Programmable Controller
CP2E

Micro PLC designed to support data collection and Machine to Machine communication



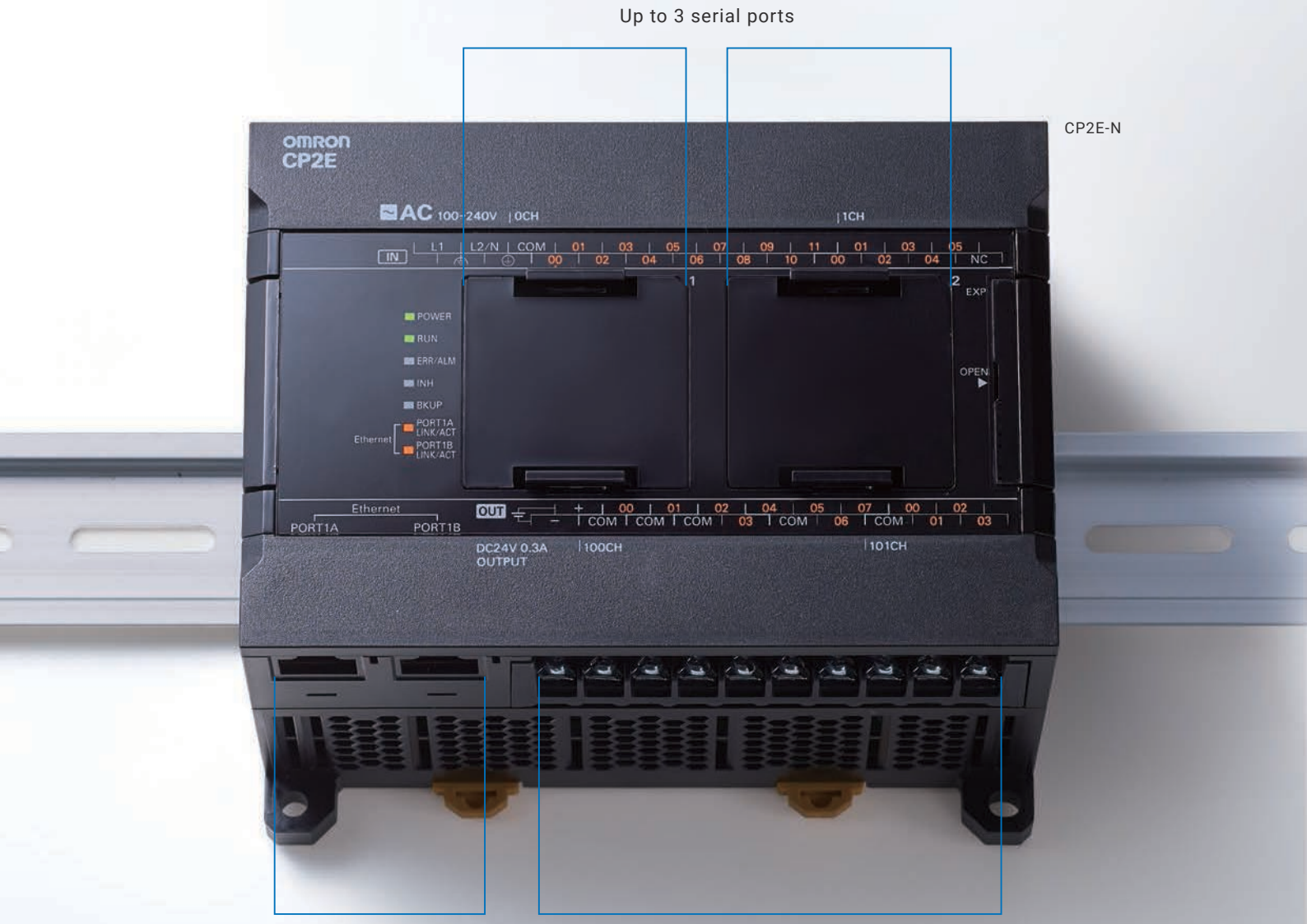
Diverse range of functions for your machine

Efficient solution for a flexible production, traceability and monitoring of machine key assets, to respond to operational excellence.

