

Industrial Automation Guide 2016



Industrial Products & Systems

industrial.omron.eu

Targeted Technologies

Creating maximum output with minimum input

By identifying the many ways of innovation in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples on our website.

industrial.omron.eu/technologies



PROplus Line

If you have a complex application or one where you need to address special needs, then the PROplus Line is the answer. That's because PROplus products are designed to be customisable.

The possibility to modify a PROplus product means that your application is unique. However, this does not mean that the PROplus Line is not a ready-made solution. On the contrary, it is a challenge.

For example, the PROplus 4000 series is designed to be modified to meet your needs. It can be modified to meet your needs in terms of I/O, communication, and more. This makes the PROplus 4000 series a challenge.

EE-NH temperature controller

The new EE-NH series is the most powerful and precise temperature controller. It features a 16-bit ADC and a 16-bit DAC. It also has a 16-bit timer and a 16-bit counter. It is designed to be modified to meet your needs.

The 361° Approach



OMRON

Industrial Automation Europe

Omron IAB partner

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Technologies

Creating maximum output with minimum input

Whatever type of automated machinery you are specialized in, you know that there are many ways to innovate. You are already aware that there are many possible areas for improvement. But where do you start? Where do you focus your efforts? Where can you make the biggest difference with the least amount of effort?

At Omron, we asked ourselves these questions too. And by identifying the answers in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples below.

Technologies

Sysmac: the all-in-one platform

We know that machine builders prefer different product solutions for different challenges. But this can cause hierarchy headaches and communications issues. That's why we developed Sysmac: a single unified platform that is open, scalable, flexible, and totally focused on maximising the speed and flexibility of machines. A platform that integrates robotic, motion and sequential logic control into a single multitasking system.

[Learn more](#)



361°: the perfect match

When it comes to sensors and components, we know that our customers all have different needs. That's why our product development in this area is driven by the 361° Approach. It produces product families that offer a total all-round choice. From quality products suited to standard environments to specialist devices that can handle extremes. A full circle of choice, all with an extra degree of quality and proven reliability.

[Learn more](#)



The 361° portfolio

PROplus
PROplus products are designed for specific applications or customer demands.

[Learn more](#)



LITE

LITE sensors are the most effective without any compromise in quality.

[Learn more](#)



PRO

If you want extra performance in your sensors and components the Omron PRO Line is your perfect choice.

[Learn more](#)



Product groups

Sysmac controller

The Sysmac controller is the heart of the Sysmac system. It is designed to be modified to meet your needs.

Robotics

The Sysmac controller is the heart of the Sysmac system. It is designed to be modified to meet your needs.

Sensors

The Sysmac controller is the heart of the Sysmac system. It is designed to be modified to meet your needs.

Relays

The Sysmac controller is the heart of the Sysmac system. It is designed to be modified to meet your needs.

PLC

The Sysmac controller is the heart of the Sysmac system. It is designed to be modified to meet your needs.

Related product news



With new G2 sensors, you only pay for what you need. Optimizing relative placement sensors in the new G2 range have been specifically designed to offer a cost-effective sensing solution or standard sensing conditions, making it unnecessary to buy more sensors than you actually need.

[Learn more](#)

Related product news



ES16 - Omron's new photo sensors combine simplicity with performance. Drawing on our experience of manufacturing over a million photoelectric sensors a year, we have developed a new generation of photoelectric products that combine simple selection, installation with reliability, versatility, rugged construction and value for money.

[Learn more](#)

Related product news



AS Safety Control: New step towards the full integration of Automation. The AS Safety Control is a new step towards the full integration of Automation. It is designed to be modified to meet your needs.



AS Safety Control: New step towards the full integration of Automation. The AS Safety Control is a new step towards the full integration of Automation. It is designed to be modified to meet your needs.

Welcome to our world

Our best-in-class devices for your automation system

Welcome to Omron's world of advanced industrial automation. The INDUSTRIAL AUTOMATION GUIDE is your essential tool to select best-in-class devices for your automation system. It highlights our core competences in sensing, control, visualisation, motion and panel components.

Of course, Omron offers a much larger range of products than you can find on the attached DVD. For more information on services and company competence visit our website.

Here you will find:

- Latest product news
- Technical product specifications
- 2D / 3D CAD Library
- Customer references
- Technology concepts
- Supporting product documentation
- Knowledge Base - "myOmron"
- Events Calendar
- Contact information

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“To the machine the work of the machine,
to man the thrill of further creation.”

Kazuma Tateisi, founder of Omron

Omron at a glance

200.000 products ranging
input, logic and output

Sensing, Control Systems, Visualization, Drives, Robots, Safety,
Quality Control & Inspection, Control and Switching Components

7%

Investment in Research & Development

Innovation track
record of 80 years

Top 150 global patent assignee

1.200 employees dedicated to R&D

11.000 + issued and pending patents

37.000

Employees worldwide

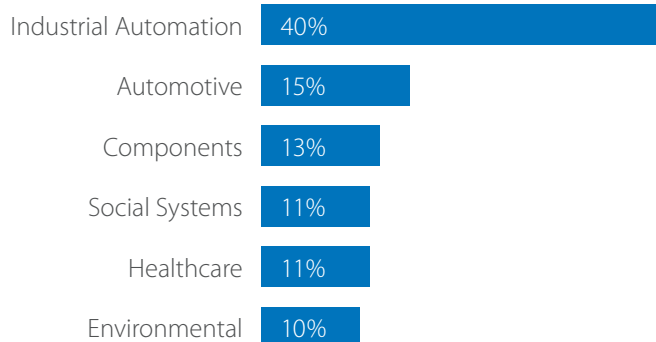
210

Locations worldwide

22

Countries in EMEA

Working for the
benefit of society



Close to your needs

Technical training & seminars, technical support, Automation Technology Centers, online community (MyOmron), online catalogues and technical documentation, customer service & sales support, inter-operability labs (Tsunagi), safety services, repairs.

Your needs, our focus

Solutions perfectly matching your needs

We asked ourselves: 'What do you need in sensors and components?' Well, first you need reliability. Then a variety and choice of performance levels. You may also want advanced functionality, with special features defined by you – or you may want standardized solutions, with highly competitive prices.

Whatever it is, it can all add up to a wish list that is difficult to fulfil. Until now. That's because our new 361° Approach not only provides a complete all-round offer without gaps, it also puts you at the very centre of the product selection process. It's an approach that leads to a Perfect Match – one with the extra degree of confidence that comes from choosing Omron.

361° in one view



Quality



Line-up



Application



Customization



Global availability



Specs

	Quality	Line-up	Application	Customization	Global availability	Specs
PRO^{plus}	Premium	Tailored	Special	Yes	Yes	Application oriented
PRO	Premium	Complete	Advanced	Yes	Yes	Above Standard
LITE	Premium	Standard	Basic	No	No	Basic
	'Quality' refers to the standard of manufacturing and the materials used – this translates into reliability	'Line-up' refers to the number of model types	'Application' indicates the complexity of the automation	'Customization' is the possibility to modify the product		'Specs' refers to the choice of performance levels

The extra degree of advantage

Three distinct lines of sensors and components

Three distinct lines

361° Approach offers three distinct lines within each sensor or component product category. LITE products are cost-effective without any compromise in quality. PRO products represent the “install & forget” option, offering longer lifetime, higher protection, and more features. While PROplus products are designed for specific applications or customer demands.

Optimized reliability

All three lines are backed by the Omron commitment to quality, so even when you need a price-competitive advantage, you can be confident that they will never let you down.

Solutions that perfectly match your needs

The 361° Approach ensures that you can quickly and easily identify the perfect match solution to your needs – nothing more, nothing less.

Optimized costs

Your sensor and component costs are also minimized – because it eliminates over-specification.

Why an extra 1°?

The extra degree is what you get when you do business with Omron, and that means different things to different customers – all depending on their needs. For example, if you need specification advice, the extra degree is ‘service’. But ultimately, to everyone it means “an extra degree of confidence in the perfect match”.



Sysmac: A fully integrated platform

Integration and Functionality

Sysmac is an integrated automation platform dedicated to providing complete control and management of your automation plant. At the core of this platform, the Machine Controller series offers synchronous control of all machine devices and advanced functionality such as motion, robotics and database connectivity. This multidisciplinary concept allows you to simplify solution architecture, reduce programming and optimize productivity.

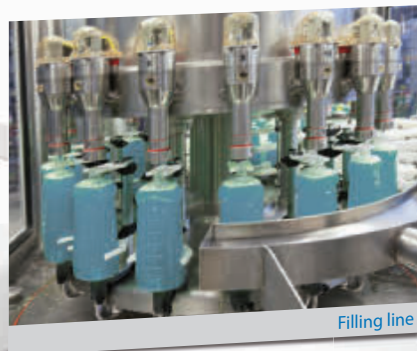


Machine Automation Controller

FACTORY
AUTOMATION

MACHINE
CONTROL

Motion



Filling line

- Motion Control: Integrated within the IDE, and operating in real-time
- Standard PLCopen Function Blocks plus Omron generated motion FB's
- Direct Synchronous control for Position, Speed and Torque

Safety



Assembly

- All safety related data is synchronized with the whole network
- Safety functions such as muting, guard locking, EDM and valve monitoring are simple to manage

- ✓ **One Integrated Development Environment software** for Configuration, Programming, Simulation and Monitoring



Information



- Sysmac communicates in real-time with Databases such as SQL
- Secure Data: In the event of a server going down or losing communications, data is automatically stored in internal memory
- Sysmac operates with Databases at high speed [1000 table element/ 100 ms] ensuring realistic Big Data Processing to improve productivity and aid predictive maintenance etc.

✓ Integrated Automation Control:

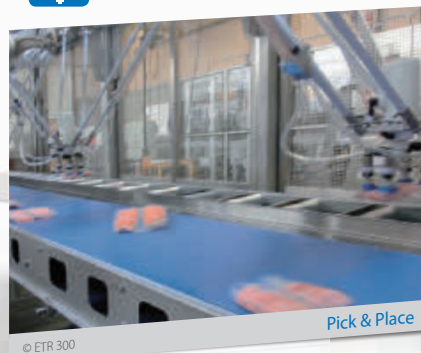
The Sysmac platform is scalable and provides the performance and functionality for a wide range of solutions from simple machines through to manufacturing cells

Vision



- Higher resolution images available without increasing the vision processing time
- Shape search technology: Provides more stable and accurate object detection for Pick & Place projects

Robotics



- Up to 8 Delta robots with one controller
- Time-based Robotic Function Blocks make programming easier

Sensing



- Full control of the process parameter setting and predictive maintenance functions
- High precision detection and positioning data synchronized on the network

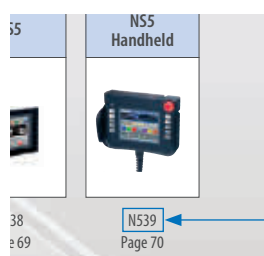
Product selection table

Automation systems				
	12 Machine automation controller	26 Programmable logic controllers (PLC)	54 Remote I/O	68 Human machine interfaces (HMI)
				
	96 Motion controllers	112 Servo systems	170 Robots	202 Frequency inverters
Sensing				
	236 Photoelectric sensors	278 Mark and Color sensors	284 Lightcurtains and area sensors	292 Fiber optic sensors and amplifiers
				
	370 Inspection & Ident systems	426 Measurement sensors		
Safety				
	462 Emergency stop and control devices	472 Safety limit switches	480 Safety door switches	506 Safety sensors
				
