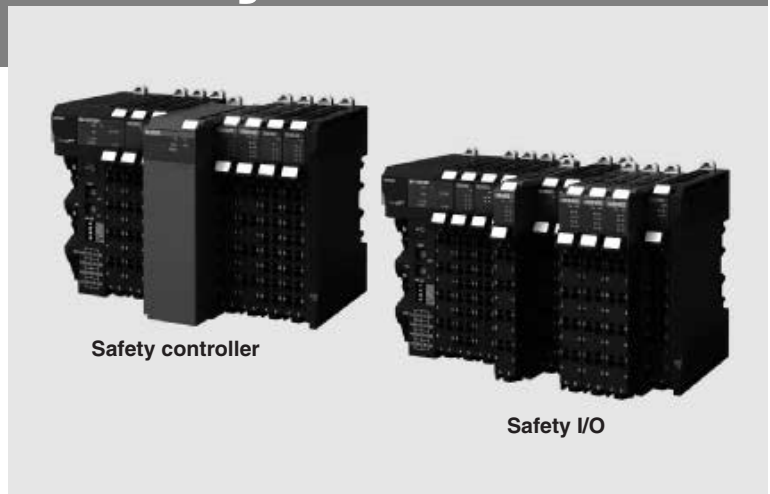


NX-S□

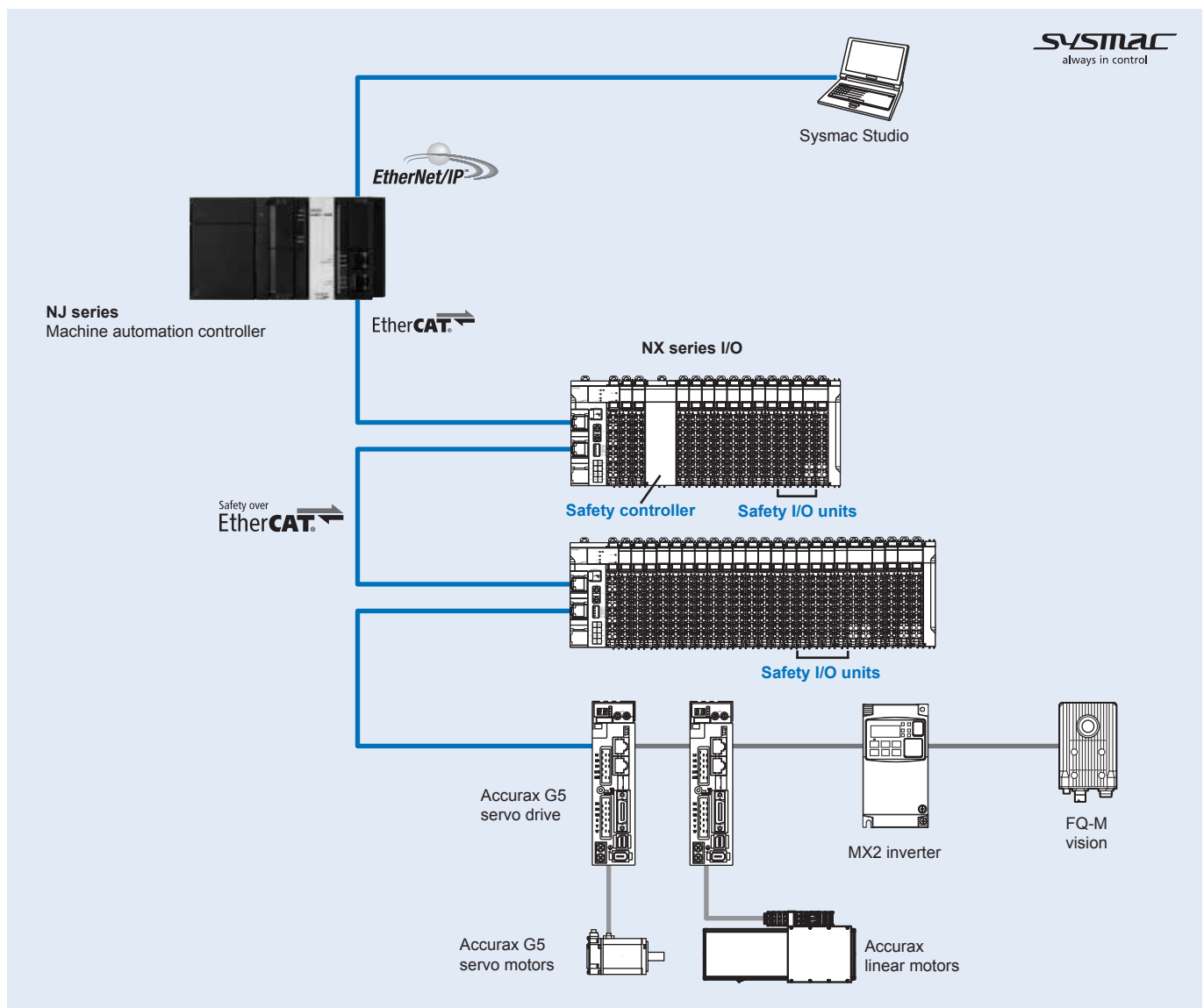
NX integrated safety

Integrated safety into machine automation

- The safety controller meets Category 4, PLe according to the ISO 13849-1 and SIL3 according to the IEC 61508
- Flexible system lets you freely mix safety controller and safety I/O units with standard NX I/O
- High connectivity I/O units for direct connection to a variety of devices
- Scalable CPUs for 32 or 128 safety connections
- Up to 8 safety input points per unit
- Safety function blocks conforming with IEC 61131-3 standard programming
- PLCopen function blocks for safety
- Integration in one software, Sysmac Studio



System configuration



Specifications

Regulations and standards

| Certification body | Standards |
|-----------------------------|--|
| TÜV Rheinland ^{*1} | EN ISO 13849-1: 2008 + AC: 2009 EN ISO 13849-2: 2012 IEC 61508 parts 1-7: 2010 EN 62061: 2005 EN 61131-2: 2007 EN ISO 13850: 2008 EN 60204-1: 2006 + A1: 2009 + AC: 2010 |
| UL | EN 61000-6-2: 2005 EN 61000-6-4: 2007 NFPA 79: 2012 ANSI RIA 15.06-1999 ANSI B11.19-2010 UL1998 IEC 61326-3-1: 2008 cULus: Listed (UL508) and ANSI/ISA 12.12.01 |

*1. Certification was received for applications in which OMRON FSoE devices are connected to each other.

The NX-series Safety Control Units allow you to build a safety control system that meets the following standards.

- Requirements for SIL 3 (Safety Integrity Level 3) in IEC 61508, EN 62061, Safety Standard for Safety Instrumented Systems (Functional Safety of Electrical/Electronic/Programmable Electronic Safety-related Systems)
