# **NX-series Digital Output Units**

# NX-OD/OC

CSM\_NX-OD\_OC\_DS\_E\_5\_1

# A Wide Range of Digital Output Units from General Purpose use to High-Speed Synchronous Control

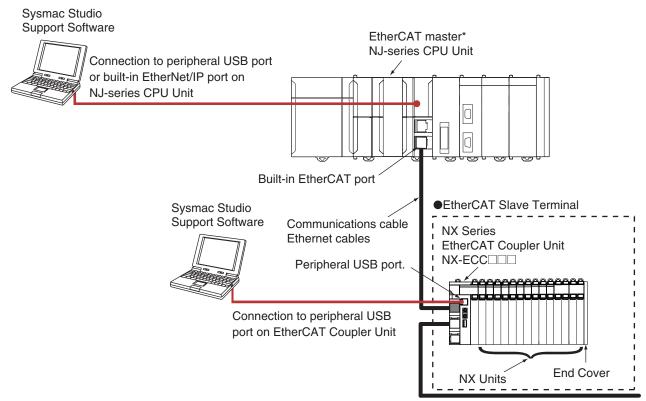
- Transistor and relay Output Units for the NX-series modular I/O system.
- Connect to other NX-series I/O Units and EtherCAT Coupler units using the high-speed NX-bus.
- Synchronous Units update their output status according to the controller's instructions every EtherCAT cycle.



#### **Features**

- High-speed I/O refreshing is possible by connecting with the NX-series EtherCAT Coupler.
- Output refreshing can be synchronized with the control cycle of the Controller. (Synchronous refreshing)
- ON/OFF response time of the high-speed model is 300 ns max, which enables high-speed, high-precision control.
- The screwless terminal block is detachable for easy commissioning and maintenance.
- Screwless clamp terminal block and Connector types are significantly reduces wiring work.
- Up to 16 digital outputs in a space-saving 12 mm width. (Connector Types 30 mm width)
- The lineup includies 2-point, 4-point, 8-point, 16-point, and 32-point types with 3-wire, 2-wire and 1-wire connection methods.
- With output refreshing with specified time stamp, the Output Unit refreshes outputs at the time specified by the program. This enables high-precision output control independent of the control cycle of the Controller.

## System Configuration



<sup>\*</sup> OMRON CJ1W-NC 81/ 82 Position Control Units cannot be connected to the EtherCAT Slave Terminal even though they support EtherCAT.

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# **Ordering Information**

#### **International Standards**

- The standards are abbreviated as follows: U: UL, U1: UL (Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, CE: EC Directives, and KC: KC Registration.
- Contact your OMRON representative for further details and applicable conditions for these standards.

### Transistor Output Unit (Screwless Clamping Terminal Block, 12 mm Width)

					Snec	ification			
Unit type	Product Name	Number of points	Internal I/O common	Maximum value of load current	Rated voltage	I/O refreshing method	ON/OFF response time	Model	Standards
		0	NPN	0.5 A/point,	04.1/D0	Output refreshing with specified time stamp only*	300 ns max./	NX-OD2154	
		2 points	PNP	1 A/Unit	24 VDC		300 ns max.	NX-OD2258	•
			NPN			Switching Synchronous I/O refreshing	0.1 ms max./ 0.8 ms max.	NX-OD3121	
	Transistor Output Unit	Output	INPIN	0.5 A/point,	24 VDC		300 ns max./ 300 ns max.	NX-OD3153	
NX Series			4 points PNP	2 A/Unit			0.5 ms max./ 1.0 ms max.	NX-OD3256	UC1, N, L,
Digital output Units			FINE				300 ns max./ 300 ns max.	NX-OD3257	CE, KC
		8 points PN PN 16 points	NPN		12 to 24 VDC		0.1 ms max./ 0.8 ms max.	NX-OD4121	
			PNP	0.5 A/point,	24 VDC		0.5 ms max./ 1.0 ms max.	NX-OD4256	
			NPN	4 A/Unit	12 to 24 VDC		0.1 ms max./ 0.8 ms max.	NX-OD5121	
			PNP		24 VDC		0.5 ms max./ 1.0 ms max.	NX-OD5256	

<sup>\*</sup> To use output refreshing with specified time stamp, NJ CPU Unit with unit version 1.06 or later, EtherCAT Coupler Unit with unit version 1.1 or later, and Sysmac Studio version 1.07 or higher are required.

### Transistor Output Units (MIL Connector, 30 mm Width)

					Spec	ification							
Unit type Produc Name		Number of points	Internal I/O common	Maximum value of load current	Rated voltage	I/O refreshing method	ON/OFF response time	Model	Standards				
	Transistor Output	16 pointo	NPN	0.5 A/point,	12 to 24 VDC		0.1 ms max./ 0.8 ms max.	NX-OD5121-5					
NX Series		16 points PNP	2 A/Unit 24	24 VDC		0.5 ms max./ 1.0 ms max.	NX-OD5256-5						
Digital output							NPN	0.5 A/point,	12 to 24 VDC	Switching Synchronous I/O refreshing and Free-Run refreshing	0.1 ms max./ 0.8 ms max.	NX-OD6121-5	UC1, CE, KC
Units		32 points	PNP	2 A/common, 4 A/Unit	24 VDC		0.5 ms max./ 1.0 ms max.	NX-OD6256-5					

# Relay Output Unit (Screwless Clamping Terminal Block, 12 mm Width)

				Spec	ification			Standards
I Init type	Product Name	Capacity	Relay type	Maximum switching capacity	I/O refreshing method	ON/OFF response time	Model	
NX Series	Relay Output Unit		N.O.  AC250V/2A (cosφ=1) AC250V/2A (cosφ=0.4)	Free-Run refreshing	15ms max./ 15ms max.	NX-OC2633	UC1, N, L, CE, KC	
Digital output Units		2 points	DC24V/2A 4A/NX Unit			NX-OC2733	UC1, N, CE,KC	

# Option

Product Name	Specification				Model	Standards
Unit/Terminal Block Coding Pins	For 10 Units (Terminal Block: 30 pins, Unit: 30 pins)				NX-AUX02	
	Specification					
Product Name	No. of terminals	Terminal number indications	Ground terminal mark	Terminal current capacity	Model	Standards
	8				NX-TBA082	
Terminal Block	12	A/B	None	10 A	NX-TBA122	
	16				NX-TBA162	

### **Accessories**

Not included.

