

# NX-series Digital Input Unit

## NX-ID/IA

CSM\_NX-ID\_IA\_DS\_E\_4\_1

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

- Digital Input 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 the status of input devices to the controller every EtherCAT cycle.

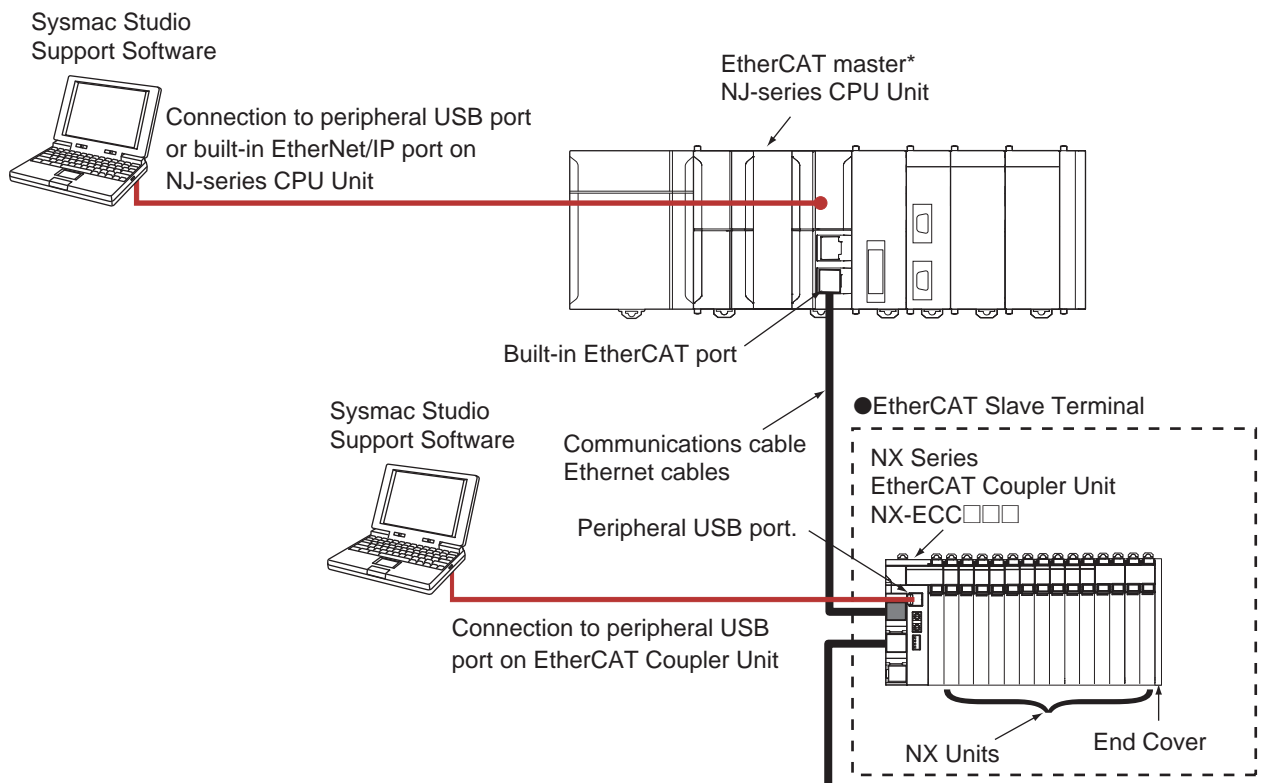


**NEW**

## Features

- High-speed I/O refreshing is possible by connecting with the NX-series EtherCAT Coupler.
- I/O refreshing can be synchronized with the control cycle of the Controller. (Synchronous refreshing)
- ON/OFF response time of the high-speed model is 100 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 significantly reduces wiring work.
- Up to 16 digital inputs in a space-saving 12 mm width. (Connector Types 30 mm width)
- The lineup includes 4-point, 8-point, 16-point, and 32-point types with 3-wire, 2-wire and 1-wire connection methods.
- With input refreshing with input changed time, the Input Unit records the time when the input is changed and the changed time with the input value is read into the Controller.
- Using with the Unit that supports output refreshing with specified time stamp enables high-precision I/O control independent of the control cycle of the Controller.

## System Configuration



\* 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.

### Digital Input Unit (Screwless Clamping Terminal Block, 12 mm Width)


| Unit type                     | Product Name  | Specification    |                     |                     |  |  | Model                  | Standards         |           |  |
|-------------------------------|---|------------------|---------------------|---------------------|--|--|------------------------|-------------------|-----------|--|
|                               |   | Number of points | Internal I/O common | Rated input voltage | I/O refreshing method  | ON/OFF response time   |                        |                   |           |  |
| NX Series Digital Input Units |  | 4 points         | NPN                 | 12 to 24 VDC        | Switching Synchronous I/O refreshing and Free-Run refreshing | 20 μs max./400 μs max.                                       | NX-ID3317              | UC1, N, L, CE, KC |           |  |
|                               |   |                  |                     | 24 VDC              | Input refreshing with input changed time only*               | 100 ns max./100 ns max.                                      | NX-ID3343              |                   |           |  |
|                               |   |                  | PNP                 |                     | 12 to 24 VDC   | Switching Synchronous I/O refreshing and Free-Run refreshing | 20 μs max./400 μs max. |                   | NX-ID3417 |  |
|                               |   |                  |                     |                     | Input refreshing with input changed time only*               | 100 ns max./100 ns max.                                      | NX-ID3443              |                   |           |  |
|                               |   | 8 points         | NPN                 | 24 VDC              | Switching Synchronous I/O refreshing and Free-Run refreshing | 20 μs max./400 μs max.                                       | NX-ID4342              |                   |           |  |
|                               |   |                  | PNP                 |                     |  |  | NX-ID4442              |                   |           |  |
|                               |   |                  | NPN                 |                     |  |  | NX-ID5342              |                   |           |  |
|                               |   |                  |                     |                     |  |  | NX-ID5442              |                   |           |  |
|                               |   | 16 points        | PNP                 |                     |  |  |                        |                   |           |  |
|                               |   |                  |                     |                     |  |  |                        |                   |           |  |

\* To use input refreshing with input changed time, 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.

### DC Input Units (MIL Connector, 30 mm Width)

| Unit type                     | Product Name  | Specification    |                     |                     |  |                        | Model       | Standards   |
|-------------------------------|---|------------------|---------------------|---------------------|--|------------------------|-------------|-------------|
|                               |   | Number of points | Internal I/O common | Rated input voltage | I/O refreshing method  | ON/OFF response time   |             |             |
| NX Series Digital Input Units |  | 16 points        | For both NPN/PNP    | 24 VDC              | Switching Synchronous I/O refreshing and Free-Run refreshing | 20 µs max./400 µs max. | NX-ID5142-5 | UC1, CE, KC |
|                               |   | 32 points        |                     |                     |  |                        | NX-ID6142-5 |             |

### Analog Input Unit (Screwless Clamping Terminal Block, 12 mm Width)

| Unit type                    | Product Name  | Specification    |  |                       |                       | Model     | Standards      |
|------------------------------|---|------------------|--|-----------------------|-----------------------|-----------|----------------|
|                              |   | Number of points | Rated input voltage                              | I/O refreshing method | ON/OFF response time  |           |                |
| NX Series Analog Input Units |  | 4 points         | 200 to 240 VAC, 50/60 Hz (170 to 264 VAC, ±3 Hz) | Free-Run refreshing   | 10 ms max./40 ms max. | NX-IA3317 | 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  | ---       |
| Product Name                    | Specification   |                             |                      |                           | Model     | Standards |
|                                 | No. of terminals                                      | Terminal number indications | Ground terminal mark | Terminal current capacity |           |           |
| Terminal Block                  | 8   | A/B                         | None                 | 10 A                      | NX-TBA082 | ---       |
|                                 | 12  |                             |                      |                           | NX-TBA122 |           |
|                                 | 16  |                             |                      |                           | NX-TBA162 |           |

### Accessories

Not included.


