

THE CP1 FAMILY

Compact machine controllers



» Standard USB interface

» Simple motion functionality

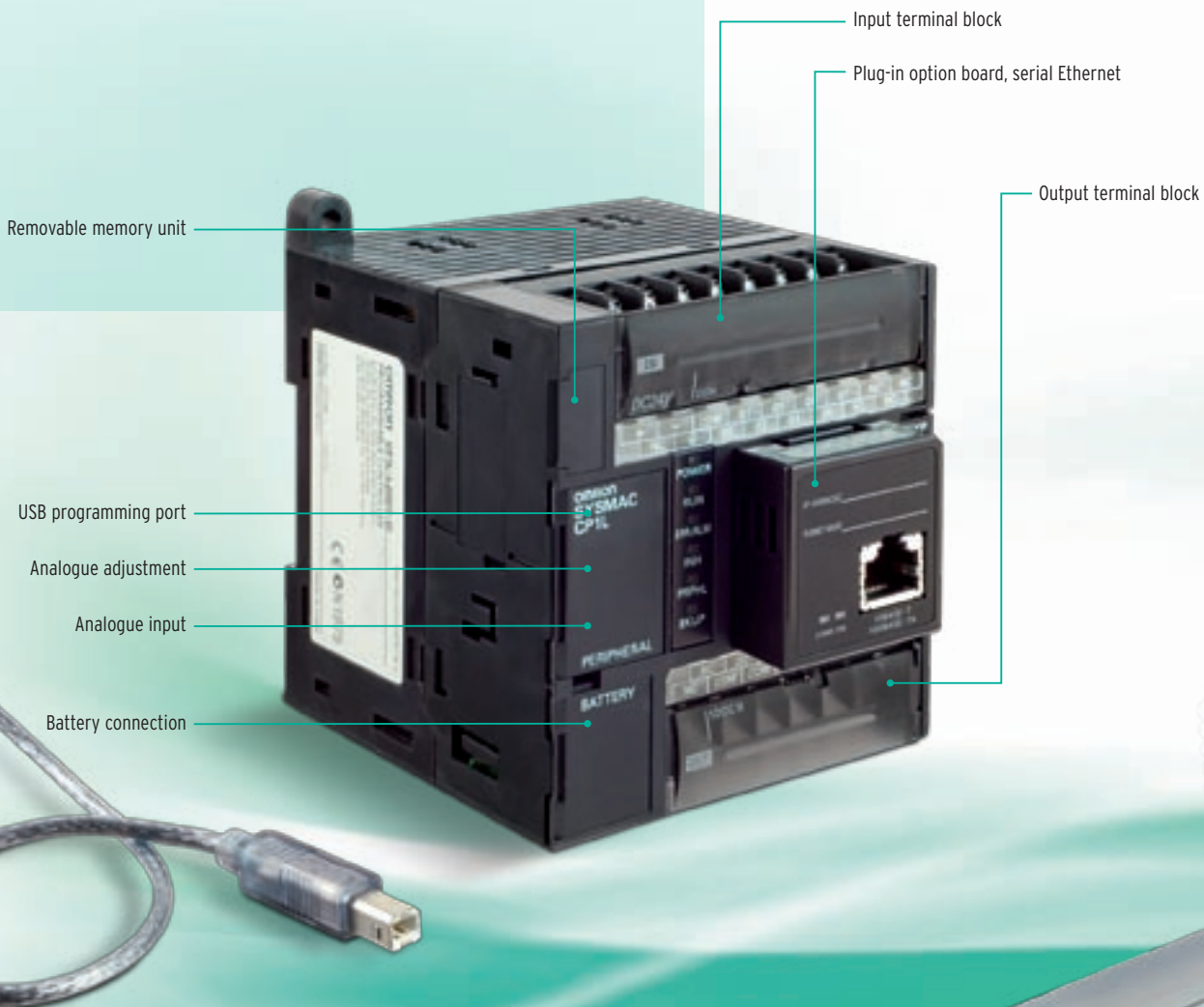
» Ethernet capability

Answering your needs... exactly

When it comes to controllers for compact machines, Omron's CP1 series offers the form of a micro PLC with the function of a modular PLC. Naturally, programming and operation is consistent with Omron's modular PLCs.

