

2011-2012

Solution Selection Guide



Automation Control Systems
Drives & Motion Controls
Temperature & Process Controls
Sensors & Vision
Industrial Components

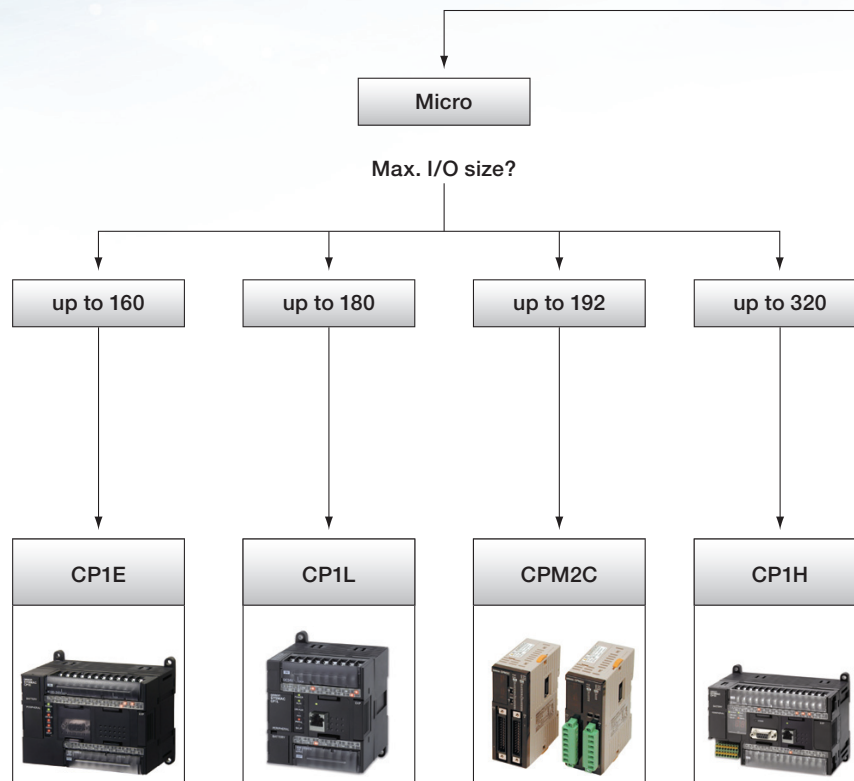
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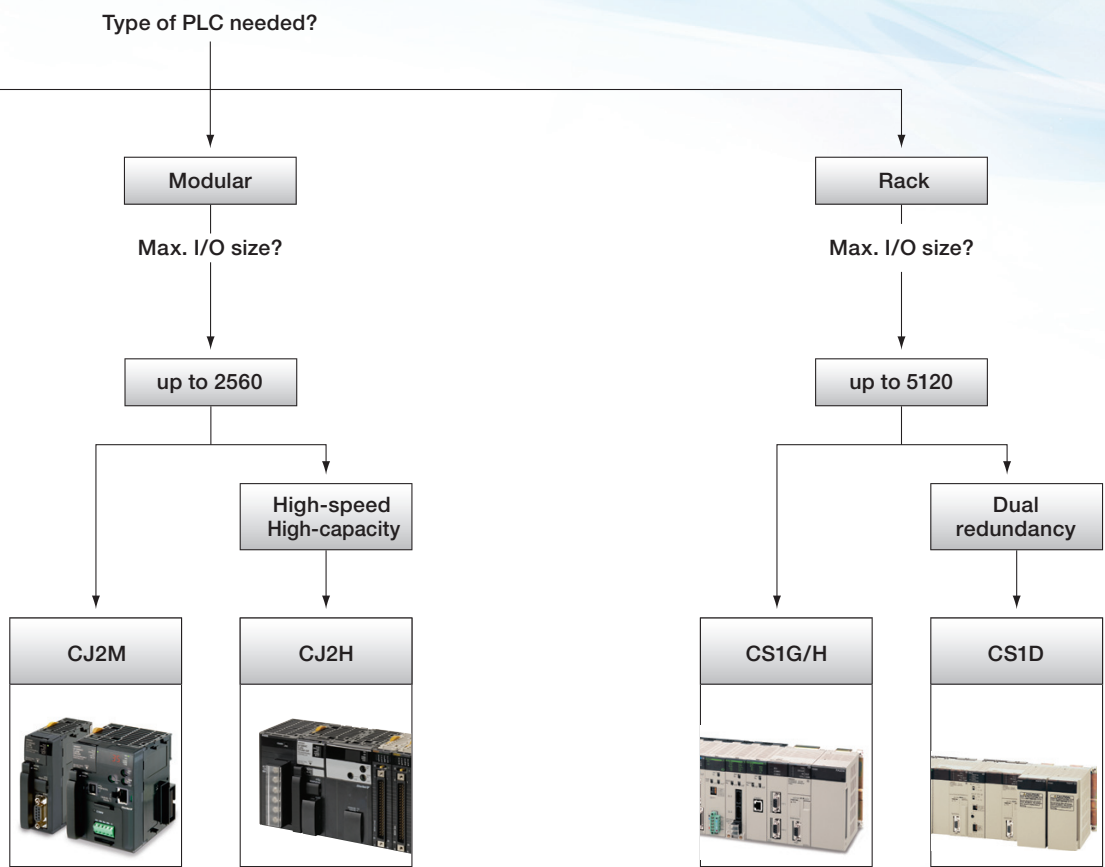
KNOW ONE... KNOW THEM ALL!

Whether your automation requires a simple and economical solution or your target is advanced, high-speed control, you can find what you need in Omron's line-up of Programmable Controllers.





And if your systems grow, or change due to market demand, you will find that only Omron offers a full range of Micro PLCs and Modular PLCs that share the same architecture. Therefore your programs are fully upward compatible, both in memory allocation and instruction set.

- One scalable PLC family to always match exactly with your application
- Transparent communication routing through different networks
- The best size/performance ratio in the industry





Selection Table



		Micro PLC Series			
					
Model		CPM2C	CP1E	CP1L	CP1H
Max digital I/O points*1		192	160	180	320*2
Built-in	Digital I/O	10 to 32	10 to 60	10 to 60	20 or 40
	Interrupt inputs	2 or 4	4 or 6	2, 4, or 6	6 or 8
	High-speed Counter inputs	2 or 4	5 or 6	4	4
	Pulse outputs*1	2	2	2	4
CPU features*1		<ul style="list-style-type: none"> • Compact size • Expansion units • Quick-response inputs • Input interrupts • High-speed counter • Pulse output with PWM • Built-in RS-232C port • Real time clock 	<ul style="list-style-type: none"> • USB port standard • Expansion I/O units • Quick-response inputs • Input interrupts • High-speed counter • Pulse output w/ PWM • Built-in RS-232C port • Serial option boards • Real time clock • 2 Analog adjusters 	<ul style="list-style-type: none"> • USB port standard • Expansion I/O units • Quick-response inputs • Input interrupts • High-speed counter • Pulse output with PWM • Built-in RS-232C port • Option board slots • Real time clock • 1 Analog adjuster • 1 External analog input 	<ul style="list-style-type: none"> • USB port standard • Expansion I/O units • CJ-series Special I/O Units • CJ-series CPU Bus Units • Quick-response inputs • Input interrupts • High-speed counter • Pulse output with PWM • Built-in RS-232C port • Option board slots • Real time clock • 1 Analog adjuster • 1 External analog input • LED display, 2 digit
Instruction Execution time (bit instruction)		0.64 µs	1.10 µs	0.61 µs	0.10 µs
Program memory		4K words	2 or 8K steps	5 or 10K steps	20K steps
Data memory		2K words	2 or 8K words	10 or 32K words	32K words
External memory		Expansion memory unit	–	Memory cassette	Memory cassette
Analog I/O		<ul style="list-style-type: none"> • Analog I/O unit • Temperature sensor unit 	<ul style="list-style-type: none"> • Built-in for E-NA model (2 in + 1 out) • Analog I/O Expansion Units • Temperature Input Expansion Units 	<ul style="list-style-type: none"> • Analog I/O Expansion Units • Temperature Input Expansion Units 	<ul style="list-style-type: none"> • Built-in for XA model (4 in + 2 out) • Analog I/O Expansion Units • Temperature Input Expansion Units • CJ Analog I/O Units • CJ Temperature Units
Special function units		–			<ul style="list-style-type: none"> • CJ-series Special I/O Units • CJ-series CPU Bus Units
Fieldbus master		–			<ul style="list-style-type: none"> • Ethernet • EtherNet/IP • Controller Link • DeviceNet • PROFIBUS-DP • PROFINET • ModBus • CompoNet • CompoBus/S • CAN (freely configurable)
Fieldbus I/O		<ul style="list-style-type: none"> • CompoBus/S • DeviceNet 	<ul style="list-style-type: none"> • PROFIBUS-DP • CompoBus/S • DeviceNet 	<ul style="list-style-type: none"> • PROFIBUS-DP • CompoBus/S • DeviceNet 	<ul style="list-style-type: none"> • PROFIBUS-DP • CompoBus/S • DeviceNet

*1 Some features listed are not available for all CPU types within each series. Please review specifications for more information on CPU features and performance.

