# NX-series Position Interface Unit NX-ECO/ECS/PG0

# NX Units for fast and precise positioning control

- Incremental Encoder Input Unit (NX-EC0) More precise timing control by synchronizing the position data with the EtherCAT<sup>®</sup> Distributed Clock
- SSI Input Unit (NX-ECS) Synchronous Serial Interface (SSI) to connect external axes to the Sysmac system
- Pulse Output Unit (NX-PG0)
   Positioning control with pulse outputs to command stepper motor drives and other pulse input motor drives



NX-EC0122

NX-EC0142



NX-PG0242-5

NX-PG0342-5

	Item	Specification		
Enclosure		Mounted in a panel		
Grounding me	thod	Ground to less than 100 $\Omega$		
	Ambient operating temperature	0 to 55°C		
	Ambient operating humidity	10% to 95% (with no condensation or icing)		
	Atmosphere	Must be free from corrosive gases.		
	Ambient storage temperature	-25 to 70°C (with no condensation or icing)		
	Altitude	2,000 m max.		
Operating	Pollution degree	Pollution degree 2 or less: Meets IEC 61010-2-201.		
environment	Noise immunity	Conforms to IEC61000-4-4, 2 kV (power supply line)		
	Overvoltage category	Category II: Meets IEC 61010-2-201.		
	EMC immunity level	Zone B		
	Vibration resistance	Conforms to IEC 60068-2-6. 5 to 8.4 Hz with 3.5-mm amplitude, 8.4 to 150 Hz, acceleration of 9.8 m/s <sup>2</sup> , 100 min each in X, Y, and Z directions (10 sweeps of 10 min each = 100 min total)		
	Shock resistance	Conforms to IEC 60068-2-27. 147 m/s <sup>2</sup> , 3 times each in X, Y, and Z directions		
Applicable standards *		CULus: Listed (UL508) or Listed (UL 61010-2-201), ANSI/ISA 12.12.01, EU: EN 61131-2, C-Tick or RCM, KC Registration, NK, LR		

## **General Specifications**

\* Refer to the OMRON website (www.ia.omron.com) or ask your OMRON representative for the most recent applicable standards for each model.

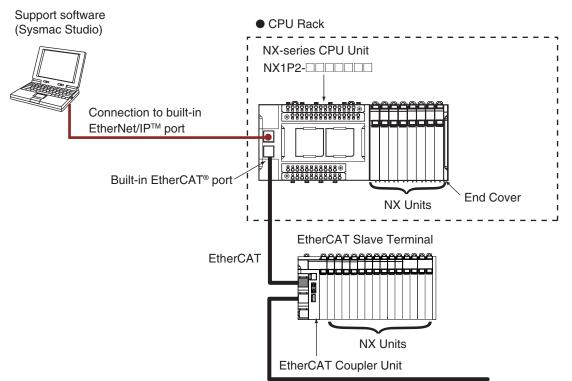
Sysmac is a trademark or registered trademark of OMRON Corporation in Japan and other countries for OMRON factory automation products. EtherCAT<sup>®</sup> is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany. EtherNet/IP<sup>™</sup> is a trademark of ODVA.

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## **System Configurations**

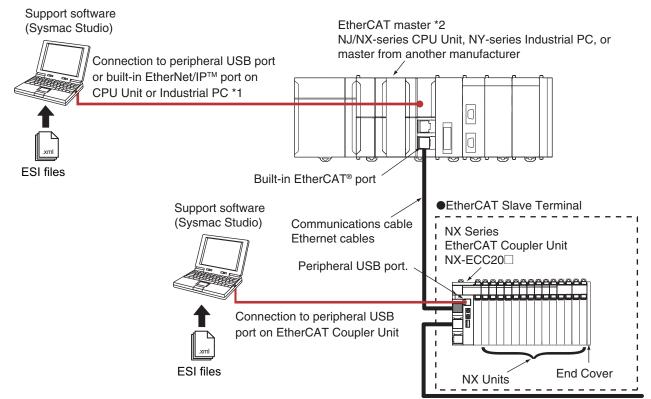
### Connected to a CPU Unit

The following figure shows a system configuration when NX Units are connected to an NX-series CPU Unit.



### Connected to an EtherCAT Coupler Unit

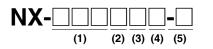
The following figure shows an example of the system configuration when an EtherCAT Coupler Unit is used as a Communications Coupler Unit.



- \*1. The connection method for the Sysmac Studio depends on the model of the CPU Unit or Industrial PC.
- \*2. An EtherCAT Slave Terminal cannot be connected to any of the OMRON CJ1W-NC 81/82 Position Control Units even though they can operate as EtherCAT masters.

Note: To check whether NX Units can be connected to your CPU Unit or Communications Coupler Unit, refer to the version information.

## **Model Number Structure**



#### (1) Unit type

No.	Specification			
EC0	Incremental Encoder Input Unit			
ECS	Serial Encoder Input Unit (SSI Input Unit)			
PG0	Pulse Output Unit			

(3) I/O Specifications The I/O specifications depend on the Unit type.

#### (2) Number of Channels

No.	Specification
1	1 channel
2	2 channels
3	4 channels

#### (4) Additional Functions

No.	Specification
2	Supports synchronous refreshing

#### (5) External connection terminals

No.	Specification				
None	Screwless clamping terminal block				
-5	MIL connector				

## **Ordering Information**

Applicable standards Refer to the OMRON website (www.ia.omron.com) or ask your OMRON representative for the most recent applicable standards for each model.

#### Position Interface: Incremental Encoder Input Units

		Specification					
Product name	Number of channels	External inputs	Maximum response frequency	I/O refreshing method *	Number of I/O entry mappings	Remarks	Model
	1 (NPN)	3 (NPN)	- 500 kHz			24-V voltage	NX-EC0112
Incremental Encoder Input Unit	1 (PNP)	3 (PNP)	500 KHZ	<ul> <li>Free-Run refreshing</li> <li>Synchronous I/O</li> </ul>	1/1	input	NX-EC0122
		3 (NPN)				Line receiver	NX-EC0132
	1	3 (PNP)	4 MHz	<ul> <li>refreshing</li> <li>Task period prioritized</li> </ul>		input	NX-EC0142
	2 (NPN)		500 111	refreshing	2/2	24-V voltage	NX-EC0212
	2 (PNP)	None	500 kHz		2/2	input	NX-EC0222

\* Refer to the I/O Refreshing Methods in the USER'S MANUAL (Cat. No. W524) for the communications cycles for each model.

## **Position Interface: SSI Input Units**

	Specification					
Product name	Number of channels	Input/Output form	Maximum data length	Encoder power supply	Type of external connections	Model
SSI Input Unit	1	EIA standard RS-422-A	32 bits	24 VDC, 0.3 A/CH	Screwless push-in terminal block (12 terminals)	NX-ECS112
	2	EIA standard RS-422-A	32 bits	24 VDC, 0.3 A/CH	Screwless push-in terminal block (12 terminals)	NX-ECS212

## **Position Interface: Pulse Output Units**

		Specification						
Product name	Number of channels *1	External inputs	External outputs	Maximum pulse output speed	I/O refreshing method	Number of I/O entry mappings	Control output interface	Model
	1 (NPN)	2 (NPN)	1 (NPN)	E00 kmma		1/1	Open collector	NX-PG0112
Pulse Output Unit	1 (PNP)	2 (PNP)	1 (PNP)	500 kpps		1/1	output	NX-PG0122
	2 (NF 5 ir (P) 5 ir (NF	5 inputs/CH (NPN)	3 outputs/CH (NPN)	- 4 Mpps	<ul> <li>Synchronous I/O refreshing</li> <li>Task period prioritized</li> </ul>	2/2	Line driver	NX-PG0232-5
		5 inputs/CH (PNP)	3 outputs/CH (PNP)					NX-PG0242-5
		5 inputs/CH (NPN)	3 outputs/CH (NPN)		4 Mpps	refreshing *2		output
	4	5 inputs/CH (PNP)	3 outputs/CH (PNP)			4/4		NX-PG0342-5

\*1. This is the number of pulse output channels.

\*2. Unit version 1.2 or later and an NX-ECC203 EtherCAT Coupler Unit are required.

## NX-EC0/ECS/PG0

Product name	Specification		Model
	Flat Cable Connectors type (Terminal block with M3 screws) 34-terminals		XW2B-34G4
	Flat Cable Connectors type (Terminal block with M3.5 screws) 34-terminals		XW2B-34G5
onnector-Terminal lock Conversion	MIL Connectors type (Slim Connector) 34-terminals		XW2D-34G6
nit	MIL Connectors type (Phillips screw) 34-terminals	BREEDE	XW2R-J34GD-T
	MIL Connectors type (Slotted screw (rise up)) 34-terminals		XW2R-E34GD-T
	MIL Connectors type (Push-in spring) 34-terminals		XW2R-P34GD-T
Cable for Connector-Terminal		Cable length: 0.5 m	XW2Z-050EE
		Cable length: 1 m	XW2Z-100EE
	MIL Connectors type 34-terminals	Cable length: 1.5 m	XW2Z-150EE
lock Conversion		Cable length: 2 m	XW2Z-200EE
IIIL		Cable length: 3 m	XW2Z-300EE
		Cable length: 5 m	XW2Z-500EE

#### Cables and Connectors for Line Driver Output Units with MIL Connectors

Note: Each of NX-PG0232-5 and NX-PG0242-5 has one MIL connector. Therefore, one Connector-Terminal Block Conversion Unit is required. Each of NX-PG0332-5 and NX-PG0342-5 has two MIL connectors. Therefore, two Connector-Terminal Block Conversion Units are required.

#### **Optional Products**

Product name	Specification	Model
Unit/Terminal Block Coding Pins	For 10 Units (Terminal Block: 30 pins, Unit: 30 pins)	NX-AUX02

Product name	No. of terminals	Terminal number indications	Ground terminal mark	Terminal current capacity	Model
	12	A/B			NX-TBA122
Terminal Block	16	A/B	None	10 A	NX-TBA162
	12	C/D			NX-TBB122

#### Accessories

Not included.

## **Version Information**

## Connected to a CPU Unit

Refer to the user's manual for the CPU Unit details on the CPU Units to which NX Units can be connected.

	NX Units	Corresponding unit versions/versions			
Model	Unit version	CPU Unit	Sysmac Studio		
NX-EC0112	Ver. 1.1		Ver. 1.17		
	Ver. 1.2	ver. 1.13	Vel. 1.17		
	Ver. 1.0				
IX-EC0122	Ver. 1.1	Ver. 1.13	Ver. 1.17		
	Ver. 1.2				
NX-EC0132	Ver. 1.1	Ver. 1.13	Ver. 1.17		
	Ver. 1.2	ver. 1.15	Vei. 1.17		
	Ver. 1.0				
IX-EC0142	Ver. 1.1	Ver. 1.13	Ver. 1.17		
	Ver. 1.2				
NX-EC0212	Ver. 1.1		Ver 1 17		
NA-EGUZ 12	Ver. 1.2	ver. 1.13	Ver. 1.17		
	Ver. 1.0		Ver. 1.17		
NX-EC0222	Ver. 1.1	Ver. 1.13			
	Ver. 1.2				
	Ver. 1.0				
NX-ECS112	Ver. 1.1	Ver. 1.13	Ver. 1.17		
	Ver. 1.2				
	Ver. 1.0		Ver. 1.17		
X-ECS212	Ver. 1.1	Ver. 1.13			
	Ver. 1.2				
	Ver. 1.1		Ver. 1.17		
NX-PG0112	Ver. 1.2	Ver. 1.13			
	Ver. 1.3		Ver. 1.19		
	Ver. 1.0				
	Ver. 1.1	Vor. 1.12	Ver. 1.17		
NX-PG0122	Ver. 1.2	—— Ver. 1.13			
	Ver. 1.3		Ver. 1.19		
	Ver. 1.2		Ver. 1.17		
NX-PG0232-5	Ver. 1.3	ver. 1.13	Ver. 1.19		
	Ver. 1.2	Vor. 1.12	Ver. 1.17		
NX-PG0242-5	Ver. 1.3	Ver. 1.13	Ver. 1.19		
IV DC0222 F	Ver. 1.2	Vor. 1.12	Ver. 1.17		
NX-PG0332-5	Ver. 1.3	Ver. 1.13	Ver. 1.19		
NX-PG0342-5	Ver. 1.2		Ver. 1.17		
NA-1 GU042-0	Ver. 1.3	vel. 1.13	Ver. 1.19		

Note: Some Units do not have all of the versions given in the above table. If a Unit does not have the specified version, support is provided by the oldest available version after the specified version. Refer to the user's manuals for the specific Units for the relation between models and versions.