Improved connectivity to networking and serial devices.

Reduced development time with function blocks (FBs) programming.

Battery-free operation increases robustness and reduces maintenance. The extended operating temperature range increase reliability for special applications.

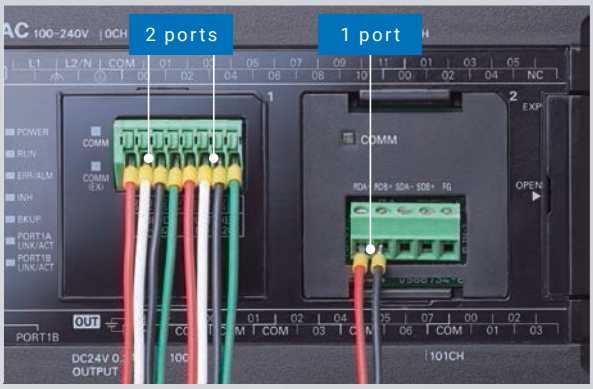


Note: Please check datasheet (Cat. No. P145) to select your controller. Available functions differ model by model.

Improved connectivity for ethernet and serial devices P.4-5

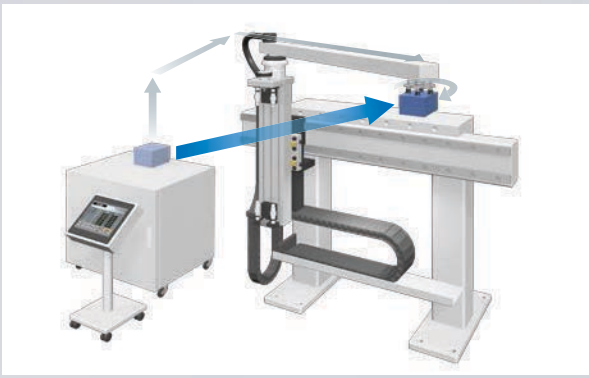


Built-in Ethernet switching function



Serial open protocols and Modbus communication

Reduced effort to realize complex machines P.6-7



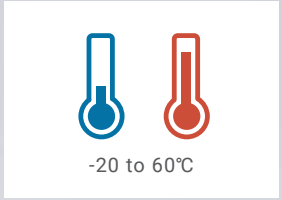
4-axis positioning function with linear interpolation

FB

Try Omron Function blocks for positioning, Machine to Machine communication and predictive maintenance

Download from
www.ia.omron.com/cp_fb

Install and forget: reliable solution for all environmental conditions P.7



Extended operational temperature range



Battery-free operation*



Input/output terminal LED indicators for quick troubleshooting



Automatic Recovery by electric interferences

* Needed only in case Real Time Clock is used.

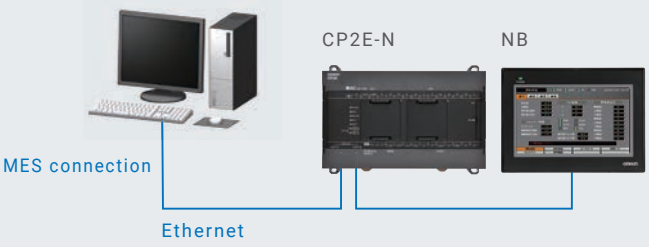
Improved connectivity for ethernet and serial devices



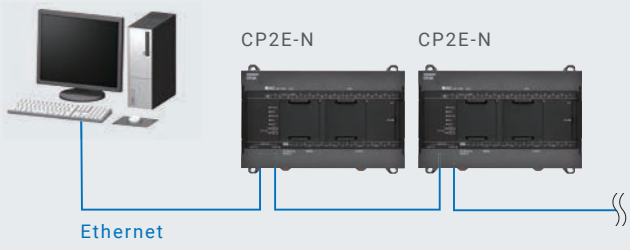
Ready for Machine to Machine communication CP2E-N

Connect machines to networks to collect field data.
Two built-in Ethernet ports eliminate the need for switching hubs. One port is connected to the host, and another can be connected to an HMI, PLC, or PC running support software or reserved.

