

CJ-series CJ3M CPU Units, Pulse I/O Modules**CJ3M-CPU3□/-CPU1□/CJ2M-MD21□**

CJ Series continues. And evolves.
Ideal for basic equipment upgrades
and expansion



CJ2M-MD21□



CJ3M-CPU3□

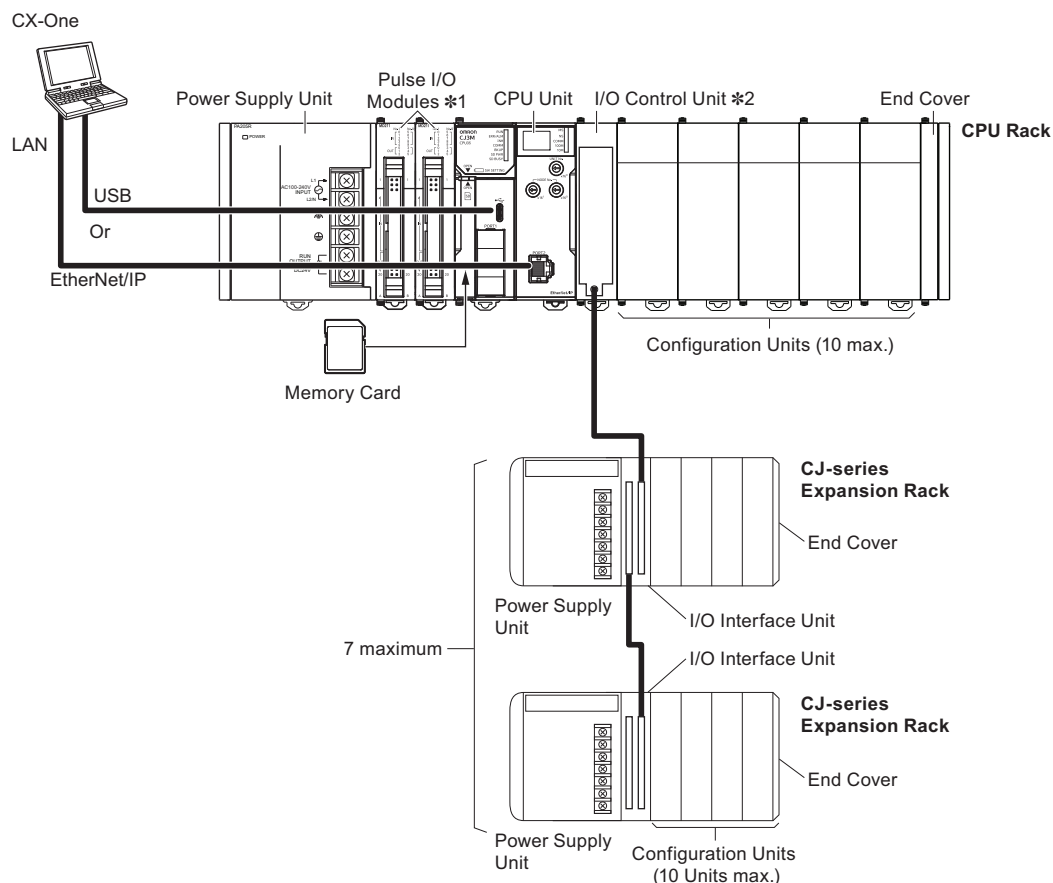


CJ3M-CPU1□

Features

- The optimum model can be selected based on the availability of an EtherNet/IP port and program capacity ranging from 5K to 100K steps.
- Up to 5,120 I/O points and a maximum of 80 Units can be connected per CPU.
- Enhanced security features contribute to the construction of a robust and reliable security system.
- Equipped with a USB Type-C connector and SD memory card that are readily available worldwide.
- Up to two Pulse I/O Blocks can be mounted, enabling easy positioning control of up to four axes.
- The battery-less design reduces maintenance workload.

System Configuration



*1. Up to two Pulse I/O Modules can be connected to the left of the CPU Unit.

*2. The I/O Control Unit is required only to connect an Expansion Rack. It must be connected immediately to the right of the CPU Unit.

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.

CJ3M CPU Units

Product name	Specifications					Current consumption (A)		Model	
	I/O capacity	Program capacity *1	Data memory capacity	LD instruction execution time	EtherNet/IP function	5 V	24 V		
CJ3M (Built-in EtherNet/IP) CPU Units 	5,120 points	100K steps	352K words (DM: 32K words, EM: 32K words × 10 banks)	0.04 μs	1 port	0.91	0.003	CJ3M-CPU35	
		50K steps						CJ3M-CPU34	
		20K steps	64K words (DM: 32K words, EM: 32K words × 1 bank)					CJ3M-CPU33	
		10K steps						CJ3M-CPU32	
		5K steps						CJ3M-CPU31	
CJ3M CPU Units 		100K steps			352K words (DM: 32K words, EM: 32K words × 10 banks)	---	0.26	0.003	CJ3M-CPU15
		50K steps			CJ3M-CPU14				
		20K steps	64K words (DM: 32K words, EM: 32K words × 1 bank)		CJ3M-CPU13				
		10K steps			CJ3M-CPU12				
		5K steps			CJ3M-CPU11				

*1. The 40K steps allocated to the FB Program Area are not included.

Accessories

The following accessories come with the CPU Unit.

Product name	Model
End Cover	CJ1W-TER01 (must be attached to the right end of the CPU Rack)
End Plate	PFP-M (2 required)

Note: A serial port (RS-232C) connector is not provided. Purchase a connector separately for serial port connection.

Plug: XM3A-0921 (manufactured by OMRON) or equivalent

Hood: XM2S-0911-E (manufactured by OMRON) or equivalent

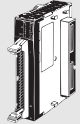
Power Supply Units

One Power Supply Unit is required for each Rack.

Product name		Power supply voltage	Output capacity			24-VDC service power supply	Options		Model
			5-VDC output capacity	24-VDC output capacity	Total power consumption		RUN output	Maintenance forecast monitor	
AC Power Supply Unit		100 to 240 VAC	5 A	0.8 A	25 W	No	No	Yes	CJ1W-PA205C
							Yes	No	CJ1W-PA205R
			2.8 A	0.4 A	14 W		No	No	CJ1W-PA202
DC Power Supply Unit		24 VDC	5 A	0.8 A	25 W	No	No	No	CJ1W-PD025
			2 A	0.4 A	19.6 W		No	No	CJ1W-PD022

Pulse I/O Modules

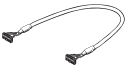
Optional Pulse I/O Modules can be mounted to enable pulse I/O. Up to two Pulse I/O Modules can be mounted to the left side of a CJ3M CPU Unit.

Product name	Specifications	Current consumption (A)		Model
		5 V	24 V	
Pulse I/O Modules 	Sinking outputs, MIL connector 10 inputs (including four interrupt/quickresponse inputs and two high-speed counter inputs) 6 outputs (including two pulse outputs and two PWM outputs)	0.08	---	CJ2M-MD211
	Sourcing outputs, MIL connector 10 inputs (including four interrupt/quickresponse inputs and two high-speed counter inputs) 6 outputs (including two pulse outputs and two PWM outputs)	0.08	---	CJ2M-MD212

Note: Connectors are not provided with Pulse I/O Modules. Purchase the following Connector, an OMRON Cable with Connectors for Connector Terminal Block Conversion Units, or an OMRON Cable with Connectors for Servo Relay Units.

Connecting to Pulse I/O Modules

Refer to the user's manual for wiring instructions.

Product name	Specifications			Model
Applicable Connector 	MIL Flat Cable Connectors (Pressure-fitted Connectors)			XG4M-4030-T
	Push-In Plus (Clamp 40-terminals) 			XW2K-40G-T
Connector-Terminal Block Conversion Units	Slim type (M3 screw terminals, 40-terminals) 			XW2D-40G6
	Slotted screw (M3 European type, 40-terminals) 			XW2R-E40GD-T
	Phillips screw (M3 screw terminals, 40-terminals) 			XW2R-J40GD-T
Cable for Connector-Terminal Block Conversion Unit 	Cable length: 0.25 m			XW2Z-C25K
	Cable length: 0.5 m			XW2Z-C50K
	Cable length: 1 m			XW2Z-100K
	Cable length: 1.5 m			XW2Z-150K
	Cable length: 2 m			XW2Z-200K
	Cable length: 3 m			XW2Z-300K
	Cable length: 5 m			XW2Z-500K
Servo Relay Units	Servo Relay Unit for 1 axis 			XW2B-20J6-8A
	Servo Relay Unit for 2 axes 			XW2B-40J6-9A
Cables for Servo Relay Units	G5 Series	Cable for Pulse I/O Modules 	Cable length: 0.5 m	XW2Z-050J-A33
			Cable length: 1 m	XW2Z-100J-A33
		Servo Driver Connecting Cables 	Cable length: 1 m	XW2Z-100J-B31
			Cable length: 2 m	XW2Z-200J-B31
	SMARTSTEP2	Cable for Pulse I/O Modules 	Cable length: 0.5 m	XW2Z-050J-A33
			Cable length: 1 m	XW2Z-100J-A33
		Servo Driver Connecting Cables 	Cable length: 1 m	XW2Z-100J-B32
			Cable length: 2 m	XW2Z-200J-B32

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 CJ-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 CJ-Series CPU Rack to an I/O Interface Unit on a CJ-Series Expansion Rack. - or - Connects an I/O Interface Unit on CJ-Series Expansion Rack to an I/O Interface Unit on another CJ-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

Programming Devices

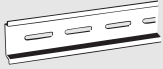
FA Integrated Tool Package CX-One Ver.4.□

The CX-One is a comprehensive software package that integrates Support Software for OMRON PLCs and components. CX-One Version 4.□ includes CX-Programmer and CX-Simulator.

For details, refer to your local OMRON website and *CX-One Ver.4 Catalog* (Cat. No. R134).

Optional Products and Maintenance Products

Product name	Specifications	Model
Memory Cards	SD memory card, 2 GB	HMC-SD292
	SDHC memory card, 4 GB	HMC-SD492
	SDHC memory card, 16 GB	HMC-SD1A2

Product name	Specifications	Model
Battery Set 	Battery for CJ-series CPU Unit Battery life 5 years at 25°C Retains the clock information when power is not supplied. The battery is not built into the CPU unit.	CJ1W-BAT01
End Cover 	Mounted to the right-hand side of CJ-series CPU Racks or Expansion Racks. One End Cover is provided as a standard accessory with each CPU Unit and I/O Interface Unit.	CJ1W-TER01
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 	There are 2 stoppers provided with CPU Units and I/O Interface Units as standard accessories to secure the Units on the DIN Track.	PFP-M

Basic I/O Units

Some discontinued CJ-series Basic I/O Units can still be used with the CJ3M. Please contact your local OMRON sales representative for details.

Input Units

Unit classification	Product name	Specifications				Number of bits allocated	Response time *1		Current consumption (A)		Model
		I/O points	Input voltage and current	Commons	External connection		ON	OFF	5 V	24 V	
CJ1 Basic I/O Units	DC Input Units 	8 inputs	12 to 24 VDC, 10 mA	Independent contacts	Removable terminal block	16 *2	20 µs max.	400 µs max.	0.08	---	CJ1W-ID201
		16 inputs	24 VDC, 7 mA	16 points, 1 common	Removable terminal block	16	20 µs max.	400 µs max.	0.08	---	CJ1W-ID211
		16 inputs <i>High-speed type</i>	24 VDC, 7 mA	16 points, 1 common	Removable terminal block	16	15 µs max.	90 µs max.	0.13	---	CJ1W-ID212
		32 inputs	24 VDC, 4.1 mA	16 points, 1 common	Fujitsu/OTAX connector	32	20 µs max.	400 µs max.	0.09	---	CJ1W-ID231 *3
		32 inputs	24 VDC, 4.1 mA	16 points, 1 common	MIL connector	32	20 µs max.	400 µs max.	0.09	---	CJ1W-ID232 *3
		32 inputs <i>High-speed type</i>	24 VDC, 4.1 mA	16 points, 1 common	MIL connector	32	15 µs max.	90 µs max.	0.20	---	CJ1W-ID233 *3
		64 inputs	24 VDC, 4.1 mA	16 points, 1 common	Fujitsu/OTAX connector	64	120 µs max.	400 µs max.	0.09	---	CJ1W-ID261 *3
		64 inputs	24 VDC, 4.1 mA	16 points, 1 common	MIL connector	64	120 µs max.	400 µs max.	0.09	---	CJ1W-ID262 *3
	AC Input Units 	8 inputs	200 to 240 VAC, 10 mA (200 V, 50 Hz)	8 points, 1 common	Removable Terminal Block	16 *2	10 µs max.	40 µs max.	0.08	---	CJ1W-IA201
		16 inputs	100 to 120 VAC, 7 mA (100 V, 50 Hz)	16 points, 1 common	Removable Terminal Block	16	10 µs max.	40 µs max.	0.09	---	CJ1W-IA111

*1. This is the input response time when no filter (i.e., 0 ms) is set.

*2. Although 16 I/O bits (1 word) are allocated, only 8 of these can be used for external I/O.

*3. Either separately purchase and use a 40-pin compatible connector (as listed under *Compatible Connectors* in the *Basic I/O Unit datasheet* (Cat. No. G152)), or use OMRON XW2K Series or XW2R-series or G7□-series I/O Relay Terminal.

Output Units

Unit classification	Product name	Specifications					Number of bits allocated	Current consumption (A)		Model
		Output type	I/O points	Maximum switching capacity	Commons	External connection		5 V	24 V	
CJ1 Basic I/O Units	Relay Contact Output Units 	---	8 outputs	250 VAC/24 VDC, 2 A	Independent contacts	Removable terminal block	16 *1	0.09	0.048 max.	CJ1W-OC201
		---	16 outputs	250 VAC/24 VDC, 2 A	16 points, 1 common	Removable terminal block	16	0.11	0.096 max.	CJ1W-OC211
	Triac Output Unit 	---	8 outputs	250 VAC, 0.6 A	8 points, 1 common	Removable terminal block	16 *1	0.22	---	CJ1W-OA201 *2 CJ1W-OA201-1
	Transistor Output Units   	Sinking	8 outputs	12 to 24 VDC, 2 A	4 points, 1 common	Removable terminal block	16 *1	0.09	---	CJ1W-OD201
		Sinking	8 outputs	12 to 24 VDC, 0.5 A	8 points, 1 common	Removable terminal block	16 *1	0.10	---	CJ1W-OD203
		Sinking	16 outputs	12 to 24 VDC, 0.5 A	16 points, 1 common	Removable terminal block	16	0.10	---	CJ1W-OD211 *3
		Sinking	16 outputs High-speed type	24 VDC, 0.5 A	16 points, 1 common	Removable terminal block	16	0.15	---	CJ1W-OD213 *3
		Sinking	32 outputs	12 to 24 VDC, 0.5 A	16 points, 1 common	Fujitsu/OTAX connector	32	0.14	---	CJ1W-OD231 *4
		Sinking	32 outputs	12 to 24 VDC, 0.5 A	16 points, 1 common	MIL connector	32	0.14	---	CJ1W-OD233 *3, *4
		Sinking	32 outputs High-speed type	24 VDC, 0.5 A	16 points, 1 common	MIL connector	32	0.22	---	CJ1W-OD234 *3, *4
		Sinking	64 outputs	12 to 24 VDC, 0.3 A	16 points, 1 common	Fujitsu/OTAX connector	64	0.17	---	CJ1W-OD261 *4
		Sinking	64 outputs	12 to 24 VDC, 0.3 A	16 points, 1 common	MIL connector	64	0.17	---	CJ1W-OD263 *4
		Sourcing	8 outputs	24 VDC, 2 A Short-circuit protection	4 points, 1 common	Removable terminal block	16 *1	0.11	---	CJ1W-OD202
		Sourcing	8 outputs	24 VDC, 0.5 A Short-circuit protection	8 points, 1 common	Removable terminal block	16 *1	0.10	---	CJ1W-OD204
		Sourcing	16 outputs	24 VDC, 0.5 A Short-circuit protection	16 points, 1 common	Removable terminal block	16	0.10	---	CJ1W-OD212
		Sourcing	32 outputs	24 VDC, 0.5 A Short-circuit protection	16 points, 1 common	MIL connector	32	0.15	---	CJ1W-OD232 *4
		Sourcing	64 outputs	12 to 24 VDC, 0.3 A	16 points, 1 common	MIL connector	64	0.17	---	CJ1W-OD262 *4

*1. Although 16 I/O bits (1 word) are allocated, only 8 of these can be used for external I/O.

