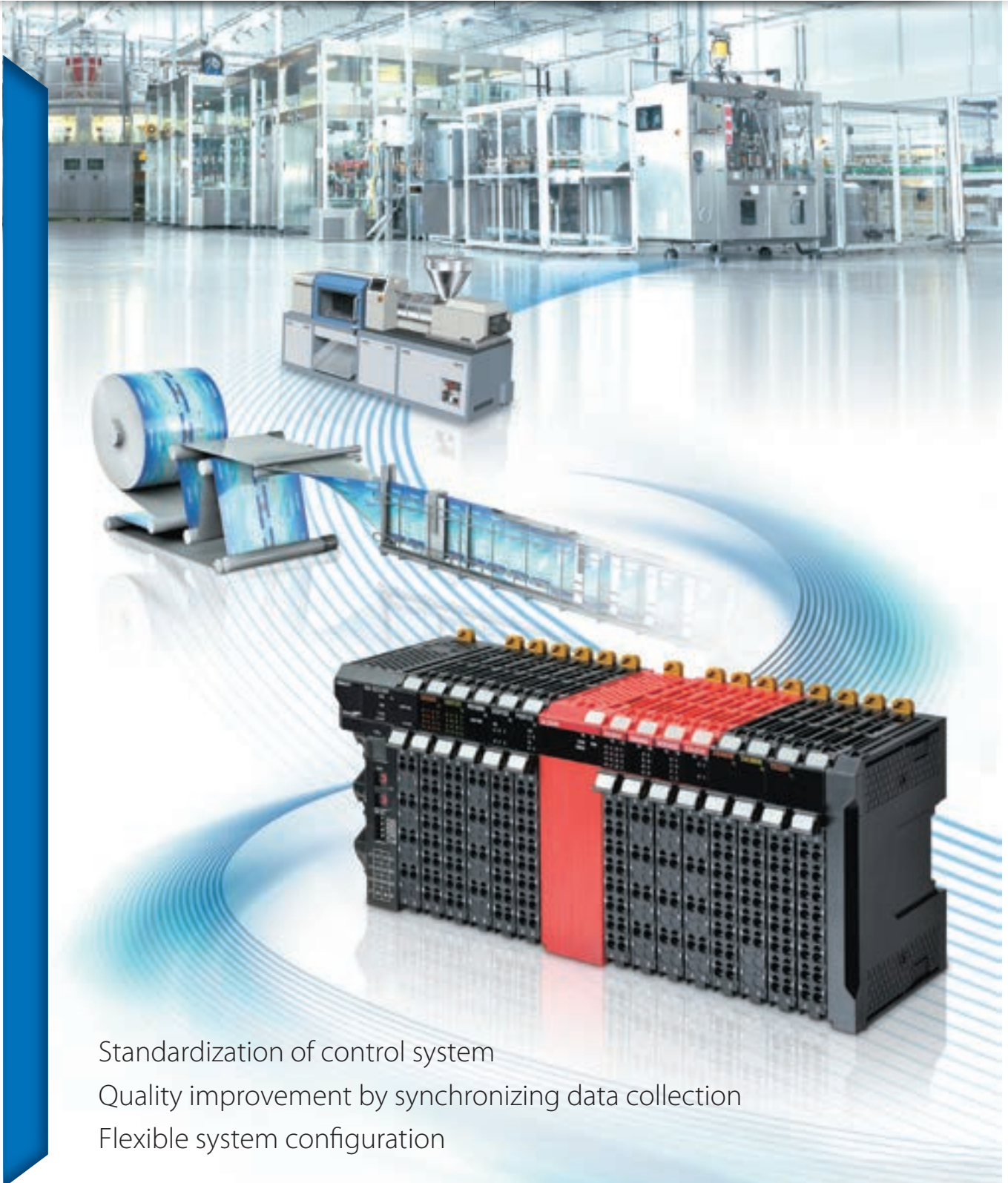# NX-series I/O System

Unique I/O increases application quality and range

OMRON

Standardization of control system

Quality improvement by synchronizing data collection

Flexible system configuration

Unique I/O increases application quality and

The NX I/O connects sensors and actuators on production lines to optimize applications

Application example	IoT	Traceability	Measuring	Weighing
	IO-Link makes communication down to the sensor level visible	Easy and quick set-up for traceability using RFID	PLC systems can measure analog signals at high speeds for inspections	High-accuracy weighing using load cells
Value Design for Panel	**Applicable units:** NX-ECC203 NX-ILM400	**Applicable units:** NX-V680C1 NX-V680C2	**Applicable units:** NX-HAD401	**Applicable units:** NX-RS1201

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

Communications coupler

· EtherCAT®
· EtherNet/IP™

IO-Link master

· Up to 4 IO-Link devices with one master

Serial communications

· RS-232C or RS-422A/485 interface

EtherCAT Slave Unit

· NX Series available as subsystem controller on EtherCAT

RFID

· Direct connection to V680 amplifiers and antennas
· 1 or 2 channels

Digital I/O

· 4, 8, 16, or 32 channels per input unit
· 2, 4, 8, 16, or 32 channels per output unit (8 channels per relay output unit)
· 16 channels per mixed I/O unit
· Standard, high-speed, and time-stamp models
· Units with Push-In Plus/MIL/Fujitsu/M3 Screw connector

Analog I/O

· +/-10V voltage and 4-20 mA current signals
· 2, 4 or 8 channels per input unit
· 2 or 4 channels per output unit
· Standard and high-performance models
· Single-ended input and differential input models

High-speed analog inputs

· 4 channels per input unit
· Differential input
· Sampling as fast as every 5 µs

Load cell inputs

· One load cell with one unit
· Fastest conversion cycle of 125 µs

range

Servo press

High-speed,
high-precision press
fit using load cells

Applicable units:
NX-RS1201
NX-SID800
NX-SOD400

Safety control

Simplify safety control
systems

Applicable units:
NX-SL3300
NX-SID800
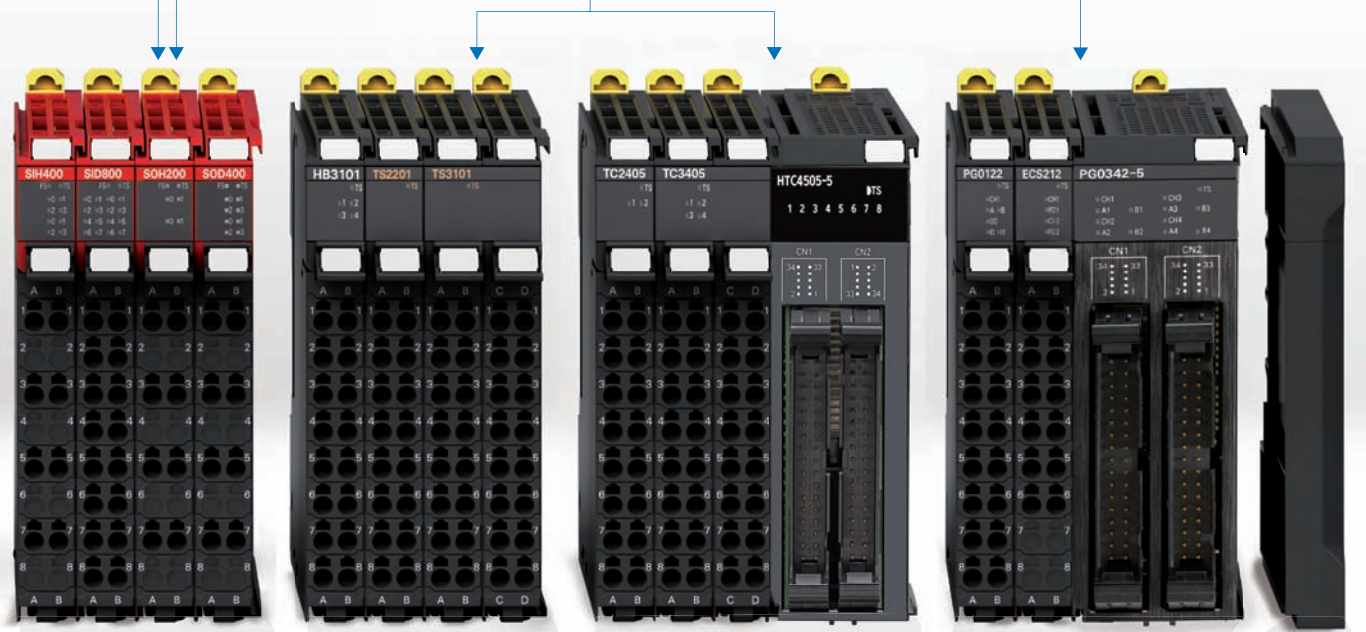NX-SOD400

Temperature control

Simplify temperature control
systems using temperature
sensors

Applicable units:
NX-TS3101
NX-HB3101
NX-TC3405
NX-HTC4505-5

Motion

Simplify position control systems
using pulse-train input type
motors

Applicable units:
NX-ECS212
NX-PG0342-5

Safety I/O
· 4 or 8 safety input points per unit
· 2 or 4 safety output points per unit
· Free allocation of the safety I/O units on the internal high speed bus

Safety CPU
· EN ISO13849-1 (PLe/Safety Category 4), IEC 61508 (SIL3) certified
· Controls up to 128 safety I/O units

Temperature inputs
· Thermocouple or RTD inputs, 2 or 4 per unit
· Conversion time of 10 ms, 60 ms or 250 ms

Heater burnout detection
· 4 CT sensor inputs and 4 trigger outputs to drive SSRs

Temperature control
· 2 or 4 multi-input (thermocouple and resistance thermometer) channels per unit
· Conversion time of 50 ms
· Voltage output (for driving SSR) or linear current output
· Number of CT inputs 1 point per channel

Advanced temperature control   *NEW*
· 4 or 8 universal inputs (thermocouple, platinum resistance thermometer, analog voltage, analog current) channels per unit

Position interface
· Incremental and absolute encoder support
· Pulse output unit (line driver output model)

End cover

Simplicity for advanced control

A fully integrated platform

The NX I/O is used to integrate sequence, motion, analog, vision, and safety control, previously done by PLC and dedicated controllers, and visualization of previously invisible sensor data within the Sysmac automation platform.

Sequence control

Multi-tasking and fully compliant with IEC 61131-3 standard programming and PLCopen® Function Blocks.

No. 0049
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18.01.2022
Datatypes supported: 17 of 26

EtherNet/IP®
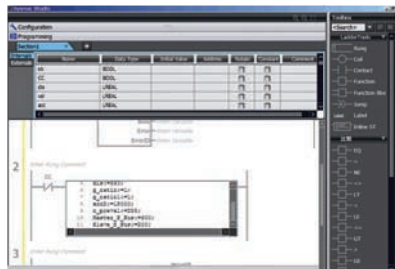
Motion control

PLCopen® Function Blocks for the motion control library are available to implement advanced motion control.

PLCopen®
motion
control

Analog control

The Sysmac Library* and instructions make temperature, weighing, and load control easier.

Weighing Control Library
Servo Press Library

Sysmac Library

* The Sysmac Library is a collection of software functional components that can be used in programs for the NJ/NX/NY Controllers. Sample programs and HMI templates are also available. Download from Omron website and install to use in the Automation Software Sysmac Studio. http://www.ia.omron.com/sysmac_library/

Safety control

Conforms with PLCopen® Function Blocks for Safety.

