Machine Automation Controller

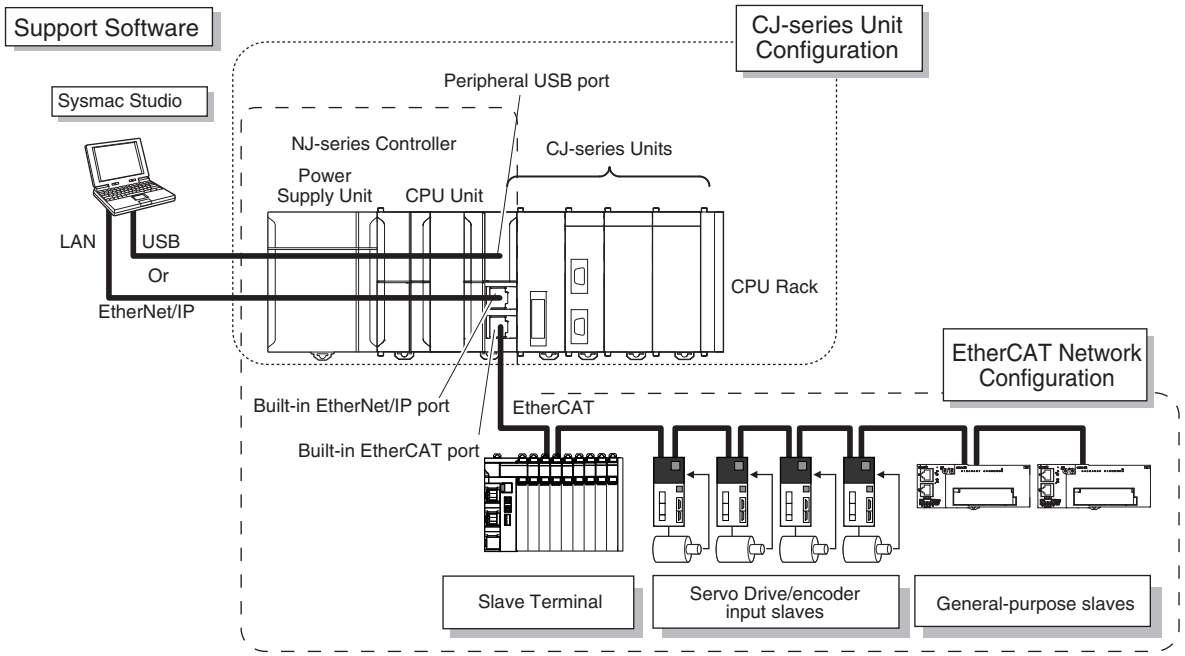
NJ-Series

Controller that covers functions and high-speed processing required for machine control and safety, reliability and maintainability

Features

- Implemented OPC UA as standard feature. OPC UA (NJ501-1□00)
- Integration of Logic and Motion in one CPU.
- Conforms to IEC 61131-3 (JIS B 3503) standard programming and PLCopen function blocks for Motion Control. Programming with variables allows users to create complex programs efficiently.
- Fast and accurate control by synchronizing all EtherCAT devices, such as vision sensors, servo drives, and field devices, with the PLC and Motion Engines.
- Offers speed without compromising on reliability and robustness expected from PLCs.
- Complete RAS functions: Transmission frame error check, timeout, bus diagnosis, Watchdog (WDT), memory check, and topology check, etc.
- Ideal for small-scale control with up to 8 axes. (NJ301-□□□□)
- Ideal for simple machines. (NJ101-□□□□)
- Linear and circular interpolation.
- Electronic gear and cam synchronization.
- The Controller can be directly connected to a database. No special Unit, software, nor middleware is required. (NJ501-□□20/NJ101-□020)
- The NJ501 SECS/GEM CPU Unit has built-in the SECS/GEM communications functions which are the standards in the semiconductor industry. (NJ501-1340)
- Control function of parallel link robots, cartesian robots and serial link robots. (NJ501-4□□0)
- Integration of Logic, Motion, OMRON Robot and Kinematics in one CPU. (NJ501-R□□0)
- Realize high-accuracy synchronization motion control (MC) and numerical control (NC) functions by ONE controller. G-Code available. (NJ501-5300)

System Configuration

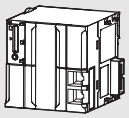
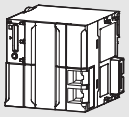
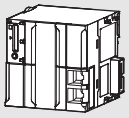


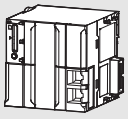
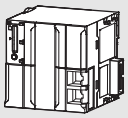
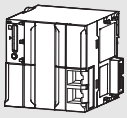
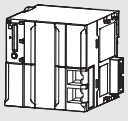
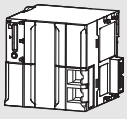
Ordering Information

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.