# **General Specification**

	Item	Specification	
Enclosure		Mounted in a panel	
Grounding n	nethod	Ground to 100 $\Omega$ or less	
	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.	
	Pollution degree	2 or less: Conforms to JIS B3502 and IEC 61131-2.	
Operating environment	Noise immunity	2 kV on power supply line (Conforms to IEC61000-4-4.)	
environinient	Overvoltage category	Category II: Conforms to JIS B3502 and IEC 61131-2.	
	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/s², 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/s², 3 times each in X, Y, and Z directions	
Applicable standards		cULus: Listed UL508 and ANSI/ISA 12.12.01 EC: EN 61131-2 and C-Tick, KC: KC Registration, NK, LR	

<sup>\*</sup> For the Relay Output Unit, refer to the Digital Input Unit Specifications.

# **Digital Output Unit Specifications**

# ● Transistor Output Unit (Screwless Clamping Terminal Block 12 mm, Width) NX-OD2154

Unit name	Transistor Output Unit	Model	NX-OD2154
Capacity	2 points	External connection terminals	Screwless clamping terminal block (8 terminals)
I/O refreshing method	Output refreshing with specified time stamp		
	TS indicator, output indicator	Internal I/O common	NPN
	OD2154	Rated voltage	24 VDC
	■TS ■0 ■1	Operating load voltage range	15 to 28.8 VDC
Indicators		Maximum value of load current	0.5 A/point, 1 A/NX Unit
		Maximum inrush current	4.0 A/point, 10 ms max.
		Leakage current	0.1 mA max.
		Residual voltage	1.5 V max.
Dimensions	12 (M) × 100 (H) × 71 (D)	ON/OFF response time Isolation method	300 ns max./300 ns max.
Dimensions	12 (W) x 100 (H) x 71 (D) 20 MΩ min. between isolated circuits (at		Digital isolator isolation 510 VAC between isolated circuits for 1
Insulation resistance	100 VDC)	Dielectric strength	minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.5 A/terminal max., IOG: 0.5 A/terminal max.
NX Unit power consumption	0.50 W max.	I/O current consumption	30 mA max.
Weight	70 g max.		
Circuit layout	NX bus connector (left)  NX bus connector (left)  I/O power supply -  This unit uses a p	ush-pull output circuit.	OUT0 to OUT1 Terminal block  IOG0 to 1  I/O power supply + NX bus connector (right)
Installation orientation and restrictions	Installation orientation: Possible in 6 oriental Restrictions: No restrictions	ations.	
Terminal connection diagram	Additional I/O Power Supply Unit  A1 B1  Olov IOV  IOV  100  24 VDC	ransistor Output Unit NX-OD2154  DUT10 OUT10 IOV IOV IOG IOG NC NC B8	/pe Three-wire type
Disconnection/ Short-circuit detection	Not supported.	Protective function	Not supported.

Unit name	Transistor Output Unit	Model	NX-OD2258
Capacity	2 points	External connection terminals	Screwless clamping terminal block (8 terminals)
I/O refreshing method	Output refreshing with specified time stamp		
	TS indicator, output indicator	Internal I/O common	PNP
	OD2258	Rated voltage	24 VDC
	■TS ■0 ■1	Operating load voltage range	15 to 28.8 VDC
Indicators		Maximum value of load current	0.5 A/point, 1 A/NX Unit
		Maximum inrush current	4.0 A/point, 10 ms max.
		Leakage current	0.1 mA max.
		Residual voltage	1.5 V max.
		ON/OFF response time	300 ns max./300 ns max.
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Digital isolator isolation
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.5 A/terminal max., IOG: 0.5 A/terminal max.
NX Unit power consumption	0.50 W max.	I/O current consumption	40 mA max.
Weight	70 g max.		
Circuit layout		ush-pull output circuit.	OUT0 to OUT1 Terminal block  I/O power supply + NX bus connector (right)
Installation orientation and restrictions	Installation orientation: Possible in 6 orienta Restrictions: No restrictions	ations.	
Terminal connection diagram	A1 B1 A1 C	Two-wire ty  OG  NC  NC  NC  NC  NC  NC  NC  NC  NC  N	Three-wire type
Disconnection/ Short-circuit detection	Not supported.	Protective function	With load short-circuit protection.

Unit name	Transistor Output Unit	Model	NX-OD3121
Capacity	4 points	External connection terminals	Screwless clamping terminal block (12 terminals)
I/O refreshing method	Selectable Synchronous I/O refreshing or F		
	TS indicator, output indicator	Internal I/O common	NPN
	OD3121 ■TS	Rated voltage	12 to 24 VDC
	<b>■0 ■1</b> ■2 <b>■</b> 3	Operating load voltage range	10.2 to 28.8 VDC
Indicators		Maximum value of load current	0.5 A/point, 2 A/NX Unit
		Maximum inrush current	4.0 A/point, 10 ms max.
		Leakage current	0.1 mA max.
		Residual voltage	1.5 V max.
Dimensions	10 (M) - 100 (H) - 71 (D)	ON/OFF response time	0.1 ms max./0.8 ms max.
Dimensions	12 (W) x 100 (H) x 71 (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 at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.5 A/terminal max., IOG: 0.5 A/terminal max.
NX Unit power consumption	0.55 W max.	I/O current consumption	10 mA max.
Weight	70 g max.		
Circuit layout	NX bus connector (left)  NX bus connector (left)  NX bus connector (left)		IOV0 to 3 OUT0 to OUT3  Terminal block  I/O power supply + NX bus connector (right)
Installation orientation and restrictions	Installation orientation: Possible in 6 oriental Restrictions: No restrictions	ations.	
Terminal connection diagram	Power Supply Unit  A1 B1  OIOV IOV  IOV  IOV IOV  IOV IOV	Ansistor Output Unit NX-OD3121  B1  Two-wire typ DUT0   OUT1  DUT0   OUT1  DUT0   OUT3  DUT2   OUT3  DUT2   IOV3  DOG2   IOG3	e Three-wire type
Disconnection/ Short-circuit detection	Not supported.	Protective function	Not supported.

