDC	0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V	GT1-DA04MX
		Terminal block		0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	GT1-DA04

Specifications

■ Output

Item		Voltage output	Current output
Output points		4	
Output type		0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V	4 to 20 mA
Output permissible load resistance		5 kΩ min.	600 Ω max.
Output impedance		0.5 Ω max.	---
Resolution		1/6,000 (full scale)	
Overall accuracy	25°C	±0.4% full scale	
	-10°C to 55°C	±0.8% full scale	
Conversion speed		4 ms/4 points	
DA output data		Binary data -10- to 10-V range: F448 to 0BB8 full scale Other signal ranges: 0000 to 1770 full scale	
Insulation method		Transistor or photocoupler insulation between outputs and power lines.	

■ Characteristics

I/O power supply voltage	20.4 to 26.4 VDC (24 VDC +10%/–15%)	
Current consumption	I/O Unit Interface	Internal circuitry power supply
	50 mA max.	GT1-DA04MX: 100 mA max. GT1-DA04: 150 mA max.
Noise immunity	±1,500 V (p-p) with a pulse width of 0.1 to 1 μs	
Vibration resistance	10 to 150 Hz, 1.0-mm double amplitude or 70 m/s ²	
Shock resistance	200 m/s ²	
Dielectric strength	500 VAC	
Mounting method	35-mm DIN track mounting	
Mounting strength	No damage when 100 N pull load was applied in all directions (10 N min. in the DIN track direction)	
Terminal strength	No damage when 100 N pull load was applied	
Ambient temperature	Operating: –10°C to 55°C	
	Storage: –25°C to 65°C	
Ambient humidity	Operating: 25% to 85% RH (with no condensation)	

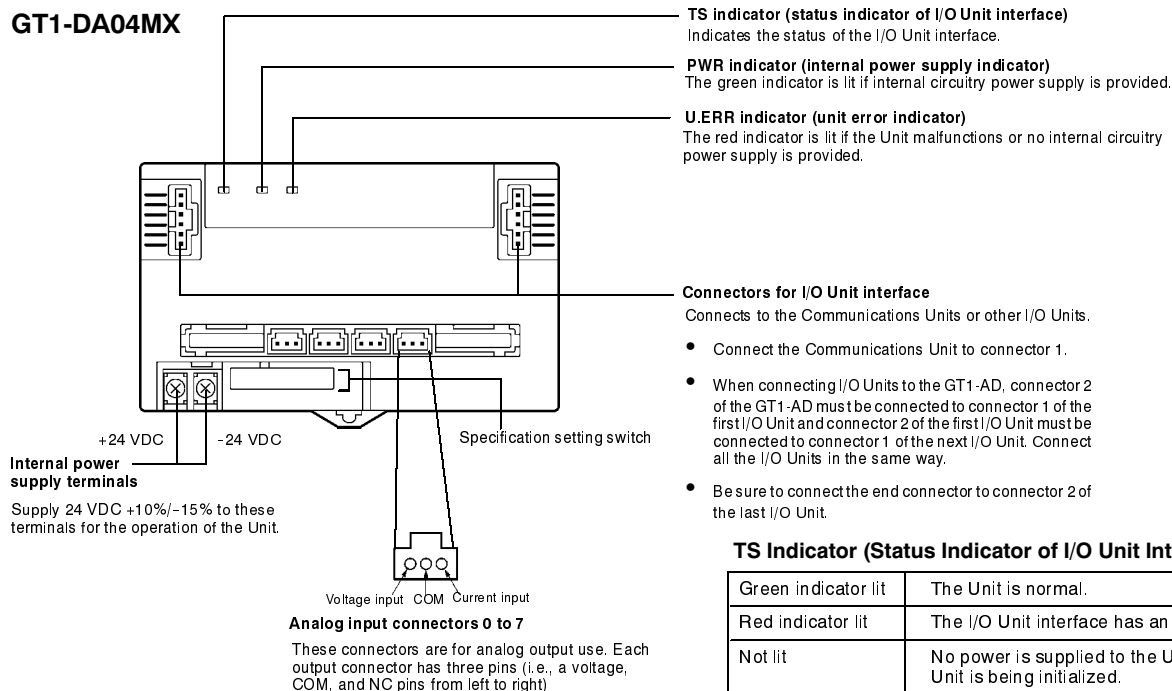
■ Connectors

Type			Model	Remarks
Molex connector	Press-fit terminal	Housing	52109-390	Corresponding to 24 AWG
	Solderless terminal	Housing	51030-0330	(See note.)
		Chain terminal	50083-8014	Corresponding to 24 to 30 AWG
			50084-8014	Corresponding to 22 to 24 AWG
		Loose terminal	50083-8114	Corresponding to 24 to 30 AWG (See note.)
			50084-8014	Corresponding to 22 to 24 AWG
		Press-fit tool	57037-5000	(See note.)