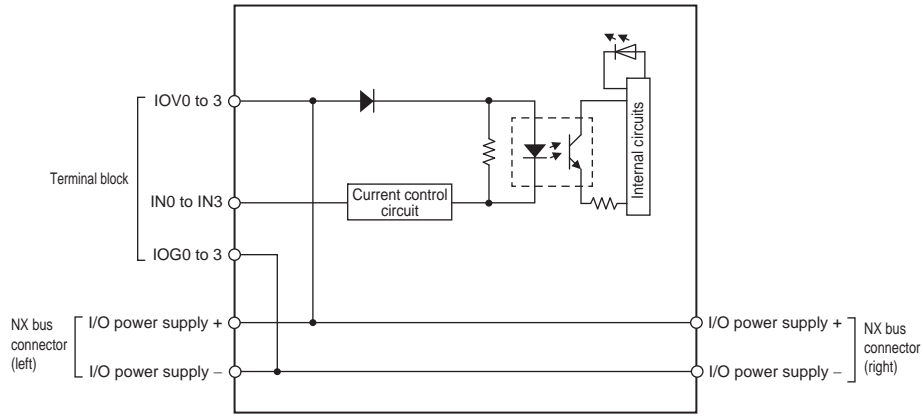
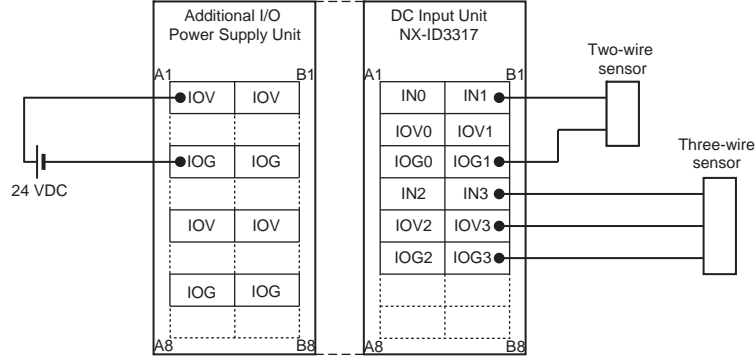
Web: <https://www.bolenscontrol.com/> - Phone: (800) 658-5241 - Email: [sales@bolenscontrol.com](mailto:sales@bolenscontrol.com)

## General Specification

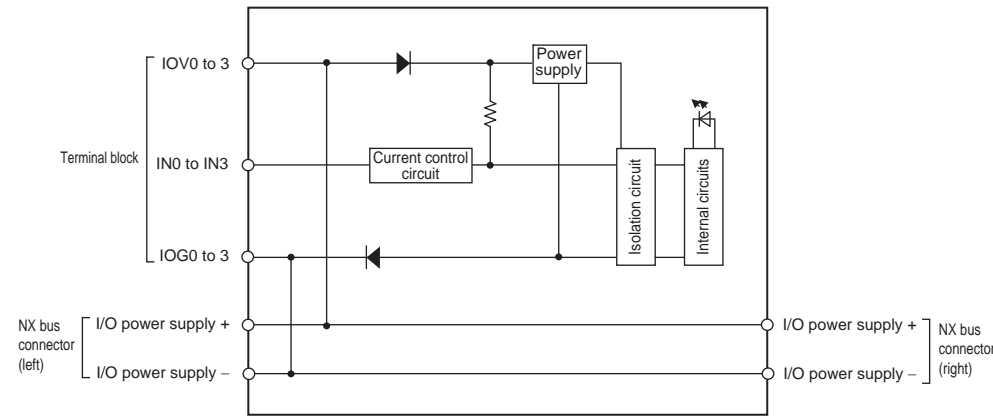
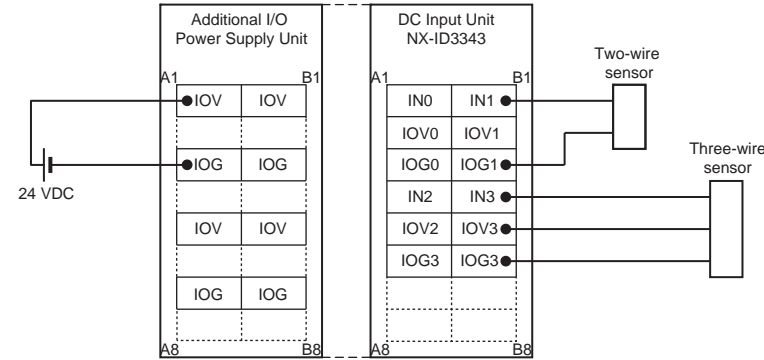
| Item                  |                               | Specification   |
|-----------------------|-------------------------------|---|
| Enclosure             |                               | Mounted in a panel  |
| Grounding method      |                               | Ground to 100 $\Omega$ or less  |
| Operating environment | 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.   |
|                       | Noise immunity                | 2 kV on power supply line (Conforms to IEC61000-4-4.)   |
|                       | 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.<br>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<br>(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 and ANSI/ISA 12.12.01<br>EC: EN 61131-2 and C-Tick, KC: KC Registration, NK, LR   |

## Digital Input Unit Specifications


### ● DC Input Unit (Screwless Clamping Terminal Block 12 mm, Width) NX-ID3317

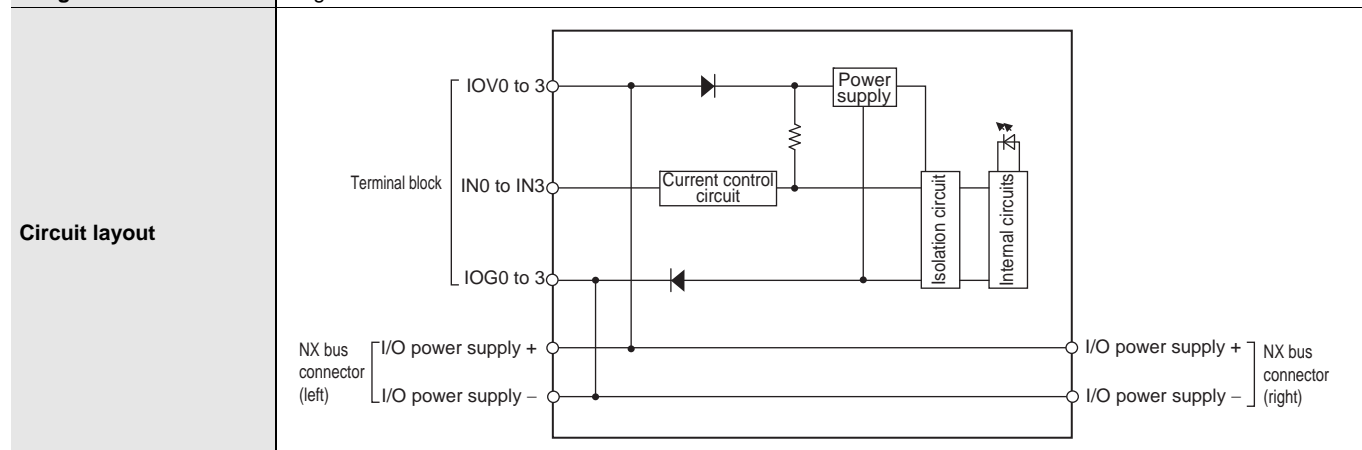
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|---|--|---|--|
| Unit name                                 | DC Input Unit  | Model   | NX-ID3317  |
| Capacity                                  | 4 points   | External connection terminals                 | Screwless clamping terminal block (12 terminals)   |
| I/O refreshing method                     | Selectable Synchronous I/O refreshing or Free-Run refreshing   |   |  |
| Indicators                                | TS indicator, input indicator<br> | Internal I/O common                           | NPN  |
|   |  | Rated input voltage                           | 12 to 24 VDC (9 to 28.8 VDC)   |
|   |  | Input current                                 | 6 mA typical (at 24 VDC), rated current  |
|   |  | ON voltage/ON current                         | 9 VDC min./3 mA min. (between IOV and each signal)   |
|   |  | OFF voltage/OFF current                       | 2 VDC max./1 mA max. (between IOV and each signal)   |
|   |  | ON/OFF response time                          | 20 $\mu$ s max./400 $\mu$ s max.   |
|   |  | Input filter time                             | Without filter, 0.25 ms, 0.5 ms, 1 ms (factory setting), 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms, 256 ms |
| 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: 0.1 A/terminal max., IOG: 0.1 A/terminal max.   |
| NX Unit power consumption                 | 0.50 W max.  | Current consumption from I/O power supply     | No consumption   |
| Weight                                    | 65 g max.  |   |  |
| Circuit layout                            |                                 |   |  |
| Installation orientation and restrictions | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions                             |   |  |
| Terminal connection diagram               |                                |   |  |
| Disconnection/Short-circuit detection     | Not supported.   | Protective function                           | Not supported.   |

## NX-ID3343

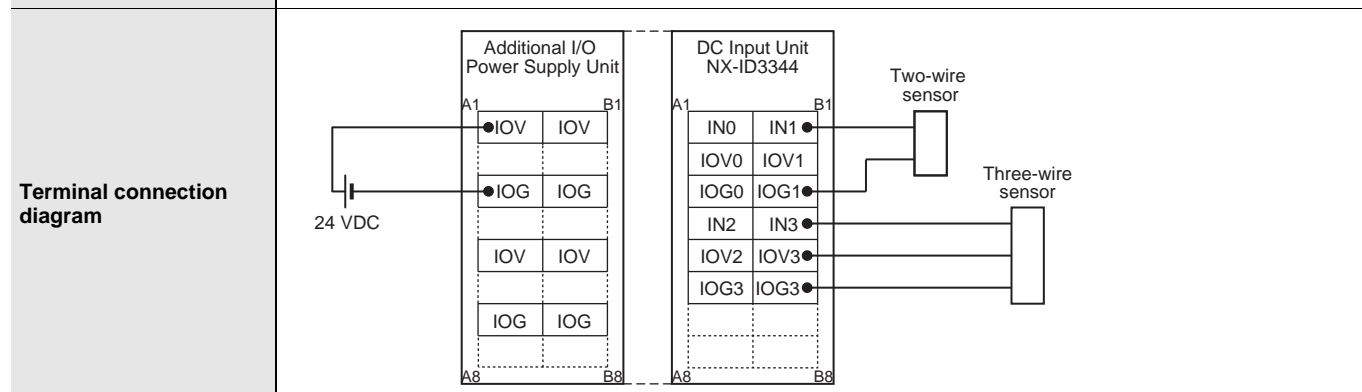
|   |   |   |   |
|---|---|---|---|
| Unit name                                 | DC Input Unit   | Model   | NX-ID3343   |
| Capacity                                  | 4 points  | External connection terminals                 | Screwless clamping terminal block (12 terminals)  |
| I/O refreshing method                     | Selectable Synchronous I/O refreshing or Free-Run refreshing  |   |   |
| Indicators                                | <div>TS indicator, input indicator</div> <div><div>ID3343</div><div><div>■ TS</div><div>■ 0 ■ 1</div><div>■ 2 ■ 3</div></div></div> | Internal I/O common                           | NPN   |
|   |   | Rated input voltage                           | 24 VDC (15 to 28.8 VDC)   |
|   |   | Input current                                 | 3.5 mA typical (at 24 VDC), rated current   |
|   |   | ON voltage/ON current                         | 15 VDC min./3 mA min. (between IOV and each signal)   |
|   |   | OFF voltage/OFF current                       | 5 VDC max./1 mA max. (between IOV and each signal)  |
|   |   | ON/OFF response time                          | 100 ns max./100 ns max.   |
|   |   | Input filter time                             | Without filter, 1 μs, 2 μs, 4 μs, 8 μs (factory setting), 16 μs, 32 μs, 64 μs, 128 μs, 256 μs |
| Dimensions                                | 12 (W) x 100 (H) x 71 (D)   | Isolation method                              | Digital isolator 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 | IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.  |
| NX Unit power consumption                 | 0.55 W max.   | Current consumption from I/O power supply     | 30 mA max.  |
| Weight                                    | 65 g max.   |   |   |
| Circuit layout                            |    |   |   |
| Installation orientation and restrictions | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions  |   |   |
| Terminal connection diagram               |   |   |   |
| Disconnection/Short-circuit detection     | Not supported.  | Protective function                           | Not supported.  |