*2 Represents local I/O capacity. If a fieldbus master is used more I/O is possible.

Programmable Logic Controllers (PLC)

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		Modular PLC series		Rack PLC series	
					
Model		CJ2M	CJ2H	CP1H	CS1D
Max digital I/O points ^{*1}		2560	2560	5120	5120
Built-in	Digital I/O	–			
	Interrupt inputs	–			
	Counter inputs	–			
	Pulse outputs	–			
CPU features ^{*1}		<ul style="list-style-type: none"> • USB port standard • Built-in Ethernet/IP port • High-speed I/O units • Option board plug-in • Structures and arrays • Tag data links • Compact size • No backplane required • Large program capacity • Function Block memory • Easy backups • Real time clock 	<ul style="list-style-type: none"> • USB port standard • Built-in Ethernet/IP port • High-speed I/O units • Structures and arrays • Tag data links • Synchronous I/O • Compact size • No backplane required • Extra Large program capacity • Easy backups • Real time clock 	<ul style="list-style-type: none"> • High I/O capacity • Inner board support • Large program capacity • Backwards compatible • Easy backups • Real time clock 	<ul style="list-style-type: none"> • Redundant CPU • Redundant power supply • Hot swapping • High I/O capacity • Inner board support • Large program capacity • Backwards compatible • Easy backups • Real time clock
Instruction Execution time (bit instruction)		0.04 μs	0.016 μs	0.04/0.02 μs	0.04/0.02 μs
Program memory		5 to 60K steps	50 to 400K steps	10 to 250K steps	10 to 250K steps
Data memory		64 to 160K words	160 to 832K words	64 to 448K words	64 to 448K words
External memory		Up to 512 MB			
Analog I/O		• Analog I/O unit	• Temperature control unit	• Temperature control unit	
Special function units		<ul style="list-style-type: none"> • Temperature control • High-speed counters (500 kHz) • SSI encoder input • Position control • Protocol macro • RFID sensor unit 	<ul style="list-style-type: none"> • Temperature control • High-speed counters (500 kHz) • SSI encoder input • Position control • Protocol macro • RFID sensor unit • High-speed I/O • Synchronised Position 	<ul style="list-style-type: none"> • Temperature control • SSI encoder input • High-speed counters (500 kHz) • Position control • Motion control • Process control • Protocol macro • RFID sensor unit 	
Fieldbus master		<ul style="list-style-type: none"> • Ethernet • EtherNet/IP • Controller Link • DeviceNet • PROFIBUS-DP • PROFINET • ModBus • CompoNet • CompoBus/S • CAN (freely configurable) 			
Fieldbus I/O		<ul style="list-style-type: none"> • DeviceNet • PROFIBUS-DP • CAN (freely configurable) 			

*1 Some features listed are not available for all CPU types within each series. Please review specifications for more information on CPU features and performance.

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CJ2-Series CPU Units

Modular PLC



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Fast and Powerful CPUs for Any Task

The family of CJ2 CPUs range from basic CPUs for simple sequence control to powerful and fast models that offer total machine control, which can handle up to 2560 I/O points. This enables you to modularize or “slice” your machine into logical sections without changing PLC series.

All CPU units support IEC61131-3 Structured text, Sequential Function Charts and ladder language. Omron’s extensive function block library helps to reduce your programming effort, while you can create your own function blocks to suit your specific needs.



The new CJ2 CPU units offer increased capacity, higher performance plus built-in USB and models with Ethernet ports. They are fully compatible with the extensive range of CJ1 I/O units.

Ordering Information

Max digital I/O points	Program capacity	Data memory capacity	Logic execution speed	Max. I/O units	Width	5 V Current consumption	Built-in functions	Model			
2,560	400 K	832 K	16 ns	40	80 mm	820 mA	USB + Ethernet/IP + RS-232C	CJ2H-CPU68-EIP			
	250 K	512 K						CJ2H-CPU67-EIP			
	150 K	352 K						CJ2H-CPU66-EIP			
	100 K	160 K						CJ2H-CPU65-EIP			
	50 K	160 K						CJ2H-CPU64-EIP			
	60 K	160 K	40 ns		62 mm	700 mA	USB + Ethernet/IP, serial comm. option slot	CJ2M-CPU35			
	30 K	160 K						CJ2M-CPU34			
	20 K	64 K						CJ2M-CPU33			
	10 K	64 K						CJ2M-CPU32			
	5 K	64 K						CJ2M-CPU31			
	60 K	160 K						31 mm	500 mA	USB + RS-232C	CJ2M-CPU15
	30 K	160 K									CJ2M-CPU14
	20 K	64 K									CJ2M-CPU13
	10 K	64 K	CJ2M-CPU12								
	5 K	64 K	CJ2M-CPU11								

CJ2-Series CPU units

Modular PLC (continued)

Pulse I/O Modules (Only CJ2M CPU Unit with Unit Version 2.0 or Later)

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 CJ2M CPU Unit.

Product name	Specifications	Current consumption (A)		Model	Standards
		5 V	24 V		
Pulse I/O Module	Sinking outputs, MIL connector 10 inputs (4 interrupt/quick response inputs, 2 high-speed counter inputs) 6 outputs (2 pulse outputs and 2 PWM outputs)	0.08	---	CJ2M-MD211	UC1, N, L, CE
	Sourcing outputs, MIL connector 10 inputs (4 interrupt/quick response inputs, 2 high-speed counter inputs) 6 outputs (2 pulse outputs, 2 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.

Power and Flexibility

CJ systems can operate on 24 VDC power supply, or on 100 to 240 VAC. For small-scale systems with mainly digital I/O, a low cost, small capacity power supply can be used. For systems with many analog I/Os and control/communication units, it may be necessary to use a larger power supply unit.

Depending on the CPU type, up to three expansions can be connected to the CPU 'rack', giving a total capacity of 40 I/O units. The total length of the expansion cables of one system may be up to 12 m.



Ordering Information

Power Supply

Input range	Power consumption	Output capacity at 5 VDC	Output capacity at 24 VDC	Max. output power	Features	Width	Model
21.6 - 25.4 VDC	35 W max.	2.0 A	0.4 A	16.6 W	--	27 mm	CJ1W-PD022
19.2 - 28.8 VDC	50 W max.	5.0 A	0.8 A	25 W	--	60 mm	CJ1W-PD025
85 - 264 VAC 47 - 63 Hz	50 VA max.	2.8 A	0.4 A	14 W	--	45 mm	CJ1W-PA202
	100 VA max	5.0 A	0.8 A	25 W	Run output (SPST relay) Maintenance status display	80 mm 80 mm	CJ1W-PA205R CJ1W-PA205C

Note: The CJ1W-PD022 has no galvanic isolation.

I/O Expansion

Type	Description	Width, length	Model
I/O control unit	Required unit on CPU 'rack' to connect I/O expansions	20 mm	CJ1W-IC101
I/O interface unit	Start unit for each I/O expansion 'rack'. Requires a power supply unit.	31 mm	CJ1W-II101
I/O expansion cable	Connects CJ1W-IC101 or -II101 to the next expansion rack's -II101	0.3 m	CS1W-CN313
		0.7 m	CS1W-CN713
		2.0 m	CS1W-CN223
		3.0 m	CS1W-CN323
		5.0 m	CS1W-CN523
		10 m	CS1W-CN133
		12 m	CS1W-CN133-B2

Digital I/O units serve as the PLC's interface to achieve fast, reliable sequence control. A full range of units, from high-speed DC inputs to relay outputs, let you adapt CJ-Series controllers to your needs.