Unit name	Transistor Output Unit	Model	NX-OD3153
Capacity	4 points	External connection	Screwless clamping terminal block (12
	'	terminals	terminals)
I/O refreshing method	Selectable Synchronous I/O refreshing or F TS indicator, output indicator	Internal I/O common	NPN
	OD3153	Rated voltage	24 VDC
	■TS	Operating load voltage	
	■0 ■1 ■2 ■3	range	15 to 28.8 VDC
Indicators		Maximum value of load current	0.5 A/point, 2 A/NX Unit
		Maximum inrush current	4.0 A/point, 10 ms max.
		Leakage current	0.1 mA max.
		Residual voltage	1.5 V max. 300 ns max./300 ns max.
Dimensions	12 (M) × 100 (H) × 71 (D)	ON/OFF response time Isolation method	
Difficusions	12 (W) x 100 (H) x 71 (D) 20 MΩ min. between isolated circuits (at		Digital isolator isolation 510 VAC between isolated circuits for 1
Insulation resistance	100 VDC)	Dielectric strength	minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.5 A/terminal max., IOG: 0.5 A/terminal max.
NX Unit power consumption	0.50 W max.	I/O current consumption	30 mA max.
Weight	70 g max.		
Circuit layout	NX bus connector (left)	n-pull output circuit.	OUT0 to OUT3  Terminal block  IOG0 to 3  I/O power supply + NX bus connector (right)
Installation orientation and restrictions	Installation orientation: Possible in 6 oriental Restrictions: No restrictions	ations.	
Terminal connection diagram	Additional I/O Power Supply Unit  A1 B1 B1 B1 A1 B1	Transistor Output Unit NX-OD3153  B1  OUT0 OUT1  IOV0 IOV1  IOG0 IOG1  OUT2 OUT3  IOV2 IOV3  IOG2 IOG3  B8	Three-wire type
Disconnection/ Short-circuit detection	Not supported.	Protective function	Not supported.

Unit name	Transistor Output Unit	Model	NX-OD3256
Capacity	4 points	External connection terminals	Screwless clamping terminal block (12 terminals)
I/O refreshing method	Selectable Synchronous I/O refreshing or F	ree-Run refreshing	
	TS indicator, output indicator	Internal I/O common	PNP
	OD3256	Rated voltage	24 VDC
	■0 ■1 ■2 ■3	Operating load voltage range	15 to 28.8 VDC
Indicators		Maximum value of load current	0.5 A/point, 2 A/NX Unit
		Maximum inrush current	4.0 A/point, 10 ms max.
		Leakage current	0.1 mA max.
		Residual voltage	1.5 V max.
		ON/OFF response time	0.5 ms max./1.0 ms max.
Dimensions	12 (W) x 100 (H) x 71 (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 at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.5 A/terminal max., IOG: 0.5 A/terminal max.
NX Unit power consumption	0.55 W max.	I/O current consumption	20 mA max.
Weight	70 g max.		
Circuit layout	NX bus connector (left)  I/O power supply -	Short-circuit protection	OUT0 to OUT3  IOG0 to 3  I/O power supply + NX bus connector (right)
Installation orientation and restrictions	Installation orientation: Possible in 6 orienta Restrictions: No restrictions	ations.	
Terminal connection diagram	Power Supply Unit  A1 B1  OIOV IOV  ICU  ICU  IOV IOV  ICU  ICU  ICU  ICU  ICU  ICU  ICU  IC	nsistor Output Unit NX-OD3256  B1 Two-wire type UT0 OUT1  DV0 IOV1  DG0 IOG1  UT2 OUT3  DV2 IOV3  DG2 IOG3  B8	Three-wire type
Disconnection/ Short-circuit detection	Not supported.	Protective function	With load short-circuit protection.

Unit name	Transistor Output Unit	Model	NX-OD3257
Capacity	4 points	External connection terminals	Screwless clamping terminal block (12 terminals)
I/O refreshing method	Selectable Synchronous I/O refreshing or F	ree-Run refreshing	
	TS indicator, output indicator	Internal I/O common	PNP
	OD3257 ■TS	Rated voltage	24 VDC
	■0 ■1 ■2 ■3	Operating load voltage range	15 to 28.8 VDC
Indicators		Maximum value of load current	0.5 A/point, 2 A/NX Unit
		Maximum inrush current	4.0 A/point, 10 ms max.
		Leakage current	0.1 mA max.
		Residual voltage	1.5 V max.
		ON/OFF response time	300 ns max./300 ns max.
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Digital isolator isolation
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.5 A/terminal max., IOG: 0.5 A/terminal max.
NX Unit power consumption	0.50 W max.	I/O current consumption	40 mA max.
Weight	70 g max.		
Circuit layout	NX bus connector (left)  I/O power supply -  This unit uses a push  Installation orientation: Possible in 6 orienta	<u> </u>	IOV0 to 3  Terminal block  OUT0 to OUT3  I/O power supply + NX bus connector (right)
and restrictions	Restrictions: No restrictions	auons.	
Terminal connection diagram	Power Supply Unit  A1  B1  A1  FIOV IOV  IOV  IOV IOV	ransistor Output Unit NX-OD3257  B1 OUT0 OUT1 IOV0 IOV1 IOG0 IOG1 OUT2 OUT3 IOV2 IOV3 IOG2 IOG3  B8	Three-wire type
Disconnection/ Short-circuit detection	Not supported.	Protective function	With load short-circuit protection.