- Requirements for PLe (Performance Level e) and for safety category 4 in EN ISO13849-1

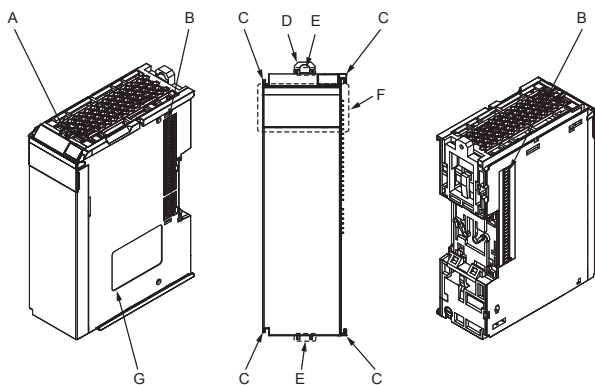
The NX-series Safety Control Units are also registered for C-Tick and KC compliance.

General specifications

| Item | Specifications |
|-------------------------------|---|
| Enclosure | Mounted in a panel |
| Grounding method | Ground to 100 Ω or less |
| Operating environment | 0 to 55°C |
| Ambient operating temperature | 0 to 55°C |
| Ambient operating humidity | 10% to 95% (with no condensation or icing) |
| Atmosphere | No 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 |
| Noise immunity | Compliant with IEC 61131-2 2 kV on power supply line (compliant with IEC 61000-4-4) |
| Insulation class | Class III (SELV) |
| Overvoltage category | Category II: Conforms to JIS B3502 and IEC 61131-2 |
| EMC immunity level | Zone B |
| Vibration resistance | Compliant with IEC 60068-2-6 5 to 8.4 Hz, 3.5-mm amplitude, 8.4 to 150 Hz, acceleration: 9.8 m/s ² for 100 minutes each in X, Y and Z directions (time coefficient: 10 minutes x coefficient factor 10 = total time 100 min.) |
| Shock resistance | Compliant with IEC 60068-2-27 147 m/s ² , 3 times each in X, Y and Z directions |
| Insulation resistance | 20 MΩ between isolated circuits (at 100 VDC) |
| Dielectric strength | 510 VAC for 1 min between isolated circuits, leakage current: 5 mA max. |
| Installation method | DIN track (IEC 60715 TH35-7.5/TH35-15) |
| Applicable standards | EN ISO 13849-1, 13849-2: 2008 PLe/Safety Category 4 IEC 61508: 2010 SIL 3, EN 62061: 2005 SIL CL3 UL 1988 cULus: listed (UL508), ANSI/ISA 12.12.01 EC: EN 61131-2, C-Tick, KC: KC Registration |