## Connected to an EtherCAT Coupler Unit

	NX Units	Corresponding unit versions/versions				
Model	Unit version	EtherCAT Coupler Unit	(PIT Unit or Industrial PC)			
	Ver. 1.1	Ver. 1.1 *1	Ver. 1.00 *1	Ver. 1.10		
NX-EC0112	Ver. 1.2	Ver. 1.3 *2*3	— Ver. 1.06 <sup>*1</sup>	Ver. 1.13		
	Ver. 1.0	Man d d *1				
NX-EC0122	Ver. 1.1	— Ver. 1.1 *1	Ver. 1.06 *1	Ver. 1.08		
	Ver. 1.2	Ver. 1.3 *2*3		Ver. 1.13		
	Ver. 1.1	Ver. 1.1 *1	Ver. 1.06 *1	Ver. 1.10		
NX-EC0132	Ver. 1.2	Ver. 1.3 *2*3	— Ver. 1.06 <sup>*1</sup>	Ver. 1.13		
	Ver. 1.0	Man. 4.4.*1		Ver. 1.07		
NX-EC0142	Ver. 1.1	Ver. 1.1 *1	Ver. 1.06 *1	Ver. 1.08		
	Ver. 1.2	Ver. 1.3 *2*3		Ver. 1.13		
	Ver. 1.1	Ver. 1.1 *1	V	Ver. 1.10		
NX-EC0212	Ver. 1.2	Ver. 1.3 *2*3	— Ver. 1.06 <sup>*1</sup>	Ver. 1.13		
	Ver. 1.0	V		Ver. 1.07		
NX-EC0222	Ver. 1.1	— Ver. 1.1 *1	Ver. 1.06 *1	Ver. 1.08		
	Ver. 1.2	Ver. 1.3 *2*3		Ver. 1.13		
NX-ECS112	Ver. 1.0	Ver. 1.1 *1		Ver. 1.07		
	Ver. 1.1	ver. 1.1 '	Ver. 1.06 *1	Ver. 1.08		
	Ver. 1.2	Ver. 1.3 *2*3		Ver. 1.13		
	Ver. 1.0	Ver. 1.1 <sup>*1</sup> Ver. 1.06 <sup>*1</sup>		Ver. 1.07		
NX-ECS212	Ver. 1.1		Ver. 1.06 *1	Ver. 1.08		
	Ver. 1.2	Ver. 1.3 *2*3		Ver. 1.13		
	Ver. 1.1	Ver. 1.0		Ver. 1.10		
NX-PG0112	Ver. 1.2	N/ + 0 *2*4	Ver. 1.05	Ver. 1.13		
	Ver. 1.3	— Ver. 1.3 <sup>*2*4</sup>		Ver. 1.19		
	Ver. 1.0			Ver. 1.06		
	Ver. 1.1	Ver. 1.0	No. 4 05	Ver. 1.08		
NX-PG0122	Ver. 1.2	N/ 1 0 *2*4	— Ver. 1.05	Ver. 1.13		
	Ver. 1.3	— Ver. 1.3 <sup>*2*4</sup>		Ver. 1.19		
	Ver. 1.2	V ar 1 0 *2*4	Ver. 1.05	Ver. 1.15		
NX-PG0232-5	Ver. 1.3	— Ver. 1.3 <sup>*2*4</sup>	Ver. 1.05	Ver. 1.19		
	Ver. 1.2	V 1 0 *2*4	Ver. 1.05	Ver. 1.15		
NX-PG0242-5	Ver. 1.3	Ver. 1.3 *2*4	Ver. 1.05	Ver. 1.19		
	Ver. 1.2	Vor 1.0 *2*4	Vor 105	Ver. 1.15		
NX-PG0332-5	Ver. 1.3	— Ver. 1.3 <sup>*2*4</sup>	Ver. 1.05	Ver. 1.19		
	Ver. 1.2	Vor 1 0 *2*4	Vor 105	Ver. 1.15		
NX-PG0342-5	Ver. 1.3	— Ver. 1.3 <sup>*2*4</sup>	Ver. 1.05	Ver. 1.19		

Note: Some Units do not have all of the versions given in the above table. If a Unit does not have the specified version, support is provided by the oldest available version after the specified version. Refer to the user's manuals for the specific Units for the relation between models and versions.

\*1. You can use the following versions if time stamp refreshing is not used.
\*2. To use task period prioritized refreshing, you must use the NX-ECC203.
\*3. If you do not use task period prioritized refreshing, you can use EtherCAT Coupler Units which support Position Interface Units with unit version 1.1 or earlier.

\*4. If you do not use task period prioritized refreshing, you can use EtherCAT Coupler Units with unit version 1.0.

#### Connected to an EtherNet/IP Coupler Unit

NX U	NX Units		Corresponding unit versions/versions						
	Unit	Application wit	h an NJ/NX/NY-so *1	eries Controller	Application with a CS/CJ/CP-series PLC *2				
Model	version	EtherNet/IP Coupler Unit	CPU Unit or Industrial PC	Sysmac Studio	EtherNet/IP Coupler Unit	Sysmac Studio	NX-IO Configurator *3		
	Ver. 1.1	– Ver. 1.2	Ver. 1.14	Ver. 1.19		Ver. 1.10			
NX-EC0112	Ver. 1.2				Ver. 1.0	Ver. 1.13	Ver. 1.00		
	Ver. 1.0					Ver. 1.10			
NX-EC0122	Ver. 1.1	Ver. 1.2	Ver. 1.14	Ver. 1.19	Ver. 1.0	ver. 1.10	Ver. 1.00		
	Ver. 1.2					Ver. 1.13			
NX-EC0132	Ver. 1.1	Ver. 1.2	Ver. 1.14	Ver. 1.19	Ver. 1.0	Ver. 1.10	Ver. 1.00		
NA-LC0132	Ver. 1.2	ver. 1.2	Vel. 1.14	vei. 1.19	ver. 1.0	Ver. 1.13	ver. 1.00		
	Ver. 1.0					Ver. 1.10			
NX-EC0142	Ver. 1.1	Ver. 1.2	Ver. 1.14	Ver. 1.19	Ver. 1.0	vei. 1.10	Ver. 1.00		
	Ver. 1.2					Ver. 1.13			
NX-EC0212	Ver. 1.1	Ver. 1.2	Ver. 1.14	Ver. 1.19	Ver. 1.0	Ver. 1.10	Ver. 1.00		
	Ver. 1.2	ver. 1.2	Vel. 1.14	vei. 1.19	ver. 1.0	Ver. 1.13	ver. 1.00		
NX-EC0222	Ver. 1.0	Ver. 1.2	Ver. 1.14	Ver. 1.19	Ver. 1.0	Ver. 1.10	Ver. 1.00		
	Ver. 1.1					Vel. 1.10			
	Ver. 1.2					Ver. 1.13			
	Ver. 1.0	Ver. 1.2	Ver. 1.14	Ver. 1.19	Ver. 1.0	Ver. 1.10			
NX-ECS112	Ver. 1.1					Vel. 1.10	Ver. 1.00		
	Ver. 1.2					Ver. 1.13			
	Ver. 1.0		Ver. 1.14	Ver. 1.19	Ver. 1.0	Ver. 1.10	Ver. 1.00		
NX-ECS212	Ver. 1.1	Ver. 1.2				VCI. 1.10			
	Ver. 1.2					Ver. 1.13			
	Ver. 1.1	_							
NX-PG0112	Ver. 1.2								
	Ver. 1.3								
	Ver. 1.0	_							
NX-PG0122	Ver. 1.1								
	Ver. 1.2	_							
	Ver. 1.3								
NX-PG0232-5	Ver. 1.2								
	Ver. 1.3								
NX-PG0242-5	Ver. 1.2								
	Ver. 1.3								
NX-PG0332-5	Ver. 1.2								
	Ver. 1.3								
NX-PG0342-5	Ver. 1.2								
NX-PG0342-5	Ver. 1.3	<b></b>							

Note: 1. Some Units do not have all of the versions given in the above table. If a Unit does not have the specified version, support is provided by the oldest available version after the specified version. Refer to the user's manuals for the specific Units for the relation between models and versions.

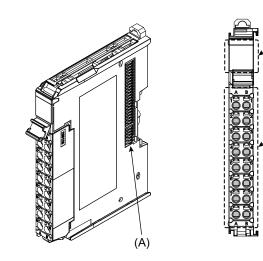
2. You cannot connect the relevant NX Unit or use the relevant NX Unit function if "---" is shown in the corresponding unit versions/versions column.

\*1. Refer to the user's manual of the EtherNet/IP Coupler Unit for the unit versions of EtherNet/IP Units corresponding to EtherNet/IP Coupler Units.

\*2. Refer to the user's manual of the EtherNet/IP Coupler Unit for the unit versions of CPU Units and EtherNet/IP Units corresponding to EtherNet/ IP Coupler Units.

\*3. For connection to an EtherNet/IP Coupler Unit with unit version 1.0, connection is supported only for a connection to the peripheral USB port on the EtherNet/IP Coupler Unit. You cannot connect by any other path. If you need to connect by another path, use an EtherNet/IP Coupler Unit with unit version 1.2 or later.

# Screwless Clamping Terminal Block Type 12 mm Width



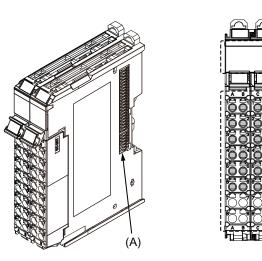
(B)

,(C)

(B)

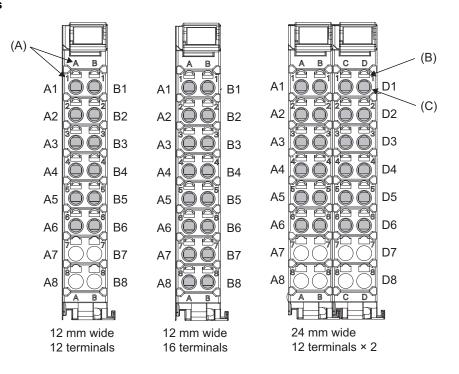
(C)

24 mm Width



Letter	Item	Item Specification	
(A)	NX bus connector	This connector is used to connect to another Unit.	
(B)	Indicators	The indicators show the current operating status of the Unit.	
(C)	Terminal block	The terminal block is used to connect to external devices. The number of terminals depends on the Unit.	

#### **Terminal Blocks**



Letter	Item	Specification
(A)	Terminal number indication	The terminal number is identified by a column (A through D) and a row (1 through 8). Therefore, terminal numbers are written as a combination of columns and rows, A1 through A8 and B1 through B8. For a 24-mm-wide terminal block, the left side contains terminals A1 through A8 and B1 through B8. The right side contains terminals C1 through C8 and D1 through D8. The terminal number indication is the same regardless of the number of terminals on the terminal block, as shown above.
(B)	Release hole	A flat-blade screwdriver is inserted here to attach and remove the wiring.
(C)	Terminal hole	The wires are inserted into these holes.

#### Applicable Terminal Blocks for Each Unit Model

	Terminal Blocks							
Unit model	Model	Model No. of terminals		Ground terminal mark	Terminal current capacity			
NX-EC0122	NX-TBA162	16	A/B	None	10 A			
NX-EC0222	NX-TBA122	12	A/B	None	10 A			
NX-EC0142	NX-TBA122	- 12	A/B	None	10 A			
NX-L00142	NX-TBB122	12	C/D	NUTE				
NX-ECS122	NX-TBA122	12	A/B	None	10 A			
NX-ECS212	NX-TBA122	12	A/B	None	10 A			
NX-PG0112	NX-TBA162	16	A/B	None	10 A			
NX-PG0122		10		NULE	IUA			

#### **Applicable Wires**

#### **Using Ferrules**

If you use ferrules, attach the twisted wires to them.

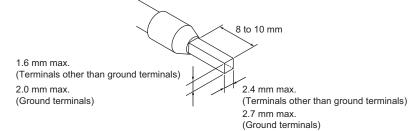
Observe the application instructions for your ferrules for the wire stripping length when attaching ferrules. Always use plated one-pin ferrules. Do not use unplated ferrules or two-pin ferrules.

The applicable ferrules, wires, and crimping tool are given in the following table.

Terminal type	Manufacturer	Ferrule model	Applicable wire (mm <sup>2</sup> (AWG))	Crimping tool
Terminals other	Phoenix	AI0,34-8	0.34 (#22)	Phoenix Contact (The figure in parentheses is the applicable wire
than ground	Contact	AI0,5-8	0.5 (#20)	
terminals		Al0,5-10		CRIMPFOX 6 (0.25 to 6 mm <sup>2</sup> , AWG 24 to 10)
		AI0,75-8	0.75 (#18)	
		AI0,75-10	1	
		AI1,0-8	1.0 (#18)	
		AI1,0-10	1	
		AI1,5-8	1.5 (#16)	
		AI1,5-10		
Ground terminals		Al2,5-10	2.0 *1	
Terminals other	Weidmuller	H0.14/12	0.14 (#26)	Weidmueller (The figure in parentheses is the applicable wire size.)
than ground terminals		H0.25/12	0.25 (#24)	PZ6 Roto (0.14 to 6 mm <sup>2</sup> , AWG 26 to 10)
terminais		H0.34/12	0.34 (#22)	
		H0.5/14	0.5 (#20)	
		H0.5/16	1	
		H0.75/14	0.75 (#18)	
		H0.75/16		
		H1.0/14	1.0 (#18)	
		H1.0/16	]	
		H1.5/14	1.5 (#16)	
		H1.5/16	1	

\*1. Some AWG 14 wires exceed 2.0 mm<sup>2</sup> and cannot be used in the screwless clamping terminal block.

When you use any ferrules other than those in the above table, crimp them to the twisted wires so that the following processed dimensions are achieved.



#### Using Twisted Wires/Solid Wires

If you use the twisted wires or the solid wires, use the following table to determine the correct wire specifications.

Torn	ninals		Wire	type		Conductor longth		
Terminais		Twisted wires		Solid wire		Wire size	Conductor length (stripping length)	
Classification	Current capacity	Plated	Unplated	Plated	Unplated		(ourpping longur)	
	2 A or less		Possible	Possible	Possible			
All terminals except ground terminals	Greater than 2 A and 4 A or less	Possible	Not	Possible *1	Not	0.08 to 1.5 mm <sup>2</sup> AWG28 to 16	8 to 10 mm	
ground terminals	Greater than 4 A	Possible *1	Possible	Not Possible	Possible	AWG201010		
Ground terminals		Possible	Possible	Possible *2	Possible *2	2.0 mm <sup>2</sup>	9 to 10 mm	

\*1 Secure wires to the screwless clamping terminal block. Refer to the Securing Wires in the USER'S MANUAL for how to secure wires.

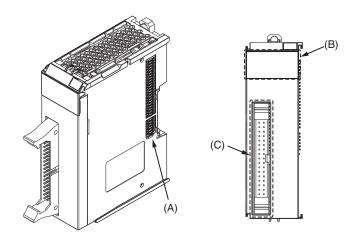
\*2 With the NX-TB 1 Terminal Block, use twisted wires to connect the ground terminal. Do not use a solid wire.

Conductor length (stripping length)

<Additional Information> If more than 2 A will flow on the wires, use plated wires or use ferrules.

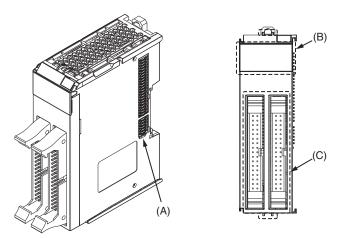
## MIL Connector Type (1 Connector with 34 terminals)

30 mm Width



## MIL Connector Type (2 Connectors with 34 terminals)

30 mm Width

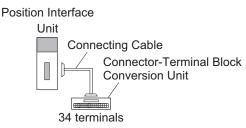


Letter	Item	Specification			
(A)	NX bus connector	This connector is used to connect to another Unit.			
(B)	Indicators	The indicators show the current operating status of the Unit.			
(C)	Terminal block	The connectors are used to connect to external devices. The number of connectors with 34 terminals depends on the Unit.			

