

Industrial Automation Guide 2016



Industrial Products & Systems

Targeted Technologies

Creating maximum output with minimum input

By identifying the many ways of innovation in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples on our website.

industrial.omron.eu/technologies



Welcome to our world

Our best-in-class devices for your automation system

Welcome to Omron's world of advanced industrial automation. The INDUSTRIAL AUTOMATION GUIDE is your essential tool to select best-in-class devices for your automation system. It highlights our core competences in sensing, control, visualisation, motion and panel components.

Of course, Omron offers a much larger range of products than you can find on the attached DVD. For more information on services and company competence visit our website.

Here you will find:

- Latest product news
- Technical product specifications
- 2D / 3D CAD Library
- Customer references
- Technology concepts
- Supporting product documentation
- Knowledge Base - "myOmron"
- Events Calendar
- Contact information

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Quick Links shortens your search. Quick Links are unique codes assigned to Omron products listed in this guide. Enter Quick Link codes in the search box on industrial.omron.eu to access detailed information on products in this guide.



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Industrial Automation Guide 2016

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“To the machine the work of the machine,
to man the thrill of further creation.”

Kazuma Tateisi, founder of Omron

Omron at a glance

200.000 products ranging
input, logic and output

Sensing, Control Systems, Visualization, Drives, Robots, Safety,
Quality Control & Inspection, Control and Switching Components

7%

Investment in Research & Development

Innovation track
record of 80 years

Top 150 global patent assignee

1.200 employees dedicated to R&D

11.000 + issued and pending patents

37.000

Employees worldwide

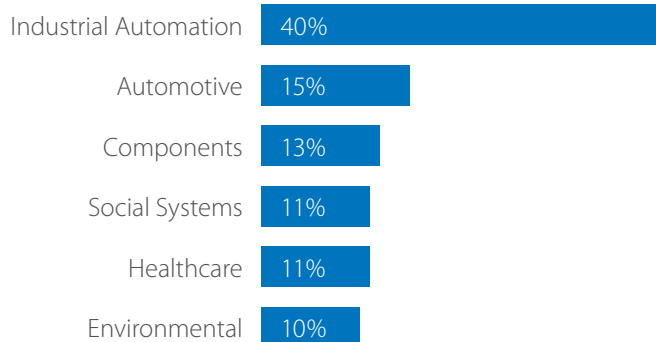
210

Locations worldwide

22

Countries in EMEA

Working for the
benefit of society



Close to your needs

Technical training & seminars, technical support, Automation Technology Centers, online community (MyOmron), online catalogues and technical documentation, customer service & sales support, inter-operability labs (Tsunagi), safety services, repairs.

Your needs, our focus

Solutions perfectly matching your needs

We asked ourselves: 'What do you need in sensors and components?' Well, first you need reliability. Then a variety and choice of performance levels. You may also want advanced functionality, with special features defined by you – or you may want standardized solutions, with highly competitive prices.

Whatever it is, it can all add up to a wish list that is difficult to fulfil. Until now. That's because our new 361° Approach not only provides a complete all-round offer without gaps, it also puts you at the very centre of the product selection process. It's an approach that leads to a Perfect Match – one with the extra degree of confidence that comes from choosing Omron.

361° in one view



Quality



Line-up



Application



Customization



Global availability



Specs

	Quality	Line-up	Application	Customization	Global availability	Specs
PRO^{plus}	Premium	Tailored	Special	Yes	Yes	Application oriented
PRO	Premium	Complete	Advanced	Yes	Yes	Above Standard
LITE	Premium	Standard	Basic	No	No	Basic
	'Quality' refers to the standard of manufacturing and the materials used – this translates into reliability	'Line-up' refers to the number of model types	'Application' indicates the complexity of the automation	'Customization' is the possibility to modify the product		'Specs' refers to the choice of performance levels

The extra degree of advantage

Three distinct lines of sensors and components

Three distinct lines

361° Approach offers three distinct lines within each sensor or component product category. LITE products are cost-effective without any compromise in quality. PRO products represent the “install & forget” option, offering longer lifetime, higher protection, and more features. While PROplus products are designed for specific applications or customer demands.

Optimized reliability

All three lines are backed by the Omron commitment to quality, so even when you need a price-competitive advantage, you can be confident that they will never let you down.

Solutions that perfectly match your needs

The 361° Approach ensures that you can quickly and easily identify the perfect match solution to your needs – nothing more, nothing less.

Optimized costs

Your sensor and component costs are also minimized – because it eliminates over-specification.

Why an extra 1°?

The extra degree is what you get when you do business with Omron, and that means different things to different customers – all depending on their needs. For example, if you need specification advice, the extra degree is ‘service’. But ultimately, to everyone it means “an extra degree of confidence in the perfect match”.



Sysmac: A fully integrated platform

Integration and Functionality

Sysmac is an integrated automation platform dedicated to providing complete control and management of your automation plant. At the core of this platform, the Machine Controller series offers synchronous control of all machine devices and advanced functionality such as motion, robotics and database connectivity. This multidisciplinary concept allows you to simplify solution architecture, reduce programming and optimize productivity.



Machine Automation Controller

FACTORY
AUTOMATION

MACHINE
CONTROL



Motion



Filling line

- Motion Control: Integrated within the IDE, and operating in real-time
- Standard PLCopen Function Blocks plus Omron generated motion FB's
- Direct Synchronous control for Position, Speed and Torque



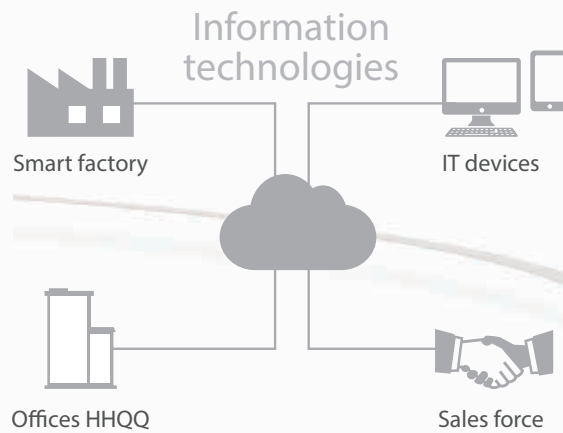
Safety



Assembly

- All safety related data is synchronized with the whole network
- Safety functions such as muting, guard locking, EDM and valve monitoring are simple to manage

- ✓ **One Integrated Development Environment software** for Configuration, Programming, Simulation and Monitoring



Information



- Sysmac communicates in real-time with Databases such as SQL
- Secure Data: In the event of a server going down or losing communications, data is automatically stored in internal memory
- Sysmac operates with Databases at high speed [1000 table element/ 100 ms] ensuring realistic Big Data Processing to improve productivity and aid predictive maintenance etc.

