Temperature input

Type	Signal type	Performance, I/O refresh method	Channels	Connection type*1	Width	Model
Temperature sensor input	Thermocouple type B/E/J/K/L/N/R/S/T/U/ WRe5-26/PLII	0.1°C resolution, 200 ms/unit Free run	2	Screwless push-in terminal block(s), with cold junction sensor, calibrated individually at the factory	12 mm	NX-TS2101
			4		24 mm	NX-TS3101
		0.01°C resolution, 10 ms/unit Free run	2		12 mm	NX-TS2102
			4		24 mm	NX-TS3102
		0.001°C resolution, 60 ms/unit Free run	2		12 mm	NX-TS2104
			4		24 mm	NX-TS3104
	RTD type Pt100 (3wire)/Pt1000/ Ni508.4	0.1°C resolution, 200 ms/unit Free run	2	Screwless push-in (NX-TBA162)	12 mm	NX-TS2201
			4	Screwless push-in (NX-TBA162 + NX-TBB162)	24 mm	NX-TS3201
		0.01°C resolution, 10 ms/unit Free run	2	Screwless push-in (NX-TBA162)	12 mm	NX-TS2202
			4	Screwless push-in (NX-TBA162 + NX-TBB162)	24 mm	NX-TS3202
		0.001°C resolution, 60 ms/unit Free run	2	Screwless push-in (NX-TBA162)	12 mm	NX-TS2204
			4	Screwless push-in (NX-TBA162 + NX-TBB162)	24 mm	NX-TS3204

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector.

Heater burnout detection

Type	Channels, signal type	Control output	I/O refresh method	Connection type*1	Width	Model
Heater burnout detection	4 CT inputs 4 control outputs	NPN, 12 to 24 VDC 0.1 A/point, 0.4 A/unit	Free run	Screwless push-in (NX-TBA162)	12 mm	NX-HB3101
		PNP, 24 VDC 0.1 A/point, 0.4 A/unit		Screwless push-in (NX-TBA162)	12 mm	NX-HB3201

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector.

Position interface

Type	Channels, signal type	I/O refresh method	Connection type*1	Width	Model	NPN type*2
Encoder input	1 SSI encoder, 2 MHz	Synchronous/free run	Screwless push-in (NX-TBA122)	12 mm	NX-ECS112	-
	2 SSI encoders, 2 MHz		Screwless push-in (NX-TBA122)	12 mm	NX-ECS212	-
	1 incremental encoder line driver 4 MHz + 3 digital inputs (1 μs)		Screwless push-in (NX-TBA122 + NX-TBB122)	24 mm	NX-EC0142	NX-EC0132
	1 incremental encoder open collector 500 kHz + 3 digital inputs (1 μs)		Screwless push-in (NX-TBA162)	12 mm	NX-EC0122	NX-EC0112
	2 incremental encoders open collector 500 kHz		Screwless push-in (NX-TBA122)	12 mm	NX-EC0222	NX-EC0212
Pulse output	1 pulse open collector 500 kHz + 2 digital inputs + 1 digital output	Synchronous	Screwless push-in (NX-TBA162)	12 mm	NX-PG0122	NX-PG0112
	2 pulse line driver 4 MHz + 5 digital inputs per channel + 3 digital outputs per channel		1 x 34-pin MIL connector	30 mm	NX-PG0242-5	NX-PG0232-5
	4 pulse line driver 4 MHz + 5 digital inputs per channel + 3 digital outputs per channel		2 x 34-pin MIL connector	30 mm	NX-PG0342-5	NX-PG0332-5

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector. Units with MIL connectors are supplied without matching plugs.
*2. Model codes are for PNP type signals (positive switching, 0 V common). Most models are also available as NPN type (negative switching, 24 V common). Inputs of MIL connector versions can be used as NPN or PNP.

Load cell input

Type	Specifications	I/O refresh method	Excitation voltage/Input range	Connection type*1	Width	Model
Load cell input	1 load cell input, 125 μs conversion cycle	Synchronous/free run	5 VDC ±10%/-5 to 5 mV/V	Screwless push-in (NX-TBC162)	12 mm	NX-RS1201

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector.