## NX-ID3344

|                                  |   |  |  |
|----------------------------------|---|--|--|
| <b>Unit name</b>                 | DC Input Unit   | <b>Model</b>   | NX-ID3344  |
| <b>Capacity</b>                  | 4 points  | <b>External connection terminals</b>                 | Screwless clamping terminal block (12 terminals)                                 |
| <b>I/O refreshing method</b>     | Input refreshing with input changed time  |  |  |
| <b>Indicators</b>                | TS indicator, input indicators<br> | <b>Internal I/O common</b>                           | NPN  |
|                                  |   | <b>Rated input voltage</b>                           | 24 VDC (15 to 28.8 VDC)  |
|                                  |   | <b>Input current</b>                                 | 3.5 mA typical (at 24 VDC), rated current  |
|                                  |   | <b>ON voltage/ON current</b>                         | 15 VDC min./3 mA min. (between IOV and each signal)                              |
|                                  |   | <b>OFF voltage/OFF current</b>                       | 5 VDC max./1 mA max. (between IOV and each signal)                               |
|                                  |   | <b>ON/OFF response time</b>                          | 100 ns max./100 ns max.  |
|                                  |   | <b>Input filter time</b>                             | No filter  |
| <b>Dimensions</b>                | 12 (W) x 100 (H) x 71 (D)   | <b>Isolation method</b>                              | Digital isolator isolation   |
| <b>Insulation resistance</b>     | 20 MΩ min. between isolated circuits (at 100 VDC)   | <b>Dielectric strength</b>                           | 510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max. |
| <b>I/O power supply method</b>   | Supply from the NX bus  | <b>Current capacity of I/O power supply terminal</b> | IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.                               |
| <b>NX Unit power consumption</b> | 0.55 W max.   | <b>Current consumption from I/O power supply</b>     | 30 mA max.   |
| <b>Weight</b>                    | 65 g max.   |  |  |

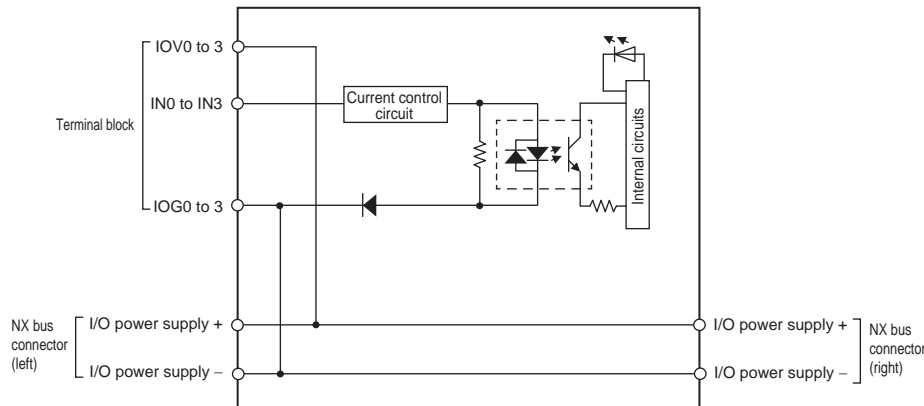
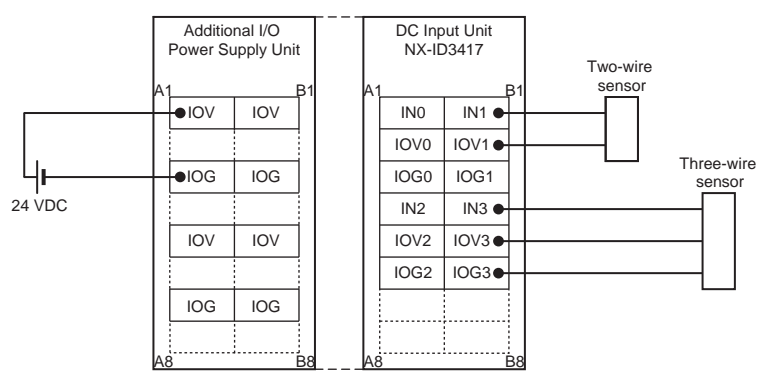


|  |  |  |  |
|--|--|--|--|
| <b>Installation orientation and restrictions</b> | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions |  |  |
|--|--|--|--|

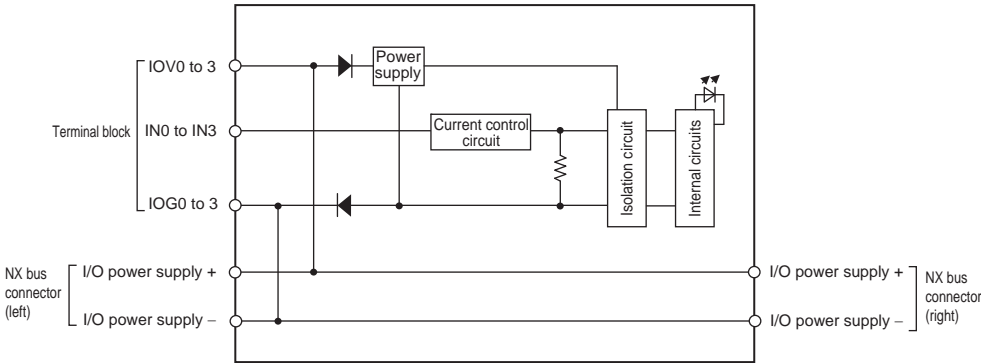
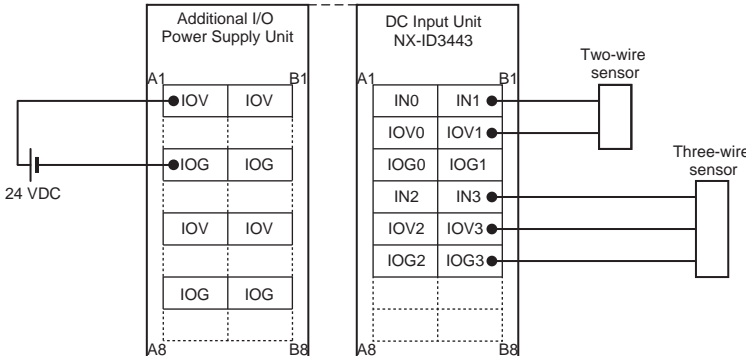


|  |                |                            |                |
|--|----------------|----------------------------|----------------|
| <b>Disconnection/Short-circuit detection</b> | Not supported. | <b>Protective function</b> | Not supported. |
|--|----------------|----------------------------|----------------|