✓ Integrated Automation Control:

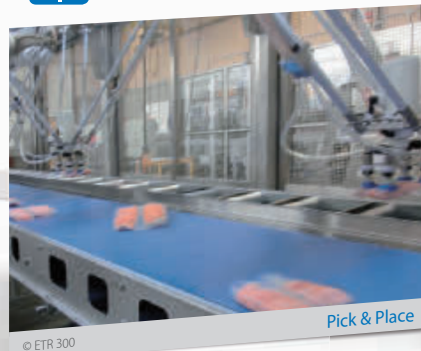
The Sysmac platform is scalable and provides the performance and functionality for a wide range of solutions from simple machines through to manufacturing cells

Vision



- Higher resolution images available without increasing the vision processing time
- Shape search technology: Provides more stable and accurate object detection for Pick & Place projects

Robotics



- Up to 8 Delta robots with one controller
- Time-based Robotic Function Blocks make programming easier

Sensing



- Full control of the process parameter setting and predictive maintenance functions
- High precision detection and positioning data synchronized on the network

Product selection table

Automation systems				
	12 Machine automation controller	26 Programmable logic controllers (PLC)	54 Remote I/O	68 Human machine interfaces (HMI)
				
	96 Motion controllers	112 Servo systems	170 Robots	202 Frequency inverters
Sensing				
	236 Photoelectric sensors	278 Mark and Color sensors	284 Lightcurtains and area sensors	292 Fiber optic sensors and amplifiers
				
	370 Inspection & Ident systems	426 Measurement sensors		
Safety				
	462 Emergency stop and control devices	472 Safety limit switches	480 Safety door switches	506 Safety sensors
				
	574 Temperature controllers	596 Power supplies	614 Uninterruptible power supplies (UPS)	622 Timers
Switching components				
	682 Electromechanical relays	696 Solid state relays	706 Low voltage switchgear	722 Monitoring products
				
	766 Software			
Software				



82 Cables and accessories



324 Inductive sensors



344 Mechanical sensors/Limit switches



358 Rotary encoders



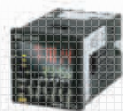
366 Cable connectors



544 Safety logic control systems



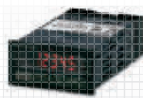
566 Safety outputs



632 Counters



642 Programmable relays



650 Digital panel indicators



660 Energy monitoring devices



674 Photovoltaic

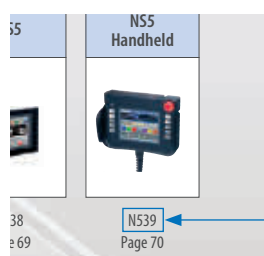


750 Pushbutton switches

Automation systems

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Quick Link

Automation systems

Machine automation controller	12	Human machine interfaces (HMI)	68
Selection table	15	Selection table	70
Machine controller		Integrated HMI	
NJ series	16	NA7/9/12/15	72
NX7 series	23	Scalable HMI	
		NS15/NS12/NS10/NS8	74
		NS5	75
		NS5 handheld	76
Programmable logic controllers (PLC)	26	Integrated controller/Scalable HMI	
Selection table	28	Accessories NS	77
Compact PLC		Compact HMI	
CPM2C CPU units	30	NB series	78
CPM2C expansion units	31	Function-key HMI	
CP1E CPU units	32	NT11	80
CP1L CPU units	34	NT2S	81
CP1H CPU units	36		
CP1W expansion units	37		
Modular PLC		Cables and accessories	
CJ-Series CPU units	38	I/O cables	82
CJ-Series power supplies, expansions	40	I/O terminal blocks	90
CJ-Series digital I/O units	41	Ethernet cables and accessories	
CJ-Series analog I/O and control units	42	Ethernet cables	91
CJ-Series motion/position control units	44	Accessories	92
CJ-Series communication units	46	Wireless communication	
Rack PLC		WE70	93
CS-Series CPU units	47		
CS-Series power supplies, backplanes	48		
CS-Series digital I/O units	49		
CS-Series analog and process I/O units	50		
CS-Series position/motion control units	52		
CS-Series communication units	53		
Remote I/O	54		
Selection table	57		
Remote I/O			
NX-series modular I/O system	58		
SmartSlice I/O system	61		
Compact I/O GX-series	62		
Compact I/O DRT2	63		
Compact I/O CRT1	64		
Compact I/O SRT2	65		
Field I/O DRT2-_C	66		
Field I/O SRT2-_C	67		

Machine automation controller

NX7/NJ-SERIES MACHINE AUTOMATION CONTROLLER

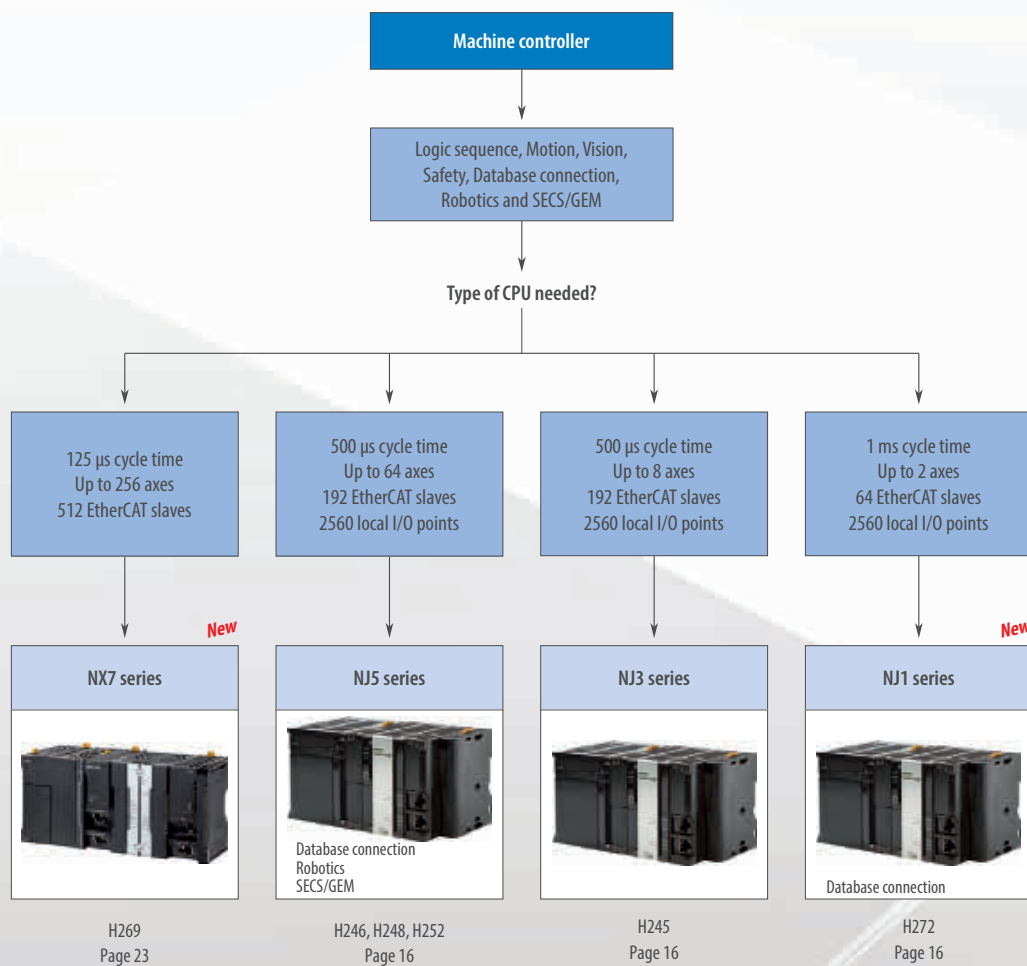
Complete and robust machine automation





The Machine Automation Controller is at the heart of the Sysmac platform. One integrated machine controller that offers speed, flexibility, scalability of software and a centric architecture without compromising on the traditional reliability and robustness that you have come to expect from Omron PLCs. The Machine Controller is designed to meet extreme machine control requirements in terms of fast and accurate motion control, accuracy, communication, security and system robustness. You just create...