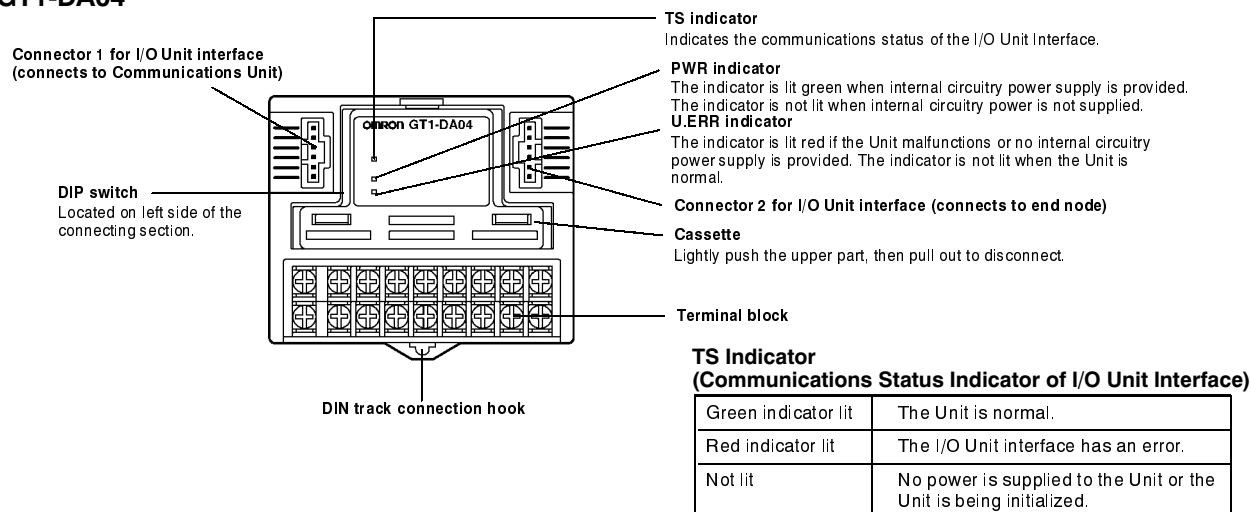
Note: Contact your OMRON representatives for the above connectors.

Nomenclature

GT1-DA04MX



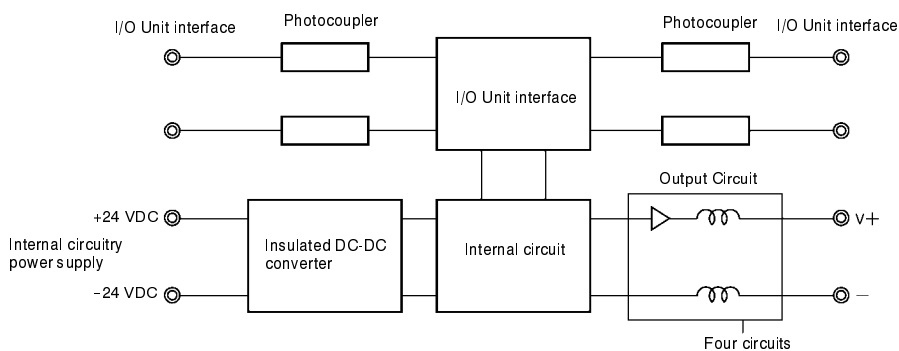
GT1-DA04



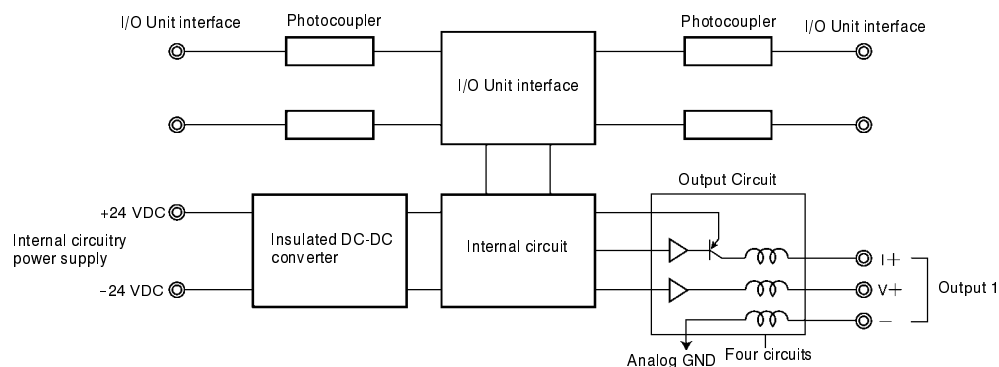
Operation

■ Internal Circuit Configuration

GT1-DA04MX



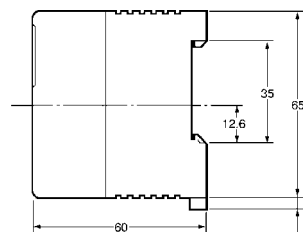
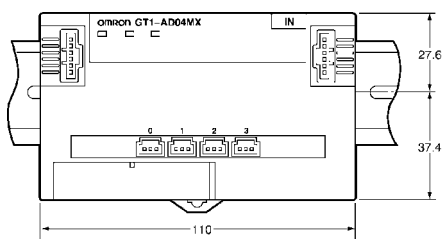
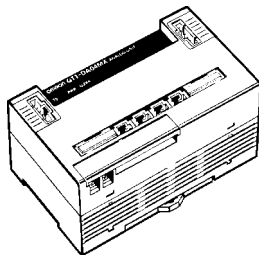
GT1-DA04