PLCopen®
safety
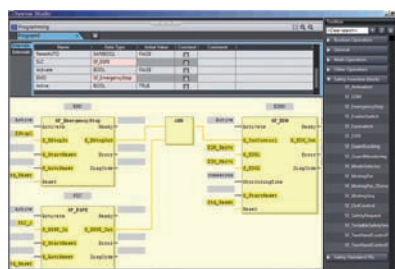
Feature of Sysmac

One Control through
One Software and
One Network
simplifies control system configuration

Visualized sensor data

IO-Link makes communication
down to the sensor level visible

IO-Link master

Interfaces for sequence, motion, safety, and analog control and
communications required for machines
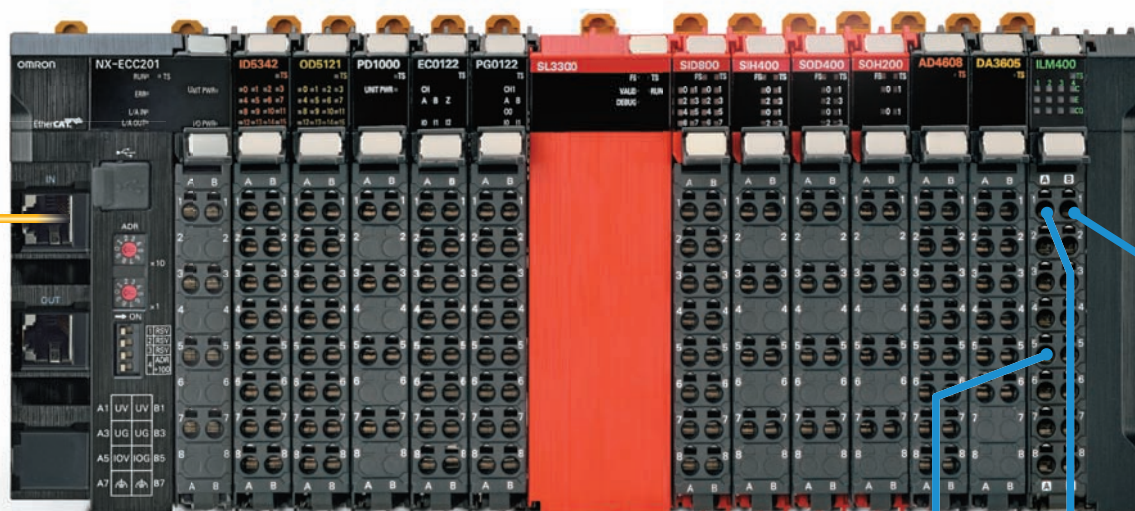
EtherCAT

Connecting directly to most sensors, actuators,
and safety components

IO-Link sensors

IO-Link

Note: Functionality provided by the EtherCAT coupler unit

Synchronized control for high-speed performance

Production data collection synchronized at high speed

Based on an internal high-speed bus running in synchronization with the EtherCAT network and CPU cycle, the NX I/O can be controlled and used for position, analog, and digital data collection with microsecond accuracy and with nanosecond resolution.

Feature

High-speed I/O units accurately synchronized with the CPU cycle*1

· Digital I/O: High-speed and time-stamp models (NsynX)

· Analog I/O: 10 µs conversion time per channel and 1:30000 resolution

· Load cell inputs: 125 µs conversion time per channel and 24-bit resolution

*1.Fastest cycle time: NX7=125 µs, NJ5=500 µs
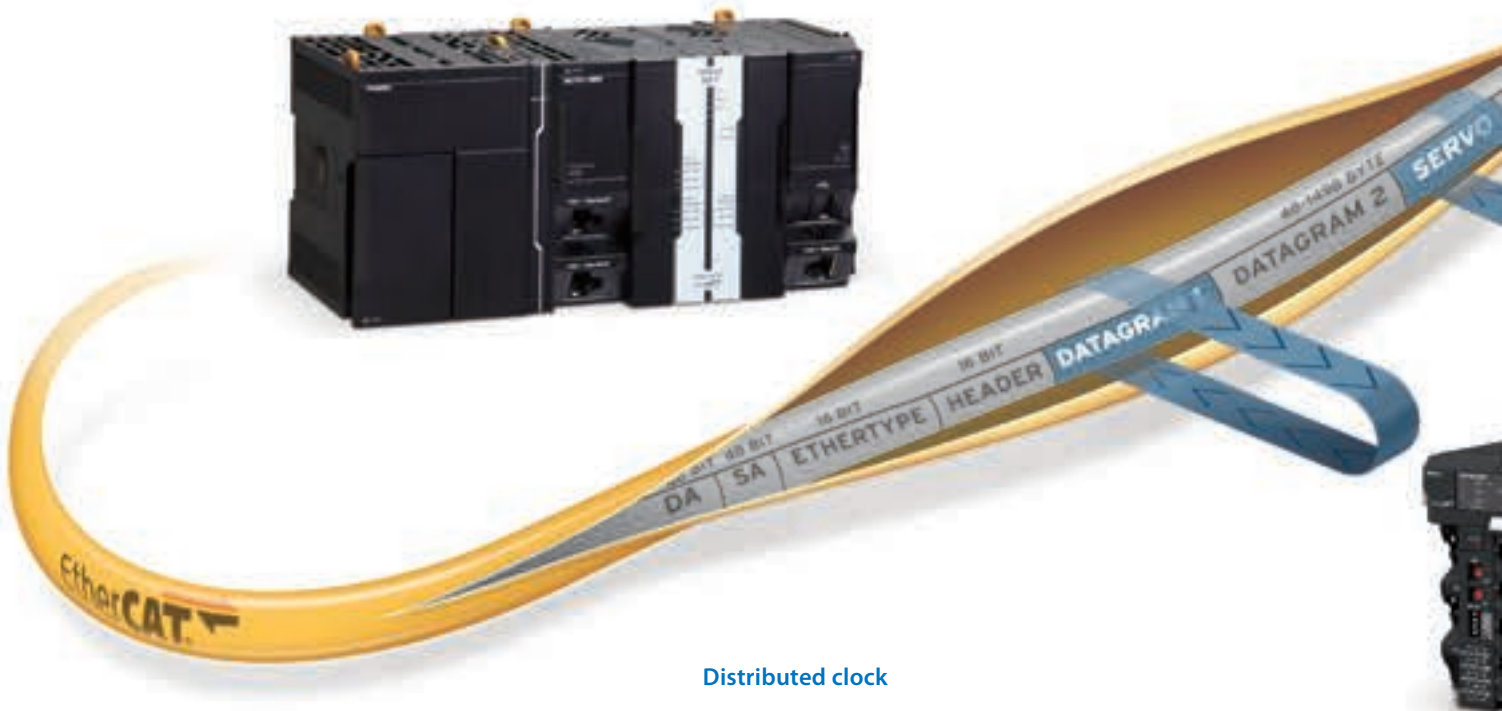
Distributed clock

The EtherCAT node slave measures the time difference between incoming and returning frame - Time-Stamp function. With this Time-Stamp function the master can determine the propagation delay offset to the individual slave accurately. This mechanism ensures accurate synchronization between devices with less than 1 µs jitter.

NsynX technology

- The NsynX technology is provided by the internal high-speed bus synchronized with the EtherCAT network. This technology is designed for machine control and includes:
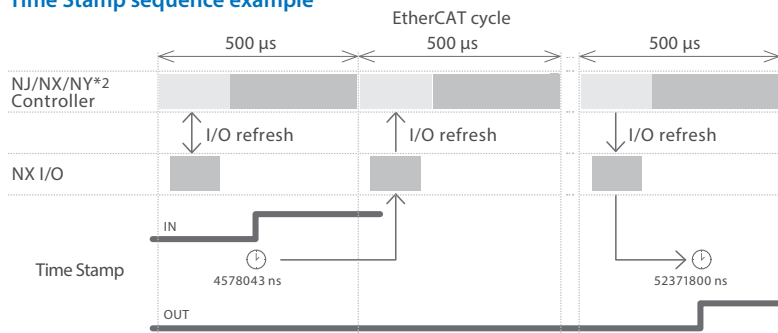- I/O units with distributed clock
- High-speed I/O units synchronized with the EtherCAT cycle
- I/O units with Time-Stamp function

Time Stamp sequence example

EtherCAT cycle

| 500 μs | 500 μs | 500 μs |

NJ/NX/NY*2 Controller

I/O refresh

NX I/O

IN

Time Stamp

4578043 ns

52371800 ns

OUT

Accurate control of input events and perfect control of output with nanosecond resolution

*2. Industrial PC Platform NY-series IPC Machine Controller only.

Slave clock

DATA EXCHANGE

Slave clock

Master clock

Internal high-speed bus based on NsynX technology

Position data
Torque data

Synchronous data collection

Synchronized with CPU cycle
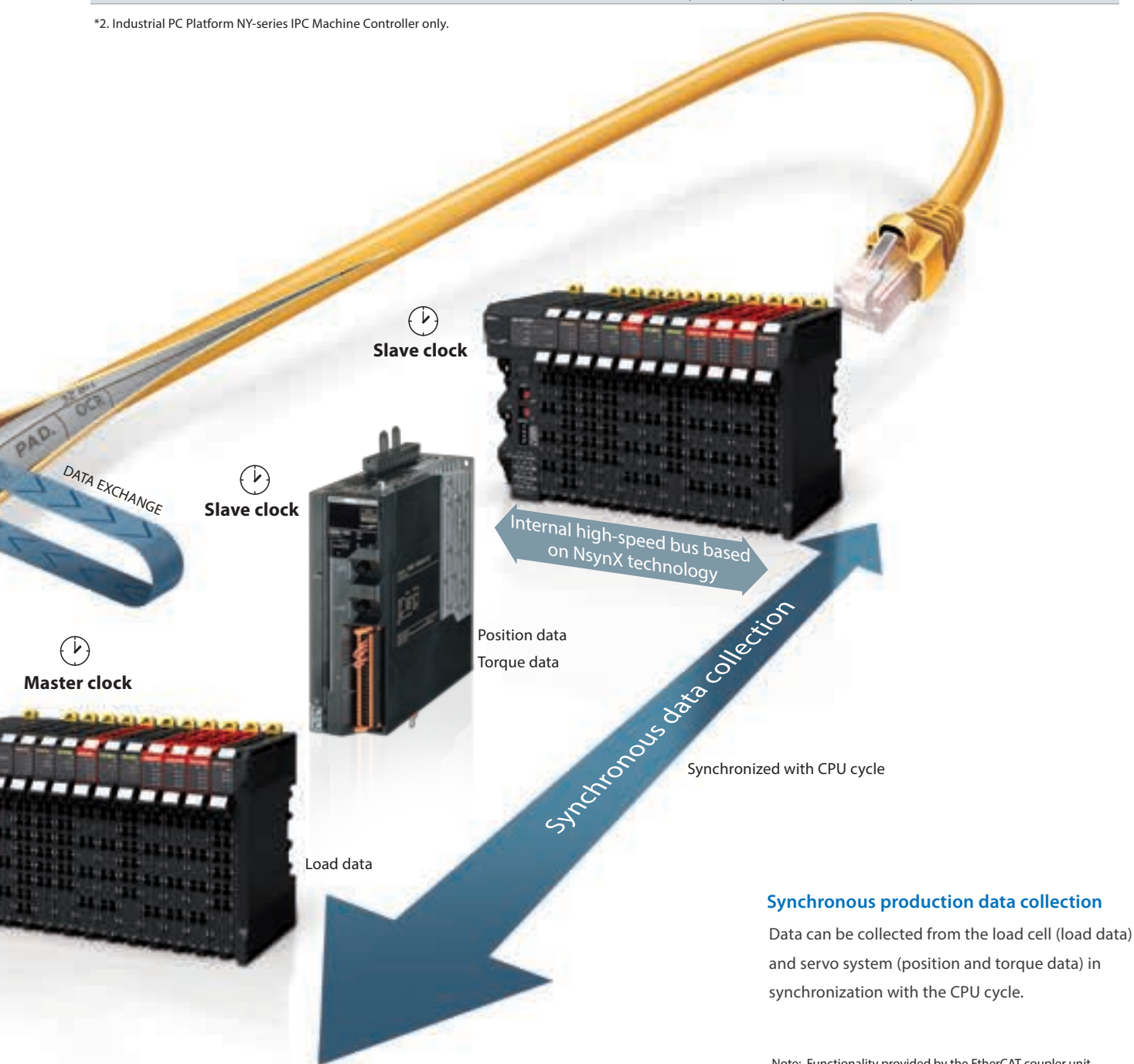
Load data

Synchronous production data collection

Data can be collected from the load cell (load data) and servo system (position and torque data) in synchronization with the CPU cycle.

Note: Functionality provided by the EtherCAT coupler unit

Simplify system configurations

The choice is yours

The modern control system demands increasing levels of flexibility.
The NX I/O enables connection with various controllers through the global standard network, which expands system configuration possibilities.
Modular remote I/O systems offer flexibility in I/O configuration and a wide choice of signal types and performance levels so that every I/O station can be assembled with just the right combination without changing the control architecture.