	574 Temperature controllers	596 Power supplies	614 Uninterruptible power supplies (UPS)	622 Timers
Switching components				
	682 Electromechanical relays	696 Solid state relays	706 Low voltage switchgear	722 Monitoring products
				
	766 Software			
Software				

Automation systems

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Quick Link

Automation systems

Machine automation controller	12	Human machine interfaces (HMI)	68
Selection table	15	Selection table	70
Machine controller		Integrated HMI	
NJ series	16	NA7/9/12/15	72
NX7 series	23	Scalable HMI	
		NS15/NS12/NS10/NS8	74
		NS5	75
		NS5 handheld	76
Programmable logic controllers (PLC)	26	Integrated controller/Scalable HMI	
Selection table	28	Accessories NS	77
Compact PLC		Compact HMI	
CPM2C CPU units	30	NB series	78
CPM2C expansion units	31	Function-key HMI	
CP1E CPU units	32	NT11	80
CP1L CPU units	34	NT2S	81
CP1H CPU units	36		
CP1W expansion units	37	Cables and accessories	
Modular PLC		I/O cables	82
CJ-Series CPU units	38	I/O terminal blocks	90
CJ-Series power supplies, expansions	40	Ethernet cables and accessories	
CJ-Series digital I/O units	41	Ethernet cables	91
CJ-Series analog I/O and control units	42	Accessories	92
CJ-Series motion/position control units	44	Wireless communication	
CJ-Series communication units	46	WE70	93
Rack PLC			
CS-Series CPU units	47		
CS-Series power supplies, backplanes	48		
CS-Series digital I/O units	49		
CS-Series analog and process I/O units	50		
CS-Series position/motion control units	52		
CS-Series communication units	53		
Remote I/O	54		
Selection table	57		
Remote I/O			
NX-series modular I/O system	58		
SmartSlice I/O system	61		
Compact I/O GX-series	62		
Compact I/O DRT2	63		
Compact I/O CRT1	64		
Compact I/O SRT2	65		
Field I/O DRT2-_C	66		
Field I/O SRT2-_C	67		

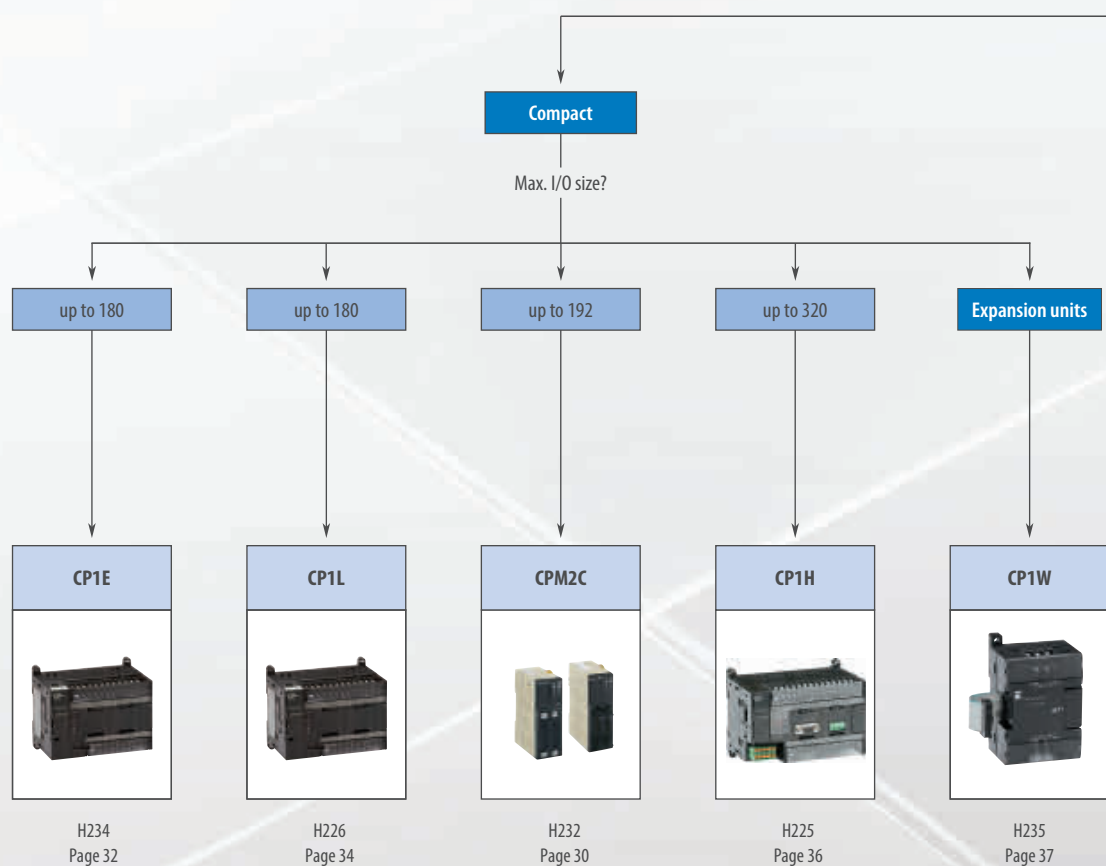
Programmable logic controllers (PLC)

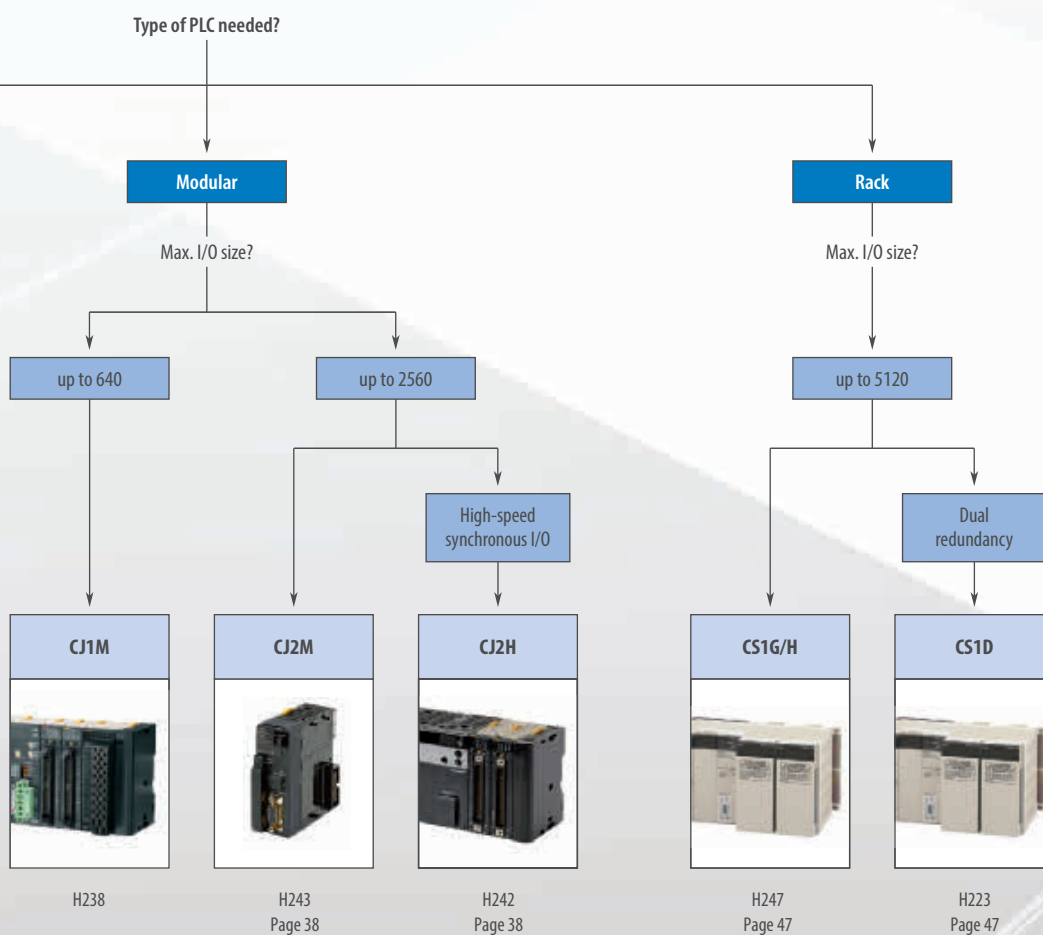
KNOW ONE ... KNOW THEM ALL!

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 Compact 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

Compact PLC series					
					
Model		CPM2C	CP1E	CP1L	CP1H
Max digital I/O points* ¹		192	180	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
	Counter inputs	2 or 4	5 or 6	4	2 or 4
	Pulse outputs* ¹	2	2	2	2 or 4
CPU features* ¹		Compact size Expansion units Quick-response inputs High-speed counter Pulse output with PWM RS-232C port Real time clock	USB port Expansion I/O units Quick-response inputs High-speed counter Pulse output with PWM RS-232C port RS-485 port Real time clock 2 Analog adjusters See Analog I/O section	USB or Ethernet port Expansion I/O units Quick-response inputs High-speed counter Pulse output with PWM Up to 2 serial option boards Real time clock 1 Analog adjuster See Analog I/O section	USB port Expansion I/O units CJ-series Special I/O Units CJ-series CPU Bus Units Quick-response inputs High-speed counter Pulse output with PWM RS-232C port Option board slots Real time clock 1 Analog adjuster LED display, 2 digit See Analog I/O section
Instruction Execution time (bit instruction)		0.64 µs	1.19 µs	0.55 µs	0.10 µs
Program memory		4K words	2 or 8K steps	5 or 10K (+10K Function block) 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		Analog I/O unit Temperature sensor unit	Built-in for E-NA model (2 in + 1 out) Analog I/O Expansion Units Temperature Input Expansion Units	Built-in for EL/EM model (2 inputs) Analog I/O Expansion Units Temperature Input Expansion Units	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		–	–	–	CJ-series Special I/O Units CJ-series CPU Bus Units
Fieldbus master		–	ModBus	Ethernet ModBus	Ethernet EtherNet/IP Controller Link DeviceNet PROFIBUS-DP PROFINET ModBus CompoNet CompoBus/S CAN (freely configurable)
Fieldbus I/O		CompoBus/S DeviceNet	PROFIBUS-DP CompoBus/S DeviceNet	PROFIBUS-DP CompoBus/S DeviceNet	PROFIBUS-DP CompoBus/S DeviceNet
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*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.

		Modular PLC series			Rack PLC series	
						
Model		CJ1M/G	CJ2M	CJ2H	CS1G/H	CS1D
Max. digital I/O points*1		1280	2560	2560	5120	5120
Built-in*1	Digital I/O	16	–			
	Interrupt inputs	4	–			
	Counter inputs	2	–			
	Pulse outputs	2	–			
CPU features*1		Compact size No backplane required Large program capacity Easy backups Built-in pulse I/O Loop control CPU type Real time clock	USB port 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	USB port 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	High I/O capacity Inner board support Large program capacity Backwards compatible Easy backups Real time clock	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)		0.10/0.04 µs	0.04 µs	0.016 µs	0.04/0.02 µs	0.04/0.02 µs
Program memory		5 to 60K steps	5 to 60K steps	50 to 400K steps	10 to 250K steps	10 to 250K steps
Data memory		32 to 128K words	64 to 160K words	160 to 832K words	64 to 448K words	64 to 448K words
CompactFlash memory		Up to 512 MB				
Analog I/O		Analog I/O unit Temperature sensor unit Temperature control unit				
Special function units		Temperature control High-speed counters (500 kHz) SSI encoder input Position control Protocol macro RFID sensor unit Weighing unit Data collection & storage unit	Temperature control High-speed counters (500 kHz) SSI encoder input Position control Protocol macro RFID sensor unit High-speed I/O Synchronised Position Data collection & storage unit	Temperature control High-speed counters (500 kHz) SSI encoder input Position control Motion control Process control Protocol macro RFID sensor unit Data collection & storage unit		
Fieldbus master		Ethernet EtherNet/IP Controller Link DeviceNet PROFIBUS-DP PROFINET ModBus CompoNet CompoBus/S CAN (freely configurable)				
Fieldbus I/O		DeviceNet PROFIBUS-DP CAN (freely configurable)				
Page/Quick Link		38/H238	38/H243	38/H242	47/H247	47/H223

*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.