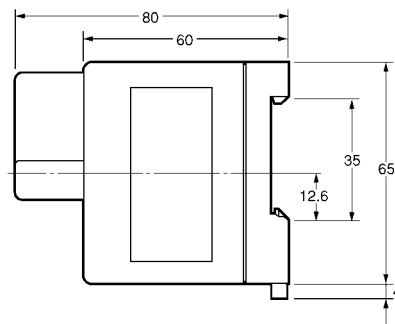
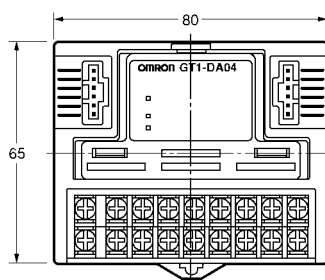
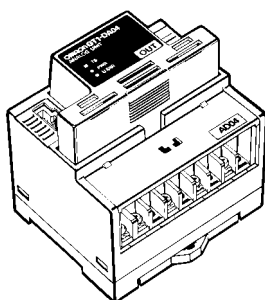
Dimensions

Note: All units are in millimeters unless otherwise indicated.

GT1-DA04MX



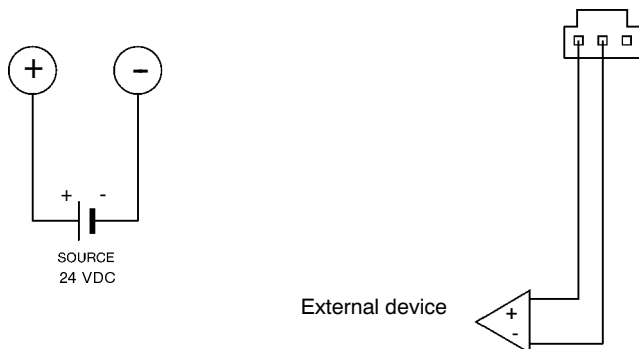
GT1-DA04



Installation

■ Wiring

Be sure to connect Molex-made connectors for analog output wires and connect the wires as shown below.



Precautions

Refer to the *CompoBus/D Operation Manual (W267)* before using the Unit.

Wiring

- To prevent inductive noise, do not wire power lines or high-tension lines along with or near the cables. Other noise-prevention techniques, such as using shielding or separate conduit/ducting, are also effective.
- Install the Unit as far as possible from equipment that generates strong high-frequency signals (such as high-frequency welders) and equipment that generates surges. Such equipment can cause the Unit to malfunction.
- Install surge absorbers or noise filters on nearby equipment that generates noise, particularly equipment that has inductive components such as motors, transformers, solenoids, or magnetic coils.
- When using a noise filter in the power supply, check the voltage and current and install the noise filter as close as possible to the Unit.

Temperature Input Unit

GT1-TS04□

Temperature Input Units for use with MULTIPLE I/O TERMINAL

- Thermocouples and platinum resistance thermometer models are available.
- Conversion time is only 250 ms for 4 inputs.
- The Configurator can be used to calibrate temperatures.
- The circuit section can be removed, so rewiring isn't required during maintenance.
- Dimensions: 80 × 80 × 65 mm (W × H × D)
- DIN track mounting.



Ordering Information

I/O type	I/O points	Connection	Rated voltage	Input specification	Model
Temperature inputs	4 inputs	Terminal Block	24 V DC	Thermocouple	GT1-TS04T
				Platinum resistance thermometer	GT1-TS04P

Specifications

■ General Specifications

Supply voltage	20.4 to 26.4 V DC
Current consumption	I/O Unit Interface: 50 mA max. Internal power supply: 80 mA max.
Vibration resistance	10 to 150 Hz, 0.7-mm amplitude or 50 m/s ²
Shock resistance	150 m/s ²
Dielectric strength	500 V AC
Mounting method	35-mm DIN Track mounting
Ambient temperature	Operating: -10 to 55 °C Storage: -25 to 65 °C
Ambient humidity	Operating: 25 to 85% (with no condensation)
Accessories	I/O Unit Connecting Cable (40 mm)

