NX-series IO-Link Master Unit

NX-ILM400

CSM_NX-ILM400_DS_E_1_7

IO-Link makes sensor level information visible and solves the three major issues at manufacturing sites!
The screwless clamping terminal block reduces wiring work.

- Downtime can be reduced.
  Notifies you of faulty parts and such phenomena in the Sensor in real time.
- The frequency of sudden failure can be decreased.
  Condition monitoring of sensors and equipment to prevent troubles.
- The efficiency of changeover can be improved.
  The batch check for individual sensor IDs significantly decreases commissioning time.

Corresponding to our shared **Value Design for Panel** concept for the specifications of products

Features

- The host controller can cyclically read control signals, status*1, wiring, and power supply status of IO-Link sensors. Because an IO-Link System can cyclically read analog data such as the amount of incident light in addition to ON/OFF information, it can be used for predictive maintenance based on detection of such things as decreases in the amount of light.
- User-specified data in IO-Link devices can be read and written from the host controller when necessary.
- Digital signals can be input rapidly from IO-Link sensors*2 during IO-Link communications.
- IO-Link sensors can be combined with non-IO-Link sensors.
- Incorrect connections of IO-Link sensors can be checked when IO-Link communications start.
- Backup and restoration of IO-Link device parameters make replacement of IO-Link sensors easier.
- IO-Link sensors can be easily replaced with non-IO-Link sensors without changing the data address settings.*3
- Sensors can report their errors to the master, which facilitates locating errors from the host.
- The total number of retries in cyclic communications can be recorded. You can use this value to check for the influences of noise and other problems.
  (When EtherCAT is used as the host communication interface)
- Up to four sensors can be connected.

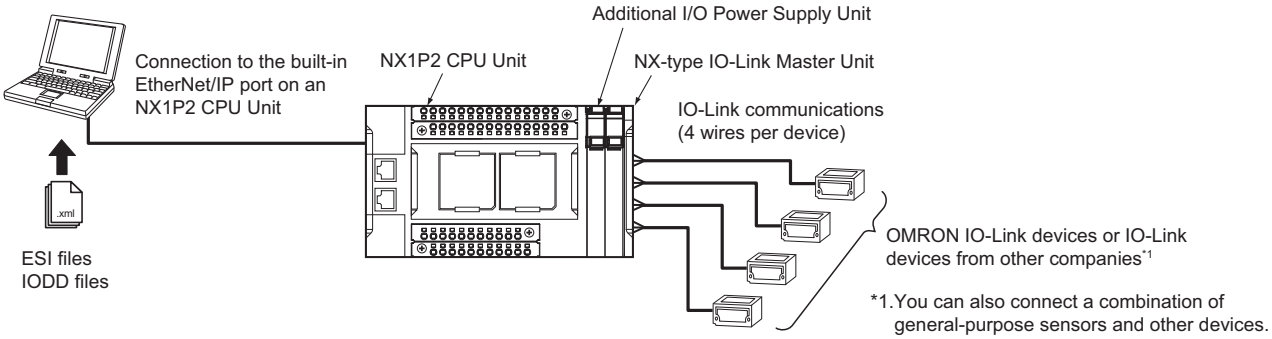
*1. Examples for Photoelectric Sensors: Instability detection and sensor errors
*2. IO-Link sensors that support digital inputs that use pin 2 of IO-Link Master Unit ports
*3. Bit data of IO-Link sensor can be reflected in the address of the digital input data by using digital input collection.
This function is supported with the unit version 1.1 or later.

System Configuration

Controller Communications with NX Bus

NX bus communications are possible when the controller is an NX1P2, NX102, or NX502 CPU Unit.
The following is a configuration example when connected to an NX1P2 CPU Unit.

Support Software:
- IO-Link Master Unit settings: Use the Sysmac Studio.
- IO-Link device settings: Use CX-ConfiguratorFDT.