Host and HMI connectivity



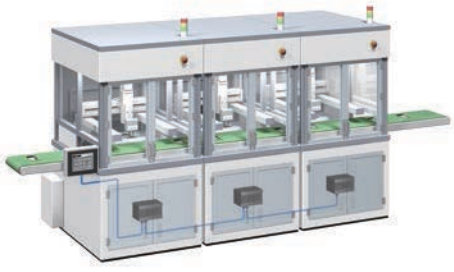
Machine to Machine connectivity



Note: The L2 Switching Hub function is built in.
Two Ethernet ports on the CP2E share the same IP address.

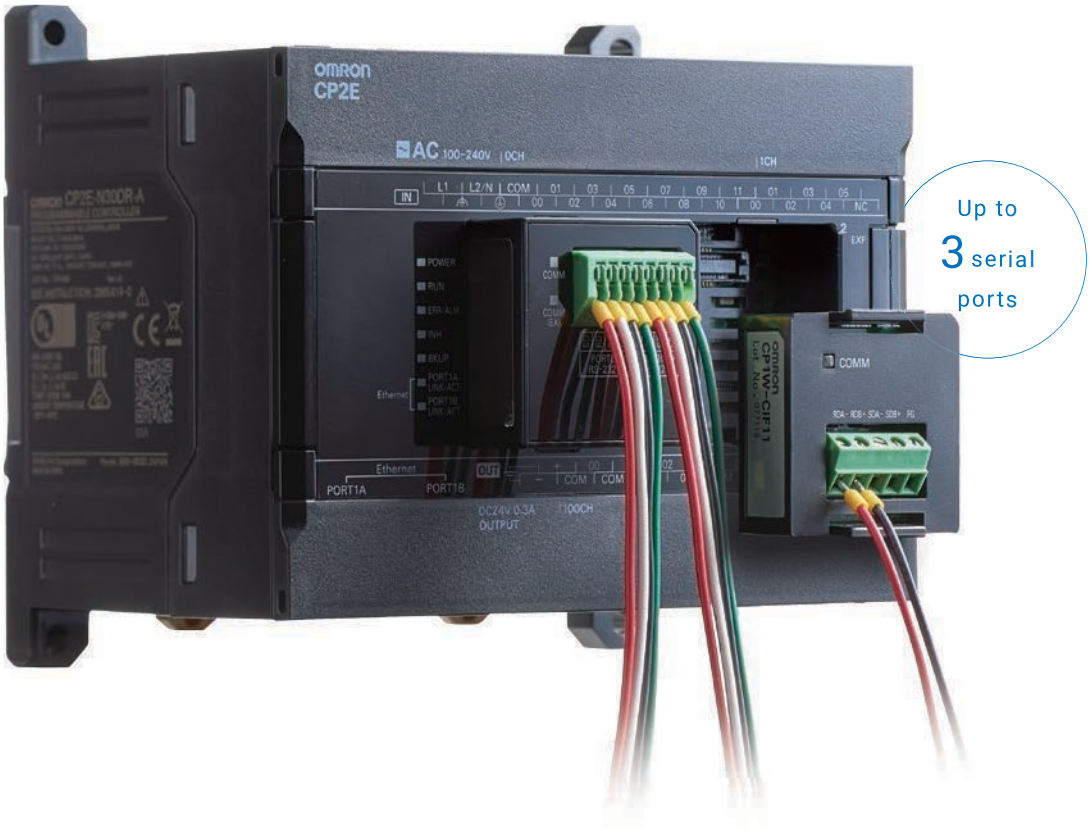
FB Ethernet Send/Receive Data

Reduce programming time by Ethernet Send/Receive Data FB to easily exchange data between controllers.