Scalable solution

The CP1 family comprises three different series, offering increasing degrees of sophistication: the CP1E, the CP1L, and the CP1H. This comprehensive line-up enables you to offer your customers a choice of automation sophistication in their machines. And that also means flexible pricing.

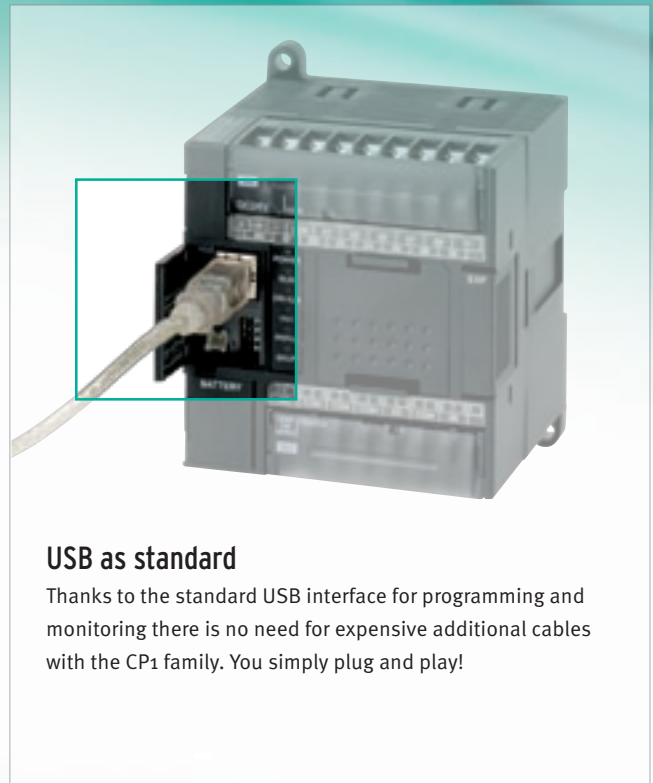


Ethernet capability

The CP1L and CP1H support Ethernet connections. Simply insert the Ethernet option board for monitoring and programming your machine over an Ethernet network.

Simple motion functionality

The CP1 family offers fast serial ports enabling simple motion control. MODBUS function blocks enable you to control and monitor up to 32 inverters in real-time. Additionally, up to four axes of servo-drives can be controlled with high-speed pulse outputs. High-speed pulse inputs can allow the connection of up to four encoders.



USB as standard

Thanks to the standard USB interface for programming and monitoring there is no need for expensive additional cables with the CP1 family. You simply plug and play!

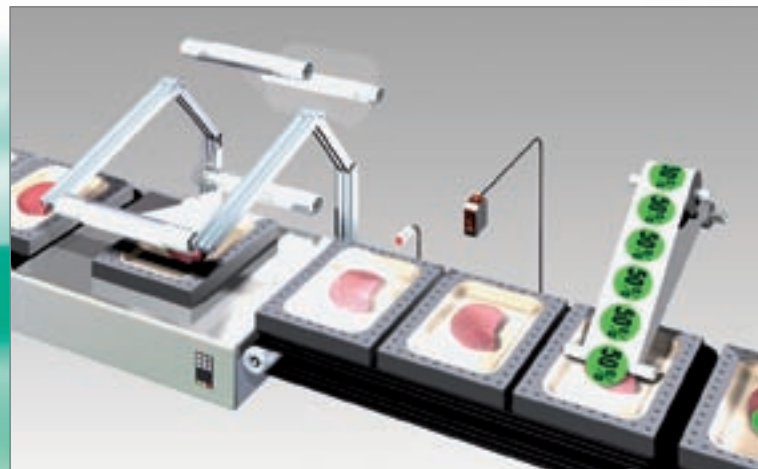
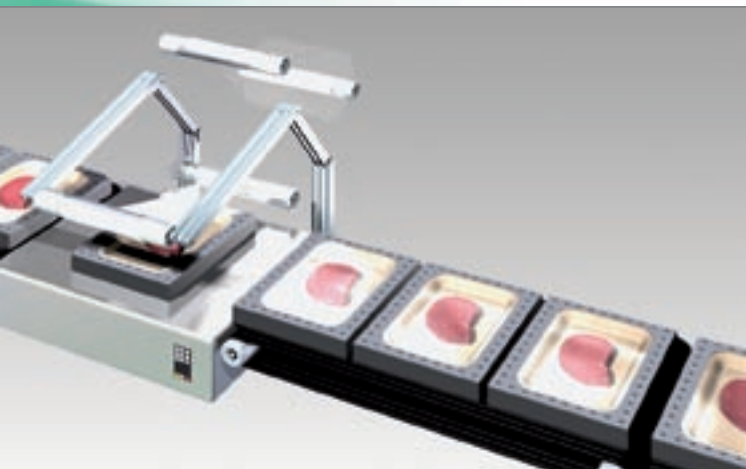


Know one... know them all

With the CP1 family you can easily customize the level of automation for your machines, enabling you to offer flexible pricing. Simply choose the CP1 that fits your needs.