*2. CJ1W-OA201 is not UC1 cULus (Class I Division 2 hazardous location certification). If cULus (Class I Div 2 hazardous location certification) is required, use CJ1W-OA201-1.

*3. The ON/OFF response time for the CJ1W-OD213/CJ1W-OD234 is shorter than for the CJ1W-OD211/CJ1W-OD233, as shown below.

· ON response time: 0.1 ms improved to 0.015 ms

· OFF response time: 0.8 ms improved to 0.08 ms

*4. Either separately purchase and use a 40-pin compatible connector (as listed under *Compatible Connectors* in the *Basic I/O Unit datasheet* (Cat. No. G152)), or use OMRON XW2K Series or XW2R-series or G7□-series I/O Relay Terminal.

I/O Units

Unit classification	Product name	Specifications					Number of bits allocated	Current consumption (A)		Model
		Output type	I/O points	Input voltage, Input current	Commons	External connection		5 V	24 V	
				Maximum switching capacity						
CJ1 Basic I/O Units	DC Input/ Transistor Output Units 	Sinking	16 inputs	24 VDC, 7 mA	16 points, 1 common	Fujitsu/OTAX connector	32	0.13	---	CJ1W-MD231 *2
			16 outputs	12 to 24 VDC, 0.5 A	16 points, 1 common					
		Sinking	16 inputs	24 VDC, 7 mA	16 points, 1 common	MIL connector	64	0.13	---	CJ1W-MD233 *2
			16 outputs	12 to 24 VDC, 0.5 A	16 points, 1 common					
		Sinking	32 inputs	24 VDC, 4.1 mA	16 points, 1 common	Fujitsu/OTAX connector	32	0.14	---	CJ1W-MD261 *1
			32 outputs	12 to 24 VDC, 0.3 A	16 points, 1 common					
		Sinking	32 inputs	24 VDC, 4.1 mA	16 points, 1 common	MIL connector	64	0.14	---	CJ1W-MD263 *1
			32 outputs	12 to 24 VDC, 0.3 A	16 points, 1 common					
	TTL I/O Units 	Sourcing	16 inputs	24 VDC, 7 mA	16 points, 1 common	MIL connector	32	0.13	---	CJ1W-MD232 *2
			16 outputs	24 VDC, 0.5 A Short-circuit protection	16 points, 1 common					
		---	32 inputs	5 VDC, 3.5 mA	16 points, 1 common	MIL connector	64	0.19	---	CJ1W-MD563 *1
			32 outputs	5 VDC, 35 mA	16 points, 1 common					

*1. Either separately purchase and use a 40-pin compatible connector (as listed under *Compatible Connectors* in the *Basic I/O Unit datasheet* (Cat. No. G152)), or use OMRON XW2K Series or XW2R-series or G7□-series I/O Relay Terminal.

*2. Either separately purchase and use 20-pin or 24-pin compatible connector (as listed under *Compatible Connectors* in the *Basic I/O Unit datasheet* (Cat. No. G152)), or use OMRON XW2K Series or XW2R-series or G7□-series I/O Relay Terminal.

Interrupt Input Units

Unit classification	Product name	Specifications						No. of words allocated	Current consumption (A)		Model
		I/O points	Input voltage, Input current	Commons	Input pulse width conditions	Max. Units mountable per Unit	External connection		5 V	24 V	
CJ1 Basic I/O Units	Interrupt Input Unit 	16 inputs	24 VDC, 7 mA	16 points, 1 common	ON time: 0.05 ms max. OFF time: 0.5 ms max.	2	Removable terminal block	1 word	0.08	---	CJ1W-INT01

Note: An Interrupt Input Unit can be connected only in a CPU Rack. Connect the Interrupt Input Units in slots 0 to 4 on the CPU Rack.

An I/O setting error will occur if an Interrupt Input Unit is connected in other positions on the CPU Rack or to any position on an Expansion Rack. Up to two Interrupt Input Units can be connected.

Quick-response Input Units

Unit classification	Product name	Specifications				Number of bits allocated	Response time		Current consumption (A)		Model
		I/O points	Input voltage, Input current	Commons	External connection		ON	OFF	5 V	24 V	
CJ1 Basic I/O Units	Quick-response Input Unit 	16 inputs	24 VDC, 7 mA	16 points, 1 common	Removable terminal block	16	0.05 ms max.	0.5 ms max.	0.08	---	CJ1W-IDP01

Special I/O Units and CPU Bus Units

- Some Special I/O Units and CPU Bus Units are allocated words in the CPU Bus Unit Setup Area.
There may also be limits due to the capacity of the Power Supply Unit that you are using or the maximum number of Units to which memory can be allocated in the CPU Bus Unit Setup Area.
Refer to the user's manual for details.
- Some discontinued CJ-series Special I/O Units and CPU Bus Units can still be used with the CJ3M. Please contact your local OMRON sales representative for details.

Process I/O Units

Isolated-type Units with Universal Inputs

Unit classification	Product name	Input points	Signal range selection	Signal range	Conversion speed (resolution)	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model
									5 V	24 V	
CJ1 Special I/O Units	Process Input Units (Isolated-type Units with Universal Inputs) 	4 inputs	Set separately for each input	Universal inputs: Pt100 (3-wire), JPt100 (3-wire), Pt1000 (3-wire), Pt100 (4-wire), K, J, T, E, L, U, N, R, S, B, WRe5-26, PL II, 4 to 20 mA, 0 to 20 mA, 1 to 5 V, 0 to 1.25 V, 0 to 5 V, 0 to 10 V, ±100 mV selectable range, -1.25 to 1.25 V, -5 to 5 V, -10 to 10 V, ±10 V selectable range, potentiometer	Resolution (conversion speed): 1/256,000 (conversion cycle: 60 ms/ 4 inputs) 1/64,000 (conversion cycle: 10 ms/ 4 inputs) 1/16,000 (conversion cycle: 5 ms/ 4 inputs)	Standard accuracy: ±0.05% of F.S.	Removable terminal block	1	0.30	---	CJ1W-PH41U *1
		4 inputs	Set separately for each input	Universal inputs: Pt100, JPt100, Pt1000, K, J, T, L, R, S, B, 4 to 20 mA, 0 to 20 mA, 1 to 5 V, 0 to 5 V, 0 to 10 V	Conversion speed: 250 ms/ 4 inputs	Accuracy: Platinum resistance thermometer input: (±0.3% of PV or ±0.8°C, whichever is larger) ±1 digit max. Thermocouple input: (±0.3% of PV or ±1.5°C, whichever is larger) ±1 digit max. *2 Voltage or current input: ±0.3% of F.S. ±1 digit max.			0.32	---	CJ1W-AD04U

*1. Do not connect a Relay Output Unit to the same CPU Rack or to the same Expansion Rack as the CJ1W-PH41U.

*2. L and -100°C or less for K and T are ±2°C ±1 digit max., and 200°C or less for R and S is ±3°C ±1 digit max. No accuracy is specified for 400°C or less for B.

Isolated-type Thermocouple Input Units

Unit classification	Product name	Input points	Signal range selection	Signal range	Conversion speed (resolution)	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model
									5 V	24 V	
CJ1 Special I/O Units	Process Input Units (Isolated-type Thermocouple Input Units) 	2 inputs	Set separately for each input	Thermocouple: B, E, J, K, L, N, R, S, T, U, WRe5-26, PLII DC voltage: ±100 mV	Conversion speed: 10 ms/ 2 inputs, Resolution: 1/64,000	Standard accuracy: ±0.05% of F.S. (See note 1.)	Removable terminal block	1	0.18	0.06 (See note 2.)	CJ1W-PTS15
		4 inputs		Thermocouple: R, S, K, J, T, L, B	Conversion speed: 250 ms/ 4 inputs	Accuracy: (±0.3% of PV or ±1°C, whichever is larger) ±1 digit max. (See note 3.)			0.25	---	CJ1W-PTS51

Note: 1. The accuracy depends on the sensors used and the measurement temperatures. For details, refer to the user's manual.

Note: 2. This is for an external power supply, and not for internal current consumption.

Note: 3. L and -100°C or less for K and T are ±2°C ±1 digit max., and 200°C or less for R and S is ±3°C ±1 digit max. No accuracy is specified for 400°C or less for B.

Isolated-type Resistance Thermometer Input Units

Unit classification	Product name	Input points	Signal range selection	Signal range	Conversion speed (resolution)	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model
									5 V	24 V	
CJ1 Special I/O Units	Process Analog Input Units (Isolated-type Resistance Thermometer Input Units) 	4 inputs	Common inputs	Resistance thermometer: Pt100, JPt100	Conversion speed: 250 ms/ 4 inputs	Accuracy: ±0.3% of PV or ±0.8°C, whichever is larger, ±1 digit max.	Removable terminal block	1	0.25	---	CJ1W-PTS52

Isolated-type DC Input Units

Unit classification	Product name	Input points	Signal range selection	Conversion speed (resolution)	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model
								5 V	24 V	
CJ1 Special I/O Units	Isolated-type DC Input Units 	2 inputs	DC voltage: 0 to 1.25 V, -1.25 to 1.25 V, 0 to 5 V, 1 to 5 V, -5 to 5 V, 0 to 10 V, -10 to 10 V, ±10 V selectable range DC current: 0 to 20 mA, 4 to 20 mA	Conversion speed: 10 ms/ 2 inputs Resolution: 1/64,000	Standard accuracy: ±0.05% of F.S.	Removable terminal block	1	0.18	0.09 *1	CJ1W-PDC15

*1. This is for an external power supply, and not for internal current consumption.

Analog I/O Units

Analog Input Units

Unit classification	Product name	Input points	Signal range selection	Signal range	Resolution	Conversion speed	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model
										5 V	24 V	
CJ1 Special I/O Units	Analog Input Units High-speed type 	4 inputs	Set separately for each input	1 to 5 V (1/10,000), 0 to 10 V (1/20,000), -5 to 5 V (1/20,000), -10 to 10 V (1/40,000), and 4 to 20 mA (1/10,000)		20 μs/1 point, 25 μs/2 points, 30 μs/3 points, 35 μs/4 points	Voltage: ±0.2% of F.S. Current: ±0.4% of F.S.	Removable terminal block	1	0.52	---	CJ1W-AD042
	Analog Input Units 	8 inputs		1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	1/4,000, (Settable to 1/8,000) *1	1 ms/point max. (Settable to 250 μs/point) *1	Voltage: ±0.2% of F.S. Current: ±0.4% of F.S.			0.42	---	CJ1W-AD081-V1
		4 inputs										

*1. The resolution and conversion speed cannot be set independently. If the resolution is set to 1/8,000, then the conversion speed will be 250 µs/point.

Analog Output Units

Unit classification	Product name	Output points	Signal range selection	Signal range	Resolution	Conversion speed	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model
										5 V	24 V	
CJ1 Special I/O Units	Analog Output Units High-speed type 	4 outputs	Set separately for each input	1 to 5 V (1/10,000), 0 to 10 V (1/20,000), and -10 to 10 V (1/40,000)		20 μs/1 point, 25 μs/2 points, 30 μs/3 points, 35 μs/4 points	±0.3% of F.S.	Removable terminal block	1	0.40	---	CJ1W-DA042V
	Analog Output Units 	8 outputs		1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V	1/4,000 (Settable to 1/8,000)	1 ms/point max. (Settable to 250 μs/point)				0.14	0.14 *1	CJ1W-DA08V
		8 outputs		4 to 20 mA						0.14	0.17 *1	CJ1W-DA08C
		4 outputs		1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	1/4,000	1 ms/point max.	Voltage output: ±0.3% of F.S. Current output: ±0.5% of F.S.			0.12	0.2 *1	CJ1W-DA041
		2 outputs								0.12	0.14 *1	CJ1W-DA021

*1. This is for an external power supply, and not for internal current consumption

Analog I/O Units

Unit classification	Product name	No. of points	Signal range selection	Signal range	Resolution (See note.)	Conversion speed (See note.)	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model
										5 V	24 V	
CJ1 Special I/O Units	Analog I/O Units 	4 inputs	Set separately for each input	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	1/4,000 (Settable to 1/8,000)	1 ms/point (Settable to 500 µs/point max.)	Voltage input: ±0.2% of F.S. Current input: ±0.2% of F.S.	Removable terminal block	1	0.58	---	CJ1W-MAD42
		2 outputs					Voltage output: ±0.3% of F.S. Current output: ±0.3% of F.S.					

Note: The resolution and conversion speed cannot be set independently. If the resolution is set to 1/4,000, then the conversion speed will be 1 ms/point.

Temperature Control Units

Unit classification	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model
		No. of loops	Temperature sensor inputs	Control outputs		5 V	24 V	
CJ1 Special I/O Units	Temperature Control Units 	4 loops	Thermocouple input (R, S, K, J, T, B, L)	Open collector NPN outputs	2	0.25	---	CJ1W-TC001
		4 loops		Open collector PNP outputs		0.25	---	CJ1W-TC002
		2 loops, heater burnout detection function		Open collector NPN outputs		0.25	---	CJ1W-TC003
		2 loops, heater burnout detection function		Open collector PNP outputs		0.25	---	CJ1W-TC004
		4 loops	Platinum resistance thermometer input (JPt100, Pt100)	Open collector NPN outputs		0.25	---	CJ1W-TC101
		4 loops		Open collector PNP outputs		0.25	---	CJ1W-TC102
		2 loops, heater burnout detection function		Open collector NPN outputs		0.25	---	CJ1W-TC103
		2 loops, heater burnout detection function		Open collector PNP outputs		0.25	---	CJ1W-TC104

High-speed Counter Unit

Unit classification	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model
		Countable channels	Encoder A and B inputs, pulse input Z signals	Max. counting rate		5 V	24 V	
CJ1 Special I/O Units	High-speed Counter Unit 	2	Open collector Input voltage: 5 VDC, 12 V, or 24 V (5 V and 12 V are each for one axis only.)	50 kHz	4	0.28	---	CJ1W-CT021
			RS-422 line driver	500 kHz				

Note: 1. If interrupts to the CPU Unit are used, mount the Interrupt Input Unit in one of the slots 0 to 4 on the CPU Rack.

Note: 2. Use the CJ1W-CT021 with the lot number 030121 (unit version 1.06) or later when using it in combination with the CJ3 CPU Unit.