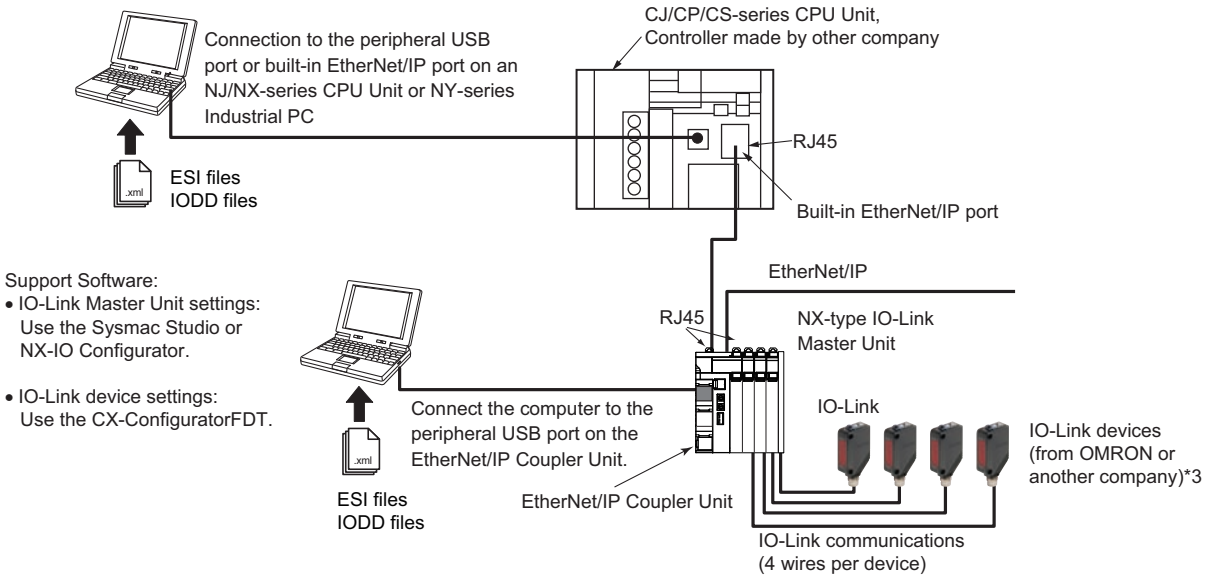
Applicable Support Software

Function	IO-Link Master Unit type	Applicable Support Software		
		NX Unit settings	IO-Link Master Unit settings	Setting and monitoring the connected IO-Link devices
Applicable Support Software	NX	Sysmac Studio *1	Sysmac Studio *1	CX-ConfiguratorFDT *2
	GX	Sysmac Studio *1	Sysmac Studio *1	CX-ConfiguratorFDT *2

*1. Sysmac Studio version 1.17 or higher is required.
*2. CX-ConfiguratorFDT version 2.2 or higher is required.

Controller Communications with EtherNet/IP

Support Software:
- IO-Link Master Unit settings: Use the Sysmac Studio or NX-IO Configurator.*1
- IO-Link device settings: Use CX-ConfiguratorFDT.*2



*1. When a host controller from another company is used with EtherNet/IP host communications connect the Sysmac Studio or NX-IO Configurator to the EtherNet/IP Coupler Unit, for IO-Link Master Unit settings.
*2. When a host controller from another company is used with EtherNet/IP host communications connect CX-ConfiguratorFDT to the EtherNet/IP Coupler Unit, for IO-Link device settings.
*3. You can also connect a combination of general-purpose sensors and other devices.