No over-specification

With the CP1 family of PLCs you can build in the exact amount of automation performance your customers' need – we offer three series and all are scalable. Which means you never need to use (and pay for) control capability that's not required.



FROM ECONOMICAL SOLUTIONS

CP1E series

- CPU with 20, 30 or 40 digital I/O built-in
- Expandable up to 160 I/O points
- USB port + 1 optional serial port
- 2.8 Ksteps user memory
- 1.1 μ s instruction speed
- 6 encoder inputs (10-100 kHz)
- 2 pulse outputs (100 kHz)

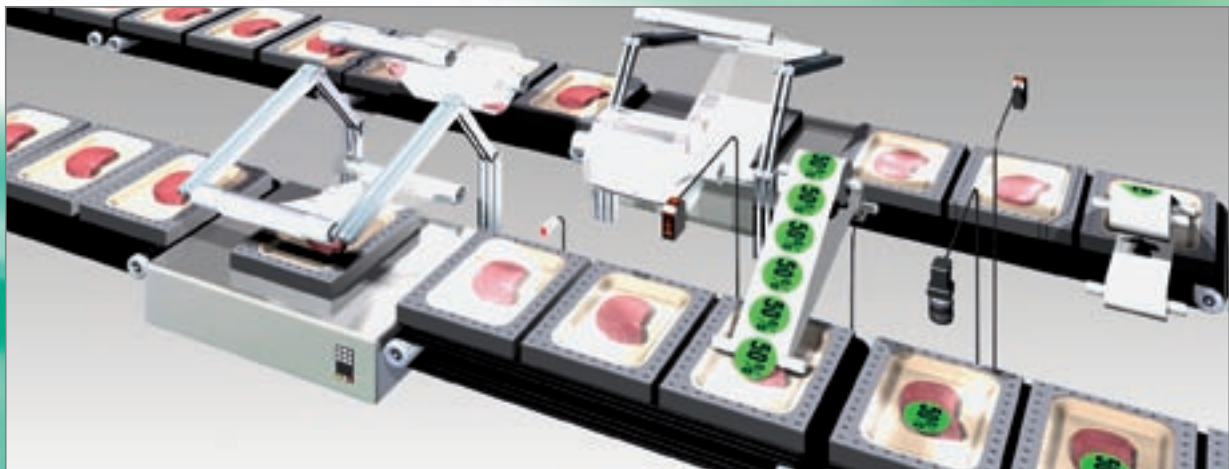


TO MORE ADVANCED

CP1L series

- CPUs from 10 up to 60 digital I/O built-in
- Expandable up to 180 I/O points
- USB port + 2 optional serial ports
- Ethernet plug in optional
- 5-10 Ksteps user memory
- 0.6 μ s instruction speed
- 4 encoder inputs (100 kHz)
- 2 pulse outputs (100 kHz)

When you need simple and economical automation tasks, or up to complex system solutions, Omron's PLC line-up can do it. Unique in the market place is that both Omron's Compact PLCs and the Modular PLCs shares the same architecture. Programs are fully compatible for memory allocations and instructions.



AND EVEN MORE

CP1H series

- CPU with 40 ("X" and "XA" models) or 20 ("Y" models) I/O built-in
- Expandable up to 320 I/O points
- USB port + 2 optional serial ports
- Ethernet plug in optional
- 20 Ksteps user memory
- 100 μ s instruction speed
- 4 encoder inputs (100 kHz or up to 1 MHz with "Y" models)
- 4 pulse outputs (100 kHz or up to 1 MHz with "Y" models)