## NX-ID3417


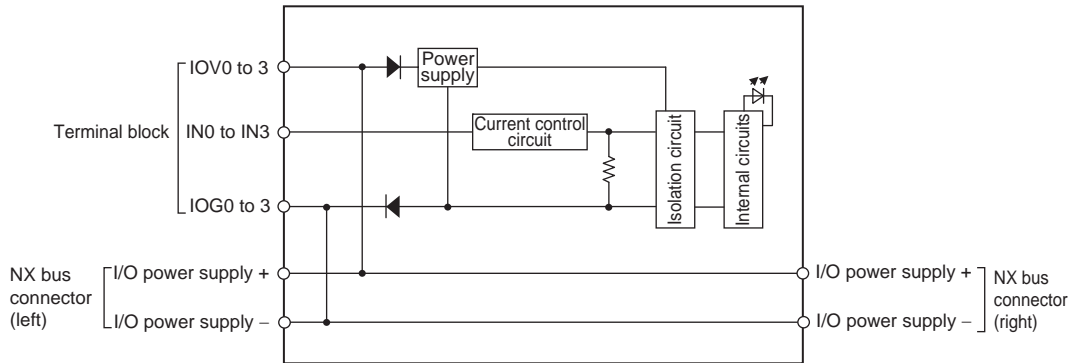
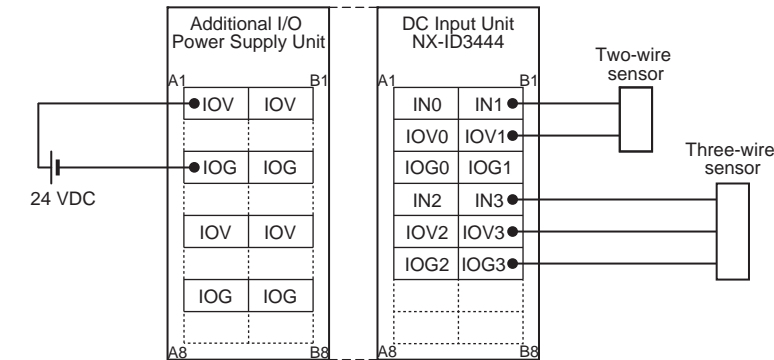
|   |   |   |  |
|---|---|---|--|
| Unit name                                 | DC Input Unit   | Model   | NX-ID3417  |
| Capacity                                  | 4 points  | External connection terminals                 | Screwless clamping terminal block (12 terminals)   |
| I/O refreshing method                     | Selectable Synchronous I/O refreshing or Free-Run refreshing  |   |  |
| Indicators                                | <div>TS indicator, input indicator</div> <div><div>ID3417</div><div><div>■ TS</div><div>■ 0</div><div>■ 1</div><div>■ 2</div><div>■ 3</div></div></div> | Internal I/O common                           | PNP  |
|   |   | Rated input voltage                           | 12 to 24 VDC (9 to 28.8 VDC)   |
|   |   | Input current                                 | 6 mA typical (at 24 VDC), rated current  |
|   |   | ON voltage/ON current                         | 9 VDC min./3 mA min. (between IOG and each signal)   |
|   |   | OFF voltage/OFF current                       | 2 VDC max./1 mA max. (between IOG and each signal)   |
|   |   | ON/OFF response time                          | 20 μs max./400 μs max.   |
|   |   | Input filter time                             | Without filter, 0.25 ms, 0.5 ms, 1 ms (factory setting), 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms, 256 ms |
| 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 | IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.   |
| NX Unit power consumption                 | 0.50 W max.   | Current consumption from I/O power supply     | No consumption   |
| Weight                                    | 65 g max.   |   |  |
| Circuit layout                            |    |   |  |
| Installation orientation and restrictions | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions  |   |  |
| Terminal connection diagram               |   |   |  |
| Disconnection/Short-circuit detection     | Not supported.  | Protective function                           | Not supported.   |

## NX-ID3443


|   |  |   |   |
|---|--|---|---|
| Unit name                                 | DC Input Unit  | Model   | NX-ID3443   |
| Capacity                                  | 4 points   | External connection terminals                 | Screwless clamping terminal block (12 terminals)  |
| I/O refreshing method                     | Selectable Synchronous I/O refreshing or Free-Run refreshing   |   |   |
| Indicators                                | <div>TS indicator, input indicator</div> <div><div>ID3443</div><div><div>■TS</div><div>■0 ■1</div><div>■2 ■3</div></div></div> | Internal I/O common                           | PNP   |
|   |  | Rated input voltage                           | 24 VDC (15 to 28.8 VDC)   |
|   |  | Input current                                 | 3.5 mA typical (at 24 VDC), rated current   |
|   |  | ON voltage/ON current                         | 15 VDC min./3 mA min. (between IOG and each signal)   |
|   |  | OFF voltage/OFF current                       | 5 VDC max./1 mA max. (between IOG and each signal)  |
|   |  | ON/OFF response time                          | 100 ns max./100 ns max.   |
|   |  | Input filter time                             | Without filter, 1 μs, 2 μs, 4 μs, 8 μs (factory setting), 16 μs, 32 μs, 64 μs, 128 μs, 256 μs |
| Dimensions                                | 12 (W) x 100 (H) x 71 (D)  | Isolation method                              | Digital isolator 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 | IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.  |
| NX Unit power consumption                 | 0.55 W max.  | Current consumption from I/O power supply     | 30 mA max.  |
| Weight                                    | 65 g max.  |   |   |
| Circuit layout                            |   |   |   |
| Installation orientation and restrictions | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions   |   |   |
| Terminal connection diagram               |    |   |   |
| Disconnection/Short-circuit detection     | Not supported.   | Protective function                           | Not supported.  |

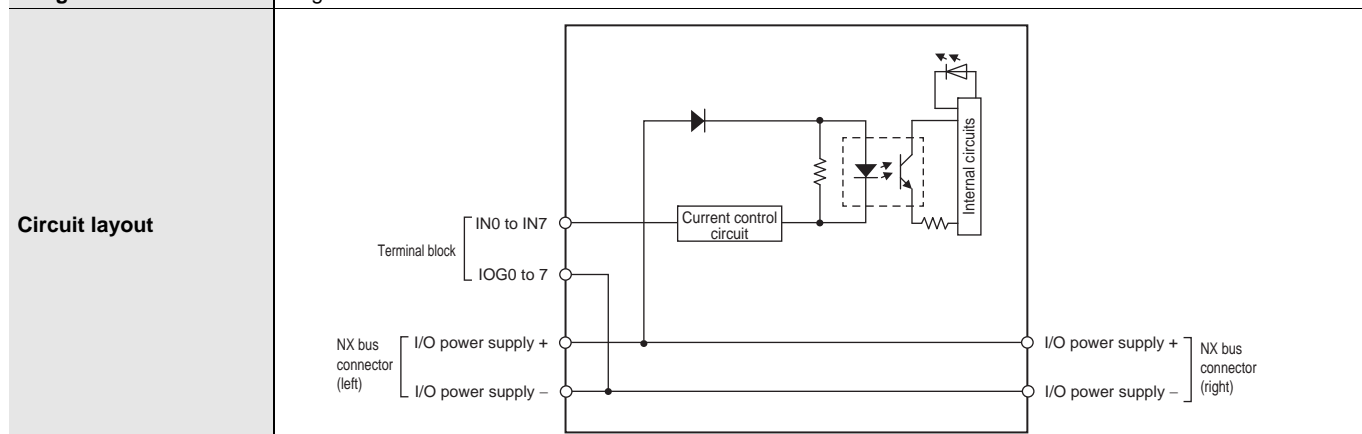


## NX-ID3444

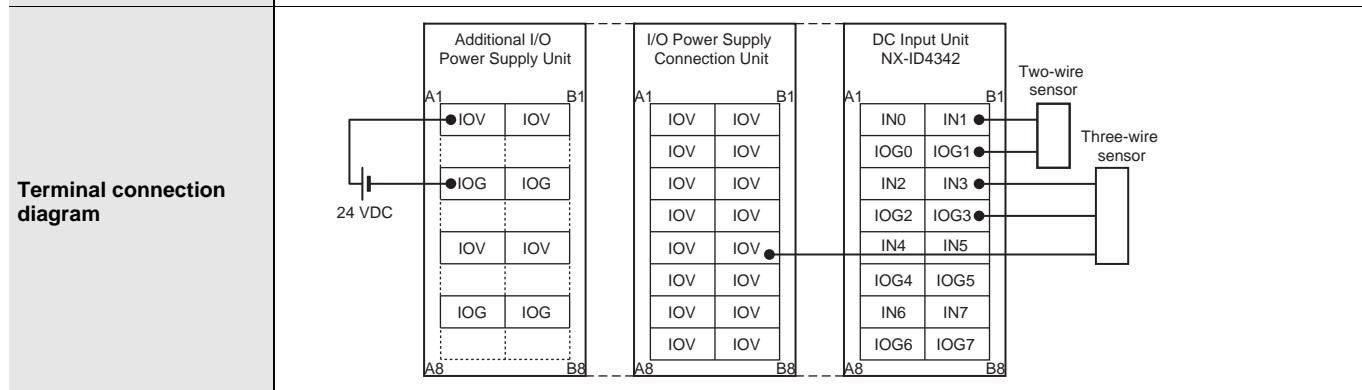
|  |   |  |  |
|--|---|--|--|
| <b>Unit name</b>                                 | DC Input Unit   | <b>Model</b>   | NX-ID3444  |
| <b>Capacity</b>                                  | 4 points  | <b>External connection terminals</b>                 | Screwless clamping terminal block (12 terminals)                                 |
| <b>I/O refreshing method</b>                     | Input refreshing with input changed time  |  |  |
| <b>Indicators</b>                                | TS indicator, input indicators<br> | <b>Internal I/O common</b>                           | PNP  |
|  |   | <b>Rated input voltage</b>                           | 24 VDC (15 to 28.8 VDC)  |
|  |   | <b>Input current</b>                                 | 3.5 mA typical (at 24 VDC), rated current  |
|  |   | <b>ON voltage/ON current</b>                         | 15 VDC min./3 mA min.<br>(between IOG and each signal)                           |
|  |   | <b>OFF voltage/OFF current</b>                       | 5 VDC max./1 mA max.<br>(between IOG and each signal)                            |
|  |   | <b>ON/OFF response time</b>                          | 100 ns max./100 ns max.  |
|  |   | <b>Input filter time</b>                             | No filter  |
| <b>Dimensions</b>                                | 12 (W) x 100 (H) x 71 (D)   | <b>Isolation method</b>                              | Digital isolator isolation   |
| <b>Insulation resistance</b>                     | 20 MΩ min. between isolated circuits (at 100 VDC)   | <b>Dielectric strength</b>                           | 510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max. |
| <b>I/O power supply method</b>                   | Supply from the NX bus  | <b>Current capacity of I/O power supply terminal</b> | IOV: 0.1 A/terminal max.,<br>IOG: 0.1 A/terminal max.                            |
| <b>NX Unit power consumption</b>                 | 0.55 W max.   | <b>Current consumption from I/O power supply</b>     | 30 mA max.   |
| <b>Weight</b>                                    | 65 g max.   |  |  |
| <b>Circuit layout</b>                            |                                  |  |  |
| <b>Installation orientation and restrictions</b> | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions                              |  |  |
| <b>Terminal connection diagram</b>               |                                 |  |  |
| <b>Disconnection/Short-circuit detection</b>     | Not supported.  | <b>Protective function</b>                           | Not supported.   |