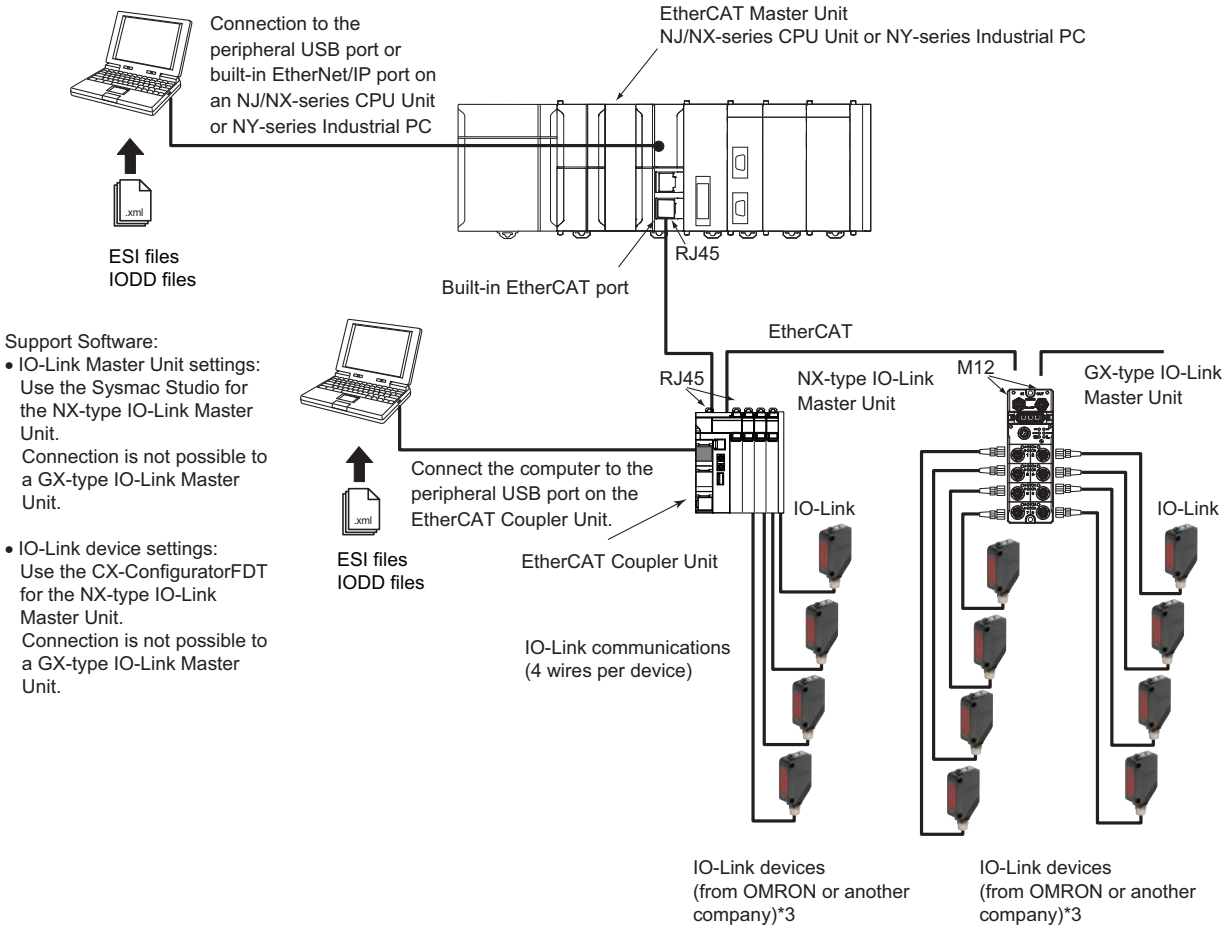
Applicable Support Software

IO-Link Master Unit type	Applicable Support Software		
	Tag data link setting	IO-Link Master Unit settings *1	Setting and monitoring the IO-Link devices
NX	Use the Network Configurator or the EtherNet/IP software application from the other company.	IO-Link Master Unit Configuration Tool • Sysmac Studio*2 • NX-IO Configurator*3	CX-ConfiguratorFDT

*1. The IO-Link device connection configuration information settings are included in the IO-Link Master Unit settings.
*2. The settings from the Sysmac Studio are required when you use the Safety Control Unit on the Slave Terminal. The Safety Control Unit is not supported with the NX-IO Configurator.
*3. The connectable paths of NX-IO Configurator differ depending on the unit version of the EtherNet/IP Coupler Unit.

Controller Communications with EtherCAT

Support Software:
- IO-Link Master Unit settings: Use the Sysmac Studio.*1
- IO-Link device settings: Use CX-ConfiguratorFDT.*2



*1. When a host controller from another company is used with EtherCAT host communications, use the EtherCAT software application from the other company for a GX-type IO-Link Master Unit.
Note. For an NX-type IO-Link Master Unit, connect the Sysmac Studio to the EtherCAT Coupler Unit, as shown above.
*2. When a host controller from another company is used with EtherCAT host communications, for a GX-type IO-Link Master Unit, make the IO-Link device settings with message communications from the host controller from the other company.
Note. For an NX-type IO-Link Master Unit, connect CX-ConfiguratorFDT to the EtherCAT Coupler Unit, as shown above.
*3. You can also connect a combination of general-purpose sensors and other devices.

Applicable Support Software

IO-Link Master Unit type	Applicable Support Software		
	PDO allocation settings (GX) I/O allocation settings (NX)	IO-Link Master Unit settings (IO-Link device connection configuration settings) *1	Setting and monitoring the IO-Link devices
NX	Sysmac Studio *1	Sysmac Studio *1	CX-ConfiguratorFDT *2
GX	Sysmac Studio *1	Sysmac Studio *1	CX-ConfiguratorFDT *2

*1. The device configuration settings are included in the IO-Link Master Unit settings.
*2. CX-ConfiguratorFDT version 2.2 or higher is required.

Ordering Information

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

NX-series IO-Link Master Unit

Product name	Specification			Model
	Number of IO-Link ports	I/O refreshing method	I/O connection terminals	
NX-series IO-Link Master Unit	4	Free-Run refreshing	Screwless clamping terminal block	**NX-ILM400**

Peripheral Devices

Sensor I/O Connectors

Order a cable with a connector on one end to connect a sensor of connector type. Refer to the *Ordering Information* in the catalog of the sensor to connect or the *Sensor I/O Connectors/Sensor Controllers* on your local OMRON website for recommended products.

Optional Products

Product name	Specification	Model
Unit/Terminal Block Coding Pins	Pins for 10 Units (30 terminal block pins and 30 Unit pins)	**NX-AUX02**

Product name	Specification				Model
	No. of terminals	Terminal number indications	Ground terminal mark	Terminal current capacity	
Terminal Block	16	A/B	Not provided	10 A	**NX-TBA162**

Software

Automation Software Sysmac Studio

The Sysmac Studio is the software that provides an integrated environment for setting, programming, debugging and maintenance of machine automation controllers including the NJ/NX-series CPU Units, NY-series Industrial PC, EtherCAT Slave, and the HMI.