Position Control Units

Position Control Units (High-speed type)

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model
		Control output interface	No. of axes		5 V	24 V	
CJ1 Special I/O Units	Position Control Units High-speed type *1, *2	Pulse-train open-collector output with Pulse Counter Function		2 axes	0.27	---	CJ1W-NC214
				4 axes	0.31	---	CJ1W-NC414
		Pulse-train line-driver output with Pulse Counter Function		2 axes	0.27	---	CJ1W-NC234
				4 axes	0.31	---	CJ1W-NC434
	Position Control Unit Cables	Open-collector output	For CJ1W-NC214/NC414	1 axis	Connecting Servo Drives: G5 Series R88D-KT		Cable length: 1 m XW2Z-100J-G13
							Cable length: 3 m XW2Z-300J-G13
					Connecting Servo Drives: SMARTSTEP2 R7D-BP		Cable length: 1 m XW2Z-100J-G16
							Cable length: 3 m XW2Z-300J-G16
				2 axes	Connecting Servo Drives: G5 Series R88D-KT		Cable length: 1 m XW2Z-100J-G5
							Cable length: 3 m XW2Z-300J-G5
					Connecting Servo Drives: SMARTSTEP2 R7D-BP		Cable length: 1 m XW2Z-100J-G8
							Cable length: 3 m XW2Z-300J-G8
		Line-driver output	For CJ1W-NC234/NC434	1 axis	Connecting Servo Drives: G5 Series R88D-KT		Cable length: 1 m XW2Z-100J-G9
							Cable length: 5 m XW2Z-500J-G9
							Cable length: 10 m XW2Z-10MJ-G9
					Connecting Servo Drives: SMARTSTEP2 R7D-BP		Cable length: 1 m XW2Z-100J-G12
							Cable length: 5 m XW2Z-500J-G12
							Cable length: 10 m XW2Z-10MJ-G12
				2 axes	Applicable Servo Drive: G5 Series R88D-KT		Cable length: 1 m XW2Z-100J-G1
							Cable length: 5 m XW2Z-500J-G1
							Cable length: 10 m XW2Z-10MJ-G1
					Applicable Servo Drive: SMARTSTEP2 R7D-BP		Cable length: 1 m XW2Z-100J-G4
							Cable length: 5 m XW2Z-500J-G4
							Cable length: 10 m XW2Z-10MJ-G4

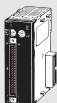
*1. With a CJ3 CPU Unit, up to 10 Configuration Units can be connected in the CPU Rack and in each Expansion Rack. The CJ1W-NC□□4, however, must be counted as two Units. Configure the Units to satisfy the following formula.

Number of CJ1W-NC□□4 Units × 2 + Number of other Units ≤ 10

For example, if five CJ1W-NC□□4 Units are connected to one Rack, no other Units can be connected.

*2. Synchronous Unit operation is not supported by the CJ3M CPU Unit.

Position Control Units

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model
		Control output interface	No. of axes		5 V	24 V	
CJ1 Special I/O Units	Position Control Units 	Pulse train, open collector output	1 axis	1	0.25	---	CJ1W-NC113
		Pulse train, open collector output	2 axes		0.25	---	CJ1W-NC213
		Pulse train, open collector output (See note.)	4 axes	2	0.36	---	CJ1W-NC413
		Pulse train, line driver output	1 axis	1	0.25	---	CJ1W-NC133
		Pulse train, line driver output	2 axes		0.25	---	CJ1W-NC233
		Pulse train, line driver output (See note.)	4 axes	2	0.36	---	CJ1W-NC433
	Space Unit	Use a CJ1W-SP001 Space Unit if the operating temperature is 0 to 55°C.					CJ1W-SP001

Note: The ambient operating temperature for 4-Axes Position Control Units is 0 to 50°C; the allowable voltage fluctuation on the external 24-VDC power supply is 22.8 to 25.2 VDC (24 V ±5%).

Position Control Unit with EtherCAT interface

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model
		Control output interface	No. of axes		5 V	24 V	
CJ1 CPU Bus Units	Position Control Unit with EtherCAT interface 	Control commands executed by EtherCAT communications. Positioning functions: Memory operation, Direct operation by ladder programming	2 axes	1	0.46	---	CJ1W-NC281
			4 axes				CJ1W-NC481
			8 axes				CJ1W-NC881
			16 axes				CJ1W-NCF81
		Control commands executed by EtherCAT communications. • Positioning functions: Memory operation, Direct operation by ladder programming • I/O communication: 64 nodes	4 axes	1	0.46	---	CJ1W-NC482
			8 axes				CJ1W-NC882
			16 axes				CJ1W-NCF82

Note: 1. Only OMNUC G5-series, and 1S-Series Servo Drives with Built-in EtherCAT can be connected.

Position Control Unit with MECHATROLINK-II interface

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model
		Control output interface	No. of axes		5 V	24 V	
CJ1 CPU Bus Units	Position Control Unit with MECHATROLINK-II interface 	Control commands executed by MECHATROLINK-II synchronous communications. Direct operation by ladder programming. Control mode: Position control, speed control, or torque control	2 axes	1	0.36	---	CJ1W-NC271
			4 axes				CJ1W-NC471
			16 axes				CJ1W-NCF71

Serial Communications Units

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model
		Communications Interface	Communications functions		5 V	24 V	
CJ1 CPU Bus Units	Serial Communications Units High-speed type 	2 RS-232C ports	The following functions can be selected for each port: Protocol macro Host Link NT Links (1:N mode) Serial Gateway No-protocol Modbus-RTU Slave	1	0.29 *1	---	CJ1W-SCU22
		2 RS-422A/485 ports			0.46	---	CJ1W-SCU32
		1 RS-232C port and 1 RS-422A/485 port			0.38 *1	---	CJ1W-SCU42
RS-422A Converter 		Converts RS-232C to RS-422A/RS-485.					CJ1W-CIF11

*1. When an NT-AL001 RS-232C/RS-422A Conversion Unit is used, this value increases by 0.15 A/Unit. Add 0.04 A/Unit when using CJ1W-CIF11 RS-422A Adapters.

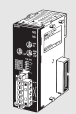
EtherNet/IP Unit

Unit classification	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model
		Communications cable	Communications functions	Max. Units mountable per CPU Unit		5 V	24 V	
CJ1 CPU Bus Unit	EtherNet/IP Unit 	Shielded twisted-pair (STP) cable Categories: 100 Ω at 5, 5e	Tag Data Link Functions, Message Communications Functions, Socket Service Functions	4	1	0.65	---	CJ1W-EIP21S

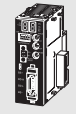
EtherCAT Slave Unit

Unit classification	Product name	Specifications	Communications type	No. of unit numbers allocated	Current consumption (A)		Model
					5 V	24 V	
CJ1 CPU Bus Units	EtherCAT Slave Unit 	STP (shielded twisted-pair) cable of category 5 or higher with double shielding	Refreshing methods: Free-Run Mode PDO DATA SIZE: TxPDO 400byte or less/RxPDO: 400byte or less	1	0.34	---	CJ1W-ECT21

DeviceNet Unit

Unit classification	Product name	Specifications	Communications type	No. of unit numbers allocated	Current consumption (A)		Model
					5 V	24 V	
CJ1 CPU Bus Units	DeviceNet Unit 	Functions as master and/or slave; allows control of 32,000 points max. per master.	- Remote I/O communications master (fixed or user-set allocations) - Remote I/O communications slave (fixed or user-set allocations) - Message communications	1	0.29	---	CJ1W-DRM21

CompoNet Master Unit

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model
		Communications functions	No. of I/O points per Master Unit		5 V	24 V	
CJ1 Special I/O Units	CompoNet Master Unit 	Remote I/O communications Message communications	Word Slaves: 2,048 max. (1,024 inputs and 1,024 outputs) Bit Slaves: 512 max. (256 inputs and 256 outputs)	1, 2, 4, or 8	0.4	---	CJ1W-CRM21

Controller Link Units

Unit classification	Product name	Specifications				No. of unit numbers allocated	Current consumption (A)		Model
		Communications cable	Communications type	Duplex support	Max. Units mountable per CPU Unit		5 V	24 V	
CJ1 CPU Bus Unit	Controller Link Unit 	Wired shielded twisted-pair cable	Data links and message service	No	8	1	0.35	---	CJ1W-CLK23

FL-net Unit

Unit classification	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model
		Communications interface	Communications functions	Max. Units mountable per CPU Units		5 V	24 V	
CJ1 CPU Bus Units	FL-net Unit 	100Base-TX	With FL-net Ver. 2.0 specifications (OPCN-2) Data links and message service	4	1	0.37	---	CJ1W-FLN22

SPU Unit (High-speed Data Storage Unit)

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model
		PC Card slot	Ethernet (LAN) port		5 V	24 V	
CJ1 CPU Bus Units	SPU Unit (High-speed Data Storage Unit) 	CF Card Type I/II × 1 slot Use an OMRON HMC-EF□□□□ Memory Card.	1 port (10/100Base-TX)	1	0.56	---	CJ1W-SPU01-V2

Note: Use version 2 or higher of the SYSMAC SPU Unit with a CJ3 CPU Unit.

ID Sensor Units

Unit classification	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model
		Connected ID Systems	No. of connected R/W heads	External power supply		5 V	24 V	
CJ1 CPU Bus Units	ID Sensor Units 	V680-Series RFID System	1	Not required.	1	0.26	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).

Peripheral Devices

Industrial Switching Hubs for EtherNet/IP and Ethernet

Product name	Appearance	Functions	No. of ports	Accessories	Current consumption (A)	Model
Industrial Switching Hubs		Quality of Service (QoS): EtherNet/IP control data priority 10/100BASE-TX, Auto-Negotiation	5	Power supply connector	0.07	W4S1-05D

Note: Industrial switching hubs cannot be used for EtherCAT.

General Specifications

Item		CJ3M-CPU1□/3□
Enclosure		Mounted in a panel
Grounding		Less than 100 Ω
CPU Unit Dimensions		CJ3M-CPU1□ 90 mm × 75 mm × 31 mm (H × D × W) CJ3M-CPU3□ 90 mm × 75 mm × 62 mm (H × D × W)
Weight *1		CJ3M-CPU1□: 140 g or less CJ3M-CPU3□: 240 g or less
Current Consumption		CJ3M-CPU1□: 5 VDC 0.26 A, 24 VDC 0.003 A CJ3M-CPU3□: 5 VDC 0.91 A, 24 VDC 0.003 A
Use Environment	Ambient Operating Temperature	0 to 55°C
	Ambient Operating Humidity	10% to 90% (with no condensation)
	Atmosphere	Must be free from corrosive gases.
	Ambient Storage Temperature	–20 to 70°C
	Altitude	2,000 m or less
	Pollution Degree	2 or less: Conforms to IEC 61010-2-201.
	Noise Immunity	2 kV on power supply line (Conforms to IEC 61000-4-4.)
	Overvoltage Category	Category II: Conforms to IEC 61010-2-201.
	EMC Immunity Level	Zone B
	Vibration Resistance	Conforms to IEC60068-2-6. 5 to 8.4 Hz with 3.5-mm amplitude, 8.4 to 150 Hz Acceleration of 10 m/s ² for 100 min in X, Y, and Z directions (10 sweeps of 10 min each = 100 min total)
Battery	Shock Resistance	Conforms to IEC60068-2-27. 150 m/s ² , 3 times in X, Y, and Z directions (100 m/s ² for Relay Output Units)
	Life	5 years at 25°C
	Weight	Approx. 10 g
Model		CJ1W-BAT01 (Sold separately)
Applicable Standards		EU, cULus, RCM, KC *2

*1. Includes the weights of the End Cover.

*2. Refer to the OMRON website (<http://www.ia.omron.com/>) or consult your OMRON representative for the most recent applicable standards for each model.

Performance Specifications

Items			CJ3M-CPU□□
User Memory			CPU11/31: 5K steps CPU12/32: 10K steps CPU13/33: 20K steps CPU14/34: 50K steps CPU15/35: 100K steps
I/O Bits			5,120 bits
Processing Speed	Overhead Processing Time *1		Normal Mode: CPU3□: 260 μs CPU1□: 160 μs
	Execution Time		Basic Instructions: 0.04 μs min.; Special Instructions: 0.06 μs min.
	Interrupts	I/O Interrupts and External Interrupts	Interrupt task startup time: 31 μs Return times to cyclic tasks: 10 μs
		Scheduled Interrupts	Minimum time interval: 0.4 ms (set in 0.1 ms increments)
			Interrupt task startup time: 30 μs Return time to cyclic task: 11 μs
Maximum Number of Connectable Units			Total per CPU Rack or Expansion Rack: 10 Units max.; Total per PLC: 80 Units max.
	Basic I/O Units		80 Units max. However, a maximum of two CJ1W-INT01 Interrupt Input Units can be mounted.
	Special I/O Units		Units for up to 96 unit numbers can be mounted. (Unit numbers run from 0 to 95. Units are allocated between 1 and 8 unit numbers.)
	CPU Bus Units		CPU1□: 16 Units max. CPU3□: 15 Units max.
	Pulse I/O Modules		2 max.
	Slots for which interrupts can be used		Slots 0 to 4 on CPU Rack
	Maximum Number of Expansion Racks		
CIO Area	I/O Area		5,120 bits (320 words): Words CIO 0000 to CIO 0319
	Link Area		3,200 bits (200 words): Words CIO 1000 to CIO 1199
	CPU Bus Unit Area		6,400 bits (400 words): Words CIO 1500 to CIO 1899
	Special I/O Unit Area		15,360 bits (960 words): Words CIO 2000 to CIO 2959
	Pulse I/O Area		20 inputs, 12 outputs (CIO 2960 to CIO 2963)
	Serial PLC Link Area		1,440 bits (90 words): Words CIO 3100 to CIO 3189
	EtherCAT Remote Area		2,368 bits (148 words), 3,800 to 3863 words, 3,900 to 3,963 words, 3,980 to 3,999 words
	DeviceNet Area		9,600 bits (600 words): Words CIO 3200 to CIO 3799
Work Area	Internal I/O Area		3,200 bits (200 words): Words CIO 1300 to CIO 1499 (Cannot be used for external I/O.) 37,504 bits (2,344 words): Words CIO 4000 to CIO 6143 (Cannot be used for external I/O.)
	Work Area		8,192 bits (512 words): Words W000 to W511 (Cannot be used for external I/O.)
Holding Area			8,192 bits (512 words): Words H000 to H511 Bits in this area maintain their ON/OFF status when PLC is turned OFF or operating mode is changed. Words H512 to H1535: These words can be used only for function blocks. They can be used only for function block instances (i.e., they are allocated only for internal variables in function blocks).
Auxiliary Area			Read-only: 31,744 bits (1,984 words) • 7,168 bits (448 words): Words A0 to A447 • 24,576 bits (1,536 words): Words A10000 to A11535 *2 Read/write: 16,384 bits (1,024 words) in words A448 to A1471 *2
Temporary Area			16 bits: TR0 to TR15
Timer Area			4,096 timer numbers (T0000 to T4095)
Counter Area			4,096 counter numbers (C0000 to C4095)

*1. The following times are added if EtherNet/IP data tag links are used.

CJ3M-CPU3□: 100 μs + Number of transfer words × 0.78 μs

When the Pulse I/O Module is mounted, 10 μs × number of mounted units is added.

*2. A960 to A1471 and A10000 to A11535 cannot be accessed by CPU Bus Units, Special I/O Units, PTs, and Support Software that do not specifically support the CJ2/CJ3 CPU Units.

