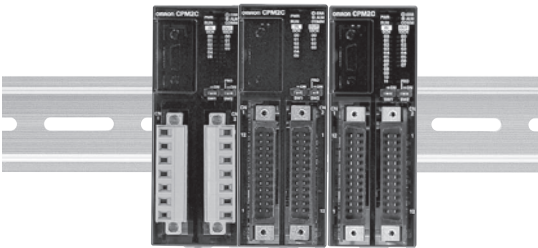


Compact PLC series

# CPM2C

A versatile controller for up to 192 I/O points in an ultra-compact package

## SYSMAC CPM2C



An extensive range of models assures efficient machine control in an ultracompact package. CPU Units (DC power supply only) 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.

CPU Units Depth: 65 mm

10 I/O Points



- Relay Output CPU Units (Terminal-block type)  
CPM2C-10CDR-D (No clock)  
CPM2C-10C1DR-D (Clock)
- Input points: 6, DC input
- Output points: 4



- Transistor Output (Sink) CPU Units (Connector type)  
CPM2C-10CDT1C-D (No clock)  
CPM2C-10C1DTC-D (Clock)  
(MIL-connector type)  
CPM2C-10CDTM-D (No clock)  
CPM2C-10C1DTM-D (Clock)

- Transistor Output (Source) CPU Units (Connector type)  
CPM2C-10CDT1C-D (No clock)  
CPM2C-10C1DT1C-D (Clock)  
(MIL-connector type)  
CPM2C-10CDT1M-D (No clock)  
CPM2C-10C1DT1M-D (Clock)
- Input points: 6, DC input
- Output points: 4

20 I/O Points



- Relay Output CPU Units (Terminal-block type)  
CPM2C-20CDR-D (No clock)  
CPM2C-20C1DR-D (Clock)
- Input points: 12, DC input
- Output points: 8



- Transistor Output (Sink) CPU Units (Connector type)  
CPM2C-20CDT1C-D (No clock)  
CPM2C-20C1DTC-D (Clock)  
(MIL-connector type)  
CPM2C-20CDTM-D (No clock)  
CPM2C-20C1DTM-D (Clock)

- Transistor Output (Source) CPU Units (Connector type)  
CPM2C-20CDT1C-D (No clock)  
CPM2C-20C1DT1C-D (Clock)  
(MIL-connector type)  
CPM2C-20CDT1M-D (No clock)  
CPM2C-20C1DT1M-D (Clock)
- Input points: 12, DC input
- Output points: 8

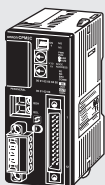
32 I/O Points



- Transistor Output (Sink) CPU Units (Connector type)  
CPM2C-32CDT1C-D (No clock)  
(MIL-connector type)  
CPM2C-32CDTM-D (No clock)

- Transistor Output (Source) CPU Units (Connector type)  
CPM2C-32CDT1C-D (No clock)  
(MIL-connector type)  
CPM2C-32CDT1M-D (No clock)
- Input points: 16, DC input
- Output points: 16

Programmable DeviceNet Slaves



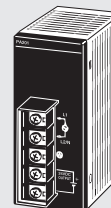
- Transistor Output (Sink) CPU Unit (Connector type)  
CPM2C-S100C-DRT (Clock)
- Transistor Output (Source) CPU Unit (Connector type)  
CPM2C-S110C-DRT (Clock)
- Input points: 6, DC input
- Output points: 4

CPU Units with CompoBus/S Master Function



- Transistor Output (Sink) CPU Unit (Connector type)  
CPM2C-S100C (Clock)
- Transistor Output (Source) CPU Unit (Connector type)  
CPM2C-S110C (Clock)
- Input points: 6, DC input
- Output points: 4

AC Power Supply Unit



- CPM2C-PA201
- 100- to 240-V AC input
- 24-V AC/600-mA output

Analog I/O Units



- CPM2C-MAD11
- Analog inputs: 2 (Resolution: 6,000)
- Analog output: 1 (Resolution: 6,000)

Temperature Sensor Units



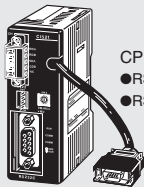
- CPM2C-TS001
- Thermocouple inputs: 2
- CPM2C-TS101
- Platinum-resistance thermometer inputs: 2

CompoBus/S I/O Link Unit



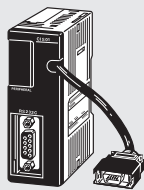
- CPM2C-SRT21
- I/O Link inputs: 8
- I/O Link outputs: 8