## NX-ID4342

|                                  |  |  |  |
|----------------------------------|--|--|--|
| <b>Unit name</b>                 | DC Input Unit  | <b>Model</b>   | NX-ID4342  |
| <b>Capacity</b>                  | 8 points   | <b>External connection terminals</b>                 | Screwless clamping terminal block (16 terminals)   |
| <b>I/O refreshing method</b>     | Selectable Synchronous I/O refreshing or Free-Run refreshing   |  |  |
| <b>Indicators</b>                | TS indicator, input indicator<br> | <b>Internal I/O common</b>                           | NPN  |
|                                  |  | <b>Rated input voltage</b>                           | 24 VDC (15 to 28.8 VDC)  |
|                                  |  | <b>Input current</b>                                 | 3.5 mA typical (at 24 VDC), rated current  |
|                                  |  | <b>ON voltage/ON current</b>                         | 15 VDC min./3 mA min. (between IOG and each signal)  |
|                                  |  | <b>OFF voltage/OFF current</b>                       | 5 VDC max./1 mA max. (between IOG and each signal)   |
|                                  |  | <b>ON/OFF response time</b>                          | 20 $\mu$ s max./400 $\mu$ s max.   |
|                                  |  | <b>Input filter time</b>                             | Without filter, 0.25 ms, 0.5 ms, 1 ms (factory setting), 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms, 256 ms |
| <b>Dimensions</b>                | 12 (W) x 100 (H) x 71 (D)  | <b>Isolation method</b>                              | Photocoupler isolation   |
| <b>Insulation resistance</b>     | 20 M $\Omega$ min. between isolated circuits (at 100 VDC)  | <b>Dielectric strength</b>                           | 510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.                               |
| <b>I/O power supply method</b>   | Supply from the NX bus   | <b>Current capacity of I/O power supply terminal</b> | IOG: 0.1 A/terminal max.   |
| <b>NX Unit power consumption</b> | 0.50 W max.  | <b>Current consumption from I/O power supply</b>     | No consumption   |
| <b>Weight</b>                    | 65 g max.  |  |  |



|  |  |  |  |
|--|--|--|--|
| <b>Installation orientation and restrictions</b> | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions |  |  |
|--|--|--|--|



|  |                |                            |                |
|--|----------------|----------------------------|----------------|
| <b>Disconnection/Short-circuit detection</b> | Not supported. | <b>Protective function</b> | Not supported. |
|--|----------------|----------------------------|----------------|

## NX-ID4442

|   |  |   |  |
|---|--|---|--|
| Unit name                                 | DC Input Unit  | Model   | NX-ID4442  |
| Capacity                                  | 8 points   | External connection terminals                 | Screwless clamping terminal block (16 terminals)   |
| I/O refreshing method                     | Selectable Synchronous I/O refreshing or Free-Run refreshing   |   |  |
| Indicators                                | <div>TS indicator, input indicator</div> <div><div>ID4442</div><div><div>■TS</div><div>■0 ■1</div><div>■2 ■3</div><div>■4 ■5</div><div>■6 ■7</div></div></div> | Internal I/O common                           | PNP  |
|   |  | Rated input voltage                           | 24 VDC (15 to 28.8 VDC)  |
|   |  | Input current                                 | 3.5 mA typical (at 24 VDC), rated current  |
|   |  | ON voltage/ON current                         | 15 VDC min./3 mA min. (between IOG and each signal)  |
|   |  | OFF voltage/OFF current                       | 5 VDC max./1 mA max. (between IOG and each signal)   |
|   |  | ON/OFF response time                          | 20 μs max./400 μs max.   |
|   |  | Input filter time                             | Without filter, 0.25 ms, 0.5 ms, 1 ms (factory setting), 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms, 256 ms |
| 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 | IOV: 0.1 A/terminal max.   |
| NX Unit power consumption                 | 0.50 W max.  | Current consumption from I/O power supply     | No consumption   |
| Weight                                    | 65 g max.  |   |  |
| Circuit layout                            |  |   |  |
| Installation orientation and restrictions | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions   |   |  |
| Terminal connection diagram               |  |   |  |
| Disconnection/Short-circuit detection     | Not supported.   | Protective function                           | Not supported.   |

## NX-ID5342

|   |  |   |  |
|---|--|---|--|
| Unit name                                 | DC Input Unit  | Model   | NX-ID5342  |
| Capacity                                  | 16 points  | External connection terminals                 | Screwless clamping terminal block (16 terminals)   |
| I/O refreshing method                     | Selectable Synchronous I/O refreshing or Free-Run refreshing   |   |  |
| Indicators                                | <div>TS indicator, input indicator</div> <div><div>ID5342</div><div><div>■TS</div><div>■0 ■1 ■2 ■3</div><div>■4 ■5 ■6 ■7</div><div>■8 ■9 ■10 ■11</div><div>■12 ■13 ■14 ■15</div></div></div> | Internal I/O common                           | NPN  |
|   |  | Rated input voltage                           | 24 VDC (15 to 28.8 VDC)  |
|   |  | Input current                                 | 2.5 mA typical (at 24 VDC), rated current  |
|   |  | ON voltage/ON current                         | 15 VDC min./2 mA min. (between IOG and each signal)  |
|   |  | OFF voltage/OFF current                       | 5 VDC max./0.5 mA max. (between IOG and each signal)   |
|   |  | ON/OFF response time                          | 20 μs max./400 μs max.   |
|   |  | Input filter time                             | Without filter, 0.25 ms, 0.5 ms, 1 ms (factory setting), 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms, 256 ms |
| 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                 | 0.55 W max.  | Current consumption from I/O power supply     | No consumption   |
| Weight                                    | 65 g max.  |   |  |
| Circuit layout                            |  |   |  |
| Installation orientation and restrictions | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions   |   |  |
| Terminal connection diagram               |  |   |  |
| Disconnection/Short-circuit detection     | Not supported.   | Protective function                           | Not supported.   |

## NX-ID5442

|   |  |   |  |
|---|--|---|--|
| Unit name                                 | DC Input Unit  | Model   | NX-ID5442  |
| Capacity                                  | 16 points  | External connection terminals                 | Screwless clamping terminal block (16 terminals)   |
| I/O refreshing method                     | Selectable Synchronous I/O refreshing or Free-Run refreshing   |   |  |
| Indicators                                | <div>TS indicator, input indicator</div> <div><div>ID5442</div><div><div>■TS</div><div>■0 ■1 ■2 ■3</div><div>■4 ■5 ■6 ■7</div><div>■8 ■9 ■10 ■11</div><div>■12 ■13 ■14 ■15</div></div></div> | Internal I/O common                           | PNP  |
|   |  | Rated input voltage                           | 24 VDC (15 to 28.8 VDC)  |
|   |  | Input current                                 | 2.5 mA typical (at 24 VDC), rated current  |
|   |  | ON voltage/ON current                         | 15 VDC min./2 mA min. (between IOG and each signal)  |
|   |  | OFF voltage/OFF current                       | 5 VDC max./0.5 mA max. (between IOG and each signal)   |
|   |  | ON/OFF response time                          | 20 μs max./400 μs max.   |
|   |  | Input filter time                             | Without filter, 0.25 ms, 0.5 ms, 1 ms (factory setting), 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms, 256 ms |
| 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                 | 0.55 W max.  | Current consumption from I/O power supply     | No consumption   |
| Weight                                    | 65 g max.  |   |  |
| Circuit layout                            |  |   |  |
| Installation orientation and restrictions | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions   |   |  |
| Terminal connection diagram               |  |   |  |
| Disconnection/Short-circuit detection     | Not supported.   | Protective function                           | Not supported.   |