For details, refer to your local OMRON website and *Sysmac Studio Catalog* (Cat. No. P138).

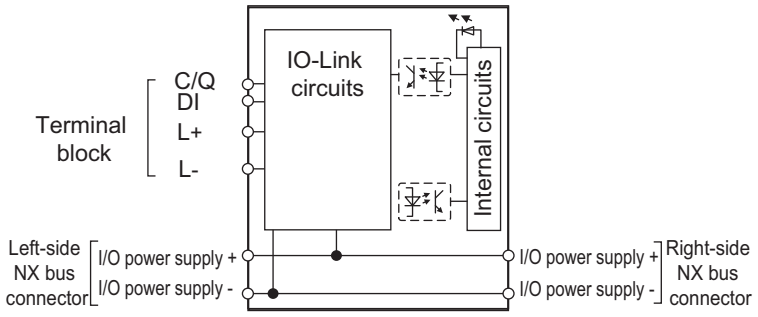
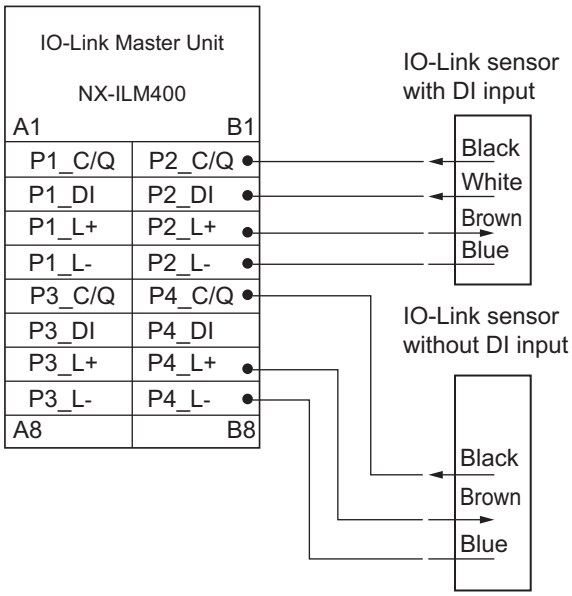
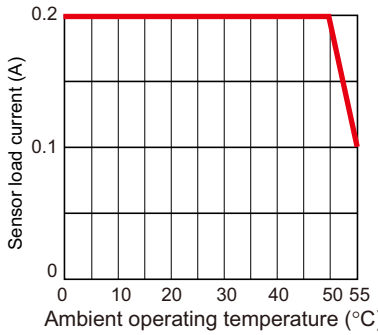
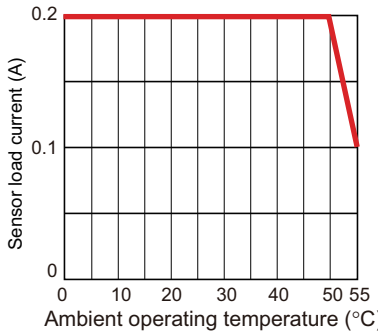
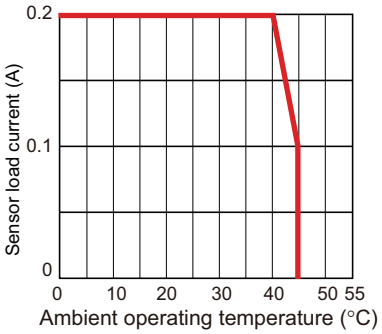
General Specification

Item		Specification
Enclosure		Must be built into a panel.
Grounding methods		Ground to 100 Ω 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	Pollution degree 2 or less: Meets IEC 61010-2-201.
	Noise immunity	Conforms to IEC 61000-4-4, 2 kV (power line).
	Overvoltage category	Category: Meets IEC 61010-2-201.
	EMC immunity level	Zone B
	Vibration resistance	Conforms to IEC 60068-2-6. 5 to 8.4 Hz with amplitude of 3.5 mm, 8.4 to 150 Hz, acceleration of 9.8 m/s^2 100 min each in X, Y, and Z directions (10 sweeps of 10 min each = 100 min total)
	Shock resistance	Conforms to IEC 60068-2-27. 147 m/s^2, 3 times each in X, Y, and Z directions
Applicable standards *		UL 61010-2-201, ANSI/ISA 12.12.01, EU: EN 61131-2, NK, LR, RCM, KC, and IO-Link conformance