Unit name	Transistor Output Unit	Model	NX-OD4121
Capacity	8 points	External connection terminals	Screwless clamping terminal block (16 terminals)
I/O refreshing method	Selectable Synchronous I/O refreshing or F	ree-Run refreshing	
	TS indicator, output indicator	Internal I/O common	NPN
	OD4121 ■TS	Rated voltage	12 to 24 VDC
	■0 ■1 ■2 ■3	Operating load voltage range	10.2 to 28.8 VDC
Indicators	■4 ■5 ■6 ■7	Maximum value of load current	0.5 A/point, 4 A/NX Unit
		Maximum inrush current	4.0 A/point, 10 ms max.
		Leakage current	0.1 mA
		Residual voltage	1.5 V max.
Dimensions	12 (W) x 100 (H) x 71 (D)	ON/OFF response time Isolation method	0.1 ms max./0.8 ms max.  Photocoupler isolation
Dimensions	$12 \text{ (W)} \times 100 \text{ (H)} \times 71 \text{ (D)}$ 20 M $\Omega$ min. between isolated circuits (at		510 VAC between isolated circuits for 1
Insulation resistance	100 VDC)	Dielectric strength	minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.5 A/terminal max.
NX Unit power consumption	0.55 W max.	I/O current consumption	10 mA max.
Weight	70 g max.		
Circuit layout	NX bus connector (left)  I/O power supply -		IOV0 to 7 OUT0 to OUT7  Terminal block  I/O power supply + I/O power supply - I/O power supply - I/O power supply -
and restrictions	Installation orientation: Possible in 6 oriental Restrictions: No restrictions	ations.	
Terminal connection diagram	Additional I/O Power Supply Unit  A1 B1 IOG	DOTE   DOTE	Three-wire type
Disconnection/ Short-circuit detection	Not supported.	Protective function	Not supported.

Unit name	Transistor Output Unit	Model	NX-OD4256	
Capacity	8 points	External connection terminals	Screwless clamping terminal block (16 terminals)	
I/O refreshing method	Selectable Synchronous I/O refreshing or F	ree-Run refreshing		
	TS indicator, output indicator	Internal I/O common	PNP	
	OD4256 ■TS	Rated voltage	24 VDC	
	■0 ■1 ■2 ■3	Operating load voltage range	15 to 28.8 VDC	
Indicators	<b>#4 #5</b> <b>#6 #7</b>	Maximum value of load current	0.5 A/point, 4 A/NX Unit	
		Maximum inrush current	4.0 A/point, 10 ms max.	
		Leakage current	0.1 mA	
		Residual voltage	1.5 V max.	
		ON/OFF response time	0.5 ms max./1.0 ms max.	
Dimensions	12 (W) x 100 (H) x 71 (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 at a leakage current of 5 mA max.	
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOG: 0.5 A/terminal max.	
NX Unit power consumption	0.65 W max.	I/O current consumption	30 mA max.	
Weight	70 g max.			
Circuit layout	NX bus connector (left)  I/O power supply -	Short-circuit protection	OUT0 to OUT7  Terminal block  I/O power supply +  I/O power supply -  I/O power supply -	
and restrictions	Installation orientation: Possible in 6 orienta Restrictions: No restrictions	itions.		
Terminal connection diagram	10V	Transistor Output Unit NX-OD4256	Three-wire type	
Disconnection/ Short-circuit detection	Not supported.	Protective function	With load short-circuit protection.	

Unit name	Transistor Output Unit	Model	NX-OD5121
Capacity	16 points	External connection terminals	Screwless clamping terminal block (16 terminals)
I/O refreshing method	Selectable Synchronous I/O refreshing or F		
	TS indicator, output indicator	Internal I/O common	NPN
	OD5121 ■TS	Rated voltage	12 to 24 VDC
	<b>m</b> 0 <b>m</b> 1 <b>m</b> 2 <b>m</b> 3 <b>m</b> 4 <b>m</b> 5 <b>m</b> 6 <b>m</b> 7	Operating load voltage range	10.2 to 28.8 VDC
Indicators	■8 ■9 ■10 ■11 ■12 ■13 ■14 ■15	Maximum value of load current	0.5 A/point, 4 A/NX Unit
		Maximum inrush current	4.0 A/point, 10 ms max.
		Leakage current	0.1 mA max.
		Residual voltage	1.5 V max.
<b>D</b>	10 (11) 100 (11) 71 (7)	ON/OFF response time	0.1 ms max./0.8 ms max.
Dimensions	12 (W) x 100 (H) x 71 (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 at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	Without I/O power supply terminals
NX Unit power consumption	0.65 W max.	I/O current consumption	20 mA max.
Weight	70 g max.		
Circuit layout	NX bus connector (left)  I/O power supply +		OUT0 to OUT15 Terminal block  I/O power supply + NX bus connector (right)
Installation orientation and restrictions	Installation orientation: Possible in 6 oriental Restrictions: No restrictions	ations.	
Terminal connection diagram	IOV   IOV	Connection Unit   NX-C	OUT3 OUT5 OUT7
Disconnection/ Short-circuit detection	Not supported.	Protective function	Not supported.

Unit name	Transistor Output Unit	Model	NX-OD5256
Capacity	16 points	External connection terminals	Screwless clamping terminal block (16 terminals)
I/O refreshing method  Indicators	Selectable Synchronous I/O refreshing or F TS indicator, output indicator  OD5256  TS  00 =1 =2 =3  44 =5 =6 =7  88 =9 =10 =11  12 =13 =14 =15	Internal I/O common Rated voltage Operating load voltage range Maximum value of load current Maximum inrush current Leakage current	PNP 24 VDC 15 to 28.8 VDC 0.5 A/point, 4 A/NX Unit 4.0 A/point, 10 ms max. 0.1 mA max.
		Residual voltage ON/OFF response time	1.5 V max.  0.5 ms max./1.0 ms max.
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Photocoupler isolation
Insulation resistance	20 MΩ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	Without I/O power supply terminals
NX Unit power consumption	0.70 W max.	I/O current consumption	40 mA max.
Weight	70 g max.		
Circuit layout	NX bus connector (left)  I/O power supply -	Short-circuit protection	OUT0 to OUT15 Terminal block  I/O power supply + NX bus connector (right)
Installation orientation and restrictions	Installation orientation: Possible in 6 orienta Restrictions: No restrictions	ations.	
Terminal connection diagram	10V   10V	Connection Unit	OUT3 OUT5 OUT7
Disconnection/ Short-circuit detection	Not supported.	Protective function	With load short-circuit protection.