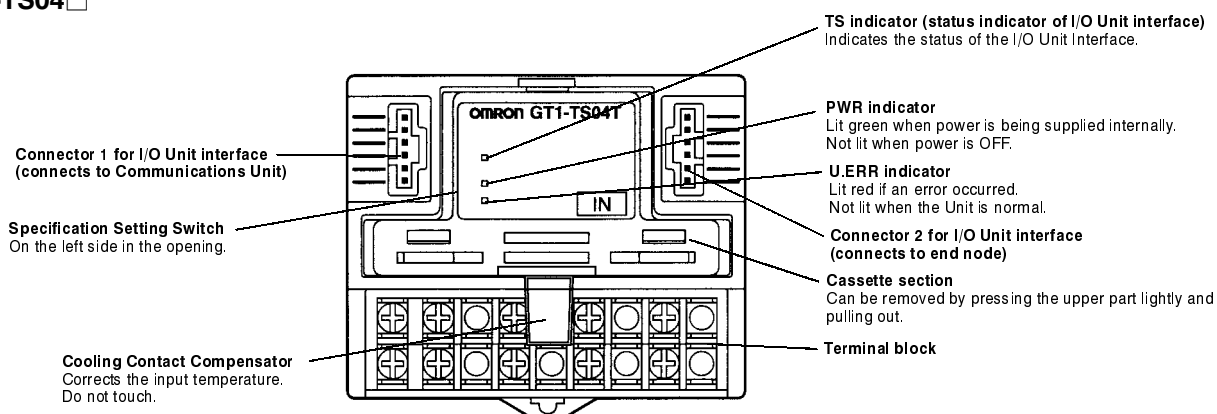
■ Input Specifications

Item	GT1-TS04T	GT1-TS04P
Input type	Switchable: R, S, K, J, T, L, or B	Switchable: Pt100 or JPt100
Indicated accuracy	(The larger of ±0.3% of the indicated value or ±1 °C. See note.) ±1 digit max.	When the range is -200.0 to 650.0: (The larger of ±0.3% of the indicated value or ±0.8 °C) ±1 digit max. When the range is -200.0 to 200.0: (The larger of ±0.3% of the indicated value or ±0.5 °C) ±1 digit max.
Conversion interval	250 ms/4 inputs	
Temperature conversion data	Binary data	
Isolation method	Photocoupler isolation between inputs and communications lines Photocoupler isolation between each temperature input signal	

Note: K or T below -100°C: ±2°C ±1 digit max.
L: ±2°C ±1 digit max.
R or S below 200°C: ±3°C ±1 digit max.
B below 400°C: No standard set

Nomenclature

GT1-TS04□



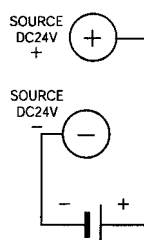
TS Indicator (Communications Status Indicator of I/O Unit Interface)

Green indicator lit	The Unit is normal.
Red indicator lit	The I/O Unit interface has an error.
Not lit	No power is supplied to the Unit or the Unit is being initialized.

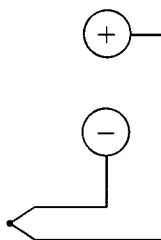
Operation

■ Wiring

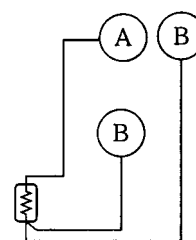
Power Supply



GT1-TS04T



GT1-TS04P



■ Terminal Arrangement

GT1-TS04T

+	+	NC	+	NC	+	NC	+	NC
0	0		1		2		3	
-	-	NC	-	NC	-	NC	-	NC
0	0		1		2		3	

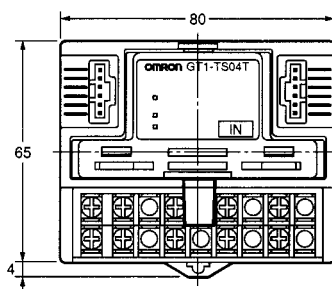
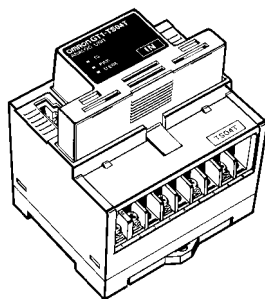
GT1-TS04P

+	A	B	A	B	A	B	A	B
0	0	0	1	1	2	2	3	3
-	B	NC	B	NC	B	NC	B	NC
0	0		1		2		3	

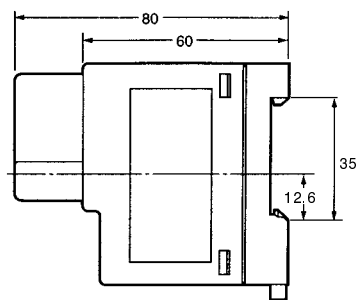
Dimensions

Note: All units are in millimeters unless otherwise indicated.