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

Unit Specification

Item		Specification
Unit name		IO-Link Master Unit
Model		NX-ILM400
Number of ports		4
Communications specifications	**Communications protocol**	IO-Link protocol
	Baud rate	COM1: 4.8kbps COM2: 38.4kbps COM3: 230.4kbps
	Topology	1:1
	Compliant standards	• IO-Link Interface and System Specification Version1.1.2 • IO-Link Test Specification Version1.1.2
Power supply to devices* in IO-Link Mode or SIO (DI) Mode	**Rated voltage**	24 VDC (20.4 to 28.8 VDC)
	Maximum load current	0.2 A/port
	Short-circuit protection	Provided.
Digital inputs (in SIO (DI) Mode)	**Internal I/O common**	PNP
	Rated voltage	24 VDC (20.4 to 28.8 VDC)
	Input current	5 mA typical (24 VDC)
	ON voltage/ON current	15 VDC min., 2 mA min.
	OFF voltage	5 VDC 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
Digital outputs (in SIO (DO) Mode)	**Internal I/O common**	PNP
	Output type	Push-pull
	Rated voltage	24 VDC (20.4 to 28.8 VDC)
	Maximum load current	0.1 A/port
	Short-circuit protection	Provided.
	Leakage current	0.1 mA max.
	Residual voltage	1.5 V max.
Digital inputs for pin 2 (in IO-Link Mode)	**Internal I/O common**	PNP
	Rated voltage	24 VDC (20.4 to 28.8 VDC)
	Input current	2 mA typical (24 VDC)
	ON voltage/ON current	15 VDC min., 2 mA min.
	OFF voltage	5 VDC 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
Cable specifications	**Cable type**	Unshielded
	Length	20 m max.
	Electrostatic capacity between lines	3 nF max.
	Loop resistance	6 Ω max.
External connection terminals		Screwless Clamping Terminal Block (16 terminals)
I/O refreshing method		Free-Run refreshing
Dimensions		12 × 100 × 71 mm (W×H×D)
Isolation method		Photocoupler isolation
Insulation resistance		20 MΩ min. at 100 VDC (between isolated circuits)
Dielectric strength		510 VAC for 1 min, leakage current: 5 mA max. (between isolated circuits)
I/O power supply method		Supply from the NX bus
NX Unit power consumption		• Connected to a CPU Unit 1.05 W max. • Connected to a Communications Coupler Unit 0.80 W max.
Current consumption from I/O power supply		50 mA
Weight		67 g

Item	Specification
Circuit configuration	
Terminal connection diagram	
Installation orientation and restrictions	• Connected to a CPU Unit The Unit can be in the upright installation orientation. Upright Installation  • Connected to a Communications Coupler Unit The Unit can be installed in any of six possible orientations. There are restrictions on mounting orientations other than upright. Upright Installation  Any Installation Other Than Upright 
Protective functions	L+ terminal short-circuit protection C/Q terminal short-circuit protection

Function Specifications

Function		Description
Communications	Cyclic communications	I/O data (process data) in the IO-Link devices is cyclically exchanged with the IO-Link Master Unit as the IO-Link communications master. At the same time, this data and the status of the IO-Link Master Unit is cyclically exchanged with the controller, with the IO-Link Master Unit operating as a slave of the controller. Cyclic communications can be used to check the amount of detection performance deterioration in devices, and to check changes in usage conditions, such as the amount of incident light for photoelectric sensors, stability detection margins, and excessive proximity for proximity sensors.
	Message communications	The controller can send messages (commands) to the IO-Link Master Unit and receive the response from the IO-Link Master Unit. The IO-Link Master Unit can also function as a gateway to send messages (commands and responses) between the controller and the IO-Link devices. During operation, you can change and adjust device parameters, such as threshold settings, tuning execution, and ON-delay time changes, from a program. Or, during operation, you can check the internal status, such as the operating times of devices.
Communications mode settings		You can select any of the following modes for each port: IO-Link Mode, SIO (DI) Mode, SIO (DO) Mode, and Disable Port This allows you to combine IO-Link communications and digital I/O in a single unit.
Digital inputs for pin 2		In IO-Link Mode, you can perform digital input with pin 2 while performing IO-Link communications.
Automatic baud rate setting for IO-Link communications		The IO-Link Master Unit automatically matches the specific baud rates (COM1, COM2, or COM3) of the IO-Link devices to communicate with the IO-Link devices. Therefore, it is not necessary to set the baud rate of the connected device for each port.
Connected device verification		This function is used to verify the configuration of IO-Link devices that are connected to the IO-Link Master Unit against the registered IO-Link device configuration settings when the power supply is turned ON. The user can enable or disable connected device verification.
IO-Link communications error detection		This function detects I/O cable breaks, disconnections from IO-Link device ports, error-level device events, device configuration verification errors, and IO-Link device malfunctions.
Detection of short-circuits in I/O cables		This function detects short-circuits in I/O cables
Notification of input data validity		The controller can use the Input Data Enabled Flags to determine whether the process input data for IO-Link communications is valid.
Load rejection for controller communications error		This function turns OFF outputs from the IO-Link Master Unit when a communications error occurs in communications with the controller in IO-Link Mode or in an SIO mode. This prevents incorrect output operations when communications error occurs.
IO-Link total communications lost frames		The IO-Link total communications lost frames can be read from the CX-ConfiguratorFDT. You can use this function to determine communications status as affected by I/O cable noise or other factors.
Digital input filter		This function is used to eliminate chattering and noise of the input signal for digital inputs in SIO(DI) Mode or for digital inputs for pin 2 in IO-Link Mode. It prevents data change and stabilizes the input signal even in situations where the input data changes due to chattering or noise and the bit status is unstable.
Digital input collection *		In IO-Link Mode, this function reflects the specified bit data in the input data from the IO-Link device on the digital input data of the IO-Link Master Unit. As a result, the bit data in the input data from the IO-Link device can be aggregated into the digital input data of the IO-Link Master Unit. One bit for each IO-Link port can be aggregated. This function cannot be used in SIO (DI) Mode and SIO (DO) Mode. If you use this function, digital inputs with pin 2 cannot be used.
Backup and restoration of parameter settings in IO-Link devices		This function is used to back up parameter settings in IO-Link devices in the IO-Link Master Unit or restore them to IO-Link devices. This eliminates the need to set parameters again after replacing an IO-Link device.
Event log		This function records events, such as errors and status changes, that occur in the IO-Link Master Unit and the IO-Link devices. This enables partial troubleshooting for NJ/NX-series Controllers and NY-series Industrial PCs.