Nomenclature

Safety controller unit



| Symbol | Name | Function |
|--------|------------------------------|--|
| A | Marker installation location | These are where markers are attached. OMRON markers are attached when the unit is shipped. You can also attach commercially available markers. |
| B | NX bus connector | This is the NX-series bus connector. It is used to connect an NX-series safety I/O unit or other NX unit. |
| C | Unit hookup guide | This guide is used to connect the unit to another unit. |
| D | DIN track mounting hooks | These hooks are used for installation on a DIN track. |
| E | Unit pull out tabs | Place your fingers on these tabs to pull out the unit. |
| F | Indicators | The indicators show the current operating status of the NX unit and signal I/O status. The number of indicators depend on the NX unit. |
| G | Unit specifications | The specifications of the NX unit are given here. |

Safety controller unit

| Item | Specifications | |
|---|-------------------------------|-------------|
| | NX-SL3300 | NX-SL3500 |
| Model | NX-SL3300 | NX-SL3500 |
| Name | Safety CPU unit | |
| Maximum number of safety I/O points | 256 points | 1024 points |
| Program capacity | 512 KB | 2048 KB |
| Number of safety master connections | 32 | 128 |
| External connection terminals | None | |
| Unit power consumption | 0.90 W max. | |
| I/O power supply system | Not supplied | |
| I/O current consumption | No consumption | |
| Current capacity of I/O power supply terminal | No I/O power supply terminals | |
| I/O refreshing method | Free-run refreshing | |
| Dimensions (W × H × D) | 30 × 100 × 71 | |
| Weight | 75 g max. | |

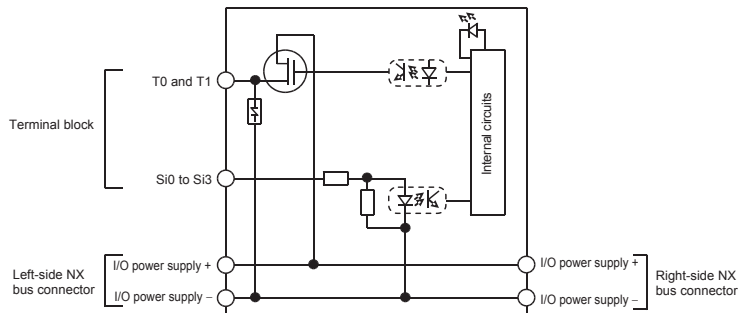
Safety I/O unit

Safety input unit

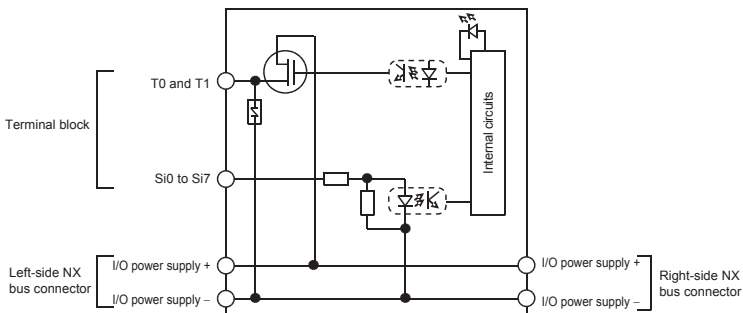
| Item | Specifications | |
|---|--|---|
| Model | NX-SIH400 | NX-SID800 |
| Name | Advanced safety input unit | Safety input unit |
| Number of safety inputs | 4 points | 8 points |
| Number of test outputs | 2 points | |
| Internal I/O common | Sinking (PNP) | |
| Rated input voltage | 24 VDC | |
| OMRON special safety input devices | Can be connected | Cannot be connected |
| Number of safety slave connections | 1 | |
| Safety input current | 4.5 mA | 3.0 mA |
| Safety input ON voltage | 11 VDC min. | 15 VDC min. |
| Safety input OFF voltage/OFF current | 5 VDC max., 1 mA max. | |
| Test output type | Sourcing outputs (PNP) | |
| Rated current of test outputs | 25 mA max. | 50 mA max. |
| Residual ON voltage of test outputs | 1.2 V max. | |
| Leakage current of test outputs | 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 | 20 mA max. | |
| Current capacity of I/O power supply terminal | No applicable terminals | |
| I/O refreshing method | Free-run refreshing | |
| Terminal block type | Screwless push-in terminals 8 terminals (A + B) | Screwless push-in terminals 16 terminals (A + B) |
| Dimensions (W × H × D) | 12 × 100 × 71 | |
| Weight | 70 g max. | |
| Maximum cable length | Devices with mechanical contacts: 400 m, other devices: 100 m | |
| Protective functions | Overvoltage protection circuit and ground fault detection (test outputs) | |