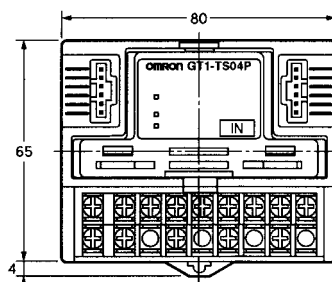
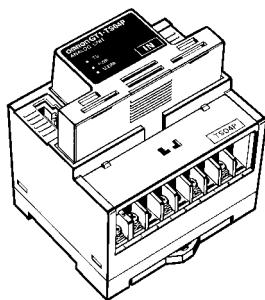
GT1-TS04T



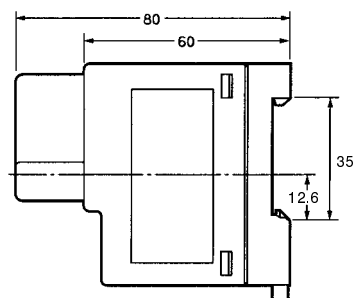
Note: Accessory cable included.



GT1-TS04P



Note: Accessory cable included.



A Counter Unit Enabling Encoder Input

- High-speed pulse with counting speed of 50 kHz.
- Counting can be set to a multiplication factor of 1 or 4.
- Wide range of measurement: -8,388,608 to +8,388,607.
- One external input and two external outputs are available.
- Dimensions: 110 × 60 × 65 (W × H × D).
- DIN track mounting.



Ordering Information

I/O classification	External I/O points	Terminal	Operating mode	Model
Counter Unit	Inputs: 1 Outputs: 2	Terminal block	Linear counter	GT1-CT01

Specifications

■ Output

Output current	0.5 A per point max.
Residual voltage	1.2 V max. (0.5 VDC, between each output terminal and ground)
Leakage current	0.1 mA max. (24 VDC, between each output terminal and G)
ON delay time	0.5 ms max.
OFF delay time	1.5 ms max.
Number of circuits	2

■ Ratings

Current consumption	90 mA max.
Connection distance	Total length: 3 m Maximum length between Units: 1 m
I/O power supply voltage	20.4 to 26.5 VDC (24 VDC -15%/+10%)
Ambient temperature	-10°C to 55°C
Ambient humidity	Operating: 25% to 85% (with no condensation)
Weight	Approx. 250 g
Dimensions	110 × 60 × 65 (W × H × D)

■ Characteristics

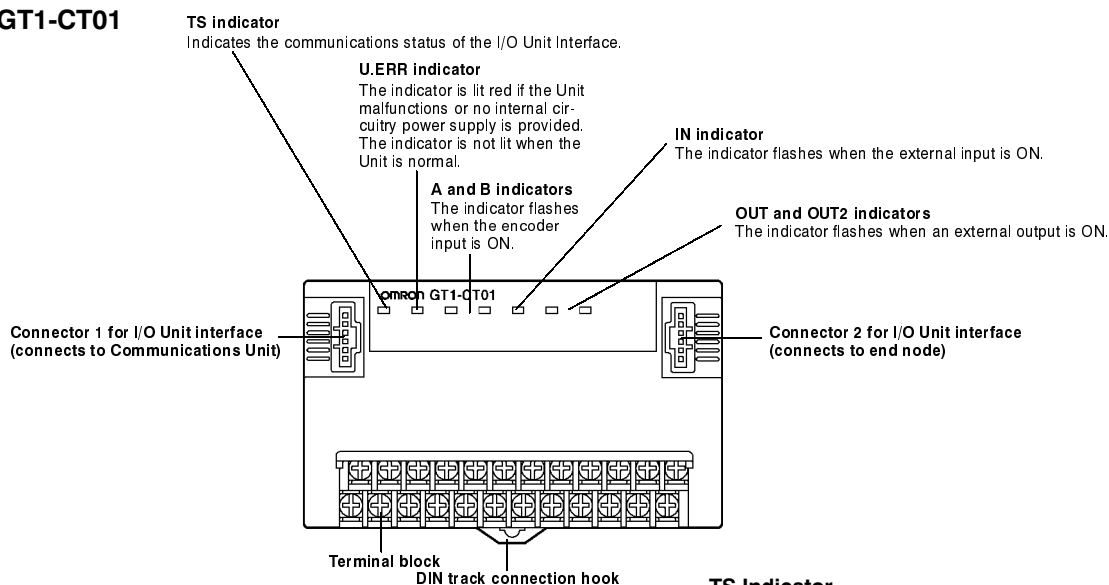
Number of counters		1
Operating mode		Linear counter
Count input	Input signal	Encoder input (A, B, Z)
	Signal level	24 VDC
	Input type	Differential phase pulse input Pulse and direction input
	Maximum counting speed	50 kHz (kcps)
	Counting range	-8,388,608 to +8,388,607
	Other	Differential phase pulse input can be set to a multiplication factor of 1 or 4.
External input	Input signal	External input (IN)
	Signal level	24 VDC
External output	Output	2 external outputs (OUT1 and OUT2)
	Maximum switching capacity	24 VDC 0.5 A
Occupied words	IN	3 words
	OUT	3 words

■ Encoders

Output type	Open-collector output
Power supply voltage	24 VDC
Models	E6B2-CWZ6C E6H-CWZ6C