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, 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, freely accessible
- Digital, analog, and fieldbus expansion units

Ordering information

Input points	Output points	Program capacity	Data memory capacity	Logic execution speed	Size in mm (H × W × D)	I/O Connectors	Output method	Built-in functions	Real time clock	Order code
6 points	4 points	4K words	2K words	0.64 μs	90 × 33 × 65	2 Terminal blocks	Relay	1 Encoder input (20 kHz)	–	CPM2C-10CDR-D
									Yes	CPM2C-10C1DR-D
						2 Fujitsu (24 pt)	Transistor (source type)	1 Encoder input (20 kHz) 2 Pulse output (10 kHz)	–	CPM2C-10CDT1C-D
									Yes	CPM2C-10C1DT1C-D
						2 MIL (20 pt)	Transistor (source type)	1 Encoder input (20 kHz) 2 Pulse output (10 kHz)	–	CPM2C-10CDT1M-D
									Yes	CPM2C-10C1DT1M-D
12 points	8 points	4K words	2K words	0.64 μs	90 × 33 × 65	2 Terminal blocks	Relay	1 Encoder input (20 kHz)	–	CPM2C-20CDR-D
									Yes	CPM2C-20C1DR-D
						2 Fujitsu (24 pt)	Transistor (source type)	1 Encoder input (20 kHz) 2 Pulse output (10 kHz)	–	CPM2C-20CDT1C-D
									Yes	CPM2C-20C1DT1C-D
						2 MIL (20 pt)	Transistor (source type)	1 Encoder input (20 kHz) 2 Pulse output (10 kHz)	–	CPM2C-20CDT1M-D
									Yes	CPM2C-20C1DT1M-D
16 points	16 points	4K words	2K words	0.64 μs	90 × 33 × 65	2 Fujitsu (24 pt)	Transistor (source type)	1 Encoder input (20 kHz) 2 Pulse output (10 kHz)	–	CPM2C-32CDT1C-D
						2 MIL (20 pt)	Transistor (source type)	1 Encoder input (20 kHz) 2 Pulse output (10 kHz)	–	CPM2C-32CDT1M-D
6 points	4 points	4K words	2K words	0.64 μs	90 × 40 × 65	1 Fujitsu (24 pt)	Transistor (source type)	1 Encoder input (20 kHz) 2 Pulse output (10 kHz) Programmable Slave with DeviceNet slave and CompoBus/S Master	Yes	CPM2C-S110C-DRT
6 points	4 points	4K words	2K words	0.64 μs	90 × 40 × 65	1 Fujitsu (24 pt)	Transistor (source type)	1 Encoder input (20 kHz) 2 Pulse output (10 kHz) CompoBus/S Master	Yes	CPM2C-S110C

Note: All CPU's are available only with DC supply voltage (CPM2C-PA201 can be used as power supply).

CPU's with sourcing transistor outputs are also available with sinking transistor outputs.

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

For I/O Cables and Terminal Blocks, see page 82



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

Ordering information

Unit	Output type	I/O Connectors	Inputs	Outputs	Order code
Expansion I/O units	–	1 Fujitsu (24 pt)	8	–	CPM2C-8EDC
		1 MIL (20 pt)			CPM2C-8EDM
	–	1 Fujitsu (24 pt)	16	–	CPM2C-16EDC
		1 MIL (20 pt)			CPM2C-16EDM
	Relay	1 Terminal block	–	8	CPM2C-8ER
	Transistor output (source type)	1 Fujitsu (24 pt)			CPM2C-8ET1C
		1 MIL (20 pt)			CPM2C-8ET1M
	Transistor output (source type)	1 Fujitsu (24 pt)	–	16	CPM2C-16ET1C
		1 MIL (20 pt)			CPM2C-16ET1M
	Relay	2 Terminal blocks	6	4	CPM2C-10EDR
	Relay	2 Terminal blocks	12	8	CPM2C-20EDR
	Transistor output (source type)	2 Fujitsu (24 pt)	16	8	CPM2C-24EDT1C
		2 MIL (20 pt)			CPM2C-24EDT1M
	Transistor output (source type)	2 Fujitsu (24 pt)	16	16	CPM2C-32EDT1C
		2 MIL (20 pt)			CPM2C-32EDT1M
Analog I/O units	Analog (resolution 1/6,000)	2 Terminal blocks	2	1	CPM2C-MAD11
Temperature sensor units	Thermocouple input	1 Terminal block	2	–	CPM2C-TS001
	Platinum resistance input	1 Terminal block	2	–	CPM2C-TS101
CompoBus/S I/O link unit	–	1 Terminal block	I/O link of 8 input bits and 8 output bits		CPM2C-SRT21
RS-232C and RS422 adapter units	–	1 D-sub 9-pin	RS-232C		CPM2C-CIF01-V1
		1 Terminal block and 1 D-sub 9-pin	RS-232C and RS422		CPM2C-CIF11

Note: Expansion I/O units with sourcing transistor outputs are also available with sinking transistor outputs.
MIL = connector according to MIL-C-83503 (compatible with DIN 41651/IEC 60603-1).
For I/O Cables and Terminal Blocks, see page 82



Maximum functionality at minimum cost

Omron's CP1E series targets a "lean" automation solution, but still offers all 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 CP1W expansion units up to 180 I/O points. It uses a standard USB port for programming and monitoring. The CP1E-N CPU types have a RS232 serial communication port embedded and offer an extra serial communication port that can be used to connect frequency inverters or temperature controllers. As the CP1E series shares the same architecture as the CP1L, CP1H, CJ, and CS1 series, programs are compatible for memory allocations and instructions.

Ordering information

CP1E CPU	Digital input	Digital output	Max. I/O points (incl. expansions)	Communication ports	Input/output functions	Output type	Power supply	Expandability	Program capacity	Data memory capacity	Logic execution speed	Order code
E-type with 10 I/O points	6	4	10	–	5 Encoder inputs (10 kHz) 4 Interrupts/counters	Relay	84 to 264 VAC 20.4 to 26.4 VDC	–	2K steps	2K words	1.19 µs	CP1E-E10DR-A
						Transistor (sinking)						CP1E-E10DR-D
						Transistor (sourcing)						CP1E-E10DT-D
												CP1E-E10DT1-D
												CP1E-E14SDR-A
E-type with 14 I/O points	8	6	14	–	6 Encoder inputs (10 kHz) 6 Interrupts/counters	Relay	84 to 264 VAC	Up to 3 expansion units*1	2K steps	2K words	1.19 µs	CP1E-E20SDR-A
E-type with 20 I/O points	12	8	20									CP1E-E30SDR-A
E-type with 30 I/O points	18	12	150									CP1E-E40SDR-A
E-type with 40 I/O points	24	16	160									
N-type with 14 I/O points	8	6	14	RS-232C port	6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Relay	84 to 264 VAC 20.4 to 26.4 VDC	–	8K steps	8K words	1.19 µs	CP1E-N14DR-A
					6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Transistor (sinking)						CP1E-N14DR-D
					2 Pulse outputs (100 kHz)	Transistor (sourcing)						CP1E-N14DT-D
												CP1E-N14DT1-D
N-type with 20 I/O points	12	8	20	–	6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Relay	84 to 264 VAC 20.4 to 26.4 VDC	Up to 3 expansion units*1	8K steps	8K words	1.19 µs	CP1E-N20DR-A
					6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Transistor (sinking)						CP1E-N20DR-D
					2 Pulse outputs (100 kHz)	Transistor (sourcing)						CP1E-N20DT-D
												CP1E-N20DT1-D
NA-type with 20 I/O points and analog I/O	12	8	140	–	6 Encoder inputs (2 × 100 kHz, 4 × 10kHz) 2 analog inputs (1/6,000) 1 analog output (1/6,000)	Relay	84 to 264 VAC 20.4 to 26.4 VDC	Up to 3 expansion units*1	8K steps	8K words	1.19 µs	CP1E-NA20DR-A
					6 Encoder inputs (2 × 100 kHz, 4 × 10kHz) 2 Pulse outputs (100 kHz) 2 analog inputs (1/6,000) 1 analog output (1/6,000)	Transistor (sinking)						CP1E-NA20DT-D
						Transistor (sourcing)						CP1E-NA20DT1-D

CP1E CPU	Digital input	Digital output	Max. I/O points (incl. expansions)	Communication ports	Input/output functions	Output type	Power supply	Expandability	Program capacity	Data memory capacity	Logic execution speed	Order code
N-type with 30 I/O points	18	12	150	RS-232C port	6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Relay	84 to 264 VAC	Up to 3 expansion units ^{*1}	8K steps	8K words	1.19 μs	CP1E-N30DR-A
					6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Transistor (sinking)	20.4 to 26.4 VDC					CP1E-N30DR-D
					2 Pulse outputs (100 kHz)	Transistor (sourcing)						CP1E-N30DT-D
												CP1E-N30DT1-D
				RS-232C port RS-485 port (half-duplex)	6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Relay	84 to 264 VAC					CP1E-N30S1DR-A
					6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Transistor (sinking)	20.4 to 26.4 VDC					CP1E-N30S1DT-D
					2 Pulse outputs (100 kHz)	Transistor (sourcing)						CP1E-N30S1DT1-D
N-type with 40 I/O points	24	16	160	RS-232C port	6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Relay	84 to 264 VAC					CP1E-N40DR-A
					6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Transistor (sinking)	20.4 to 26.4 VDC					CP1E-N40DR-D
					2 Pulse outputs (100 kHz)	Transistor (sourcing)						CP1E-N40DT-D
												CP1E-N40DT1-D
				RS-232C port RS-485 port (half-duplex)	6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Relay	84 to 264 VAC					CP1E-N40S1DR-A
					6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Transistor (sinking)	20.4 to 26.4 VDC					CP1E-N40S1DT-D
					2 Pulse outputs (100 kHz)	Transistor (sourcing)						CP1E-N40S1DT1-D
N-type with 60 I/O points	36	24	180	RS-232C port	6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Relay	84 to 264 VAC					CP1E-N60DR-A
					6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Transistor (sinking)	20.4 to 26.4 VDC					CP1E-N60DR-D
					2 Pulse outputs (100 kHz)	Transistor (sourcing)						CP1E-N60DT-D
												CP1E-N60DT1-D
				RS-232C port RS-485 port (half-duplex)	6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Relay	84 to 264 VAC					CP1E-N60S1DR-A
					6 Encoder inputs (2 × 100 kHz, 4 × 10kHz)	Transistor (sinking)	20.4 to 26.4 VDC					CP1E-N60S1DT-D
					2 Pulse outputs (100 kHz)	Transistor (sourcing)						CP1E-N60S1DT1-D

^{*1} There is no restriction on the possible combination of CP1W expansion units. All expansion units can be combined with each other up to the maximum number of expansions.