EtherCAT®

EtherCAT specification is governed by the EtherCAT Technology Group (ETG). EtherCAT is suitable for motion control and other applications that require high speed and high precision because of no need of handshaking and high bandwidth utilization.

NJ/NX/NY Series or EtherCAT master from other vendors

EtherCAT®

EtherNet/IP®

EtherNet/IP specification is governed by the Open DeviceNet Vendors Association (ODVA). Based on standardized Ethernet protocols (TCP/IP, UDP/IP), EtherNet/IP devices can be mixed with standard Ethernet devices.

CJ Series or PLC from other vendors

EtherNet/IP®

Feature

Wide choice: More than 100 types of I/O unit, from 2 to 32 points in one unit

Types of NX I/O Units

· Digital Input/Output Units
· Analog Input/Output Units
· Temperature Input Units
· Encoder/Positioning Units
· System Units
· Serial communication Units

Quick connections

· Detachable screwless terminal block for easy commissioning and maintenance
· Push-In Plus connections speed up installation
· MIL/Fujitsu connectors for high-density I/O

Safety integrated

The NX Safety CPU Unit and Safety I/O Units can be mixed with standard I/O units to create a complete modular safety control system

Note: 1. Communications coupler units vary depending on the connected network.
2. Connectable units vary depending on the communications coupler unit.
3. The number of connectable nodes varies depending on the master.

Downsize machines and control panels

Reduce wiring time and save space

Push-In Plus connections reduce the work and time required for wiring. Modular design saves space. Also designed for installation in any orientation, the NX I/O can be freely allocated in machines.

Up to 63 units per communication coupler

Feature

Compact design: Up to 16 digital signals in 12 mm width

12mm

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

Greatly reduce wiring work with Push-In Plus terminal blocks

Push-In Plus terminal blocks make wiring work easy - just insert wires.

Wiring time

Approx.
60%
reduction!*1

Conventional screw terminal block

Push-In Plus terminal block
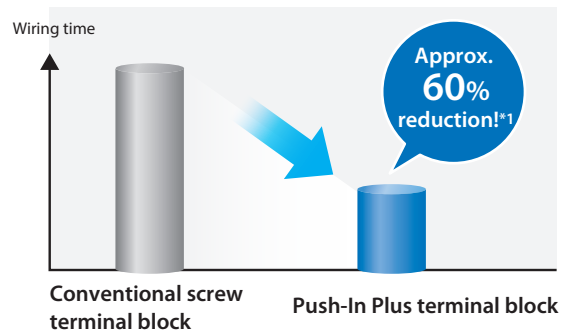
*1. Information for Push-In Plus and screw terminal blocks is based on Omron's actual measurement data.

Save space in control panels

V and G terminals are provided for each input signal (NX-PC0030). No relay terminal block is required, which saves space in control panels.

I/O Power Supply Connection Unit NX-PC0030		DC input unit or Transistor output unit		3-wire type
● IOV	IOV	● 0	1	
● IOG	IOG	2	3	
IOV	IOV	4	5	
IOG	IOG	6	7	
IOV	IOV	8	9	
IOG	IOG	10	11	
IOV	IOV	12	13	
IOG	IOG	14	15	

Reduced nodes and wiring work

Saved space
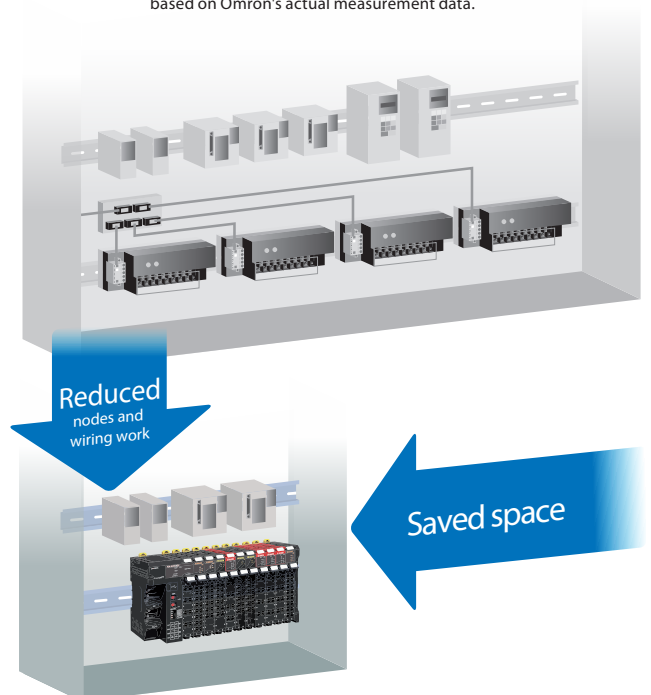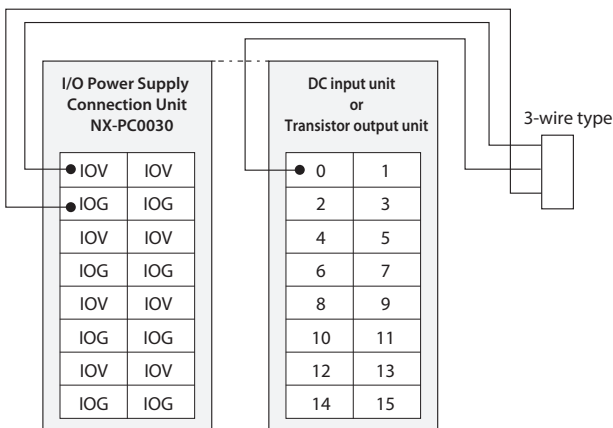
Flexible connectivity expands system configuration possibilities

One I/O system for various controllers

While different machines may require different levels of controller performance, the NX I/O is the only remote I/O system you will need. This will unify wiring and installation techniques, and simplify spare parts stock.

Automation Software
Sysmac Studio

NX-series
NX1 CPU
Unit

NJ/NX/NY/
CK3E/CK3M Series
or
EtherCAT
master

NX series NX1
Machine Automation Controller

NJ/NX series
Machine Automation Controller

CK3M
Programmable Multi-Axis
Controller*1

CK3E
Programmable Multi-Axis
Controller*1

Industrial PC Platform
NY IPC Machine Controller

EtherCAT®
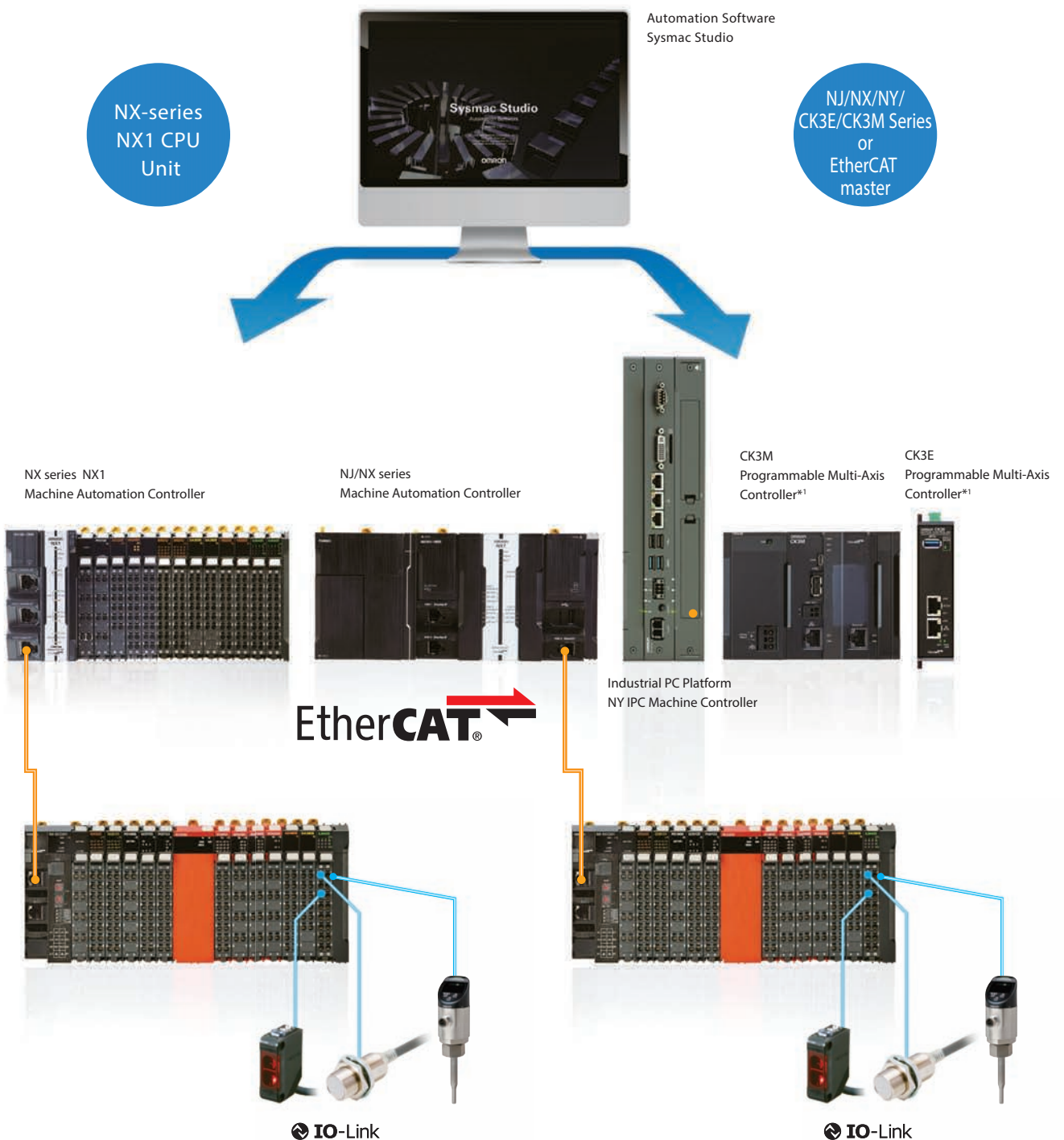
IO-Link

IO-Link

*1. Dedicated software is required to use the CK3M and CK3E Series.

Features

- Multivendor compatibility
  The NX I/O can be connected with PLC from other vendors
  as well as Omron PLC

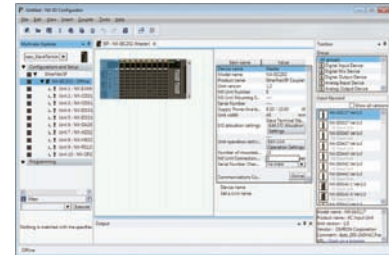- Start a small-scale IO-Link
  IO-Link and other unique I/O systems can be easily integrated into
  existing machine configurations

Easy configuration with NX-IO Configurator

The NX-IO Configurator is software to set up and maintain EtherNet/IP coupler units and NX I/O Units on an EtherNet/IP coupler

FA Integrated Tool Package CX-One

CJ Series
or
PLC from
other
vendors

CX-One

CJ Programmable Controller*2

PLC from other vendors*3

EtherNet/IP

W4S1
Industrial Switching Hub

IO-Link

IO-Link

*2. Dedicated software is required to use the CJ PLC or other vendor's PLC with the NX Safety Units.
*3. Connect the NX I/O system to a PLC from another vendor via a switching hub and set up with the CX-One.

Various software components help reduce programming time

The Sysmac Library is a collection of software functional components that can be used in programs for the NJ/NX Machine Automation Controllers or Industrial PC Platform NY IPC Machine Controllers.

Packed with Omron's rich technical know-how on control programs, the Sysmac Library makes advanced control easy.

Easy-to-obtain Library

The Sysmac Library is freely available to download from Omron website.

These software components specially designed for the NJ/NX/NY Controller can be used in your programs without the need for additional work.