- Fastest cycle time: 125 µs
- Up to 256 synchronized axes
- Fully conforms with IEC 61131-3 standards
- PLCopen Function Blocks for Motion Control
- Advanced motion with Robotics functionality
- Built-in EtherCAT and EtherNet/IP ports



SYSMAC
always in control



	Machine automation controller			
				
Model	NX7	NJ5	NJ3	NJ1
Fastest cycle time	125 µs	500 µs	500 µs	1 ms
Number of axes	256, 128	64, 32, 16	8, 4	2, 0
Task	Multi-tasking program			
Motion core	2 synchronized motion cores		Synchronized motion core	
Functions	<ul style="list-style-type: none"> Logic sequence Motion 	<ul style="list-style-type: none"> Logic sequence Motion Robotics Database connection SECS/GEM 	<ul style="list-style-type: none"> Logic sequence Motion 	<ul style="list-style-type: none"> Logic sequence Motion Database connection
Software tool	Sysmac Studio			
Programming languages	<ul style="list-style-type: none"> Ladder Structured Text In-Line ST 			
Standard programming	<ul style="list-style-type: none"> IEC 61131-3 PLCopen Function Blocks for Motion Control 			
Program capacity	80 MB	20 MB	5 MB	3 MB
SD memory card	SD and SDHC memory card			
Built-in port	<ul style="list-style-type: none"> EtherNet/IP EtherCAT USB 2.0 			
EtherCAT slaves	512	192		64
Servo drive	Accurax G5/EtherCAT			
Motion control	<ul style="list-style-type: none"> Axes groups interpolation and single axis moves Electronic cams and gearboxes Direct position control for axis and groups 			
Robotics	–	Up to 8 Delta robot control	–	
Supported SQL servers	–	<ul style="list-style-type: none"> Microsoft SQL Server Oracle IBM DB2 MySQL Firebird 	–	<ul style="list-style-type: none"> Microsoft SQL Server Oracle IBM DB2 MySQL Firebird
Local I/O points	–	2560		
Mounting	DIN rail			
Global standards	CE, cULus	CE, cULus, NK, LR		
Page/Quick Link	23/H269	16/H246, H248, H252	16/H245	16/H272



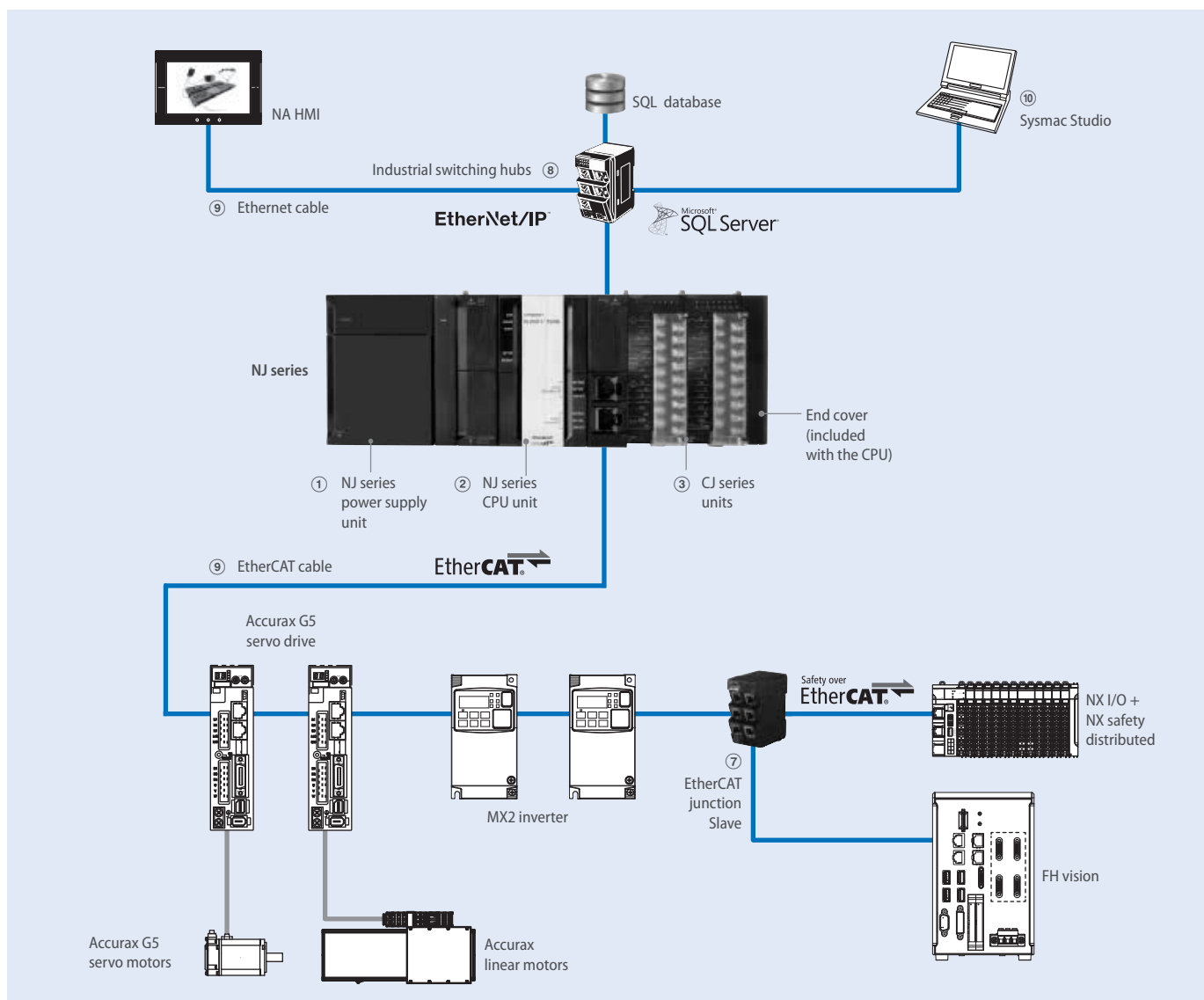
Sysmac controller - NJ series

The NJ series is an scalable machine controller for logic sequence and motion control that includes options for advanced functions such as robotics and database connection.

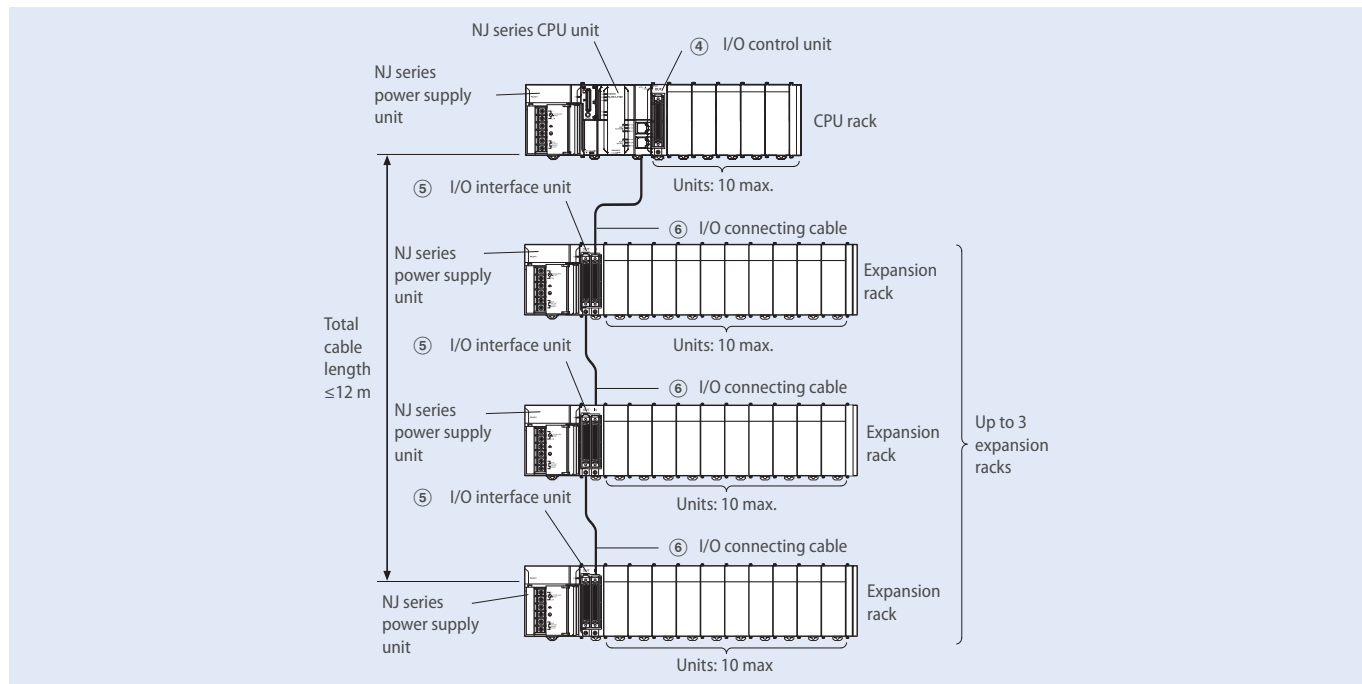
- Fastest cycle time: 500 ms
- Number of axes: 64, 32, 16, 8, 4, 2, 0
- Synchronized motion core
- Functions: Logic sequence, Motion, Robotics, Database connection and SECS/GEM
- Up to 8 Delta robot control
- DB connection: SQL client for Microsoft SQL server, Oracle, IBM DB2, MySQL, Firebird
- Multi-tasking
- Built-in EtherCAT and EtherNet/IP ports