* This function is supported with the unit version 1.1 or later.

Version Information

Connecting with CPU Units

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

NX Unit		Corresponding versions *		
Model	Unit version	CPU Unit	Sysmac Studio	CX-ConfiguratorFDT
NX-ILM400	Ver.1.1	Ver1.13 or later	Ver1.20 or higher	Ver2.3 or higher
	Ver.1.0	Ver.1.13 or later	Ver.1.17 or higher	Ver.2.3 or higher

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

Connecting with an EtherCAT Coupler Unit

NX Unit		Corresponding version			
Model	Unit version	EtherCAT Coupler Unit	CPU Units or Industrial PCs	Sysmac Studio	CX-ConfiguratorFDT
NX-ILM400	Ver.1.1	Ver.1.0	Ver.1.12	Ver.1.20	Ver.2.2
	Ver.1.0			Ver.1.16	

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

Connecting with an EtherNet/IP Coupler Unit

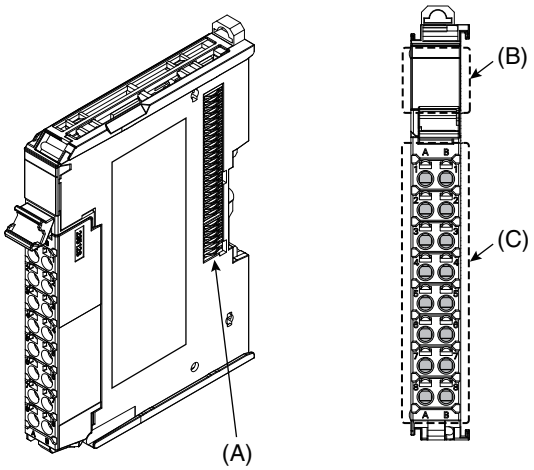
NX Unit		Corresponding version *1			
Model	Unit version	EtherNet/IP Coupler Unit	CPU Units or Industrial PCs	Sysmac Studio	CX-ConfiguratorFDT
NX-ILM400	Ver.1.1	Ver.1.2	Ver.1.14	Ver.1.20	Ver.2.4 *2
	Ver.1.0			Ver.1.19	

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

*1. Refer to the user's manual of the EtherNet/IP Coupler Unit for the unit versions of EtherNet/IP Units corresponding to EtherNet/IP Coupler Units.
*2. The CX-ConfiguratorFDT with version 2.2 or higher can be used if it is connected to the peripheral USB port on the EtherNet/IP Coupler Unit.

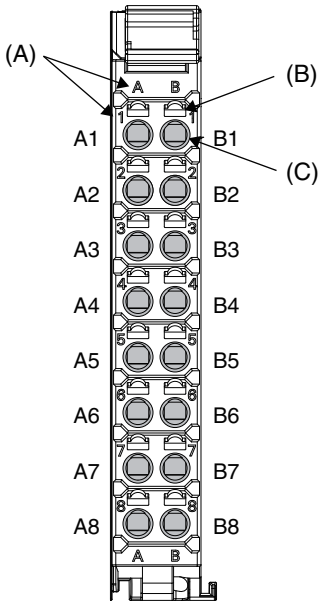
External Interface

NXILM-400



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)	Terminal block	The terminal block is used to connect external devices. The number of terminals depends on the type of Unit.