Omron website

FB

Download

Install the downloaded Function Blocks to the Sysmac Studio

Sysmac Studio
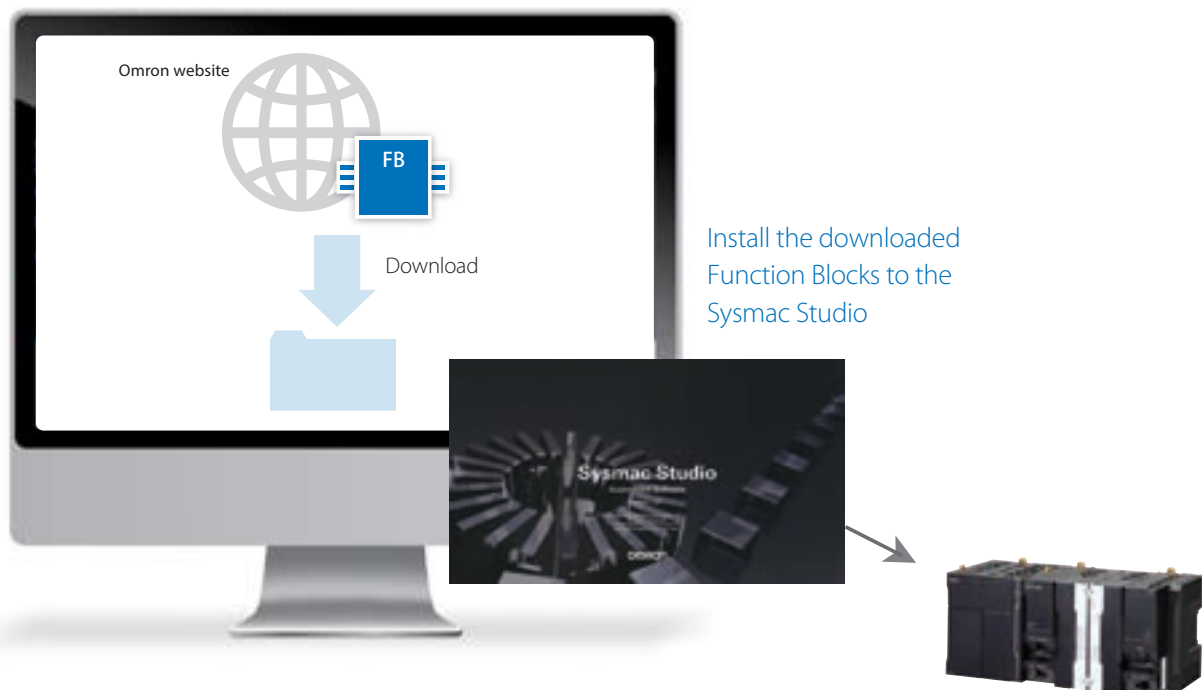
Download from

http://www.ia.omron.com/sysmac_library/

Note: Ask your Omron representative to obtain Libraries that are not provided on the above website.

Application example (1) Load cells

Press fit using servo press

Improve both speed and quality of the press-fit process

Load data is collected in synchronization with the CPU cycle for high-speed measurement, high-speed servo press control, and precision improvement.

Previous issues

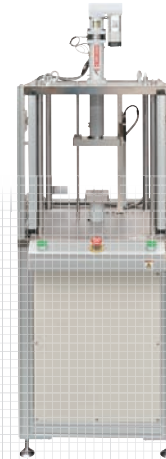· Wait time must be considered to operate the dedicated press controller together with the main PLC.

· Load, position, and torque data collected at the same time cannot be checked from the host device.

Solution using Sysmac

· One CPU system capable of switching between position, velocity, and torque control without stopping

· Fastest control cycle of 125 µs and servo press function using software for required control

· High-speed measurement and control by collecting load data synchronized with servo data (position and torque data).

FROM Conventional system (Ex. multi-axis)

Software for PLC
HMI
Inverter
I/O
Safety laser scanner
Load judgment device
Safety light curtain
Press controller
Software for press controller
Servo press cylinder
Software for load judgment device
Load cell

TO NJ/NX/NY Controller + NX I/O + 1S Servo integrate control elements

Sysmac Studio
NJ/NX/NY Controller
EtherNet/IP
Sysmac Library
NA HMI
EtherCAT One network
NX I/O
1S AC Servo System
Safety laser scanner
Safety light curtain
Servo press cylinder
Load cell
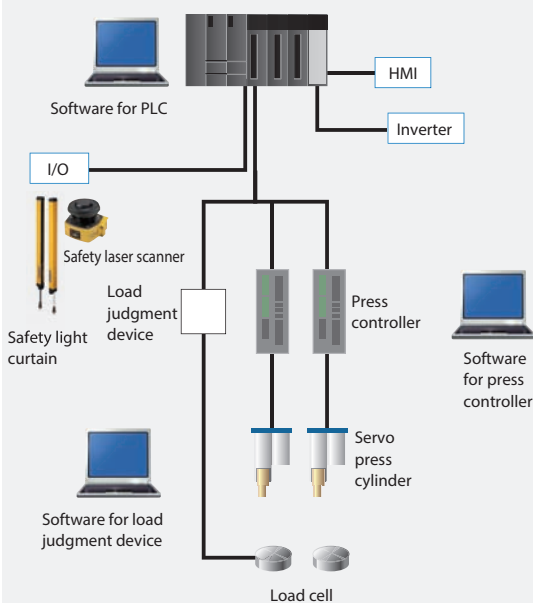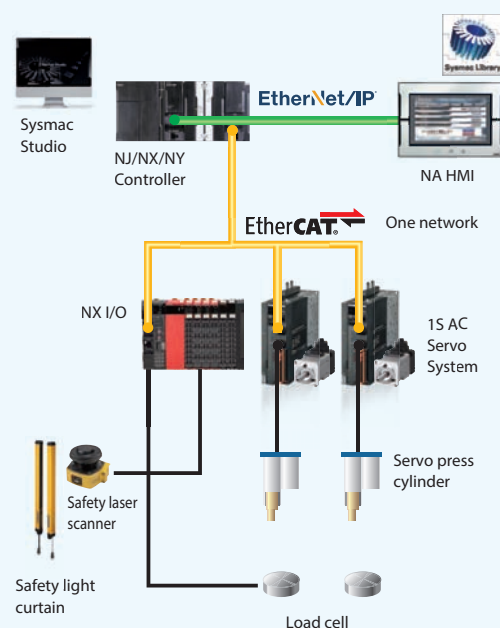
Application example (2) Temperature control
Packaging machines and molding machines
(Temperature/motion/weighing)

Reduce material and design costs to implement temperature control

TCO can be reduced by eliminating the need for the dedicated temperature
controller and reducing inventory control work and communications programming work.

Previous issues

- Communications networks are selected for each device, and dedicated software for each component is used.

- Ladder program and memory configuration for communications are required.

Solution using Sysmac

- Dedicated controllers, dedicated software, separate networks, and separate programs are no longer required

FROM Conventional system

Software for temperature controller

PT

Temperature controller

Serial

Software for PLC

PLC

Weighing controller

Serial

Servo system

I/O

Software for safety controller

Safety controller

TO NJ/NX/NY Controller + NX I/O + 1S Servo integrate control elements (temperature/motion/weighing/safety control)

Sysmac Studio

EtherNet/IP

NJ/NX/NY Controller

NA HMI

NX I/O

EtherCAT

1S AC Servo System

Application example (3) Photoelectric sensors and proximity sensors
Improving system commissioning and changeover efficiency

Reduce work by individual identification

IO-Link sensors allow you to check individual sensor identifications in batches without going to the site, which results in a significant reduction of commissioning time.

Previous issues

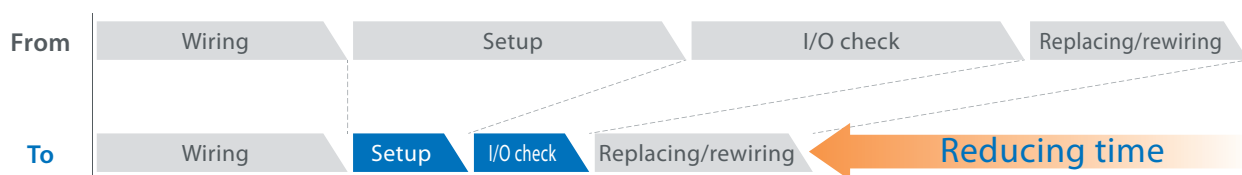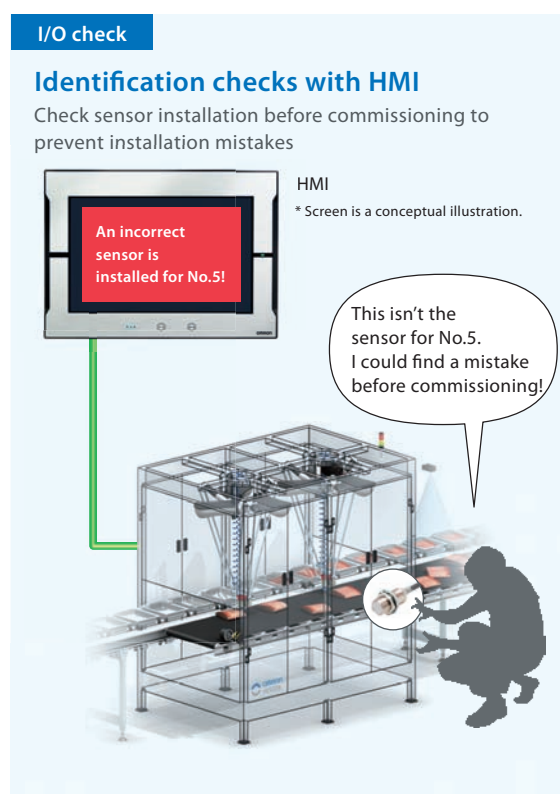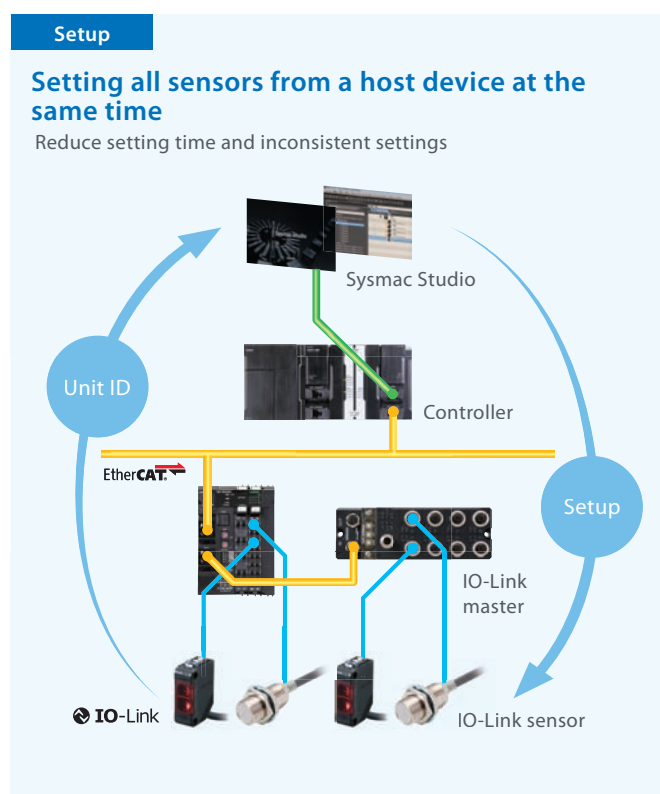· During system commissioning or changeover, operators have to perform the I/O check for each of the thousands of sensors installed on the line, and it took an enormous amount of time.

· Incorrect sensor installation creates unnecessary extra work.

From	Wiring	Setup	I/O check	Replacing/rewiring

To	Wiring	Setup	I/O check	Replacing/rewiring	Reducing time

* The graph above is a conceptual illustration.

Setup

Setting all sensors from a host device at the same time
Reduce setting time and inconsistent settings

Sysmac Studio

Unit ID

EtherCAT.

Controller

Setup

IO-Link master

IO-Link

IO-Link sensor

I/O check

Identification checks with HMI
Check sensor installation before commissioning to prevent installation mistakes

HMI
* Screen is a conceptual illustration.

An incorrect sensor is installed for No.5!

This isn't the sensor for No.5. I could find a mistake before commissioning!