Safety (the NX-Safety units must be used in combination with the EtherCAT communication coupler)

Type	Specifications	Performance, I/O refresh method	Connection type*1	Width	Model
Safety controller	FSoE protocol	For up to 1,024 safety I/O points	128 safety connections	30 mm	NX-SL3500
		For up to 256 safety I/O points	32 safety connections	30 mm	NX-SL3300
Safety input	4 inputs + 2 test outputs	Free run	Screwless push-in (NX-TBA082)	12 mm	NX-SIH400
	8 inputs + 2 test outputs		Screwless push-in (NX-TBA162)	12 mm	NX-SID800
Safety output	2 outputs, 2.0 A		Screwless push-in (NX-TBA082)	12 mm	NX-SOH200
	4 outputs, 0.5 A		Screwless push-in (NX-TBA082)	12 mm	NX-SOD400

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector.

Communication interface

Type	Serial interface	No. of serial ports	Connection type*1	Width	Model
Communication interface	RS-232C	1	Screwless push-in (NX-TBC162)	12 mm	NX-CIF101
		2	D-Sub 9pin connector	30 mm	NX-CIF210
	RS-422A/485	1	Screwless push-in (NX-TBC162)	12 mm	NX-CIF105

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector.

Position interface

Type	Channels, signal type	I/O refresh method	Connection type*1	Width	Model	NPN type*2
Encoder input	1 SSI encoder, 2 MHz	Synchronous/free run	Screwless push-in (NX-TBA122)	12 mm	NX-ECS112	-
	2 SSI encoders, 2 MHz		Screwless push-in (NX-TBA122)	12 mm	NX-ECS212	-
	1 incremental encoder line driver 4 MHz + 3 digital inputs (1 μs)		Screwless push-in (NX-TBA122 + NX-TBB122)	24 mm	NX-EC0142	NX-EC0132
	1 incremental encoder open collector 500 kHz + 3 digital inputs (1 μs)		Screwless push-in (NX-TBA162)	12 mm	NX-EC0122	NX-EC0112
	2 incremental encoders open collector 500 kHz		Screwless push-in (NX-TBA122)	12 mm	NX-EC0222	NX-EC0212
Pulse output	1 pulse open collector 500 kHz + 2 digital inputs + 1 digital output	Synchronous	Screwless push-in (NX-TBA162)	12 mm	NX-PG0122	NX-PG0112
	2 pulse line driver 4 MHz + 5 digital inputs per channel + 3 digital outputs per channel		1 x 34-pin MIL connector	30 mm	NX-PG0242-5	NX-PG0232-5
	4 pulse line driver 4 MHz + 5 digital inputs per channel + 3 digital outputs per channel		2 x 34-pin MIL connector	30 mm	NX-PG0342-5	NX-PG0332-5

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector. Units with MIL connectors are supplied without matching plugs.
*2. Model codes are for PNP type signals (positive switching, 0 V common). Most models are also available as NPN type (negative switching, 24 V common). Inputs of MIL connector versions can be used as NPN or PNP.

Load cell input

Type	Specifications	I/O refresh method	Excitation voltage/Input range	Connection type*1	Width	Model
Load cell input	1 load cell input, 125 μs conversion cycle	Synchronous/free run	5 VDC ±10%/-5 to 5 mV/V	Screwless push-in (NX-TBC162)	12 mm	NX-RS1201

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector.

Safety

Type	Specifications	Performance, I/O refresh method	Connection type*1	Width	Model
Safety controller	FSoE protocol	For up to 1,024 safety I/O points	128 safety connections	30 mm	NX-SL3500
		For up to 256 safety I/O points	32 safety connections	30 mm	NX-SL3300
Safety input	4 inputs + 2 test outputs	Free run	Screwless push-in (NX-TBA082)	12 mm	NX-SIH400
	8 inputs + 2 test outputs		Screwless push-in (NX-TBA162)	12 mm	NX-SID800
Safety output	2 outputs, 2.0 A		Screwless push-in (NX-TBA082)	12 mm	NX-SOH200
	4 outputs, 0.5 A		Screwless push-in (NX-TBA082)	12 mm	NX-SOD400

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector.
Note: For more detailed information about safety units, refer to “NX integrated safety datasheet (I183E-EN)” and “NX safety standalone datasheet (I185E-EN)”.