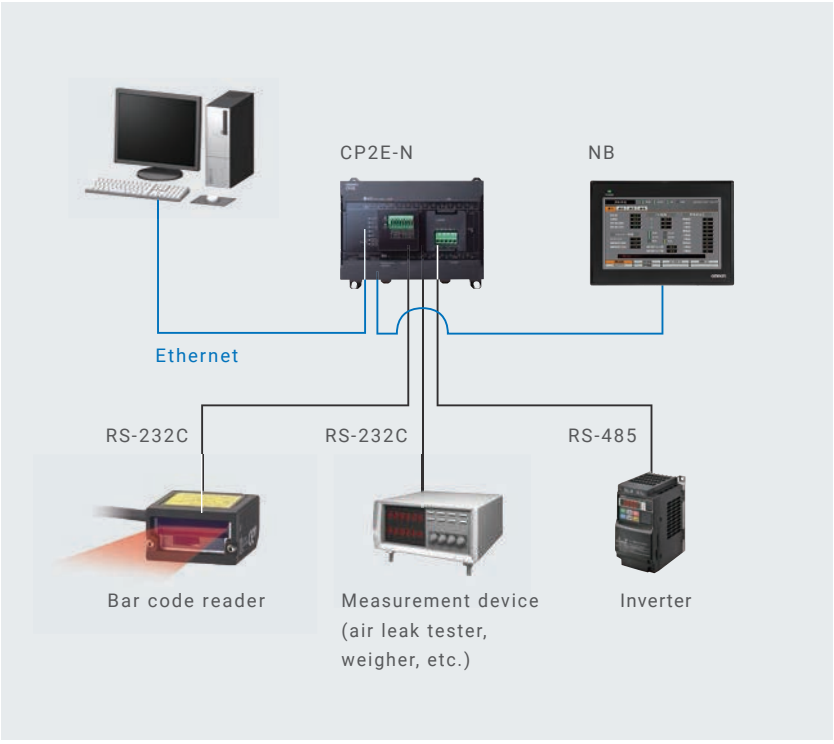
Assembling lines

Improve design efficiency and productivity reducing development time with a modular conception of the machine



Open connectivity to serial devices CP2E-N

CP2E-N can use up to 3 serial ports by mounting option boards.
Data collection, Control and Monitoring of serial devices is easy and flexible.



FB Modbus RTU master

Reduce programming time by Modbus FB to easily communicate with serial devices.