Application example (4) Traceability using RFID
Improving system commissioning efficiency

Reduce time required for system design and wiring

Distributed installation of RFID units simplifies system design and wiring,
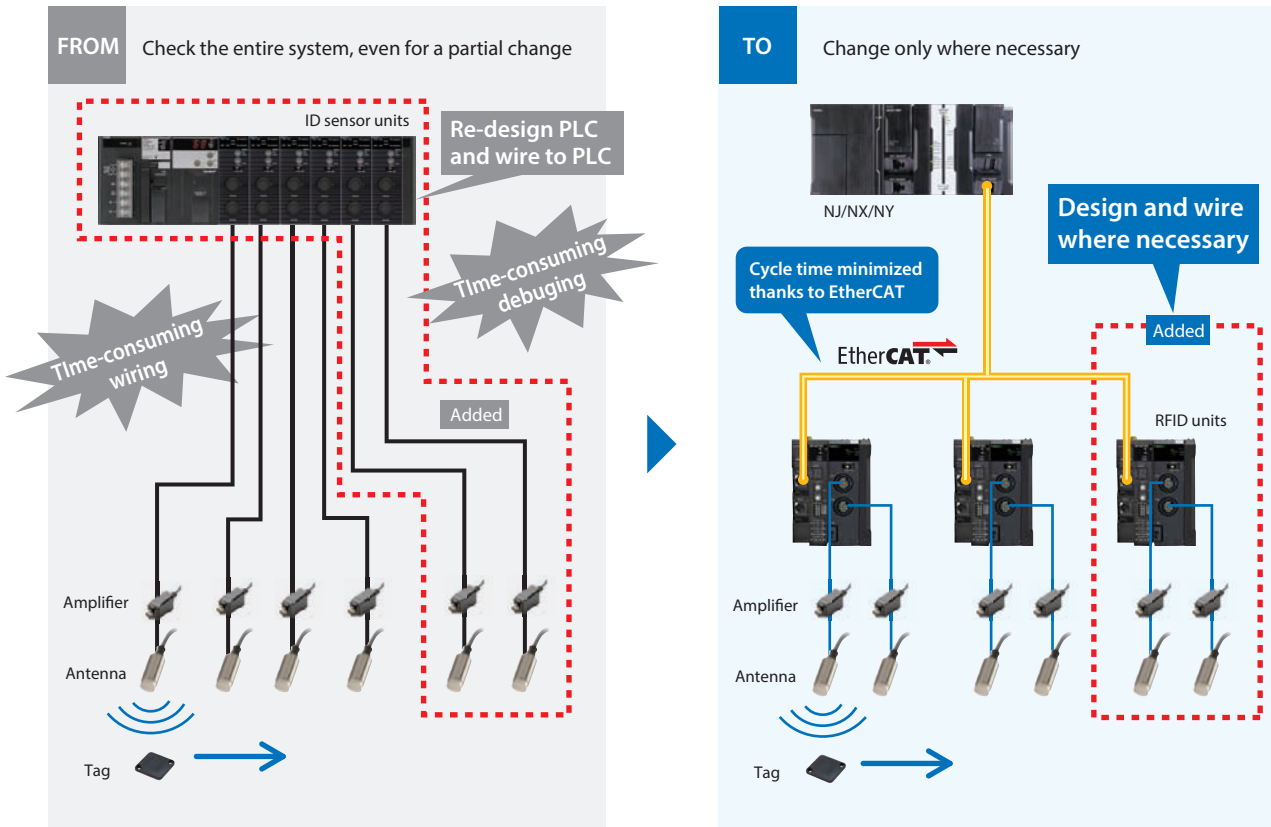even for high-mix production.

Previous issues

· When the system configuration is changed, it requires considerable time and
effort to re-design and debug the entire program because ID sensor units
cannot be distributed.
· It is difficult and time-consuming to wire an additional antenna to the ID
sensor unit that is located away from it.

Solution using Sysmac

· The RFID units can be installed near each antenna, allowing addition or change of programs only where necessary and reducing
wiring time

FROM   Check the entire system, even for a partial change

ID sensor units

**Re-design PLC
and wire to PLC**

**TIme-consuming
debuging**

**TIme-consuming
wiring**

Added

Amplifier

Antenna

Tag

TO   Change only where necessary

NJ/NX/NY

**Cycle time minimized
thanks to EtherCAT**

EtherCAT

**Design and wire
where necessary**

Added

RFID units

Amplifier

Antenna

Tag

EtherNet/IP connection is also available.

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.

Communications Coupler Units
EtherCAT Coupler Units

Product name	Communications cycle in DC Mode	Current consumption	Maximum I/O power supply current	Model
EtherCAT Coupler Unit *1	250 to 4000 µs *2	1.45 W or lower	4 A	NX-ECC201
	250 to 4000 µs *2		10 A	NX-ECC202
	125 to 10000 µs *2	1.25 W or lower		NX-ECC203

*1. One End Cover NX-END01 is provided with the EtherCAT Coupler Unit.
*2. This depends on the specifications of the EtherCAT master. For example, the values are as follows when the EtherCAT Coupler Unit is connected to the built-in EtherCAT port on an NJ5-series CPU Unit: 500 µs, 1,000 µs, 2,000 µs, and 4,000 µs. For the specifications of the built-in EtherCAT port, refer to the user's manual for the built-in EtherCAT port on the connected CPU Unit or the Industrial PC.
This depends on the Unit configuration.

EtherNet/IP Coupler Unit

Product name	Current consumption	Maximum I/O power supply current	Model
EtherNet/IP Coupler Unit *	1.60 W or lower	10 A	NX-EIC202

* One End Cover NX-END01 is provided with the EtherCAT Coupler Unit.

EtherCAT Slave Unit

Product name	Specifications		Model
	Send/receive PDO data sizes *	Refreshing method	
EtherCAT Slave Unit	• Data input by the EtherCAT master (TxPDOs) 1,204 bytes max. • Data output by the EtherCAT master (RxPDOs) 1,200 bytes max.	Free-Run Mode	NX-ECT101

* The following shows the contents of the TxPDO data.
  • I/O data set from the CPU Unit to the EtherCAT master: 1,200 bytes or less
  • Status to notify the EtherCAT master: 4 bytes or less

Digital Input Units

Product Name	Specifications					Model
	Number of points	Internal I/O common	Rated input voltage	I/O refreshing method	ON/OFF response time	
DC Input Unit (Screwless Clamping Terminal Block, 12 mm Width/ 24 mm Width)	4 points	NPN	12 to 24 VDC	Switching Synchronous I/O refreshing and Free-Run refreshing	20 μs max./400 μs max.	NX-ID3317
			24 VDC		100 ns max./100 ns max.	NX-ID3343
				Input refreshing with input changed time only ✻		NX-ID3344
		PNP	12 to 24 VDC	Switching Synchronous I/O refreshing and Free-Run refreshing	20 μs max./400 μs max.	NX-ID3417
			24 VDC		100 ns max./100 ns max.	NX-ID3443
				Input refreshing with input changed time only ✻		NX-ID3444
	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
	16 points	NPN				NX-ID5342
		PNP				NX-ID5442
	32 points	NPN				NX-ID6342 _NEW_
		PNP				NX-ID6442 _NEW_
DC Input Unit (M3 Screw Terminal Block, 30 mm Width)	16 points	For both NPN/PNP	24 VDC	Switching Synchronous I/O refreshing and Free-Run refreshing	20 μs max./400 μs max.	NX-ID5142-1
DC Input Unit (MIL Connector, 30 mm Width)	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
	32 points					NX-ID6142-5
DC Input Unit (Fujitsu Connector, 30 mm Width)	32 points	For both NPN/PNP	24 VDC	Switching Synchronous I/O refreshing and Free-Run refreshing	20 μs max./400 μs max.	NX-ID6142-6
AC Input Unit (Screwless Clamping Terminal Block, 12 mm Width)	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-IA3117

✻ To use input refreshing with input changed time, the EtherCAT Coupler Unit with unit version 1.1 or later and the Sysmac Studio version 1.07 or higher are required.

Digital Output Units

Product Name	Specifications						Model
	Number of points	Internal I/O common	Maximum value of load current	Rated voltage	I/O refreshing method	ON/OFF response time	
Transistor Output Unit **(Screwless Clamping Terminal Block, 12 mm Width/ 24 mm Width)**	2 points	NPN	0.5 A/point, 1 A/ Unit	24 VDC	Output refreshing with specified time stamp only ✳	300 ns max./ 300 ns max.	**NX-OD2154**
		PNP					**NX-OD2258**
	4 points	NPN	0.5 A/point, 2 A/ Unit	12 to 24 VDC	Switching Synchronous I/O refreshing and Free- Run refreshing	0.1 ms max./ 0.8 ms max.	**NX-OD3121**
				24 VDC		300 ns max./ 300 ns max.	**NX-OD3153**
		PNP				0.5 ms max./ 1.0 ms max.	**NX-OD3256**
						300 ns max./ 300 ns max.	**NX-OD3257**
			2 A/point, 8 A/Unit			0.5 ms max./ 1.0 ms max.	**NX-OD3268**
	8 points	NPN	0.5 A/point, 4 A/ Unit	12 to 24 VDC		0.1 ms max./ 0.8 ms max.	**NX-OD4121**
		PNP		24 VDC		0.5 ms max./ 1.0 ms max.	**NX-OD4256**
	16 points	NPN		12 to 24 VDC		0.1 ms max./ 0.8 ms max.	**NX-OD5121**
		PNP		24 VDC		0.5 ms max./ 1.0 ms max.	**NX-OD5256**
	32 points	NPN	0.5 A/point, 4 A/ terminal block, 8 A/Unit	12 to 24 VDC		0.1 ms max./ 0.8 ms max.	**NX-OD6121** _NEW_
		PNP		24 VDC		0.5 ms max./ 1.0 ms max.	**NX-OD6256** _NEW_
Transistor Output Unit **(M3 Screw Terminal Block, 30 mm Width)**	16 points	NPN	0.5 A/point, 5 A/ Unit	12 to 24 VDC	Switching Synchronous I/O refreshing and Free- Run refreshing	0.1 ms max./ 0.8 ms max.	**NX-OD5121-1**
		PNP		24 VDC		0.5 ms max./ 1.0 ms max.	**NX-OD5256-1**
Transistor Output Unit **(MIL Connector, 30 mm Width)**	16 points	NPN	0.5 A/point, 2 A/ Unit	12 to 24 VDC	Switching Synchronous I/O refreshing and Free- Run refreshing	0.1 ms max./ 0.8 ms max.	**NX-OD5121-5**
		PNP		24 VDC		0.5 ms max./ 1.0 ms max.	**NX-OD5256-5**
	32 points	NPN	0.5 A/point, 2 A/ common, 4 A/Unit	12 to 24 VDC		0.1 ms max./ 0.8 ms max.	**NX-OD6121-5**
		PNP		24 VDC		0.5 ms max./ 1.0 ms max.	**NX-OD6256-5**
Transistor Output Unit **(Fujitsu Connector, 30 mm Width)**	32 points	NPN	0.5 A/point, 2 A/ common, 4 A/Unit	12 to 24 VDC	Switching Synchronous I/O refreshing and Free- Run refreshing	0.1 ms max./ 0.8 ms max.	**NX-OD6121-6**
Relay Output Unit **(Screwless Clamping Terminal Block, 12 mm Width/ 24 mm Width)**	2 points	Relay type: N.O.	250 VAC/2 A (cosφ=1), 250 VAC/ 2 A (cosφ=0.4), 24 VDC/2 A, 4 A/ Unit		Free-Run refreshing	15 ms max./ 15 ms max.	**NX-OC2633**
		Relay type: N.O.+N.C.					**NX-OC2733**
	8 points	Relay type: N.O.	250 VAC/2 A (cosφ=1), 250 VAC/ 2 A (cosφ=0.4), 24 VDC/2 A, 8 A/ Unit		Free-Run refreshing	15 ms max./ 15 ms max.	**NX-OC4633**

✳To use output refreshing with specified time stamp, the EtherCAT Coupler Unit with unit version 1.1 or later and the Sysmac Studio version 1.07 or higher are required.