## ● DC Input Units (MIL Connector, 30 mm Width)

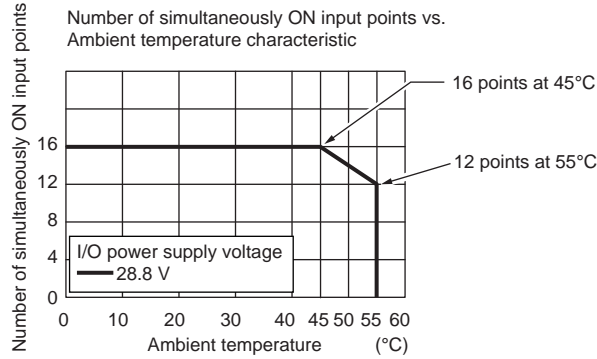
### NX-ID5142-5

|                           |  |   |   |
|---------------------------|--|---|---|
| Unit name                 | DC Input Unit  | Model   | NX-ID5142-5   |
| 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   |   |   |
| Indicators                | <div>TS indicator, input indicators</div> <div><div>ID5142-5</div><div><div>■ TS</div><div>■0 ■1 ■2 ■3 ■4 ■5 ■6 ■7</div><div>■8 ■9 ■10 ■11 ■12 ■13 ■14 ■15</div></div></div> | Internal I/O common                           | For both NPN/PNP  |
|                           |  | Rated input voltage                           | 24 VDC (15 to 28.8 VDC)   |
|                           |  | Input current                                 | 7 mA typical (at 24 VDC)  |
|                           |  | ON voltage/ON current                         | 15 VDC min./3 mA min.<br>(between COM and each signal)  |
|                           |  | OFF voltage/OFF current                       | 5 VDC max./1 mA max.<br>(between COM and each signal)   |
|                           |  | ON/OFF response time                          | 20 μs max./400 μs max.  |
|                           |  | Input filter time                             | No filter, 0.25 ms, 0.5 ms, 1 ms (default),<br>2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms,<br>128 ms, 256 ms |
| Dimensions                | 30 (W) x 100 (H) x 71 (D)  | Isolation method                              | Photocoupler isolation  |
| Insulation resistance     | 20 MΩ min. between isolated circuits<br>(at 100 VDC)   | Dielectric strength                           | 510 VAC between isolated circuits for<br>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 | 0.55 W max.  | Current consumption from I/O power supply     | No consumption  |
| Weight                    | 85 g max.  |   |   |
| Circuit layout            | <div></div>  |   |   |

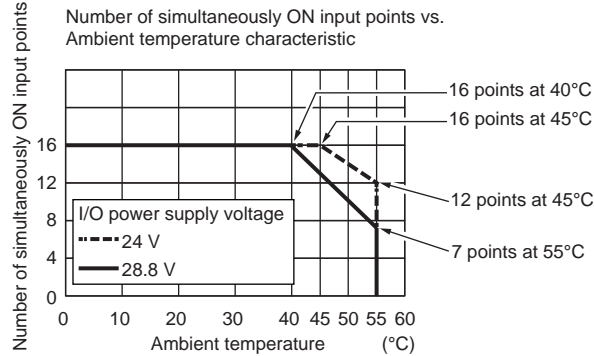
Installation orientation and restrictions

Installation orientation: Possible in 6 orientations.  
Restrictions: As shown in the following.

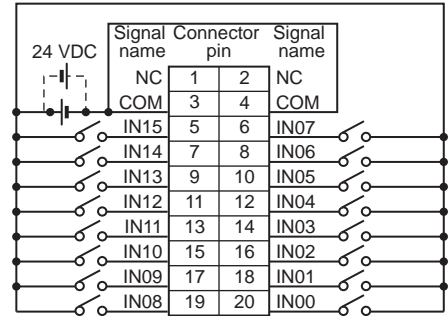
- For upright installation



- For any installation other than upright



Terminal connection diagram



- The polarity of the input power supply can be connected in either direction.
- Be sure to wire both pins 3 and 4 (COM), and set the same polarity for both pins.

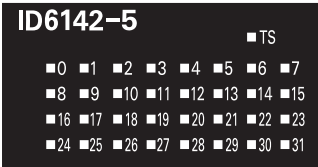
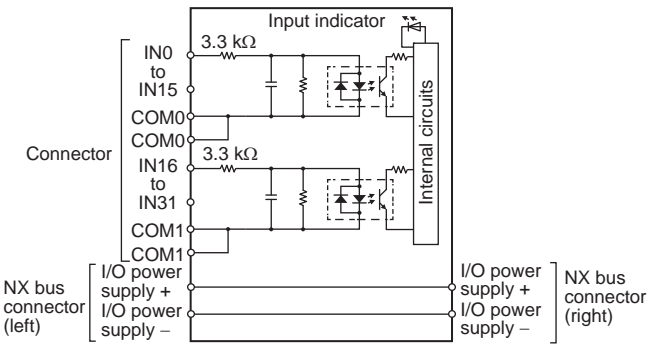
Disconnection/Short-circuit detection

Not supported.

Protective function

Not supported.

## NX-ID6142-5

|                           |   |   |   |
|---------------------------|---|---|---|
| Unit name                 | DC Input Unit   | Model   | NX-ID6142-5   |
| 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  |   |   |
| Indicators                | TS indicator, input indicators<br> | Internal I/O common                           | For both NPN/PNP  |
|                           |   | Rated input voltage                           | 24 VDC (19 to 28.8 VDC)   |
|                           |   | Input current                                 | 4.1 mA typical (24 VDC)   |
|                           |   | ON voltage/ON current                         | 19 VDC min./3 mA min.<br>(between COM and each signal)  |
|                           |   | OFF voltage/OFF current                       | 5 VDC max./1 mA max.<br>(between COM and each signal)   |
|                           |   | ON/OFF response time                          | 20 μs max./400 μs max.  |
|                           |   | Input filter time                             | No filter, 0.25 ms, 0.5 ms, 1 ms (default),<br>2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms,<br>256 ms |
| Dimensions                | 30 (W) x 100 (H) x 71 (D)   | Isolation method                              | Photocoupler isolation  |
| Insulation resistance     | 20 MΩ min. between isolated circuits<br>(at 100 VDC)  | Dielectric strength                           | 510 VAC between isolated circuits for<br>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     | No consumption  |
| Weight                    | 90 g max.   |   |   |
| Circuit layout            |                                  |   |   |

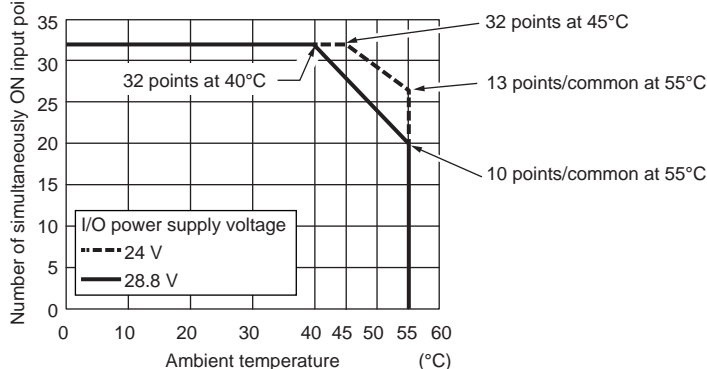


# Installation orientation and restrictions

Installation orientation: Possible in 6 orientations.  
Restrictions: As shown in the following.

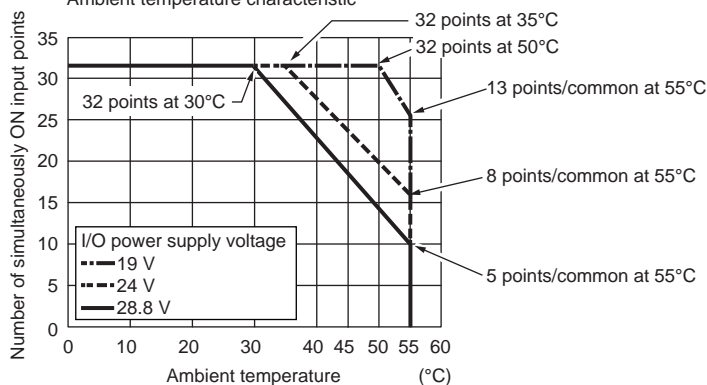
## • For upright installation

Number of simultaneously ON input points vs.  
Ambient temperature characteristic

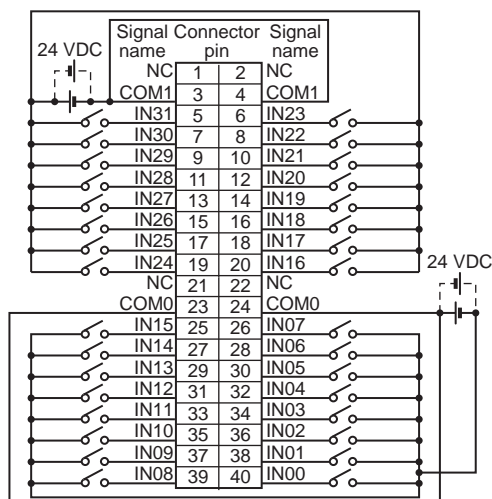


## • For any installation other than upright

Number of simultaneously ON input points vs.  
Ambient temperature characteristic



# Terminal connection diagram



- The polarity of the input power supply can be connected in either direction.
- Be sure to wire both pins 23 and 24 (COM0), and set the same polarity for both pins.
- Be sure to wire both pins 3 and 4 (COM1), and set the same polarity for both pins.