CJ1W units are available with various I/O densities and connection technologies. Up to 16 I/O points can be wired to units with detachable M3 screw terminals or screwless clamp terminals. High-density 32- and 64-point I/O units are equipped with standard 40-pin flat cable-connectors. Prefabricated cables and wiring terminals are available for easy interfacing to high-density I/O units.



Ordering Information

Points	Type	Rated voltage	Rated current	Width	Remarks	Connection type ¹⁾	Model
16	AC input	120 VAC	7 mA	31 mm	--	M3	CJ1W-IA111
8	AC input	240 VAC	10 mA	31 mm	--	M3	CJ1W-IA201
8	DC input	24 VDC	10 mA	31 mm	--	M3	CJ1W-ID201
16	DC input	24 VDC	7 mA	31 mm	--	M3	CJ1W-ID211
16	DC input	24 VDC	7 mA	31 mm	Fast-response (15 μ s ON, 90 μ s OFF)	M3	CJ1W-ID212
16	DC input	24 VDC	7 mA	31 mm	Inputs start interrupt tasks in PLC program	M3	CJ1W-INT01
16	DC input	24 VDC	7 mA	31 mm	Latches pulses down to 50 μ s pulse width	M3	CJ1W-IDP01
32	DC input	24 VDC	4.1 mA	20 mm	--	1 x Fujitsu	CJ1W-ID231
32	DC input	24 VDC	4.1 mA	20 mm	--	1 x MIL ⁻¹ (40 pt)	CJ1W-ID232
32	DC input	24 VDC	4.1 mA	20 mm	Fast-response (15 μ s ON, 90 μ s OFF)	1 x MIL ⁻¹ (40 pt)	CJ1W-ID233
64	DC input	24 VDC	4.1 mA	31 mm	--	2 x Fujitsu	CJ1W-ID261
64	DC input	24 VDC	4.1 mA	31 mm	--	2 x MIL ⁻¹ (40 pt)	CJ1W-ID262
8	Triac output	250 VAC	0.6 mA	31 mm	--	M3	CJ1W-OA201
8	Relay output	250 VAC	2 A	31 mm	Independent response	M3	CJ1W-OC201
16	Relay output	250 VAC	2 A	31 mm	--	M3	CJ1W-OC211
8	DC output (sink)	12 to 24 VDC	2 A	31 mm	--	M3	CJ1W-OD201
8	DC output (source)	24 VDC	2 A	31 mm	With short-circuit protection, alarm	M3	CJ1W-OD202

CJ-Series Digital I/O Units (continued)

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Points	Type	Rated voltage	Rated current	Width	Remarks	Connection type ^{*1}	Model
16	DC output (sink)	12 to 24 VDC	0.5 A	31 mm	--	M3	CJ1W-OD211
16	DC output (source)	24 VDC	0.5 A	31 mm	With short-circuit protection, alarm	M3	CJ1W-OD212
16	DC output (sink)	24 VDC	0.5 A	31 mm	Fast-response (15 μ s ON, 80 μ s OFF)	M3	CJ1W-OD213
32	DC output (sink)	12 to 24 VDC	0.5 A	20 mm	--	1 x Fujitsu	CJ1W-OD231
32	DC output (source)	24 VDC	0.3 A	20 mm	With short-circuit protection, alarm	1 x MIL ^{*1} (40 pt)	CJ1W-OD232
32	DC output (sink)	24 VDC	0.5 A	20 mm	Fast-response (15 μ s ON, 90 μ s OFF)	1 x MIL ^{*1} (40 pt)	CJ1W-OD234
64	DC output (sink)	12 to 24 VDC	0.3 A	31 mm	--	2 x Fujitsu	CJ1W-OD261
64	DC output (source)	24 VDC	0.3 A	31 mm	--	2 x MIL ^{*1} (40 pt)	CJ1W-OD262
16 + 16	DC in+out (source)	24 VDC	0.5 A	31 mm	--	2 x MIL ^{*1} (20 pt)	CJ1W-MD232
32 + 32	DC in+out (sink)	24 VDC	0.3 A	31 mm	--	2 x MIL ^{*1} (40 pt)	CJ1W-MD263
32 + 32	DC in+out (TLL)	5 VDC	35 mA	31 mm	--	2 x MIL ^{*1} (40 pt)	CJ1W-MD563

^{*1} MIL = connector according to MIL-C-83503 (compatible with DIN 41651/IEC 60603-1).

Note: All digital I/O unit are designated as basic I/O units.

From Basic to Advanced Analog I/O

The CJ-series offers a wide choice of analog input units, fit for any application, to support high-speed, high-accuracy data acquisition. Analog outputs can be used for accurate control or external indication.

Advanced units with built-in scaling, filtering and alarm functions reduce the need for complex PLC programming. High-accuracy process I/O units support an extensive range of sensors, for fast and accurate data acquisition.



Temperature control units relieve the PLC CPU of PID calculations and alarm monitoring. These functions are handled autonomously by the unit, offering control performance and auto-tuning functions similar to stand-alone temperature controllers.

Ordering Information

Points	Type	Ranges	Resolution	Accuracy ¹	Conversion time	Remarks	Model
4	Universal analog input	DC voltage, DC current, Thermocouple Pt100/Pt1000, potentiometer	1/256,000	0.05%	60 ms/4 points	All inputs individually isolated, configurable alarms, maintenance functions, user-defined scaling, zero/span adjustment	CJ1W-PH41U
4		0 to 5 V 1 to 5 V 0 to 10 V 0 to 20 mA 4 to 20 mA	V/I: 1/12,000 T/C: 0.1 °C RTD: 0.1 °C	V: 0.3% I: 0.3% T/C: 0.3% RTD: 0.3%	250 ms/4 points	Universal inputs, with zero/span adjustment, configurable alarms, scaling, sensor error detection	CJ1W-AD04U
		T/C: K, J, T, L, R, S, B, Pt100, Pt1000, JPt100					
4 8	Analog input	0 to 5 V 1 to 5 V 0 to 10 V -10 to 10 V 4 to 20 mA	1/8,000	V: 0.2% I: 0.4%	250 µs/point	Offset/gain adjustment, peak hold, moving average, alarms	CJ1W-AD041-V1 CJ1W-AD081-V1
2 4		Analog output		1/4,000	V: 0.02% I: 0.05%		1 ms/point
4 + 2	Analog input + output			1/8,000	In: 0.2% Out: 0.3%	1 ms/point	Offset/gain adjustment, scaling, peak hold, moving average, alarms, output hold
4	High-speed input		1/40,000	V: 0.2% I: 0.4%	35 µs/4 points	Direct conversion (CJ2 special instruction)	CJ1W-AD042

CJ-Series Analog I/O Units (continued)

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Points	Type	Ranges		Resolution	Accuracy*1	Conversion time	Remarks	Model
4	High-speed output	1 to 0 to -10 to	5 V 10 V 10 V	1/40,000	0.3%	35 μs/ 4 points	Direct conversion (CJ2 special instruction)	CJ1W-DA042V
8	Voltage output	0 to 0 to -10 to 1 to	5 V 10 V 10 V 5 V	1/8,000	0.3%	250 μs/ point	Offset/gain adjustment, output hold	CJ1W-DA08V
8	Current output	4 to	20 mA		0.5%			CJ1W-DA08C
2	Process input	4 to 0 to 0 to -10 to 0 to -5 to 1 to 0 to 1.25 to	20 mA 20 mA 10 V 10 V 5 V 5 V 5 V 1.25 V 1.25 V	1/64,000	0.05%	5/ms point	Configurable alarms, maintenance functions, user-defined scaling, zero/span adjustment, square root, totalizer	CJ1W-PDC15

*1: Accuracy for Voltage and Current Inputs/Outputs as percentage of full scale and typical value at 25°C ambient temperature. Accuracy for Temperature Inputs/Outputs as percentage of process value and typical value at 25°C ambient temperature. (Consult the operation manual for details.)

Note: All Analog I/O units are designated as Special I/O units, except CJ1W-TS561/-TS562, which are Basic I/O units (cannot be used with CP1H).

In-panel Temperature Control and Monitoring

Temperature control units relieve the PLC CPU of PID calculations and alarm monitoring. These functions are handled autonomously by the unit, offering control performance and auto-tuning functions similar to stand-alone temperature controllers.