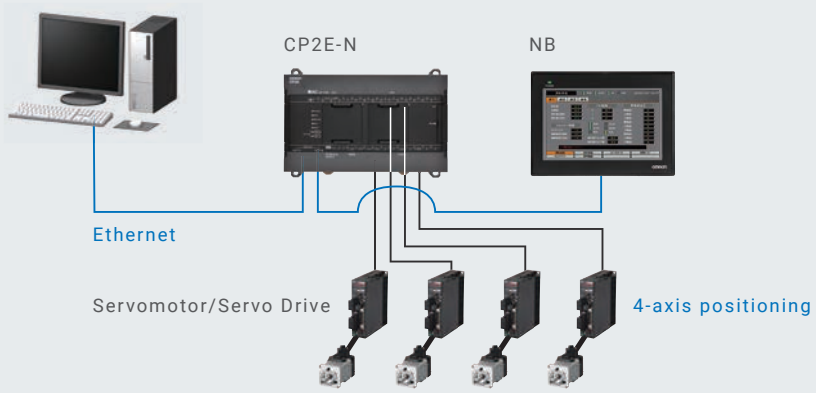


Semiautomatic assembling machines

Connect bar code readers for traceability and monitor state of machine

Reduced effort to realize complex machines

Up to 4-axis linear interpolation CP2E-N

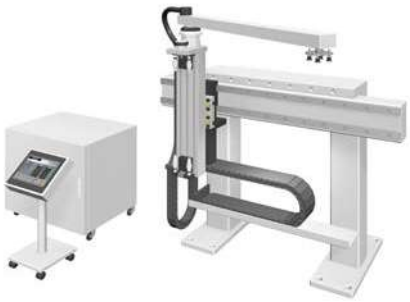


FB Linear interpolation

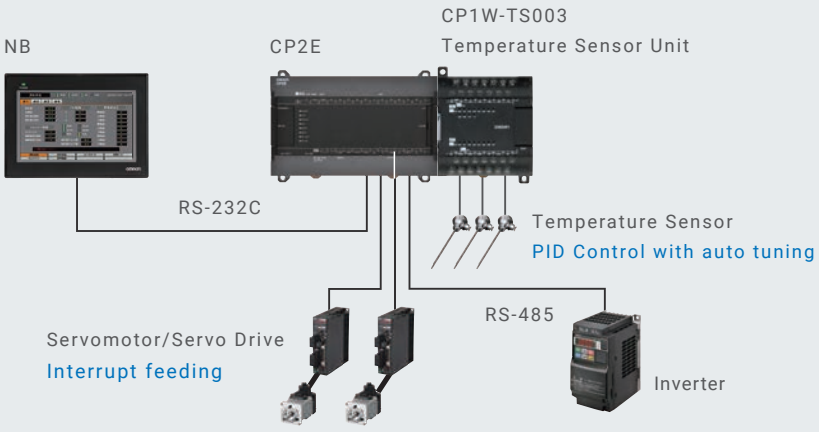
Simplified positioning:
4-axis can operate simultaneously for a faster positioning.

Pick and Place

Operate with 4-axis simultaneously to reduce machine cycle time

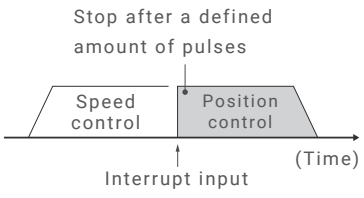


Positioning on mark for Packaging Machines CP2E-N/CP2E-S



Instruction Fixed positioning on interrupt (IFEED instruction)

With one instruction you can execute a fixed positioning on Interrupt input (mark) independently by PLC cycle time.



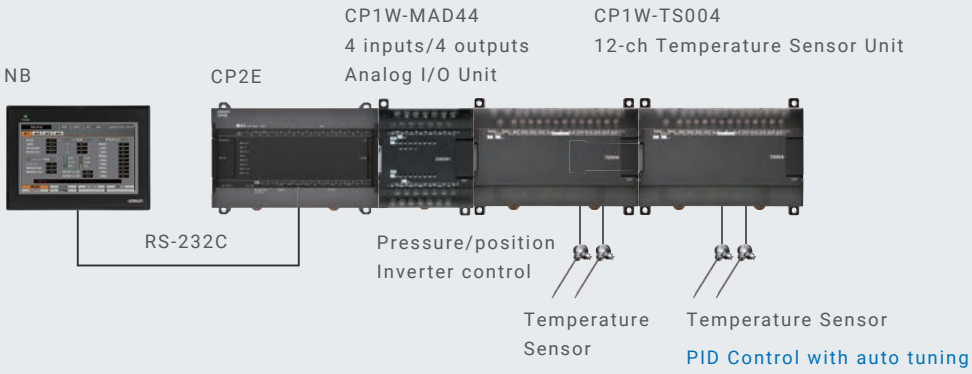
Packaging machine

Constant movement from mark detection to seal position



Stable temperature control with autotuning function

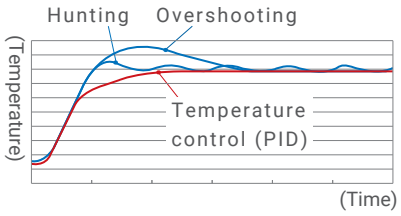
CP2E-N/CP2E-S/CP2E-E



FB

PID Control with auto tuning

PID with Autotuning function enable stable temperature control reducing start-up time. Connection with stand alone temperature control is also available.