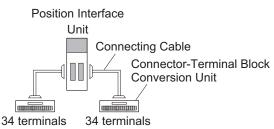
#### **Connecting to Connector-Terminal Block Conversion Units**

#### **Connection Examples**

(a) NX-PG0232-5 and NX-PG0242-5



(b) NX-PG0332-5 and NX-PG0342-5



#### **Connecting Cable**

The table below shows applicable connecting cables.

Model	Manufacturer
XW2Z-DDDEE	OMRON Corporation

The cable length from the Unit to an external device connected through the Connector-Terminal Block Conversion Units should not be longer than the specified cable length for the Unit.

Refer to the Specification for each units.

#### **Connector-Terminal Block Conversion Unit**

The table below shows applicable Connector-Terminal Block Conversion Units.

Model	Manufacturer
XW2B-34G4	
XW2B-34G5	
XW2D-34G6	
XW2R-J34GD-T	OMRON Corporation
XW2R-E34GD-T	
XW2R-P34GD-T	

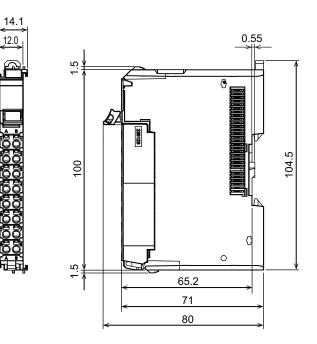
Each of NX-PG0232-5 and NX-PG0242-5 has one MIL connector. Therefore, one Connector-Terminal Block Conversion Unit is required. Each of NX-PG0332-5 and NX-PG0342-5 has two MIL Connectors. Therefore, two Connector-Terminal Block Conversion Units are required.

(Unit: mm)

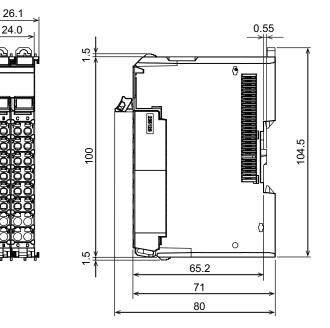
## Dimensions

## Screwless Clamping Terminal Block Type

12 mm Width

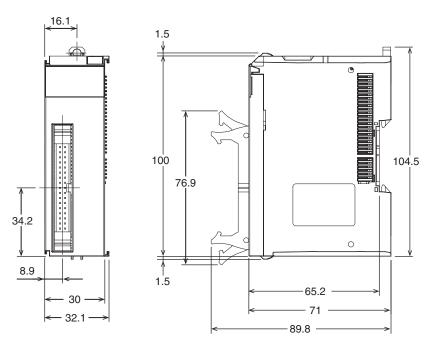


24 mm Width

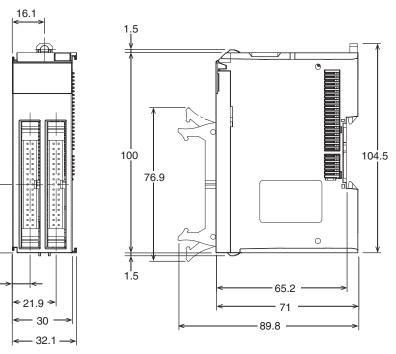


## MIL Connector Type (1 Connector with 34 terminals)

30 mm Width



## MIL Connector Type (2 Connectors with 34 terminals) 30 mm Width



## **Related Manual**

34.2

8.9

Man. No	Model	Manual	Application	Description
W524	NX-EC0 NX-ECS NX-PG0	NX-series Position Interface Units User's Manual	Learning how to use NX-series Position Interface Units	The hardware, setup methods, and functions of the NX-series Incremental Encoder Input Units, SSI Input Units, and Pulse Output Unit are described.

# **NX-series Incremental Encoder Input Unit** NX-ECO

## More precise timing control by synchronizing the position data with the EtherCAT<sup>®</sup> Distributed Clock

- Process encoder input data using the MC Function Modules of the NJ/NX/NY5 Controllers
- Time-stamp inputs enables high-precision timing control in combination with time-stamp outputs

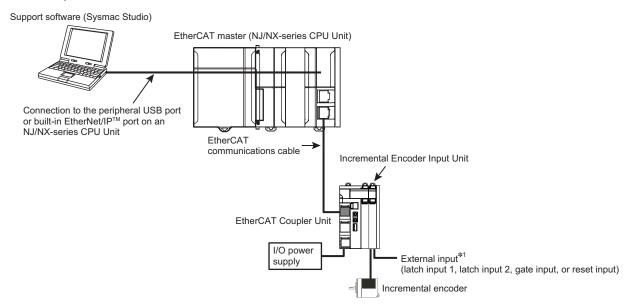


## Features

- Open collector output type and line driver output type Incremental Encoders can be connected
- High-speed remote I/O control with communications cycle as fast as 125 μs\*1
- Free-run refreshing, synchronous I/O refreshing, or task period prioritized refreshing<sup>\*2</sup> with the NX1P2 CPU Unit or EtherCAT Coupler Unit
- The MC Function Modules of the NJ/NX/NY5 Controllers allows the encoder to be used as a motion axis
- Latching (1 internal signal and 2 input signals from external devices)
- Pulse Period Measurement
- 32 bit counters (8000000 to 7FFFFFF HEX)
- Maximum counting rate: 4 MHz (Line receiver: 4 MHz, Open collector: 500 kHz)
- Time Stamping
- · Maximum and minimum counter value setting
- Connect to the CJ PLC using the EtherNet/IP<sup>™</sup> bus coupler
- \*1. When using the NX-EC01 together with the NX701- and NX-ECC203.
  \*2. Task Period Prioritized refreshing is available when the NX-ECC203 is used together.

## **System Configuration**

The following figure shows a system configuration when an Incremental Encoder Input Unit is connected to an NJ/NX-series CPU Unit via an EtherCAT Coupler Unit.



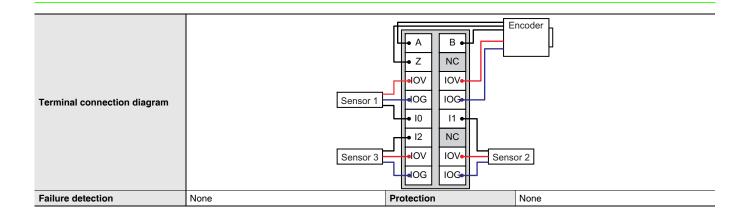
\*1. You can specify functions for up to two external inputs to a One-input Incremental Encoder Input Unit. You cannot use external inputs for a Two-input Unit.



## **Incremental Encoder Input Unit Specifications**

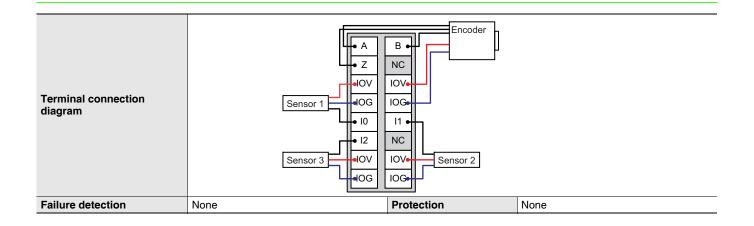
# • Incremental Encoder Input Unit NX-EC0112

Unit name	Incremental Encoder Input Unit	Model	NX-EC0112				
Number of channels	1 channel	Type of external connections	Screwless clamping terminal block (16 terminals)				
I/O refreshing method	Free-Run refreshing, synchronous I/O refreshing	ng or task period prioritized refre	eshing *				
Indicators	EC0112 DTS DCH DA DB DZ DIO DI1 DI2	Input signals	Counter: Phases A, B, and Z External Inputs: 3				
Input form	Voltage input (24 V)		ul				
Counting unit	Pulses						
Pulse input method	Phase differential pulse (multiplication x2/4), pulse + direction inputs, or up and down pulse inputs						
Counter range	-2,147,483,648 to 2,147,483,647 pulses						
Counter functions							
Counter type	Ring counter or linear counter						
Counter controls	Gate control, counter reset, and counter prese	t					
Latch function	Two external input latches and one internal late						
Measurements	Pulse rate measurement and pulse period mea						
Voltage input specifications	. dee rate measurement and pulse period mea						
Input voltage	20.4 to 28.8 VDC (24 VDC +20%/-15%)	ON voltage	19.6 VDC min./3 mA min.				
Input current	4.2 mA typical (24 VDC)	OFF voltage	4.0 VDC max./1 mA max.				
Maximum response							
frequency Internal I/O common	Phases A and B: Single-phase 500 kHz (phase	e differential pulse input x4: 125	kHz), Phase Z: 125 kHz				
processing	NPN						
External input specifications		<u></u>					
Input voltage	20.4 to 28.8 VDC (24 VDC +20%, -15%)	ON voltage/ON current	15 VDC min./3 mA min.				
Input current	4.6 mA typical (24 VDC)	OFF voltage/OFF current	4.0 VDC max./1 mA max.				
ON/OFF response time	1 μs max./2 μs max.						
Internal I/O common processing	NPN						
Dimensions	$12 \times 100 \times 71 \text{ mm} (W \times H \times D)$	Isolation method	Photocoupler isolation				
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute with leakage current of 5 mA max.				
I/O power supply method	Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%, -15%)	Current capacity of I/O power supply terminals	IOV: 0.3 A max. per terminal for encoder supply section and 0.1 A max. per terminal fo other sections IOG: 0.3 A max. per terminal for encoder supply section and 0.1 A max. per terminal fo other sections				
NX Unit power consumption	<ul> <li>Connected to a CPU Unit 1.15 W max.</li> <li>Connected to a Communications Coupler Unit 0.85 W max.</li> </ul>	Current consumption from I/O power supply	None				
Weight	70 g max.						
	Encoder Input and External Inputs						
Circuit layout	Terminal block						
Installation orientation and restrictions	Installation orientation: • Connected to a CPU Unit: Possible in uprig • Connected to a Communications Coupler U Restrictions: There are no restrictions.	Installation orientation: Connected to a CPU Unit: Possible in upright installation. Connected to a Communications Coupler Unit: Possible in 6 orientations.					



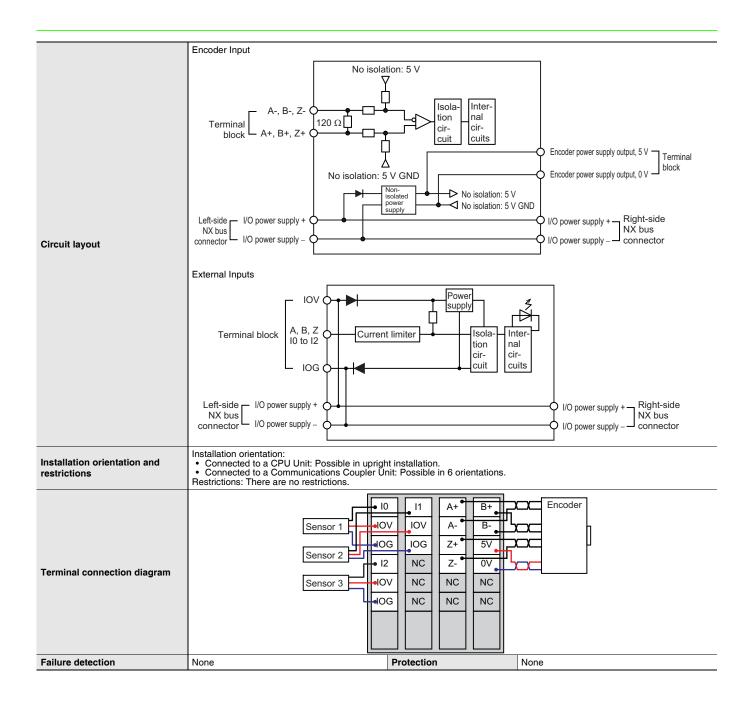


Incremental Encoder Input Unit	Model	NX-EC0122		
1 channel	Type of external connections	Screwless push-in terminal block (16 terminals)		
Free-Run refreshing, synchronous I/O refreshing or task period prioritized refreshing *				
EC0122 DTS DCH DA DB DZ DIO DI1 DI2	Input signals	Counter: Phases A, B, and Z External Inputs: 3		
Voltage input (24 V)				
Pulses				
Phase difference pulse (multiplication x2/4), pulse + direction inputs, or up and down pulse inputs				
-2,147,483,648 to 2,147,483,647 pulses				
<u> </u>				
Ring counter or linear counter				
Gate control, counter reset, and counter	oreset			
Two external input latches and one intern	al latch			
20.4 to 28.8 VDC (24 VDC +20%/-15%)	ON voltage	19.6 VDC min./3 mA min.		
4.2 mA typical (24 VDC)	OFF voltage	4.0 VDC max./1 mA max.		
Phases A and B: Single-phase 500 kHz (		t x4: 125 kHz), Phase Z: 125 kHz		
PNP				
20.4 to 28.8 VDC (24 VDC +20%/-15%)	ON voltage/ON current	15 VDC min./3 mA min.		
4.6 mA typical (24 VDC)	current	4.0 VDC max./1 mA max.		
1 μs max./2 μs max.		1		
PNP				
12 × 100 × 71 mm (W×H×D)	Isolation method	Photocoupler isolation		
20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute with leakage current of 5 mA mat		
Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%/-15%)	Current capacity of I/O power supply terminals	IOV: 0.3 A max. per terminal for encode supply section and 0.1 A max. per terminal for other sections IOG: 0.3 A max. per terminal for encode supply section and 0.1 A max. per terminal for other sections		
<ul> <li>Connected to a CPU Unit</li> <li>1.30 W max.</li> <li>Connected to a Communications Coupler Unit</li> <li>0.95 W max.</li> </ul>	Current consumption from I/O power supply	None		
70 g max.				
Encoder Input and External Inputs		z		
	Г			
Terminal block		Inter- nal cir- cuits		
10 to 12 Curre		nal cir-		
	1 channel         Free-Run refreshing, synchronous I/O ref         EC0122         DTS         DCH         A DB DZ         DIO DI DI DI         Voltage input (24 V)         Pulses         Phase difference pulse (multiplication x2/ -2,147,483,648 to 2,147,483,647 pulses         Ring counter or linear counter         Gate control, counter reset, and counter r         Two external input latches and one interr         Pulse rate measurement and pulse period         20.4 to 28.8 VDC (24 VDC +20%/-15%)         4.2 mA typical (24 VDC)         Phases A and B: Single-phase 500 kHz (         PNP         20.4 to 28.8 VDC (24 VDC +20%/-15%)         4.6 mA typical (24 VDC)         1 µs max./2 µs max.         PNP         12 × 100 × 71 mm (W×H×D)         20 MΩ min. between isolated circuits (at 100 VDC)         Supplied from the NX bus.         20.4 to 28.8 VDC (24 VDC +20%/-15%)         • Connected to a CPU Unit 1.30 W max.         • Connected to a CPU Unit 1.30 W max.         • Connected to a CPU Unit 1.30 W max.         • Connected to a CPU Unit 1.30 W max.         • Connected to a CPU Unit 1.30 W max.         • Connected to a Communications Coupler Unit 0.95 W max.         70	1 channel       Type of external connections         Free-Run refreshing, synchronous I/O refreshing or task period prior         EC0122       TS         CH       TS         DA B B Z       Input signals         Voltage input (24 V)       Input signals         Phase difference pulse (multiplication x2/4), pulse + direction inputs, -2,147,483,648 to 2,147,483,647 pulses       Phase difference pulse (multiplication x2/4), pulse + direction inputs, -2,147,483,648 to 2,147,483,647 pulses         Ring counter or linear counter       Gate control, counter reset, and counter preset         Two external input latches and one internal latch       Pulse rate measurement and pulse period measurement         20.4 to 28.8 VDC (24 VDC +20%/-15%)       ON voltage         Phases A and B: Single-phase 500 kHz (phase difference pulse inpu PNP         20.4 to 28.8 VDC (24 VDC +20%/-15%)       ON voltage/ON current         4.6 mA typical (24 VDC)       OFF voltage/OFF current         1 μs max./2 μs max.       PNP         12 × 100 × 71 mm (W×H×D)       Isolation method         20 MΩ min. between isolated circuits (at 100 VDC)       Dielectric strength         Supplied from the NX bus.       Current capacity of I/O power supply terminals         0.4 to 28.8 VDC (24 VDC +20%/-15%)       Current consumption from I/O power supply terminals         0.95 W max.       Connected to a COPU Unit 1.30 W		