Circuit layout

NX-SIH400

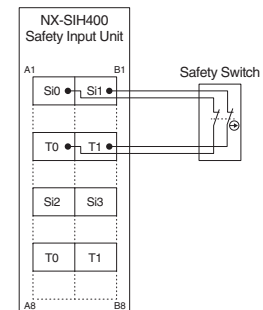


NX-SID800

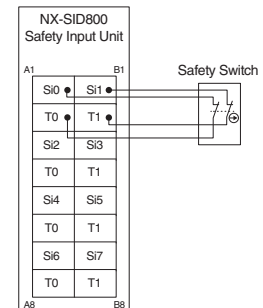


Terminal wiring

NX-SIH400



NX-SID800

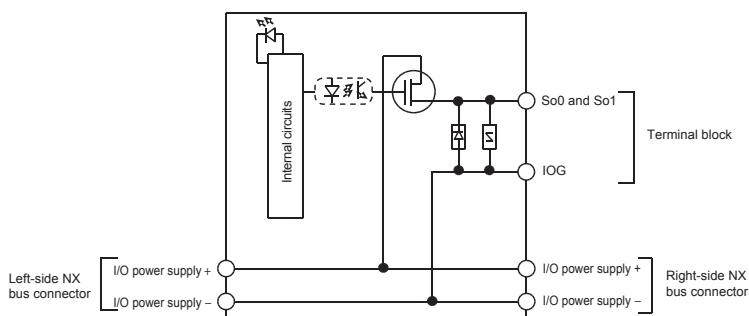


Safety output unit

| 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 40°C, 2.5 A/unit at 55°C 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 x H x D) | 12 x 100 x 71 | |
| Weight | 65 g max. | |
| Maximum cable length | 100 m | |
| Protective functions | Overvoltage protection circuit and ground fault detection | |