Ordering information

NJ series system



NJ series expansion racks



Power supply units

Symbol	Name	Output capacity			RUN output	Order code
		5 VDC	24 VDC	Total		
①	100 to 240 VAC power supply unit for NJ CPU	6.0 A	1.0 A	30 W	Supported	NJ-PA3001
	24 VDC power supply unit for NJ CPU					NJ-PD3001

Note: Power supply units for the CJ Series cannot be used as a power supply for a CPU rack of the NJ System or as a power supply for an expansion rack.

NJ series CPU units

Symbol	CPU	Program capacity	Variables capacity	Specifications	Functionalities					Number of axes	Order code
					Sequence	Motion	DB connection	Robotics	SECS/GEM		
②	NJ501	20 MB	2 MB: Retained 4 MB: Not retained	I/O capacity: 2,560 points CPU rack: 10 units max. Expansion rack: 10 units max. (Up to 3 expansion racks) 40 units max. per system (CPU rack + 3 expansion racks) Current consumption: 1.90 A at 5 VDC	■	■	■	■		16	NJ501-4320
					■	■	■			64	NJ501-1520
					■	■	■			32	NJ501-1420
					■	■	■			16	NJ501-1320
					■	■		■		64	NJ501-4500
					■	■		■		32	NJ501-4400
					■	■		■		16	NJ501-4300
					■	■		■		16	NJ501-4310*1
					■	■			■	16	NJ501-1340
					■	■				64	NJ501-1500
					■	■				32	NJ501-1400
					■	■				16	NJ501-1300
					■	■				8	NJ301-1200
					■	■				4	NJ301-1100
					■	■				2	NJ101-1000
					■	■	■			2	NJ101-1020
					■					0	NJ101-9000
					■		■			0	NJ101-9020
	NJ301	5 MB	0.5 MB: Retained 2 MB: Not retained								
	NJ101	3 MB									

^{*1} The NJ501-4310 CPU unit only supports one Delta robot.

Note: The end cover unit CJ1W-TER01 is included with the CPU unit.

CJ series digital I/O units

Symbol	Points	Type	Rated voltage	Rated current	Width	Remarks	Current consumption (A)		Connection type	Order code
							5 VDC	24 VDC		
③	8	AC input	240 VAC	10 mA	31 mm	–	0.08	–	M3	CJ1W-IA201
	16		120 VAC	7 mA	31 mm	–	0.09	–	M3	CJ1W-IA111
	8	DC input	24 VDC	10 mA	31 mm	–	0.08	–	M3	CJ1W-ID201
	16		24 VDC	7 mA	31 mm	–	0.08	–	M3	CJ1W-ID211
					31 mm				Screwless	CJ1W-ID211(SL)
	16		24 VDC	7 mA	31 mm	Fast-response (15 µs is ON, 90 µs is OFF)	0.13	–	M3	CJ1W-ID212
	16		24 VDC	7 mA	31 mm	Inputs start interrupt tasks in PLC program	0.08	–	M3	CJ1W-INT01
	16		24 VDC	7 mA	31 mm	Latches pulses down to 50 µs pulse width	0.08	–	M3	CJ1W-IDP01
	32		24 VDC	4.1 mA	20 mm	–	0.09	–	Fujitsu	CJ1W-ID231
	32		24 VDC	4.1 mA	20 mm	–	0.09	–	MIL	CJ1W-ID232
	32		24 VDC	4.1 mA	20 mm	Fast-response (15 µs is ON, 90 µs is OFF)	0.20	–	MIL	CJ1W-ID233
	64		24 VDC	4.1 mA	31 mm	–	0.09	–	Fujitsu	CJ1W-ID261
	64		24 VDC	4.1 mA	31 mm	–	0.09	–	MIL	CJ1W-ID262
	8	Triac output	250 VAC	0.6 mA	31 mm	–	0.22	–	M3	CJ1W-OA201
	8	Relay contact output	250 VAC	2 A	31 mm	–	0.09	0.048	M3	CJ1W-OC201
					31 mm				Screwless	CJ1W-OC201(SL)
	16		250 VAC	2 A	31 mm	–	0.11	0.096	M3	CJ1W-OC211
					31 mm				Screwless	CJ1W-OC211(SL)
	8	DC output (sink)	12 to 24 VDC	2 A	31 mm	–	0.09	–	M3	CJ1W-OD201
	8		12 to 24 VDC	0.5 A	31 mm	–	0.10	–	M3	CJ1W-OD203
	16		12 to 24 VDC	0.5 A	31 mm	–	0.10	–	M3	CJ1W-OD211
					31 mm				Screwless	CJ1W-OD211(SL)
	16		24 VDC	0.5 A	31 mm	Fast-response (15 µs is ON, 80 µs is OFF)	0.15	–	M3	CJ1W-OD213
	32		12 to 24 VDC	0.5 A	20 mm	–	0.14	–	Fujitsu	CJ1W-OD231
	32		12 to 24 VDC	0.5 A	20 mm	–	0.14	–	MIL	CJ1W-OD233
	32		24 VDC	0.5 A	20 mm	Fast-response (15 µs is ON, 80 µs is OFF)	0.22	–	MIL	CJ1W-OD234
	64		12 to 24 VDC	0.3 A	31 mm	–	0.17	–	Fujitsu	CJ1W-OD261
	64		12 to 24 VDC	0.3 A	31 mm	–	0.17	–	MIL	CJ1W-OD263
	8	DC output (source)	24 VDC	2 A	31 mm	Short-circuit protection	0.11	–	M3	CJ1W-OD202
	8		24 VDC	0.5 A	31 mm	Short-circuit protection	0.10	–	M3	CJ1W-OD204
	16		24 VDC	0.5 A	31 mm	Short-circuit protection	0.10	–	M3	CJ1W-OD212
					31 mm				Screwless	CJ1W-OD212(SL)
	32		24 VDC	0.3 A	20 mm	Short-circuit protection	0.15	–	MIL	CJ1W-OD232
	64		24 VDC	0.3 A	31 mm	–	0.17	–	MIL	CJ1W-OD262
	16 + 16	DC in + out (source)	24 VDC	0.5 A	31 mm	–	0.13	–	MIL	CJ1W-MD232
	16 + 16	DC in + out (sink)	24 VDC	0.5 A	31 mm	–	0.13	–	Fujitsu	CJ1W-MD231
	16 + 16		24 VDC	0.5 A	31 mm	–	0.13	–	MIL	CJ1W-MD233
	32 + 32		24 VDC	0.3 A	31 mm	–	0.14	–	Fujitsu	CJ1W-MD261
	32 + 32		24 VDC	0.3 A	31 mm	–	0.14	–	MIL	CJ1W-MD263
	32 + 32	DC in + out (TTL)	5 VDC	35 mA	31 mm	–	0.19	–	MIL	CJ1W-MD563

Note: MIL = Connector according to MIL-C-83503 (compatible with DIN 41651/IEC 60603-1).