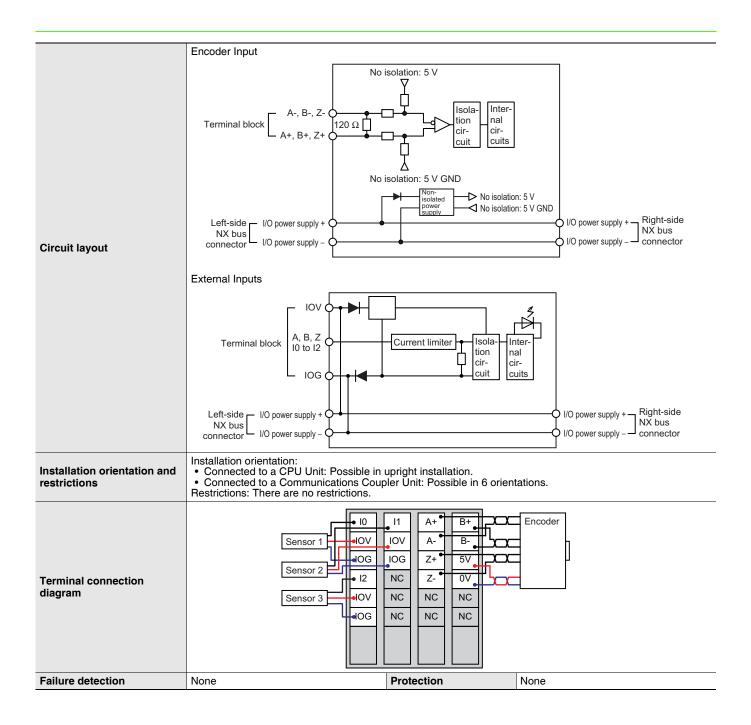


Unit name	Incremental Encoder Input Unit	Model	NX-EC0132	
Number of channels	1 channel	Type of external connections	Screwless clamping terminal block (12 terminals × 2)	
I/O refreshing method	Free-Run refreshing, synchronous I/O refreshing or task period prioritized refreshing *			
Indicators	EC0132 DTS DCH DA DB DZ DIODI1 DI2	Input signals	Counter: Phases A, B, and Z External Inputs: 3	
Input form	Line receiver input			
Counting unit	Pulses			
Pulse input method	Phase differential pulse (multiplication x2/4), p	ulse + direction inputs, or up and	d down pulse inputs	
Counter range	-2,147,483,648 to 2,147,483,647 pulses			
Counter functions				
Counter type	Ring counter or linear counter			
Counter controls	Gate control, counter reset, and counter preset			
Latch function	Two external input latches and one internal lat	ch		
Measurements	Pulse rate measurement and pulse period mea	asurement		
Line driver specifications				
Input voltage	EIA standard RS-422-A line driver levels	High level input voltage	VIT+: 0.1 V min.	
Input impedance	$120 \Omega \pm 5\%$	Low level input voltage	VIT-: -0.1 V min.	
Hysteresis voltage	Vhys (V <sub>IT+</sub> – V <sub>IT</sub> ): 60 mV			
Maximum response frequency	Phases A and B: Single-phase 4 MHz (phase differential pulse input x4: 1 MHz), Phase Z: 1 MHz			
5-V power supply for encoder	Output voltage: 5 VDC ±5% Output current: 500 mA max.			
External input specifications				
Input voltage	20.4 to 28.8 VDC (24 VDC +20%, -15%)	ON voltage/ON current	15 VDC min./3 mA min.	
Input current	3.5 mA typical (24 VDC)	OFF voltage/OFF current	5.0 VDC max./1 mA max.	
ON/OFF response time	1 μs max./1 μs max.			
Internal I/O common processing	NPN			
Dimensions	12 × 100 × 71 mm (W×H×D)	Isolation method	Digital isolator	
Insulation resistance	20 MΩ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute with leakage current of 5 mA max.	
I/O power supply method	Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%, -15%)	Current capacity of I/O power supply terminals	IOV: 0.1 A max. per terminal IOG: 0.1 A max. per terminal	
NX Unit power consumption	<ul> <li>Connected to a CPU Unit 1.25 W max.</li> <li>Connected to a Communications Coupler Unit 0.95 W max.</li> </ul>	Current consumption from I/O power supply	Unit current consumption: 30 mA max. Consumption from encoder 5-V power supply 0.28 × Encoder current consumption mA	
Weight	130 g max.			



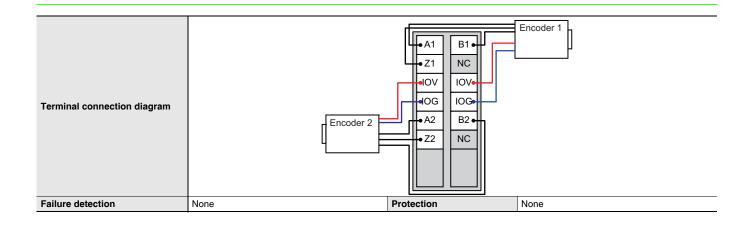


Unit name	Incremental Encoder Input Unit	Model	NX-EC0142	
Number of channels	1 channel	Type of external connections	Screwless push-in terminal block (12 terminals × 2)	
I/O refreshing method	Free-Run refreshing, synchronous I/O refreshing or task period prioritized refreshing *			
Indicators	EC0142 DTS DCH DA DB DZ DIO D11 D12	Input signals	Counter: Phases A, B, and Z External Inputs: 3	
Input form	Line receiver input	,	•	
Counting unit	Pulses			
Pulse input method	Phase difference pulse (multiplication x2/	4), pulse + direction inputs,	or up and down pulse inputs	
Counter range	-2,147,483,648 to 2,147,483,647 pulses			
Counter functions				
Counter type	Ring counter or linear counter			
Counter controls	Gate control, counter reset, and counter	oreset		
Latch function	Two external input latches and one internal latch			
Measurements	Pulse rate measurement and pulse period	d measurement		
Line driver specifications	•			
Input voltage	EIA standard RS-422-A line driver levels	High level input voltage	VIT+: 0.1 V min.	
Input impedance	120 Ω ± 5%	Low level input voltage	VIT-: -0.1 V min.	
Hysteresis voltage	Vhys (VIT+ – VIT–): 60 Mv			
Maximum response frequency	Phases A and B: Single-phase 4 MHz (pl	nase difference pulse input :	x4: 1 MHz), Phase Z: 1 MHz	
5-V power supply for encoder	Output voltage: 5 VDC Output current: 500 mA max.			
External input specifications				
Input voltage	20.4 to 28.8 VDC (24 VDC +20%/.15%)	ON voltage/ON current	15 VDC min./3 mA min.	
Input current	3.5 mA typical (24 VDC)	OFF voltage/OFF current	4.0 VDC max./1 mA max.	
ON/OFF response time	1 μs max./2 μs max.		-	
Internal I/O common processing	PNP			
Dimensions	12 × 100 × 71 mm (W×H×D)	Isolation method	Photocoupler isolation	
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute with leakage current of 5 mA max	
I/O power supply source	Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%/-15%)	Current capacity of I/O power supply terminals	IOV: 0.1 A max. per terminal IOG: 0.1 A max. per terminal	
NX Unit power consumption	<ul> <li>Connected to a CPU Unit 1.50 W max.</li> <li>Connected to a Communications Coupler Unit 1.05 W max.</li> </ul>	Current consumption from I/O power supply	Unit current consumption: 30 mA max. Consumption from encoder 5-V power supply: 0.28 × Encoder current consumption mA	
Weight	130 g max.			



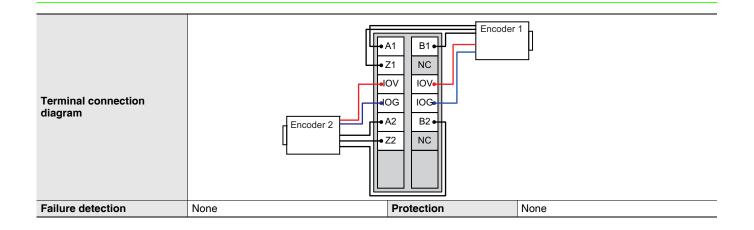


Unit name	Incremental Encoder Input Unit	Model	NX-EC0212		
Number of channels	2 channels	Type of external connections	Screwless clamping terminal block (12 terminals)		
I/O refreshing method	Free-Run refreshing, synchronous I/O refreshi	ing or task period prioritized refre	eshing *		
Indicators	EC0212 DTS DCH1 DA1DB1DZ1 DCH2 DA2DB2DZ2	Input signals	Counter: Phases A, B, and Z External Inputs: None		
Input form	Voltage input (24 V)				
Counting unit	Pulses				
Pulse input method	Phase differential pulse (multiplication x2/4), p	ulse + direction inputs, or up and	d down pulse inputs		
Counter range	-2,147,483,648 to 2,147,483,647 pulses				
Counter functions					
Counter type	Ring counter or linear counter				
Counter controls	Gate control, counter reset, and counter prese	et			
Latch function	Two external input latches and one internal lat	ch			
Measurements	Pulse rate measurement and pulse period me	asurement			
Voltage input specifications					
Input voltage	20.4 to 28.8 VDC (24 VDC +20%, -15%)	ON voltage	19.6 VDC min./3 mA min.		
Input current	4.2 mA typical (24 VDC)	OFF voltage	4.0 VDC max./1 mA max.		
Maximum response frequency	Phases A and B: Single-phase 500 kHz (phase differential pulse input x4: 125 kHz), Phase Z: 125 kHz				
Internal I/O common processing	NPN				
External input specifications					
Input voltage		ON voltage/ON current			
Input current		OFF voltage/OFF current			
ON/OFF response time					
Internal I/O common processing			-		
Dimensions	12 × 100 × 71 mm (W×H×D)	Isolation method	Photocoupler isolation		
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute with leakage current of 5 mA max.		
I/O power supply method	Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%, -15%) • Connected to a CPU Unit	Current capacity of I/O power supply terminals	IOV: 0.3 A max. per terminal IOG: 0.3 A max. per terminal		
NX Unit power consumption	<ul> <li>Connected to a Coord Unit 1.15 W max.</li> <li>Connected to a Communications Coupler Unit 0.85 W max.</li> </ul>	Current consumption from I/O power supply	None		
Weight	70 g max.				
Circuit layout	NX bus		nal cir- cuits //O power supply + _ Right-side NX bus		
Installation orientation and restrictions	Installation orientation: • Connected to a CPU Unit: Possible in upright installation. • Connected to a Communications Coupler Unit: Possible in 6 orientations. Restrictions: There are no restrictions.				