Items		CJ3M-CPU□□
DM Area		32k words *3 • DM Area words for Special I/O Units: D20000 to D29599 (100 words × 96 Units) • DM Area words for CPU Bus Units: D30000 to D31599 (100 words × 16 Units)
EM Area		32k words/bank × 1 to 10 banks max.: E00_00000 to E09_32767 max. *4 CPU□1/□2/□3: 1 bank CPU□4/□5: 10 banks
Index Registers		IR0 to IR15 These are special registers for storing PLC memory addresses for indirect addressing. (Index Registers can be set so that they are unique in each task or so that they are shared by all tasks.)
Cyclic Task Flag Area		128 flags
Memory Card		HMC-SD29□: 2 GB HMC-SD49□: 4 GB HMC-SD1A□: 16 GB
Operating Modes		PROGRAM Mode: Programs are not executed. Preparations can be executed prior to program execution in this mode. MONITOR Mode: Programs are executed, and some operations, such as online editing, and changes to present values in I/O memory, are enabled in this mode. RUN Mode: Programs are executed. This is the normal operating mode.
Execution Mode		Normal Mode
Programming Languages		Ladder Logic (LD) Sequential Function Charts (SFC) Structured Text (ST) Instruction Lists (IL)
Function Blocks	Maximum number of definitions	2,048
	Maximum number of instances	2,048
FB Program Area		40K steps
Tasks	Type of Tasks	Cyclic tasks Interrupt tasks (Power OFF interrupt tasks, scheduled interrupt tasks, I/O interrupt tasks, external interrupt tasks, and input interrupt tasks (Pulse I/O Module) *3)
	Number of Tasks	Cyclic tasks: 128 Interrupt tasks: 256 (Interrupt tasks can be defined as cyclic tasks to create extra cyclic tasks. Therefore, the total number of cyclic tasks is actually 384 max.)
Symbols (Variables)	Type of Symbols	Local symbols: Can be used only within a single task in the PLC. Global symbols: Can be used in all tasks in the PLC. Network symbols (tags): I/O memory in the CPU Unit can be externally accessed using symbols, depending on parameter settings.
	Data Type of Symbols	BOOL (bit) UINT (one-word unsigned binary) UDINT (two-word unsigned binary) ULINT (four-word unsigned binary) INT (one-word signed binary) DINT (two-word signed binary) LINT (four-word signed binary) UINT BCD (one-word unsigned BCD) *5 UDINT BCD (two-word unsigned BCD) *5 ULINT BCD (four-word unsigned BCD) *5 REAL (two-word floating-point) LREAL (four-word floating-point) CHANNEL (word) NUMBER (constant or number) WORD (one-word hexadecimal) DWORD (two-word hexadecimal) LWORD (four-word hexadecimal) STRING (1 to 255 ASCII characters) TIMER (timer) *6 COUNTER (counter) *6 User-defined data types (data structures)

*3. Bits in the EM Area can be addressed either by bit or by word. These bits cannot be addressed by CPU Bus Units, Special I/O Units, PTs, and Support Software that do not specifically support the CJ3 CPU Units.

*4. Force-setting/resetting bits in the EM Area is possible either for banks that have been specified for automatic address allocation or for banks specified for the EM Area force-set/reset function.

*5. This data type cannot be used in Function blocks.

*6. This data type can be used only in Function blocks.

CJ3M-CPU3□/-CPU1□/CJ2M-MD21□

Items			CJ3M-CPU□□
Symbols (Variables)	Maximum Size of Symbol		32k words
	Array Symbols (Array Variables)		One-dimensional arrays
	Number of Array Elements		32,000 elements max.
	Number of Registrable Network Symbols (Tags)		10,000 max.
	Length of Network Symbol (Tag) Name		255 bytes max.
	Encoding of Network Symbols (Tags)		UTF-8
Data Tracing	Memory Capacity		220,000 words (Up to 32k words × the maximum bank number for the CPU Unit when EM is specified in CX-Programmer)
	Number of Samplings		Bits = 31, one-word data = 32, two-word data = 16, four-word data = 8
	Sampling Cycle		1 to 2,550 ms (Unit: 1 ms)
	Trigger Conditions		• Bit Upward/downward differentiation, ON, OFF AND/OR condition combinations for a maximum of 4 bits • Word =, >, ≥, <, ≤, ≠ AND/OR condition combinations for a maximum of 2 words • AND/OR condition combinations for bit conditions and word conditions
File Memory			Memory Card HMC-SD□□□ is used EM file memory (Part of the EM Area can be converted for use as file memory.)
Source/Comment Memory		Program source, comments, program index, and symbol table	Capacity: 2 Mbytes
Communications	Logical Ports for Communications	Logical Ports	8 ports (Used for SEND, RECV, CMND, PMCR, TXDU, and RXDU instructions.)
		Extended Logical Ports	64 ports (Used for SEND2, RECV2, CMND2, and PMCR2 instructions.)
	CIP Communications Specification	Class 3 (Number of Connections)	Number of connections: 128
		UCMM (Non-connection Type)	Maximum number of clients that can communicate at the same time: 32 Maximum number of servers that can communicate at the same time: 32
	Peripheral (USB) Port		USB 2.0-compliant Type-C connector
	Baud Rate		12 Mbps max.
	Serial Port		Interface: Conforms to EIA RS-232C.
	Communications Method		Half-duplex
	Synchronization Method		Start-stop
	Baud Rate		0.3, 0.6, 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, or 115.2 (kbps)
	Transmission Distance		15 m max.
	EtherNet/IP Port *7		
	Transmission Specifications	Media Access Method	CSMA/CD
		Modulation	Baseband
		Transmission Paths	Star
		Baud Rate	100 Mbps (100Base-TX)
		Transmission Media	Shielded twisted-pair (STP) cable; Categories: 5, 5e
Transmission Distance		100 m (between Ethernet switch and node)	
Number of Cascade Connections		No restrictions if Ethernet switch is used.	

*7. The EtherNet/IP port is built into the CJ3M-CPU3□ only.

Item		CJ3M-CPU□□
Communications	EtherNet/IP Port *7	---
	CIP Communications: Tag Data Links	---
	Number of Connections	256
	Packet Interval (Refresh period)	0.5 to 10,000 ms (Unit: 0.5 ms) Can be set for each connection. (Data will be refreshed at the set interval, regardless of the number of nodes.)
	Permissible Communications Band *8	12,000 packets per second
	Number of Registrable Tags	256
	Type of Tags	CIO, DM, EM, HR, WR, and network symbols
	Number of Tags per Connection	8 (Seven tags if PLC status is included in the segment.)
	Maximum Link Data Size per Node	184,832 words
	Maximum Data Size per Connection	252 or 722 words *9 (Data is synchronized within each connection.)
	Number of Registrable Tag Set	256 (1 connection = 1 segment)
	Maximum Tag Set Size	722 words (One word is used when PLC status is included in the segment.)
	Maximum Number of Tags Refreshable in a Single Cycle of CPU Unit *10	Output/send (CPU Unit to EtherNet/IP): 256 Input/receive (EtherNet/IP to CPU Unit): 256
	Data Size Refreshable in a Single Cycle of CPU Unit *10	Output/send (CPU to EtherNet/IP): 6,432 words Input/receive (EtherNet/IP to CPU): 6,432 words
	Change of Tag Data Link Parameter Settings during Operation	Supported *11
	Multi-cast Packet Filter *12	Supported
	Quick Connect	Originator only is supported
	CIP Communications: Explicit Messages	---
	Class 3 (Number of Connections)	Number of connections: 128
	UCMM (Non-connection Type)	Maximum number of clients that can communicate at the same time: 32 Maximum number of servers that can communicate at the same time: 32
	CIP Routing	Supported (CIP routing is enabled for the following remote Units: CJ1W-EIP21/EIP21S, CJ3M-CPU3□, CJ2H-CPU6□-EIP, CJ2M-CPU3□, and CS1W-EIP21/EIP21S.)
	FINS Communications	---
	FINS/UDP	Supported
	FINS/TCP	16 connections max.
	Socket Service (TCP)	8 sockets max.
	Socket Service (UDP)	8 sockets max.
	Modbus TCP Server	8 connections max.
	Modbus UDP Server	Supported
	Modbus TCP Client	Possible by function block using Socket Service 8 connections max.
	Modbus UDP Client	Possible by function block using Socket Service 8 connections max.
	EtherNet/IP Conformance Test	Conforms to CT21.
	EtherNet/IP Interface	10Base-T/100Base-TX Auto Negotiation/Fixed Setting

*7. The EtherNet/IP port is built into the CJ3M-CPU3□ only.

*8. "Packets per second" is the number of communications packets that can be processed per second.

*9. Large Forward Open (CIP optional specification) must be supported in order for 505 to 1,444 bytes to be used as the data size. Application is supported between CS/CJ-series PLCs. When connecting to devices from other manufacturers, make sure that the devices support the Large Forward Open specification.

*10. If the maximum number is exceeded, refreshing will require more than one CPU Unit cycle.

*11. When changing parameters, however, the EtherNet/IP port where the change is made will be restarted. In addition, a timeout will temporarily occur at the other node that was communicating with that port, and it will then recover automatically.

*12. The EtherNet/IP port supports an IGMP client, so unnecessary multicast packets are filtered by using an Ethernet switch that supports IGMP snooping.

Item		CJ3M-CPU□□
Pulse I/O (When using Pulse I/O Module)	External interface	CJ2M-MD211 or CJ2M-MD212 Pulse I/O Module with 40-pin MIL connector
	Pulse Inputs	Can be used as normal inputs, interrupt inputs, quick-response inputs, or high-speed counter inputs. (Functions of each input must be selected in the PLC Setup.) Input method: Line-driver input or 24-VDC input (selected by wiring)
	Normal inputs	20 max. (10 per Pulse I/O Module) Input constants: Set in the PLC Setup (0, 0.5, 1, 2, 4, 8, 16, or 32 ms). Default: 8 ms
	Interrupt inputs and quick-response inputs	8 max. (4 per Pulse I/O Module) Input signal minimum ON pulse width: 30 μs
	High-speed counter inputs	4 max. (2 per Pulse I/O Module) Input method: Differential-phase (×4) pulses, pulse + direction, up/down pulses, or increment pulse Maximum response frequency: 50 kHz for differential phases or 100 kHz for single phase Counting mode: Linear mode or circular (ring) mode Count value: 32 bits Counter reset: Phase Z + software reset or software reset Control method: Target-value comparison or range comparison Gate function: Supported
	Pulse Outputs	Can be used as normal outputs, pulse outputs, or PWM outputs. (Functions of each output must be selected in the PLC Setup.) Output method: Sinking or sourcing transistor outputs (The method is determined by Pulse I/O Module model.)
	Normal outputs	12 max. (6 per Pulse I/O Module)
	Pulse outputs	4 max. (2 per Pulse I/O Module) Output method: CW/CCW or pulse + direction (The method is determined by the I/O wiring and the instructions used in the ladder program.) Output frequency: 1 pps to 100 kpps (in increments of 1 pps) Output Mode: Continuous mode (for speed control) or independent mode (for position control) Output pulses: Relative coordinates: 0000 0000 to 7FFF FFFF hex (0 to 2,147,483,647 pulses) Absolute coordinates: 8000 0000 to 7FFF FFFF hex (–2,147,483,648 to 2,147,483,647) Acceleration/deceleration curves: Linear or S-curve Origin search function: Supported
	PWM outputs	4 max. (2 per Pulse I/O Module) Output frequency: 0.1 to 6,553.5 Hz (in 0.1-Hz increments) or 1 to 32,800 Hz (in 1-Hz increments) Duty ratio: 0.0% to 100.0% (in 0.1% increments)

Function Specifications

Functions				Description
Cycle Time Management	Minimum Cycle Time			A minimum cycle time can be set. (0.2 to 32,000 ms; Unit: 0.1 ms) The minimum cycle time setting can be changed in MONITOR mode
	Cycle Time Monitoring			The cycle time is monitored. (10 to 40,000 ms; Unit: 10 ms)
	Background Processing			Instructions with long execution times can be executed over multiple cycles to prevent fluctuations in the cycle time.
Unit (I/O) Management	Basic I/O Units, Special I/O Units, and CPU Bus Units	I/O Refreshing	Cyclic Refreshing	Cyclic refreshing of Basic I/O Units, Special I/O Units, and CPU Bus Units
			Immediate Refreshing	I/O refreshing by immediate refreshing instructions
			Refreshing by IORF	I/O refreshing by IORF instruction
		Unit Recognition at Startup		The number of units recognized when the power is turned ON is displayed.
	Basic I/O Units	Input Response Time Setting		The input response times can be set for Basic I/O Units. The response time can be increased to reduce the effects of chattering and noise at input contacts. The response time can be decreased to enable detecting shorter input pulses.
		Load OFF Function		All of the outputs on Basic I/O Units can be turned OFF when an error occurs in RUN or MONITOR mode.
		Basic I/O Unit Status Monitoring		Alarm information can be read from Basic I/O Units and the number of Units recognized can be read.
	Special I/O Units and CPU Bus Units	Reading/writing data using instructions for specific Units		Special instructions can be used to read/write required data for specific Units at high speed.
		Unit Restart Bits to Restart Units		A Special I/O Unit or CPU Bus Unit can be restarted.
	Configuration Management	Automatic I/O Allocation at Startup		I/O words can be automatically allocated to the Basic I/O Units that are connected in the PLC to start operation automatically without registering Units into I/O tables.
		I/O Table Creation		The current unit configuration can be registered in I/O tables to prevent it from being changed, to reserve words, and to set words.
		Rack/Slot First Word Settings		The first words allocated to a Units on the Racks can be set.
Pulse I/O Functions (When using Pulse I/O Module)	Pulse Input Functions	Normal Inputs		Input signals are read during I/O refreshing and stored in I/O memory.
		Interrupt Inputs		An interrupt task can be started when an input signal turns ON or turns OFF.
		Quick-response Inputs		Input signals that are shorter than the cycle time are read and stored in I/O memory.
		High-speed Counter Inputs		High-speed pulse signals are counted. Interrupt tasks can also be started.
	Pulse Output Functions	Normal Outputs		The status of I/O memory is output during I/O refreshing.
		Pulse Outputs		A pulse signal is output with the specified frequency and number of pulses at a fixed duty ratio (50%).
		PWM Outputs		A pulse signal is output at the specified duty ratio.
	Origin Searches			The origin point of the machine is determined according to the specified origin search parameters while actually outputting pulses and using the origin and origin proximity input signals as conditions. (Pulse inputs and outputs are also used for this function.)

Functions		Description
Memory Management	Holding I/O Memory when Changing Operating Modes	The status of I/O memory can be held when the operating mode is changed or power is turned ON. The forced-set/reset status can be held when the operating mode is changed or power is turned ON.
	File Memory	Files (such as program files, data files, and symbol table files) can be stored in Memory Card, EM File Memory, or Comment Memory.
	Built-in Flash Memory	The user program and Parameter Area can be backed up to an internal flash memory when they are transferred to the CPU Unit.
	EM File Function	Parts of the EM Area can be treated as file memory.
	Storing Comments	I/O comments can be stored as symbol table files in a Memory Card, EM file memory, or comment memory.
	EM Configuration	EM Area can be set as trace memory or EM file memory.
	Battery-free I/O Memory Backup Function	This function holds DM Area (D), EM Area (E), Holding Area (H), Counter (C), and Auxiliary Area (A) data without the need for a battery when the power is interrupted.
Memory Cards	Automatic File Transfer at Startup	A program file and parameter files can be read from a Memory Card when the power is turned ON.
	Program Replacement during PLC Operation	User programs can be transferred from a Memory Card to CPU Unit during operation.
	Function for Reading and Writing Data from a Memory Card	Data in I/O memory in the CPU Unit can be written to a Memory Card in CSV/TXT format. Data in CSV/TXT format in the Memory Card can be read to I/O memory in the CPU Unit.
Communications		---
	Peripheral (USB) Port	Bus for communications with various kinds of Support Software running on a personal computer.
	Serial Port	---
	Host Link (SYSWAY) Communications	Host Link commands or FINS commands placed between Host Link headers and terminators can be sent from a host computer or PT to read/write I/O memory, read/control the operating mode, and perform other operations for PLC.
	No-protocol Communications	I/O instructions for communications ports (such as TXD/RXD instructions) can be used for data transfer with peripheral devices such as bar code readers and printers.
	NT Link Communications	I/O memory in the PLC can be allocated and directly linked to various PT functions, including status control areas, status notification areas, touch switches, lamps, memory tables, and other objects.
	Peripheral Bus	Bus for communications with various kinds of Support Software running on a personal computer.
	Serial Gateway	This gateway enables receiving and automatically converting FINS to the CompoWay/F.
	Serial PLC Links	Data is exchanged between CPU Units using serial ports without communications programming. PTs set to the 1:N NT Link protocol can be included in the network.
	EtherNet/IP Port *1	
	100Base-TX/10Base-T Protocols: TCP/IP, UDP, ARP, ICMP (ping only), BOOTP, LLDP Applications: FINS, CIP, SNTP, DNS (Client), FTP (Server), Modbus (Server)	
	CIP Communications Service	Tag Data Links Message Communications Programless cyclic data exchanges with the devices on the EtherNet/IP network. Any CIP commands can be received from the devices on the EtherNet/IP network.
	FINS Communications Service	Message Communications Any FINS commands can be transferred with the devices on the EtherNet/IP network.
	Socket service	Message Communications Any data can be sent and received to and from general-purpose devices over Ethernet.
	Modbus Communications Service	Message Communications Modbus commands can be sent and received to and from Modbus clients and Modbus servers on an EtherNet/IP network.