CJ series analog I/O and control units

Symbol	Points	Type	Ranges	Resolution	Accuracy*1	Conversion time	Width	Remarks	Current (A)		Connection type	Order code
									5 V	24 V		
③	4	Universal analog input	0 to 5 V, 1 to 5 V, 0 to 10 V, 0 to 20 mA, 4 to 20 mA, K, J, T, L, R, S, B, Pt100, Pt1000, JPt100	V/I: 1/12,000 T/C: 0.1°C RTD: 0.1°C	V: 0.3% I: 0.3% T/C: 0.3% RTD: 0.3%	250 ms/4 points	31 mm	Universal inputs, with zero/span adjustment, configurable alarms, scaling, sensor error detection	0.32	–	M3 Screwless	CJ1W-AD04U CJ1W-AD04U(SL)
	4	Analog input	0 to 5 V, 0 to 10 V, –10 to 10 V, 1 to 5 V, 4 to 20 mA	1/8,000	V: 0.2% I: 0.4%	250 µs/point	31 mm	Offset/gain adjustment, peak hold, moving average, alarms	0.42	–	M3 Screwless	CJ1W-AD041-V1 CJ1W-AD041-V1(SL)
	4	High-speed analog input	1 to 5 V, 0 to 10 V, –5 to 5 V, –10 to 10 V, 4 to 20 mA	1/40,000	V: 0.2% I: 0.4%	35 µs/4 points	31 mm	Direct conversion (CJ2H special instruction)	0.52	–	M3	CJ1W-AD042
	8	Analog input	1 to 5 V, 0 to 10 V, –10 to 10 V, 1 to 5 V, 4 to 20 mA	1/8,000	V: 0.2% I: 0.4%	250 µs/point	31 mm	Offset/gain adjustment, peak hold, moving average, alarms	0.42	–	M3 Screwless	CJ1W-AD081-V1 CJ1W-AD081-V1(SL)
	2	Analog output	0 to 5 V, 0 to 10 V, –10 to 10 V, 1 to 5 V, 4 to 20 mA	1/4,000	V: 0.3% I: 0.5%	1 ms/point	31 mm	Offset/gain adjustment, output hold	0.12	0.14	M3 Screwless	CJ1W-DA021 CJ1W-DA021(SL)
	4	Analog output	1 to 5 V, 0 to 10 V, –10 to 10 V, 1 to 5 V, 4 to 20 mA	1/4,000	V: 0.3% I: 0.5%	1 ms/point	31 mm	Offset/gain adjustment, output hold	0.12	0.2	M3 Screwless	CJ1W-DA041 CJ1W-DA041(SL)
	4	High-speed analog output	1 to 5 V, 0 to 10 V, –10 to 10 V	1/40,000	0.3%	35 µs/4 points	31 mm	Direct conversion (CJ2H special instruction)	0.40	–	M3	CJ1W-DA042V
	8	Voltage output	1 to 5 V, 0 to 10 V, –10 to 10 V, 1 to 5 V	1/8,000	0.3%	250 µs/point	31 mm	Offset/gain adjustment, output hold	0.14	0.14	M3 Screwless	CJ1W-DA08V CJ1W-DA08V(SL)
	8	Current output	4 to 20 mA	1/8,000	0.5%	250 µs/point	31 mm	Offset/gain adjustment, output hold	0.14	0.17	M3 Screwless	CJ1W-DA08C CJ1W-DA08C(SL)
	4 + 2	Analog in + out	1 to 5 V, 0 to 10 V, –10 to 10 V, 1 to 5 V, 4 to 20 mA	1/8,000	in: 0.2% out: 0.3%	1 ms/point	31 mm	Offset/gain adjustment, scaling, peak hold, moving average, alarms, output hold	0.58	–	M3 Screwless	CJ1W-MAD42 CJ1W-MAD42(SL)
	4	Universal analog input	DC voltage, DC current, thermocouple, Pt100/Pt1000, potentiometer	1/256,000	0.05%	60 ms/4 points	31 mm	All inputs individually isolated, configurable alarms, maintenance functions, user-defined scaling, zero/span adjustment	0.30	–	M3	CJ1W-PH41U
	2	Process input	4 to 20 mA, 0 to 20 mA, 0 to 10 V, –10 to 10 V, 0 to 5 V, –5 to 5 V, 1 to 5 V, 0 to 1.25 V, 1.25 to 1.25 V	1/64,000	0.05%	5 ms/point	31 mm	Configurable alarms, maintenance functions, user-defined scaling, zero/span adjustment, square root, totaliser	0.18	0.09	M3	CJ1W-PDC15
	6	Temperature control loops, thermocouple	K-type (–200 to 1,300°C) J-type (–100 to 850°C)	0.1°C	0.5%	40 ms/point	31 mm	Basic I/O unit, setup by DIP switches, adjustable filtering 10/50/60 Hz	0.22	–	M3 Screwless	CJ1W-TS561 CJ1W-TS561(SL)
	6	Temperature control loops	Pt100 (–200 to 650°C) Pt1000 (–200 to 650°C)	0.1°C	0.5%	40 ms/point	31 mm	Basic I/O unit, setup by DIP switches, adjustable filtering 10/50/60 Hz	0.25	–	M3 Screwless	CJ1W-TS562 CJ1W-TS562(SL)
	2	Temperature control loops, thermocouple	B, J, K, L, R, S, T	0.1°C	0.3%	500 ms total	31 mm	Open collector NPN outputs	0.25	–	M3	CJ1W-TC003
	2	Temperature control loops, thermocouple	B, J, K, L, R, S, T	0.1°C	0.3%	500 ms total	31 mm	Open collector PNP outputs	0.25	–	M3	CJ1W-TC004
	2	Temperature control loops	Pt100, JPt100	0.1°C	0.3%	500 ms total	31 mm	Open collector NPN outputs	0.25	–	M3	CJ1W-TC103
	2	Temperature control loops	Pt100, JPt100	0.1°C	0.3%	500 ms total	31 mm	Open collector PNP outputs	0.25	–	M3	CJ1W-TC104

*1 Accuracy for voltage and current inputs/outputs as percentage of full scale and typical value at 25°C ambient temperature (consult the operation manual for details)
Accuracy for temperature inputs/outputs as percentage of process value and typical value at 25°C ambient temperature (consult the operation manual for details)

CJ series special I/O units

Symbol	Channels	Type	Signal type	Width	Remarks	Current consumption (A)		Connection type	Order code
						5 V	24 V		
③	2	500 kHz Counter	24 V, line driver	31 mm	2 configurable digital inputs + outputs	0.28	–	Fujitsu	CJ1W-CT021
	4	100 kHz Counter	Line driver, 24 V via terminal block		Target values trigger interrupt to CPU	0.32	–	1 × MIL (40 pt)	CJ1W-CTL41-E

CJ series communication units

Symbol	Type	Ports	Data transfer	Protocols	Width	Current consumption (A)		Connection type	Order code
						5 V	24 V		
③	Serial communications units	2 × RS-232C	High-speed	CompoWay/F, host link, NT link, Modbus, user-defined	31 mm	0.28	–	9 pin D-Sub	CJ1W-SCU22
		2 × RS-422A/RS-485			31 mm	0.28	–	9 pin D-Sub	CJ1W-SCU32
		1 × RS-232C + 1 × RS-422/RS-485			31 mm	0.28	–	9 pin D-Sub	CJ1W-SCU42
	EtherNet/IP	1 × 100 Base-Tx	–	EtherNet/IP, UDP, TCP/IP, FTP server, SNMP, SNMP	31 mm	0.41	–	RJ45	CJ1W-EIP21 ^{*1}
	DeviceNet	1 × CAN	–	DeviceNet	31 mm	0.29	–	5-p detachable	CJ1W-DRM21
	CompoNet	4-wire, data + power to slaves (Master)	–	CompoNet (CIP-based)	31 mm	0.4	–	4-p detachable IDC or screw	CJ1W-CRM21 ^{*2}
	PROFIBUS-DP	1 × RS-485 (Master)	–	DP, DPV1	31 mm	0.40	–	9 pin D-Sub	CJ1W-PRM21
		1 × RS-485 (Slave)	–	DP	31 mm	0.40	–		CJ1W-PRT21
	PROFINET-IO	1 × 100 Base-Tx	–	PROFINET-IO controller, FINS/UDP	31 mm	0.42	–	RJ45	CJ1W-PNT21
	RS-422A converter accessory	RS-232C to RS-422A/RS-485 signal converter. Mounts directly on serial port						9 pin D-Sub to screw clamp terminals	CJ1W-CIF11

^{*1} Supported only by the EtherNet/IP units with unit version 2.1 or later, CPU units with unit version 1.01 or later and the Sysmac Studio version 1.02 or higher.