# Disconnection/Short-circuit detection


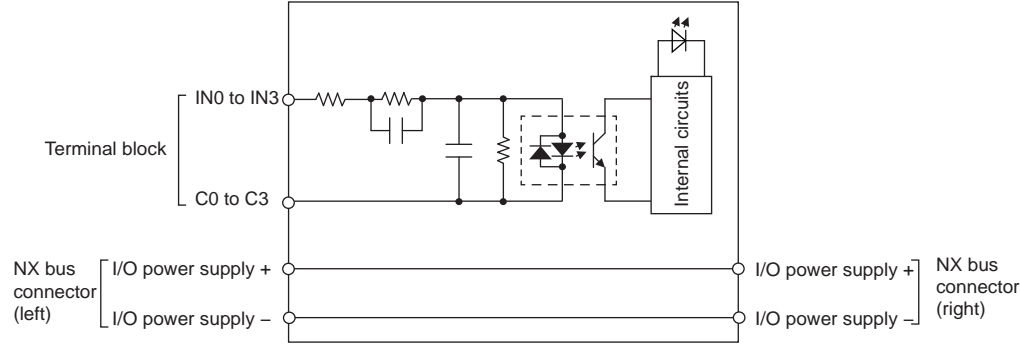
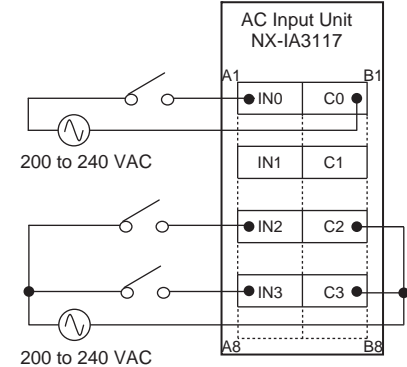
Not supported.

# Protective function

Not supported.

## ● AC Input Units (Screwless Clamping Terminal Block, 12 mm Width)

### NX-IA3117

|   |   |   |   |
|---|---|---|---|
| Unit name                                 | AC Input Unit   | Model   | NX-IA3117   |
| Number of points                          | 4 points, independent contacts  | External connection terminals                 | Screwless clamping terminal block (8 terminals)   |
| Capacity                                  | Free-Run refreshing   |   |   |
| Indicators                                | TS indicator, input indicator<br>  | Internal I/O common                           | No polarity   |
|   |   | Rated input voltage                           | 200 to 240 VAC, 50/60 Hz (170 to 264 VAC, $\pm 3$ Hz)   |
|   |   | Input current                                 | 9 mA typical (at 200 VAC, 50 Hz)<br>11 mA typical (at 200 VAC, 60 Hz)   |
|   |   | ON voltage/ON current                         | 120 VAC min./4 mA min.  |
|   |   | OFF voltage/OFF current                       | 40 VAC max./2 mA max.   |
|   |   | ON/OFF response time                          | 10 ms max./40 ms max.   |
|   |   | Input filter time                             | No filter, 0.25 ms, 0.5 ms, 1 ms (default), 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, 128 ms, 256 ms   |
| Dimensions                                | 12 (W) x 100 (H) x 71 (D)   | Isolation method                              | Photocoupler isolation  |
| Insulation resistance                     | Between each AC input circuit: 20 M $\Omega$ min. (at 500 VDC)<br>Between the external terminals and the functional ground terminal: 20 M $\Omega$ min. (at 500 VDC)<br>Between the external terminals and internal circuits: 20 M $\Omega$ min. (at 500 VDC)<br>Between the internal circuit and the functional ground terminal: 20 M $\Omega$ min. (at 100 VDC) | Dielectric strength                           | Between each AC input circuit: AC3700V VAC for 1 min at a leakage current of 5 mA max.<br>Between the external terminals and functional ground terminal: 2300 VAC for 1 min at a leakage current of 5 mA max.<br>Between the external terminals and internal circuits: 2300 VAC for 1 min at a leakage current of 5 mA max.<br>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                   | Supplied from external source.  | Current capacity of I/O power supply terminal | Without I/O power supply terminals  |
| NX Unit power consumption                 | 0.5 W max.  | Current consumption from I/O power supply     | No consumption  |
| Weight                                    | 60 g max.   |   |   |
| Circuit layout                            |   |   |   |
| Installation orientation and restrictions | Installation orientation: Possible in 6 orientations.<br>Restrictions: No restrictions  |   |   |
| Terminal connection diagram               |    |   |   |
| Disconnection/Short-circuit detection     | Not supported.  | Protective function                           | Not supported.  |

## Version Information

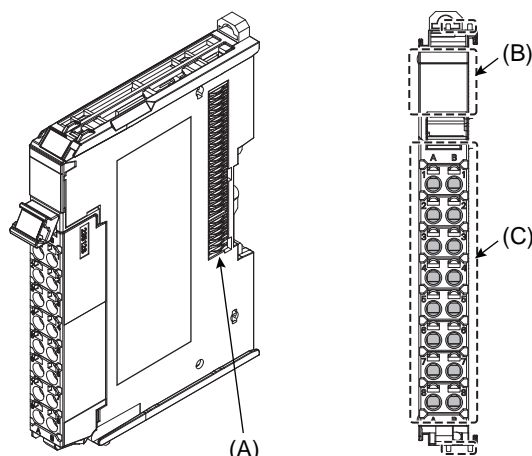
| NX Units    |              | Corresponding unit versions/versions         |  |                        |
|-------------|--------------|--|--|------------------------|
| Model       | Unit Version | EtherCAT Coupler Units<br>NX-ECC201/ECC202 * | NJ-series CPU Units<br>NJ501-□□□□/NJ301-□□□□ | Sysmac Studio          |
| NX-ID3317   | Ver.1.0      | Version 1.0 or later                         | Version 1.05 or later                        | Version 1.06 or higher |
| NX-ID3343   |              | Version 1.1 or later                         | Version 1.06 or later                        | Version 1.07 or higher |
| NX-ID3344   |              | Version 1.0 or later                         | Version 1.05 or later                        | Version 1.06 or higher |
| NX-ID3417   |              | Version 1.1 or later                         | Version 1.06 or later                        | Version 1.07 or higher |
| NX-ID3443   |              | Version 1.0 or later                         | Version 1.05 or later                        | Version 1.06 or higher |
| NX-ID3444   |              | Version 1.1 or later                         | Version 1.06 or later                        | Version 1.07 or higher |
| NX-ID4342   |              | Version 1.0 or later                         | Version 1.05 or later                        | Version 1.06 or higher |
| NX-ID4442   |              |  |  | Ver.1.10 or higher     |
| NX-ID5142-5 |              |  |  | Version 1.06 or higher |
| NX-ID5342   |              |  |  | Ver.1.10 or higher     |
| NX-ID5442   |              |  |  | Version 1.08 or higher |
| NX-ID6142-5 |              |  |  | Version 1.08 or higher |
| NX-IA3117   |              |  |  | Version 1.08 or higher |

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

## External Interface

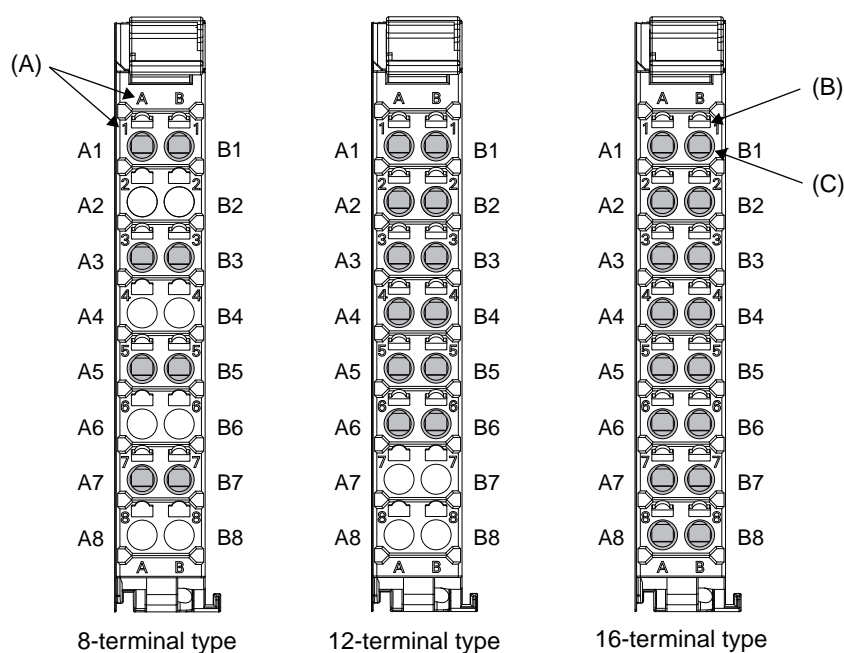
### Screwless Clamping Terminal Block Type

#### ● 12 mm 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.<br>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

| Unit model | Terminal Blocks |                  |                             |                      |                           |
|------------|-----------------|------------------|-----------------------------|----------------------|---------------------------|
|            | Model           | No. of terminals | Terminal number indications | Ground terminal mark | Terminal current capacity |
| NX-ID3□□□  | NX-TBA122       | 12               | A/B                         | None                 | 10 A                      |
| NX-ID4□□□  | NX-TBA162       | 16               | A/B                         | None                 | 10 A                      |
| NX-ID5□□□  | NX-TBA162       | 16               | A/B                         | None                 | 10 A                      |
| NX-IA3117  | 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.