# ● Transistor Output Units (MIL Connector, 30 mm Width) NX-OD5121-5

Unit name	Transistor Output Unit	Model	NX-OD5121-5
Number of points	16 points	External connection terminals	MIL connector (20 terminals)
I/O refreshing method	Switching Synchronous I/O refreshing and Free-	Run refreshing	
	TS indicator, output indicator	Internal I/O common	NPN
	OD5121−5	Rated voltage	12 to 24 VDC
	■0 ■1 ■2 ■3 ■4 ■5 ■6 ■7	Operating load voltage range	10.2 to 28.8 VDC
Indicators	■8 ■9 ■10 ■11 ■12 ■13 ■14 ■15	Maximum value of load current	0.5 A/point, 2 A/NX Unit
		Maximum inrush current	4.0 A/point, 10 ms max.
		Leakage current	0.1 mA max.
		Residual voltage	1.5 V max.
		ON/OFF response time	0.1 ms max./0.8 ms max.
Dimensions	30 (W) x 100 (H) x 71 (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 at a leakage current of 5 mA max.
I/O power supply method	Supply from external source	Current capacity of I/O power supply terminal	Without I/O power supply terminals
NX Unit power consumption	0.60 W max.	Current consumption from I/O power supply	30 mA max.
Weight	80 g max.		
Circuit layout	NX bus connector (left)  I/O power supply +		
Installation orientation and restrictions	Installation orientation: Possible in 6 orientations Restrictions: No restrictions	·	
Terminal connection diagram	12 to 24 VDC	<del></del>	
Disconnection/Short-circuit	Not supported.	Protective function	Not supported.
detection			. ,

## NX-OD5256-5

Unit name	Transistor Output Unit	Model	NX-OD5256-5	
Number of points	16 points	External connection terminals	MIL connector (20 terminals)	
I/O refreshing method	Switching Synchronous I/O refreshing and Free-			
	TS indicator, output indicator	Internal I/O common	PNP	
	OD5256-5 <sub>■™</sub>	Rated voltage	24 VDC	
	■0 ■1 ■2 ■3 ■4 ■5 ■6 ■7 ■8 ■9 ■10 ■11 ■12 ■13 ■14 ■15	Operating load voltage range	20.4 to 28.8 VDC	
Indicators	<b>-</b> 8 <b>-</b> 9 <b>-</b> 10 <b>-</b> 11 <b>-</b> 12 <b>-</b> 13 <b>-</b> 14 <b>-</b> 13	Maximum value of load current	0.5 A/point, 2 A/NX Unit	
		Maximum inrush current	4.0 A/point, 10 ms max.	
		Leakage current	0.1 mA max.	
		Residual voltage	1.5 V max.	
Dimensions	20 (M) × 100 (II) × 71 (D)	ON/OFF response time	0.5 ms max./1.0 ms max.	
Dimensions	30 (W) x 100 (H) x 71 (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 at a leakage current of 5 mA max.	
I/O power supply method	Supplied from external source.	Current capacity of I/O power supply terminal	Without I/O power supply terminals	
NX Unit power consumption	0.70 W max.	Current consumption from I/O power supply	40 mA max.	
Weight	85 g max.			
Circuit layout	NX bus connector (left)  NX bus connector (left)	Short-circuit protection	COM (+V)  Connector  OUT0 to OUT15  OV  OV  I/O power supply +  I/O power supply -  I/O power supply -	
Installation orientation and restrictions	Installation orientation: Possible in 6 orientations Restrictions: No restrictions			
Terminal connection diagram	0V 3 4 0V  OUT15 5 6 OL  L OUT14 7 8 OL  L OUT13 9 10 OL  L OUT12 11 12 OL  L OUT11 13 14 OL  L OUT10 15 16 OL  L OUT09 17 18 OL  OUT08 19 20 OL  Be sure to wire both pins 1 and 2 (COM (+V)).	Signal name  DM (+V)  JT07  L  JT06  L  JT05  L  JT04  L  JT03  L  JT02  L  JT01  L  JT01  L  JT01  L		
Disconnection/Short-circuit detection	Be sure to wire both pins 3 and 4 (0V).  Not supported.	Protective function	With load short-circuit protection.	

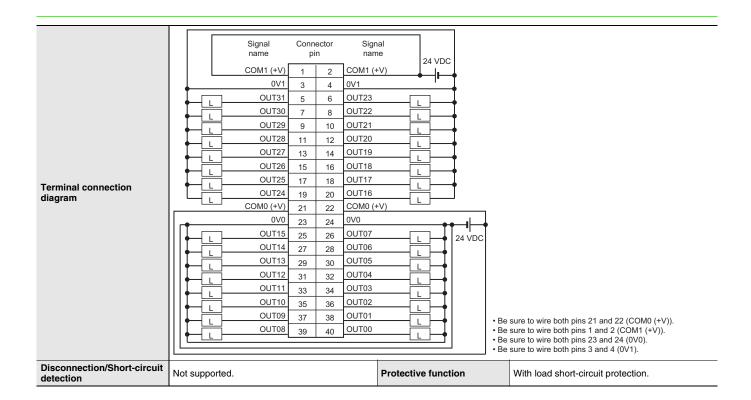
## NX-OD6121-5

Unit name	Transistor Output Unit	Model	NX-OD6121-5		
Number of points	32 points	External connection terminals	MIL connector (40 terminals)		
I/O refreshing method	Switching Synchronous I/O refreshing and Free-Run refreshing				
	TS indicator, output indicator	Internal I/O common	NPN		
	OD6121−5	Rated voltage	12 to 24 VDC		
	■0 ■1 ■2 ■3 ■4 ■5 ■6 ■7	Operating load voltage range	10.2 to 28.8 VDC		
Indicators	■8 ■9 ■10 ■11 ■12 ■13 ■14 ■15 ■16 ■17 ■18 ■19 ■20 ■21 ■22 ■23 ■24 ■25 ■26 ■27 ■22 ■23	Maximum value of load current	0.5 A/point, 2 A/common, 4 A/NX Unit		
	■24 ■25 ■26 ■27 ■28 ■29 ■30 ■31	Maximum inrush current	4.0 A/point, 10 ms max.		
		Leakage current	0.1 mA max.		
		Residual voltage	1.5 V max.		
		ON/OFF response time	0.1 ms max./0.8 ms max.		
Dimensions	30 (W) x 100 (H) x 71 (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 at a leakage current of 5 mA max.		
I/O power supply method	Supply from external source	Current capacity of I/O power supply terminal	Without I/O power supply terminals		
NX Unit power consumption	0.80 W max.	Current consumption from I/O power supply	50 mA max.		
Weight	90 g max.				
Circuit layout	NX bus connector (left)  NX bus connector (left)	+V0 +V0 OUT0 to OUT15 COM0 COM0 +V1 +V1 OUT16 to OUT31 COM1 COM1 I/O power	connector		
Installation orientation and restrictions	Installation orientation: Possible in 6 orientations. Restrictions: No restrictions				