Small extrusion machine

Stable multipoint temperature control, setting via NB series HMI

Install and forget: reliable solution for all environmental conditions

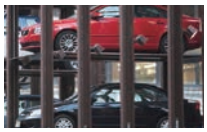
CP2E-N/CP2E-S/CP2E-E

Extended operational temperature range



-20 to 60℃

Increase reliability in special applications



Multi-level parking



Waste disposal equipment



Grain storage facility

Battery-free operation*



Cost reduction in maintenance, logistic/stock

* Needed only in case Real Time Clock is used.

I/O LED indicators



Reduce installation time and easily check wiring errors by LED indicators

Automatic Recovery by electric interferences.



Normal operation continues

CP2E detects and recovers in real-time operation a bit corruption.
Increase machine efficiency avoiding CPU stops.

Product lineup

CP2E-N Network Model: Ethernet connectivity, 4-axis positioning, FB programming



CPU unit with 30, 40, or 60 I/O points

2 Ethernet ports	Up to 3 serial ports	4-axis positioning	2 option boards	3 expansion units
Memory 10K steps	Clock	Battery-free	-20 to 60℃	USB port



CPU unit with 14 or 20 I/O points

1 Ethernet port	Up to 2 serial ports	2-axis positioning	1 option board	Expansion unit
Memory 10K steps	Clock	Battery-free	-20 to 60℃	USB port

CP2E-S Standard Model: 2 serial ports, 2-axis positioning, FB programming



CPU unit with 30, 40, or 60 I/O points

Ethernet	1 x RS-232C port 1 x RS-485 port*1	2-axis positioning	option board	3 expansion units
Memory 8K steps	Clock	Battery-free	-20 to 60℃	USB port

CP2E-E Essential Model: 1 serial port, FB programming



CPU unit with 30, 40, or 60 I/O points

Ethernet	1 x RS-232C port*1	positioning	option board	3 expansion units
Memory 4K steps	Clock	Battery-free	-20 to 60℃	USB port



CPU unit with 14 or 20 I/O points

Ethernet	1 x RS-232C port*1	positioning	option board	Expansion unit
Memory 4K steps	Clock	Battery-free	-20 to 60℃	USB port

*1. RS-232C: Screwless terminal block (6 terminals), RS-485: Screwless terminal block (3 terminals)

Option Board (for CP2E-N-type CPU Units)

1-port Serial Option Board



RS-232C



RS-422A/485



RS-422A/485
(isolated)

2-port Serial Option Board *2



RS-232C
RS-232C



RS-232C
RS-485 (isolated)



RS-485 (isolated)
RS-485 (isolated)

Analog Option Board *2



2 analog inputs
0 to 10 V,
0 to 20 mA



2 analog outputs
0 to 10 V



2 analog inputs
0 to 10 V, 0 to 20 mA
2 analog outputs
0 to 10 V

*2. Two 2-port serial option boards cannot be mounted in a CPU unit.
PORT1(EX) is not supported host links and 1:N NT Link.
Two analog option boards also cannot be mounted in a CPU unit.

Expansion I/O Unit and Expansion Unit



40-point I/O Unit
32-point Output Unit



20-point I/O Unit
16-point Output Unit



8-point Input Unit
8-point Output Unit



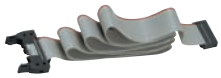
Analog Input Unit
Analog Output Unit
Analog I/O Unit