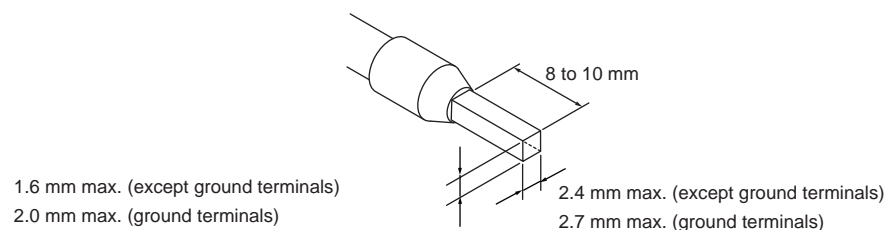
The applicable ferrules, wires, and crimping tool are given in the following table.

| Terminal types                        | Manufacturer    | Ferrule model number | Applicable wire (mm <sup>2</sup> (AWG)) | Crimping tool  |
|---------------------------------------|-----------------|----------------------|---|--|
| Terminals other than ground terminals | Phoenix Contact | AI0,34-8             | 0.34 (#22)                              | Phoenix Contact (The figure in parentheses is the applicable wire size.)<br>CRIMPFOX 6 (0.25 to 6 mm <sup>2</sup> , AWG24 to 10) |
|                                       |                 | AI0,5-8              | 0.5 (#20)                               |  |
|                                       |                 | AI0,5-10             |   |  |
|                                       |                 | AI0,75-8             | 0.75 (#18)                              |  |
|                                       |                 | AI0,75-10            |   |  |
|                                       |                 | AI1,0-8              | 1.0 (#18)                               |  |
|                                       |                 | AI1,0-10             |   |  |
|                                       |                 | AI1,5-8              | 1.5 (#16)                               |  |
| Ground terminals                      | Phoenix Contact | AI1,5-10             |   |  |
|                                       |                 | AI2,5-10             | 2.0 *                                   |  |
| Terminals other than ground terminals | Weidmuller      | H0.14/12             | 0.14 (#26)                              | Weidmuller (The figure in parentheses is the applicable wire size.)<br>PZ6 Roto (0.14 to 6 mm <sup>2</sup> , AWG 26 to 10)       |
|                                       |                 | H0.25/12             | 0.25 (#24)                              |  |
|                                       |                 | 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              |   |  |

\* 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.

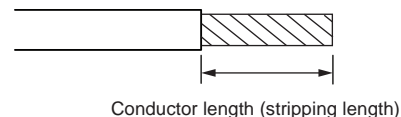
Finished Dimensions of Ferrules



### Using Twisted Wires/Solid Wires

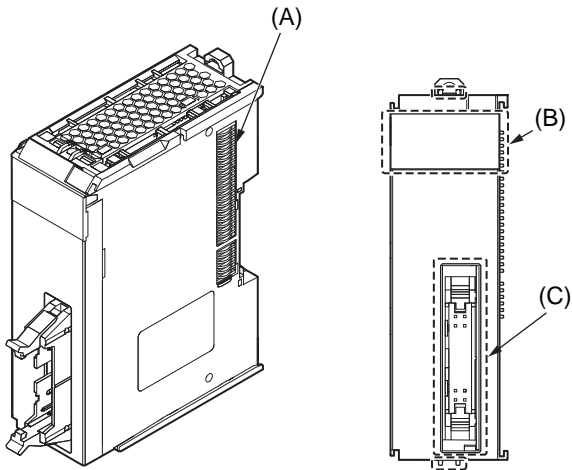
If you use the twisted wires or the solid wires, the applicable wire range and conductor length (stripping length) are as follows.

| 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><br>AWG28 to 16 | 8 to 10 mm                          |



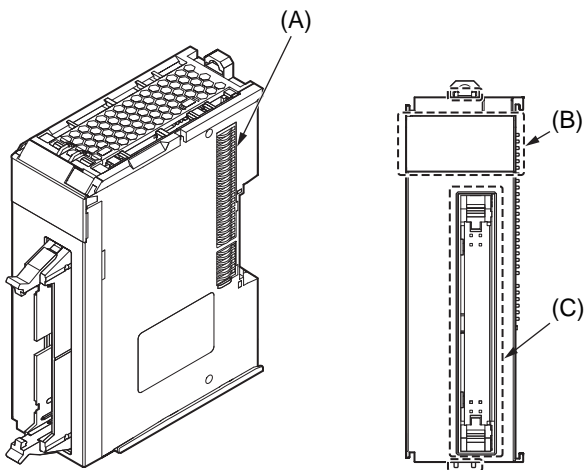
Units with MIL Connectors

● 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

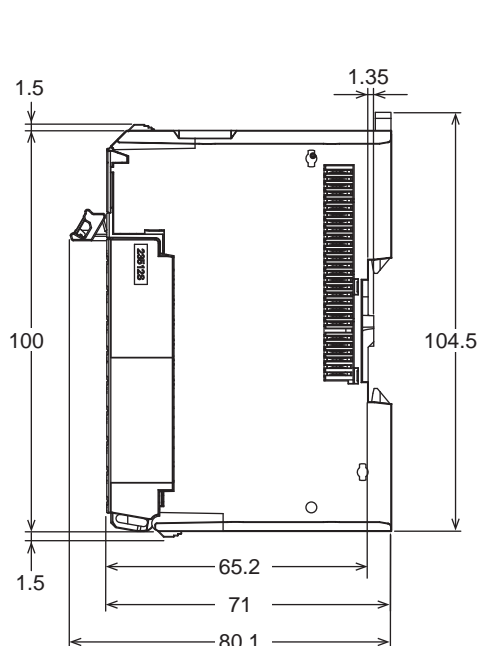


| Letter | Name             | Function  |
|--------|------------------|---|
| (A)    | NX bus connector | This connector is used to connect each Unit.                  |
| (B)    | Indicators       | The indicators show the current operating status of the Unit. |
| (C)    | Connectors       | The connectors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

## Dimensions

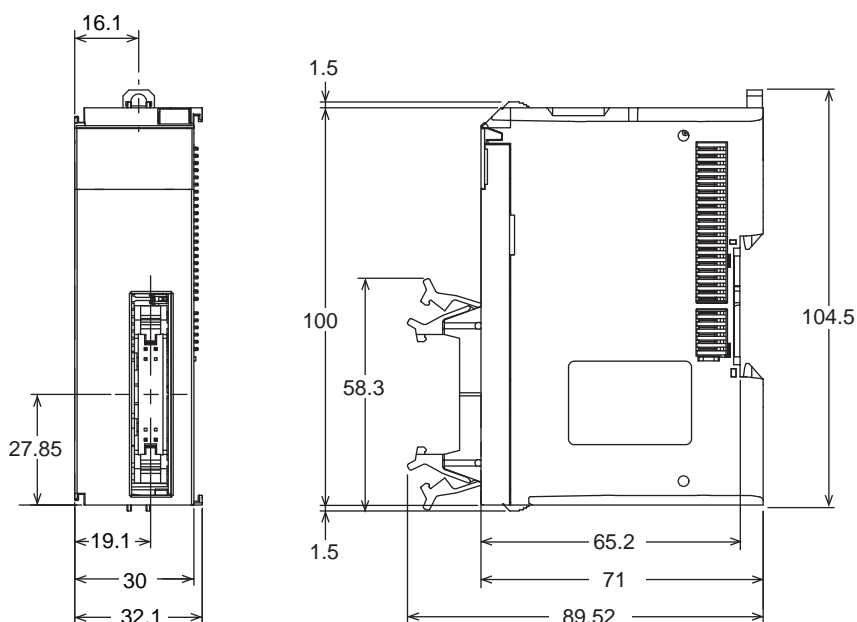
### Screwless Clamping Terminal Block Type

#### ● 12 mm Width



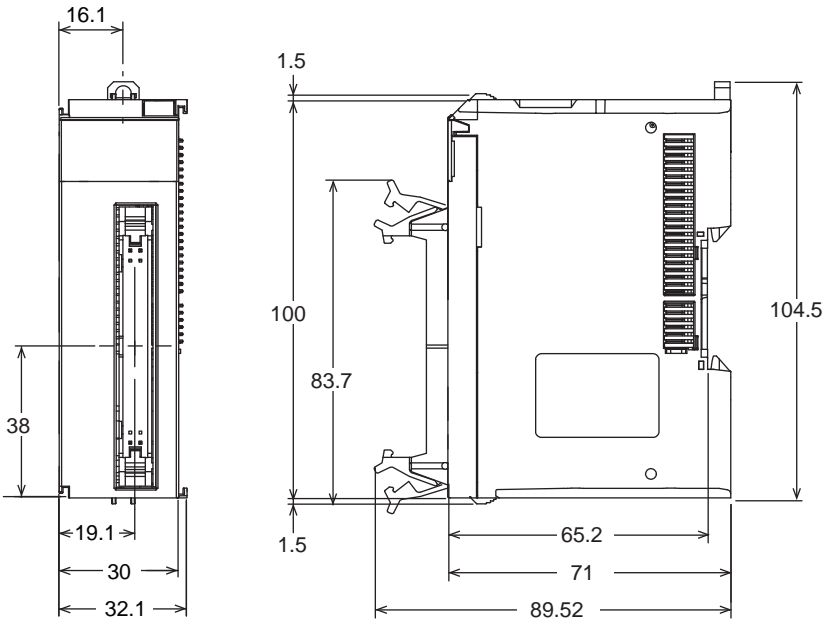
### Units with MIL Connectors (1 Connector with 20 terminals)

#### ● 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-ID□□□□<br>NX-IA□□□□<br>NX-OD□□□□<br>NX-OC□□□□<br>NX-MD□□□□ | 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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