Digital Mixed I/O Units

Product Name	Specifications					Model
	Number of points	**Internal I/O common**	**Maximum value of load current**	**I/O refreshing method**	**ON/OFF response time**	
DC Input/Transistor Output Unit **(MIL Connector, 30 mm Width)**	Outputs: 16 points Inputs: 16 points	Outputs: NPN Inputs: For both NPN/PNP	Outputs: 12 to 24 VDC Inputs: 24 VDC	Switching Synchronous I/O refreshing and Free-Run refreshing	Outputs: 0.1 ms max./ 0.8 ms max. Inputs: 20 µs max./ 400 µs max.	**NX-MD6121-5**
		Outputs: PNP Inputs: For both NPN/PNP	Outputs: 24 VDC Inputs: 24 VDC		Outputs: 0.5 ms max./ 1.0 ms max. Inputs: 20 µs max./ 400 µs max.	**NX-MD6256-5**
DC Input/Transistor Output Unit **(Fujitsu Connector, 30 mm Width)**	Outputs: 16 points Inputs: 16 points	Outputs: NPN Inputs: For both NPN/PNP	Outputs: 12 to 24 VDC Inputs: 24 VDC	Switching Synchronous I/O refreshing and Free-Run refreshing	Outputs: 0.1 ms max./ 0.8 ms max. Inputs: 20 µs max./ 400 µs max.	**NX-MD6121-6**

Connection Patterns for Connector-Terminal Block Conversion Units

Pattern	Configuration	Number of connectors	Branching
A	Connecting Cable / Connector-Terminal Block Conversion Unit / 20 or 40 terminals	1	None
B	Connecting Cable / Connector-Terminal Block Conversion Unit / 20 terminals / 20 terminals	2	None

Connections to Connector-Terminal Block Conversion Units

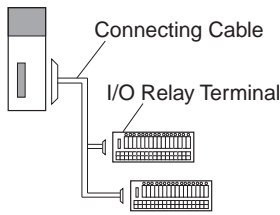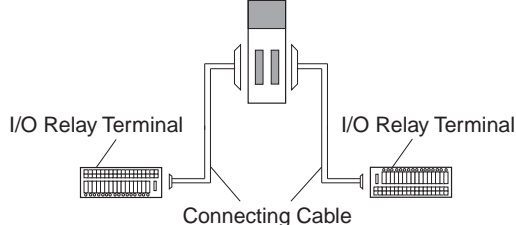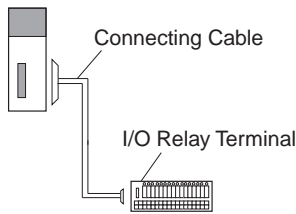| Unit	I/O capacity	Number of connectors	Polarity	Connection pattern	Connecting Cable *	Connector-Terminal Block Conversion Unit	Wiring method	Common terminal
NX-ID5142-5	16 inputs	1 MIL connector	NPN/ PNP	A	XW2Z-□□□X	XW2K-20G-T	Push-In Plus	No
					XW2Z-□□□X-R	XW2K-20G-O16A-IN	Push-In Plus	Yes
					XW2Z-□□□X	XW2D-20G6	Phillips screw	No
					XW2Z-□□□X	XW2R-E20GD-T	Slotted screw (rise up)	No
NX-ID6142-5	32 inputs	1 MIL connector	NPN/ PNP	A	XW2Z-□□□K	XW2K-40G-O32C	Push-In Plus	No
				A	XW2Z-□□□K	XW2K-40G-O32C-IN	Push-In Plus	Yes
				A	XW2Z-□□□K	XW2R-J34GD-C2	Phillips screw	No
				A	XW2Z-□□□K	XW2D-40G6	Phillips screw	No
				A	XW2Z-□□□K	XW2R-E34GD-C2	Slotted screw (rise up)	No
NX-ID6142-6	32 inputs	1 Fujitsu connector	NPN/ PNP	A	XW2Z-□□□B	XW2K-40G-O32A	Push-In Plus	No
				A	XW2Z-□□□B	XW2K-40G-O32A-IN	Push-In Plus	Yes
				A	XW2Z-□□□B	XW2R-J34GD-C1	Phillips screw	No
				A	XW2Z-□□□B	XW2D-40G6	Phillips screw	No
				A	XW2Z-□□□B	XW2R-E34GD-C1	Slotted screw (rise up)	No
NX-OD5121-5	16 outputs	1 MIL connector	NPN	A	XW2Z-□□□X	XW2K-20G-T	Push-In Plus	No
				A	XW2Z-□□□X-R	XW2K-20G-O16B-OUT	Push-In Plus	Yes
				A	XW2Z-□□□X	XW2D-20G6	Phillips screw	No
				A	XW2Z-□□□X	XW2R-E20GD-T	Slotted screw (rise up)	No
NX-OD5256-5	16 outputs	1 MIL connector	PNP	A	XW2Z-□□□X	XW2K-20G-T	Push-In Plus	No
				A	XW2Z-□□□X-R	XW2K-20G-O16B-OUT	Push-In Plus	Yes
				A	XW2Z-□□□X	XW2D-20G6	Phillips screw	No
				A	XW2Z-□□□X	XW2R-E20GD-T	Slotted screw (rise up)	No

Unit	I/O capacity	Number of connectors	Polarity	Connection pattern	Connecting Cable ✶	Connector-Terminal Block Conversion Unit	Wiring method	Common terminal
NX-OD6121-5	32 outputs	1 MIL connector	NPN	A	XW2Z-□□□K	XW2K-40G-O32C	Push-In Plus	No
				A	XW2Z-□□□K	XW2K-40G-O32C-OUT	Push-In Plus	Yes
				A	XW2Z-□□□K	XW2R-J34GD-C4	Phillips screw	No
				A	XW2Z-□□□K	XW2D-40G6	Phillips screw	No
				A	XW2Z-□□□K	XW2R-E34GD-C4	Slotted screw (rise up)	No
NX-OD6121-6	32 outputs	1 Fujitsu connector	NPN	A	XW2Z-□□□B	XW2K-40G-O32B	Push-In Plus	No
				A	XW2Z-□□□B	XW2K-40G-O32B-OUT	Push-In Plus	Yes
				A	XW2Z-□□□B	XW2R-J34GD-C3	Phillips screw	No
				A	XW2Z-□□□B	XW2D-40G6	Phillips screw	No
				A	XW2Z-□□□B	XW2R-E34GD-C3	Slotted screw (rise up)	No
NX-OD6256-5	32 outputs	1 MIL connector	PNP	A	XW2Z-□□□K	XW2K-40G-O32C	Push-In Plus	No
				A	XW2Z-□□□K	XW2K-40G-O32C-OUT	Push-In Plus	Yes
				A	XW2Z-□□□K	XW2R-J34GD-C4	Phillips screw	No
				A	XW2Z-□□□K	XW2D-40G6	Phillips screw	No
				A	XW2Z-□□□K	XW2R-E34GD-C4	Slotted screw (rise up)	No
NX-MD6121-5	16 inputs	1 MIL connector	NPN/PNP	B	XW2Z-□□□X	XW2K-20G-T	Push-In Plus	No
				B	XW2Z-□□□X-R	XW2K-20G-O16A-IN	Push-In Plus	Yes
				B	XW2Z-□□□X	XW2D-20G6	Phillips screw	No
				B	XW2Z-□□□X	XW2R-E20GD-T	Slotted screw (rise up)	No
	16 outputs	1 MIL connector	NPN	B	XW2Z-□□□X	XW2K-20G-T	Push-In Plus	No
				B	XW2Z-□□□X-R	XW2K-20G-O16B-OUT	Push-In Plus	Yes
				B	XW2Z-□□□X	XW2D-20G6	Phillips screw	No
				B	XW2Z-□□□X	XW2R-E20GD-T	Slotted screw (rise up)	No
NX-MD6121-6	16 inputs	1 Fujitsu connector	NPN/PNP	B	XW2Z-□□□A	XW2K-20G-T	Push-In Plus	No
				B	XW2Z-□□□A	XW2K-20G-O16A-IN	Push-In Plus	Yes
				B	XW2Z-□□□A	XW2D-20G6	Phillips screw	No
				B	XW2Z-□□□A	XW2R-E20GD-T	Slotted screw (rise up)	No
	16 outputs	1 Fujitsu connector	NPN	B	XW2Z-□□□A	XW2K-20G-T	Push-In Plus	No
				B	XW2Z-□□□A	XW2K-20G-O16B-OUT	Push-In Plus	Yes
				B	XW2Z-□□□A	XW2D-20G6	Phillips screw	No
				B	XW2Z-□□□A	XW2R-E20GD-T	Slotted screw (rise up)	No
NX-MD6256-5	16 inputs	1 MIL connector	NPN/PNP	B	XW2Z-□□□X	XW2K-20G-T	Push-In Plus	No
				B	XW2Z-□□□X-R	XW2K-20G-O16A-IN	Push-In Plus	Yes
				B	XW2Z-□□□X	XW2D-20G6	Phillips screw	No
				B	XW2Z-□□□X	XW2R-E20GD-T	Slotted screw (rise up)	No
	16 outputs	1 MIL connector	NPN	B	XW2Z-□□□X	XW2K-20G-T	Push-In Plus	No
				B	XW2Z-□□□X-R	XW2K-20G-O16B-OUT	Push-In Plus	Yes
				B	XW2Z-□□□X	XW2D-20G6	Phillips screw	No
				B	XW2Z-□□□X	XW2R-E20GD-T	Slotted screw (rise up)	No

Note: For other models and specifications that are not listed above, refer to the *XW2K Series Datasheet* (Cat. No. G152), *XW2R Series Catalog* (Cat. No. G077) and *XW2D Series Datasheet* for details.
✶ □□□ in the model number indicates the cable length. Refer to the *XW2Z Datasheet* for details.

Connection Patterns for I/O Relay Terminals

Pattern	Configuration	Number of connectors	Branching
A	Connecting Cable / I/O Relay Terminal	1	2 branches
E	I/O Relay Terminal / I/O Relay Terminal / Connecting Cable	2	None
F	Connecting Cable / I/O Relay Terminal	1	

Connections to I/O Relay Terminals

Unit	I/O capacity	Number of connectors	Polarity	Connection pattern	Number of branches	Connecting Cable *1	I/O Relay Terminal	Wiring method
NX-ID5142-5	16 inputs	1 MIL connector	NPN	F	None	XW2Z-RO☐C	G7TC-ID16	Phillips screw
				F	None	XW2Z-RO☐C	G7TC-IA16	Phillips screw
				F	None	XW2Z-RO☐C	G70V-SID16P	Push-in spring
				F	None	XW2Z-RO☐C	G70V-SID16P-C16	Push-in spring
			PNP	F	None	XW2Z-RO☐C	G70V-SID16P-1	Push-in spring
				F	None	XW2Z-RO☐C	G70V-SID16P-1-C16	Push-in spring
NX-ID6142-5	32 inputs	1 MIL connector	NPN	A	2	XW2Z-RO☐-☐-D1	G7TC-ID16	Phillips screw
				A	2	XW2Z-RO☐-☐-D1	G7TC-IA16	Phillips screw
				A	2	XW2Z-RO☐-☐-D1	G70V-SID16P	Push-in spring
				A	2	XW2Z-RO☐-☐-D1	G70V-SID16P-C16	Push-in spring
			PNP	A	2	XW2Z-RO☐-☐-D1	G70V-SID16P-1	Push-in spring
				A	2	XW2Z-RO☐-☐-D1	G70V-SID16P-1-C16	Push-in spring
NX-ID6142-6	32 inputs	1 Fujitsu connector	NPN	A	2	XW2Z-RI☐C-☐	G7TC-ID16	Phillips screw
				A	2	XW2Z-RI☐C-☐	G7TC-IA16	Phillips screw
				A	2	XW2Z-RI☐C-☐	G70V-SID16P	Push-in spring
				A	2	XW2Z-RI☐C-☐	G70V-SID16P-C16	Push-in spring
			PNP	A	2	XW2Z-RI☐C-☐	G70V-SID16P-1	Push-in spring
				A	2	XW2Z-RI☐C-☐	G70V-SID16P-1-C16	Push-in spring
NX-OD5121-5	16 outputs	1 MIL connector	NPN	F	None	XW2Z-RO☐C	G7TC-OC08	Phillips screw
				F	None	XW2Z-RO☐C	G70D-SOC08	Phillips screw
				F	None	XW2Z-RO☐C	G70R-SOC08 *2	Phillips screw
				F	None	XW2Z-RO☐C	G7TC-OC16	Phillips screw
				F	None	XW2Z-RO☐C	G70D-SOC16	Phillips screw
				F	None	XW2Z-RO☐C	G70D-VSOC16	Phillips screw
				F	None	XW2Z-RO☐C	G70D-FOM16	Phillips screw
				F	None	XW2Z-RO☐C	G70D-VFOM16	Phillips screw
				F	None	XW2Z-RO☐C	G70A-ZOC16-3	Phillips screw
				F	None	XW2Z-RO☐C	G70V-SOC16P	Push-in spring
				F	None	XW2Z-RO☐C	G70V-SOC16P-C4	Push-in spring