		2 to	Signal name		nector	Signal name			
	24	1 VDC	+V1	1	2	+V1	<b>—</b>		
	<b> </b>	1	COM1	3	4	COM1			
	L .	<u>'</u>	OUT31	5	6	OUT23			
	_		OUT30	7	8	OUT22			
			OUT29	9	10	OUT21			
	L		OUT28	11	12	OUT20			
	L	_;;;	OUT27	13	14	OUT19			
	l L	_;;;;	OUT26	15	16	OUT18			
	I		OUT25	17	18	OUT17			
Terminal connection	L		OUT24	19	20	OUT16			
diagram			+V0	21	22	+V0			
			COM0 23 24 COM0						
			OUT15	25	26	OUT07			
	<u>L</u>		OUT14	27	28	OUT06 L OUT05			
	II —		OUT13 29	29	30				
			OUT12	31	32	OUT04			
			OUT11	33	34	OUT03			
	II I	$\neg$ $\vdash$ $\vdash$	OUT10	35	36	OUT02			
	II I	$\neg$ $\vdash$ $\vdash$	OUT09	37	38	OUT01		_	
	12 to L	$\neg$ $\vdash$ $\vdash$	OUT08	39	40	OUT00			e sure to wire both pins 21 and 22 (+V0). e sure to wire both pins 23 and 24 (COM0).
				- 00	10			• Be	e sure to wire both pins 1 and 2 (+V1).
	L '							」・Be	e sure to wire both pins 3 and 4 (COM1).
Disconnection/Short-circuit detection	Not supported	d.				Protectiv	ve function		Not supported.

## NX-OD6256-5

Unit name	Transistor Output Unit	Model	NX-OD6256-5	
Number of points	32 points	External connection terminals	MIL connector (40 terminals)	
I/O refreshing method	Switching Synchronous I/O refreshing and Free-F	Run refreshing		
	TS indicator, output indicator	Internal I/O common	PNP	
	OD6256-5	Rated voltage	24 VDC	
	■TS ■0 ■1 ■2 ■3 ■4 ■5 ■6 ■7	Operating load voltage range	20.4 to 28.8 VDC	
Indicators	■8 ■9 ■10 ■11 ■12 ■13 ■14 ■15 ■16 ■17 ■18 ■19 ■20 ■21 ■22 ■23	Maximum value of load current	0.5 A/point, 2 A/common, 4 A/NX Unit	
	■24 ■25 ■26 ■27 ■28 ■29 ■30 ■31	Maximum inrush current	4.0 A/point, 10 ms max.	
		Leakage current	0.1 mA max.	
		Residual voltage	1.5 V max.	
		ON/OFF response time	0.5 ms max./1.0 ms max.	
Dimensions	30 (W) x 100 (H) x 71 (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 at a leakage current of 5 mA max.	
I/O power supply method	Supply from external source	Current capacity of I/O power supply terminal	Without I/O power supply terminals	
NX Unit power consumption	1.00 W max.	Current consumption from I/O power supply	80 mA max.	
Weight	95 g max.			
Circuit layout	NX bus connector (left)  I/O power supply +	Short-circuit protection protection T T T T	COM0 (+V)  COM0 (+V)  OUT0 to OUT15  OV0  COM1 (+V)  COM1 (+V)  COM1 (+V)  OUT16 to OUT31  OV1  OV1  OV1  I/O power supply +  NX bus connector (right)	
Installation orientation and	Installation orientation: Possible in 6 orientations.			
restrictions	Restrictions: No restrictions			



# ● Relay Output Unit (Screwless Clamping Terminal Block 12 mm, Width) NX-OC2633

Unit name	Relay Output Units	Model	NX-OC2633		
Capacity	2 points, independent contacts	External connection	Screwless clamping terminal block (8		
	, ,	terminals	terminals)		
/O refreshing method	Free-Run refreshing TS indicator, output indicator	Relay type	N.O. contact		
Indicators	OC2633 =TS =0 =1	Maximum switching capacity	250 VAC/2 A (cosφ = 1), 250 VAC/2 A (cosφ = 0.4), 24 VDC/2 A, 4 A/Unit		
		Minimum switching capacity	5 VDC, 1 mA		
Relay service life	Electrical: 100,000 operations* Mechanical: 20,000,000 operations	ON/OFF response time	15 ms max./15 ms max.		
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Relay isolation		
Insulation resistance	Between A1/B1 terminals and A3/B3 terminals: $20~M\Omega$ min. (500 VDC) Between the external terminals and internal circuits: $20~M\Omega$ min. (500 VDC) Between the internal circuit and GR terminal: $20~M\Omega$ min. (100 VDC) Between the external terminals and GR terminal: $20~M\Omega$ min. (500 VDC)	Dielectric strength	Between A1/B1 terminals and A3/B3 terminals: 2300 VAC for 1 min at a leakage current of 5 mA max.  Between the external terminals and GR terminal: 2300 VAC for 1 min at a leakage current of 5 mA max.  Between the external terminals and internal circuits: 2300 VAC for 1 min at a leakage current of 5 mA max.  Between the internal circuit and GR terminal: 510 VAC for 1 min at a leakage current of 5 mA max.		
Vibration resistance	Conforms to IEC60068-2-6. 5 to 8.4 Hz with amplitude of 3.5 mm, 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	100 m/s², 3 times each in X, Y, and Z directions		
I/O power supply method	Supply from external source	Current capacity of I/O power supply terminal	Without I/O power supply terminals		
NX Unit power consumption	0.80 W max.	I/O current consumption	No consumption		
Weight	65 g max.				
Circuit layout	NX bus connector (left)  I/O power supply + Vou cannot replace	the relay.	0 to 1  Terminal block  C0 to C1  I/O power supply +  I/O power supply -  I/O power supply -		
Installation orientation and restrictions	Installation orientation: Possible in 6 orienta Restrictions: No restrictions	ations.			
Terminal connection diagram	Relay Output Unit NX-OC2633  A1  B1  Load  O CO  NC NC  NC NC  NC NC  NC NC  NC NC				
Disconnection/ Short-circuit detection	Not supported.	Protective function	Not supported.		