Ordering Information

Inputs	Input type	Ranges	Resolution	Accuracy ^{*1}	Conversion time	Remarks	Model
Temperature Input Units							
2	Thermocouple input	B, E, J, K, L, N, R, S, T, U, WRe5-26, PLII, -100 to 100 mV	1/64,000	0.05%	5 ms/ point	Configurable alarms, (absolute + rate-of-change), peak hold, maintenance functions	CJ1W-PTS15
4		B, J, K, L, R, S, T	0.1°C	0.03% 0.05%	62.5 ms/ point	4 configurable alarm outputs	CJ1W-PTS51
6					40 ms/ point		CJ1W-TS561
2	Resistance thermometer input	Pt50, Pt100, JPt100, Ni508.4	1/64,000	0.05%	5 ms/ point	Configurable alarms (absolute + rate-of-change), peak hold, maintenance functions	CJ1W-PTS16
4		Pt100, JPt100	0.1°C	0.03% 0.05%	62.5 ms/ point	4 configurable alarm outputs	CJ1W-PTS52
6					40 ms/ point		CJ1W-TS562

*1: Accuracy for Voltage and Current Inputs/Outputs as percentage of full scale and typical value at 25°C ambient temperature. Accuracy for Temperature Inputs/Outputs as percentage of process value and typical value at 25°C ambient temperature. (Consult the operation manual for details)

Note: All Analog I/O units are designated as Special I/O units, except CJ1W-TS561/-TS562, which are Basic I/O units. (cannot be used with CP1H).

Temperature Control Units

Specifications			Model
No. of loops	Temperature sensor inputs	Control outputs	
4 loops	Thermocouple input (R, S, K, J, T, B, L)	Open collector NPN outputs (pulses)	CJ1W-TC001
4 loops		Open collector PNP outputs (pulses)	CJ1W-TC002
2 loops, heater burnout detection function		Open collector NNP outputs (pulses)	CJ1W-TC003
2 loops, heater burnout detection function		Open collector PNP outputs (pulses)	CJ1W-TC004
4 loops	Platinum resistance thermometer input (JPt100, Pt100)	Open collector NPN outputs (pulses)	CJ1W-TC101
4 loops		Open collector PNP outputs (pulses)	CJ1W-TC102
2 loops, heater burnout detection function		Open collector NNP outputs (pulses)	CJ1W-TC103
2 loops, heater burnout detection function		Open collector PNP outputs (pulses)	CJ1W-TC104

Add motion control to any CJ-Series PLC

From simple position measurement to multi-axis synchronised motion control, the CJ-Series offers a full range of units:

- Counter Units gather position information from SSI or incremental encoders. Actual positions are compared with internally stored target values.
- Position Control Units are used for point-to-point positioning with servo drives or stepper motors. Target data and acceleration/deceleration curves can be adjusted on the fly.
- Position and Motion Control Units equipped with EtherCAT or MECHATROLINK-II interface can control multiple drives through a single high-speed link. Message routing through multiple communication layers allows the attached drives to be configured from any point in the control network.



Ordering Information

Position Control Units

Channels/ Axes	Type	Signal type	Unit class	Remarks	Model
2	SSI inputs (absolute position data)	Synchronous serial protocol	Special I/O unit	Baud rate, encoding type, data length, etc. can be set per channel	CJ1W-CTS21-E
2	500 kHz Counter	24 V, line driver	Special I/O unit	2 configurable digital inputs + outputs	CJ1W-CT021
4	100 kHz Counter	Line driver, 24 V via terminal block	Special I/O unit	Target values trigger interrupt to CPU	CJ1W-CTL41-E
1	DC Motor Control unit	PWM (24 V/4 A)	Special I/O unit	4 configurable digital inputs + 50 kHz counter input	CJ1W-DCM11-E
1	Position Control unit	24 V open collector	Special I/O unit	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	CJ1W-NC113
2	Position Control unit	24 V open collector	Special I/O unit	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	CJ1W-NC213
4	Position Control unit	24 V open collector	Special I/O unit	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	CJ1W-NC413
2	Position Control Unit High speed type	24 V open collector	Special I/O Unit	500 kpps pulse outputs, built-in feedback pulse counters, synchronous multi-axis control	CJ1W-NC214

CJ-Series

Motion/Position Control Units (continued)

Position Control Units

Channels/ Axes	Type	Signal type	Unit class	Remarks	Model
4	Position Control Unit High speed type	24 V open collector	Special I/O Unit	500 kpps pulse outputs, built-in feedback pulse counters, synchronous multi-axis control	CJ1W-NC414
2	Position Control Unit	MECHATROLINK-II	CPU bus unit	Position, speed and torque control, access to all drive parameters	CJ1W-NC271
4	Position Control Unit	MECHATROLINK-II	CPU bus unit	Position, speed and torque control, access to all drive parameters	CJ1W-NC471
16	Position Control unit	MECHATROLINK-II	CPU bus unit	Position, speed and torque control, access to all drive parameters	CJ1W-NCF71

Note: Line driver signal type units also available.

Trajexia Advanced Motion Control Units

Axes/I/O Devices	Type	Signal type	Unit class	Remarks	Model
4	Advanced Motion Control unit	MECHATROLINK-II, Encoder I/O, digital I/O	CPU bus unit	Trajexia Motion Controller on the CJ handles complex motion tasks for up to 4 servos or inverters (AC drives)	CJ1W-MC472
30	Advanced Motion Control unit	MECHATROLINK-II, Encoder I/O, digital I/O	CPU bus unit	Trajexia Motion Controller on the CJ handles complex motion tasks for up to 30 servos or inverters (AC drives)	CJ1W-MCH72

Position Controller Units with EtherCAT

Axes/I/O Devices	Type	Signal type	Unit class	Remarks	Model
2	Position control unit	EtherCAT	CPU bus unit	Position, speed and torque control, access to all drive parameters	CJ1W-NC281
4					CJ1W-NC481
8					CJ1W-NC881
16					CJ1W-NCF81
4 / 64					CJ1W-NC482
8 / 64					CJ1W-NC882

Open to any Communication

The CJ-Series offers both standardized open network interfaces, and cost-efficient high-speed proprietary network links. Datalinks between PLCs or to higher-level information systems can be made using serial or Ethernet links, or the easy-to-use controller link network.

Omron supports the major field networks. For high-speed field I/O, CompoNet offers unsurpassed ease of installation and a lower material costs than other networks. Fully user-configurable serial and CAN-based communication can be used to emulate a variety of application-specific protocols. EtherNet/IP units provide data link functions to share large amounts of data between PLCs. The new PROFINET-I/O controller together with the SmartSlice modular I/O system offers Ethernet based I/O with controller and network redundancy.



Ordering Information

Type	Ports	Data transfer	Protocols	Unit class	Width	Connection type	Model
Serial	2 x RS-232C		CompoWay/F, Host link, NT link, Modbus, User-defined	CPU bus unit	31 mm	9-pin D-Sub	CJ1W-SCU21-V1
Serial	2 x RS-232C	High-speed	CompoWay/F, Host link, NT link, Modbus, User-defined	CPU bus unit	31 mm	9-pin D-Sub	CJ1W-SCU22
Serial	2 x RS-422A/RS-485		CompoWay/F, Host link, NT link, Modbus, User-defined	CPU bus unit	31 mm	9-pin D-Sub	CJ1W-SCU31-V1
Serial	2 x RS-422A/RS-485	High-speed	CompoWay/F, Host link, NT link, Modbus, User-defined	CPU bus unit	31 mm	9-pin D-Sub	CJ1W-SCU32
Serial	1 x RS-232C + 1 x RS-422/RS-485		CompoWay/F, Host link, NT link, Modbus, User-defined	CPU bus unit	31 mm	9-pin D-Sub	CJ1W-SCU41-V1
Serial	1 x RS-232C + 1 x RS-422/RS-485	High-speed	CompoWay/F, Host link, NT link, Modbus, User-defined	CPU bus unit	31 mm	9-pin D-Sub	CJ1W-SCU42
Ethernet	1 x 100 Base-Tx		UDP, TCP/IP, FTP server,SMTP (e-mail), SNTP (time adjust), FINS routing, socket service	CPU bus unit	31 mm	RJ45	CJ1W-ETN21
EtherNet/IP	1 x 100 Base-Tx		EtherNet/IP, UDP, TCP/IP, FTP server, SNTP, SNMP	CPU bus unit	31 mm	RJ45	CJ1W-EIP21
DeviceNet	1 x CAN		DeviceNet	CPU bus unit	31 mm	5-p detachable	CJ1W-DRM21