^{*2} Supported only by the CPU units with unit version 1.01 or higher and the Sysmac Studio version 1.02 or higher.

CJ series ID sensor units

Symbol	Type	Specifications				Current consumption (A)		Order code
		Connected ID systems	No. of connected R/W heads	External power supply	No. of unit numbers allocated	5 V	24 V	
③	ID sensor units	V680-Series RFID system	1	Not required	1	0.26 ^{*1}	0.13 ^{*1}	CJ1W-V680C11
			2		2	0.32	0.26	CJ1W-V680C12

^{*1} To use a V680-H01 antenna, refer to the V680 Series RFID system catalog (Cat. No. Q151)

Note: The data transfer function using intelligent I/O commands can not be used.

Expansion racks

CJ series I/O control unit (mounted on CPU rack when connecting expansion racks)

Symbol	Name	Connecting cable	Connected Unit	Width	Current consumption (A)		Order code
					5 V	24 V	
④	CJ-Series I/O control unit	CS1W-CN__3	CJ1W-II101	20 mm	0.02 A	–	CJ1W-IC101

Note: Mount to the right of the power supply unit.

CJ series I/O interface unit (mounted on expansion rack)



Symbol	Name	Connecting cable	Width	Current consumption (A)		Order code
				5 V	24 V	
⑤	CJ-Series I/O interface unit	CS1W-CN__3	31 mm	0.13 A	–	CJ1W-II101

Note: Mount to the right of the power supply unit.

I/O connecting cables


Symbol	Name	Specifications	Order code	
⑥	I/O connecting cable	Connects an I/O control unit on NJ series CPU rack to an I/O interface unit on a NJ series expansion rack. or Connects an I/O interface unit on NJ series expansion rack to an I/O interface unit on another NJ series expansion rack.	Cable length: 0.3 m	CS1W-CN313
			Cable length: 0.7 m	CS1W-CN713
		Cable length: 2 m	CS1W-CN223	
		Cable length: 3 m	CS1W-CN323	
		Cable length: 5 m	CS1W-CN523	
		Cable length: 10 m	CS1W-CN133	
		Cable length: 12 m	CS1W-CN133-B2	

EtherCAT junction slave




Symbol	Appearance	Name	No. of ports	Power supply voltage	Current consumption (A)	Dimensions (W × D × H)	Weight	Order code
⑦		EtherCAT junction slave	3	20.4 to 28.8 VDC (24 VDC –15 to 20%)	0.08	25 mm × 78 mm × 90 mm	165 g	GX-JC03
			6		0.17	48 mm × 78 mm × 90 mm	220 g	GX-JC06





Note 1. Please do not connect EtherCAT junction slave with OMRON position control unit, Model CJ1W-NC_81/_82.
2. EtherCAT junction slave cannot be used for Ethernet/IP and Ethernet.

Industrial switching hubs

Symbol	Appearance	Specifications			Accessories	Current consumption (A)	Order code
		Functions	No. of ports	Failure detection			
⑧		Quality of Service (QoS): EtherNet/IP control data priority.	3	No	Power supply connector	0.08	W4S1-03B
		Failure detection: Broadcast storm and LSI error detection 10/100 BASE-TX, Auto-Negotiation	5	No		0.12	W4S1-05B
			5	Yes	Power supply connector and connector for informing error	0.12	W4S1-05C

Recommended EtherCAT and EtherNet/IP communication cables


Symbol	Item			Manufacturer	Color	Cable length (m)	Order code
⑨	Ethernet patch cable	Cat 6a, AWG27, 4-pair cable Cable sheath material: LSZH*1 Note: This cable is available in yellow, green and blue colors.	Standard type Cable with connectors on both ends (RJ45/RJ45) 	OMRON	Yellow	0.2	XS6W-6LSZH8S520CM-Y
						0.3	XS6W-6LSZH8S530CM-Y
						0.5	XS6W-6LSZH8S550CM-Y
						1	XS6W-6LSZH8S5100CM-Y
						1.5	XS6W-6LSZH8S5150CM-Y
						2	XS6W-6LSZH8S5200CM-Y
						3	XS6W-6LSZH8S5300CM-Y
						5	XS6W-6LSZH8S5500CM-Y
						7.5	XS6W-6LSZH8S5750CM-Y
						10	XS6W-6LSZH8S51000CM-Y
						15	XS6W-6LSZH8S51500CM-Y
						20	XS6W-6LSZH8S52000CM-Y
		Green	0.2		XS6W-6LSZH8S520CM-G		
			0.3		XS6W-6LSZH8S530CM-G		
			0.5		XS6W-6LSZH8S550CM-G		
			1		XS6W-6LSZH8S5100CM-G		
			1.5		XS6W-6LSZH8S5150CM-G		
			2		XS6W-6LSZH8S5200CM-G		
			3		XS6W-6LSZH8S5300CM-G		
			5		XS6W-6LSZH8S5500CM-G		
			7.5		XS6W-6LSZH8S5750CM-G		
			10		XS6W-6LSZH8S51000CM-G		
			15		XS6W-6LSZH8S51500CM-G		
			20		XS6W-6LSZH8S52000CM-G		
		Cat 5, AWG26, 4-pair cable Cable sheath material: PUR*1	Standard type Cable with connectors on both ends (RJ45/RJ45) 		Green	0.5	XS6W-5PUR8S550CM-G
						1	XS6W-5PUR8S5100CM-G
						1.5	XS6W-5PUR8S5150CM-G
						2	XS6W-5PUR8S5200CM-G
						3	XS6W-5PUR8S5300CM-G
						5	XS6W-5PUR8S5500CM-G
	7.5			XS6W-5PUR8S5750CM-G			
	10			XS6W-5PUR8S51000CM-G			
	15			XS6W-5PUR8S51500CM-G			
	20			XS6W-5PUR8S52000CM-G			
	Cat5, AWG22, 2-pair cable	Rugged type Cable with connectors on both ends (RJ45/RJ45) 	Grey	0.3	XS5W-T421-AMD-K		
				0.5	XS5W-T421-BMD-K		
				1	XS5W-T421-CMD-K		
				2	XS5W-T421-DMD-K		
				3	XS5W-T421-EMD-K		
				5	XS5W-T421-GMD-K		
				10	XS5W-T421-JMD-K		
				15	XS5W-T421-KMD-K		