CPU Units

Product name	Specifications				Model
	I/O capacity / maximum number of configuration Units (Expansion Racks)	Program capacity	Memory capacity for variables	Number of motion axes	
NJ501 CPU Units OPC UA Support 	2,560 points / 40 Units (3 Expansion Racks)	20 MB	2 MB: Retained during power interruption 4 MB: Not retained during power interruption	64	**NJ501-1500**
				32	**NJ501-1400**
				16	**NJ501-1300**
NJ301 CPU Units 		5 MB	0.5 MB: Retained during power interruption 2 MB: Not retained during power interruption	8	**NJ301-1200**
				4	**NJ301-1100**
NJ101 CPU Units 		3 MB		2	**NJ101-1000**
				0	**NJ101-9000**

Product name	Specifications									Model
	I/O capacity / maximum number of configuration Units (Expansion Racks)	Program capacity	Memory capacity for variables	Number of motion axes	Database Connection function	SECS/GEM Communication function	Number of controlled robots	Number of controlled OMRON robots	Numerical Control Functions	
Database Connection CPU Units 	2,560 points / 40 Units (3 Expansion Racks)	20 MB	2 MB: Retained during power interruption 4 MB: Not retained during power interruption	64	Yes	No	---	---	No	**NJ501-1520**
				32						**NJ501-1420**
				16						**NJ501-1320**
		3 MB	0.5 MB: Retained during power interruption 2 MB: Not retained during power interruption	2						**NJ101-1020**
				0						**NJ101-9020**
SECS/GEM CPU Unit 	2,560 points / 40 Units (3 Expansion Racks)	20 MB	2 MB: Retained during power interruption 4 MB: Not retained during power interruption	16	No	Yes	---	---	No	**NJ501-1340**
NJ Robotics CPU Units 				64		No	8 max. *1			**NJ501-4500**
				32						**NJ501-4400**
				16						**NJ501-4300**
							1			**NJ501-4310**
					Yes		8 max. *1			**NJ501-4320**
Robot Integrated CPU Units 				64	No			8 max.		**NJ501-R500**
					Yes					**NJ501-R520**
				32	No					**NJ501-R400**
					Yes					**NJ501-R420**
				16	No					**NJ501-R300**
					Yes					**NJ501-R320**
NC Integrated Controller 				16 *2	No		---	---	Yes *3	**NJ501-5300**

*1. The number of controlled robots varies according to the number of axes used for the system.
*2. The number of controlled axes of the MC Control Function Module is included.
*3. One CNC Operator License (SYSMAC-RTNC0001L) is attached with the CPU Unit.

Accessories

The following accessories come with the CPU Unit.

Product name	Model
Battery	CJ1W-BAT01
End Cover	CJ1W-TER01 (must be attached to the right end of the CPU Rack)
End Plate	PFP-M (2 required)
SD Memory Card (Flash Memory)	NJ501-□□20, NJ501-1340, NJ501-R□□□: HMC-SD492 NJ101-□□20: HMC-SD292

Power Supply Units

One Power Supply Unit is required for each Rack.

Product name	Power supply voltage	Output current		Output capacity	Options			Model
		5-VDC output capacity	24-VDC output capacity	Total power consumption	24-VDC service power supply	RUN output	Maintenance forecast monitor	
AC Power Supply Unit	100 to 240 VAC	6.0 A	1.0 A	30 W	No	Yes	No	**NJ-PA3001**
DC Power Supply Unit	24 VDC							**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.

Expansion Racks

Select the I/O Control Unit, I/O Interface Unit, Expansion Connecting Cable, and Power Supply Unit.

CJ-Series I/O Control Unit (Mounted on CPU Rack when Connecting Expansion Racks)

Product name	Specifications	Current consumption (A)		Model
		5 V	24 V	
CJ-Series I/O Control Unit 	Mount one I/O Control Unit on the CJ-Series CPU Rack when connecting one NJ-Series Expansion Racks. Connecting Cable: CS1W-CN□□3 Expansion Connecting Cable Connected Unit: CJ1W-II101 I/O Interface Unit Mount to the right of the CPU Unit.	0.02	---	**CJ1W-IC101**

Note: Mounting the I/O Control Unit in any other location may cause faulty operation.

CJ-Series I/O Interface Unit (Mounted on Expansion Rack)

Product Name	Specifications	Current consumption (A)		Model
		5 V	24 V	
CJ-Series I/O Interface Unit 	One I/O Interface Unit is required on each Expansion Rack. Connecting Cable: CS1W-CN□□3 Expansion Connecting Cable Mount to the right of the Power Supply Unit.	0.13	---	**CJ1W-II101**

Note: Mounting the I/O Interface Unit in any other location may cause faulty operation.

I/O Connecting Cables

Product name	Specifications		Model
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**