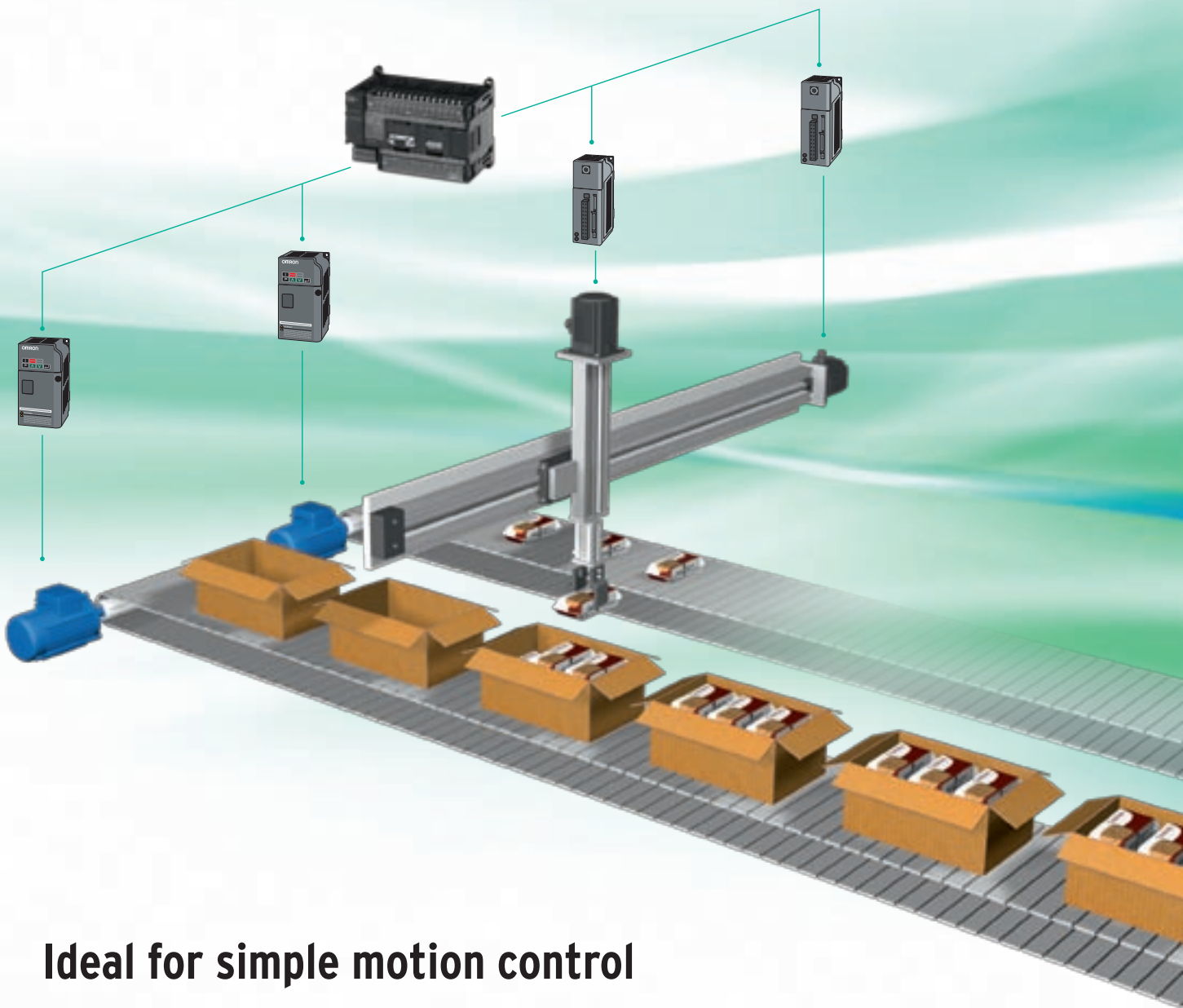
Communicate! Locally or remotely

Omron's CP1 series can communicate in open standardised networks such as Ethernet, DeviceNet and Profibus-DP.

The CIF41 plug-in module means a compact and cost effective 10/100Mbit Ethernet interface for the CP1L or CP1H. Systems can be monitored using a standard web browser, either via a local network or over an Internet connection from anywhere in the world. There is full access to process data, uploading and downloading of programs and monitoring and fault tracing. This is useful for machinery monitoring, transfer of data to supervisory computers, or for performing remote diagnostics on equipment installed at sites where no local technical support is available. For example, solar panel tracking stations.