4-ch Temperature
Sensor Unit
2-ch Temperature
Sensor Unit



12-ch Temperature
Sensor Unit



I/O Connecting Cable

Battery



Battery: only for Real time
Clock function-
CP2E-N/CP2E-S CPU Unit

Ordering Information

CPU Units

CP2E-N/Network Models

I/O points	Specifications						
	Power supply	Inputs	Outputs	Output type	Program capacity	DM Area capacity	Model
14	100 to 240 VAC	8	6	Relay	10K steps	16K words	CP2E-N14DR-A
				Transistor (sinking)			CP2E-N14DT-A
	24 VDC			Relay			CP2E-N14DR-D
				Transistor (sinking)			CP2E-N14DT-D
				Transistor (sourcing)			CP2E-N14DT1-D
20	100 to 240 VAC	12	8	Relay			CP2E-N20DR-A
				Transistor (sinking)			CP2E-N20DT-A
	24 VDC			Relay			CP2E-N20DR-D
				Transistor (sinking)			CP2E-N20DT-D
				Transistor (sourcing)			CP2E-N20DT1-D
30	100 to 240 VAC	18	12	Relay			CP2E-N30DR-A
				Transistor (sinking)			CP2E-N30DT-A
	24 VDC			Relay			CP2E-N30DR-D
				Transistor (sinking)			CP2E-N30DT-D
				Transistor (sourcing)			CP2E-N30DT1-D
40	100 to 240 VAC	24	16	Relay			CP2E-N40DR-A
				Transistor (sinking)			CP2E-N40DT-A
	24 VDC			Relay			CP2E-N40DR-D
				Transistor (sinking)			CP2E-N40DT-D
				Transistor (sourcing)			CP2E-N40DT1-D
60	100 to 240 VAC	36	24	Relay			CP2E-N60DR-A
				Transistor (sinking)			CP2E-N60DT-A
	24 VDC			Relay			CP2E-N60DR-D
				Transistor (sinking)			CP2E-N60DT-D
				Transistor (sourcing)			CP2E-N60DT1-D

CP2E-S/Standard Models

I/O points	Specifications						
	Power supply	Inputs	Outputs	Output type	Program capacity	DM Area capacity	Model
30	100 to 240 VAC	18	12	Relay	8K steps	8K words	CP2E-S30DR-A
	24 VDC			Transistor (sinking)			CP2E-S30DT-D
				Transistor (sourcing)			CP2E-S30DT1-D
40	100 to 240 VAC	24	16	Relay			CP2E-S40DR-A
	24 VDC			Transistor (sinking)			CP2E-S40DT-D
				Transistor (sourcing)			CP2E-S40DT1-D
60	100 to 240 VAC	36	24	Relay			CP2E-S60DR-A
	24 VDC			Transistor (sinking)			CP2E-S60DT-D
				Transistor (sourcing)			CP2E-S60DT1-D

CP2E-E/Essential Models

I/O points	Specifications						
	Power supply	Inputs	Outputs	Output type	Program capacity	DM Area capacity	Model
14	100 to 240 VAC	8	6	Relay	4K steps	4K words	CP2E-E14DR-A
20		12	8	Relay			CP2E-E20DR-A
30		18	12	Relay			CP2E-E30DR-A
40		24	16	Relay			CP2E-E40DR-A
60		36	24	Relay			CP2E-E60DR-A

For details, refer to datasheet of CP2E (Cat.No. P145).

FB Function Blocks are available to download free of charge from Omron website. (www.ia.omron.com/cp_fb)

Optional Products

Battery: only for Real time Clock function- CP2E-N/CP2E-S CPU Unit

Product name	Specifications	Model
Battery	CP2E-N, CP2E-S dedicated battery. Install when using the clock function	CP2W-BAT02

Option Boards for CP2E-N

Product name	Specifications	Model
1-port Serial Option Board	RS-232C	CP1W-CIF01
	RS-422A/485	CP1W-CIF11
	RS-422A/485 (isolated)	CP1W-CIF12-V1
2-port Serial Option Board *1	RS-232C 2port	CP2W-CIFD1
	RS-232C, RS-485 (isolated)	CP2W-CIFD2
	RS-485 (isolated) 2port	CP2W-CIFD3
Analog Option Board *1	2 analog inputs. 0 to 10 V (resolution: 1/4000), 0 to 20 mA (resolution: 1/2000)	CP1W-ADB21
	2 analog outputs. 0 to 10 V (resolution: 1/4000)	CP1W-DAB21V
	2 analog inputs. 0 to 10 V (resolution: 1/4000), 0 to 20 mA (resolution: 1/2000) 2 analog outputs. 0 to 10 V (resolution: 1/4000)	CP1W-MAB221

*1.Two 2-port serial option boards cannot be mounted in a CPU unit. PORT1(EX) is not supported host links and 1:N NT Link.
Two analog option boards also cannot be mounted in a CPU unit.