<sup>\*</sup> Electrical service life will vary depending on the current value. Refer to "NX-series Digital I/O Units User's Manual" for details.

# ● Relay Output Unit NX-OC2733

Unit name	Relay Output Unit	Model	NX-OC2733		
		External connection	Screwless clamping terminal block (8		
Number of points	2 points, independent contacts	terminals	terminals)		
Indicators	TS indicator, output indicator  OC2733  TS  TS  TS	Maximum switching capacity  Minimum switching capacity	250 VAC/2 A (cosφ = 1), 250 VAC/2 A (cosφ = 0.4), 24 VDC/2 A, 4 A/NX Unit		
Relay service life	Electrical: 100,000 operations Mechanical: 20,000,000 operations	ON/OFF response time	15 ms max./15 ms max.		
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Relay isolation		
Insulation resistance	Between A1/3, B1/3 terminals and A5/7, B5/7 terminals: $20~M\Omega$ min. (at 500 VDC) Between the external terminals and functional ground terminal: $20~M\Omega$ min. (at 500 VDC) Between the external terminals and internal circuits: $20~M\Omega$ min. (at 500 VDC) Between the internal circuit and the functional ground terminal: $20~M\Omega$ min. (at 100 VDC)	Dielectric strength	Between A1/3, B1/3 terminals and A5/7, B5/7 terminals: 2300 VAC for 1 min at a leakage current of 5 mA max. Between the external terminals and the functional ground terminal: 2300 VAC for 1 min at a leakage current of 5 mA max. Between the external terminals and internal circuits: 2300 VAC for 1 min at a leakage current of 5 mA max. Between the internal circuit and the functional ground terminal: 510 VAC for 1 min at a leakage current of 5 mA max.		
I/O power supply method	Supply from external source	Current capacity of I/O power supply terminal	Without I/O power supply terminals		
NX Unit power consumption	0.95 W max.	Current consumption from I/O power supply	No consumption		
Weight	70 g max.				
Circuit layout		are normal open contacts, and	NO0 to NO1 C0 to C1 Terminal block NC0 to NC1  I/O power supply + NX bus connector (right)  NC0 and NC1 are normal close contacts.		
Installation orientation	Installation orientation: Possible in 6 orientation	place the relay.			
Terminal connection diagram	Relay Output Unit NX-OC2733 B1 Load NO0 NC0 Load NO1 NC1 Load Load Load NO1 NC1 Load Load Load NO1 NC1 Load NO1 NC1 Load Load NO1 NC1 Load Load NO1 NC1 Load NO1				
Disconnection/Short-circuit detection	Not supported.	Protective function	Not supported.		

# **Version Information**

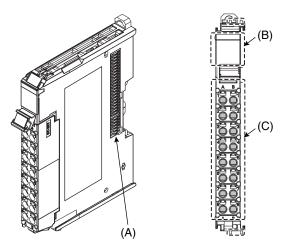
NX U	Inits	Corresponding unit versions/versions				
Model	Unit Version	EtherCAT Coupler Units NX-ECC201/ECC202*	Sysmac Studio			
NX-OD2154		Ver.1.1 or later	Ver.1.06 or later	Var 1 07 or bigher		
NX-OD2158		ver.1.1 or later	ver.1.06 or later	Ver.1.07 or higher		
NX-OD3121						
NX-OD3153						
NX-OD3256						
NX-OD3257				Ver.1.06 or higher		
NX-OD4121						
NX-OD4256	Ver.1.0					
NX-OD5121	ver.i.u	Ver.1.0 or later	Vor 1 05 or leter			
NX-OD5121-5		ver.1.0 or later	Ver.1.05 or later	Ver.1.10 or higher		
NX-OD5256				Ver.1.06 or higher		
NX-OD5256-5						
NX-OD6121-5					Ver.1.10 or higher	
NX-OD6256-5						
NX-OC2633				Ver.1.06 or higher		
NX-OC2733				Ver.1.08 or higher		

<sup>\*</sup> For the NX-ECC202, there is no unit version of 1.1 or earlier.

# **External Interface**

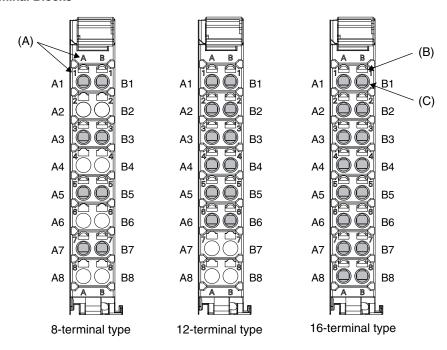
# **Screwless Clamping Terminal Block Type**

### • 12mm Width



Symbol	Name	Function
(A)	NX bus connector	This connector is used to connect each Unit.
(B)	Indicators	The indicators show the current operating status of the Unit.
(C)	Terminal block	The terminal block is used to connect external devices. The number of terminals depends on the type of Unit.

#### **Terminal Blocks**



Symbol	Name	Function
(A)	Terminal number indications	Terminal numbers for which A to D indicate the column, and 1 to 8 indicate the line are displayed. The terminal number is a combination of column and line, so A1 to A8 and B1 to B8 are displayed. The terminal number indications are the same regardless of the number of terminals on the terminal block.
(B)	Release holes	Insert a flat-blade screwdriver into these holes to connect and remove the wires.
(C)	Terminal holes	The wires are inserted into these holes.