Nomenclature

GT1-CT01

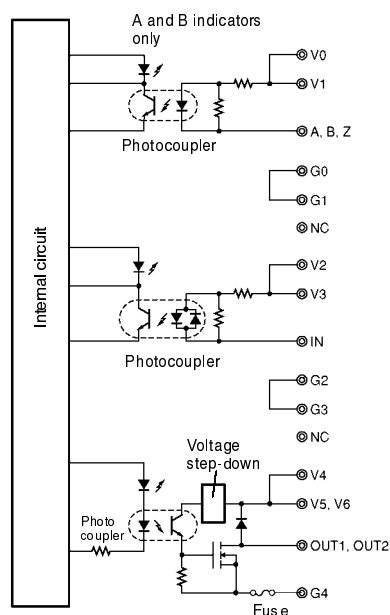


TS Indicator (Communications Status Indicator of I/O Unit Interface)

Green indicator lit	The Unit is normal.
Red indicator lit	The I/O Unit interface has an error.
Not lit	No power is supplied to the Unit or the Unit is being initialized.

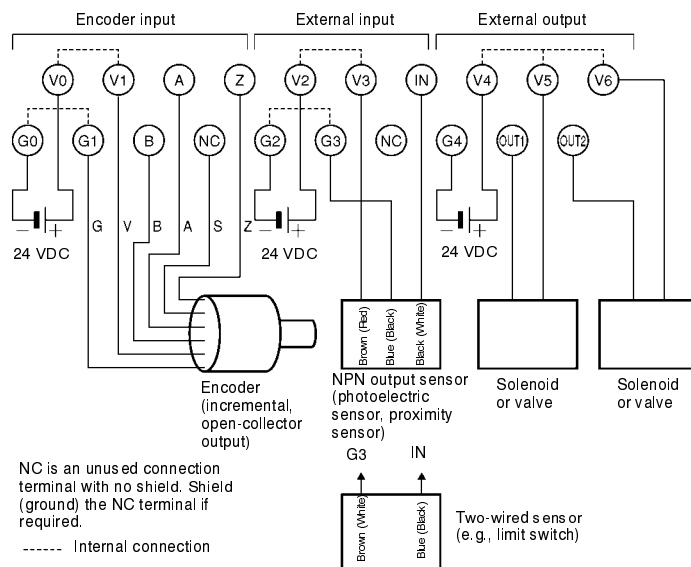
Operation

■ Internal Circuit Configuration



■ Wiring

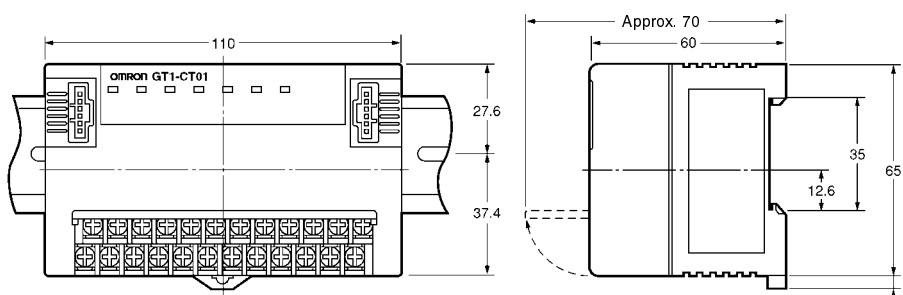
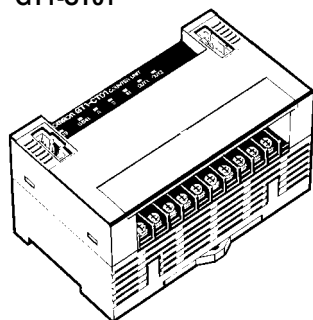
Be sure to connect Molex connectors for analog output wires and connect the wires as shown below.



Dimensions

Note: All units are in millimeters unless otherwise indicated.

GT1-CT01

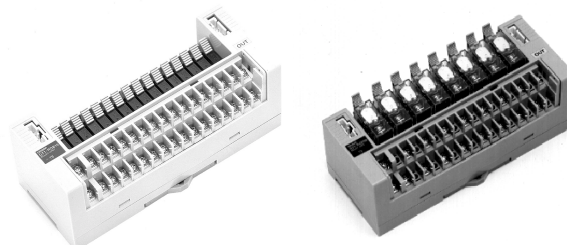


Relay Output Unit

GT1-ROS16/ROP08

Relay Output Unit Compatible with MULTIPLE I/O TERMINAL

- 8- and 16-point relay output models are available.
- Dimensions of 8-point model:
160 x 60 x 65 (W x H x D)
Dimensions of 16-point model:
160 x 60 x 65 (W x H x D)
- DIN track mounting.