Unit name	Incremental Encoder Input Unit	Model	NX-EC0222
Number of channels	2 channels	Type of external connections	Screwless push-in terminal block (12 terminals)
O refreshing method	Free-Run refreshing, synchronous I/O ref	freshing or task period prior	itized refreshing *
ndicators	EC0222 DTS DCH1 DA1DB1DZ1 DCH2 DA2DB2DZ2	Input signals	Counter: Phases A, B, and Z External Inputs: None
nput form	Voltage input (24 V)		
Counting unit	Pulses		
Pulse input method	Phase difference pulse (multiplication x2/4), pulse + direction inputs, or up and down pulse inputs		
Counter range	-2,147,483,648 to 2,147,483,647 pulses		
Counter functions	· · · ·		
Counter type	Ring counter or linear counter		
Counter controls	Gate control, counter reset, and counter p	oreset	
Latch function	Two external input latches and one intern		
Measurements	Pulse rate measurement and pulse period	d measurement	
Voltage input specifications	· · ·		
Input voltage	20.4 to 28.8 VDC (24 VDC +20%/-15%)	ON voltage	19.6 VDC min./3 mA min.
Input current	4.2 mA typical (24 VDC)	OFF voltage	4.0 VDC max./1 mA max.
Maximum response frequency	Phases A and B: Single-phase 500 kHz (phase difference pulse input x4: 125 kHz), Phase Z: 125 kHz		
Internal I/O common processing	PNP		
External input specifications	3		
Input voltage		ON voltage/ON current	
Input current		OFF voltage/OFF current	
ON/OFF response time			
Internal I/O common			
processing			1
	12 × 100 × 71 mm (W×H×D)	Isolation method	Photocoupler isolation
Dimensions	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	Photocoupler isolation 510 VAC between isolated circuits for minute with leakage current of 5 mA ma
Dimensions	20 MΩ min. between isolated circuits (at 100 VDC) Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%/-15%)		510 VAC between isolated circuits for
Dimensions Insulation resistance I/O power supply source	20 MΩ min. between isolated circuits (at 100 VDC) Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%/-15%) • Connected to a CPU Unit 1.30 W max.	Dielectric strength Current capacity of I/O power supply	510 VAC between isolated circuits for minute with leakage current of 5 mA ma IOV: 0.3 A max. per terminal
processing Dimensions Insulation resistance I/O power supply source NX Unit power consumption Weight	<ul> <li>20 MΩ min. between isolated circuits (at 100 VDC)</li> <li>Supplied from the NX bus.</li> <li>20.4 to 28.8 VDC</li> <li>(24 VDC +20%/-15%)</li> <li>Connected to a CPU Unit 1.30 W max.</li> <li>Connected to a Communications Coupler Unit 0.95 W max.</li> <li>70 g max.</li> </ul>	Dielectric strength Current capacity of I/O power supply terminals Current consumption	510 VAC between isolated circuits for minute with leakage current of 5 mA ma IOV: 0.3 A max. per terminal IOG: 0.3 A max. per terminal
Dimensions Insulation resistance I/O power supply source NX Unit power consumption	20 MΩ min. between isolated circuits (at 100 VDC) Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%/-15%) • Connected to a CPU Unit 1.30 W max. • Connected to a Communications Coupler Unit 0.95 W max. 70 g max. Encoder Input	Dielectric strength Current capacity of I/O power supply terminals Current consumption	510 VAC between isolated circuits for minute with leakage current of 5 mA ma IOV: 0.3 A max. per terminal IOG: 0.3 A max. per terminal



# NX-series SSI Input Unit

## Synchronous Serial Interface (SSI) to connect external axes to the Sysmac system

- Process SSI encoder input data using the MC Function Modules of the NJ/NX/NY5 Controllers
- SSI to connect an absolute encoder or linear encoder

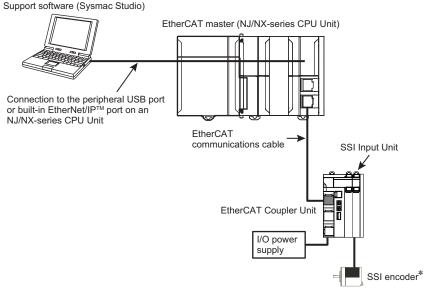


## Features

- SSI clock frequency up to 2 MHz
- $\bullet$  High-speed remote I/O control with communications cycle as fast as 125  $\mu s^{\star 1}$
- Free-run refreshing, synchronous I/O refreshing, or task period prioritized refreshing<sup>\*2</sup> with the NX1P2 CPU Unit or EtherCAT Coupler Unit
- The MC Function Modules of the NJ/NX/NY5 Controllers allows the encoder to be used as a motion axis
- Choice of SSI Coding Methods (No conversion, binary code, or gray code)
- Time Stamping
- Multi-turn and single-turn encoders supported
- Data Refresh Status (Data refreshing can be checked on the host controller.)
- Maximum connecting SSI cable length: 400 m
- Connect to the CJ PLC using the EtherNet/IP<sup>™</sup> bus coupler
- \*1. When using the NX-EC01 together with the NX701- and NX-ECC203.
- \*2. Task Period Prioritized refreshing is available when the NX-ECC203 is used together.

## System Configuration

The following figure shows a system configuration when an SSI Input Unit is connected to an NJ/NX-series CPU Unit via an EtherCAT Coupler Unit.



\* The SSI encoder is supplied with 24-VDC power from the SSI Input Unit.

## **SSI Input Unit Specifications**

### SSI Input Unit 1 channel NX-ECS112

Unit name	SSI Input Unit	Model	NX-ECS112
Number of channels	1 channel	Type of external connections	Screwless push-in terminal block (12 terminals)
O refreshing method	Free-Run refreshing, synchronous I/O refreshing or task period prioritized refreshing *1		
Indicators	ECS112 DTS DCH DRD	Input signals	External inputs: 2 Data input (D+,D–) External outputs: 2 Clock output (C+, C-
/O interface	Synchronized serial interface (SSI)		<u> </u>
Clock output	EIA standard RS-422-A line driver levels		
Data input	EIA standard RS-422-A line receiver leve	ls	
Maximum data length	32 bits (The single-turn, multi-turn, and st	atus data length can be set	)
Coding method	No conversion, binary code, or gray code		
Baud Rate	100 kHz, 200 kHz, 300 kHz, 400 kHz, 500		r 2.0 MHz
Dimensions	12 × 100 × 71 mm (W×H×D)	Isolation method	Digital isolator
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute with leakage current of 5 mA ma
I/O power supply source	Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%/-15%)	Current capacity of I/O power supply terminals	IOV: 0.3 A max. per terminal IOG: 0.3 A max. per terminal
NX Unit power consumption	Connected to a CPU Unit 1.20 W max. Connected to a Communications Coupler Unit 0.85 W max.	Current consumption from I/O power supply	20 mA
	Baud Rate	Maximum transmission	distance
	100 kHz	400 m	
	200 kHz	190 m	
	300 kHz	120 m	
Maximum transmission	400 kHz	80 m	
distance *2	500 kHz	60 m	
	1.0 MHz	25 m	
	1.5 MHz	10 m	
	2.0 MHz	5 m	
Weight	65 g	•	
	Terminal block Left-side No isolation: 5 V Left-side No power supply + No power supply + No power supply - Right-side No power supply - Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Right-side Ri		
Circuit layout	Left-side I/O power supply +	isolation: 5 V GND	5 V GND I/O power supply + - Right-side NX bus
Installation orientation	Left-side I/O power supply +	p isolation: 5 V GND Nor- Solated power Supply No isolation: No isolation:	5 V GND I/O power supply + - Right-side NX bus
Circuit layout Installation orientation and restrictions	Left-side I/O power supply + NX bus connector I/O power supply + Installation orientation: • Connected to a CPU Unit: Possible in uprigh • Connected to a Communications Coupler Un	p isolation: 5 V GND Nor- Solated power Supply No isolation: No isolation:	5 V GND I/O power supply + - Right-side NX bus

\*1. The I/O refreshing method is automatically set according to the connected Communications Coupler Unit and CPU Unit. Refer to information on the I/O refreshing methods in the W524 manual for the communications cycles for each model.

\*2. The maximum transmission distance for an SSI Input Unit depends on the baud rate due to the delay that can result from the responsiveness of the connected encoder and cable impedance. The maximum transmission distance is only a guideline. Review the specifications for the cables and encoders in the system and evaluate the operation of the equipment before use.

#### SSI Input Unit 2 channel NX-ECS212

Unit name	SSI Input Unit	Model	NX-ECS212
Number of channels	2 channels	Type of external connections	Screwless push-in terminal block (12 terminals)
/O refreshing method	Free-Run refreshing, synchronous I/O refreshing or task period prioritized refreshing *1		
Indicators	ECS212 UTS DCH1 DCH2 DRD2	Input signals	External inputs: 2 Data input (D+, D–) External outputs: 2 Clock output (C+, C-
I/O interface	Synchronized serial interface (SSI)	1	1
Clock output	EIA standard RS-422-A line driver levels		
Data input	EIA standard RS-422-A line receiver levels		
Maximum data length	32 bits (The single-turn, multi-turn, and st	atus data length can be set	.)
Coding method	No conversion, binary code, or gray code		
Baud Rate	100 kHz, 200 kHz, 300 kHz, 400 kHz, 500	0 kHz, 1.0 MHz, 1.5 MHz, o	r 2.0 MHz
Dimensions	12 × 100 × 71 mm (W×H×D)	Isolation method	Digital isolator
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute with leakage current of 5 mA max
I/O power supply source	Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%/-15%)	Current capacity of I/O power supply terminals	IOV: 0.3 A max. per terminal IOG: 0.3 A max. per terminal
	Connected to a CPU Unit	power suppry terminals	
NX Unit power consumption	<ul> <li>1.25 W max.</li> <li>Connected to a Communications Coupler Unit 0.9 W max.</li> </ul>	Current consumption from I/O power supply	30 mA
	Baud Rate	Maximum transmission	distance
	100 kHz	400 m	
	200 kHz	190 m	
Maximum transmission	300 kHz	120 m	
Maximum transmission distance <sup>*2</sup>	400 kHz	80 m	
	500 kHz	60 m	
	1.0 MHz	25 m	
	1.5 MHz	10 m	
	2.0 MHz	5 m	
Weight	65 g		
Circuit layout	SSI Clock Output and Data Input	No isolation: 5 V GND	s 5 V
Installation orientation and restrictions	Installation orientation: • Connected to a CPU Unit: Possible in upright installation. • Connected to a Communications Coupler Unit: Possible in 6 orientations. Restrictions: No restrictions		
	C1-	D1+ Encoder	
Terminal connection diagram		D2+ D2-	

 \*1. The I/O refreshing method is automatically set according to the connected Communications Coupler Unit and CPU Unit. Refer to information on the I/O refreshing methods in the W524 manual for the communications cycles for each model.
 \*2. The maximum transmission distance for an SSI Input Unit depends on the baud rate due to the delay that can result from the responsiveness of the connected encoder and cable impedance. The maximum transmission distance is only a guideline. Review the specifications for the cables and encoders in the system and evaluate the operation of the equipment before use.

32

# NX-series Pulse Output Unit

## Positioning control with pulse outputs to command stepper motor drives and other pulse input motor drives

- The MC Function Modules of the NJ/NX/NY5 Controllers enable pulse outputs for motor control
- The same motion control instructions as those for Servomotor control can be used to program single-axis PTP control and interpolation
- Non-networked motors, such as DD motors, stepper motors, and DC motors, can be connected



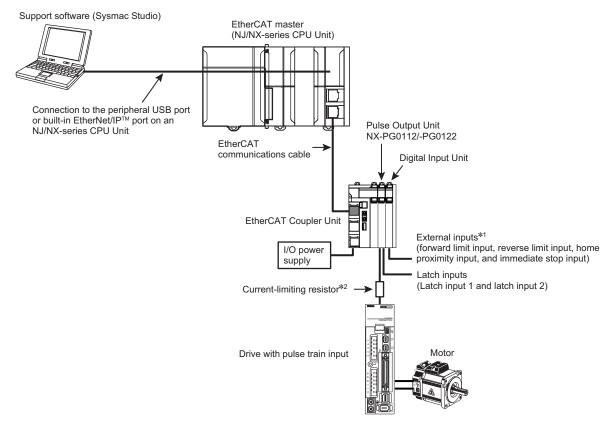
## Features

- The MC Function Modules of the NJ/NX/NY5 Controller allows you to connect with as many axes as the NJ/NX/ NY5 Controller can control
- $\bullet$  High-speed remote I/O control with communications cycle as fast as 125  $\mu s^{\star 1}$
- Free-run refreshing or task period prioritized refreshing\*2 with the EtherCAT Coupler Unit
- Latching (2 external latch inputs)
- Open collector pulse outputs up to 500 kHz or line driver pulse outputs up to 4 MHz
- Line driver output models with two or four channels
- \*1. When using the NX-EC01 together with the NX701- and NX-ECC203.
- \*2. Task Period Prioritized refreshing is available when the NX-ECC203 is used together.

## **System Configurations**

#### NX-PG0112/-PG0122

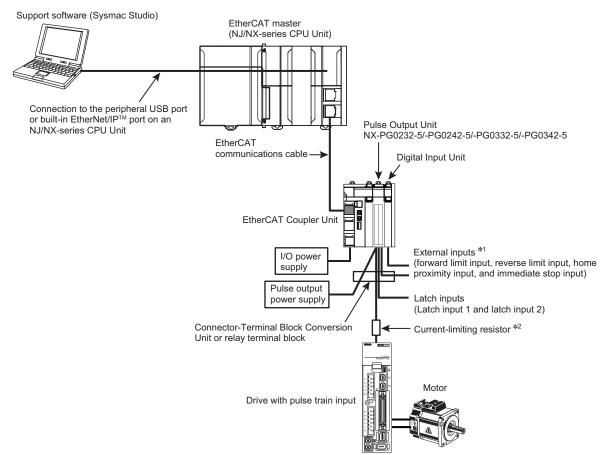
The following figure shows a system configuration when the NX-PG0112/-PG0122 Pulse Output Unit is connected to an NJ/NX-series CPU Unit via an EtherCAT Coupler Unit.



- \*1. When the Unit is connected to an NJ-series CPU, you can use these inputs by adding a Digital Input Unit and assigning MC Function Module functions. \*2. The pulse output from a Pulse Output Unit is a 24-VDC PNP open collector output. Connect an external current-limiting resistor according to
- the input specifications of the connected motor drive. Example: For a G5-series Servo Drive, connect a 2-k $\Omega$  (1/2-W) resistor in series.

#### NX-PG0232-5/-PG0242-5/-PG0332-5/-PG0342-5

The following figure shows a system configuration when the NX-PG0232-5/-PG0242-5/-PG0332-5/-PG0342-5 Pulse Output Unit is connected to an NJ/NX-series CPU Unit via an EtherCAT Coupler Unit.



- \*1. When the Unit is connected to an NJ/NX-series CPU, you can use these inputs by assigning MC Function Module functions to external inputs inside a Pulse Output Unit or to inputs of a Digital Input Unit that is added. For information on Digital Input Units, refer to the *NX-series Digital I/O Units User's Manual* (Cat. No. W521). For NX-PG0232-5, NX-PG0242-5, NX-PG0332-5, and NX-PG0342-5 Pulse Output Units, the number of available external inputs that can be used in always ON status is restricted by ambient operating temperature and installation orientation.
- \*2. The pulse output from a Pulse Output Unit is a 24-VDC open collector output. When it is used as a control output for a motor drive such as an error counter reset output, connect an external current-limiting resistor according to the input specifications of the connected motor drive. A line drive output does not need a current limiting resistor.