For distances up to 500 meters the CIF12 provides an optional extra serial connection for any of the CP1 PLCs. This is particularly useful to create a dedicated data connection between two places, for instance to a PLC on the factory floor from an office area, or to make a connection between buildings.





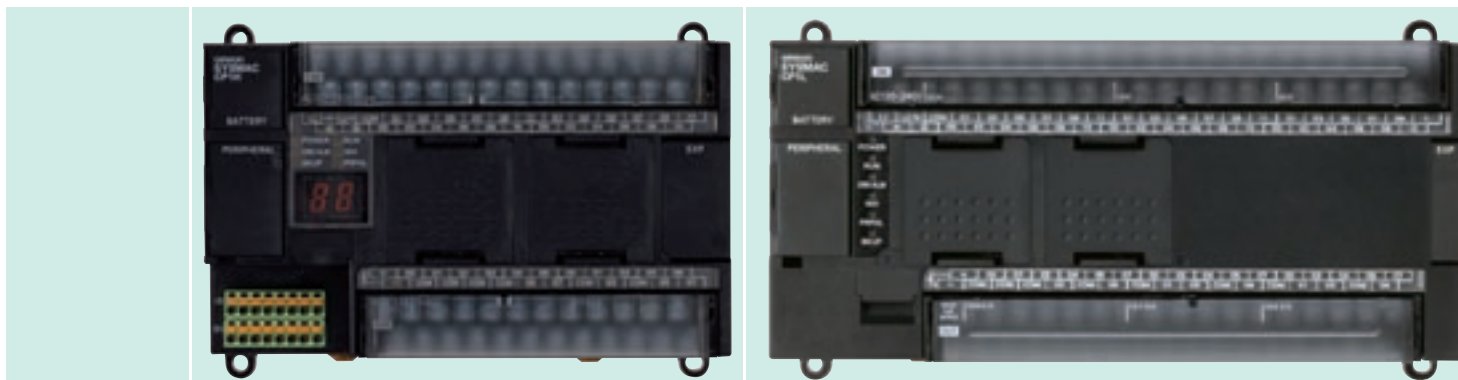
Ideal for simple motion control

The combined functionality of high-speed pulse outputs, frequency drive control and position feedback make the CP1 an excellent choice.

When closed loop positioning is required, the high speed counter inputs can be connected to provide position feedback. For example, the CP1L has four 100kHz counter inputs for position feedback. To control drives the CP1 also has serial port(s) for high speed communication. Connecting inverters for speed control is made simple using the Modbus-RTU Easy Master feature. The CP1H model includes up to four pulse outputs to control four axis at 100kHz.

The CP1 is frequently used for conveyor control, point-to-point motion, and non-interpolated pick and place systems.

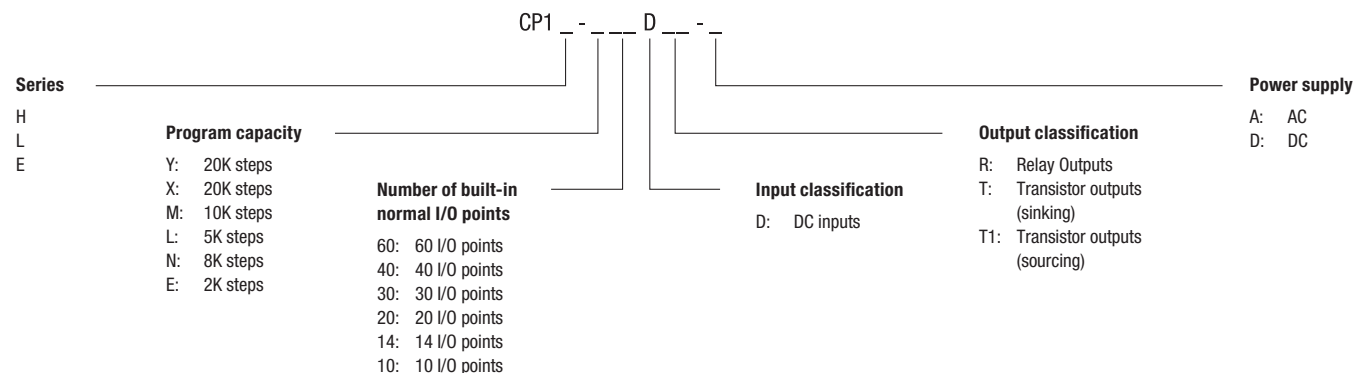
Maximize efficiency by selecting the optimum CPU unit for your applications