Note: The CP1E E-type has no real-time clock and therefore no battery. The N/NA-type has one optional battery for the real-time clock.
The CP1E-N/NA-type has 6 Interrupts/counters.
The CP1E-NxxS1 CPU types do not support serial option boards.

Accessories

Type	Remarks	Order code
USB programming cable	A-type male to B-type male (length: 1.8 m)	CP1W-CN221
RS-232C option board	D-Sub, 9 pins, female (15 m max.)	CP1W-CIF01
RS-422A/485 option board	Terminal block (50 m max.)	CP1W-CIF11
RS-422A/485 (isolated) option board	Terminal block (500 m max.)	CP1W-CIF12
Ethernet option board	100/10Base-TX (Auto-MDIX)	CP1W-CIF41 ^{*1}
Analog I/O option board (only for models supporting option board)	2 inputs, 0 to 10 V/0 to 20 mA	CP1W-ADB21 ^{*2}
	2 outputs, 0 to 10 V	CP1W-DAB21V ^{*2}
	2 inputs, 0 to 10 V/0 to 20 mA + 2 outputs 0 to 10 V	CP1W-MAB221 ^{*2}
Battery for CP1E-N/NA type	To retain time of clock	CP1W-BAT01

^{*1} Only firmware CIF41 v2.0

^{*2} Only firmware CP1E CPU v1.2



The compact machine controller

When it comes to controllers for compact machines, 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 CP1W 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, of which one can be used for a display or Ethernet option as well. As the CP1L series shares the same architecture as the CP1E, CP1H, CJ1, and CS1 series, programs are compatible for memory allocations and instructions.

Ordering information

CP1L CPU	Digital input	Digital output	Max. I/O points (incl. expansions)	Input/output functions	Output type	Power supply	PLC port	Expandability	Program capacity	Data memory capacity	Logic execution speed	Order code			
L-type with 10 I/O points	6	4	10	4 Encoder inputs (100 kHz) 2 Interrupts/counters	Relay	84 to 264 VAC	USB	—	5K steps	10K words	0.55 μs	CP1L-L10DR-A			
						20.4 to 26.4 VDC						CP1L-L10DR-D			
				4 Encoder inputs (100 kHz) 2 Pulse outputs (100 kHz) 2 Interrupts/counters	Transistor (sinking)							CP1L-L10DT-D			
					Transistor (sourcing)							CP1L-L10DT1-D			
L-type with 14 I/O points	8	6	54	4 Encoder inputs (100 kHz) 4 Interrupts/counters	Relay	84 to 264 VAC		Up to 1 expansion units ^{*1}				CP1L-L14DR-A			
						20.4 to 26.4 VDC						CP1L-L14DR-D			
				4 Encoder inputs (100 kHz) 2 Pulse outputs (100 kHz) 4 Interrupts/counters	Transistor (sinking)							CP1L-L14DT-D			
					Transistor (sourcing)							CP1L-L14DT1-D			
L-type with 20 I/O points	12	8	60	4 Encoder inputs (100 kHz) 6 Interrupts/counters	Relay	84 to 264 VAC			5K steps	32K words		CP1L-L20DR-A			
						20.4 to 26.4 VDC						CP1L-L20DR-D			
				4 Encoder inputs (100 kHz) 2 Pulse outputs (100 kHz) 6 Interrupts/counters	Transistor (sinking)							CP1L-L20DT-D			
					Transistor (sourcing)							CP1L-L20DT1-D			
				4 Encoder inputs (100 kHz) 6 Interrupts/counters 2 Analog inputs (1/1,000)	Relay	Ethernet			5K (+10KFB) steps			CP1L-EL20DR-D			
				4 Encoder inputs (100 kHz) 2 Pulse outputs (100 kHz) 6 Interrupts/counters 2 Analog inputs (1/1,000)	Transistor (sinking)							CP1L-EL20DT-D			
					Transistor (sourcing)							CP1L-EL20DT1-D			
M-type with 30 I/O points	18	12	150	4 Encoder inputs (100 kHz) 6 Interrupts/counters	Relay	84 to 264 VAC		Up to 3 expansion units ^{*1}	10K steps			CP1L-M30DR-A			
						20.4 to 26.4 VDC						CP1L-M30DR-D			
				4 Encoder inputs (100 kHz) 2 Pulse outputs (100 kHz) 6 Interrupts/counters	Transistor (sinking)							CP1L-M30DT-D			
					Transistor (sourcing)							CP1L-M30DT1-D			
				4 Encoder inputs (100 kHz) 6 Interrupts/counters 2 Analog inputs (1/1,000)	Relay	Ethernet			10K (+10KFB) steps			CP1L-EM30DR-D			
				4 Encoder inputs (100 kHz) 2 Pulse outputs (100 kHz) 6 Interrupts/counters 2 Analog inputs (1/1,000)	Transistor (sinking)							CP1L-EM30DT-D			
					Transistor (sourcing)							CP1L-EM30DT1-D			

CP1L CPU	Digital input	Digital output	Max. I/O points (incl. expansions)	Input/output functions	Output type	Power supply	PLC port	Expandability	Program capacity	Data memory capacity	Logic execution speed	Order code						
M-type with 40 I/O points	24	16	160	4 Encoder inputs (100 kHz) 6 Interrupts/counters	Relay	84 to 264 VAC 20.4 to 26.4 VDC	USB	Up to 3 expansion units ^{*1}	10K steps	32K words	0.55 μs	CP1L-M40DR-A						
				4 Encoder inputs (100 kHz) 2 Pulse outputs (100 kHz) 6 Interrupts/counters	Transistor (sinking)							CP1L-M40DR-D						
					Transistor (sourcing)							CP1L-M40DT-D						
				4 Encoder inputs (100 kHz) 6 Interrupts/counters 2 Analog inputs (1/1,000)	Relay							Ethernet	10K (+10KFB) steps	CP1L-EM40DR-D				
					4 Encoder inputs (100 kHz) 2 Pulse outputs (100 kHz) 6 Interrupts/counters 2 Analog inputs (1/1,000)	Transistor (sinking)	CP1L-EM40DT-D											
				Transistor (sourcing)		CP1L-EM40DT1-D												
				M-type with 60 I/O points	36	24	180		4 Encoder inputs (100 kHz) 6 Interrupts/counters			Relay	84 to 264 VAC 20.4 to 26.4 VDC	USB	10K steps			CP1L-M60DR-A
									4 Encoder inputs (100 kHz) 2 Pulse outputs (100 kHz) 6 Interrupts/counters			Transistor (sinking)						CP1L-M60DR-D
Transistor (sourcing)	CP1L-M60DT-D																	
																		CP1L-M60DT1-D

^{*1} There is no restriction on the possible combination of CP1W expansion units. All expansion units can be combined with each other up to the maximum number of expansions.

Accessories

Type	Remarks	Order code
Memory cassette	512K words (upload/download program)	CP1W-ME05M
USB programming cable	A-type male to B-type male (length: 1.8 m)	CP1W-CN221
RS-232C option board	D-Sub, 9 pins, female (15 m max.)	CP1W-CIF01
RS-422A/485 option board	Terminal block (50 m max.)	CP1W-CIF11
RS-422A/485 (isolated) option board	Terminal block (500 m max.)	CP1W-CIF12
Ethernet option board	100/10Base-TX (Auto-MDIX)	CP1W-CIF41
LCD display	4 rows × 12 characters	CP1W-DAM01
Analog I/O option board (only for CP1L-EL/EM)	2 inputs, 0 to 10 V/0 to 20 mA	CP1W-ADB21
Analog I/O option board (only for CP1L-EL/EM)	2 outputs, 0 to 10 V	CP1W-DAB21V
Analog I/O option board (only for CP1L-EL/EM)	2 inputs, 0 to 10 V/0 to 20 mA + 2 outputs 0 to 10 V	CP1W-MAB221
Battery	For replacement purpose	CJ1W-BAT01

Note: CP1L-10 I/O points CPU does not support option boards.
 CP1L-30/40/60 I/O points CPUs support two option boards.
 For Ethernet Cables and Accessories, see page 91.



The all-in-one PLC

Designed for compact machines, it combines the size 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 4 analog inputs and 2 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 CP1W I/Os and supports up to 2 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 and execution speed
- 4 analog inputs and 2 analog outputs for the XA model
- USB port for easy communication, programming and configuration
- Supports PROFIBUS, DeviceNet, CAN and Ethernet

Ordering information

CP1H CPU	Digital input	Digital output	Max. I/O points (incl. expansions)	Input/output functions	Output type	Power supply	PLC port	Expandability	Program capacity	Data memory capacity	Logic execution speed	Order code
Y-type with 20 I/O points	12	8	300	4 Encoder inputs (2 × 1 MHz + 2 × 100 kHz) 4 Pulse outputs (2 × 1 MHz + 2 × 100 kHz) 6 Interrupts/counters	Transistor (sinking)	20.4 to 26.4 VDC	USB	Up to 7 expansion units ^{*1}	20K steps	32K words	0.1 μs	CP1H-Y20DT-D
X-type with 40 I/O points	24	16	320	4 Encoder inputs (100 kHz) 8 Interrupts/counters	Relay	84 to 264 VAC						CP1H-X40DR-A
				4 Encoder inputs (100 kHz) 4 Pulse outputs (100 kHz) 8 Interrupts/counters	Transistor (sinking) Transistor (sourcing)	20.4 to 26.4 VDC						CP1H-X40DT-D CP1H-X40DT1-D
XA-type with 40 I/O points and analog I/O				4 Encoder inputs (100 kHz) 8 Interrupts/counters 4 Analog inputs (1/12,000) 2 Analog outputs (1/12,000)	Relay	84 to 264 VAC						CP1H-XA40DR-A
				4 Encoder inputs (100 kHz) 4 Pulse outputs (100 kHz) 8 Interrupts/counters 4 Analog inputs (1/12,000) 2 Analog outputs (1/12,000)	Transistor (sinking) Transistor (sourcing)	20.4 to 26.4 VDC						CP1H-XA40DT-D CP1H-XA40DT1-D

^{*1} CP1H CPU series can be expanded with CP1W expansion units (up to 7 units) and CJ1 Special I/O units (up to 2 units).

Note: Some expansion units count for 2 unit numbers (eg. CP1W-AD042, CP1W-DA042, CP1W-TS003 and CP1W-TS102) but only 7 expansion unit numbers can be allocated in a CP1H PLC's configuration. There are more limitations for expansion units like, max. I/O words and total DC power consumption. See manual for more information.

Accessories

Type	Remarks	Order code
Memory cassette	512K words (upload/download program)	CP1W-ME05M
USB programming cable	A-type male to B-type male (length: 1.8 m)	CP1W-CN221
RS-232C option board	D-Sub, 9 pins, female (15 m max.)	CP1W-CIF01
RS-422A/485 option board	Terminal block (50 m max.)	CP1W-CIF11
RS-422A/485 (isolated) option board	Terminal block (500 m max.)	CP1W-CIF12
Ethernet option board	100/10Base-TX (Auto-MDIX)	CP1W-CIF41
LCD display	4 rows × 12 characters	CP1W-DAM01
Expansion I/O connecting cable	80 cm cable to connect CP1W expansion units	CP1W-CN811
CJ1 expansion unit adapter	Unit to connect CJ1 Special I/O units	CP1W-EXT01
Battery	For replacement purpose	CJ1W-BAT01



Expand the capacity of your compact PLC

A wide variety of expansion units such as Digital I/O, Analog I/O and Remote I/O are available to create the application you need. These CP1W expansion units can be used for CP1E-, CP1L-, and CP1H series PLC.