Simple Communications Unit

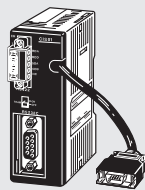


- CPM2C-CIF21
- RS-485 component connection
- RS-232C

Adapters



- Peripheral/RS-232C Adapter CPM2C-CIF01-V1



- RS-422/RS-485 + RS-232C Adapter CPM2C-CIF11

Expansion I/O Units Depth: 65 mm

Input/Output Expansion I/O Units



- Relay Output I/O Unit (Terminal-block type) CPM2C-10EDR
- Input points: 6, DC input
- Output points: 4



- Relay Output I/O Unit (Terminal-block type) CPM2C-20EDR
- Input points: 12, DC input
- Output points: 8



- Transistor Output (Sink) I/O Unit (Connector type) CPM2C-24EDTC

- Transistor Output (Source) I/O Unit (Connector type) CPM2C-24EDT1C

- Transistor Output (Sink) I/O Unit (MIL-connector type) CPM2C-24EDTM

- Transistor Output (Source) I/O Unit (MIL-connector type) CPM2C-24EDT1M
- Input points: 16, DC input
- Output points: 8



- Transistor Output (Sink) I/O Unit (Connector type) CPM2C-32EDTC

- Transistor Output (Source) I/O Unit (Connector type) CPM2C-32EDT1C

- Transistor Output (Sink) I/O Unit (MIL-connector type) CPM2C-32EDTM

- Transistor Output (Source) I/O Unit (MIL-connector type) CPM2C-32EDT1M
- Input points: 16, DC input
- Output points: 16

Input Expansion I/O Units



- (Connector type) CPM2C-8EDC
- (MIL-connector type) CPM2C-8EDM
- Input points: 8, DC input

CPM2C-8EDC



- (Connector type) CPM2C-16EDC
- (MIL-connector type) CPM2C-16EDM
- Input points: 16, DC input

CPM2C-16EDC

Output Expansion I/O Units



- Relay Output I/O Unit (Terminal-block type) CPM2C-8ER
- Output points: 8



- Transistor Output (Sink) I/O Unit (Connector type) CPM2C-8ETC
- Transistor Output (Source) I/O Unit (Connector type) CPM2C-8ET1C

- Transistor Output (Sink) I/O Unit (MIL-connector type) CPM2C-8ETM

- Transistor Output (Source) I/O Unit (MIL-connector type) CPM2C-8ET1M
- Output points: 8



- Transistor Output (Sink) I/O Unit (Connector type) CPM2C-16ETC
- Transistor Output (Source) I/O Unit (Connector type) CPM2C-16ET1C

- Transistor Output (Sink) I/O Unit (MIL-connector type) CPM2C-16ETM

- Transistor Output (Source) I/O Unit (MIL-connector type) CPM2C-16ET1M
- Output points: 16

**Specifications**

**General**

Item	CPU Unit Specification					
	CPU Units with 10 I/O points (relay outputs)	CPU Units with 10 I/O points (transistor outputs)	CPU Units with 20 I/O points (relay outputs)	CPU Units with 20 I/O points (transistor outputs)	CPU Units with 32 I/O points (transistor outputs)	CPM2C-S CPU Unit with 10 I/O points (transistor outputs)
Supply voltage	24 V DC					
Operating voltage range	20.4 to 26.4 V DC					
Power consumption (Add Expansion Unit consumption from following tables.)	4 W	3 W	4 W	3 W	3 W	3 W
Inrush current	25 A max.					
Insulation resistance	20 MΩ min. (at 500 V DC) between isolated circuits					
Dielectric strength	2,300 V AC for 1 min (between isolated circuits)					
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)					
Vibration resistance	Conforming to IEC 60068-2-6, JIS C0040: 10 to 57 Hz, 0.075-mm amplitude, 57 to 150 Hz, acceleration: 9.8 m/s <sup>2</sup> in X, Y, and Z directions for 80 minutes each (Time coefficient; 8 minutes × coefficient factor 10 = total time 80 minutes)					
Shock resistance	Conforming to IEC 60068-2-27, JIS C0041: 147 m/s <sup>2</sup> three times each in X, Y, and Z directions					
Ambient temperature	Operating: 0° to 55° C Storage: -20° to 75° C (except for the battery)					
Humidity	10% to 90% (with no condensation)					
Atmosphere	Must be free from corrosive gas					
I/O interface	Terminal block	Connector	Terminal block	Connector		
Power interrupt time	2 ms min.					
Weight	200 g max.	200 g max.	250 g max.	200 g max.	200 g max.	160 g max.
	Expansion I/O Unit with 10 I/O points (relay outputs)				200 g max.	
	Expansion I/O Unit with 20 I/O points (relay outputs)				200 g max.	
	Expansion I/O Units with 24 I/O points (transistor outputs)				200 g max.	
	Expansion I/O Unit with 32 I/O points (transistor outputs)				200 g max.	
	Expansion I/O Unit with 8 input points				150 g max.	
	Expansion I/O Unit with 16 input points				150 g max.	
	Expansion I/O Units with 8 output points (transistor outputs)				150 g max.	
	Expansion I/O Units with 16 output points (transistor outputs)				150 g max.	
	Expansion I/O Unit with 8 output points (relay outputs)				200 g max.	
	Simple Communications Unit				150 g max.	
	Peripheral/RS232C Adapter Unit				150 g max.	
	RS422/RS232C Adapter Unit				150 g max.	
	AC Power Supply Unit				250 g max.	
	Analog I/O Unit				200 g max.	
Temperature Sensor Unit				200 g max.		
CompoBus/S I/O Link Unit				150 g max.		