Ordering Information

I/O classification	Relay model	I/O points	Terminal	Power supply voltage	I/O specification	Model
Relay output	G6D-1A (24 VDC)	16	M3 terminal block	24 VDC	2 A/SPST-NO	GT1-ROS16
	G2R-1-SN (24 VDC)	8			5 A/SPST-NO	GT1-ROP08

Specifications

■ Characteristics

I/O power supply voltage	24 VDC +10%/-15%			
Current consumption (See note.)	I/O Unit interface		I/O power supply	
	GT1-ROP08	40 mA max.	GT1-ROP08	350 mA max.
	GT1-ROS16	50 mA max.	GT1-ROS16	250 mA max.
Connecting Units	8			
Dielectric strength	500 VAC (between isolated circuits)			
Noise immunity	±1,500 V (p-p) for 10 minutes with a pulse width of 0.1 to 1 μs			
Vibration resistance	10 to 55 Hz, 1.0-mm double amplitude or 70 m/s ²			
Shock resistance	200 m/s ²			
Mounting method	35-mm DIN track mounting			
Mounting strength	No damage when 100 N pull load was applied in all directions			
Terminal strength	No damage when 100 N pull load was applied			
Screw tightening torque	0.3 to 0.5 N • m			
Ambient temperature	Operating: -10°C to 55°C (with no icing or condensation)			
	Storage: -25°C to 65°C (with no icing or condensation)			
Ambient humidity	Operating: 25% to 85%			

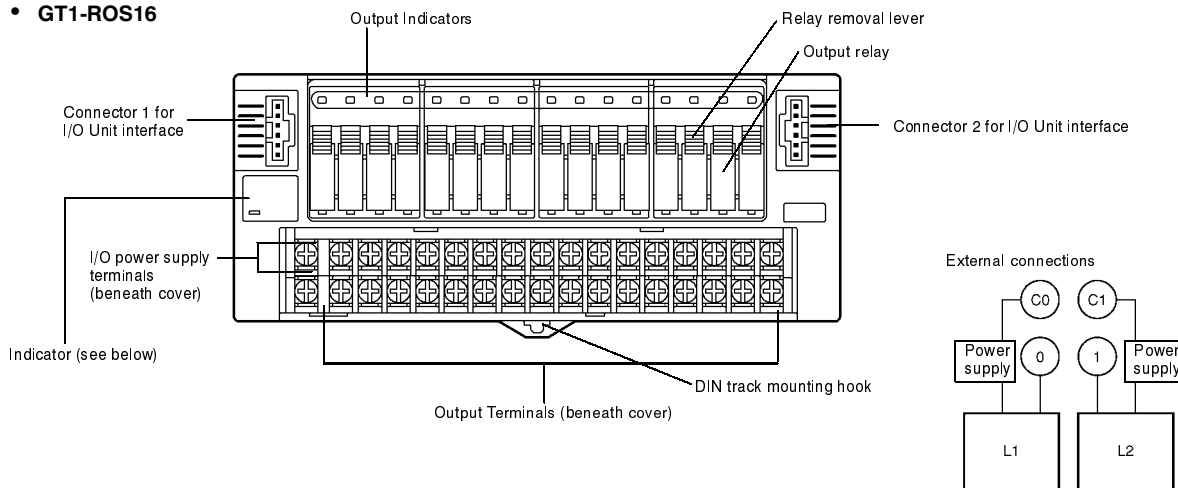
Note: The above current consumption is a value with all the points turned ON including the current consumption of the relay coils.

■ Relay Output Specifications

Item	G6D-1A	G2R-1-SN
Maximum contact current	2 A	5 A
Minimum applicable load (reference values)	5 VDC, 10 mA	5 VDC, 100 mA
Electrical life expectancy	100,000 operations min. with switching frequency of 1,800 operations per hour (at ambient temperature of 23°C with rated load)	
Mechanical life expectancy	20,000,000 operations min. with switching frequency of 18,000 operations per hour (at ambient temperature of 23°C with rated load)	

Nomenclature

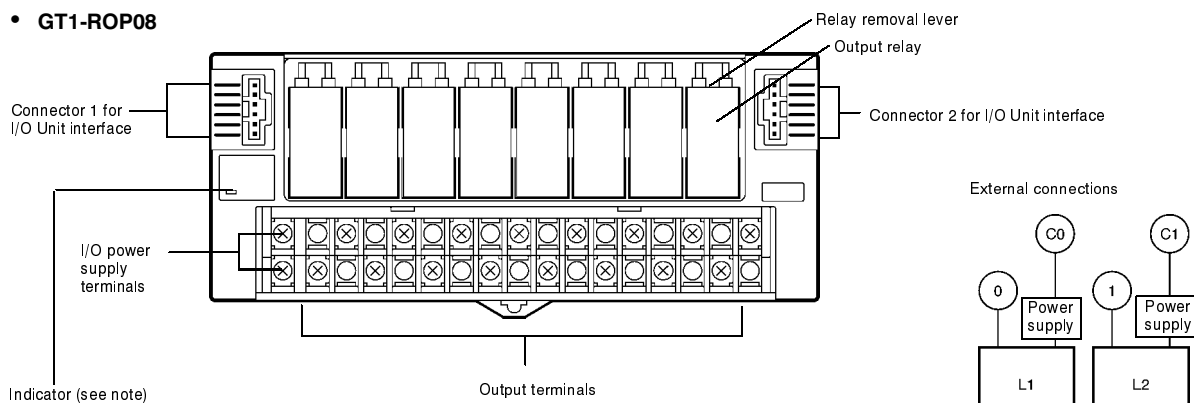
• GT1-ROS16



Indicators

Indicator	Display	Color	Meaning
TS	Lit	Green	The Unit is normal.
	Lit	Red	The I/O Unit interface has an error.
	Not lit	---	No power is supplied to the Unit or the Unit is being initialized.