CJ-Series Communication Units (continued)

Type	Ports	Data transfer	Protocols	Unit class	Width	Connection type	Model
PROFIBUS-DP	1 x RS-485 (Master)		DP, DPV1	CPU bus unit	31 mm	9-pin D-Sub	CJ1W-PRM21
PROFIBUS-DP	1 x RS-485 (Slave)		DP	Special I/O unit	31 mm	9-pin D-Sub	CJ1W-PRT21
PROFINET-IO	1 x 100 Base-Tx		PROFINET-IO Controller, FINS/UDP	CPU bus unit	31 mm	RJ45	CJ1W-PNT21
CAN	1 x CAN		User-defined, supports 11-bit and 29-bit identifiers	CPU bus unit	31 mm	5-p detachable	CJ1W-CORT21
CompoNet	4-wire, data + power to slaves (Master)		CompoNet (CIP-based)	Special I/O unit	31 mm	4-p detachable IDC or screw	CJ1W-CRM21
CompoBus/S	2-wire (Master)		Omron proprietary	Special I/O unit	20 mm	2-wire screw + 2-wire power	CJ1W-SRM21

Accessories

Description	Connection type	Model
RS-232C to RS-422/RS-485 signal converter. Mounts directly on serial port.	9-pin D-sub to screw clamp terminals	CJ1W-CIF11
Controller link repeater unit (wire to wire)	Screw - Screw	CS1W-RPT01
Controller link repeater unit (wire to HPCF fiber)	Screw - HPCF connector	CS1W-RPT02
Controller link repeater unit (wire to graded-index glass fiber)	Screw - ST connector	CS1W-RPT03

Fast and Powerful CPUs for any Task

Omron's CS1-series CPUs are available in two processor speeds, each in various memory capacities. Besides the basic CPU models, versions are available for dual redundant operation, supporting I/O hot-swapping. All CPUs have one dedicated board slot with a direct CPU-bus connection, in which a serial communication board or a loop control board can be mounted. All CPU units support IEC61131-3 structured text and ladder language.



Omron's extensive function block library helps to reduce your programming effort, while you can create your own function blocks to suit your specific needs.

Ordering Information

Max. Digital I/O points	Program capacity	Data memory capacity	Logic execution speed	Max. I/O units	Additional functions	Model
5120	250K steps	448K words	20 ns	80	–	CS1H-CPU67H
				71	Supports duplex power supply and I/O hot-swapping	CS1D-CPU67S
				68	CPU for full dual-redundancy	CS1D-CPU67H
	CPU for full dual-redundancy, with loop control board	CS1D-CPU67P				
	80	–		CS1H-CPU66H		
	80	–		CS1H-CPU65H		
	60K steps	128K words	40 ns	71	Supports duplex power supply and I/O hot-swapping	CS1D-CPU65S
				68	CPU for full dual-redundancy	CS1D-CPU65H
					CPU for full dual-redundancy, with loop control board	CS1D-CPU65P
	30K steps	64K words		80	–	CS1H-CPU64H
	20K steps			–	CS1H-CPU63H	
	60K steps			–	CS1G-CPU45H	
1280	30K steps		40	–	CS1G-CPU44H	
			35	Supports duplex power supply and I/O hot-swapping	CS1D-CPU44S	
960	20K steps		30	–	CS1G-CPU43H	
	10K steps		–	CS1G-CPU42H		
			26	Supports duplex power supply and I/O hot-swapping	CS1D-CPU42S	

CS1-Series CPU Units (continued)

Accessories

Description	Remarks	Model
Duplex unit, required for CS1D-CPU6_H systems	–	CS1D-DPL01
Serial communication option board, 2 x RS-232C	–	CS1W-SCB21-V1
Serial communication option board, 1 x RS-232C + 1 x RS422/RS-485	–	CS1W-SCB41-V1
Loop control option board	50 control blocks max.	CS1W-LCB01
Loop control option board	300 control blocks max.	CS1W-LCB05
Replacement battery set, for all CS1 CPUs	–	CS1W-BAT01
Compact Flash memory card, 128 MB, for all models (not required for operation)	Industrial grade flash	HMC-EF183
Compact Flash memory card, 256 MB, for all models (not required for operation)	Industrial grade flash	HMC-EF283
Compact Flash memory card, 512 MB, for all models (not required for operation)	Industrial grade flash	HMC-EF583
Compact Flash PC-Card adapter	–	HMC-AP001
CX-One, integrated software for programming and configuration of all Omron control system components	–	CX-ONE-AL_ _ CV_
Connection cable, D-Sub 9-pin PC serial port to PLC peripheral port	length: 2.0 m	CS1W-CN226
Connection cable, D-Sub 9-pin PC serial port to PLC peripheral port	length: 6.0 m	CS1W-CN626
USB to serial conversion cable	–	CS1W-CIF31

Expand with up to 7 Racks

CS1 systems can operate on 24 VDC power supply or on 100-240 VAC. For small-scale systems with mainly digital I/O, a low cost, small capacity power supply can be used. For systems with many analog I/Os and control/communication units, it may be necessary to use a larger power supply unit.

PLC racks are available in several sizes, from 2 to 10 slots wide. Special backplanes are required for duplex systems. Depending on the CPU type, up to 7 expansions can be connected to the CPU rack, giving a total capacity of 80 I/O units. The total length of the expansion cables of one system may be up to 12 m.



Ordering Information

Power Supplies

Input range	Power consumption	Output capacity 5 VDC	Output capacity 26 VDC	Max. output power	Extra functions	Model
19.2 to 28.8 VDC	40 W max.	6.6 A	0.62 A	30 W	-	C200HW-PD024
		4.3 A	0.56 A	28 W	Power supply for dual-redundant system	CS1D-PD024
	55 VA max.	5.3 A	1.3 A	40 W	-	C200HW-PD025
					Power supply for dual-redundant system	CS1D-PD025
85 to 264 VAC 50/60 Hz	120 VA max.	4.6 A	0.62 A	30 W	Maintenance status display	C200HW-PA204C
85 to 132 VAC, 170 to 264 VAC, 50/60 Hz					-	C200HW-PA204
					Service output 24 VDC, 0.8 A	C200HW-PA204S
					Run status output (SPST relay)	C200HW-PA204R
					180 VA max.	9.0 A
150 VA max.	7.0 A	1.3 A	35 W	Power supply for dual-redundant system	CS1D-PA207R	

Backplanes

Type	Slots	Expansion connector	Width	Special functions	Model
CPU	2	No	200 mm	-	CS1W-BC023
CPU	3	Yes	260 mm	-	CS1W-BC033
CPU	5	Yes	330 mm	-	CS1W-BC053
CPU	8	Yes	435 mm	-	CS1W-BC083
CPU	10	Yes	505 mm	-	CS1W-BC103
Expansion	3	Yes	260 mm	-	CS1W-BI033
Expansion	5	Yes	330 mm	-	CS1W-BI053
Expansion	8	Yes	435 mm	-	CS1W-BI083

CS1-Series

Power Supplies, Backplanes (continued)

Type	Slots	Expansion connector	Width	Special functions	Model
Expansion	10	Yes	505 mm	–	CS1W-BI103
CPU	5	Yes	505 mm	For Duplex CPU + Power supplies	CS1D-BC052
CPU	8	Yes	505 mm	For Duplex Power supplies	CS1D-BC082S
Expansion	9	Yes	505 mm	For Duplex Power supplies	CS1D-BI092

Type	Remarks	Model
I/O Expansion cable to connect CS1 CPU backplane or Expansion backplane to next Expansion backplane.	0.3 m	CS1W-CN313
	0.7 m	CS1W-CN713
	2.0 m	CS1W-CN223
	3.0 m	CS1W-CN323
	5.0 m	CS1W-CN523
	10.0 m	CS1W-CN133
	12.0 m	CS1W-CN133-B2

Up to 96 I/O Points per Unit - Input, Output or Mixed

Digital I/O units serve as the PLC's interface to achieve fast, reliable sequence control. A full range of units, from high-speed DC inputs to relay outputs, let you adapt CS1 to your needs.