Ordering information

Expansion unit	Inputs	Outputs	Max I/O points	Input/output functions	Input/output type	Size in mm (H × W × D)	No. of unit numbers allocated (CP1H only)*1	Order code
Digital I/O units	8	–	8 points	8 Inputs	–	90 × 66 × 50	1	CP1W-8ED
	–	8	8 points	8 Outputs	Relay	90 × 66 × 50	1	CP1W-8ER
					Transistor (sinking)	90 × 66 × 50	1	CP1W-8ET
					Transistor (sourcing)	90 × 66 × 50	1	CP1W-8ET1
	12	16	16 points	16 Outputs	Relay	90 × 86 × 50	1	CP1W-16ER
		8	20 points	12 Inputs/8 outputs	Relay	90 × 86 × 50	1	CP1W-20EDR1
					Transistor (sinking)	90 × 86 × 50	1	CP1W-20EDT
					Transistor (sourcing)	90 × 86 × 50	1	CP1W-20EDT1
		16	40 points	24 Inputs/16 outputs	Relay	90 × 150 × 50	1	CP1W-40EDR
					Transistor (sinking)	90 × 150 × 50	1	CP1W-40EDT
					Transistor (sourcing)	90 × 150 × 50	1	CP1W-40EDT1
Analog I/O units	4	–	4 analog points	4 Analog inputs (resolution 1/12,000)	Analog	90 × 86 × 50	2	CP1W-AD042
	–	2	2 analog points	2 Analog outputs (resolution 1/6,000)	Analog	90 × 86 × 50	1	CP1W-DA021
	–	4	4 analog points	4 Analog outputs (resolution 1/12,000)	Analog	90 × 86 × 50	2	CP1W-DA042
	2	1	3 analog points	2 Analog inputs (resolution 1/6,000) 1 Analog output (resolution 1/6,000)	Analog	90 × 86 × 50	1	CP1W-MAD11
	4	2	6 analog points	4 Analog inputs (resolution 1/12,000) 2 Analog outputs (resolution 1/12,000)	Analog	90 × 86 × 50	2	CP1W-MAD42
	4	4	8 analog points	4 Analog inputs (resolution 1/12,000) 4 Analog outputs (resolution 1/12,000)	Analog	90 × 86 × 50	2	CP1W-MAD44
Temperature sensor units (K, J)	2	–	2 analog points	2 Thermocouple inputs (K or J)	–	90 × 86 × 50	1	CP1W-TS001
	4	–	4 analog points	4 Thermocouple inputs (K or J), where 2 thermocouple inputs can be used as 2 analog inputs	–	90 × 86 × 50	2	CP1W-TS003
	12	–	12 analog points	12 Thermocouple inputs (K or J)	–	90 × 150 × 50	1	CP1W-TS004
Temperature sensor units (Pt100, JPt100)	2	–	2 analog points	2 Platinum resistance thermometer inputs (Pt100 or JPt100)	–	90 × 86 × 50	1	CP1W-TS101
	4	–	4 analog points	4 Platinum resistance thermometer inputs (Pt100 or JPt100)	–	90 × 86 × 50	2	CP1W-TS102
CompoBus/S I/O link unit	8 points	8 points	16 points	I/O link of 8 input bits and 8 output bits	CompoBus/S communication	90 × 66 × 50	1	CP1W-SRT21
PROFIBUS-DP I/O link unit	16 points	16 points	32 points	I/O link of 16 input bits and 16 output bits	PROFIBUS-DP communication	90 × 66 × 50	1	CPM1A-PRT21
DeviceNet I/O link unit	32 points	32 points	64 points	I/O link of 32 input bits and 32 output bits	DeviceNet communication	90 × 66 × 50	1	CPM1A-DRT21

*1 Some expansion units count for 2 unit numbers (eg. CP1W-AD042, CP1W-DA042, CP1W-TS003 and CP1W-TS102) but only 7 expansion unit numbers can be allocated in a CP1H PLC's configuration. There are more limitations for expansion units like, max. I/O words and total DC power consumption. See manual for more information.



Fast and powerful CPUs for any task

The family of CJ2 CPUs range from very small CPUs for simple sequence control to powerful and fast models that offer total machine control which can handle up to 2,560 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. All CJ2M CPU units can be equipped with pulse I/O option modules to perform position control for up to 4 axes, using dedicated instructions.

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	Order code
2,560	400 K	832 K	16 ns	40	80 mm	820 mA	USB + EtherNet/IP + RS-232C	CJ2H-CPU68-EIP
2,560	250 K	512 K	16 ns	40	80 mm	820 mA	USB + EtherNet/IP + RS-232C	CJ2H-CPU67-EIP
2,560	150 K	352 K	16 ns	40	80 mm	820 mA	USB + EtherNet/IP + RS-232C	CJ2H-CPU66-EIP
2,560	100 K	160 K	16 ns	40	80 mm	820 mA	USB + EtherNet/IP + RS-232C	CJ2H-CPU65-EIP
2,560	50 K	160 K	16 ns	40	80 mm	820 mA	USB + EtherNet/IP + RS-232C	CJ2H-CPU64-EIP
2,560	60 K	160 K	40 ns	40	62 mm	700 mA	USB + EtherNet/IP, serial comm. option slot	CJ2M-CPU35
2,560	30 K	160 K	40 ns	40	62 mm	700 mA	USB + EtherNet/IP, serial comm. option slot	CJ2M-CPU34
2,560	20 K	64 K	40 ns	40	62 mm	700 mA	USB + EtherNet/IP, serial comm. option slot	CJ2M-CPU33
2,560	10 K	64 K	40 ns	40	62 mm	700 mA	USB + EtherNet/IP, serial comm. option slot	CJ2M-CPU32
2,560	5 K	64 K	40 ns	40	62 mm	700 mA	USB + EtherNet/IP, serial comm. option slot	CJ2M-CPU31
2,560	400 K	832 K	16 ns	40	49 mm	420 mA	USB + RS-232C	CJ2H-CPU68
2,560	250 K	512 K	16 ns	40	49 mm	420 mA	USB + RS-232C	CJ2H-CPU67
2,560	150 K	352 K	16 ns	40	49 mm	420 mA	USB + RS-232C	CJ2H-CPU66
2,560	100 K	160 K	16 ns	40	49 mm	420 mA	USB + RS-232C	CJ2H-CPU65
2,560	50 K	160 K	16 ns	40	49 mm	420 mA	USB + RS-232C	CJ2H-CPU64
2,560	60 K	160 K	40 ns	40	31 mm	500 mA	USB + RS-232C	CJ2M-CPU15
2,560	30 K	160 K	40 ns	40	31 mm	500 mA	USB + RS-232C	CJ2M-CPU14
2,560	20 K	64 K	40 ns	40	31 mm	500 mA	USB + RS-232C	CJ2M-CPU13
2,560	10 K	64 K	40 ns	40	31 mm	500 mA	USB + RS-232C	CJ2M-CPU12
2,560	5 K	64 K	40 ns	40	31 mm	500 mA	USB + RS-232C	CJ2M-CPU11
1,280	60 k	128 k	40 ns	40	69 mm	1,060 mA	Loop control engine (300 blocks) with Gradient Temperature Control	CJ1G-CPU45P-GTC
1,280	60 k	128 k	40 ns	40	69 mm	1,060 mA	Loop control engine (300 blocks)	CJ1G-CPU45P
1,280	30 k	64 k	40 ns	40	69 mm	1,060 mA	Loop control engine (300 blocks)	CJ1G-CPU44P
960	20 k	64 k	40 ns	30	69 mm	1,060 mA	Loop control engine (300 blocks)	CJ1G-CPU43P
960	10 k	64 k	40 ns	30	69 mm	1,060 mA	Loop control engine (50 blocks)	CJ1G-CPU42P

Accessories

Description	Remarks	Order code
High-speed data collection and storage unit, with CF card slot and Ethernet port	CPU bus unit	CJ1W-SPU01-V2
Pulse I/O option module for CJ2M CPU Units, 2 encoder inputs, 2 pulse outputs	NPN (sinking) outputs	CJ2M-MD211
Pulse I/O option module for CJ2M CPU Units, 2 encoder inputs, 2 pulse outputs	PNP (sourcing) outputs	CJ2M-MD212
CompactFlash memory card, 128 MB, for all models (not required for operation)	Industrial grade	HMC-EF183
CompactFlash memory card, 256 MB, for all models (not required for operation)	Industrial grade	HMC-EF283
CompactFlash memory card, 512 MB, for all models (not required for operation)	Industrial grade	HMC-EF583
CompactFlash PC-Card adapter	–	HMC-AP001
I/O terminal block (40-pt.) for CJ1M-CPU2_/CJ2M-MD21_	Push-in	XW2R-P40G-T
I/O terminal block (40-pt.) for CJ1M-CPU2_/CJ2M-MD21_	Clamp	XW2R-E40G-T
I/O terminal block (40-pt.) for CJ1M-CPU2_/CJ2M-MD21_	M3 Screws	XW2R-J40G-T
Connection cable between I/O terminal block and CJ1M-CPU2_/CJ2M-MD21_ (____ = length in cm)	MIL (40 pt)	XW2Z-____FF-L
Servo unit terminal block for 1 axis	–	XW2B-20J6-8A
Servo unit terminal block for 2 axes	–	XW2B-40J6-9A
SMARTSTEP cable for CJ1M-CPU2_/CJ2M-MD21_, cable length: 1 m	–	XW2Z-100J-A26
W-series servo cable for CJ1M-CPU2_/CJ2M-MD21_, cable length: 1 m	–	XW2Z-100J-A27
CX-One, integrated software for programming and configuration of all Omron control system components	–	CX-ONE-AL__C-E
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
RS-232C Option Board ^{*1}	–	CP1W-CIF01
RS-422A/485 Option board ^{*1}	–	CP1W-CIF11
RS422A/485 (isolated) Option board ^{*1}	–	CP1W-CIF12
Battery Set ^{*2}	–	CJ1W-BAT01
USB Programming cable	–	CP1W-CN221

^{*1} Only used with CJ2M-CPU3_

^{*2} Included with the CPU unit

Note: -MIL = connector according to MIL-C-83503 (compatible with DIN 41651/IEC 60603-1).
 -More accessories are available. Please refer to CJ-Series Data Sheets and Operation Manuals for details
 For I/O Cables and Terminal Blocks, see page 82
 For Ethernet Cables and Accessories, see page 91



Power and flexibility

CJ systems can operate on 24 VDC power supply, or on 100 to 240 VAC mains. 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 3 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	Order code
21.6 to 26.4 VDC	35 W max.	2.0 A	0.4 A	16.6 W	–	27 mm	CJ1W-PD022
19.2 to 28.8 VDC	50 W max.	5.0 A	0.8 A	25 W	–	60 mm	CJ1W-PD025
85 to 264 VAC 47 to 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	Order code
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



8 to 64 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 CJ1 to your needs.