## **Pulse Output Unit Specifications**

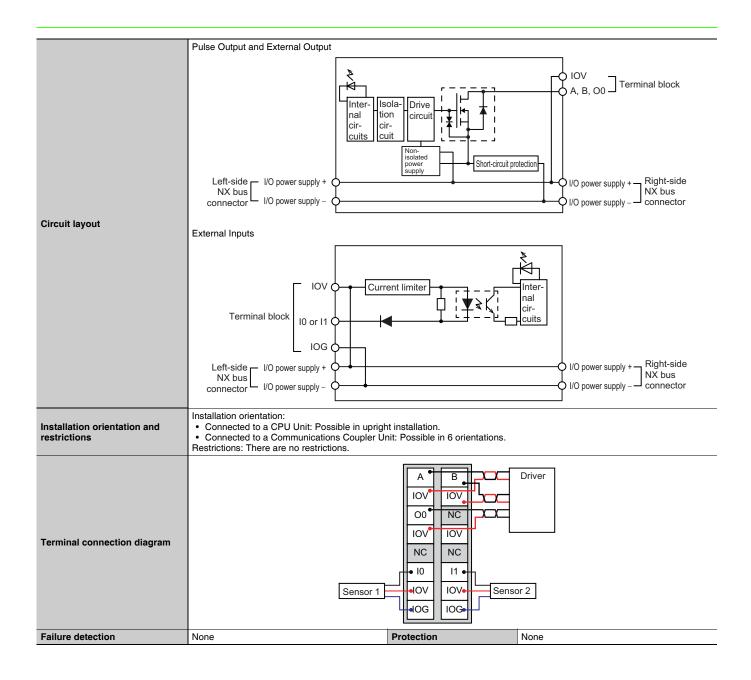
## Pulse Output Unit (Open collector output, NPN type) NX-PG0112

Unit name	Pulse Output Unit	Model	NX-PG0112
Number of axes	1	Type of external connections	Screwless clamping terminal block (16 terminals)
/O refreshing method *1	Synchronous I/O refreshing or task period prior	ritized refreshing	<u> </u>
Indicators	PG0112 DTS DCH1 DA DB D00 DI0 DI1	I/O signals	Inputs: 2, External inputs Outputs: 3, The outputs are the forward direction pulse output, reverse direction pulse output, and external output (one of each output).
Control method	Open-loop control through pulse string output		
Controlled drive	Servo drive with a pulse string input or a stepp	er motor drive	
Pulse output form	Open collector output		
Unit of control	Pulses		
Maximum pulse output speed	500 kpps		
Pulse output method	Forward/reverse direction outputs or Pulse + d	irection outputs	
Position control range	-2,147,483,648 to 2,147,483,647 pulses		
Velocity control range	1 to 500,000 pps		
Positioning *2			
Single-axis position control	Absolute positioning, relative positioning, and it	nterrupt feeding	
Single-axis velocity control	Velocity control (velocity feeding in Position Co		
Single-axis synchronized control	Cam operation and gear operation		
Single-axis manual operation	Jogging		
Auxiliary function for single- axis control	Homing, stopping, and override changes		
External input specifications			
Input voltage	20.4 to 28.8 VDC (24 VDC +20%/-15%)	ON voltage/ON current	15 VDC min./3 mA min.
Input current	4.6 mA typical (24 VDC)	OFF voltage/OFF current	4.0 VDC max./1 mA max.
ON/OFF response time	1 μs max./2 μs max.		
Internal I/O common processing	NPN		
Pulse output and external outpu	t specifications		
Rated voltage	24 VDC		
Load voltage range	15 to 28.8 VDC	Residual voltage	1.0 V max.
Maximum load current	30 mA	Leakage current	0.1 mA max.
ON/OFF response time	Pulse output: Refer to " <i>NX-series Position Interface Units User's Manual</i> (W524-E1)". External output: 5 μs max./5 μs max.		
Internal I/O common processing	NPN		
Dimensions	12 × 100 × 71 mm (W×H×D)	Isolation method	External inputs: Photocoupler isolation External outputs: Digital isolator
Insulation resistance	20 $M\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute with leakage current of 5 mA max.
I/O power supply method	Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%, -15%)	Current capacity of I/O power supply terminals	IOV: 0.1 A max. per terminal IOG: 0.1 A max. per terminal
NX Unit power consumption	Connected to a CPU Unit 1.15 W max. Connected to a Communications Coupler Unit 0.80 W max.	Current consumption from I/O power supply	20 mA max.
Weight	70 g max.	Cable length	3 m max.
	· · · · · · · · · · · · · · · · · · ·		

\*1. The I/O refreshing method is automatically set according to the connected Communications Coupler Unit and CPU Unit.

\*2. These functions are supported when you also use the MC Function Module in the NJ/NX-series CPU Unit or the NY-series Industrial PC. For details, refer to the motion control user's manual for the connected CPU Unit or Industrial PC.

A Pulse Output Unit only outputs pulses during the control period based on commands received at a fixed period. Target position calculations (distribution calculations) for acceleration/deceleration control or for each control period must be performed on the Controller.



#### Pulse Output Unit (Open collector output, PNP type) NX-PG0122

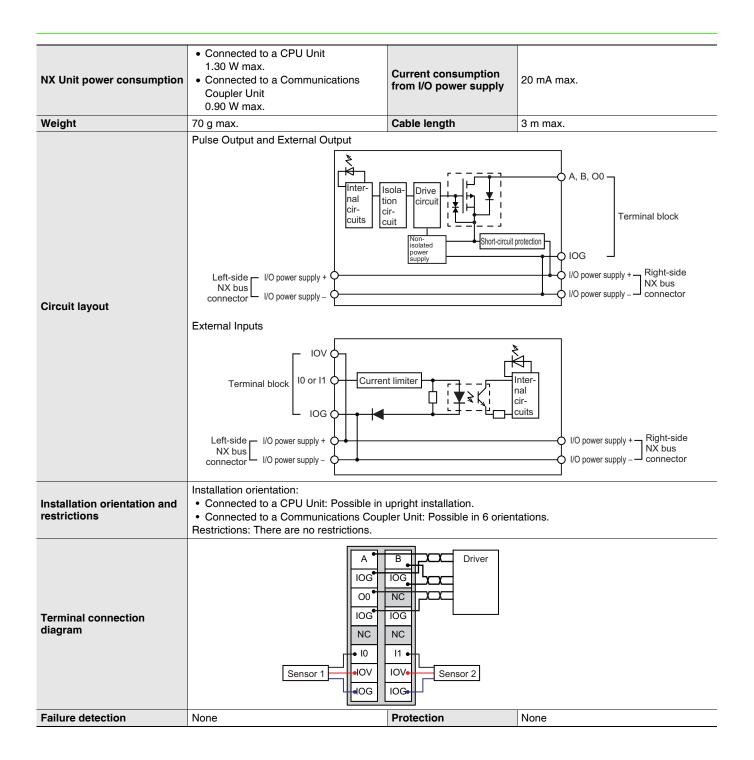
Unit name	Pulse Output Unit	Model	NX-PG0122		
Number of axes	1	Type of external connections	Screwless push-in terminal block (16 terminals)		
/O refreshing method *1	Synchronous I/O refreshing or task period prioritized refreshing				
Indicators	PG0122 DTS DCH1 DA DB D00 D10 D11	I/O signals	Inputs: 2, External inputs *2 Outputs: 3, The outputs are the forward direction pulse output, reverse directior pulse output, and external output *3 (on of each output).		
Control method	Open-loop control through pulse string or	utput			
Controlled drive	Servo drive with a pulse train input or a stepper motor drive				
Pulse output form	Open collector output				
Control unit	Pulses				
Maximum pulse output speed	500 kpps				
Pulse output method	Forward/reverse direction pulse outputs or pulse + direction outputs				
Position control range	-2,147,483,648 to 2,147,483,647 pulses				
Velocity control range	1 to 500,000 pps				
Positioning *4					
Single-axis position control	Absolute positioning, relative positioning, and interrupt feeding				
Single-axis velocity control	Velocity control (velocity feeding in Position Control Mode)				
Single-axis synchronized control	Cam operation and gear operation				
Single-axis manual operation	Jogging				
Auxiliary function for single-axis control	Homing, stopping, and override changes				
External input specifications		1			
Input voltage	20.4 to 28.8 VDC (24 VDC +20%/-15%)	ON voltage/ON current	15 VDC min./3 mA min.		
Input current	4.6 mA typical (24 VDC)	OFF voltage/OFF current	4.0 VDC max./1 mA max.		
ON/OFF response time	1 μs max./2 μs max.				
Internal I/O common processing	PNP				
External output specification	is and the second se				
Rated voltage	24 VDC				
Load voltage range	15 to 28.8 VDC	Residual voltage	1.0 V max.		
Maximum load current	30 mA	Leakage current	0.1 mA max.		
ON/OFF response time	Pulse output: Refer to " <i>NX-series Position Interface Units User's Manual</i> (W524-E1)". 5 μs max./5 μs max.				
Internal I/O common processing	PNP				
Dimensions	12 × 100 × 71 mm (W×H×D)	Isolation method	External inputs: Photocoupler isolation External outputs: Digital isolator		
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for minute with leakage current of 5 mA ma		
I/O power supply source	Supplied from the NX bus. 20.4 to 28.8 VDC (24 VDC +20%/-15%)	Current capacity of I/O power supply terminals	IOV: 0.1 A max. per terminal IOG: 0.1 A max. per terminal		

\*2. You can use the external inputs as latch inputs.

\*3. You can use the external output as error counter reset outputs.

\*4. These functions are supported when you also use the MC Function Module in the NJ/NX-series CPU Unit or the NY-series Industrial PC. For details, refer to the motion control user's manual for the connected CPU Unit or Industrial PC. A Pulse Output Unit only outputs pulses during the control period based on commands received at a fixed period. Target position calculations (distribution calculations) for acceleration/deceleration control or for each control period must be performed on the

Controller.





#### Pulse Output Unit (Line driver output, NPN type) 2 channels NX-PG0232-5 Unit name Pulse Output Unit Model NX-PG0232-5 Type of external Number of channels 2 channels MIL connector (34 terminals ×1) connections I/O refreshing method \*1 Synchronous I/O refreshing or task period prioritized refreshing PG0232-5 Inputs: 5 per channel. External inputs \*2 TS Outputs: 5 per channel. 1 forward CH1 Indicators I/O signals direction pulse output, 1 reverse direction )B1 )A1 pulse output, and 3 external outputs (per CH2 channel) \*3 A2 B2 Control method Open-loop control through pulse string output Controlled drive Servo drive with a pulse string input or a stepper motor drive Pulse output form Line driver output Unit of control Pulses Maximum pulse output speed 4 Mpps Forward/reverse direction pulse outputs, Pulse + direction outputs, or Phase differential pulse output Pulse output method multiplication x1/2/4 -2,147,483,648 to 2,147,483,647 pulses Position control range Velocity control range 1 to 4,000,000 pps Positioning \*4 Single-axis position control Absolute positioning, relative positioning, and interrupt feeding Single-axis velocity control Velocity control (velocity feeding in Position Control Mode) Single-axis synchronized Cam operation and gear operation control Single-axis manual Jogging operation Auxiliary function for Homing, stopping, and override changes single-axis control External input specifications (except for line receiver inputs) Input voltage 21.6 to 26.4 VDC (24 VDC +10%, -10%) ON voltage/ON current 15 VDC min./3 mA min. **OFF voltage/OFF** 4.0 VDC max./1 mA max. Input current 4.6 mA typical (24 VDC) current External inputs 0 and 1: 1 µs max./2 µs max. **ON/OFF** response time External inputs 2 to 4: 20 µs max./400 µs max. Internal I/O common NPN processing External input specifications (line receiver inputs) EIA standard RS-422-A line driver Input voltage High level input voltage VIT+: 0.1 V min. levels VIT-: -0.1 V max. Input impedance $120 \Omega \pm 5\%$ Low level input voltage Vhys (VIT+ – VIT–): 60 mV Hysteresis voltage Line driver output specifications Output voltage RS-422-A line driver level (equivalent to AM26C31) Maximum load current 20 mA Maximum output 4 Mpps frequency External output specifications **Rated voltage** 24 VDC 15 to 28.8 VDC **Residual voltage** 1.0 V max. Load voltage range **Maximum load current** 30 mA Leakage current 0.1 mA max. External output 0: 5 µs max./5 µs max. **ON/OFF** response time External outputs 1 and 2: 0.5 ms max./1 ms max. Internal I/O common NPN processing The I/O refreshing method is automatically set according to the connected Communications Coupler Unit and CPU Unit. \*1.

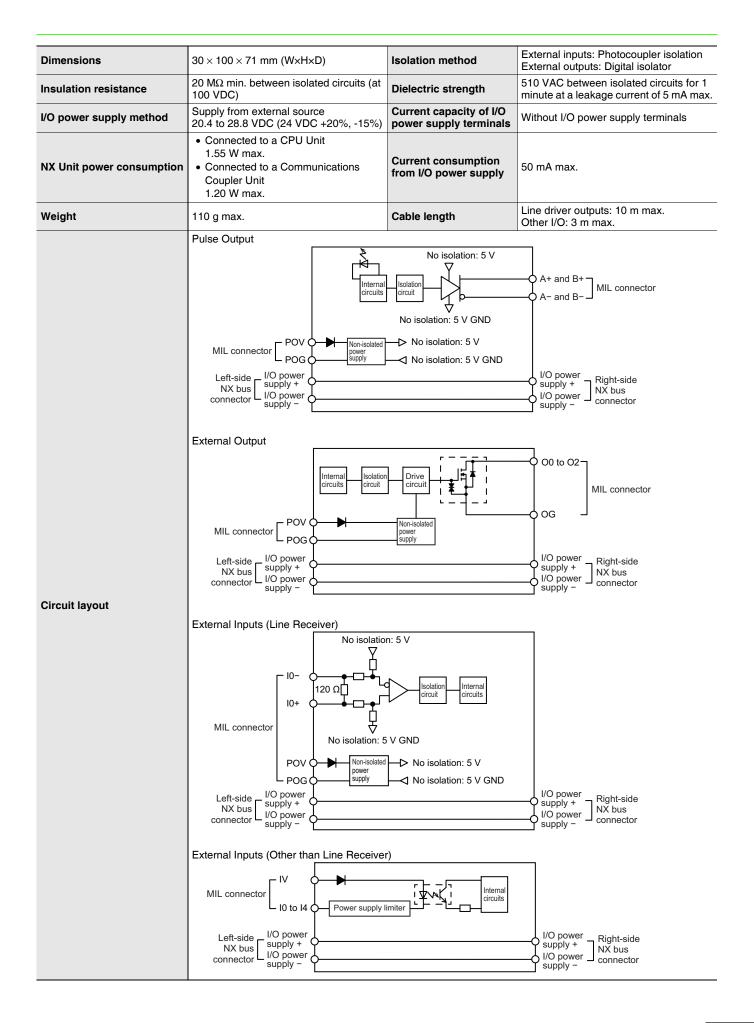
\*2. You can use the external input 0 as a latch input.