**CPM2C Power Consumption**

Use the following power consumption tables to calculate the total power capacity required when using a CPM2C PLC. The rated output for the CPM2C-PA201 AC Power Supply Unit is 15 W. Any surplus power not required for the PLC directly can be used as service power supply for sensors and other devices.

CPU Unit	Power consumption (W)
CPM2C-10C(1)DR-D	4
CPM2C-20C(1)DR-D	4
CPM2C-S1□0C-DRT1	3
CPM2C-S1□0C	3
CPM2C-10C(1)DT(1)□-D	3
CPM2C-20C(1)DT(1)□-D	3
CPM2C-32C(1)DT(1)□-D	3

The power consumption of the CPU Unit includes power for the Programming Consoles and Adapter Units.

Add the following consumptions when using Expansion I/O Units.

Expansion I/O Unit	Power consumption (W)
CPM2C-10EDR	1
CPM2C-20EDR	2
CPM2C-24EDT(1)□	1
CPM2C-32EDT(1)□	1
CPM2C-MAD11	3.5
CPM2C-SRT21	1
CPM2C-TS001/002	1.5
CPM2C-8ED□/16ED□	1
CPM2C-8ER	2
CPM2C-8ET(1)□/16ET(1)□	1

CPM2C Characteristics

Item	CPU Unit Specification					
	CPU Units with 10 I/O points (relay outputs)	CPU Units with 10 I/O points (transistor outputs)	CPU Units with 20 I/O points (relay outputs)	CPU Units with 20 I/O points (transistor outputs)	CPU Units with 32 I/O points (transistor outputs)	CPM2C-S CPU Unit with 10 I/O points (transistor outputs) and CompoBus/S Master function
Control method	Stored program method					
I/O control method	Cyclic scan with direct output (Immediate refreshing can be performed with IORF(97).)					
Programming language	Ladder diagram					
Instruction length	1 step per instruction, 1 to 5 words per instruction					
Instructions	Basic instructions: 14 Special instructions: 105 instructions, 185 variations					
Execution time	Basic instructions: 0.64 μs (LD instruction) Special instructions: 7.8 μs (MOV instruction)					
Program capacity	4,096 words					
I/O capacity	CPU Unit only	10 points	20 points	20 points	32 points	10 points
	With Expansion I/O Units	170 points max.	180 points max.	180 points max.	192 points max.	362 points max. (106 local + 256 remote)
Input bits	IR 00000 to IR 00915 (Words not used for input bits can be used for work bits.)					
Output bits	IR 01000 to IR 01915 (Words not used for output bits can be used for work bits.)					
CompoBus/S input bits	---				128 inputs: IR 02000 to IR 02715	I/O bits not used for I/O be used as work bits.
CompoBus/S output bits	---				128 outputs: IR 03000 to IR 03715	
Work bits	928 bits: IR 02000 to IR 04915 (Words IR 020 to IR 049) and IR 20000 to IR 22715 (Words IR 200 to IR 227)				672 bits: IR 02800 to IR 02915 (Words IR 028 to IR 029), IR 03800 to IR 04915 (Words IR 038 to IR 049) and IR 20000 to IR 22715 (Words IR 200 to IR 227)	
Special bits (SR area)	448 bits: SR 22800 to SR 25515 (Words SR 228 to SR 255)					
Temporary bits (TR area)	8 bits (TR0 to TR7)					
Holding bits (HR area)	320 bits: HR 0000 to HR 1915 (Words HR 00 to HR 19)					
Auxiliary bits (AR area)	384 bits: AR 0000 to AR 2315 (Words AR 00 to AR 23)					
Link bits (LR area)	256 bits: LR 0000 to LR 1515 (Words LR 00 to LR 15)					
Timers/Counters	256 timers/counters (TIM/CNT 000 to TIM/CNT 255) 1-ms timers: TMHH(—) 10-ms timers: TIMH(15) 100-ms timers: TIM 1-s/10-s timers: TIML(—) Decrementing counters: CNT Reversible counters: CNTR(12)					
Data memory	Read/Write: 2,048 words (DM 0000 to DM 2047)* Read-only: 456 words (DM 6144 to DM 6599) PC Setup: 56 words (DM 6600 to DM 6655) *The Error Log is contained in DM 2000 to DM 2021.					