*1. Supported only by CJ3M-CPU□.

Function		Description
Interrupt	Scheduled Interrupts	A task is executed at a specified interval.
	Resetting and restarting with MSKS	When MSKS is executed, the internal timer is restarted and the time to first interrupt is set to a fixed value.
	Reading present value of internal timer with MSKR	MSKR can be used to read the time that has elapsed until the scheduled interrupt is started or since the previous scheduled interrupt.
	Power OFF Interrupts	A task can be executed when CPU Unit's power turns OFF.
	I/O Interrupts	A task can be executed when an input signal is input to an Interrupt Input Unit.
	External Interrupts	A task can be executed when interrupts are requested from a Special I/O Unit or a CPU Bus Unit.
	Input Interrupt Function of Pulse I/O Module	A task is started for an interrupt input from a Pulse I/O Module or for a high-speed counter input.
	Input Interrupts	Interrupt tasks are executed when the interrupt input turns ON or turns OFF. Direct Mode: An interrupt task is executed each time an input signal changes. Counter Mode: Changes in the input signal are counted up or down and the interrupt task is executed when the counter counts out. (The maximum response frequency is 3 kHz.)
Clock	High-speed Counter Interrupts	An interrupt task is executed when preset comparison conditions for a high-speed counter are met. Target-value comparison: The interrupt task is executed when the count matches a specified value. Range comparison: The interrupt task is executed when the count enters or leaves a specified range of values.
	Clock Function	Clock data is stored in memory. Accuracy (Accuracy depends on the temperature.) Ambient temperature of 55°C: -3.5 to 0.5 min error per month Ambient temperature of 25°C: -1.5 to 1.5 min error per month Ambient temperature of 0°C: -3 to 1 min error per month
	Built-in Capacitor Backup Time	At ambient temperature of 40°C: 10 days
	Operation Start Time Storage	The time when operating mode was last changed to RUN mode or MONITOR mode is stored.
	Operation Stop Time Storage	The last time a fatal error occurred or the last time the operating mode was changed to PROGRAM mode is stored.
	Startup Time Storage	The time when the power was turned ON is stored.
	Power Interruption Time Storage	The time when the power is turned OFF is stored.
	Total Power ON Time Calculation	The total time that the PLC has been ON is stored in increments of 10 hours.
	Power ON Clock Data Storage	A history of the times when the power was turned ON is stored.
	User Program Overwritten Time Storage	The time that the user program was last overwritten is stored.
Power Supply Management	Parameter Date Storage	The time when the Parameter Area was overwritten is stored.
	Memory Protection	Holding Area data, DM Area data, EM Area data, Counter Completion Flags, and counter present values are held even when power is turned OFF. CIO Area, Work Area, some Auxiliary Area data, and Timer Completion Flags, timer present values, index registers, and data registers can be protected by turning ON the IOM Hold Bit in the Auxiliary Area, and by also setting the IOM Hold Bit to "Hold" in the PLC Setup.
	Power OFF Detection Time Setting	The detection time for power interruptions can be set. AC power supply: 10 to 25 ms (variable) DC power supply: 2 to 5 ms (CJ1W-PD022) or 2 to 20 ms (CJ1W-PD025)
	Power OFF Detection Delay Time	The detection of power interruptions can be delayed: 0 to 10 ms (Not supported by the CJ1W-PD022.)
Function Blocks	Number of Power Interruptions Counter	The number of times power has been interrupted is counted.
	Languages in Function Block Definitions	Standard programming can be encapsulated as function blocks. Ladder programming or structured text

Function		Description
Debugging	Online Editing	The program can be changed during operation (in MONITOR or PROGRAM mode), except for block programming areas.
	Force-Set/Reset	Specified bits can be set or reset. A parameter can be set to enable force-setting/resetting bits in EM Area banks. Force-setting/resetting is enabled for the specified bank and all the banks after it.
	Differentiate Monitoring	ON/OFF changes in specified bits can be monitored.
	Data Tracing	The specified I/O memory data can be stored in the trace memory in the CPU Unit. The triggers can be set.
	Continuous Tracing	The trace data can be uploaded during data tracing using the CX-Programmer. This enables continuously logging the data by constantly uploading the trace data.
	Automatically starting tracing when operation starts	Data tracing can be automatically started when operation is started (i.e., when the operating mode is changed from PROGRAM mode to MONITOR or RUN mode).
	Storing Location of Error when an Error Occurs	The location and task number where execution stopped for a program error is recorded.
Self-diagnosis and Restoration	Program Check	The programs can be checked for items such as no END instruction and FALS/FAL errors at startup.
	Error Log	A function is provided to store predefined error codes in CPU Unit, error information, and time at which the error occurred.
	CPU Error Detection	CPU Unit WDT errors are detected.
	User-defined Failure Diagnosis	Errors can be generated for user-specified conditions: Non-fatal errors (FAL) and fatal errors (FALS). Program section time diagnosis and program section logic diagnosis are supported (FPD instruction).
	Load OFF Function	This function turns OFF all outputs from Output Units when an error occurs.
	RUN Output	The RUN output from the CJ1W-PA205R turns ON while CPU Unit is in RUN mode or MONITOR mode.
	Basic I/O Load Short-circuit Detection	This function provides alarm information from Basic I/O Units that have load short-circuit protection.
	Failure Point Detection	The time and logic of an instruction block can be analyzed using the FPD instruction.
	CPU Standby Detection	This function indicates when the CPU Unit is on standby because all Special I/O Units and CPU Bus Units have not been recognized at the startup in RUN or MONITOR mode.
	Non-fatal Error Detection	System FAL Error Detection (User-defined non-fatal error)
		Duplicated Refreshing Error Detection
		Basic I/O Unit Error Detection
		Backup Memory Error Detection
		PLC Setup Error Detection
		CPU Bus Unit Error Detection
		Special I/O Unit Error Detection
		Tag Memory Error Detection
		Battery Error Detection
		CPU Bus Unit Setting Error Detection
		Special I/O Unit Setting Error Detection

Function		Description
Self-diagnosis and Restoration	Fatal Error Detection	Memory Error Detection This function detects errors that occur in memory of the CPU Unit.
		I/O Bus Error Detection This function detects when an error occurs in data transfers between the Units mounted in Rack slots and the CPU Unit and detects when the End Cover is not connected to the CPU Rack or an Expansion Rack.
		Unit/Rack Number Duplication Error This function detects an error when the same unit number is set for two or more Units, the same word is allocated to two or more Basic I/O Units, or the same rack number is set for two or more Racks.
		Too Many I/O Points Error Detection This function detects an error when the total number of I/O points set in the I/O tables or the number of Units per Rack exceeds the specified range.
		I/O Setting Error Detection The registered I/O tables are used to detect errors if the number of Units in the registered I/O tables does not agree with the actual number of Units that are connected or an Interrupt Unit has been connected in the wrong position.
		Program Error Detection This function detects errors in programs.
		Instruction Processing Error Detection This function detects an error when the given data value is invalid when executing an instruction, or execution of instruction between tasks was attempted.
		Indirect DM/EM BCD Error Detection This function detects an error when an indirect DM/EM address in BCD mode is not BCD.
		Illegal Area Access Error Detection This function detects an error when an attempt is made to access an illegal area with an instruction operand.
		No END Error Detection This function detects an error when there is no END instruction at the end of the program.
		Task Error Detection This function detects an error when there are no tasks that can be executed in a cycle, there is no program for a task, or the execution condition for an interrupt task was met but there is no interrupt task with the specified number.
		Differentiation Overflow Error Detection This function detects an error when too many differentiated instructions are entered or deleted during online editing (131,072 times or more).
		Invalid Instruction Error Detection This function detects an error when an attempt is made to execute an instruction that is not defined in the system.
		User Program Area Overflow Error Detection This function detects an error when instruction data is stored after the last address in user program area.
		Cycle Time Exceeded Error Detection This function monitors the cycle time (10 to 40,000 ms) and stops the operation when the set value is exceeded.
		System FALS Error Detection (User-defined Fatal Error) This function generates a fatal (FALS) error when the user-defined conditions are met in program.
		Version Error Detection This function detects an error when a user program includes a function that is not supported by the current unit version.
		Memory Card Transfer Error Detection This function detects an error when the automatic file transfer from Memory Card fails at startup.

Function			Description
Maintenance	Simple Backup Function		This function collectively backs up the data in CPU Unit (user programs, parameters, and I/O memory) and internal backup data in the I/O Units.
	Unsolicited Communications		A function that allows the PLC to use Network Communications Instruction to send required FINS commands to a computer connected via a Host Link
	Remote Programming and Monitoring		Host Link communications can be used for remote programming and remote monitoring through a Controller Link, Ethernet, DeviceNet, or SYSMAC LINK Network. Communications across network layers can be performed. Controller Link or Ethernet: 8 layers DeviceNet or SYSMAC LINK: 3 layers
	Automatic Online Connection via Network	Direct Connection	This function enables automatically connecting to the PLC online when the CX-Programmer is directly connected by a serial connection (peripheral (USB) port or serial port).
		Via Networks	This function enables connecting the CX-Programmer online to a PLC that is connected via an EtherNet/IP network.
Security	Read Protection using Password		This function protects reading and displaying programs and tasks using passwords. Write protection: Set using the DIP switch. Read protection: Set a password using the CX-Programmer.
	FINS Write Protection		This function prohibits writing by using FINS commands sent over the network.
	Unit Name Function		This function allows the users to give any names to the Units. Names are verified at online connection to prevent wrong connection
	Hardware ID Using Lot Numbers		This function sets operation protection by identifying hardware using the user programs according to lot numbers stored in the Auxiliary Area.
	Operation Log Function		Function for recording important operations and the results of operations performed by online users while they are online together with the date, IP address of PC, and user name.
	Extended FINS Write Access Log		Function for retaining a log of requests to write to the CPU Unit from external sources when the source address is not the local node.
	File Encryption Function		Function for encrypting files handled by CX-Programmer, backup tools, and file memory to prevent unauthorized access by third parties.
	Secure Communications Function *2		Function for ensuring the confidentiality and integrity of the line used to access important data on the CPU Unit from peripheral tools.
	User authentication *2		Function for allowing only specified users to perform online operation from peripheral tools to further restrict online operation based on privileges set for each user.
	Port Open/Close Function *2		Function for allowing you to block or allow communications to pass through the TCP/UDP ports allocated to individual communication functions according to the configured setting.
	IP Packet Filter *2		Function for selectively allowing packets received by the EtherNet/IP port to pass through based on preset conditions.

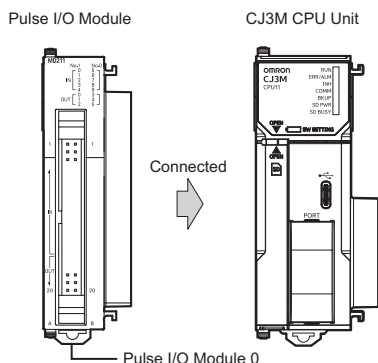
*2. This function can be used only with CJ3M-CPU3□.

Specifications for Pulse I/O Functions

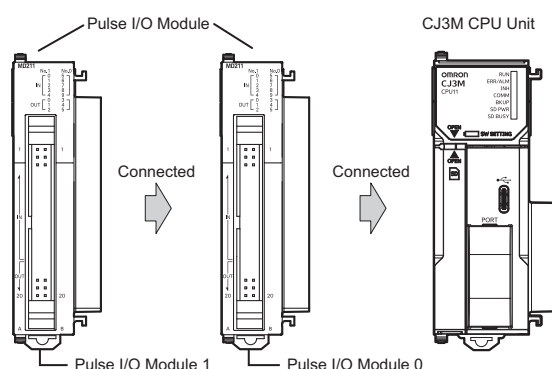
The following functions of CJ3M can be used by installing one or two Pulse I/O Modules. Each module has 10 high-speed inputs and 6 high-speed outputs.

- The inputs can be used as general-purpose inputs, interrupt inputs, quick-response inputs, high-speed counters, or origin search inputs.
- The outputs can be used as general-purpose outputs, pulse outputs, origin search outputs, or PWM outputs.

One Pulse I/O Module can be mounted



Two Pulse I/O Modules can be mounted



Note: The Pulse I/O Module closest to the CPU Unit is Pulse I/O Module 0 and the other one is Pulse I/O Module 1.

Performance Specifications

Item		Description
Pulse I/O	Model of Pulse I/O Modules	CJ2M-MD211 (Sinking-type) CJ2M-MD212 (Sourcing-type)
	External Interface	40-pin MIL connector
	Pulse Inputs	Can be used as normal inputs, interrupt inputs, quick-response inputs, or high-speed counter inputs. (Function of each input must be selected in the PLC Setup.) Input method: Line-driver input or 24-VDC input (selected by wiring)
	Normal Inputs	20 max. (10 per Pulse I/O Module) Input constants: Set in the PLC Setup (0, 0.5, 1, 2, 4, 8, 16, or 32 ms). Default: 8 ms
	Interrupt Inputs and Quick-response Inputs	8 max. (4 per Pulse I/O Module) Input signal minimum ON pulse width: 30 μs
	High-speed Counter Inputs	4 max. (2 per Pulse I/O Module) Input method: Differential-phase (×4) pulses, pulse + direction, up/down pulses, or increment pulse Maximum response frequency: 50 kHz for differential phases or 100 kHz for single phase Counting mode: Linear mode or circular (ring) mode Count value: 32 bits Counter reset: Phase Z + software reset or software reset Control method: Target-value comparison or range comparison Gate function: Supported
	Pulse Outputs	Can be used as normal outputs, pulse outputs, or PWM outputs. (Function of each output must be selected in the PLC Setup.) Output method: Sinking or sourcing transistor outputs (The method is determined by Pulse I/O Module model.)
	Normal Outputs	12 max. (6 per Pulse I/O Module)
	Pulse Outputs	4 max. (2 per Pulse I/O Module) Output method: CW/CCW or pulse + direction (The method is determined by the I/O wiring and the instructions used in the ladder program.) Output frequency: 1 pps to 100 kpps (in increments of 1 pps) Output Mode: Continuous mode (for speed control) or independent mode (for position control) Output pulses: Relative coordinates: 0000 0000 to 7FFF FFFF hex (0 to 2,147,483,647 pulses) Absolute coordinates: 8000 0000 to 7FFF FFFF hex (–2,147,483,648 to 2,147,483,647) Acceleration/deceleration curves: Linear or S-curve Origin search function: Supported
	PWM Outputs	4 max. (2 per Pulse I/O Module) Output frequency: 0.1 to 6,553.5 Hz (in 0.1-Hz increments) or 1 to 32,800 Hz (in 1-Hz increments) Duty ratio: 0.0% to 100.0% (in 0.1% increments)

Function Specifications

Functions			Description
Pulse I/O Functions	Pulse Input Functions	Normal Inputs	Input signals are read during I/O refreshing and stored in I/O memory.
		Interrupt Inputs	An interrupt task can be started when an input signal turns ON or turns OFF.
		Quick-response Inputs	Input signals that are shorter than the cycle time are read and stored in I/O memory.
		High-speed Counter Inputs	High-speed pulse signals are counted. Interrupt tasks can also be started.
	Pulse Output Functions	Normal Outputs	The status of I/O memory is output during I/O refreshing.
		Pulse Outputs	A pulse signal is output with the specified frequency and number of pulses at a fixed duty ratio (50%).
		PWM Outputs	A pulse signal is output at the specified duty ratio.
Interrupt	Origin Searches		The origin point of the machine is determined according to the specified origin search parameters while actually outputting pulses and using the origin and origin proximity input signals as conditions. (Pulse inputs and outputs are also used for this function.)
	Input Interrupt Function		A task is started for an interrupt input from a Pulse I/O Module or for a high-speed counter input.
	Input Interrupts		Interrupt tasks are executed when the interrupt input turns ON or turns OFF. Direct Mode: An interrupt task is executed each time an input signal changes. Counter Mode: Changes in the input signal are counted up or down and the interrupt task is executed when the counter counts out. (The maximum response frequency is 3 kHz.)
	High-speed Counter Interrupts		An interrupt task is executed when preset comparison conditions for a high-speed counter are met. Target-value comparison: The interrupt task is executed when the count matches a specified value. Range comparison: The interrupt task is executed when the count enters or leaves a specified range of values.