Communication interface unit

Type	Serial interface	No. of serial ports	Connection type*1	Width	Model
Communication interface	RS-232C	1	Screwless push-in (NX-TBC162)	12 mm	NX-CIF101
		2	D-Sub 9pin connector	30 mm	NX-CIF210
	RS-422A/485	1	Screwless push-in (NX-TBC162)	12 mm	NX-CIF105

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector.

Power/System unit

Type	Description	Connection type*1	Width	Model
NX bus power supply unit	24 VDC input, non-isolated	Screwless push-in (NX-TBC082)	12 mm	NX-PD1000
I/O power feed unit	For separation of groups, up to 4 A	Screwless push-in (NX-TBA082)	12 mm	NX-PF0630
	For separation of groups, up to 10 A	Screwless push-in (NX-TBA082)	12 mm	NX-PF0730
I/O power supply connection unit	16 × IOV	Screwless push-in (NX-TBA162)	12 mm	NX-PC0020
	16 × IOG	Screwless push-in (NX-TBA162)	12 mm	NX-PC0010
	8 × IOV + 8 × IOG	Screwless push-in (NX-TBA162)	12 mm	NX-PC0030
Shield connection unit	Grounding terminal, 16 points	Screwless push-in (NX-TBC162)	12 mm	NX-TBX01

*1. Units with Screwless push-in connections are supplied with the appropriate terminal connector.

Accessories

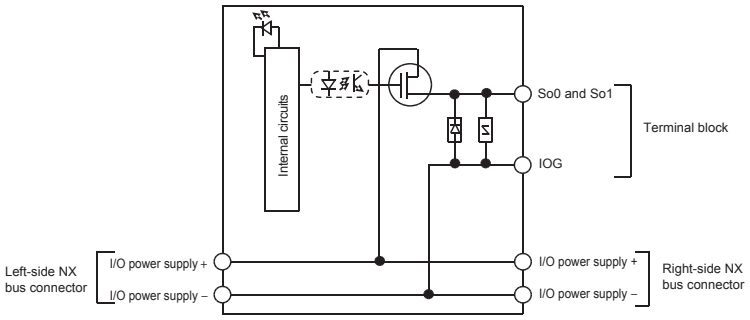
Type	Description	Connection type	Width	Model
End cover	Included with communication coupler	-	12 mm	NX-END01
Terminal block (replacement front connector)	With 8 wiring terminals (A + B)	Screwless push-in	12 mm	NX-TBA082
	With 8 wiring terminals (A + B with FG)		12 mm	NX-TBC082
	With 12 wiring terminals (A + B)		12 mm	NX-TBA122
	With 12 wiring terminals (C + D)		12 mm	NX-TBB122
	With 16 wiring terminals (A + B)		12 mm	NX-TBA162
	With 16 wiring terminals (C + D)		12 mm	NX-TBB162
	With 16 wiring terminals (A + B with FG)		12 mm	NX-TBC162
DIN rail insulation spacers	Set of 3 pcs	-	-	NX-AUX01
Terminal block coding pins	For 10 units (Terminal block: 30 pins, unit: 30 pins)	-	-	NX-AUX02
End plate	To secure the units on the DIN track	-	-	PFP-M