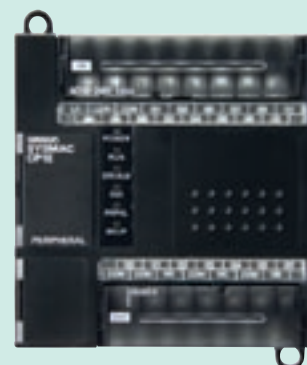
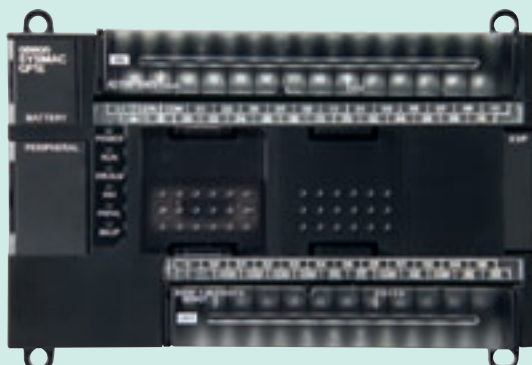
	CP1H			CP1L			
	CP1H-Y20DT-D	CP1H-XA40D -	CP1H-X40D -	CP1L-M60D -	CP1L-M40D -	CP1L-M30D -	CP1L-L20D -
	12 Inputs 8 Outputs	24 Inputs 16 Outputs	24 Inputs 16 Outputs	36 Inputs 24 Outputs	24 Inputs 16 Outputs	18 Inputs 12 Outputs	12 Inputs 8 Outputs
AC Power Supply	No	Yes	Yes	Yes			
DC Power Supply	Yes	Yes	Yes	Yes			
Relay Outputs	No	Yes (AC model only)	Yes (AC model only)	Yes			
Transistor Outputs	Yes (NPN/Sinking only)	Yes (DC model only)	Yes (DC model only)	Yes			
I/O Capacity	300	320		180	160	150	60
High Speed Inputs	4 1 MHz maximum*1	4 100 kHz maximum*1		4 100 kHz maximum*1			
Pulse Outputs	4 axes 1 MHz maximum*1	4 axes 100 kHz maximum*1		2 axes 100 kHz maximum*1 Transistor output models only			
Serial Communications	Two serial ports can be added			Two serial ports can be added			One serial port can be added
LCD Option Board	Yes			Yes			
Built-in Analog I/O	No	4 inputs, 2 outputs	No	No			
Analog Adjuster	Yes (x1)			Yes (x1)			Yes (x1)
External Analog Settings Input (256 Resolution)	Yes			Yes			
Memory Cassette	Yes			Yes			
Function Blocks (ladder diagrams or ST language)	Yes			Yes			
Inverter Positioning	No			Yes			
7-Segment Display	Yes			No			
Program Capacity	20K Steps			10K Steps			5K Steps
Data Memory Capacity	32K Words			32K Words			10K Words
Processing Speed	0.1 μs/LD instruction, 0.3 μs/MOV instruction			0.55 μs/LD instruction, 1.84 μs/MOV instruction			
Real-Time Clock	Yes			Yes			
Removable Terminals	Yes			Yes			
CP1W/CPM1A Expansion Units	Yes (maximum 7 or 15 input words/15 output words)			Yes (maximum 3)			Yes (maximum 1)
CJ-Series Special I/O and CPU Bus Units	Yes (maximum 2)			No			No

*1 This table is a general overview only. See specifications for more information

Part number diagram









NOTE: Not all combinations may be possible. See manual for details.