Allocating Functions I/O signals

Pulse I/O Module 0 (on the right)

Terminal symbol			IN 00	IN 01	IN 02	IN 03	IN 04	IN 05	IN 06	IN 07	IN 08	IN 09	OUT 00	OUT 01	OUT 02	OUT 03	OUT 04	OUT 05
Address			2960										2961					
Bit			0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5
Inputs	Normal inputs		Normal input 0	Normal input 1	Normal input 2	Normal input 3	Normal input 4	Normal input 5	Normal input 6	Normal input 7	Normal input 8	Normal input 9	---	---	---	---	---	---
	Interrupt inputs (Direct Mode/ Counter Mode)		Interrupt input 0	Interrupt input 1	Interrupt input 2	Interrupt input 3	---	---	---	---	---	---	---	---	---	---	---	---
	Quick response inputs		Quick response input 0	Quick response input 1	Quick response input 2	Quick response input 3	---	---	---	---	---	---	---	---	---	---	---	---
	High-speed counters		---	---	High-speed counter 1 (phase-Z/ reset)	High-speed counter 0 (phase-Z/ reset)	---	---	High-speed counter 1 (phase-A, increment, or count input)	High-speed counter 1 (phase-B, decrement, or direction input)	High-speed counter 0 (phase-A, increment, or count input)	High-speed counter 0 (phase-B, decrement, or direction input)	---	---	---	---	---	---
Outputs	Normal outputs		---	---	---	---	---	---	---	---	---	---	Normal output 0	Normal output 1	Normal output 2	Normal output 3	Normal output 4	Normal output 5
	Pulse outputs	CW/CCW outputs	---	---	---	---	---	---	---	---	---	---	Pulse output 0 (CW)	Pulse output 0 (CCW)	Pulse output 1 (CW)	Pulse output 1 (CCW)	---	---
		Pulse + direction outputs	---	---	---	---	---	---	---	---	---	---	Pulse output 0 (pulse)	Pulse output 1 (pulse)	Pulse output 0 (direction)	Pulse output 1 (direction)	---	---
		Variable duty ratio outputs	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	PWM output 0
Origin search			Origin search 0 (Origin Input Signal)	Origin search 0 (Origin Proximity Input Signal)	Origin search 1 (Origin Input Signal)	Origin search 1 (Origin Proximity Input Signal)	Origin search 0 (Positioning Completed Signal)	Origin search 1 (Positioning Completed Signal)	---	---	---	---	---	---	---	---	Pulse output 0 error counter reset output (operation modes 1 and 2)	Pulse output 1 error counter reset output (operation modes 1 and 2)

Pulse I/O Module 1 (on the left)

Terminal symbol			IN 10	IN 11	IN 12	IN 13	IN 14	IN 15	IN 16	IN 17	IN 18	IN 19	OUT 10	OUT 11	OUT 12	OUT 13	OUT 14	OUT 15
Address			2962										2963					
Bit			0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5
Inputs	Normal inputs		Normal input 10	Normal input 11	Normal input 12	Normal input 13	Normal input 14	Normal input 15	Normal input 16	Normal input 17	Normal input 18	Normal input 19	---	---	---	---	---	---
	Interrupt inputs (Direct Mode/ Counter Mode)		Interrupt input 4	Interrupt input 5	Interrupt input 6	Interrupt input 7	---	---	---	---	---	---	---	---	---	---	---	---
	Quick response inputs		Quick response input 4	Quick response input 5	Quick response input 6	Quick response input 7	---	---	---	---	---	---	---	---	---	---	---	---
	High-speed counters		---	---	High-speed counter 3 (phase-Z/ reset)	High-speed counter 2 (phase-Z/ reset)	---	---	High-speed counter 3 (phase-A, increment, or count input)	High-speed counter 3 (phase-B, decrement, or direction input)	High-speed counter 2 (phase-A, increment, or count input)	High-speed counter 2 (phase-B, decrement, or direction input)	---	---	---	---	---	---
Outputs	Normal outputs		---	---	---	---	---	---	---	---	---	---	Normal output 6	Normal output 7	Normal output 8	Normal output 9	Normal output 10	Normal output 11
	Pulse outputs	CW/CCW outputs	---	---	---	---	---	---	---	---	---	---	Pulse output 2 (CW)	Pulse output 2 (CCW)	Pulse output 3 (CW)	Pulse output 3 (CCW)	---	---
		Pulse + direction outputs	---	---	---	---	---	---	---	---	---	---	Pulse output 2 (pulse)	Pulse output 3 (pulse)	Pulse output 2 (direction)	Pulse output 3 (direction)	---	---
		Variable duty ratio outputs	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	PWM output 2
Origin search			Origin search 2 (Origin Input Signal)	Origin search 2 (Origin Proximity Input Signal)	Origin search 3 (Origin Input Signal)	Origin search 3 (Origin Proximity Input Signal)	Origin search 2 (Positioning Completed Signal)	Origin search 3 (Positioning Completed Signal)	---	---	---	---	---	---	---	---	Pulse output 2 error counter reset output (operation modes 1 and 2)	Pulse output 3 error counter reset output (operation modes 1 and 2)

Specifications of Pulse Input Functions

Interrupt Inputs

Item	Direct Mode	Counter Mode
Number of interrupt inputs	Max. 8 inputs	
Allocated bit	CIO 2960 and CIO 2962, bits 00 to 03	
Interrupt detection method	ON-to-OFF or OFF-to-ON transitions	
Interrupt task numbers	140 to 147 (fixed)	
Counting method	---	Incrementing or decrementing (Set with the MSKS(690) instruction.)
Counting range	---	0001 to FFFF hex (16 bits) (Set in A532 to A535 and A544 to A547.)
Response frequency	---	Single-phase: 3 kHz × 8 inputs
Storage locations for PVs for interrupt inputs in Counter Mode	---	A536 to A539 and A548 to A551

Quick-response inputs

Item	Specifications
Number of Quick-response inputs	Max. 8 inputs
Quick-response inputs	Signals that are shorter than the cycle time are latched for one PLC cycle, so they can be detected in the PLC program. Minimum detectable pulse width is 30 μs.

High-speed Counter Inputs

Item	Description
Number of High-speed Counter Inputs	Max. 4 inputs
Pulse input method (counting mode)	Incremental pulse inputs Differential phase input (4×) Up/down inputs Pulse + direction inputs
Input signals	Increment pulse Phase A Up pulse Pulse
	--- Phase B Down pulse Direction
	--- Phase Z Reset Reset
Frequency and number of high-speed counters	100 kHz, 2 inputs × 2 I/O Modules 50 kHz, 2 inputs × 2 I/O Modules 100 kHz, 2 inputs × 2 I/O Modules 100 kHz, 2 inputs × 2 I/O Modules
Counting mode	Linear mode or ring mode
Count value	Linear mode: 8000 0000 to 7FFF FFFF hex 0000 0000 to FFFF FFFF hex (for increment pulse) Ring mode: 0000 0000 to Max. ring value
High-speed counter PV storage locations	High-speed counter 0: A271 (upper 4 digits) and A270 (lower 4 digits) High-speed counter 1: A273 (upper 4 digits) and A272 (lower 4 digits) High-speed counter 2: A317 (upper 4 digits) and A316 (lower 4 digits) High-speed counter 3: A319 (upper 4 digits) and A318 (lower 4 digits) Refreshed during overseeing processing. Use PRV(881) to read the most recent PVs. Data format: 8 digit hexadecimal • Linear mode: 8000 0000 to 7FFF FFFF hex 0000 0000 to FFFF FFFF hex (for increment pulse) • Ring mode: 0000 0000 to Max. ring value
Control method	Target value comparison Up to 48 target values and corresponding interrupt task numbers can be registered.
	Range Comparison Up to 8 or up to 32 ranges can be registered, with a separate upper limit, lower limit, and interrupt task number for each range.
Counter reset method	- Phase-Z + Software reset The counter is reset when the phase-Z input goes ON while the Reset Bit (A531.00 to A531.03) is ON. - Software reset The counter is reset when the Reset Bit (A531.00 to A531.03) is turned ON. Operation can be set to stop or continue the comparison operation when the high-speed counter is reset.

Specifications of Pulse Output Functions

Position Control and Speed Control

Item	Specifications
Number of Pulse Outputs	Max. 4 outputs (Pulse Output 00 to 03)
Output mode	Continuous mode (for speed control) or independent mode (for position control)
Positioning (independent mode) instructions	PULS (886) and SPED (885), PULS (886) and ACC (888), or PULS2 (887) instruction
Speed control (continuous mode) instructions	SPED (885) and ACC (888) instructions
Origin (origin search and origin return) instructions	ORG (889) instruction
Interrupt feeding instruction	IFEED (892) instruction
Output frequency	1 pps to 100 kpps (1 pps units), two pulse outputs × 2 Pulse I/O Modules
Frequency acceleration and deceleration rates	Set in increments of 1 pps for acceleration/deceleration rates from 1 to 65,535 pps (every 4 ms). The acceleration and deceleration rates can be set independently only with the PLS2 (887) instruction.
Changing SVs during instruction execution	The target frequency, acceleration/deceleration rate, and target position can be changed.
Pulse output method	CW/CCW or pulse + direction
Number of output pulses	Relative coordinates: 0000 0000 to 7FFF FFFF hex (Accelerating or decelerating in either direction: 2,147,483,647) Absolute coordinates: 8000 0000 to 7FFF FFFF hex (–2,147,483,648 to 2,147,483,647)
Relative/absolute coordinate specifications for pulse output PVs	Absolute coordinates are specified automatically when the origin location has been defined by changing the pulse output PV with the INI (880) instruction or performing an origin search with the ORG(889) instruction. Relative coordinates must be used when the origin is undefined.
Relative pulse/absolute pulse specifications	The pulse type can be specified with an operand in the PULS (886) or PLS2 (887) instruction. Absolute pulses can be used when absolute coordinates are specified for the pulse output PV, i.e. the origin location has been defined. Absolute pulse cannot be used when relative coordinates are specified, i.e., when the origin location is undefined. An instruction error will occur.
Pulse output PV's storage location	The following Auxiliary Area words contain the pulse output PVs Pulse output 0: A277 (leftmost 4 digits) and A276 (rightmost 4 digits) Pulse output 1: A279 (leftmost 4 digits) and A278 (rightmost 4 digits) Pulse output 2: A323 (leftmost 4 digits) and A322 (rightmost 4 digits) Pulse output 3: A325 (leftmost 4 digits) and A324 (rightmost 4 digits) The PVs are refreshed during regular I/O refreshing.

Variable-duty Pulse Outputs (PWM)

Item	Specifications
Number of PWM Outputs	Max. 4 outputs (PWM Output 00 to 03)
Duty ratio	0.0% to 100.0% in 0.1% increments
Frequency	0.1 Hz to 6,553.5 Hz (Set in 0.1-Hz increments.) 1 Hz to 32,800 Hz (Set in 1-Hz increments.)
Output mode	Continuous Mode
Instruction	PWM (891) instruction

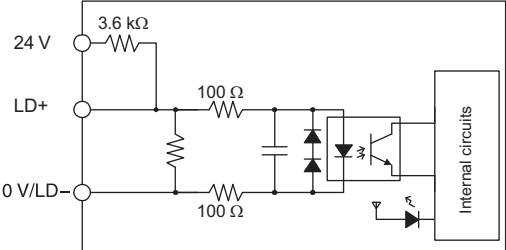
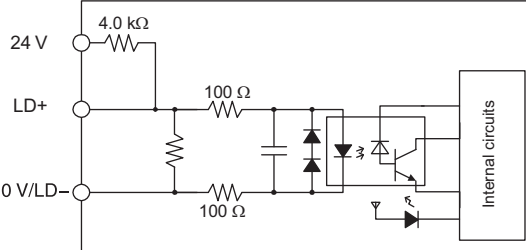
Specifications of Pulse I/O Modules

Input Specifications (IN00 to IN09/IN10 to IN19)

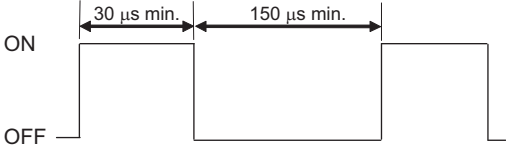
Normal Inputs

Inputs	IN00 to IN05 and IN10 to IN15	IN06 to IN09 and IN16 to IN19	IN00 to IN05 and IN10 to IN15	IN06 to IN09 and IN16 to IN19
Input form	24 VDC inputs		Line driver inputs	
Input current	6.0 mA typical	5.5 mA typical	13 mA typical	10 mA typical
Input voltage range	24 VDC +10%/−15%		RS-422A or RS-422 line driver (conforming to AM26LS31), Power supply voltage of 5 V ±5%	
Input impedance	3.6 kΩ	4.0 kΩ	---	
Number of circuits	1 common, 1 circuit			
ON voltage/current	17.4 VDC min., 3 mA min.		---	
OFF voltage/current	1 mA max. at 5 VDC max.		---	
ON response time	8 ms max. (The input time constant can be set to 0, 0.5, 1, 2, 4, 8, 16, or 32 ms in the PLC Setup.)			
OFF response time	8 ms max. (The input time constant can be set to 0, 0.5, 1, 2, 4, 8, 16, or 32 ms in the PLC Setup.)			