Terminal Blocks



12 mm width
16-terminal type

Letter	Name	Function
(A)	Terminal number indications	Terminal numbers for which A and B indicate the column, and 1 to 8 indicate the line are displayed. The terminal number is a combination of column and line, i.e. A1 to A8 and B1 to B8. 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-ILM400	NX-TBA162	16	A/B	Not provided	10A

Applicable Wires

Using Ferrules

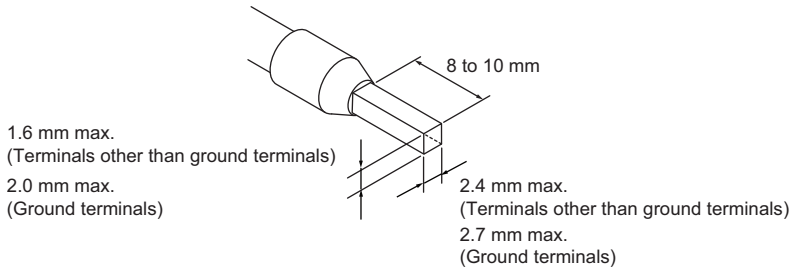
If you use ferrules, attach the twisted wires to them.
Observe the application instructions for your ferrules for the wire stripping length when attaching ferrules.
Always use plated one-pin ferrules. Do not use unplated ferrules or two-pin ferrules.

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

Terminal types	Manufacturer	Ferrule model	Applicable wire (mm^2 (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.) CRIMPFOX 6 (0.25 to 6 mm^2, AWG 24 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)	
		AI1,5-10		
Ground terminals		AI2,5-10	2.0 *1	
Terminals other than ground terminals	Weidmuller	H0.14/12	0.14 (#26)	Weidmueller (The figure in parentheses is the applicable wire size.) PZ6 Roto (0.14 to 6 mm^2, 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		

*1. Some AWG 14 wires exceed 2.0 mm^2 and cannot be used in the screwless clamping terminal block.

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

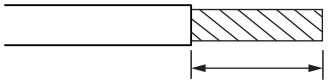


Using Twisted Wires/Solid Wires

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

Terminals		Wire type				Wire size	Conductor length (stripping length)
		Twisted wires		Solid wire			
Classification	Current capacity	Plated	Unplated	Plated	Unplated		
All terminals except ground terminals	2 A max.	Possible	Possible	Possible	Possible	0.08 to 1.5 mm^2 AWG28 to 16	8 to 10 mm
	Greater than 2 A and 4 A or less		Not Possible	Possible *1	Not Possible		
	Greater than 4 A	Possible *1		Not Possible			
Ground terminals	---	Possible	Possible	Possible *2	Possible *2	2.0 mm^2	9 to 10 mm

*1. Secure wires to the screwless clamping terminal block. Refer to the Securing Wires in the USER'S MANUAL for how to secure wires.
*2. With the NX-TB□□□1 Terminal Block, use twisted wires to connect the ground terminal. Do not use a solid wire.



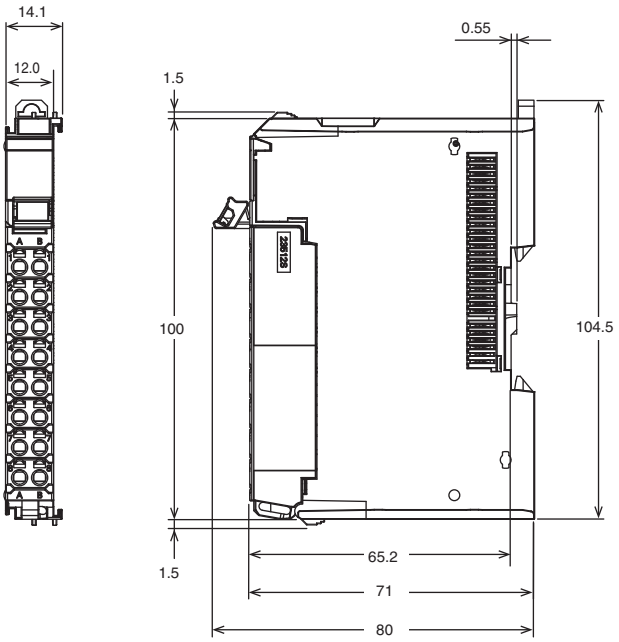
Conductor length (stripping length)

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

Dimensions

(Unit: mm)