Symbol	Item			Manufacturer	Color	Cable length (m)	Order code
⑨	Ethernet patch cable	Cat5, AWG22, 2-pair cable	Rugged type Cable with connectors on both ends (M12 straight/RJ45) 	OMRON	Grey	0.3	XS5W-T421-AMC-K
						0.5	XS5W-T421-BMC-K
						1	XS5W-T421-CMC-K
						2	XS5W-T421-DMC-K
						3	XS5W-T421-EMC-K
						5	XS5W-T421-GMC-K
						10	XS5W-T421-JMC-K
						15	XS5W-T421-KMC-K
			Rugged type Cable with connectors on both ends (M12 L right angle/RJ45) 		Grey	0.3	XS5W-T422-AMC-K
						0.5	XS5W-T422-BMC-K
						1	XS5W-T422-CMC-K
						2	XS5W-T422-DMC-K
						3	XS5W-T422-EMC-K
						5	XS5W-T422-GMC-K
						10	XS5W-T422-JMC-K
						15	XS5W-T422-KMC-K
	Ethernet installation cable	Cat 5, SF/UTP, 4 × 2 × AWG 24/1 (solid core), Polyurethane (PUR)	Weidmüller	Green	100	WM IE-5IC4x2xAWG24/1-PUR	
		Cat 5, SF/UTP, 4 × 2 × AWG 26/7 (stranded core), Polyurethane (PUR)		Green	100	WM IE-5IC4x2xAWG26/7-PUR	
	Connectors	RJ45 metallic connector For AWG22 to AWG26 	OMRON	–	–	WM IE-T0-RJ45-FH-BK	
		RJ45 plastic connector For AWG22 to AWG24 		–	–	XS6G-T421-1	
	RJ45 socket	DIN-rail mount socket to terminate installation cable in the cabinet			Weidmüller	–	–

*1 The lineup features low smoke zero halogen cables for in-cabinet use and PUR cables for out-of-cabinet use.






Note: Please be careful while cable processing, for EtherCAT, connectors on both ends should be shield connected and for EtherNet/IP, connectors on only one end should be shield connected.

WE70 FA wireless LAN units

Appearance	Name	Area	Type	Order code	
	WE70 FA wireless LAN units	Europe	Access point (Master)	WE70-AP-EU	
			Client (Slave)	WE70-CL-EU	
	Directional magnetic-base antenna		1 set with two antennas, 2.4 GHz/5 GHz Dual-band compatible	WE70-AT001H	
	DIN rail mounting bracket		For TH35 7.5	WT30-FT001	
			For TH35 15	WT30-FT002	
	Antenna extension cable		5 m	WE70-CA5M	

Note: Special versions are available for USA, Canada, China and Japan.

NJ series options and accessories

Appearance	Specifications		Order code
	SD memory card	2 GB	HMC-SD291
		4 GB	HMC-SD491
	DIN track	Length: 0.5 m; height: 7.3 mm	PFP-50N
		Length: 1 m; height: 7.3 mm	PFP-100N
		Length: 1 m; height: 16 mm	PFP-100N2
	End plate to secure the units on the DIN track (2 pieces are included with the CPU unit and I/O interface unit)		PFP-M (2 pcs)
	Battery for NX7/NJ CPU unit (The battery is included with the CPU unit)		CJ1W-BAT01
	End cover (The end cover is included with each CPU unit and I/O interface unit)		CJ1W-TER01

Computer software

Symbol	Specifications		Order code
⑩	Sysmac Studio ^{*1} ^{*2}		SYSMAC-SE2 ^{*3}
	License for the SECS/GEM configurator ^{*4}	Software to make HSMS, SECSII and GEM settings for the NJ501 CPU units with SECS/GEM communications	WS02-GCTL1

*1 For the NJ501-1340 CPU unit, Sysmac Studio version 1.11 or higher is needed.

*2 For the NJ101 CPU units, Sysmac Studio version 1.13 or higher is needed.

*3 Refer to the Sysmac Studio datasheet (Cat. No. SysCat_I181E) for detailed information or contact your OMRON representative

*4 SECS/GEM configurator files are included in the Sysmac Studio standard edition DVD.

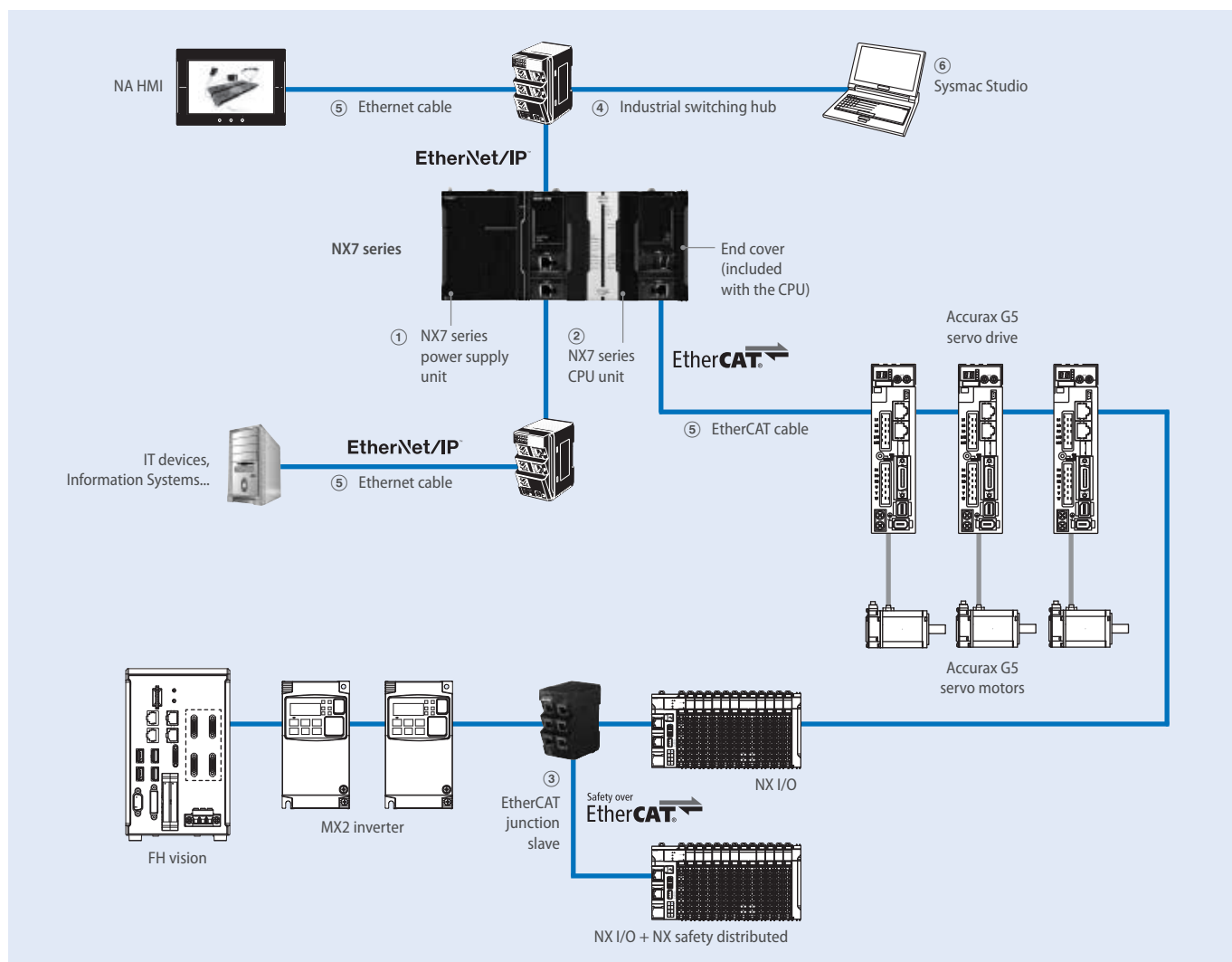


Sysmac controller - NX7 series

The NX7 series is a high performance machine controller that includes two synchronized motion cores controlling up to 256 axes.