Input Circuit Configuration

Item	Specifications	
Input	IN00 to IN05/IN10 to IN15	IN06 to IN09/IN16 to IN19
Circuit configuration		

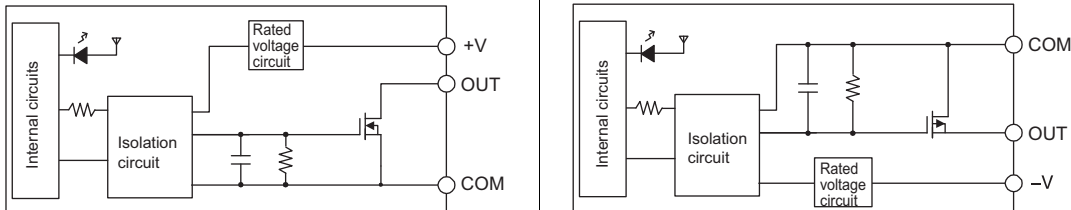
Interrupt Input and Quick-response Input Specifications (IN00 to IN03 and IN10 to IN13)

Item	Specifications
ON response time	30 μs max.
OFF response time	150 μs max.
Response pulse	

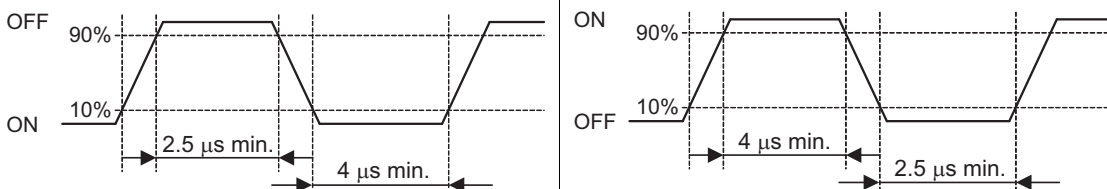
High-speed Counter Input Specifications (IN06 to IN09 and IN16 to IN19)

	24-VDC input	Line driver input
Set to 60 kHz	Phase-A/Phase-B encoder input, Single-phase 60-kHz pulse input with 50% duty ratio Rise time and fall time: 3.0 μs max. 16.6 μs min. ON 50% OFF 8.3 μs min. 8.3 μs min. 3 μs max. 3 μs max. Phase-A/Phase-B encoder inputs, Differential phases, 30 kHz Changes in phases A and B must be separated by at least 4.0 μs. ON 50% OFF ON 50% OFF 33.3 μs min. T1 T2 T3 T4 T1, T2, T3, T4: 4.0 μs min.	Encoder input phase A or B, single-phase 60-kHz pulse input with 50% duty ratio ON 50% OFF 16.6 μs min. 8.3 μs min. 8.3 μs min. Phase-A/Phase-B encoder inputs, Differential phases, 30 kHz Changes in phases A and B must be separated by at least 4.0 μs. ON 50% OFF ON 50% OFF 33.3 μs min. T1 T2 T3 T4 T1, T2, T3, T4: 4.0 μs min.
Set to 100 kHz	Phase-A/Phase-B encoder input, Single-phase 100-kHz pulse input with 50% duty ratio Rise time and fall time: 2.5 μs max. 10.0 μs min. ON 50% OFF 5.0 μs min. 5.0 μs min. 2.5 μs max. 2.5 μs max. Phase-A/Phase-B encoder inputs, Differential phases, 50 kHz Changes in phases A and B must be separated by at least 2.5 μs. ON 50% OFF ON 50% OFF 20.0 μs min. T1 T2 T3 T4 T1, T2, T3, T4: 2.5 μs min.	Single-phase 100-kHz pulse input with 50% duty ratio ON 50% OFF 10.0 μs min. 5.0 μs min. 5.0 μs min. Differential-phase 50-kHz pulse input Changes in phases A and B must be separated by at least 2.5 μs. ON 50% OFF ON 50% OFF 20.0 μs min. T1 T2 T3 T4 T1, T2, T3, T4: 2.5 μs min.
Phase Z/reset input	Encoder input phase Z (IN02/IN03 or IN12/IN13) Maintain an ON time of 30 μs min. and an OFF time of 150 μs min. ON 50% OFF 30 μs min. 150 μs min.	Encoder input phase Z (IN02/IN03 or IN12/IN13) Maintain an ON time of 30 μs min. and an OFF time of 150 μs min. ON 50% OFF 30 μs min. 150 μs min.

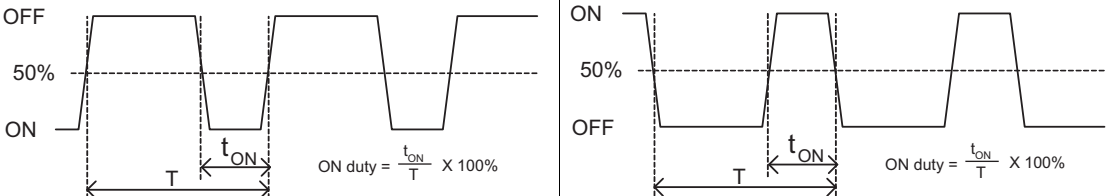
Output Specifications (OUT00 to OUT05 and OUT10 to OUT15)

Item	Specifications	
Output Specifications	Sinking-type (CJ2M-MD211)	Sourcing-type (CJ2M-MD212)
Rated voltage	5 to 24 VDC	
Allowable voltage range	4.75 to 26.4 VDC	
Maximum switching current	0.3 A/output, 1.8 A/Unit	
Number of circuits	6 outputs (6 outputs/common)	
Maximum inrush current	3.0 A/output, 10 ms max.	2.0 A/output, 10 ms max.
Leakage current	0.1 mA max.	
Residual voltage	0.6 V max.	
ON response time	0.1 ms max.	
OFF response time	0.1 ms max.	
Fuse	None	
External supply power (power supply input for outputs)	10.2 to 26.4 VDC, 20 mA min.	
Circuit configuration		

Pulse Outputs (OUT00 to OUT03 and OUT10 to OUT13)

Item	Specifications	
Output Specifications	Sinking-type (CJ2M-MD211)	Sourcing-type (CJ2M-MD212)
Rated voltage	5 to 24 VDC	
Allowable voltage range	4.75 to 26.4 VDC	
Maximum switching capacity	30 mA	
Minimum switching capacity	7 mA	
Maximum output frequency	100 kHz	
Output waveform		

PWM Outputs (OUT04, OUT05, OUT14, and OUT15)

Item	Specifications	
Output Specifications	Sinking-type (CJ2M-MD211)	Sourcing-type (CJ2M-MD212)
Rated voltage	5 to 24 VDC	
Allowable voltage range	4.75 to 26.4 VDC	
Maximum switching capacity	6.5535 kHz or less: 300 mA, 6.5536 to 32.8 kHz: 100 mA	
Maximum output frequency	32,800 Hz	
PWM output accuracy (for ON pulse width of 2 μs or longer)	ON duty at 6.5535 kHz or less: -0.2% to +1%, ON duty at 32.8 kHz: -1% to +5% (at switching current of 30 mA)	ON duty at 6.5535 kHz or less: ±0.5%, ON duty at 32.8 kHz: ±2.5% (at switching current of 30 mA)
Output waveform		

Version Information

Unit Versions

Refer to *CJ-series CJ2/CJ3 CPU Unit Software User's Manual* (Cat. No. W473).

Unit Versions and Programming Devices

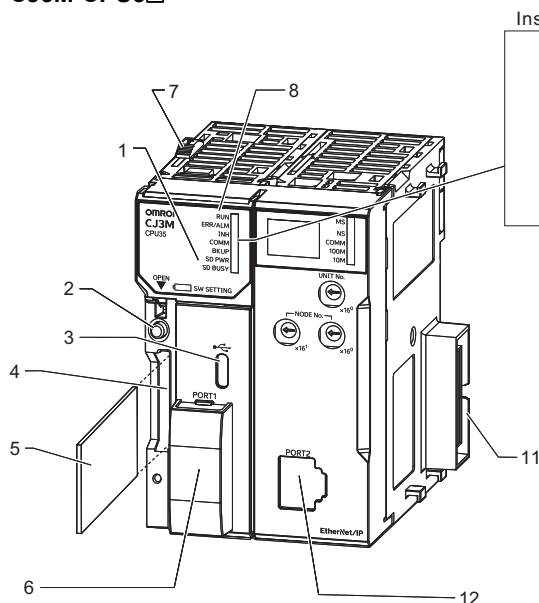
Refer to *CJ-series CJ2/CJ3 CPU Unit Software User's Manual* (Cat. No. W473).

CJ3M-CPU3□/-CPU1□/CJ2M-MD21□

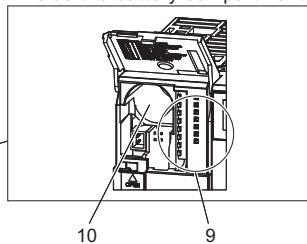
Part Names and Functions

CPU Unit

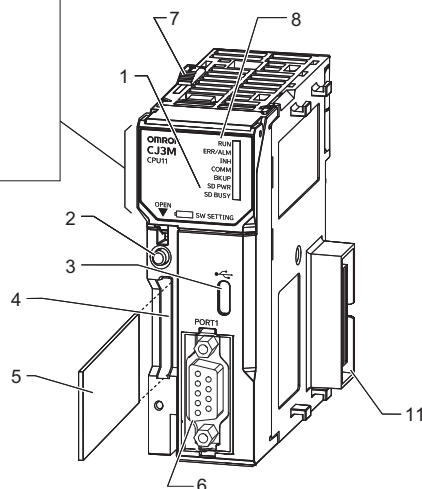
CJ3M-CPU3□



Inside the battery compartment

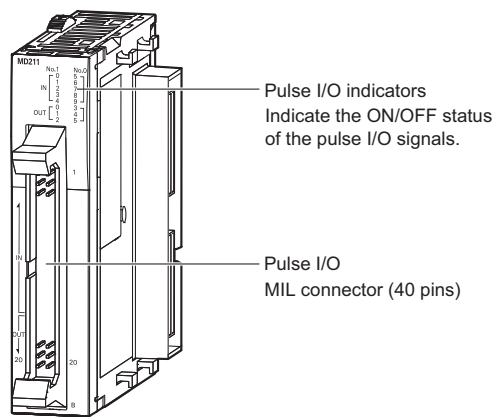


CJ3M-CPU1□



Number	Name	Function
1	Battery Compartment Cover	When you open the cover upward, you will find a battery slot and DIP switch.
2	Simple Backup/ Memory Card Power Supply Switch	Used to back up Memory Card data or turn OFF the power when removing the Memory Card.
3	Peripheral (USB) Port	Connected to Programming Devices, such as the CX-Programmer.
4	Memory Card Connector	Connects the Memory Card to the CPU Unit.
5	Memory Card	All CPU Unit data can be copied to a Memory Card to back up the data.
6	RS-232C Serial Port	Connected to Programming Devices, Host Computers, general-purpose external devices, Programmable Terminals, and other devices.
7	Slider	Secures the CPU Unit to the next Unit.
8	LED Indicators	These indicators show the status of the CPU Unit: • Normal operation • Errors • Output OFF status • Communications status for the RS-232C ports • Backup status built-in flash memory • Memory Card status (accessing and supplying power)
9	DIP Switch	Sets operations, such as user memory protection, automatic program transfer by Memory Card, serial port communications mode, and simple backup.
10	Battery Slot	Install a separately sold battery (CJ1W-BAT01).
11	Connector	Connected to the next Unit.
12	Built-in EtherNet/IP Section	Refer to <i>CS/CJ Series EtherNet/IP Units Operation Manual</i> (Cat. No. W465).

Pulse I/O Modules

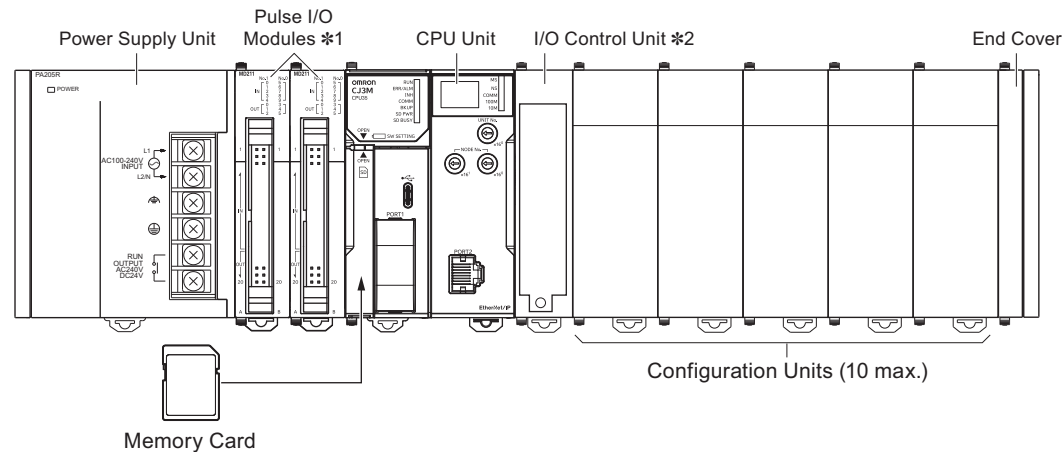


Unit Configuration

CPU Rack

The CPU Rack consists of a CJ3 CPU Unit, a CJ-series Power Supply Unit, CJ-series Configuration Units, and a CJ-series End Cover. Up to 10 Configuration Units can be connected.

CJ3M CPU Units



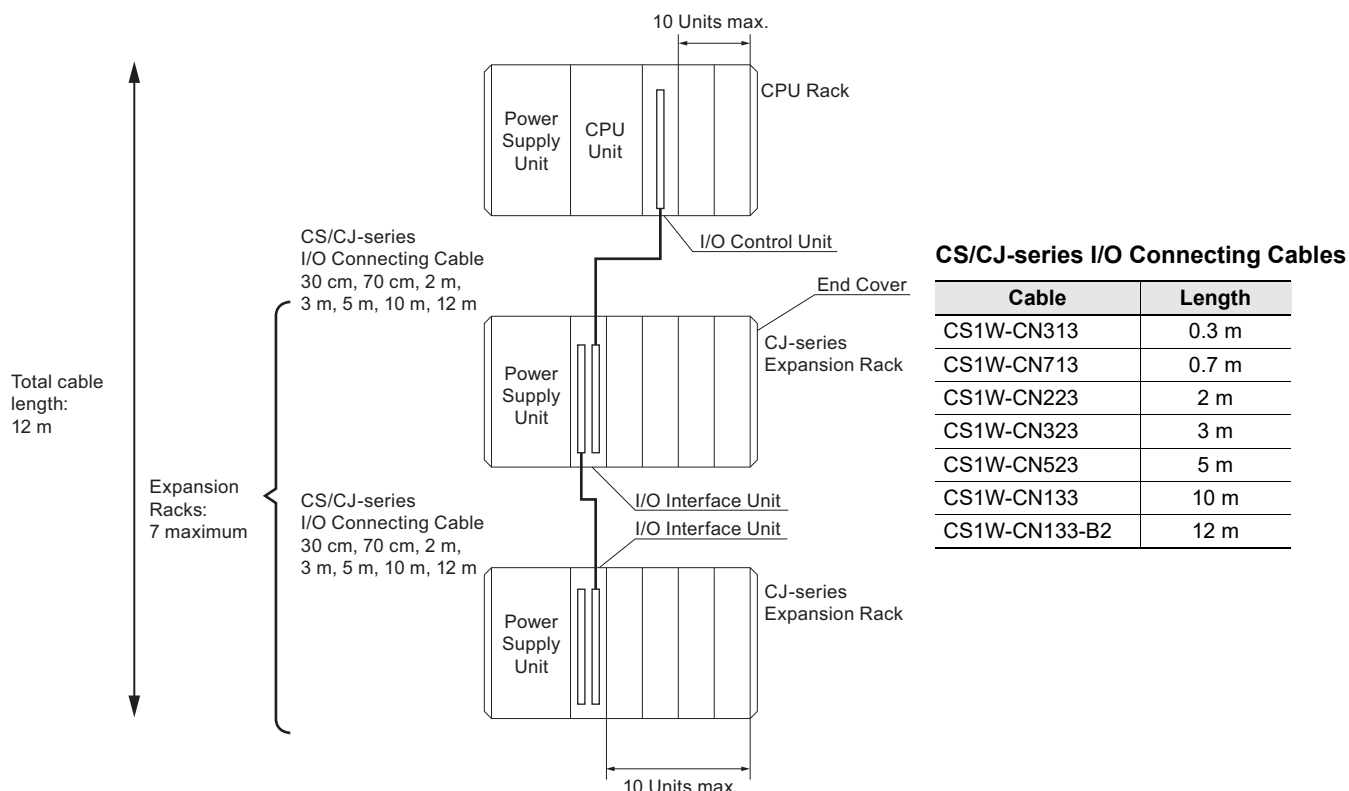
- *1. Up to two Pulse I/O Modules can be connected to the left of the CPU Unit.
- *2. The I/O Control Unit is required only to connect an Expansion Rack. It must be connected immediately to the right of the CPU Unit.