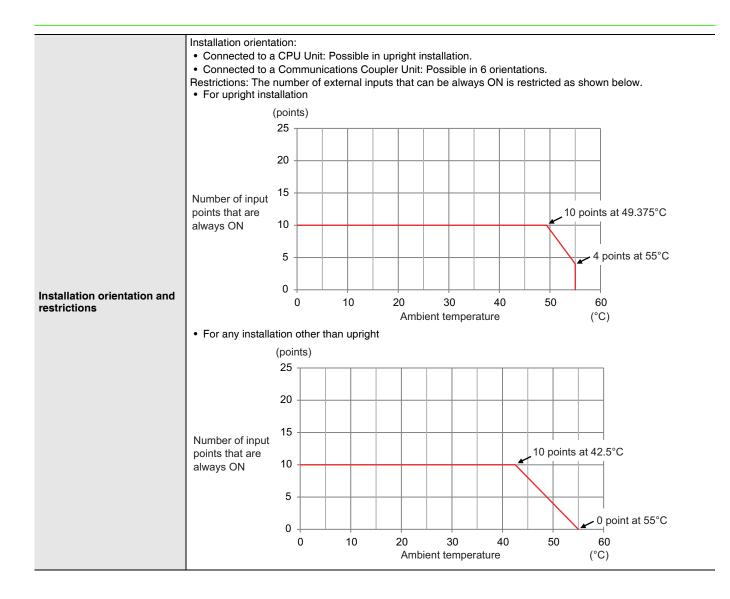
\*3. You can use the external output 0 as an error counter reset output.

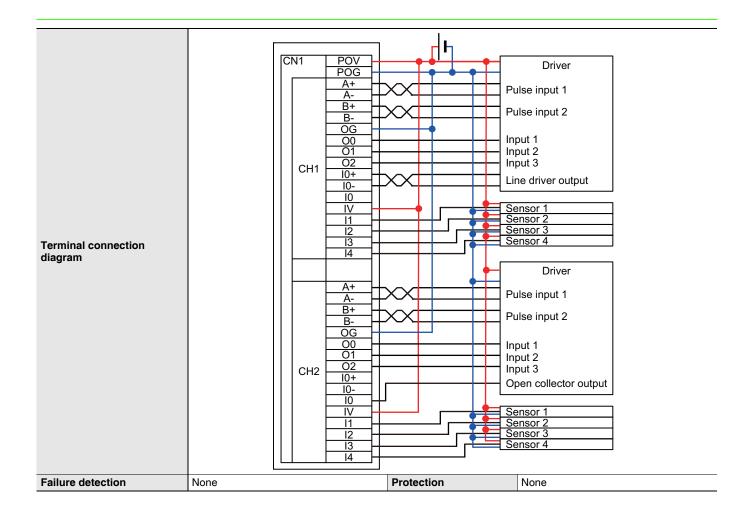
\*4. These functions are supported when you also use the MC Function Module in the NJ/NX-series CPU Unit or the NY-series Industrial PC. For details, refer to the motion control user's manual for the connected CPU Unit or Industrial PC.

A Pulse Output Unit only outputs pulses during the control period based on commands received at a fixed period.

Target position calculations (distribution calculations) for acceleration/deceleration control or for each control period must be performed on the Controller.







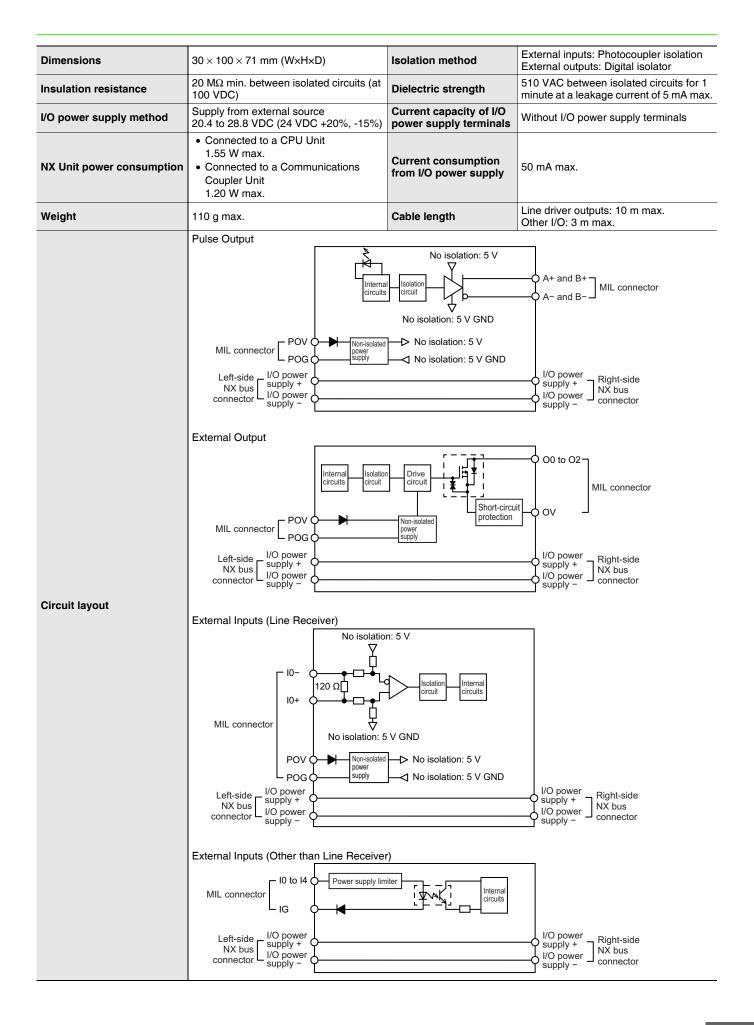


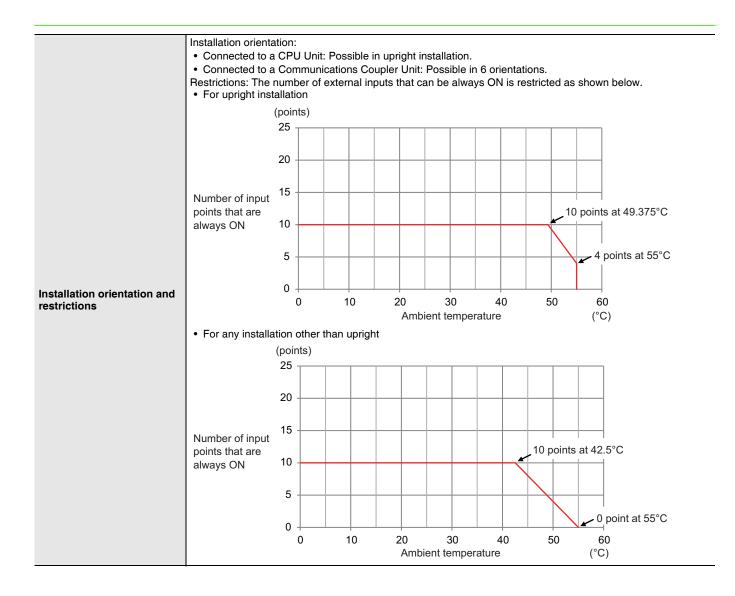
Unit name	Pulse Output Unit	Model	NX-PG0242-5			
Number of channels	2 channels	Type of external connections	MIL connector (34 terminals ×1)			
/O refreshing method *1	Synchronous I/O refreshing or task period					
Indicators	PG0242-5 DTS DCH1 DA1 DB1 DCH2 DA2 DB2	I/O signals	Inputs: 5 per channel. External inputs * Outputs: 5 per channel. 1 forward direction pulse output, 1 reverse directio pulse output, and 3 external outputs (per channel) * <sup>3</sup>			
Control method	Open-loop control through pulse string ou	itput	1			
Controlled drive	Servo drive with a pulse string input or a s	stepper motor drive				
Pulse output form	Line driver output					
Unit of control	Pulses					
Maximum pulse output speed	4 Mpps					
Pulse output method	Forward/reverse direction pulse outputs, Phase + direction outputs, or Phase differential pulse output multiplication x1/2/4					
Position control range	-2,147,483,648 to 2,147,483,647 pulses					
Velocity control range	1 to 4,000,000 pps					
Positioning <sup>*4</sup>						
Single-axis position control	Absolute positioning, relative positioning,	and interrupt feeding				
Single-axis velocity control	Velocity control (velocity feeding in Position	on Control Mode)				
Single-axis synchronized control	Carn operation     Carn operation       ngle-axis manual peration     Jogging       uxiliary function for ngle-axis control     Homing, stopping, and override changes					
Single-axis manual operation						
Auxiliary function for single-axis control						
	e (except for line receiver inputs)	I				
Input voltage	21.6 to 26.4 VDC (24 VDC +10%, -10%)	ON voltage/ON current	15 VDC min./3 mA min.			
Input current	4.6 mA typical (24 VDC)	OFF voltage/OFF current	4.0 VDC max./1 mA max.			
ON/OFF response time	External inputs 0 and 1: 1 µs max./2 µs m External inputs 2 to 4: 20 µs max./400 µs					
Internal I/O common processing	PNP					
External input specifications			I			
Input voltage	EIA standard RS-422-A line driver levels	High level input voltage	VIT+: 0.1 V min.			
Input impedance	$120 \Omega \pm 5\%$	Low level input voltage	VIT-: -0.1 V max.			
Hysteresis voltage	Vhys (VIT+ – VIT–): 60 mV					
Line driver output specificat		MOCO21)				
Output voltage Maximum load current	RS-422-A line driver level (equivalent to AM26C31)					
Maximum load current Maximum output	20 mA					
frequency	4 Mpps					
External output specification	IS					
Rated voltage	24 VDC					
Load voltage range	15 to 28.8 VDC	Residual voltage	1.0 V max.			
Maximum load current	30 mA	Leakage current	0.1 mA max.			
ON/OFF response time	External output 0: 5 µs max./200 µs max. External outputs 1 and 2: 0.5 ms max./1 ms max.					
Internal I/O common processing	PNP					

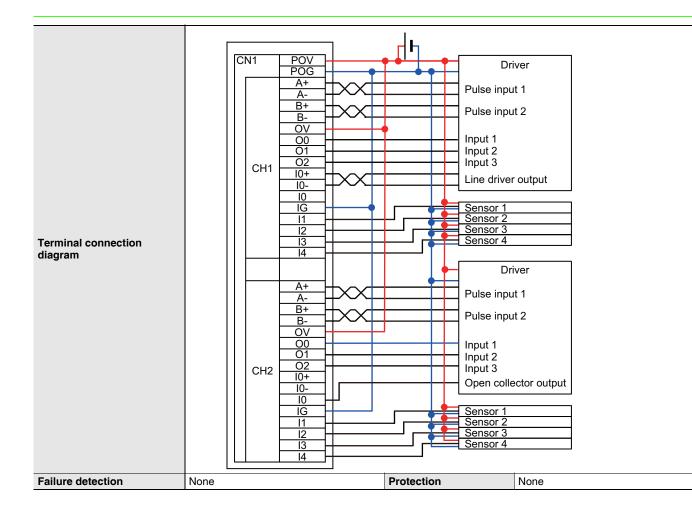
\*3. You can use the external output 0 as an error counter reset output.
\*4. These functions are supported when you also use the MC Function Module in the NJ/NX-series CPU Unit or the NY-series Industrial PC. For details, refer to the motion control user's manual for the connected CPU Unit or Industrial PC.

A Pulse Output Unit only outputs pulses during the control period based on commands received at a fixed period.

Target position calculations (distribution calculations) for acceleration/deceleration control or for each control period must be performed on the Controller.









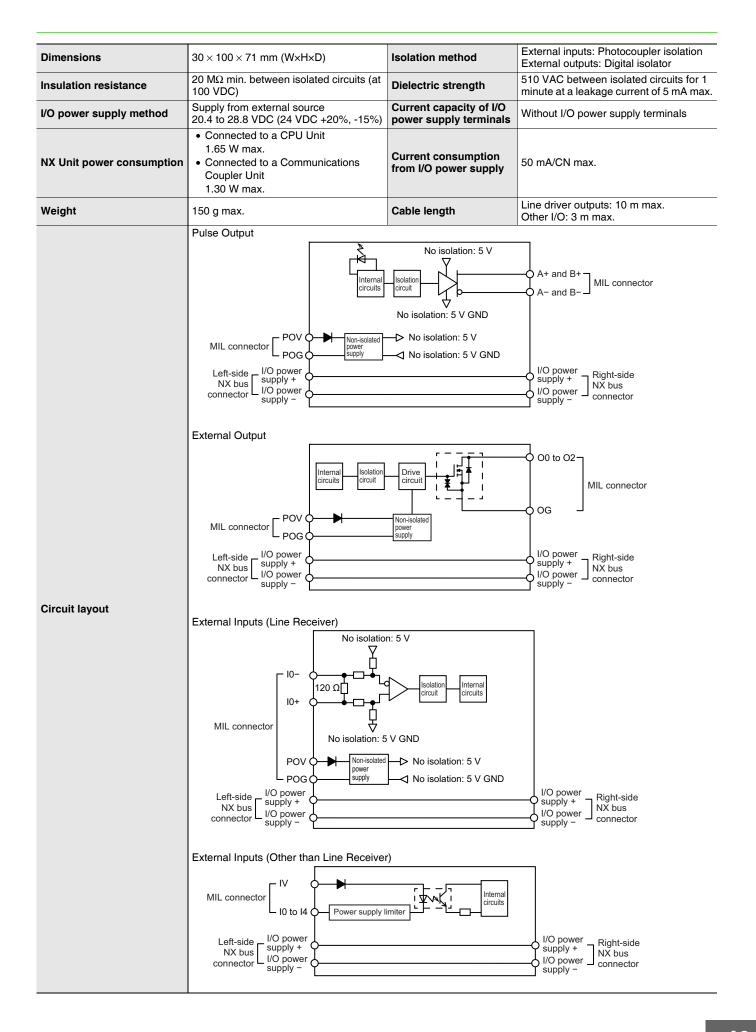
#### Pulse Output Unit (Line driver output, NPN type) 4 channels NX-PG0332-5