Unit	I/O capacity	Number of connectors	Polarity	Connection pattern	Number of branches	Connecting Cable *1	I/O Relay Terminal	Wiring method
NX-OD5256-5	16 outputs	1 MIL connector	PNP	F	None	XW2Z-RI□C	G7TC-OC16-1	Phillips screw
				F	None	XW2Z-RO□C	G70D-SOC16-1	Phillips screw
				F	None	XW2Z-RO□C	G70D-FOM16-1 *2	Phillips screw
				F	None	XW2Z-RO□C	G70A-ZOC16-4	Phillips screw
				F	None	XW2Z-RO□C	G70V-SOC16P-1	Push-in spring
				F	None	XW2Z-RO□C	G70V-SOC16P-1-C4	Push-in spring
NX-OD6121-5	32 outputs	1 MIL connector	NPN	A	2	XW2Z-RO□-□-D1	G7TC-OC16	Phillips screw
				A	2	XW2Z-RO□-□-D1	G7TC-OC08	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70D-SOC16	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70D-FOM16	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70D-VSOC16	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70D-VFOM16	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70A-ZOC16-3 and Relay	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70R-SOC08 *2	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70D-SOC08	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70V-SOC16P	Push-in spring
				A	2	XW2Z-RO□-□-D1	G70V-SOC16P-C4	Push-in spring
NX-OD6121-6	32 outputs	1 Fujitsu connector	NPN	A	2	XW2Z-RO□C-□	G7TC-OC16	Phillips screw
				A	2	XW2Z-RO□C-□	G7TC-OC08	Phillips screw
				A	2	XW2Z-RO□C-□	G70D-SOC16	Phillips screw
				A	2	XW2Z-RO□C-□	G70D-FOM16	Phillips screw
				A	2	XW2Z-RO□C-□	G70D-VSOC16	Phillips screw
				A	2	XW2Z-RO□C-□	G70D-VFOM16	Phillips screw
				A	2	XW2Z-RO□C-□	G70A-ZOC16-3 and Relay	Phillips screw
				A	2	XW2Z-RO□C-□	G70R-SOC08 *2	Phillips screw
				A	2	XW2Z-RO□C-□	G70D-SOC08	Phillips screw
				A	2	XW2Z-RO□C-□	G70V-SOC16P	Push-in spring
				A	2	XW2Z-RO□C-□	G70V-SOC16P-C4	Push-in spring
NX-OD6256-5	32 outputs	1 MIL connector	PNP	A	2	XW2Z-RI□-□-D1	G7TC-OC16-1	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70D-SOC16-1	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70D-FOM16-1 *2	Phillips screw
				A	2	XW2Z-RO□-□-D1	G70A-ZOC16-4 and Relay	Phillips screw
NX-MD6121-5	16 inputs	1 MIL connector	NPN	E	None	XW2Z-RO□C	G7TC-ID16	Phillips screw
				E	None	XW2Z-RO□C	G7TC-IA16	Phillips screw
				E	None	XW2Z-RO□C	G70V-SID16P	Push-in spring
				E	None	XW2Z-RO□C	G70V-SID16P-C16	Push-in spring
	16 outputs	1 MIL connector	NPN	E	None	XW2Z-RO□C	G7TC-OC16	Phillips screw
				E	None	XW2Z-RO□C	G7TC-OC08	Phillips screw
				E	None	XW2Z-RO□C	G70D-SOC16	Phillips screw
				E	None	XW2Z-RO□C	G70D-FOM16	Phillips screw
				E	None	XW2Z-RO□C	G70D-VSOC16	Phillips screw
				E	None	XW2Z-RO□C	G70D-VFOM16	Phillips screw
				E	None	XW2Z-RO□C	G70A-ZOC16-3 and Relay	Phillips screw
				E	None	XW2Z-RO□C	G70R-SOC08 *2	Phillips screw
				E	None	XW2Z-RO□C	G70D-SOC08	Phillips screw
				E	None	XW2Z-RO□C	G70V-SOC16P	Push-in spring
				E	None	XW2Z-RO□C	G70V-SOC16P-C4	Push-in spring

Unit	I/O capacity	Number of connectors	Polarity	Connection pattern	Number of branches	Connecting Cable ∗1	I/O Relay Terminal	Wiring method
NX-MD6121-6	16 inputs	1 Fujitsu connector	NPN	E	None	XW2Z-R□C	G7TC-ID16	Phillips screw
				E	None	XW2Z-R□C	G7TC-IA16	Phillips screw
				E	None	XW2Z-R□C	G70V-SID16P	Push-in spring
				E	None	XW2Z-R□C	G70V-SID16P-C16	Push-in spring
	16 outputs	1 Fujitsu connector	NPN	E	None	XW2Z-R□C	G7TC-OC16	Phillips screw
				E	None	XW2Z-R□C	G7TC-OC08	Phillips screw
				E	None	XW2Z-R□C	G70D-SOC16	Phillips screw
				E	None	XW2Z-R□C	G70D-FOM16	Phillips screw
				E	None	XW2Z-R□C	G70D-VSOC16	Phillips screw
				E	None	XW2Z-R□C	G70D-VFOM16	Phillips screw
				E	None	XW2Z-R□C	G70A-ZOC16-3 and Relay	Phillips screw
				E	None	XW2Z-R□C	G70R-SOC08 ∗2	Phillips screw
				E	None	XW2Z-R□C	G70D-SOC08	Phillips screw
				E	None	XW2Z-R□C	G70V-SOC16P	Push-in spring
				E	None	XW2Z-R□C	G70V-SOC16P-C4	Push-in spring
NX-MD6256-5	16 inputs	1 MIL connector	PNP	E	None	XW2Z-RO□C	G70V-SID16P-1	Push-in spring
				E	None	XW2Z-RO□C	G70V-SID16P-1-C16	Push-in spring
	16 outputs	1 MIL connector	PNP	E	None	XW2Z-RO□C	G7TC-OC16-1	Phillips screw
				E	None	XW2Z-RI□C	G70D-SOC16-1	Phillips screw
				E	None	XW2Z-RI□C	G70D-FOM16-1 ∗2	Phillips screw
				E	None	XW2Z-RI□C	G70A-ZOC16-4 and Relay	Phillips screw
				E	None	XW2Z-RI□C	G70V-SOC16P-1	Push-in spring
				E	None	XW2Z-RI□C	G70V-SOC16P-1-C4	Push-in spring

Note: 1. For other models and specifications that are not listed above, refer to the datasheets.
     2. The G70V Series includes models that provide internal connections. Refer to the *G70V Datasheet* (Cat. No. J215) for details.
     3. The G70A is a socket only. Mountable relays and timers are sold separately.
∗1. □ in the model number indicates the cable length. Refer to the *XW2Z-R Datasheet* (Cat. No. G126) for details.
∗2. Product no longer available to order.

High-speed Analog Input Units

Product name	Specification								I/O refreshing method	Model
	Number of points	Input range	Resolution	Input method	Conversion time	Trigger input section				
						Number of points	Internal I/O common			
High-speed Analog Input Units	4 points	-10 to +10V -5 to +5V 0 to 10V 0 to 5V 1 to 5V 0 to 20mA 4 to 20mA	• Input range of -10 to 10 V or -5 to 5 V: 1/64,000 (full scale) • Other input range: 1/32,000 (full scale)	Differential input	5 µs per channel	4	NPN		Synchronous I/O refreshing	NX-HAD401
							PNP			NX-HAD402

Analog Input Units

Product name	Specification									Model
	Number of points	Input range	Resolution	Conversion value, decimal number (0 to 100%)	Over all accuracy (25°C)	Input method	Conversion time	Input impedance	I/O refreshing method	
Voltage Input type	2 points	-10 to +10 V	1/8000	-4000 to 4000	±0.2% (full scale)	Single-ended input	250 µs/point	1 MΩ min.	Free-Run refreshing	NX-AD2603
						Differential input				NX-AD2604
			1/30000	-15000 to 15000	±0.1% (full scale)	Differential input	10 µs/point		Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD2608
	4 points		1/8000	-4000 to 4000	±0.2% (full scale)	Single-ended input	250 µs/point		Free-Run refreshing	NX-AD3603
						Differential input				NX-AD3604
			1/30000	-15000 to 15000	±0.1% (full scale)	Differential input	10 µs/point		Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD3608
	8 points		1/8000	-4000 to 4000	±0.2% (full scale)	Single-ended input	250 µs/point		Free-Run refreshing	NX-AD4603
						Differential input				NX-AD4604
			1/30000	-15000 to 15000	±0.1% (full scale)	Differential input	10 µs/point		Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD4608
Current Input type	2 points	4 to 20 mA	1/8000	0 to 8000	±0.2% (full scale)	Single-ended input	250 µs/point	250 Ω	Free-Run refreshing	NX-AD2203
						Differential input				NX-AD2204
			1/30000	0 to 30000	±0.1% (full scale)	Differential input	10 µs/point		Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD2208
	4 points		1/8000	0 to 8000	±0.2% (full scale)	Single-ended input	250 µs/point		Free-Run refreshing	NX-AD3203
						Differential input				NX-AD3204
			1/30000	0 to 30000	±0.1% (full scale)	Differential input	10 µs/point		Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD3208
	8 points		1/8000	0 to 8000	±0.2% (full scale)	Single-ended input	250 µs/point	85 Ω	Free-Run refreshing	NX-AD4203
						Differential input				NX-AD4204
			1/30000	0 to 30000	±0.1% (full scale)	Differential input	10 µs/point		Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD4208

Analog Output Units

Product name	Specification							Model
	Number of points	Input range	Resolution	Output setting value, decimal number (0 to 100%)	Over all accuracy (25°C)	Conversion time	I/O refreshing method	
Voltage Output type	2 points	-10 to +10 V	1/8000	-4000 to 4000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	NX-DA2603
			1/30000	-15000 to 15000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-DA2605
	4 points		1/8000	-4000 to 4000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	NX-DA3603
			1/30000	-15000 to 15000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-DA3605
Current Output type	2 points	4 to 20 mA	1/8000	0 to 8000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	NX-DA2203
			1/30000	0 to 30000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-DA2205
	4 points		1/8000	0 to 8000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	NX-DA3203
			1/30000	0 to 30000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-DA3205

Advanced Temperature Control Units/Temperature Control Units/ Temperature Input Units/Heater Burnout Detection Units

Advanced Temperature Control Units

Product name	Specification								Model
	Number of channels	Input type	Output	Output capacity	CT Input capacity	Control type	Conversion time	I/O refreshing method	
Advanced Temperature Control Unit 4Ch type	4 Ch	Universal inputs (thermocouple, platinum resistance thermometer, analog voltage, analog current)	Voltage output (for driving SSR)	4 points	4 points	Heating and Cooling Control	50 m sec	Free-Run refreshing	NX-HTC3510-5
			Linear current output						
Advanced Temperature Control Unit 8Ch type	8 Ch		Voltage output (for driving SSR)	8 points	8 points	Standard Control			NX-HTC4505-5

Temperature Control Units

Product name	Specification								Model
	Number of channels	Input type	Output	Output capacity	CT Input capacity	Control type	Conversion time	I/O refreshing method	
Temperature Control Unit 2Ch type	2 Ch	Multi-input (Thermocouple and Resistance thermometer)	Voltage output (for driving SSR)	2 points	2 points	Standard Control	50 m sec	Free-Run refreshing	NX-TC2405
					None	Standard Control			NX-TC2406
			Voltage output (for driving SSR)	4 points	None	Heating and Cooling Control			NX-TC2407
			Linear current output	2 points	None	Standard Control			NX-TC2408
Temperature Control Unit 4Ch type	4 Ch		Voltage output (for driving SSR)	4 points	4 points	Standard Control			NX-TC3405
					None	Standard Control			NX-TC3406
			Voltage output (for driving SSR)	8 points	None	Heating and Cooling Control			NX-TC3407
			Linear current output	4 points	None	Standard Control			NX-TC3408

Temperature Input Units

Product name	Specification							Model
	Number of points	Input type	Resolution (25°C)	Over all accuracy (25°C)	Conversion time	I/O refreshing method	Terminals	
Thermocouple Input type	2 points	Thermocouple	0.1°C max. ∗1	Refer to your OMRON website for details.	250 ms/Unit	Free-Run refreshing	16 Terminals	NX-TS2101
	4 points						16 Terminals x 2	NX-TS3101
	2 points		0.01°C max.		10 ms/Unit		16 Terminals	NX-TS2102
	4 points						16 Terminals x 2	NX-TS3102
	2 points		0.001°C max.		60 ms/Unit		16 Terminals	NX-TS2104
	4 points						16 Terminals x 2	NX-TS3104
Resistance Thermometer Input type	2 points	Resistance Thermometer (Pt100/Pt1000, three-wire) ∗2	0.1°C max.		250 ms/Unit		16 Terminals	NX-TS2201
	4 points						16 Terminals x 2	NX-TS3201
	2 points		0.01°C max.		10 ms/Unit		16 Terminals	NX-TS2202
	4 points						16 Terminals x 2	NX-TS3202
	2 points		0.001°C max.		60 ms/Unit		16 Terminals	NX-TS2204
	4 points						16 Terminals x 2	NX-TS3204

∗**1.** The resolution is 0.2°C max. when the input type is R, S, or W.
∗**2.** The NX-TS2202 and NX-TS3202 only support Pt100 three-wire sensor.