Even though the CJ-series PLCs do not have Backplanes, the term “slot” is still used to refer to the location of Units. Slot numbers are assigned in order to Units from left to right on the CPU Rack (slot 0, slot 1, slot 2, etc.).

Name	Configuration		Remarks
CJ-series CPU Rack	CPU Unit	CJ3M CPU Units	One required for every CPU Rack.
		Pulse I/O Module	Connected to use pulse I/O. Up to two Pulse I/O Modules can be connected. They must be connected to the immediate left of the CPU Unit. The Pulse I/O Module closest to the CPU Unit is Pulse I/O Module 0 and the other one is Pulse I/O Module 1.
		Memory Card	Install as required.
	CJ-series Power Supply Unit		One required for every CPU Rack.
	I/O Control Unit		Required to connect an Expansion Rack. Must be connected immediately to the right of the CPU Unit.
	Configuration Units	CJ-series Basic I/O Units	A total of up to 10 Units can be connected to the CPU Rack and to each of the Expansion Racks. (An error will occur if 11 or more Units are connected.)
		CJ-series Special I/O Units	
		CJ-series CPU Bus Units	
	End Cover		Must be connected to the right end of the CPU Rack. One End Cover is provided with the CPU Unit. A fatal error will occur if the End Cover is not connected.

Expansion Racks

When adding on Configuration Units beyond those mounted on the CPU Unit, up to seven CJ-series Expansion Racks can be connected to the CPU Unit.



Units for CJ-series Expansion Racks

Rack	Configuration	Remarks
CJ-series Expansion Racks	CJ-series Power Supply Unit	One required for each Expansion Rack. (An I/O Control Unit is required on the CJ-series CPU Rack.)
	I/O Interface Unit (one End Cover included.)	
	CJ-series Basic I/O Units	A total of up to 10 Units can be connected to the CPU Rack and to each of the Expansion Racks. (An error will occur if 11 or more Units are connected.)
	CJ-series Special I/O Units	
	CJ-series CPU Bus Units	
	End Cover	Must be connected to the right end of the Expansion Rack. (One End Cover is provided with the I/O Interface Unit. A fatal error will occur if the End Cover is not connected.)
	CS/CJ-series I/O Connecting Cable	Required to connect the I/O Interface Unit to the I/O Control Unit or previous I/O Interface Unit.

Maximum Number of Units

A maximum of 10 Units can be connected to the CPU Rack for a CJ3 CPU Unit or to an Expansion Rack. There are no restrictions in the number of each model of Unit based on location.

Note: A fatal error will occur and the CPU Unit will not operate if more than the allowable number of Units is connected to a CJ3 CPU Rack or to an Expansion Rack.

Models of Configuration Units

The Configuration Units with which the CJ3 CPU Unit can exchange data are classified into three groups. The number of Units that can be mounted depends on the type of Unit.

Units	Description	Unit identification method
Basic I/O Units	Basic I/O Units are used for discrete inputs and outputs.	Identified by the CPU Unit according to mounting position.
Special I/O Units	Special I/O Units are more advanced than Basic I/O Units. They support functions other than discrete inputs and outputs. Examples: Analog I/O Units and High-speed Counter Units Special I/O Units have a smaller area for exchanging data with the CPU Unit than CPU Bus Units (including Network Communications Units).	Identified by the CPU Unit using unit numbers 0 to 95 set with the rotary switches on the front panel of the Unit.
CPU Bus Unit	CPU Units are advanced units that exchange data with the CPU Unit via the CPU bus. Examples: Network Communications Units and Serial Communications Units CPU Bus Units have a larger area for exchanging data with the CPU Unit than Special I/O Units.	Identified by the CPU Unit using unit number 0 to F set with the rotary switch on the front panel of the Unit.

Number of mountable Units

Type	CJ3M-CPU1□/3□
Basic I/O Units	80 Units max.
Special I/O Units	80 Units max.
CPU Bus Units	16 Units max. *1
System total	80 Units max.

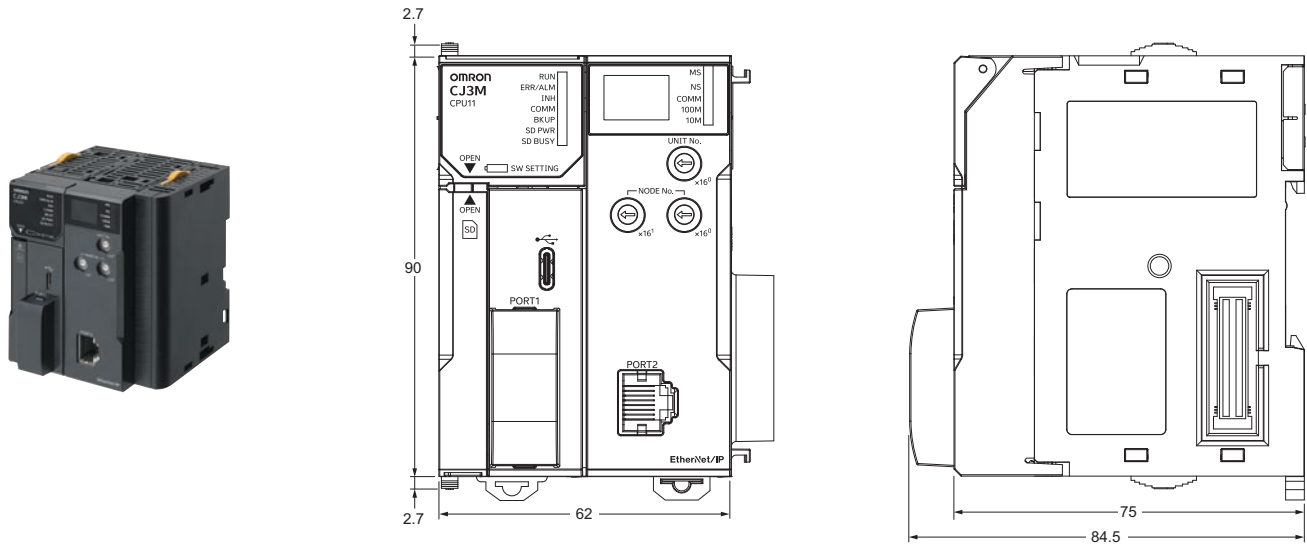
*1. The maximum number of CJ3M-CPU3□ Units is 15.

Dimensions

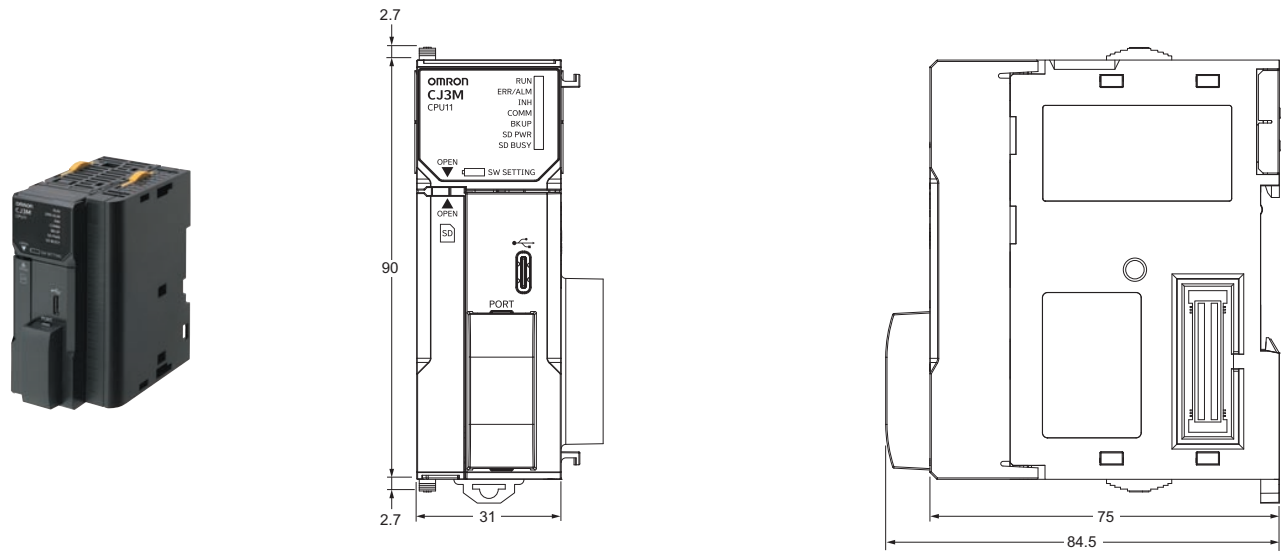
(Unit: mm)

CPU Units

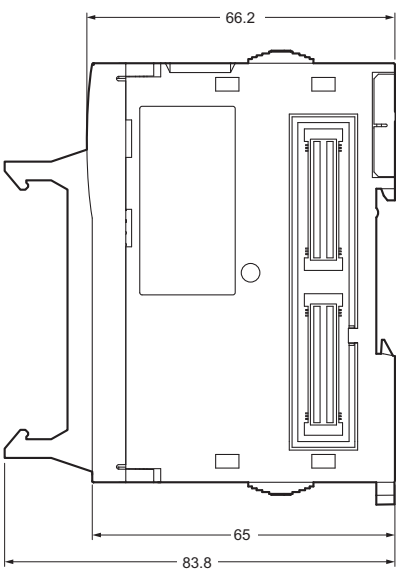
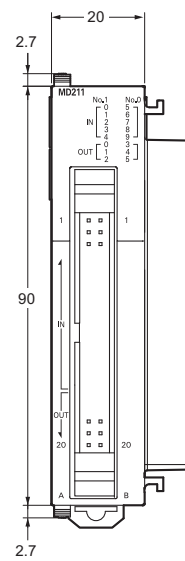
CJ3M-CPU3□



CJ3M-CPU1□



Pulse I/O Module



End Cover (included with CPU Units)

CJ1W-TER01



Related Manuals

The following manuals are related. Use these manuals for reference.

Manual	Cat. No.	Model	Application	Description
CJ-series CJ3 CPU Unit Hardware User's Manual	W664	CJ3M-CPU□□	Hardware specifications for CJ2 CPU Units	Describes the following for CJ3 CPU Units: • Overview and features • Basic system configuration • Part nomenclature and functions • Mounting and setting procedure • Remedies for errors Also refer to the <i>Software User's Manual</i> (Cat. No. W473).
CJ-series CJ2/CJ3 CPU Unit Software User's Manual	W473	CJ3M-CPU□□ CJ2H-CPU6□-EIP CJ2H-CPU6□ CJ2M-CPU□□	Software specifications for CJ2/CJ3 CPU Units	Describes the following for CJ2/CJ3 CPU Units: • CPU Unit operation • Internal memory • Programming • Settings • Functions built into the CPU Unit Also refer to the <i>Hardware User's Manual</i> (Cat. No. W472).
CS/CJ-series EtherNet/IP™ Units Operation Manual	W465	CJ3M-CPU3□ CJ2H-CPU6□-EIP CJ2M-CPU3□/4□ CS1W-EIP21/EIP21S CJ1W-EIP21/EIP21S	Using the built-in EtherNet/IP port of the CJ2/CJ3 CPU Unit	Describes the built-in EtherNet/IP port and EtherNet/IP Units. Describes basic settings, tag data links, FINS communications, and other functions.
CJ-series CJ2M/CJ3M CPU Unit Pulse I/O Module User's Manual	W486	CJ3M-CPU□□ CJ2M-CPU□□ + CJ2M-MD21□	Information on using pulse I/O on CJ2M/ CJ3M CPU Units	Provides the following information on the CJ2M/CJ3M CPU Units: • Specifications and wiring methods • I/O functions • Quick-response inputs • Interrupt functions • High-speed counters • Pulse outputs • PWM outputs When programming, use this manual together with the <i>Instructions Reference Manual</i> (Cat. No. W474).
CS/CJ/NSJ-series Instructions Reference Manual	W474	CJ3M-CPU□□ CJ2H-CPU6□-EIP CJ2H-CPU6□ CJ2M-CPU□□ CS1G/H-CPU□□H CS1G/H-CPU□□-V1 CS1D-CPU□□H CS1D-CPU□□S CJ1H-CPU□□H-R CJ1G/H-CPU□□H CJ1G-CPU□□P CJ1G-CPU□□ CJ1M-CPU□□ NSJ□-□□□□(B)-G5D NSJ□-□□□□(B)-M3D	Information on instructions	Describes each programming instruction in detail. Also refer to the <i>Software User's Manual</i> (Cat. No. W473) when you do programming.

Manual	Cat. No.	Model	Application	Description
CS/CJ/CP/NSJ-series Communications Command Reference Manual	W342	CJ3M-CPU3□ CJ2H-CPU6□-EIP CJ2H-CPU6□ CJ2M-CPU□□ CS1G/H-CPU□□H CS1G/H-CPU□□-V1 CS1D-CPU□□H CS1D-CPU□□S CS1W-SCU□□-V1 CS1W-SCB□□-V1 CJ1H-CPU□□H-R CJ1G/H-CPU□□H CJ1G-CPU□□P CJ1M-CPU□□ CJ1G-CPU□□ CJ1W-SCU□□-V1 CP1H-X□□□□-□ CP1H-XA□□□□-□ CP1H-Y□□□□-□ CP1L-M/L□□□□-□□ CP1E-E/N□□D□-□	Information on communications for CS/CJ/CP-series CPU Units and NSJ-series Controllers	Describes C-mode commands and FINS commands Refer to this manual for a detailed description of commands for communications with the CPU Unit using C mode commands or FINS commands. Note: This manual describes the communications commands that are addressed to CPU Units. The communications path that is used is not relevant and can include any of the following: serial ports on CPU Units, communications ports on Serial Communications Units/Boards, and Communications Units. For communications commands addressed to Special I/O Units or CPU Bus Units, refer to the operation manual for the related Unit.
CX-One Setup Manual	W463	CXONE-AL□□D-V4/ LT□□□-V4	Installing software from the CX-One	Provides an overview of the CX-One FA Integrated Tool Package and describes the installation procedure.
CX-Programmer Operation Manual	W446	CXONE-AL□□D-V4	Support Software for Windows computers CX-Programmer operating procedure	Describes operating procedures for the CX-Programmer. Also refer to the <i>Software User's Manual</i> (Cat. No. W473) and <i>CS/CJ/NSJ-series Instructions Reference Manual</i> (Cat. No. W474) when you do programming.
CX-Programmer Operation Manual Functions Blocks/Structured Text	W447			
CX-Programmer Operation Manual SFC Programming	W469			
CS/CJ/CP/NSJ-series CX-Simulator Operation Manual	W366		Operating procedures for CX-Simulator Simulation Support Software for Windows computers Using simulation in the CX-Programmer with CX-Programmer version 6.1 or higher	Describes the operating procedures for the CX-Simulator. When you do simulation, also refer to the <i>CX-Programmer Operation Manual</i> (Cat. No. W446), <i>Software User's Manual</i> (Cat. No. W473), and <i>CS/CJ/NSJ-series Instructions Reference Manual</i> (Cat. No. W474).
CS/CJ/CP/NSJ-series CX-Integrator Network Configuration Software Operation Manual	W464		Network setup and monitoring	Describes the operating procedures for the CX-Integrator.

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Cat. No. P180-E1-01 0926 (0926)