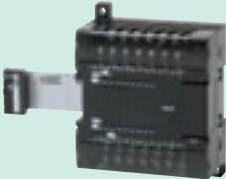




CP1L-L14D _ _		CP1L-L10D _ _		CP1E-N40D _ _		CP1E-N30D _ _		CP1E-N20D _ _		CP1E-E40DR-A		CP1E-E30DR-A		CP1E-E20DR-A		
8 Inputs 6 Outputs		6 Inputs 4 Outputs		24 Inputs 16 Outputs		18 Inputs 12 Outputs		12 Inputs 8 Outputs		24 Inputs 16 Outputs		18 Inputs 12 Outputs		12 Inputs 8 Outputs		
				Yes						Yes						
				Yes						No						
				Yes						Yes						
				Yes						No						
54	10	160	150	20	160	150	20	160	150	20	160	150	20	160	150	20
				6 100 kHz maximum* ¹						6 10 kHz maximum* ¹						
				2 axes 100 kHz maximum* ¹						No						
		No		Built-in RS-232C port. One serial port can be added (CP1W-CIF01, CP1W-CIF11, CP1W-CIF12)				Built-in RS232C port. Serial port cannot be added		No						
		No		No						No						
				No						No						
				Yes (x2)						Yes (x2)						
				No												
				No						No						
				No						No						
				No						No						
				8K steps						2K steps						
				8K words						2K words						
				1.19 µs/LD instruction, 7.9 µs/MOV instruction												
				Yes (with optional battery)						No						
				No												
		No		Yes (maximum 3)				No		Yes (maximum 3)				No		
				No												



Option boards

					
RS-232C Option Board CP1W-CIF01	RS-422A/485 Option Board CP1W-CIF11	RS-422A/485 (Isolated-type) Option Board CP1W-CIF12	Ethernet Option Board CP1W-CIF41	LCD Option Board CP1W-DAM01	Memory Cassette CP1W-ME05M


Expansion I/O Units

			
CP1W-8ED DC inputs: 8	CP1W-16ER Relay outputs: 16	CP1W-32ER Relay outputs: 32	CP1W-40EDR DC inputs : 24 Relay outputs: 16
CP1W-8ER Relay outputs: 8	CP1W-16ET Transistor outputs (sinking): 16	CP1W-32ET Transistor outputs (sinking): 32	CP1W-40EDT DC inputs: 24 Transistor outputs (sinking): 16
CP1W-8ET Transistor outputs (sinking): 8	CP1W-16ET1 Transistor outputs (sourcing): 16	CP1W-32ET1 Transistor outputs (sourcing): 32	CP1W-40EDT1 DC inputs: 24 Transistor outputs (sourcing): 16
CP1W-8ET1 Transistor outputs (sourcing): 8	CP1W-20EDR1 DC inputs: 12 Relay outputs: 8		


Analog Units

	
Analog Input Unit CP1W-AD041 Analog inputs: 4 (resolution: 6,000)	Analog I/O Unit CP1W-MAD11 Analog inputs: 2 (resolution: 6,000) Analog outputs: 1 (resolution: 6,000)
Analog Output Unit CP1W-DA041 Analog outputs: 4 (resolution: 6,000)	


Temperature Sensor Unit


CP1W-TS001 Thermocouple inputs: 2
CP1W-TS002 Thermocouple inputs: 4
CP1W-TS101 Platinum-resistance thermometer inputs: 2
CP1W-TS102 Platinum-resistance thermometer inputs: 4


CJ Unit Adapter


CP1W-EXT01 CJ Unit adapter for use with CJ1H. Includes CJ endplate.

DeviceNet I/O Link Unit


DeviceNet I/O Link Unit CPM1A-DRT21 Inputs: 32 bits Outputs: 32 bits



PROFIBUS-DP I/O Link Unit


PROFIBUS-DP I/O Link Unit CPM1A-PRT21 Inputs: 16 bits Outputs: 16 bits

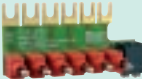

CompoBus/S I/O Link Unit


CompoBus/S I/O Link Unit CP1W-SRT21 Inputs: 8 bits Outputs: 8 bits

Battery Set

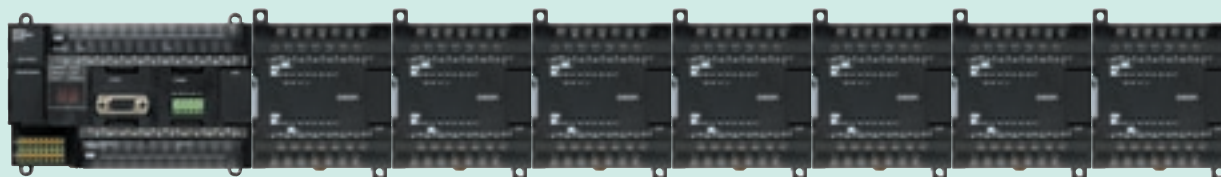

Battery Set CP1W-BAT01
USB Programming Cable 
CP1W-CN221 USB Programming cable A-type male to B-type male, Length: 1,8 m

Switch Input Board


Switch Input Board CP1W-SWB06
I/O Connecting Cable 
CP1W-CN811 I/O Connecting Cable: 80 cm CP1W/CPM1A Expansion Units include I/O Connection Cables (in lengths of approx. 6 cm) for side-by-side connection.