CJ1 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}	Order code
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 Screwless	CJ1W-ID211 CJ1W-ID211(SL)
16	DC input	24 VDC	7 mA	31 mm	Fast-response (15 µs ON, 90 µs 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 µs pulse width	M3	CJ1W-IDP01
32	DC input	24 VDC	4.1 mA	20 mm	–	1 × Fujitsu	CJ1W-ID231
32	DC input	24 VDC	4.1 mA	20 mm	–	1 × MIL ^{*1} (40 pt)	CJ1W-ID232
32	DC input	24 VDC	4.1 mA	20 mm	Fast-response (15 µs ON, 90 µs OFF)	1 × MIL ^{*1} (40 pt)	CJ1W-ID233
64	DC input	24 VDC	4.1 mA	31 mm	–	2 × Fujitsu	CJ1W-ID261
64	DC input	24 VDC	4.1 mA	31 mm	–	2 × 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	–	M3 Screwless	CJ1W-OC201 CJ1W-OC201(SL)
16	Relay output	250 VAC	2 A	31 mm	–	M3 Screwless	CJ1W-OC211 CJ1W-OC211(SL)
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
8	DC output (source)	24 VDC	0.5 A	31 mm	With short-circuit protection, alarm	M3	CJ1W-OD204
16	DC output (sink)	12 to 24 VDC	0.5 A	31 mm	–	M3 Screwless	CJ1W-OD211 CJ1W-OD211 (SL)
16	DC output (source)	24 VDC	0.5 A	31 mm	With short-circuit protection, alarm	M3 Screwless	CJ1W-OD212 CJ1W-OD212 (SL)
16	DC output (sink)	24 VDC	0.5 A	31 mm	Fast-response (15 µs ON, 80 µs OFF)	M3	CJ1W-OD213
32	DC output (sink)	12 to 24 VDC	0.5 A	20 mm	–	1 × Fujitsu	CJ1W-OD231
32	DC output (source)	24 VDC	0.3 A	20 mm	With short-circuit protection, alarm	1 × MIL ^{*1} (40 pt)	CJ1W-OD232
32	DC output (sink)	24 VDC	0.5 A	20 mm	Fast-response (15 µs ON, 80 µs OFF)	1 × MIL ^{*1} (40 pt)	CJ1W-OD234
64	DC output (sink)	12 to 24 VDC	0.3 A	31 mm	–	2 × Fujitsu	CJ1W-OD261
64	DC output (source)	24 VDC	0.3 A	31 mm	–	2 × MIL ^{*1} (40 pt)	CJ1W-OD262
16+16	DC in+out (source)	24 VDC	0.5 A	31 mm	–	2 × MIL ^{*1} (20 pt)	CJ1W-MD232
32+32	DC in+out (sink)	24 VDC	0.3 A	31 mm	–	2 × MIL ^{*1} (40 pt)	CJ1W-MD263
32+32	DC in+out (TLL)	5 VDC	35 mA	31 mm	–	2 × 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 units are designated as basic I/O units.
For I/O Cables and Terminal Blocks, see page 82

Accessories

Description	Connection type	Order code
Replacement 18-point screwless terminal blocks for I/O units, pack of 5 pcs.	Screwless	CJ-WM01-18P-5
Replacement 18-point screw terminal blocks for I/O units, pack of 5 pcs.	M3	CJ-OD507-18P-5



From basic analog I/O to advanced temperature control

The CJ-series offers a wide choice of analog input units, fit for any application, from low-speed, multi-channel temperature measurement to 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	Width	Remarks	Connection type	Order code
4	Universal analog input	0 to 5 V 1 to 5 V 0 to 10 V 0 to 20 mA 4 to 20 mA K, J, T, L, R, S, B Pt100, Pt1000, JPt100	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 point	31 mm	Universal inputs, with zero/span adjustment, configurable alarms, scaling, sensor error detection	M3	CJ1W-AD04U
								Screwless	CJ1W-AD04U(SL)
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	31 mm	Offset/gain adjustment, peak hold, moving average, alarms	M3	CJ1W-AD041-V1
								Screwless	CJ1W-AD041-V1 (SL)
4	High-speed analog input	1 to 5 V, 0 to 10 V, -5 to 5 V, -10 to 10 V, 4 to 20 mA	1/40,000	V: 0.2% I: 0.4%	35 µs/4 points	31 mm	Direct conversion (CJ2H special instruction)	M3	CJ1W-AD042
8	Analog input	1 to 5 V, 0 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	31 mm	Offset/gain adjustment, peak hold, moving average, alarms	M3	CJ1W-AD081-V1
								Screwless	CJ1W-AD081-V1 (SL)
2	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	31 mm	Offset/gain adjustment, output hold	M3	CJ1W-DA021
								Screwless	CJ1W-DA021 (SL)
4	Analog output	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	1/4,000	V: 0.3% I: 0.5%	1 ms/point	31 mm	Offset/gain adjustment, output hold	M3	CJ1W-DA041
								Screwless	CJ1W-DA041 (SL)
4	High-speed analog output	1 to 5 V, 0 to 10 V, -10 to 10 V	1/40,000	0.3%	35 µs/4 points	31 mm	Direct conversion (CJ2H special instruction)	M3	CJ1W-DA042V
8	Voltage output	0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V	1/8,000	0.3%	250 µs/point	31 mm	Offset/gain adjustment, output hold	M3	CJ1W-DA08V
								Screwless	CJ1W-DA08V (SL)
8	Current output	4 to 20 mA	1/8,000	0.3%	250 µs/point	31 mm	Offset/gain adjustment, output hold	M3	CJ1W-DA08C
								Screwless	CJ1W-DA08C (SL)
4 + 2	Analog in + output	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	1/8,000	in: 0.2% out: 0.3%	1 ms/point	31 mm	Offset/gain adjustment, scaling, peak hold, moving average, alarms, output hold	M3	CJ1W-MAD42
								Screwless	CJ1W-MAD42 (SL)
4	Universal analog input	DC voltage, DC current, Thermocouple, Pt100/Pt1000, potentiometer	1/256,000	0.05%	60 ms/4 points	31 mm	All inputs individually isolated, configurable alarms, maintenance functions, user-defined scaling, zero/span adjustment	M3	CJ1W-PH41U
2	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, 0 to 1.25 V, 1.25 to 1.25 V	1/64,000	0.05%	5 ms/point	31 mm	Configurable alarms, maintenance functions, user-defined scaling, zero/span adjustment, square root, totaliser	M3	CJ1W-PDC15

Points	Type	Ranges	Resolution	Accuracy ^{*1}	Conversion time	Width	Remarks	Connection type	Order code
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	31 mm	Configurable alarms, maintenance functions	M3	CJ1W-PTS15
4	Thermocouple Input	B, J, K, L, R, S, T	0.1°C	0.3%	62.5 ms/point	31 mm	4 configurable alarm outputs	M3	CJ1W-PTS51
4	Resistance thermometer input	Pt100, JPt100	0.1°C	0.3%	62.5 ms/point	31 mm	4 configurable alarm outputs	M3	CJ1W-PTS52
6	Thermocouple input	K-type (-200 to 1,300°C) J-Type (-100 to 850°C)	0.1°C	0.5%	40 ms/point	31 mm	Basic I/O unit, setup by DIP switches, adjustable filtering 10/50/60 Hz	M3	CJ1W-TS561
								Screwless	CJ1W-TS561 (SL)
6	Resistance thermometer input	Pt100 (-200 to 650°C) Pt1000 (-200 to 650°C)	0.1°C	0.5%	40 ms/point	31 mm	Basic I/O unit, setup by DIP switches, adjustable filtering 10/50/60 Hz	M3	CJ1W-TS562
								Screwless	CJ1W-TS562 (SL)
4	Temperature control loops, Thermocouple	B, J, K, L, R, S, T	0.1°C	0.3%	500 ms total	31 mm	4 control outputs: PNP open collector, 100 mA max.	M3	CJ1W-TC002
2	Temperature control loops, Thermocouple	B, J, K, L, R, S, T	0.1°C	0.3%	500 ms total	31 mm	2 control outputs: PNP open collector, 100 mA max., 2 current transformer inputs for heater burnout detection.	M3	CJ1W-TC004
4	Temperature control loops, RTD	Pt100, JPt100	0.1°C	0.3%	500 ms total	31 mm	4 control outputs: PNP open collector, 100 mA max.	M3	CJ1W-TC102
2	Temperature control loops, RTD	Pt100, JPt100	0.1°C	0.3%	500 ms total	31 mm	2 control outputs: PNP open collector, 100 mA max., 2 current transformer inputs for heater burnout detection.	M3	CJ1W-TC104
1	Load Cell Interface unit	10 VDC or 2.5 VDC, max. four 350Ω load cells.	24 bit, 0.1μV/count	Linearity error: <0.02% FS	0.33 ms	31 mm	Self-contained unit designed for fast weight and force measurement. Low-pass filter adjustable 3 Hz - 1 kHz. Made by Unipulse Co.	M3	CJ1W-F130
1	Weighing unit	10 VDC, max. four 350Ω load cells	24 bit, 0.3μV/count	Linearity error: <0.01% FS	2 ms	31 mm	Self-contained unit designed for feed weighing, discharge weighing, hopper scales, packing scales, bag filling, etc. Made by Unipulse Co.	M3	CJ1W-F159

^{*1} Accuracy for Voltage and Current Inputs/Outputs as percentage of full scale and typical value at 25°C ambient temperature (Consult the operation manual for details)
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 TS561/TS562, which are Basic I/O units (cannot be used with CP1H).

Accessories

Description	Connection type	Order code
Replacement 18-point screwless terminal blocks for I/O units, pack of 5 pcs.	Screwless	CJ-WM01-18P-5
Replacement 18-point screw terminal blocks for I/O units, pack of 5 pcs.	M3	CJ-OD507-18P-5



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.
- CJ2M CPU Units have dedicated positioning functions that can be used by installing up to 2 Pulse I/O option modules.
- 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