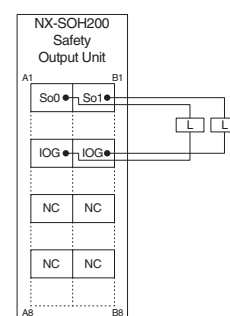
Circuit layout

NX-SOH200

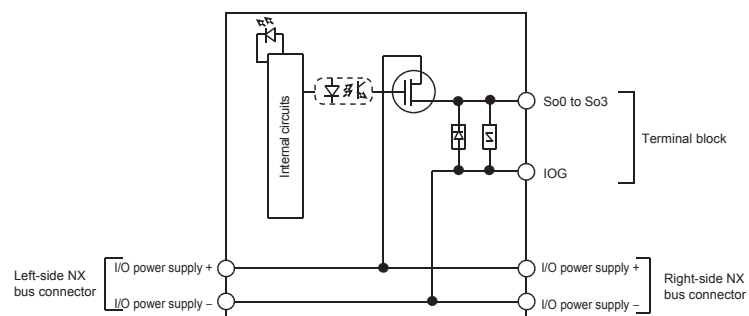


Terminal wiring

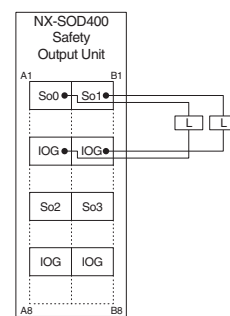
NX-SOH200



NX-SOD400



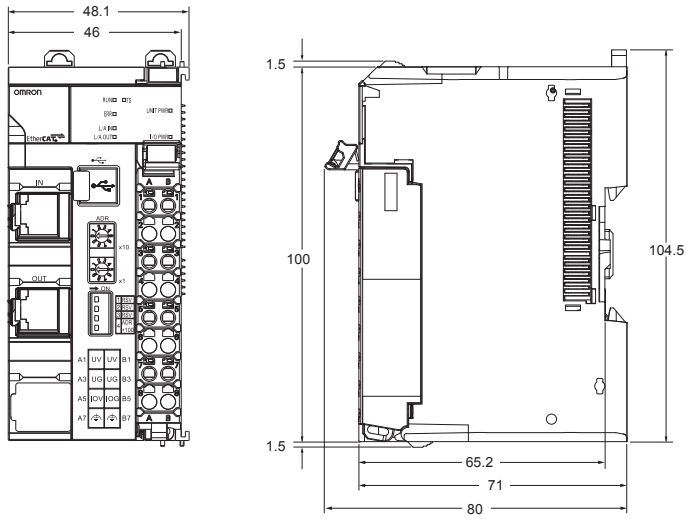
NX-SOD400



Dimensions

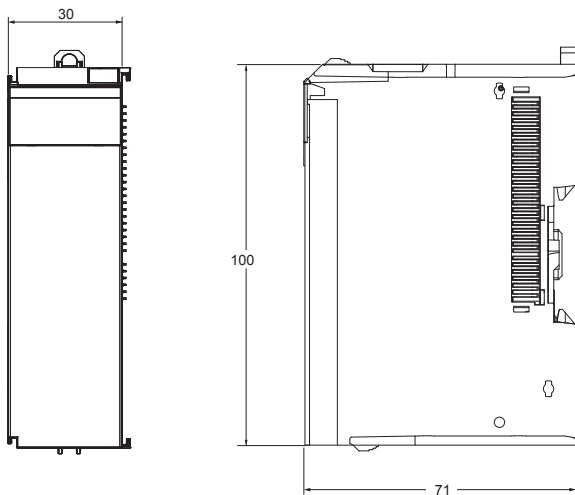
EtherCAT coupler unit

NX-ECC202



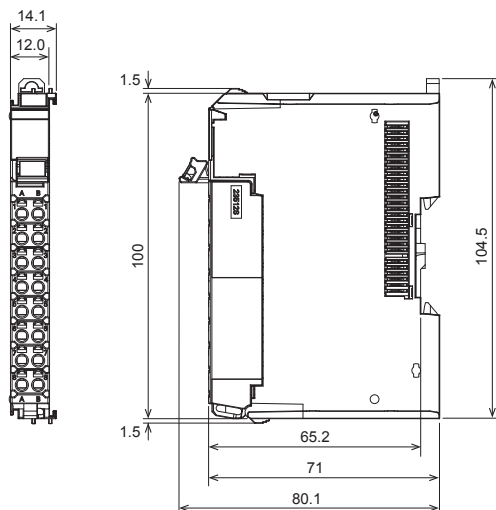
Safety controller unit

NX-SL3300/SL3500



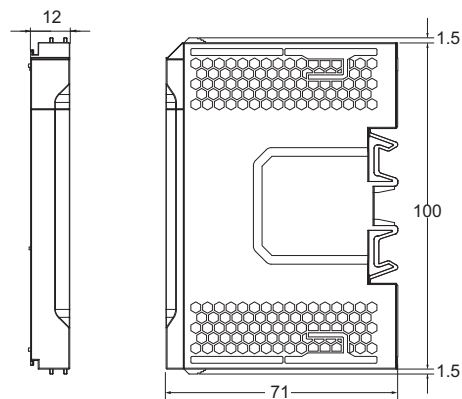
Safety I/O unit

12 mm width



End cover unit (included with the EtherCAT coupler unit)

NX-END01



Ordering information

EtherCAT coupler unit

| Type | Signal type | Specifications | Channels | Max. I/O power supply | Width | Model |
|---|----------------|---|----------|-----------------------|-------|-----------|
| EtherCAT communication coupler (firmware version 1.1 or higher) | EtherCAT slave | Up to 63 I/O units Max. 1024 bytes in + 1024 bytes out Supports distributed clock | 2 | 10.0 A | 46 mm | NX-ECC202 |

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 1.08 or higher ^{*1} | SYSMAC-SE2□□□ |

*1. Please contact your OMRON representative for compatibility between the Sysmac Studio version 1.07 or lower and NX I/O units.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.