• GT1-ROP08

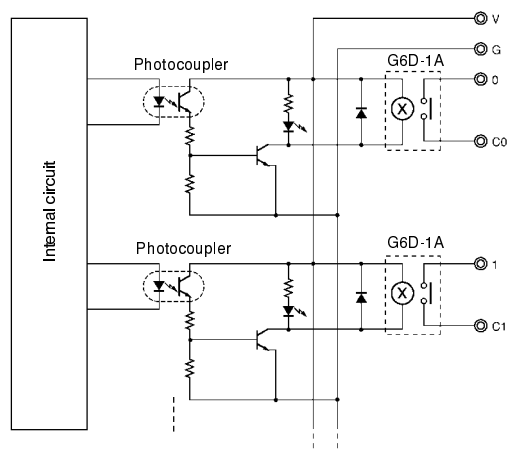


Note: The indicators for the GT1-POP08 are the same as for the GT1-ROS16.

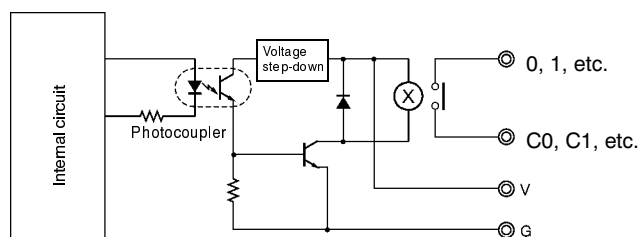
Operation

Internal Circuit Configuration

GT1-ROS16



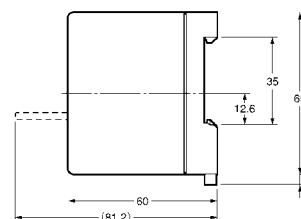
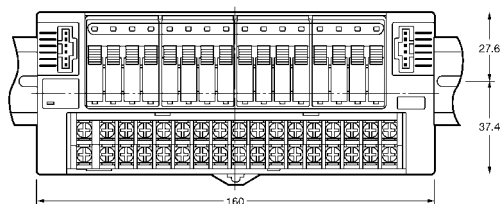
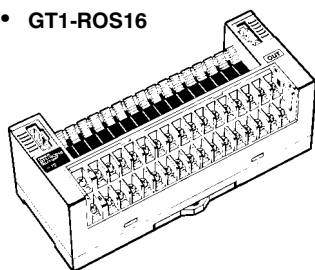
GT1-ROP08



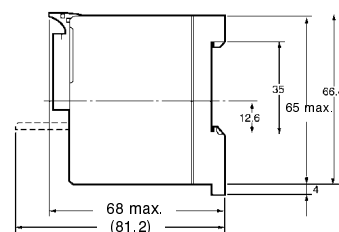
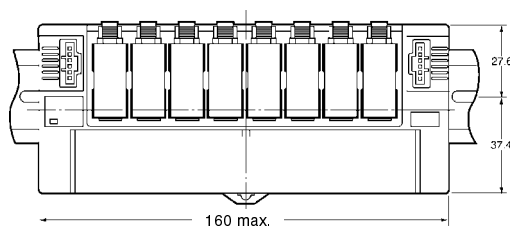
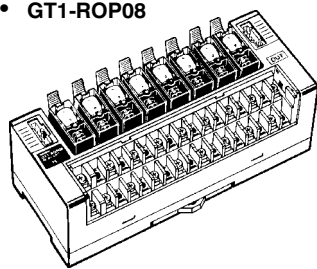
Dimensions

Note: All units are in millimeters unless otherwise indicated.

GT1-ROS16



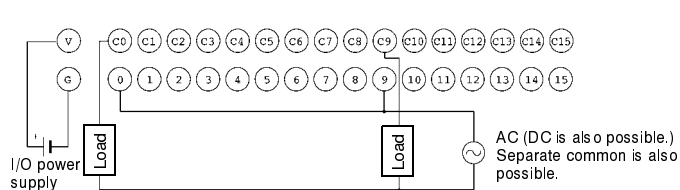
GT1-ROP08



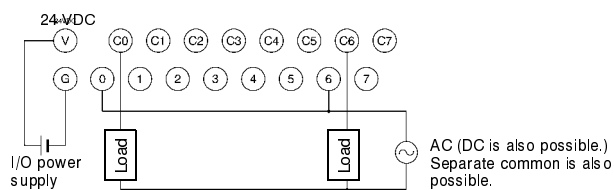
Installation

Wiring

GT1-ROS16



GT1-ROP08





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