CS1 units are available with various I/O densities and connection technologies. Up to 16 I/O points can be wired to units with detachable M3 screw terminals directly. High-density 32- and 64-point I/O units are equipped with standard 40-pin connectors. Prefabricated



cables and wiring terminals are available for easy interfacing to high-density I/O units.

Ordering Information

Points	Type	Rated voltage	Rated current	Remarks	Connection type	Model ^{*1}
16	AC input	120 VAC	10 mA	--	M3	CS1W-IA111
16	AC input	240 VAC	10 mA	--	M3	CS1W-IA211
16	DC input	24 VDC	7 mA	--	M3	CS1W-ID211
16	DC input	24 VDC	7 mA	Inputs start interrupt tasks in PLC program	M3	CS1W-INT01
16	DC input	24 VDC	7 mA	Latches pulses down to 50 µs pulse width	M3	CS1W-IDP01
32	DC input	24 VDC	6 mA	--	1 x 40 pt Fujitsu	CS1W-ID231
64	DC input	24 VDC	6 mA	--	2 x 40 pt Fujitsu	CS1W-ID261
96	DC input	24 VDC	5 mA	--	2 x 56 pt Fujitsu	CS1W-ID291
8	Triac output	250 VAC	1.2 A	--	M3	CS1W-OA201
16	Triac output	250 VAC	0.5 A	--	M3	CS1W-OA211
8	Relay output	250 VAC	2.0 A	--	M3	CS1W-OC201
16	Relay output	250 VAC	2.0 A	--	M3	CS1W-OC211
16	DC output (sink)	12 to 24 VDC	0.5 A	--	M3	CS1W-OD211
16	DC output (source)	24 VDC	0.5 A	With short-circuit protection, alarm	M3	CS1W-OD212
32	DC output (sink)	12 to 24 VDC	0.5 A	--	1 x 40 pt Fujitsu	CS1W-OD231
32	DC output (source)	24 VDC	0.5 A	With short-circuit protection, alarm	1 x 40 pt Fujitsu	CS1W-OD232
64	DC output (sink)	12 to 24 VDC	0.3 A	--	2 x 40 pt Fujitsu	CS1W-OD261
64	DC output (source)	24 VDC	0.3 A	With short-circuit protection, alarm	2 x 40 pt Fujitsu	CS1W-OD262
96	DC output (sink)	12 to 24 VDC	0.1 A	--	2 x 56 pt Fujitsu	CS1W-OD291
96	DC output (source)	24 VDC	0.1 A	--	2 x 56 pt Fujitsu	CS1W-OD292
32+32	DC output (sink)	12 to 24 VDC	0.3 A	--	2 x 40 pt Fujitsu	CS1W-MD261
32+32	DC in+out (source)	24 VDC	0.3 A	With short-circuit protection, alarm	2 x 40 pt Fujitsu	CS1W-MD262
48+48	DC output (sink)	12 to 24 VDC	0.1 A	--	2 x 56 pt Fujitsu	CS1W-MD291
48+48	DC in+out (source)	12 to 24 VDC	0.1 A	--	2 x 56 pt Fujitsu	CS1W-MD292

*1 C200H I/O units can also be mounted, except on CS1D systems. Note: All Digital I/O units are designated as Basic I/O units.

From Basic Analog I/O to Process Control

CS1 offers a wide range of analog input units fit for any application, from low-speed, multi-channel temperature measurement to high-speed, high-accuracy data acquisition. Analogue outputs can be used for accurate control or external indication.

Advanced units with built-in scaling, filtering and alarm functions reduce the need for complex PLC programming. High-accuracy process I/O units support an extensive range of sensors, for fast and accurate data acquisition. All process and temperature I/O units provide isolation between all individual channels.



Ordering Information

Points	Type	Ranges	Resolution	Accuracy ¹	Conversion time	Remarks	Model		
4	Analog input	0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V, 4 to 20 mA	1/8,000	V: 0.2% I: 0.4%	250 µs/point	Offset/gain adjustment, peak hold, moving average, alarms	CS1W-AD041-V1		
8									CS1W-AD081-V1
16				0.2%				CS1W-AD161	
4	Analog output	0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V, 4 to 20 mA	1/4,000	V: 0.3% I: 0.5%	1 ms/point	Offset/gain adjustment	CS1W-DA041		
4 + 4	Analog in + output	0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V (4 to 20 mA input)	1/8,000	V in: 0.2% I in: 0.4% out: 0.3%		Offset/gain adjustment, scaling, peak hold, moving average, alarms, output hold	CS1W-MAD44		
8	Voltage output	0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V	1/4,000	0.3%	1 ms/point	Offset/gain adjustment, output hold	CS1W-DA08V		
8	Current output	4 to 20 mA		0.5%			CS1W-DA08C		
4	Process input	4 to 20 mA, 0 to 20 mA, 0 to 10 V, -10 to 10 V, 0 to 5 V, -5 to 5 V, 1 to 5 V, 1 to 1.25 V, -1.25 to 1.25 V	1/64,000	0.05%	5 ms/point	Configurable alarms, maintenance functions, user-defined scaling, zero/span adjustment, square root, totalizer	CS1W-PDC11		

CS1-Series

Analog and Process I/O Units (continued)

A

Points	Type	Ranges	Resolution	Accuracy*1	Conversion time	Remarks	Model
8	Process input	-10 to 10 V, 0 to 5 V, 1 to 5 V, 4 to 20 mA	1/16,000	0.3% of PV	62.5 ms/ point	Configurable alarms, zero/span adjustment, square root	CS1W-PDC55
4	2-Wire transmitter input	1 to 5 V, 4 to 20 mA	1/4,096	0.2%	25 ms/point	Built-in power supply for transmitter, configurable alarms, square root, rate-of-change, etc.	CS1W-PTW01
8	Power transducer input	-1 to 1 mA, 0 to 1 mA -100 to 100 mV, 0 to 100 mV	1/4,096	0.2%	25 ms/point	Inrush current limiter, configurable alarms, averaging, etc.	CS1W-PTR01
			1/4,096	0.2%	25 ms/point		CS1W-PTR02
4	Pulse rate input	20000 pps, voltage, open collector, contact	up to 1/32,000	--	25 ms/point	Averaging, totalizer	CS1W-PPS01

*1: Accuracy for Voltage and Current Inputs/Outputs as percentage of full scale and typical value at 25°C ambient temperature. Accuracy for Temperature Inputs/Outputs as percentage of process value and typical value at 25°C ambient temperature. (Consult the operation manual for details)

Note: All analog I/O units are designated as special I/O units.

In-Panel Temperature Inputs and Process Outputs

Integrate temperature measurement and monitoring into your control system with in-panel temperature input and process output units for CS1 platform PLCs. Advanced features in the Temperature Input units simplify data logging and reporting, including data tracking for rate-of-change, absolute value, peak hold and more. The isolated process outputs provide high/low and rate limiting settings, as well as output hold, and convenient zero/span adjustment.



Ordering Information

Inputs	Input type	Ranges	Resolution	Accuracy ^{*1}	Conversion time	Remarks	Model	
Temperature Input Units								
4	Thermocouple input	B, E, J, K, L, N, R, S, T, U, WRe5-26, PLII, -100 to 100 mV	1/64,000	0.05%	5 ms/ point	Configurable alarms, (absolute + rate-of-change), peak hold, maintenance functions	CS1W-PTS11	
4		B, J, K, L, R, S, T	0.1 °C	0.3%	62.5 ms/ point		4 configurable alarm outputs	CS1W-PTS51
8					31.2 ms/ point		CS1W-PTS55	
4	Resistance thermometer input	Pt50, Pt100, JPt100, Ni508.4	1/64,000	0.05%	5 ms/ point	Configurable alarms (absolute + rate-of-change), peak hold, maintenance functions	CJ1W-PTS12	
4		Pt100, JPt100	0.1 °C	0.3%	62.5 ms/ point		4 configurable alarm outputs	CS1W-PTS52
8					31.2 ms/ point			CS1W-PTS56
Isolated Control Output Units								
4	Isolated control output	1 to 4 to	5 V 20 mA	1/4,000	I: 0.1% V: 0.2%	25 ms/ point	Output readback, high/low/ rate limiting, disconnection alarm, zero/span adjustment	CS1W-PMV01
4		-10 to 0 to -5 to 0 to -1 to 0 to	10 V 10 V 5 V 5 V 1 V 1 V	1/4,000	0.1%	10 ms/ point		High/low/rate limiting, output hold, zero/span adjustment

*1: Accuracy for Voltage and Current Inputs/Outputs as percentage of full scale and typical value at 25°C ambient temperature. Accuracy for Temperature Inputs/Outputs as percentage of process value and typical value at 25°C ambient temperature. (Consult the operation manual for details.)