### **Applicable Terminal Blocks for Each Unit Model**

	Terminal Blocks					
Unit model	Model	No. of terminals	Terminal number indications	Ground terminal mark	Terminal current capacity	
NX-OD2	NX-TBA082	8	A/B	None	10 A	
NX-OD3	NX-TBA122	12	A/B	None	10 A	
NX-OD4□□□	NX-TBA162	16	A/B	None	10 A	
NX-OD5□□□	NX-TBA162	16	A/B	None	10 A	
NX-OC2	NX-TBA082	8	A/B	None	10 A	

### **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 one-pin ferrules. Do not use two-pin ferrules.

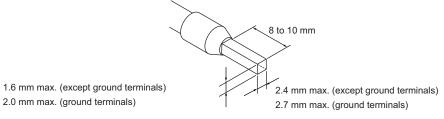
The applicable ferrules, wires, and crimping tool are given in the following table.

Terminal types	Manufacturer	Ferrule model number	Applicable wire (mm² (AWG))	Crimping tool
Terminals other than ground	Phoenix Contact	AI0,34-8	0.34 (#22)	Phoenix Contact (The figure in parentheses is the applicable wire size.)
		AI0,5-8	0.5 (#20)	CRIMPFOX 6 (0.25 to 6 mm <sup>2</sup> , AWG24 to 10)
terminals		AI0,5-10		
		AI0,75-8	0.75 (#18)	
		AI0,75-10	İ	
		Al1,0-8	1.0 (#18)	
		Al1,0-10	†	
		Al1,5-8	1.5 (#16)	
		Al1,5-10		
Ground terminals		Al2,5-10	2.0 *	
Terminals other	Weidmuller	H0.14/12	0.14 (#26)	Weidmuller (The figure in parentheses is the applicable wire size.)
than ground		H0.25/12	0.25 (#24)	PZ6 Roto (0.14 to 6 mm <sup>2</sup> , AWG 26 to 10)
terminals		H0.34/12	0.34 (#22)	
		H0.5/14	0.5 (#20)	
		H0.5/16		
		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		

<sup>\*</sup> Some AWG 14 wires exceed 2.0 mm² 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.

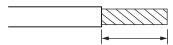
Finished Dimensions of Ferrules



#### **Using Twisted Wires/Solid Wires**

If you use the twisted wires or the solid wires, the applicable wire range and conductor length (stripping length) are as follows.

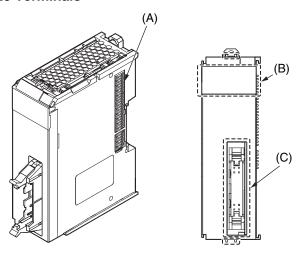
Terminal types	Applicable wires	Conductor length (stripping length)
Ground terminals	2.0 mm <sup>2</sup>	9 to 10 mm
Terminals other than ground terminals	0.08 to 1.5 mm <sup>2</sup> AWG28 to 16	8 to 10 mm



Conductor length (stripping length)

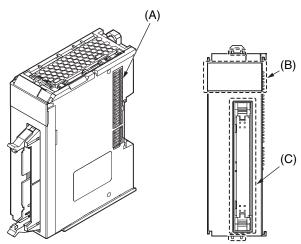
## **Units with MIL Connectors**

## • 1 Connector with 20 Terminals



Letter	Name	Function
(A)	NX bus connector	This connector is used to connect each Unit.
(B)	Indicators The indicators show the current operating status of the Unit.	
(C)	Connectors	The connectors are used to connect to external devices.

## • 1 Connector with 40 Terminals

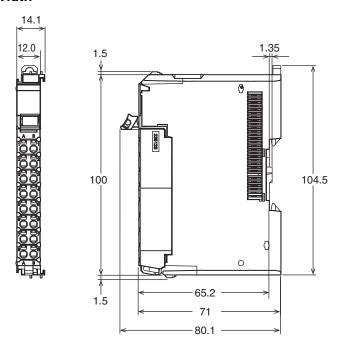


Letter	Name	Function
(A)	NX bus connector	This connector is used to connect each Unit.
(B)	Indicators	The indicators show the current operating status of the Unit.
(C)	Connectors	The connectors are used to connect to external devices.

**Dimensions** (Unit/mm)

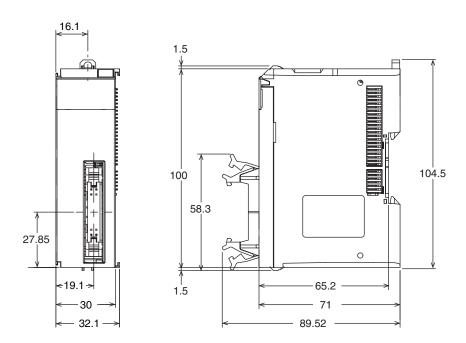
# **Screwless Clamping Terminal Block Type**

### • 12 mm Width



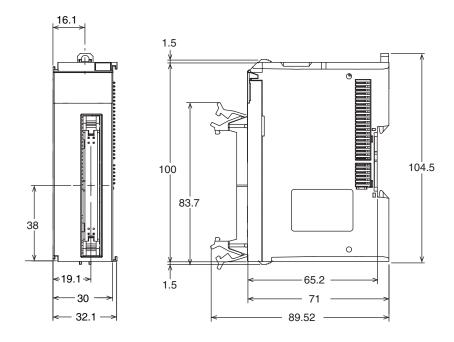
# **Units with MIL Connectors (1 Connector with 20 terminals)**

### • 30 mm Width



# Units with MIL Connectors (1 Connector with 40 terminals)

## • 30 mm Width



# **Related Manuals**

Cat. No.	Model number	Manual name	Application	Description
W521	NX-IA OOO NX-ID OOO NX-OO OOO NX-OC OOO OOO	NX-series Digital I/O Units User's Manual	Learning how to use NX-series Digital I/O Units	The hardware, setup methods, and functions of the NX-series Digital I/O Units are described.

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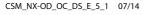
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