Safety output unit

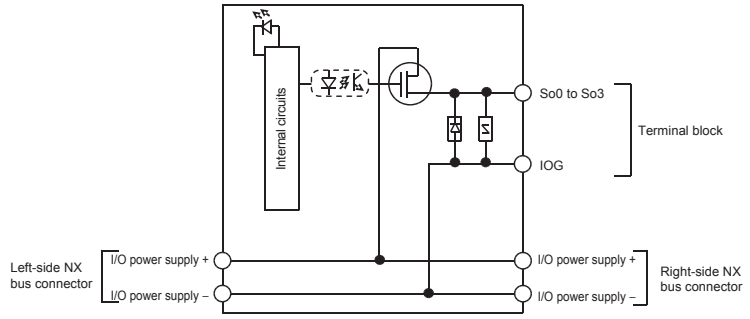
Item	Specifications	
Model	**NX-SOH200**	**NX-SOD400**
Name	High-current safety output unit	Safety output unit
Number of safety outputs	2 points	4 points
Internal I/O common	Sourcing outputs (PNP)	
Maximum load current	2.0 A/point, 4.0 A/unit at 40ºC, 2.5 A/unit at 55ºC The maximum load current depends on the installation orientation and ambient temperature.	0.5 A/point and 2.0 A/unit
Rated voltage	24 VDC	
Number of safety slave connections	1	
Safety output ON residual voltage	1.2 V max.	
Safety output OFF residual voltage	2 V max.	
Safety output leakage current	0.1 mA max.	
Dielectric strength	510 VAC for 1 min between isolated circuits, leakage current: 5 mA max.	
Insulation resistance	20 MΩ min. between isolated circuits (at 100 VDC)	
Isolation method	Photocoupler isolation	
Unit power consumption	0.70 W max.	0.75 W max.
I/O power supply system	Power supplied through the NX bus	
I/O current consumption	40 mA max.	60 mA max.
Current capacity of I/O power supply terminal	IOG: 2 A max./terminal	IOG (A3 and B3): 2 A max./terminal, IOG (A7 and B7): 0.5 A max./terminal
I/O refreshing method	Free-run refreshing	
Terminal block type	Screwless push-in terminals 8 terminals (A + B)	
Dimensions (W × H × D)	12 × 100 × 71 mm	
Weight	65 g max.	
Maximum cable length	100 m	
Protective functions	Overvoltage protection circuit and ground fault detection	

Circuit layout

NX-SOH200

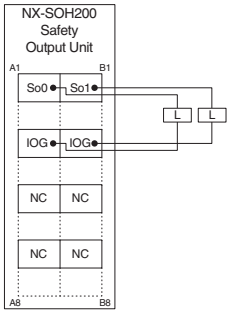


NX-SOD400

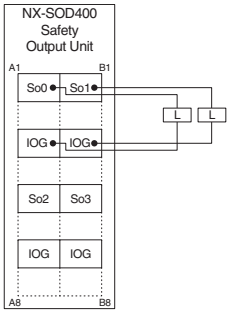


Terminal wiring

NX-SOH200



NX-SOD400



Ordering information

EtherCAT coupler unit

Type	Protocol	Communications cycle in DC mode*1	Specifications	Connection	I/O power supply	Width	Model
Communication coupler	EtherCAT slave	125 to 10,000 μs	Up to 63 I/O units Max. 1024 bytes in and 1024 bytes out Supports distributed clock	2 RJ45 ports (in and out)	10.0 A max.	46 mm	NX-ECC203

*1. This depends on the specifications of the EtherCAT master and the unit configuraton.

Safety controller unit

Type	Safety master connections	Safety I/O points	Program capacity	Width	Model
Safety CPU	32	256 points max.	512 KB	30 mm	NX-SL3300
	128	1024 points max.	2048 KB	30 mm	NX-SL3500

Safety I/O unit

Safety input unit

Type	Signal type	Safety slave connections	Safety inputs	Test outputs	Width	Model
Safety input	PNP type	1	4 points	2 points	12 mm	NX-SIH400
			8 points	2 points	12 mm	NX-SID800

Safety output unit

Type	Signal type	Safety slave connections	Safety outputs	Width	Model
Safety output	PNP type	1	2 points	12 mm	NX-SOH200
			4 points	12 mm	NX-SOD400

System unit

Type	Specifications	Width	Model
End cover	Included with communication coupler	12 mm	NX-END01

Accessories

Name	Specifications	Model
Terminal block coding pins	For 10 units (Terminal block: 30 pins, unit: 30 pins)	NX-AUX02
Terminal block	Replacement front connector with 8 wiring terminals (A + B)	NX-TBA082
	Replacement front connector with 16 wiring terminals (A + B)	NX-TBA162

Computer software

Name	Model
Sysmac Studio version 1.13 or higher*1	SYSMAC-SE2□□□

*1. Please contact your OMRON representative for compatibility between the Sysmac Studio version 1.12 or lower and NX I/O units.