Note: All Analog I/O units are designated as Special I/O units, except CJ1W-TS561/-TS562, which are Basic I/O units.

Add Motion Control to Any CS1 PLC

From simple position measurement to multi-axis synchronized motion control, CS1 offers a full range of units:

- Counter units gather position information from SSI or incremental encoders. Actual positions are compared with internally stored target values.
- Position control units are used for point-to-point positioning with servo drives or stepper motors. Target data and acceleration/deceleration curves can be adjusted on-the-fly.
- Position and motion control unit equipped with MECHATROLINK-II interface can control multiple drives through a single high-speed link. Message routing through multiple communication layers allows the attached drives to be configured from any point in the control network.



Ordering Information

Channels/Axes	Type	Signal type	Unit class	Remarks	Model
2	SSI inputs (absolute position data)	Synchronous serial protocol	Special I/O unit	Baud rate, encoding type, data length, etc. can be set per channel 2 digital outputs, NPN/PNP selectable.	CS1W-CTS21
2	500 kHz Counter	24 V, 12 V, line driver		4 configurable digital inputs + 4 configurable digital outputs Target values trigger interrupt to CPU	CS1W-CT021
4				CS1W-CT041	
1	Position control unit	24V open collector		500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	CS1W-NC113
2	Position control unit	24V open collector		500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	CS1W-NC213
4	Position control unit	24V open collector		500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	CS1W-NC413
1	Position control unit	Line driver		500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	CS1W-NC133
2	Position control unit	Line driver		500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	CS1W-NC233
4	Position control unit	Line driver		500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	CS1W-NC433
2	Motion control unit	Analog		Closed loop with automatic trapezoid or S-curve acceleration/deceleration	CS1W-MC221-V1
4	Motion control unit	Analog	Closed loop with automatic trapezoid or S-curve acceleration/deceleration	CS1W-MC421-V1	

Open to Any Communication, Standard or User-Defined

CS1 provides both standardized open network interfaces, and cost-efficient, high-speed proprietary network links. Datalinks between PLCs, or to higher-level information systems can be made using Serial or Ethernet links, or the easy-to-use Controller Link network.

Omron supports the two major field networks – DeviceNet and PROFIBUS-DP. For high-speed field I/O, CompoNet offers unsurpassed ease of installation and a lower material costs than other networks. Fully user-configurable serial and CAN-based



communication can be used to emulate a variety of application-specific protocols.

Ordering Information

Type	Ports	Protocols	Unit class	Connection type	Model
Serial	2 x RS-232C	CompoWay/F, Host Link, NT link, Modbus, User-defined	CPU bus unit	9-pin D-Sub	CS1W-SCU21-V1
Serial	2 x RS-232C/RS-485	CompoWay/F, Host Link, NT link, Modbus, User-defined	CPU bus unit	9-pin D-Sub	CS1W-SCU31-V1
Serial	2 x RS-232C	CompoWay/F, Host Link, NT link, Modbus, User-defined	CPU option board	9-pin D-Sub	CS1W-SCB21-V1
Serial	1 x RS-232C + 1 x RS-422/RS-485	CompoWay/F, Host Link, NT link, Modbus, User-defined	CPU option board	9-pin D-Sub	CS1W-SCB41-V1
GP-IB	Master/Slave selectable	GP-IB instrument communication	Special I/O unit	GP-IB	CS1W-GPI01
Ethernet	1 x 100 Base-Tx	UDP, TCP/IP, FTP server, SMTP (e-mail), SNTP (time adjust), FINS routing, socket service	CPU bus unit	RJ45	CS1W-ETN21
Controller link	2-wire twisted pair	Omron proprietary	CPU bus unit	2-wire screw+GND	CS1W-CLK21-V1
	Optical HPCF			2 x HPCF connector	CS1W-CLK12-V1
	Optical graded-index fiber			4 x ST connector	CS1W-CLK52-V1
EtherNet/IP	1 x 100 Base-Tx	EtherNet/IP, UDP, TCP/IP, FTP server, SNTP, SNMP	CPU Bus unit	RJ45	CS1W-EIP21
DeviceNet	1 x CAN	DeviceNet	CPU bus unit	5-p detachable	CS1W-DRM21-V1
CompoNet	4-wire, data + power to slaves (Master)	CompoNet (CIP-based)	Special I/O unit	4-p detachable IDC or screw	CS1W-CRM21
PROFIBUS-DP	1 x RS-485 (Master)	DP, DPV1	CPU bus unit	9-pin D-Sub	CS1W-PRM21
CAN	1 x CAN	CANopen, User-defined	CPU bus unit	5-p detachable	CS1W-CORT21
PROFIBUS-DP	1 x RS-485 (Slave)	DP	C200H special I/O unit; cannot be used on CS1D systems	9-pin D-Sub	C200HW-PRT21
CompoBus/S	2-wire (Master)	Omron proprietary		2-wire screw + 2-wire power	C200HW-SRM21-V1

The All-In-One PLC

Designed for compact machines, it combines the compactness of a micro PLC and the power of a modular PLC. Four built-in high-speed counters and four pulse outputs are ideal for multi-axis positioning control. The CP1H-XA comes with four analog inputs and two analog outputs built-in. This makes it suitable for simple loop control, using the PLC's advanced PID control function with auto-tuning. The CP1H can be expanded with CP-series I/Os and supports up to two CJ1 special I/O units. This means that it is open to popular fieldbuses and supports all communication units of the CJ1 series.



- Up to 1 MHz for inputs/outputs
- CJ1M compatible instruction set
- 4 analog inputs and 2 analog outputs for the XA model
- USB port for easy communication, programming and configuration
- Supports PROFIBUS, DeviceNet, CAN, Ethernet/IP and Ethernet

Ordering Information

Built-in functions: E = Encoder inputs; I/C = Interrupts/counters; P = Pulse outputs

Input points	Output points	Expandable up to*	Program capacity	Data memory capacity	Power supply	Output method	Built-in functions			Model
							E	I/C	P	
CP1H-X with pulse outputs for 4 axes										
24	16	320 points	20K steps	32K words	85 to 264 VAC	Relay output	4	8	--	CP1H-X40DR-A
					20.4 to 26.4 VDC	Transistor output (sink type)	4	8	4	CP1H-X40DT-D
						Transistor output (source type)	4	8	4	CP1H-X40DT1-D
CP1H-XA with built-in analog I/O (4 analog inputs/2 analog outputs; 1/12,000 resolution)										
24	16	320 points	20K steps	32K words	85 to 264 VAC	Relay output	4	8	--	CP1H-XA40DR-A
					20.4 to 26.4 VDC	Transistor output (sink type)	4	8	4	CP1H-XA40DT-D
						Transistor output (source type)	4	8	4	CP1H-XA40DT1-D
CP1H-Y with 1-MHz pulse I/O										
12	8	300 points	20K steps	32K words	20.4 to 26.4 VDC	Transistor output (sink type)	4**	6	4**	CP1H-YS0DT-D

*CP1H CPU series can be expanded with CP-series Expansion Units and CJ1 Special I/O Units.

** Encoder inputs: 2x 1 MHz + 2x 100 kHz; Pulse outputs: 2x 1 MHz + 2x 100 kHz.

The Compact Machine Controller

Omron's CP1L series offers the compactness of a micro-PLC with the capability of a modular PLC. It provides all the functionality you need to control your machine, including outstanding positioning capability. The CP1L comes with 14, 20, 30, 40, or 60 I/O built-in and can be expanded with a wide range of CP-series expansion units up to 180 I/O points. It uses a standard USB port for programming and monitoring and offers two optional plug-in serial communication ports—additionally, one port can be used for a display or Ethernet option. The CP1L series shares the same



architecture as the CP1E, CP1H, CJ, and CS1 series, therefore programs are compatible for memory allocations and instructions.