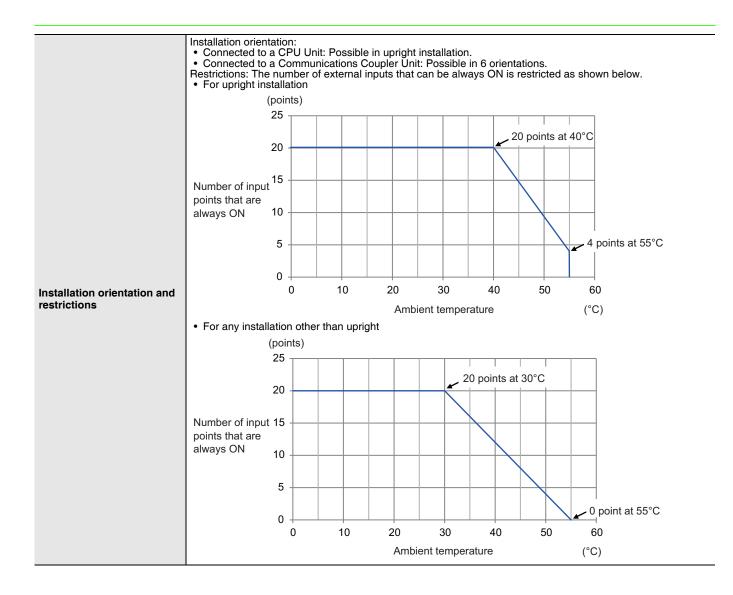
Unit name	Pulse Output Unit	Model	NX-PG0332-5			
Number of channels	4 channels	Type of external connections	MIL connector (34 terminals ×2)			
/O refreshing method *1	Synchronous I/O refreshing or task period	d prioritized refreshing				
Indicators	PG0332-5 DTS DCH1 DCH3 A1 DB1 DA3 DB3 DCH2 DCH4 A2 DB2 DA4 DB4	I/O signals	Inputs: 5 per channel. External inputs <sup>*2</sup> Outputs: 5 per channel. 1 forward direction pulse output, 1 reverse directio pulse output, and 3 external outputs (per channel) <sup>*3</sup>			
Control method	Open-loop control through pulse string ou	utput	•			
Controlled drive	Servo drive with a pulse string input or a stepper motor drive					
Pulse output form	Line driver output					
Unit of control	Pulses					
Maximum pulse output speed	4 Mpps					
Pulse output method	Forward/reverse direction pulse outputs, Pulse + direction outputs, or Phase differential pulse output multiplication x1/2/4					
Position control range	-2,147,483,648 to 2,147,483,647 pulses	-2,147,483,648 to 2,147,483,647 pulses				
Velocity control range	1 to 4,000,000 pps					
Positioning *4						
Single-axis position control	Absolute positioning, relative positioning,	and interrupt feeding				
Single-axis velocity control	Velocity control (velocity feeding in Positie	on Control Mode)				
Single-axis synchronized control	Cam operation and gear operation					
Single-axis manual operation	Jogging Homing, stopping, and override changes s (except for line receiver inputs)					
Auxiliary function for single-axis control						
· · ·						
Input voltage	21.6 to 26.4 VDC (24 VDC +10%, -10%)	ON voltage/ON current	15 VDC min./3 mA min.			
Input current	4.6 mA typical (24 VDC)	OFF voltage/OFF current	4.0 VDC max./1 mA max.			
ON/OFF response time	External inputs 0 and 1: 1 μs max./2 μs max. External inputs 2 to 4: 20 μs max./400 μs max.					
Internal I/O common processing	NPN					
External input specification	,	1				
Input voltage	EIA standard RS–422–A line driver levels	High level input voltage	VIT+: 0.1 V min.			
Input impedance	120 Ω±5%	Low level input voltage	VIT-: -0.1 V max.			
Hysteresis voltage		Vhys (VIT+ – VIT–): 60 mV				
Line driver output specifica						
Output voltage	RS-422-A line driver level (equivalent to A	AM26C31)				
Maximum load current	20 mA					
Maximum output frequency	4 Mpps					
External output specificatio	ns					
Rated voltage	24 VDC					
Load voltage range	15 to 28.8 VDC	Residual voltage	1.0 V max.			
Maximum load current	30 mA	Leakage current	0.1 mA max.			
ON/OFF response time	External output 0: 5 μs max./5 μs max. External outputs 1 and 2: 0.5 ms max./1 ms max.					
·						

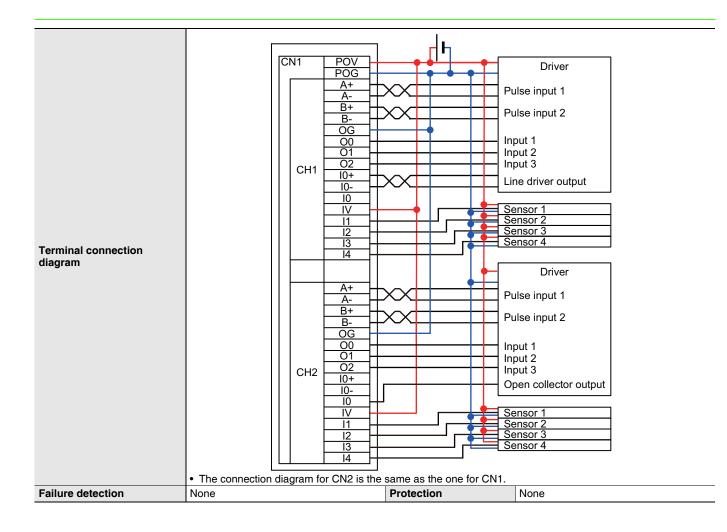
\*3. You can use the external output 0 as an error counter reset output.
\*4. These functions are supported when you also use the MC Function Module in the NJ/NX-series CPU Unit or the NY-series Industrial PC. For details, refer to the motion control user's manual for the connected CPU Unit or Industrial PC.

A Pulse Output Unit only outputs pulses during the control period based on commands received at a fixed period.

Target position calculations (distribution calculations) for acceleration/deceleration control or for each control period must be performed on the Controller.







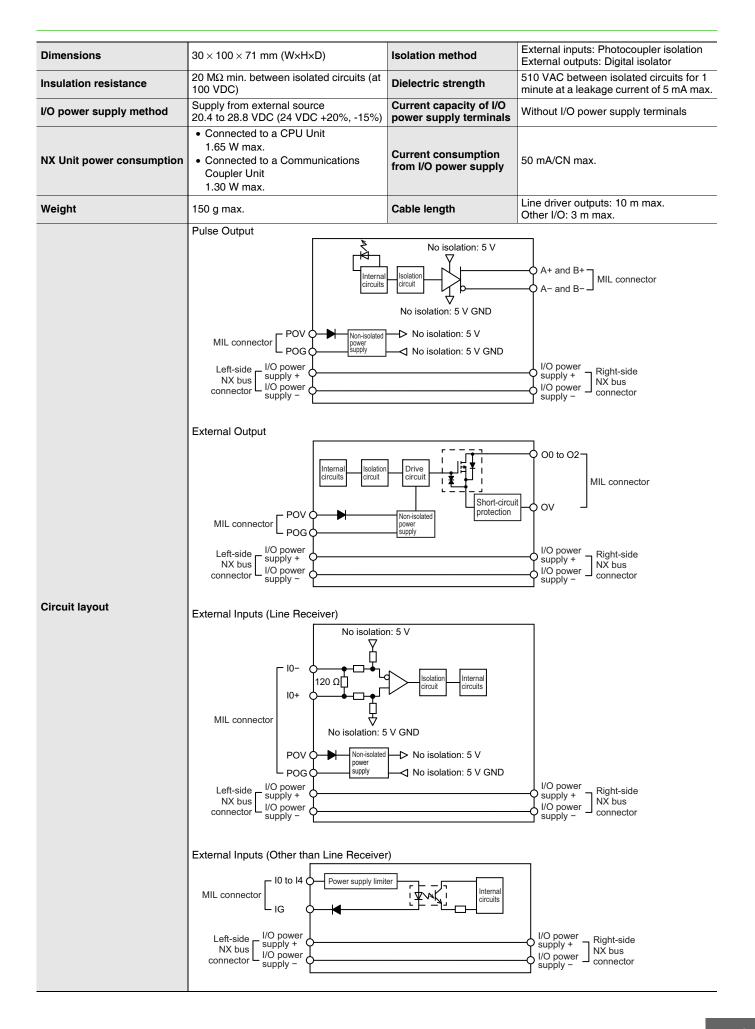


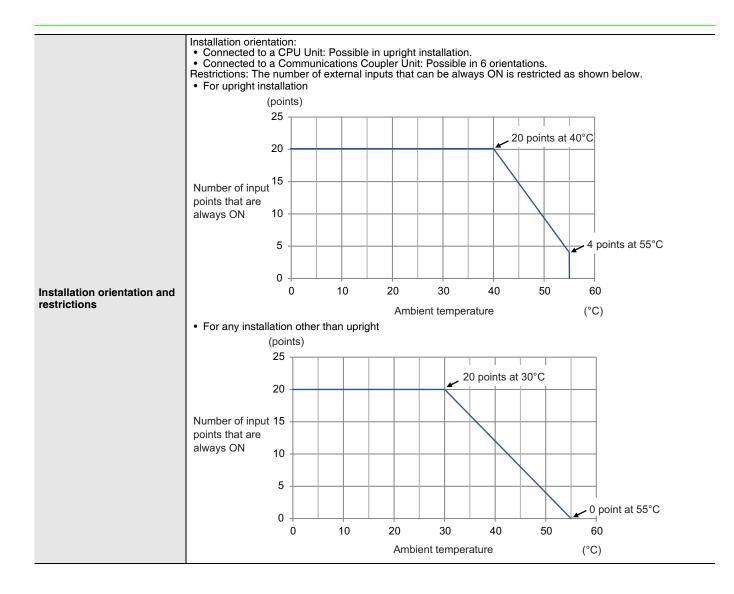
	Ilse Output Unit ( it name	Pulse Output Unit	Model	NX-PG0342-5			
-			External connection				
Nui	mber of channels	4 channels	terminals	MIL connector (34 terminals ×2)			
/0	refreshing method *1	Synchronous I/O refreshing or task period	prioritized refreshing				
Ind	licators	PG0342-5         DTS           CH1         CH3           A1         DB1         DA3           CH2         DCH4           A2         DB2         DA4	I/O signals	Inputs: 5 per channel. External inputs <sup>*2</sup> Outputs: 5 per channel. 1 forward direction pulse output, 1 reverse direction pulse output, and 3 external outputs (per channel) <sup>*3</sup>			
Соі	ntrol method	Open-loop control through pulse string ou	tput	1			
Соі	ntrolled drive	Servo drive with a pulse string input or a s	stepper motor drive				
Pul	lse output form	Line driver output					
Uni	it of control	Pulses					
Max	ximum pulse output speed	d 4 Mpps					
Pul	se output method	Forward/reverse direction pulse outputs, Pulse + direction outputs, or Phase differential pulse output multiplication x1/2/4					
Pos	sition control range	-2,147,483,648 to 2,147,483,647 pulses					
Vel	ocity control range	1 to 4,000,000 pps					
Pos	sitioning *4						
	Single-axis position control	Absolute positioning, relative positioning, and interrupt feeding					
;	Single-axis velocity control	Velocity control (velocity feeding in Positio	on Control Mode)				
	Single-axis synchronized control	Cam operation and gear operation					
	Single-axis manual operation	Jogging					
	Auxiliary function for single-axis control	Homing, stopping, and override changes					
Ext	ternal input specifications	(except for line receiver inputs)					
I	Input voltage	21.6 to 26.4 VDC (24 VDC +10%, -10%)	ON voltage/ON current	15 VDC min./3 mA min.			
I	Input current	4.6 mA typical (24 VDC)	OFF voltage/OFF current	4.0 VDC max./1 mA max.			
(	ON/OFF response time	External inputs 0 and 1: 1 μs max./2 μs max. External inputs 2 to 4: 20 μs max./400 μs max.					
1	Internal I/O common processing	PNP					
Ext	ternal input specifications						
	Input voltage	EIA standard RS-422-A line driver levels	High level input voltage	VIT+: 0.1 V min.			
_	Input impedance	120 Ω±5%	Low level input voltage	VIT-: -0.1 V max.			
	Hysteresis voltage	Vhys (VIT+ – VIT–): 60 mV					
_	e driver output specificati						
- H-	Output voltage	RS-422-A line driver level (equivalent to AM26C31)					
	Maximum load current	20 mA					
1	Maximum output frequency	4 Mpps					
_	ternal output specification						
- H-	Rated voltage	24 VDC					
- H-	Load voltage range	15 to 28.8 VDC	Residual voltage	1.0 V max.			
	Maximum load current	30 mA	Leakage current	0.1 mA max.			
(	ON/OFF response time	External output 0: 5 μs max./200 μs max. External outputs 1 and 2: 0.5 ms max./1 ms max.					
	Internal I/O common processing	PNP s set according to the connected Communications Coupler Unit and CPU Unit.					

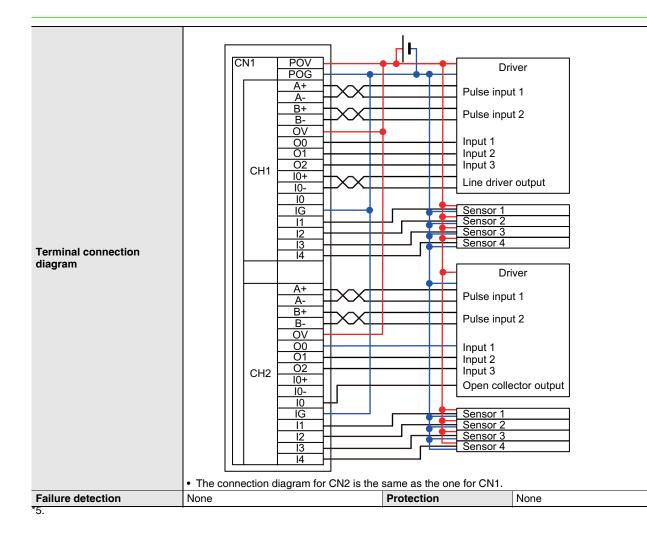
\*2. You can use the external input 0 as a latch input.
\*3. You can use the external output 0 as an error counter reset output.
\*4. These functions are supported when you also use the MC Function Module in the NJ/NX-series CPU Unit or the NY-series Industrial PC. For details, refer to the motion control user's manual for the connected CPU Unit or Industrial PC.
A Details of the external output of the external output of the connected CPU Unit or Industrial PC.

A Pulse Output Unit only outputs pulses during the control period based on commands received at a fixed period.

Target position calculations (distribution calculations) for acceleration/deceleration control or for each control period must be performed on the Controller.







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