NX-ILM400
12 mm Width



Related Manuals

Man.No	Model	Manual	Application	Description
W567	NX-ILM400	IO-Link Master Unit User's Manual	Learning hardware information, wiring, and specifications for the NX-series IO-Link Master Unit and checking a list of NX objects.	Describes detailed part specifications, installation, and wiring and also provides tables of specifications and NX objects for the NX-series IO-Link Master Unit.
W570	NX-ILM400 GX-ILM08C	IO-Link System User's Manual	Learning everything from an introduction to details about IO-Link Systems, including mainly software information common to all IO-Link masters, Support Software operating methods, and troubleshooting.	Provides an overview of IO-Link Systems and explains the system configuration, communications specifications, communications methods, I/O data, parameters, models, Support Software, and troubleshooting. Refer to the following manuals for the individual IO-Link Master Units for hardware information and specifications specific to each Master Unit and a list of the objects for each Master Unit. NX-series IO-Link Master Unit: W568 GX-series IO-Link Master Unit: W488-E1-05 or later
W488	GX-ID □□□□ GX-OD □□□□ GX-OC □□□□ GX-MD □□□□ GX-AD □□□□ GX-DA □□□□ GX-EC □□□□ GX-ILM □□□ XWT-ID □□ XWT-OD □□	EtherCAT Slave Units User's Manual	Learning hardware information on the GX-series IO-Link Master Unit and checking a list of objects (W488-E1-05 or later). Or, learning how to use GX-series EtherCAT Slave Terminals.	Describes part names, functions, installation, and wiring and also provides tables of specifications and objects for the GX-series IO-Link Master Unit (W488-E1-05 or later). Also describes the hardware, setup methods, and functions of the EtherCAT Remote I/O Terminals.
W502	NX701-□□□□ NX502-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□	NJ/NX-series Instructions Reference Manual	Learning detailed specifications on the basic instructions of an NJ/NXseries CPU Unit.	The instructions in the instruction set (IEC 61131-3 specifications) are described. When programming, use this manual together with the *NX-series CPU Unit Hardware User's Manual* (Cat. No. W535) or *NJ-series CPU Unit Hardware User's Manual* (Cat. No. W500) and *NJ/NX-series CPU Unit Software User's Manual* (Cat. No. W501).
W505	NX701-□□□□ NX502-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□	NJ/NX-series CPU Unit Built-in EtherCAT® Port User's Manual	Using the built-in EtherCAT port on an NJ/NX-series CPU Unit.	Information on the built-in EtherCAT port is provided. This manual provides an introduction and provides information on the configuration, features, and setup.
W503	NX701-□□□□ NX502-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□	NJ/NX-series Troubleshooting Manual	Learning about the errors that may be detected in an NJ/NX-series Controller.	Concepts on managing errors that may be detected in an NJ/NX-series Controller and information on individual errors are described.
W525	NX- □□□□□□	NX-series Data Reference Manual	Referencing lists of the data that is required to configure systems with NX-series Units	Lists of the power consumptions, weights, and other NX Unit data that is required to configure systems with NX-series Units are provided.
W519	NX-ECC□□□	NX-series EtherCAT® Coupler Unit User's Manual	Learning how to use an NX-series EtherCAT Coupler Unit and EtherCAT Slave Terminals	The system and configuration of EtherCAT Slave Terminals, which consist of an NX-series EtherCAT Coupler Unit and NX Units, are described along with the hardware, setup, and functions of the EtherCAT Coupler Unit that are required to configure, control, and monitor NX Units through EtherCAT.
W536	NX-EIC202	NX-series EtherNet/IP™ Coupler Unit User's Manual	Learning how to use an NX-series EtherNet/IP Coupler Unit and EtherNet/IP Slave Terminals.	The following items are described: the overall system and configuration methods of an EtherNet/IP Slave Terminal (which consists of an NX-series EtherNet/IP Coupler Unit and NX Units), and information on hardware, setup, and functions to set up, control, and monitor NX Units.
W504	SYSMAC-SE2-□□□□	Sysmac Studio Version 1 Operation Manual	Learning about the operating procedures and functions of the Sysmac Studio.	Describes the operating procedures of the Sysmac Studio.
W578	NX1P2-□□□□	NX-series NX1P2 CPU Unit Hardware User's manual	Learning the basic specifications of the NX-series NX1P2 CPU Units, including introductory information, designing, installation, and maintenance. Mainly hardware information is provided.	An introduction to the entire NX1P system is provided along with the following information on the NX1P2 CPU Unit. • Features and system configuration • Introduction • Part names and functions • General specifications • Installation and wiring • Maintenance and inspection
W562	NY532-□□□□ NY512-□□□□	NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in Ether-CAT® Port User's Manual	Using the built-in EtherCAT port in an NY-series Industrial PC.	Information on the built-in EtherCAT port is provided. This manual provides an introduction and provides information on the configuration, features, and setup.
W560	NY532-□□□□ NY512-□□□□	NY-series Instructions Reference Manual	Learning detailed specifications on the basic instructions of an NY-series Industrial PC.	The instructions in the instruction set (IEC 61131-3 specifications) are described.

Note: Refer to the instructions for the individual Sensors for information on IO-Link Sensors.

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