Channels/ Axes	Type	Signal type	Unit class	Width	Remarks	Connection type	Order code
2	SSI inputs (absolute position data)	Synchronous serial protocol	Special I/O unit	31 mm	Baud rate, encoding type, data length, etc. can be set per channel	M3 screw	CJ1W-CTS21-E
2	500 kHz Counter	24 V, line driver	Special I/O unit	31 mm	2 configurable digital inputs + outputs	1 × Fujitsu (40 pt)	CJ1W-CT021
4	100 kHz Counter	Line driver, 24 V via terminal block	Special I/O unit	31 mm	Target values trigger interrupt to CPU	1 × MIL (40 pt)	CJ1W-CTL41-E
1	DC Motor Control unit	PWM (24 V/4 A)	Special I/O unit	31 mm	4 configurable digital inputs + 50 kHz counter input	3 × Screwless	CJ1W-DCM11-E
2	Pulse I/O option module for CJ2M CPU	24 V, line driver	CPU Option Module	20 mm	100 kpps encoder inputs and pulse outputs, NPN (sinking), interrupt / fast response inputs	1 × MIL (40 pt)	CJ2M-MD211
2	Pulse I/O option module for CJ2M CPU	24 V, line driver	CPU Option Module	20 mm	100 kpps encoder inputs and pulse outputs, PNP (sourcing), interrupt / fast response inputs	1 × MIL (40 pt)	CJ2M-MD212
1	Position Control unit	24 V open collector	Special I/O unit	31 mm	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	1 × Fujitsu (40 pt)	CJ1W-NC113
2	Position Control unit	24 V open collector	Special I/O unit	31 mm	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	1 × Fujitsu (40 pt)	CJ1W-NC213
4	Position Control unit	24 V open collector	Special I/O unit	31 mm	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	2 × Fujitsu (40 pt)	CJ1W-NC413
2	Position Control Unit High speed type	24 V open collector	Special I/O Unit	51 mm	500 kpps pulse outputs, built-in feedback pulse counters, synchronous multi-axis control	MIL	CJ1W-NC214
4	Position Control Unit High speed type	24 V open collector	Special I/O Unit	62 mm	500 kpps pulse outputs, built-in feedback pulse counters, synchronous multi-axis control	MIL	CJ1W-NC414
2	Position Control Unit	EtherCAT	CPU bus unit	31 mm	Position, speed and torque control, access to all drive parameters	RJ45	CJ1W-NC281
4	Position Control Unit	EtherCAT	CPU bus unit	31 mm	Position, speed and torque control, access to all drive parameters	RJ45	CJ1W-NC481
4	Position Control Unit	EtherCAT	CPU bus unit	31 mm	Position, speed and torque control, access to all drive parameters, supports up to 64 general purpose EtherCAT slaves	RJ45	CJ1W-NC482
8	Position Control Unit	EtherCAT	CPU bus unit	31 mm	Position, speed and torque control, access to all drive parameters	RJ45	CJ1W-NC881
8	Position Control Unit	EtherCAT	CPU bus unit	31 mm	Position, speed and torque control, access to all drive parameters, supports up to 64 general purpose EtherCAT slaves	RJ45	CJ1W-NC882
16	Position Control Unit	EtherCAT	CPU bus unit	31 mm	Position, speed and torque control, access to all drive parameters	RJ45	CJ1W-NCF81
2	Position Control Unit	MECHATROLINK-II	CPU bus unit	31 mm	Position, speed and torque control, access to all drive parameters	ML-II	CJ1W-NC271
4	Position Control Unit	MECHATROLINK-II	CPU bus unit	31 mm	Position, speed and torque control, access to all drive parameters	ML-II	CJ1W-NC471
16	Position Control unit	MECHATROLINK-II	CPU bus unit	31 mm	Position, speed and torque control, access to all drive parameters	ML-II	CJ1W-NCF71
30	Advanced Motion Control unit	MECHATROLINK-II, Encoder I/O, digital I/O	CPU bus unit	49 mm	Trajexia Motion Controller on the CJ-series	ML-II, 9-pin D-Sub, screwless push-in	CJ1W-MCH72

Note: Line driver signal type units also available.

Accessories

Description	Connection type	Order code
Screwless terminal block for connecting 24 V or Line driver encoders to CJ1W-CTL41-E	Push-in	XW2G-40G7-E
General purpose I/O connection cable for I/O units with 40-pt. Fujitsu connector (____ = length in cm)	Fujitsu (40 pt.) to MIL (40 pt.)	XW2Z-____BF-L
General purpose I/O connection cable for I/O units with 40-pt. MIL connector (____ = length in cm)	2 × MIL (40 pt)	XW2Z-____FF-L
Servo relay unit 1-Axis position control unit	—	XW2B-20J6-1B
Servo relay unit 2-Axes position control unit	—	XW2B-40J6-2B
Cable connecting servo relay unit to Position control unit CJ1W-NC113, cable length 1 m. For Accurax G5 servo drives.	—	XW2Z-100J-A14
Cable connecting servo relay unit to Position control unit CJ1W-NC213/413, cable length 1 m. For Accurax G5 servo drives.	—	XW2Z-100J-A15
Cable connecting servo relay unit to Position control unit CJ1W-NC113, cable length 1 m. For SmartStep 2 servo drives.	—	XW2Z-100J-A14
Cable connecting servo relay unit to Position control unit CJ1W-NC213/413, cable length 1 m. For SmartStep 2 servo drives.	—	XW2Z-100J-A15
Cable connecting servo relay unit to Position control unit CJ1W-NC133, cable length 1 m. For Accurax G5 servo drives.	—	XW2Z-100J-A18
Cable connecting servo relay unit to Position control unit CJ1W-NC233/433, cable length 1 m. For Accurax G5 servo drives.	—	XW2Z-100J-A19
Cable connecting servo relay unit to Position control unit CJ1W-NC133, cable length 1 m. For SmartStep 2 servo drives.	—	XW2Z-100J-A18
Cable connecting servo relay unit to Position control unit CJ1W-NC233/433, cable length 1 m. For SmartStep 2 servo drives.	—	XW2Z-100J-A19
Cable connecting servo relay unit to Accurax G5 servo drives, cable length 1 m.	—	XW2Z-100J-B25
Cable connecting servo relay unit to SmartStep 2 servo drive, cable length 1 m.	—	XW2Z-100J-B29

Note: For General-purpose I/O Cables and Terminal Blocks, see page 82



Open to any communication

The CJ-Series offers both standardised open networks 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 2 major field networks, DeviceNet and PROFIBUS-DP. For high-speed field I/O, Omron's own CompoBus/S offers an unsurpassed ease of installation. 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-IO 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	Order code
Serial	2 × 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 × 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 × 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 × 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 × RS-232C + 1 × 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 × RS-232C + 1 × 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 × 100 Base-Tx		UDP, TCP/IP, FTP server, SMTP (e-mail), SNMP (time adjust), FINS routing, socket service	CPU bus unit	31 mm	RJ45	CJ1W-ETN21
EtherNet/IP	1 × 100 Base-Tx		EtherNet/IP, UDP, TCP/IP, FTP server, SNMP, SNMP	CPU Bus unit	31 mm	RJ45	CJ1W-EIP21
Controller link	2-wire twisted pair		Omron proprietary	CPU bus unit	31 mm	2-wire screw + GND	CJ1W-CLK23
DeviceNet	1 × CAN		DeviceNet	CPU bus unit	31 mm	5-p detachable	CJ1W-DRM21
PROFIBUS-DP	1 × RS-485 (Master)		DP, DPV1	CPU bus unit	31 mm	9-pin D-Sub	CJ1W-PRM21
PROFIBUS-DP	1 × RS-485 (Slave)		DP	Special I/O unit	31 mm	9-pin D-Sub	CJ1W-PRT21
PROFINET-IO	1 × 100 Base-Tx		PROFINET-IO Controller, FINS/UDP	CPU Bus unit	31 mm	RJ45	CJ1W-PNT21
CAN	1 × 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	Order code
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 PCI board with support software	PCI, wired CLK	3G8F7-CLK23-E
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
PROFIBUS DP to RS-422/RS-485 Serial Gateway. User-configurable, with Omron protocols built-in.	9-pin D-sub to screw clamp terminals	PRT1-SCU11
PROFINET IO + ModBus/TCP to Modbus/RTU (RS-485) Gateway.	3 × RJ45 to screw clamp terminals	EJ1N-HFU-ETN

Note: For Ethernet Cables and Accessories, see page 91



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.

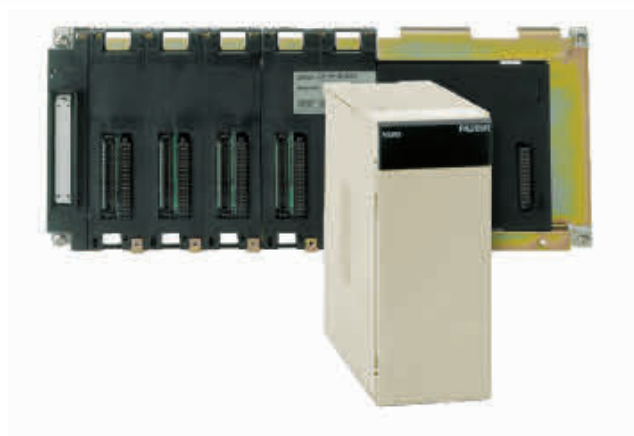
Omron's extensive function block library helps to reduce your programming effort, while you can create your own function blocks to suit your specific needs.

Ordering information

Max. Digital I/O points	Program capacity	Data memory capacity	Logic execution speed	Max. I/O units	Additional functions	Order code
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
	120K steps	256K words		80	–	CS1H-CPU66H
	60K steps	128K words		80	–	CS1H-CPU65H
				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	
40 ns			40		–	CS1G-CPU44H
1280	30K steps	35	Supports duplex power supply and I/O hot-swapping	CS1D-CPU44S		
960	20K steps	10K steps	30	–	CS1G-CPU43H	
	–			CS1G-CPU42H		
	26		Supports duplex power supply and I/O hot-swapping	CS1D-CPU42S		

Accessories

Description	Remarks	Order code
High-speed data collection and storage unit, with CF card slot and Ethernet port	CPU bus unit	CS1W-SPU01-V2
High-speed data collection and storage unit, with CF card slot and 2 Ethernet ports	CPU bus unit	CS1W-SPU02-V2
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	HMC-EF183
Compact Flash memory card, 256 MB, for all models (not required for operation)	Industrial grade	HMC-EF283
Compact Flash memory card, 512 MB, for all models (not required for operation)	Industrial grade	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__ C-E
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 mains. 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	Order code
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	Order code
CPU backplane	2	No	200 mm	–	CS1W-BC023
CPU backplane	3	Yes	260 mm	–	CS1W-BC033
CPU backplane	5	Yes	330 mm	–	CS1W-BC053
CPU backplane	8	Yes	435 mm	–	CS1W-BC083
CPU backplane	10	Yes	505 mm	–	CS1W-BC103
Expansion backplane	3	Yes	260 mm	–	CS1W-BI033
Expansion backplane	5	Yes	330 mm	–	CS1W-BI053
Expansion backplane	8	Yes	435 mm	–	CS1W-BI083
Expansion backplane	10	Yes	505 mm	–	CS1W-BI103
CPU backplane	5	Yes	505 mm	For Duplex CPU + Power supplies	CS1D-BC052
CPU backplane	8	Yes	505 mm	For Duplex Power supplies	CS1D-BC082S
Expansion backplane	9	Yes	505 mm	For Duplex Power supplies	CS1D-BI092

Accessories

Type	Remarks	Order code
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	Order code ^{*1}
16	AC or DC input	120 VAC or VDC	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 × 40 pt Fujitsu	CS1W-ID231
64	DC input	24 VDC	6 mA	–	2 × 40 pt Fujitsu	CS1W-ID261
96	DC input	24 VDC	5 mA	–	2 × 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 × 40 pt Fujitsu	CS1W-OD231
32	DC output (source)	24 VDC	0.5 A	With short-circuit protection, alarm	1 × 40 pt Fujitsu	CS1W-OD232
64	DC output (sink)	12 to 24 VDC	0.3 A	–	2 × 40 pt Fujitsu	CS1W-OD261
64	DC output (source)	24 VDC	0.3 A	With short-circuit protection, alarm	2 × 40 pt Fujitsu	CS1W-OD262
96	DC output (sink)	12 to 24 VDC	0.1 A	–	2 × 56 pt Fujitsu	CS1W-OD291
96	DC output (source)	24 VDC	0.1 A	–	2 × 56 pt Fujitsu	CS1W-OD292
32+32	DC output (sink)	12 to 24 VDC	0.3 A	–	2 × 40 pt Fujitsu	CS1W-MD261
32+32	DC in+out (source)	24 VDC	0.3 A	With short-circuit protection, alarm	2 × 40 pt Fujitsu	CS1W-MD262
48+48	DC output (sink)	12 to 24 VDC	0.1 A	–	2 × 56 pt Fujitsu	CS1W-MD291
48+48	DC in+out (source)	12 to 24 VDC	0.1 A	–	2 × 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.