Expansion I/O Units and Expansion Units

Unit type	Product name	Inputs	Outputs	Specifications	Model
CP1W Expansion I/O Unit	Input Unit	8	—	24 VDC input	CP1W-8ED
	Output Unit	—	8	Relay	CP1W-8ER
			8	Transistor (sinking)	CP1W-8ET
			8	Transistor (sourcing)	CP1W-8ET1
			16	Relay	CP1W-16ER
			16	Transistor (sinking)	CP1W-16ET
			16	Transistor (sourcing)	CP1W-16ET1
			32	Relay	CP1W-32ER
			32	Transistor (sinking)	CP1W-32ET
			32	Transistor (sourcing)	CP1W-32ET1
	I/O Unit	12	8	Relay	CP1W-20EDR1
		12	8	Transistor (sinking)	CP1W-20EDT
		12	8	Transistor (sourcing)	CP1W-20EDT1
		24	16	Relay	CP1W-40EDR
		24	16	Transistor (sinking)	CP1W-40EDT
		24	16	Transistor (sourcing)	CP1W-40EDT1
CP1W Expansion Unit	Analog Input Unit	4 ch	—	Input range: 0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V, 0 to 20 mA, or 4 to 20 mA. Resolution: 1/6000	CP1W-AD041
		4 ch		Input range: 0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V, 0 to 20 mA, or 4 to 20 mA. Resolution: 1/12000	CP1W-AD042
	Analog Output Unit	—	2 ch	Output range: 1 to 5 V, 0 to 10 V, -10 to 10 V, 0 to 20 mA, or 4 to 20 mA. Resolution: 1/6000	CP1W-DA021
			4 ch		CP1W-DA041
			4 ch	Output range: 1 to 5 V, 0 to 10 V, -10 to 10 V, 0 to 20 mA, or 4 to 20 mA. Resolution: 1/12000	CP1W-DA042
	Analog I/O Unit	2 ch	1 ch	Input range: 0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V, 0 to 20 mA, or 4 to 20 mA. Output range: 1 to 5 V, 0 to 10 V, -10 to 10 V, 0 to 20 mA, or 4 to 20 mA. Resolution: 1/6000	CP1W-MAD11
		4 ch	2 ch	Input range: 0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V, 0 to 20 mA, or 4 to 20 mA. Output range: 1 to 5 V, 0 to 10 V, -10 to 10 V, 0 to 20 mA, or 4 to 20 mA. Resolution: 1/12000	CP1W-MAD42
		4 ch	4 ch		CP1W-MAD44
	Temperature Sensor Unit	2 ch	—	Sensor type: Thermocouple (K or J)	CP1W-TS001
		4 ch			CP1W-TS002
		2 ch		Sensor type: Platinum resistance thermometer (Pt100 or JPt100)	CP1W-TS101
		4 ch			CP1W-TS102
		4 ch		Sensor type: Thermocouple (K or J). 4 ch or 2 analog inputs. Input range: 0 to 10 V, 1 to 5 V, or 4 to 20 mA. Resolution: 1/12000	CP1W-TS003
		12 ch		Sensor type: Thermocouple (K or J)	CP1W-TS004
I/O Connecting Cable		800 mm extension cable for CP1W Expansion I/O Units and CP1W Expansion Units. Only one I/O Connecting Cable can be used in each PLC			CP1W-CN811

Software

Product name	Specifications	License	Media	Model
CX-One Lite Ver4.□	A subset of the complete CX-One package that provides only the support software required for compact PLC applications	1	DVD	CXONE-LT01D-V4
Cx-One Ver4.□	A comprehensive software package that integrates support software for Omron PLCs and components	1	DVD	CXONE-AL01D-V4

• The product photographs and figures that are used in this catalog may vary somewhat from the actual products.
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Note: Do not use this document to operate the Unit.

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