- Encoder inputs: 100 kHz
- Pulse outputs: 100 kHz (transistor models)
- Logic execution speed: 0.55 μs

Ordering Information

Built-in functions: E = Encoder inputs; I/C = Interrupts/counters; P = Pulse outputs

Input points	Output points	Expands up to*	Program capacity	Data memory	Power supply	Output type	Built-in-functions			Model
							E	I/C	P	
6	4	10	5K steps	10 K words	85 to 264 VAC	Relay	4	2	--	CP1L-L10DR-A
						Relay	4	2	--	CP1L-L10DR-D
					20.4 to 26.4 VDC	Transistor (sinking)	4	2	2	CP1L-L10DT-D
						Transistor (sourcing)	4	2	2	CP1L-L10DT1-D
8	6	54	5K steps	10 K words	85 to 264 VAC	Relay	4	4	--	CP1L-L14DR-A
						Relay	4	4	--	CP1L-L14DR-D
					20.4 to 26.4 VDC	Transistor (sinking)	4	4	2	CP1L-L14DT-D
						Transistor (sourcing)	4	4	2	CP1L-L14DT1-D
12	8	60	5K steps	10 K words	85 to 264 VAC	Relay	4	6	--	CP1L-L20DR-A
						Relay	4	6	--	CP1L-L20DR-D
					20.4 to 26.4 VDC	Transistor (sinking)	4	6	2	CP1L-L20DT-D
						Transistor (sourcing)	4	6	2	CP1L-L20DT1-D
18	12	150	10 K steps	32 K words	85 to 264 VAC	Relay	4	6	--	CP1L-L30DR-A
						Relay	4	6	--	CP1L-L30DR-D
					20.4 to 26.4 VDC	Transistor (sinking)	4	6	2	CP1L-L30DT-D
						Transistor (sourcing)	4	6	2	CP1L-L30DT1-D
24	16	160	10 K steps	32 K words	85 to 264 VAC	Relay	4	6	--	CP1L-L40DR-A
						Relay	4	6	--	CP1L-L40DR-D
					20.4 to 26.4 VDC	Transistor (sinking)	4	6	2	CP1L-L40DT-D
						Transistor (sourcing)	4	6	2	CP1L-L40DT1-D
36	24	180	10 K steps	32 K words	85 to 264 VAC	Relay	4	6	--	CP1L-L60DR-A
						Relay	4	6	--	CP1L-L60DR-D
					20.4 to 26.4 VDC	Transistor (sink)	4	6	2	CP1L-L60DT-D
						Transistor (source)	4	6	2	CP1L-L60DT1-D

*CP1L CPU series can be expanded with CP-series Expansion Units.

Easy, Efficient and Economic

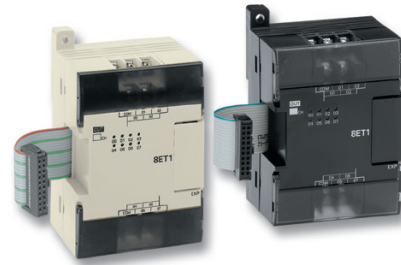
Omron's CP1E series targets a 'lean' automation solution, but still offers all the functionality you need to control relatively simple applications, including outstanding positioning capability. The CP1E comes with 10, 14, 20, 30, 40 or 60 I/O built-in and can be expanded with a wide range of CP-series expansion units up to 160 I/O points. It uses a standard USB port for programming and monitoring.

The E-N type includes a serial communication port and offers an additional plug-in serial communication port. As the CP1E series shares the same architecture as the CP1L, CP1H, CJ, and CS1 series, programs are compatible for memory allocations and instructions.



Expand the Capacity of Your Micro PLC

A wide variety of expansion units such as Digital I/O, Analogue I/O and Remote I/O are available to create the application you need. These CP expansion units can be used for CP1E, CP1L, and CP1H series PLC.



- Expansion Unit Types: Digital Inputs (up to 8 Inputs)
- Digital Outputs (up to 32 Outputs, NPN, PNP, Relay)
- Mixed I/O (up to 24 Inputs and 16 Outputs)
- Analog Input Unit with 4 Inputs, 1/6000 resolution
- Analog Output Unit with 4 Outputs, 1/6000 resolution
- Analog Mixed I/O Units with 2 Inputs and 1 Output, 1/256 or 1/6000 resolutions
- Temperature Sensor Units with 2 or 4 Inputs (Thermocouple or Platinum Resistance types)
- Temperature Sensor Unit with 2 Platinum Resistance Inputs and 1 Voltage/Current output
- DeviceNet I/O Link Unit (I/O Link of 32 Input bits and 32 Output bits)
- ProfiBus-DP I/O Link Unit (I/O Link of 16 Input bits and 16 Output bits)
- Ethernet Option Units available
- Serial Option Units (RS-232C and combination RS-232C / RS-422)

Ordering Information

Description	Output type	Input points	Output points	Size in mm (H x W x D)	Model
Expansion I/O units	--	8	--	90 x 66 x 50	CP1W-8ED
	Relay	--	8	90 x 66 x 50	CP1W-8ER
	Transistor (sinking)	--	8	90 x 66 x 50	CP1W-8ET
	Transistor (sourcing)	--	8	90 x 66 x 50	CP1W-8ET1
	Relay	--	16	90 x 86 x 50	CP1W-16ER
	Relay	12	8	90 x 96 x 50	CP1W-20EDR1
	Transistor (sinking)	12	8	90 x 96 x 50	CP1W-20EDT
	Transistor (sourcing)	12	8	90 x 96 x 50	CP1W-20EDT1
	Relay	24	16	90 x 150 x 50	CP1W-40EDR
	Transistor (sinking)	24	16	90 x 150 x 50	CP1W-40EDT
	Transistor (sourcing)	24	16	90 x 150 x 50	CP1W-40EDT1
Analog I/O units	Analog (resolution 1/256)	2	1	90 x 66 x 50	CPM1A-MAD01
	Analog (resolution 1/6000)	2	1	90 x 86 x 50	CP1W-MAD11
	Analog (resolution 1/6000)	4	--	90 x 86 x 50	CP1W-AD041
	Analog (resolution 1/6000)	--	4	90 x 86 x 50	CP1W-DA041

CP-series Expansion Units

Micro PLC (continued)

A

Description	Output type	Input points	Output points	Size in mm (H x W x D)	Model
Temperature sensor input units	Thermocouple input	2	--	90 x 86 x 50	CP1W-TS001
	Thermocouple input	4	--	90 x 86 x 50	CP1W-TS002
	Platinum resistance input	2	--	90 x 86 x 50	CP1W-TS101
	Platinum resistance input	4	--	90 x 86 x 50	CP1W-TS102
	Platinum resistance input and voltage/current output	2	1	90 x 86 x 50	CPM1A-TS101-DA
I/O link units	DeviceNet	32 bits	32 bits	90 x 66 x 50	CPM1A-DRT21
	PROFIBUS-DP	6 bits	16 bits	90 x 66 x 50	CPM1A-PRT21

CPM2C CPU Units Micro PLC

Quick Link
H232

The Versatile Slim-Line Controller

An extensive range of models ensures efficient machine control in an ultra-compact package. CPU units are available with relay or transistor output, terminal block or various connector options, and an optional real-time clock function. Select the output type, number of I/O points and other specifications to meet your needs. Expansion I/O units with 8 to 32 I/O points make it possible to configure a control system with a maximum of 192 I/O points.

- Space-saving slim outline, just 90H x 33W x 65D mm, with high-density I/O
- 10-32 I/O points per CPU, transistor or relay outputs
- 20 kHz counter input, two 10 kHz pulse outputs integrated
- Two communication ports built-in, accessible with communication cable



- Digital, analog, and fieldbus expansion units
- CompoBus/S master (CPM2C-S) models function as a DeviceNet slave
- Logic execution speed of 0.64 μ s

CPM2C Expansion Units Micro PLC

Quick Link
H232

Expand the Capacity of Your CPM2C PLC

Expansion I/O units with 8 to 32 I/O points make it possible to configure a control system with a maximum of 192 I/O points.

- Expansion Unit Types: Digital Inputs (up to 16 Inputs)
- Digital Outputs (up to 16 Outputs, NPN, PNP, Relay)
- Mixed I/O (up to 16 Inputs and 16 Outputs)
- Analog I/O Unit with 2 Inputs and 1 Output)
- Temperature Sensor Units (Thermocouple or Platinum Resistance types)
- CompoBus/S I/O Link Unit (I/O Link of 8 Input bits and 8 Output bits)
- Serial Adaptor Units (RS-232C and combination RS-232C / RS-422)