- Fastest cycle time: 125 μ s
- Number of axes: 256, 128
- Two synchronized motion cores
- Functions: Logic sequence and Motion
- Multi-tasking
- Built-in EtherCAT and two EtherNet/IP (1 Gbps) ports
- Fully conforms to IEC 61131-3 standards
- Certified PLCopen function blocks for motion control

Ordering information



Power supply units



Symbol	Description	Output capacity	RUN output	Order code
		Total		
①	100 to 240 VAC power supply unit for NX7 CPU	90 W	Supported	NX-PA9001
	24 VDC power supply unit for NX7 CPU	70 W		NX-PD7001

NX7 series CPU units

Symbol	CPU	Program capacity	Variables capacity	Specifications	Number of axes	Order code
②	NX701	80 MB	4 MB: Retained 256 MB: Not retained	Power consumption: 40 W	256	NX701-1700
					128	NX701-1600


Note: The end cover unit NX-END01 is included with the CPU unit.

EtherCAT junction slave

Symbol	Appearance	Name	No. of ports	Power supply voltage	Current consumption (A)	Dimensions (W x D x H)	Weight	Order code
③		EtherCAT junction slave	3	20.4 to 28.8 VDC (24 VDC –15 to 20%)	0.08	25 mm × 78 mm × 90 mm	165 g	GX-JC03
			6		0.17	48 mm × 78 mm × 90 mm	220 g	GX-JC06





Note 1. Please do not connect EtherCAT junction slave with OMRON position control unit, Model CJ1W-NC_81/_82.
2. EtherCAT junction slave cannot be used for Ethernet/IP and Ethernet.

Industrial switching hub

Symbol	Appearance	Specifications			Accessories	Current consumption (A)	Order code
		Functions	No. of ports	Failure detection			
④		Quality of Service (QoS): EtherNet/IP control data priority. Failure detection: Broadcast storm and LSI error detection 10/100 BASE-TX, Auto-Negotiation	3	No	Power supply connector	0.08	W4S1-03B
			5	No		0.12	W4S1-05B
			5	Yes	Power supply connector and connector for informing error	0.12	W4S1-05C


Recommended EtherCAT and EtherNet/IP communication cables

Symbol	Item			Manufacturer	Color	Cable length (m)	Order code
⑤	Ethernet patch cable	Cat 6a, AWG27, 4-pair cable Cable sheath material: LSZH*1	Standard type Cable with connectors on both ends (RJ45/RJ45)	OMRON	Yellow	0.2	XS6W-6LSZH8S520CM-Y
						0.3	XS6W-6LSZH8S530CM-Y
						0.5	XS6W-6LSZH8S550CM-Y
						1	XS6W-6LSZH8S5100CM-Y
						1.5	XS6W-6LSZH8S5150CM-Y
						2	XS6W-6LSZH8S5200CM-Y
						3	XS6W-6LSZH8S5300CM-Y
						5	XS6W-6LSZH8S5500CM-Y
						7.5	XS6W-6LSZH8S5750CM-Y
						10	XS6W-6LSZH8S51000CM-Y
						15	XS6W-6LSZH8S51500CM-Y
						20	XS6W-6LSZH8S52000CM-Y
					Green	0.2	XS6W-6LSZH8S520CM-G
						0.3	XS6W-6LSZH8S530CM-G
						0.5	XS6W-6LSZH8S550CM-G
						1	XS6W-6LSZH8S5100CM-G
						1.5	XS6W-6LSZH8S5150CM-G
						2	XS6W-6LSZH8S5200CM-G
						3	XS6W-6LSZH8S5300CM-G
						5	XS6W-6LSZH8S5500CM-G
						7.5	XS6W-6LSZH8S5750CM-G
						10	XS6W-6LSZH8S51000CM-G
						15	XS6W-6LSZH8S51500CM-G
						20	XS6W-6LSZH8S52000CM-G
	Green	0.5	XS6W-5PUR8S550CM-G				
		1	XS6W-5PUR8S5100CM-G				
		1.5	XS6W-5PUR8S5150CM-G				
		2	XS6W-5PUR8S5200CM-G				
		3	XS6W-5PUR8S5300CM-G				
		5	XS6W-5PUR8S5500CM-G				
		7.5	XS6W-5PUR8S5750CM-G				
		10	XS6W-5PUR8S51000CM-G				
		15	XS6W-5PUR8S51500CM-G				
		20	XS6W-5PUR8S52000CM-G				
		Grey	0.3	XS5W-T421-AMD-K			
			0.5	XS5W-T421-BMD-K			
1	XS5W-T421-CMD-K						
2	XS5W-T421-DMD-K						
3	XS5W-T421-EMD-K						
5	XS5W-T421-GMD-K						
10	XS5W-T421-JMD-K						
15	XS5W-T421-KMD-K						
		Cat 5, AWG26, 4-pair cable Cable sheath material: PUR*1	Standard type Cable with connectors on both ends (RJ45/RJ45)				
		Cat5, AWG22, 2-pair cable	Rugged type Cable with connectors on both ends (RJ45/RJ45)				

Symbol	Item			Manufacturer	Color	Cable length (m)	Order code
⑤	Ethernet patch cable	Cat5, AWG22, 2-pair cable	Rugged type Cable with connectors on both ends (M12 straight/RJ45) 	OMRON	Grey	0.3	XS5W-T421-AMC-K
						0.5	XS5W-T421-BMC-K
						1	XS5W-T421-CMC-K
						2	XS5W-T421-DMC-K
						3	XS5W-T421-EMC-K
						5	XS5W-T421-GMC-K
						10	XS5W-T421-JMC-K
						15	XS5W-T421-KMC-K
		Rugged type Cable with connectors on both ends (M12 L right angle/RJ45) 	Grey	0.3	XS5W-T422-AMC-K		
				0.5	XS5W-T422-BMC-K		
				1	XS5W-T422-CMC-K		
				2	XS5W-T422-DMC-K		
				3	XS5W-T422-EMC-K		
				5	XS5W-T422-GMC-K		
				10	XS5W-T422-JMC-K		
				15	XS5W-T422-KMC-K		
	Ethernet installation cable	Cat 5, SF/UTP, 4 × 2 × AWG 24/1 (solid core), Polyurethane (PUR)		Weidmüller	Green	100	WM IE-5IC4x2xAWG24/1-PUR
		Cat 5, SF/UTP, 4 × 2 × AWG 26/7 (stranded core), Polyurethane (PUR)			Green	100	WM IE-5IC4x2xAWG26/7-PUR
	Connectors	RJ45 metallic connector For AWG22 to AWG26 	OMRON	–	–	WM IE-T0-RJ45-FH-BK	
		RJ45 plastic connector For AWG22 to AWG24 		–	–	XS6G-T421-1	
	RJ45 socket	DIN-rail mount socket to terminate installation cable in the cabinet			Weidmüller	–	–





*1 This cable is available in yellow, green and blue colors

WE70 FA wireless LAN units

Appearance	Name	Area	Type	Order code
	WE70 FA wireless LAN units		Europe	Access point (Master)
				Client (Slave)
	Directional magnetic-base antenna		1 set with two antennas, 2.4 GHz/5 GHz Dual-band compatible	
	DIN rail mounting bracket		For TH35 7.5	WT30-FT001
			For TH35 15	WT30-FT002
	Antenna extension cable		5 m	WE70-CA5M

Note: Special versions are available for USA, Canada, China and Japan.

Accessories

Appearance	Specifications		Order code
	SD memory card	2 GB	HMC-SD291
		4 GB	HMC-SD491
	DIN track	Length: 0.5 m; height: 7.3 mm	PFP-50N
		Length: 1 m; height: 7.3 mm	PFP-100N
		Length: 1 m; height: 16 mm	PFP-100N2
	Battery for NX7/NJ CPU unit (The battery is included with the CPU unit)		CJ1W-BAT01
	End cover (The end cover is included with the CPU unit. Necessary to be connected to the right end of the CPU rack)		NX-END01
	Fan unit (The fan unit is included with the CPU unit)		NX-FAN01

Computer software

Symbol	Specifications	Order code
⑥	Sysmac Studio version 1.13 or higher	SYSMAC-SE2_* ^{*1}

*1 Refer to the Sysmac Studio datasheet (Cat. No. SysCat_I181E) for detailed information or contact your OMRON representative