Note: CPM1A Expansion Unit and Expansion I/O Units can be used with CP1H, CP1L or CP1E CPU Units under the same conditions as for the CP1W.

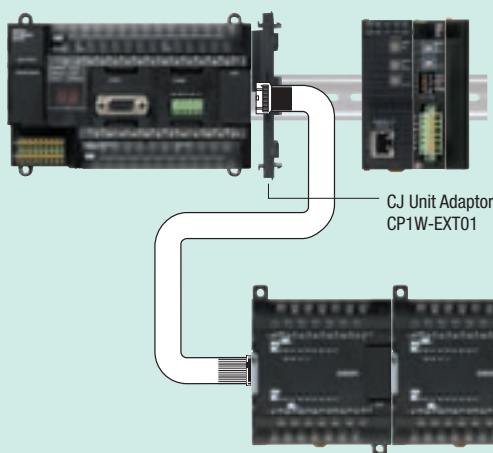
Using expansion units with the CP1



Up to 7 CP1W/CPM1A Expansion Units and Expansion I/O Units can be connected.

Note: Some Expansion Units and Expansion I/O Units have certain restrictions on use.

Using CJ-series units and CP1W units with the CP1H



Up to two CJ-series CPU Bus Units or Special I/O Units can be connected.

Up to 7 CP1W/CPM1A Expansion Units and Expansion I/O Units can be connected.

CP1W/CPM1A Expansion Units and Expansion I/O Units and CJ Units can be used simultaneously.
CP1W-CN811 I/O Connecting Cable is required.

CJ-Series Units for use with CP1H

Description	Unit Name	Model	Description	Unit Name	Model		
Analog I/O and Control Units	Universal Analog Input Unit	CJ1W-AD04U	Motion/Position Control Units	Position Control Units	CJ1W-NC113		
	Analog Input Unit	CJ1W-AD041-V1			CJ1W-NC133		
	Analog Input Unit	CJ1W-AD081-V1			CJ1W-NC213		
	Analog Output Unit	CJ1W-DA021			CJ1W-NC233		
	Analog Output Unit	CJ1W-DA041			CJ1W-NC271		
	Analog Output Unit	CJ1W-DA08V			CJ1W-NC471		
	Analog Output Unit	CJ1W-DA08C			CJ1W-NC413		
	Analog Input/Output Unit	CJ1W-MAD42			CJ1W-NC433		
	Universal Analog Input Unit	CJ1W-PH41U			MECHATROLINK-II Position Control Unit	CJ1W-NCF71	
	Process Input Unit	CJ1W-PDC15				CJ1W-NCF71-MA	
	Thermocouple Input Unit	Thermocouple Input Unit	CJ1W-PTS15	MECHATROLINK-II Motion Control Unit	CJ1W-MCH71		
			CJ1W-PTS51	Communication Units	Serial Communication Units	CJ1W-SCU21-V1	
		Resistance Thermometer Input Unit	CJ1W-PTS16			CJ1W-SCU31-V1	
		Temperature Control Loops, Thermocouple Unit	CJ1W-PTS52			CJ1W-ETN21	
						CJ1W-TC001	CJ1W-EIP21
						CJ1W-TC002	CJ1W-DRM21
						CJ1W-TC003	CJ1W-CRM21
		Temperature Control Loops, RTD	CJ1W-TC004			CJ1W-SRM21	
						CJ1W-TC101	CJ1W-PNT21
				CJ1W-TC102	CJ1W-PRM21		
CJ1W-TC103	CJ1W-PRT21						
SYSMAC SPU	CJ1W-TC104	CJ1W-CLK23					
		CJ1W-SPU01-V2	CJ1W-CORT21				
		Motion/Position Control Units	SSSI Input Unit	CJ1W-CTS21-E	Control Units	RFID Sensor Controller Unit	CJ1W-V680C11
High Speed Counter Unit	CJ1W-CT021			CJ1W-V680C12			
4-Channel Counter Unit	CJ1W-CTL41-E			CJ1W-V600C11			
24VDC Motor Control Unit	CJ1W-DCM11-E		CJ1W-V600C12				

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