Heater Burnout Detection Units

Product name	Specification							Model
	CT input section		Control output section					
	Number of inputs	Maximum heater current	Number of outputs	Internal I/O common	Maximum load current	Rated voltage	I/O refreshing method	
Heater Burnout Detection Unit	4	50 A AC	4	NPN	0.1 A/point, 0.4 A/Unit	12 to 24 VDC	Free-Run refreshing	NX-HB3101
				PNP		24 VDC		NX-HB3201

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
Current Transformer (CT)	Hole diameter: 5.8 mm	E54-CT1
	Hole diameter: 5.8 mm	E54-CT1L ∗
	Hole diameter: 12.0 mm	E54-CT3
	Hole diameter: 12.0 mm	E54-CT3L ∗

∗ Lead wires are included with these CTs. If UL certification is required, use these CTs.

Load Cell Input Unit

Product name	Specification					Model
	Number of points	Conversion cycle	I/O refreshing method ∗	Load cell excitation voltage	Input range	
Load Cell Input Unit	1	125 µs	• Free-Run refreshing • Synchronous I/O refreshing • Task period prioritized refreshing	5 VDC ± 10%	-5.0 to 5.0 mV/V	**NX-RS1201**

∗ Refer to the *I/O Refreshing* in the *NX-series Load Cell Input Unit User's Manual* (Cat. No. W565) for detailed information on I/O refresh cycle.
Note: The NX-RS1201-K Load Cell Input Unit with the test and calibration certificate is also available. Ask your OMRON representative for details.

Position Interface Units: Incremental Encoder Input Units

Product name	Specification						Model
	Number of channels	External inputs	Maximum response frequency	I/O refreshing method	Number of I/O entry mappings	Remarks	
Incremental Encoder Input Unit	1 (NPN)	3 (NPN)	500 kHz	• Free-Run refreshing • Synchronous I/O refreshing	1/1	24-V voltage input	**NX-EC0112**
	1 (PNP)	3 (PNP)					**NX-EC0122**
	1	3 (NPN)	4 MHz			Line receiver input	**NX-EC0132**
		3 (PNP)					**NX-EC0142**
	2 (NPN)	None	500 kHz		2/2	24-V voltage input	**NX-EC0212**
	2 (PNP)						**NX-EC0222**

Position Interface Units: SSI Input Units

Product name	Specification					Model
	Number of channels	Input/Output form	Maximum data length	Encoder power supply	Type of external connections	
SSI Input Unit	1	EIA standard RS-422-A	32 bits	24 VDC, 0.3 A/CH	Screwless push-in terminal block (12 terminals)	**NX-ECS112**
	2	EIA standard RS-422-A	32 bits	24 VDC, 0.3 A/CH	Screwless push-in terminal block (12 terminals)	**NX-ECS212**

Position Interface Units: Pulse Output Units
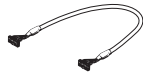
Product name	Specification							Model
	Number of channels ∗1	External inputs	External outputs	Maximum pulse output speed	I/O refreshing method	Number of I/O entry mappings	Control output interface	
Pulse Output Unit	1 (NPN)	2 (NPN)	1 (NPN)	500 kpps	• Synchronous I/O refreshing • Task period prioritized refreshing ∗2	1/1	Open collector output	**NX-PG0112**
	1 (PNP)	2 (PNP)	1 (PNP)					**NX-PG0122**
	2	5 inputs/CH (NPN)	3 outputs/CH (NPN)	4 Mpps		2/2	Line driver output	**NX-PG0232-5**
		5 inputs/CH (PNP)	3 outputs/CH (PNP)					**NX-PG0242-5**
	4	5 inputs/CH (NPN)	3 outputs/CH (NPN)			4/4		**NX-PG0332-5**
		5 inputs/CH (PNP)	3 outputs/CH (PNP)					**NX-PG0342-5**

∗1. This is the number of pulse output channels.
∗2. Unit version 1.2 or later and an NX-ECC203 EtherCAT Coupler Unit are required.

Cables and Connectors for Line Driver Output Units with MIL Connectors

Product name	Specifications		Model
Connector-Terminal Block Conversion Unit	MIL Connectors type (Push-In Plus) 34 terminals		**XW2K-34G-T**
	MIL Connectors type (Phillips screw) 34 terminals		**XW2D-34G6**
	MIL Connectors type (Slotted screw (rise up)) 34 terminals		**XW2R-E34GD-T**
Cable for Connector-Terminal Block Conversion Unit	34-terminal MIL Connector to 34-terminal MIL Connector	Cable length: 0.5 m	**XW2Z-050EE**
		Cable length: 1 m	**XW2Z-100EE**
		Cable length: 1.5 m	**XW2Z-150EE**
		Cable length: 2 m	**XW2Z-200EE**
		Cable length: 3 m	**XW2Z-300EE**
		Cable length: 5 m	**XW2Z-500EE**

Note: Each of NX-PG0232-5 and NX-PG0242-5 has one MIL connector. Therefore, one Connector-Terminal Block Conversion Unit is required.
Each of NX-PG0332-5 and NX-PG0342-5 has two MIL connectors. Therefore, two Connector-Terminal Block Conversion Units are required.

Communications Interface Units

Product name	Serial interface	External connection terminals	Number of serial ports	Communications function	Model
Communications Interface Unit	RS-232C	Screwless clamping terminal block	1 port	• No-protocol serial communications • Serial line monitor	**NX-CIF101**
	RS-422A/485				**NX-CIF105**
	RS-232C	D-Sub connector	2 ports		**NX-CIF210**

RFID Units

Product name	Amplifier/Antenna	No. of unit numbers used	Model
RFID Unit (1Ch)	V680 series	1	**NX-V680C1**
RFID Unit (2Ch)		2	**NX-V680C2**

IO-Link Master Unit

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

Note: For details of IO-Link sensors and sensor I/O connectors, refer to the *IO-Link Series Catalog* (Cat. No. Y229).

System Units

Product Name	Specifications	Model
Additional NX Unit Power Supply Unit	Power supply voltage: 24 VDC (20.4 to 28.8 VDC) NX Bus power supply capacity: 10 W max.	NX-PD1000
Additional I/O Power Supply Unit	Power supply voltage: 5 to 24 VDC (4.5 to 28.8 VDC) I/O power feed maximum current: 4 A	NX-PF0630
	Power supply voltage: 5 to 24 VDC (4.5 to 28.8 VDC) I/O power feed maximum current: 10 A	NX-PF0730
I/O Power Supply Connection Unit	Number of I/O power terminals: IOG: 16 terminals Current capacity of I/O power terminal: 4 A/terminal max.	NX-PC0010
	Number of I/O power terminals: IOV: 16 terminals Current capacity of I/O power terminal: 4 A/terminal max.	NX-PC0020
	Number of I/O power terminals: IOV: 8 terminals, IOG: 8 terminals Current capacity of I/O power terminal: 4 A/terminal max	NX-PC0030
Shield Connection Unit	Number of shield terminals: 14 terminals (The lower two terminals are functional ground terminals.)	NX-TBX01

Optional Products and Maintenance Products

Product name	Specification	Model
Unit/Terminal Block Coding Pins	For 10 Units (Terminal Block: 30 pins, Unit: 30 pins)	NX-AUX02
End Cover	One End Cover is provided as a standard accessory with the Communication Coupler Unit.	NX-END01
DIN Track Insulation Spacer	A Spacer to insulate the control panel from the DIN Track. To insulate the Slave Terminal from the control panel, use Din Track Insulation Spacers.	NX-AUX01

Product name	Specification				Model
	No. of terminals	Terminal number indications	Ground terminal mark	Terminal current capacity	
Terminal Block	8	A/B	None	10 A	NX-TBA082
	12	A/B			NX-TBA122
	16	A/B			NX-TBA162
	12	C/D			NX-TBB122
	16	C/D			NX-TBB162
	8	A/B	Provided		NX-TBC082
	16	A/B			NX-TBC162

Safety Control Units **NX Series**

Ordering Information

Safety CPU Units

Unit type	Appearance	Specification					Model
		Maximum number of safety I/O points	Program capacity	Number of safety master connections	I/O refreshing method	Unit version	
Safety CPU Unit		256 points	512 KB	32	Free-Run refreshing	Ver.1.1	**NX-SL3300**
		1024 points	2048 KB	128	Free-Run refreshing	Ver.1.1	**NX-SL3500**

Note: Connect the Safety CPU Unit to the NX1P2 CPU Unit via the EtherCAT Coupler Unit.

Safety Input Units

Unit type	Appearance	Specification							Model
		Number of safety input points	Number of test output points	Internal I/O common	Rated input voltage	OMRON special safety input devices	Number of safety slave connections	I/O refreshing method	Unit version	
Safety Input Unit		4 points	2 points	Sinking inputs (PNP)	24 VDC	Can be connected.	1	Free-Run refreshing	Ver.1.1	**NX-SIH400**
		8 points	2 points	Sinking inputs (PNP)	24 VDC	Cannot be connected.	1	Free-Run refreshing	Ver.1.0	**NX-SID800**

Note: Connect the Safety Input Unit to the NX1P2 CPU Unit via the EtherCAT Coupler Unit.

Safety Output Units

Unit type	Appearance	Specification						Model
		Number of safety output points	Internal I/O common	Maximum load current	Rated voltage	Number of safety slave connections	I/O refreshing method	Unit version	
Safety Output Unit		2 points	Sourcing outputs (PNP)	2.0 A/point, 4.0 A/Unit at 40°C, and 2.5 A/Unit at 55°C The maximum load current depends on the installation orientation and ambient temperature.	24 VDC	1	Free-Run refreshing	Ver.1.0	**NX-SOH200**
		4 points	Sourcing outputs (PNP)	0.5 A/point and 2.0 A/Unit	24 VDC	1	Free-Run refreshing	Ver.1.0	**NX-SOD400**

Note: Connect the Safety Output Unit to the NX1P2 CPU Unit via the EtherCAT Coupler Unit.

Optional Products

Product Name	Specification				Model
Unit/Terminal Block Coding Pins	For 10 Units (Terminal Block: 30 pins, Unit: 30 pins)				**NX-AUX02**

Product name	Specification				Model
	No. of terminals	Terminal number indications	Ground terminal mark	Terminal current capacity	
Terminal Block	8	A/B	None	10 A	**NX-TBA082**
	16	A/B	None	10 A	**NX-TBA162**

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OMRON Corporation **Industrial Automation Company**

Kyoto, JAPAN   **Contact : www.ia.omron.com**

Regional Headquarters

OMRON EUROPE B.V.
Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31) 2356-81-300   Fax: (31) 2356-81-388

OMRON ELECTRONICS LLC
2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900   Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.
438B Alexandra Road, #08-01/02 Alexandra
Technopark, Singapore 119968
Tel: (65) 6835-3011   Fax: (65) 6835-2711

OMRON (CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-6023-0333   Fax: (86) 21-5037-2388