Accessories

Description	Connection type	Order code
Connection cable between I/O terminal block and I/O unit with 40-pt Fujitsu connector (_ _ _ = length in cm)	Fujitsu (40pt)	XW2Z- _ _ _ B
I/O terminal block for input unit with 40-pt Fujitsu connector	Push-in	XW2R-P34G-C1
I/O terminal block for output unit with 40-pt Fujitsu connector	Push-in	XW2R-P34G-C3
I/O terminal block for input unit with 40-pt Fujitsu connector	Clamp	XW2R-E34G-C1
I/O terminal block for output unit with 40-pt Fujitsu connector	Clamp	XW2R-E34G-C3
I/O terminal block for input unit with 40-pt Fujitsu connector	M3 Screws	XW2R-J34G-C1
I/O terminal block for output unit with 40-pt Fujitsu connector	M3 Screws	XW2R-J34G-C3

Note: For I/O Cables and Terminal Blocks, see page 82



From basic analog I/O to process control

CS1 offers a wide choice of analog input units, fit for any application, from low-speed, multi-channel temperature measurement to 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. All process and temperature I/O units provide isolation between all individual channels.

Ordering information

Points	Type	Ranges	Resolution	Accuracy* ¹	Conversion time	Remarks	Connection type	Order code
4	Analog input	0 to 5 V,	1/8,000	V: 0.2% of PV	250 μs/point	Offset/gain adjustment, peak hold, moving average, alarms	M3	CS1W-AD041-V1
8	Analog input	0 to 10 V,		I: 0.4% of PV			M3	CS1W-AD081-V1
16	Analog input	–10 to 10 V, 1 to 5 V, 4 to 20 mA		0.2% of PV			2 × MIL (34p.)	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% of PV I: 0.5% of PV	1 ms/point	Offset/gain adjustment	M3	CS1W-DA041
8	Voltage output	0 to 5 V, 0 to 10 V, –10 to 10 V, 1 to 5 V		0.3% of PV			M3	CS1W-DA08V
8	Current output	4 to 20 mA		0.5% of PV			M3	CS1W-DA08C
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% of PV I in: 0.4% of PV out: 0.3% of PV	1 ms/point	Offset/gain adjustment, scaling, peak hold, moving average, alarms, output hold	M3	CS1W-MAD44
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% of PV	5 ms/point	Configurable alarms, maintenance functions, user-defined scaling, zero/span adjustment, square root, totalis- er.	M3	CS1W-PDC11
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 adjust- ment, square root	M3	CS1W-PDC55
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% of PV	5 ms/point	Configurable alarms (absolute + rate-of-change), peak hold, maintenance functions	M3	CS1W-PTS11
4	Resistance thermometer input	Pt50, Pt100 JPt100, Ni508.4	1/64,000	0.05% of PV	5 ms/point	Configurable alarms (absolute + rate-of-change), peak hold, maintenance functions	M3	CS1W-PTS12
4	Thermocouple input	B, J, K, L, R, S, T	0.1°C	0.3% of PV	62.5 ms/point	4 configurable alarm outputs	M3	CS1W-PTS51
4	Resistance thermometer input	Pt100, JPt100	0.1°C	0.3% of PV	62.5 ms/point	4 configurable alarm outputs	M3	CS1W-PTS52
8	Thermocouple input	B, J, K, L, R, S, T	0.1°C	0.3% of PV	31.2 ms/point	Configurable alarms per channel	M3	CS1W-PTS55
8	Resistance thermometer input	Pt100, JPt100	0.1°C	0.3% of PV	31.2 ms/point	Configurable alarms per channel	M3	CS1W-PTS56
4	2-Wire transmitter input	1 to 5 V, 4 to 20 mA	1/4,096	0.2% of FS	25 ms/point	Built-in power supply for transmitter, configurable alarms, square root, rate-of-change, etc.	M3	CS1W-PW01
8	Power transducer input	–1 to 1 mA, 0 to 1 mA	1/4,096	0.2% of FS	25 ms/point	Inrush current limiter, configurable alarms, averaging, etc.	M3	CS1W-PTR01
8	Power transducer input	–100 to 100 mV, 0 to 100 mV	1/4,096	0.2% of FS	25 ms/point	Inrush current limiter, configurable alarms, averaging, etc.	M3	CS1W-PTR02
4	Pulse rate input	20000 pps, voltage, open collector, contact	up to 1/32,000	–	25 ms/point	Averaging, totaliser	M3	CS1W-PPS01

Points	Type	Ranges	Resolution	Accuracy*1	Conversion time	Remarks	Connection type	Order code
4	Isolated control output	1 to 5 V, 4 to 20 mA	1/4,000	I: 0.1% of FS V: 0.2% of FS	25 ms/point	Output readback, high/low/rate limiting, disconnection alarm, zero/span adjustment	M3	CS1W-PMV01
4	Isolated control output	−10 to 10 V, 0 to 10 V, −5 to 5 V, 0 to 5 V, −1 to 1 V, 0 to 1 V	1/4,000	0.1% of FS	10 ms/point	High/low/rate limiting, output hold, zero/span adjustment	M3	CS1W-PMV02

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



Add motion control to any CS1 PLC

From simple position measurement to multi-axis synchronised 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 units 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	Connection type	Order code
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.	M3 screw	CS1W-CTS21
2	500 kHz Counter	24 V, 12 V, line driver	Special I/O unit	4 configurable digital inputs + 4 configurable digital outputs Target values trigger interrupt to CPU	1 × Fujitsu (40 pt)	CS1W-CT021
4					2 × Fujitsu (40 pt)	CS1W-CT041
1	Position control unit	24 V open collector	Special I/O unit	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	1 × Fujitsu (40 pt)	CS1W-NC113
2	Position control unit	24 V open collector	Special I/O unit	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	1 × Fujitsu (40 pt)	CS1W-NC213
4	Position control unit	24 V open collector	Special I/O unit	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	2 × Fujitsu (40 pt)	CS1W-NC413
1	Position control unit	Line driver	Special I/O unit	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	1 × Fujitsu (40 pt)	CS1W-NC133
2	Position control unit	Line driver	Special I/O unit	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	1 × Fujitsu (40 pt)	CS1W-NC233
4	Position control unit	Line driver	Special I/O unit	500 kpps pulse outputs, inputs for origin, limit switches, stop, interrupt	2 × Fujitsu (40 pt)	CS1W-NC433
2	Motion control unit	Analog	Special I/O unit	Closed loop with automatic trapezoid or S-curve acceleration/deceleration	Snap-on connectors (3M)	CS1W-MC221-V1
4	Motion control unit	Analog	Special I/O unit	Closed loop with automatic trapezoid or S-curve acceleration/deceleration	Snap-on connectors (3M)	CS1W-MC421-V1

Accessories

Description	Connection type	Order code
Servo relay unit 1-Axis position control unit	–	XW2B-20J6-1B
Servo relay unit 2-Axes position control unit	–	XW2B-40J6-2B
Cable connecting servo relay unit to Position control unit CS1W-NC113, cable length 1 m. For Accurax G5 servo drives.	–	XW2Z-100J-A6
Cable connecting servo relay unit to Position control unit CS1W-NC213/413, cable length 1 m. For Accurax G5 servo drives.	–	XW2Z-100J-A7
Cable connecting servo relay unit to Position control unit CS1W-NC113, cable length 1 m. For SmartStep 2 servo drives.	–	XW2Z-100J-A6
Cable connecting servo relay unit to Position control unit CS1W-NC213/413, cable length 1 m. For SmartStep 2 servo drives.	–	XW2Z-100J-A7
Cable connecting servo relay unit to Position control unit CS1W-NC133, cable length 1 m. For Accurax G5 servo drives.	–	XW2Z-100J-A10
Cable connecting servo relay unit to Position control unit CS1W-NC233/433, cable length 1 m. Accurax G5 servo drives.	–	XW2Z-100J-A11
Cable connecting servo relay unit to Position control unit CS1W-NC133, cable length 1 m. For SmartStep 2 servo drives.	–	XW2Z-100J-A10
Cable connecting servo relay unit to Position control unit CS1W-NC233/433, cable length 1 m. For SmartStep 2 servo drives.	–	XW2Z-100J-A11
Cable connecting servo relay unit to Accurax G5 servo drives, cable length 1 m.	–	XW2Z-100J-B25
Cable connecting servo relay unit to SmartStep 2 servo drive, cable length 1 m.	–	XW2Z-100J-B29

Note: For General-purpose I/O Cables and Terminal Blocks, see page 82



Open to any communication, standard or user-defined

CS1 provides both standardised open networks 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 2 major field networks, DeviceNet and PROFIBUS-DP. For high-speed field I/O, Omron's own CompoBus/S offers an unsurpassed ease of installation. 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 PROFINET-IO controller together with the SmartSlice modular I/O system offers ethernet-based I/O with controller- and network redundancy.

Ordering information

Type	Ports	Protocols	Unit class	Remarks	Connection type	Order code
Serial	2 × RS-232C	CompoWay/F, Host Link, NT link, Modbus, User-defined	CPU bus unit	–	9-pin D-Sub	CS1W-SCU21-V1
Serial	2 × RS-422/RS-485	CompoWay/F, Host Link, NT link, Modbus, User-defined	CPU bus unit	–	9-pin D-Sub	CS1W-SCU31-V1
Serial	2 × RS-232C	CompoWay/F, Host Link, NT link, Modbus, User-defined	CPU option board	–	9-pin D-Sub	CS1W-SCB21-V1
Serial	1 × RS-232C + 1 × 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 × 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-CLK23
	Optical HPCF			–	2 × HPCF connector	CS1W-CLK13
	Optical graded-index fiber			–	4 × ST connector	CS1W-CLK53
EtherNet/IP	1 × 100 Base-Tx	EtherNet/IP, UDP, TCP/IP, FTP server, SNTP, SNMP	CPU Bus unit	31 mm	RJ45	CS1W-EIP21
DeviceNet	1 × 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
CompoBus/S	2-wire (Master)	Omron proprietary	Special I/O unit	–	2-wire screw + 2-wire power	CS1W-SRM21
PROFIBUS-DP	1 × RS-485 (Master)	DP, DPV1	CPU bus unit	–	9-pin D-Sub	CS1W-PRM21
CAN	1 × CAN	CANopen, User-defined	CPU bus unit	–	5-p detachable	CS1W-CORT21
PROFINET IO	1 × 100 Base-Tx PROFINET IO controller	FINS UDP	CPU bus unit	–	RJ45	CS1W-PNT21
PROFIBUS-DP	1 × RS-485 (Slave)	DP	C200H special I/O unit	C200H units cannot be used on CS1D systems	9-pin D-Sub	C200HW-PRT21

Accessories

Description	Connection type	Order code
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 PCI board with support software	PCI, wired CLK	3G8F7-CLK23-E
Controller link PCI board with support software	PCI, HPCF connectors	3G8F7-CLK13-E
Controller link PCI board with support software	PCI, ST connectors	3G8F7-CLK53-E
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
PROFIBUS DP to RS-422/RS-485 Serial Gateway. User-configurable, with Omron protocols built-in.	9-pin D-sub to screw clamp terminals	PRT1-SCU11
PROFINET IO + ModBus/TCP to Modbus/RTU (RS-485) Gateway.	3 × RJ45 to screw clamp terminals	EJ1N-HFU-ETN

Note: For Ethernet Cables and Accessories, see page 91