CompoBus/S master functions	---				Connects to up to 32 slaves with up to 256 I/O link points	
DeviceNet slave functions	---				DeviceNet remote I/O link (DRT model only) Up to 1,024 I/O link points Explicit messages Read/write of specified areas from PLC with Master Unit	
Basic interrupts	Interrupt processing	2 interrupts	2 interrupts	4 interrupts	4 interrupts	4 interrupts
	Interval timer interrupts	1 (Scheduled Interrupt Mode or Single Interrupt Mode)				
High-speed counter	High-speed counter	One high-speed counter: 20 kHz single-phase or 5 kHz two-phase (linear count method) Counter interrupt: 1 (set value comparison or set-value range comparison)				
High-speed counter	Interrupt inputs (Counter mode)	2 inputs	2 inputs	4 inputs	4 inputs	4 inputs
	Counter interrupts	2 inputs	2 inputs	4 inputs	4 inputs	4 inputs
Pulse output	Two points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control. One point with trapezoid acceleration/deceleration, 10 Hz to 10 kHz, and direction control. Two points with variable duty-ratio outputs (using PWM(—)). (Pulse outputs can be used with transistor outputs only, they cannot be used with relay outputs.)					
Synchronized pulse control	One point: A pulse output can be created by combining the high-speed counter with pulse outputs and multiplying the frequency of the input pulses from the high-speed counter by a fixed factor. (This output is possible with transistor outputs only, it cannot be used with relay outputs.)					
Quick-response inputs	Quick-response inputs	2 inputs	2 inputs	4 inputs	4 inputs	4 inputs
	Quick-response inputs	Shared by the external interrupt inputs and the interrupt inputs (counter mode). Min. input pulse width: 50 μs max.				
Input time constant (ON response time = OFF response time)	Can be set for all input points. (1 ms, 2 ms, 3 ms, 5 ms, 10 ms, 20 ms, 40 ms, or 80 ms)					
Clock function	Shows the year, month, day of the week, day, hour, minute, and second. (Battery backup)					

Item	CPU Unit Specification					
	CPU Units with 10 I/O points (relay outputs)	CPU Units with 10 I/O points (transistor outputs)	CPU Units with 20 I/O points (relay outputs)	CPU Units with 20 I/O points (transistor outputs)	CPU Units with 32 I/O points (transistor outputs)	CPM2C-S CPU Unit with 10 I/O points (transistor outputs) and CompoBus/S Master function
Communications functions	Peripheral port: Supports Host Link, peripheral bus, no-protocol, or Programming Console connections. RS-232C port: Supports Host Link, no-protocol, 1:1 Slave Unit Link, 1:1 Master Unit Link, or 1:1 NT Link connections. A CPM2C-CN111, CS1W-CN114, or CS1W-CN118 Connecting Cable, or an Interface Unit (CPM2C-CIF01-V1 or CPM2C-CIF11) is required to connect to the CPM2C's communications port.					
Memory protection	HR area, AR area, program contents, read/write DM area contents, and counter values are maintained during power interruptions.					
Memory backup	Flash memory: Program, read-only DM area, and PC Setup Memory backup: The read/write DM area, HR area, AR area, and counter values are backed up. With CPU Units that are equipped with a clock, the battery will backup memory for 2 years at 25° C. With CPU Units that are not equipped with a clock, if a battery is not installed, the internal capacitor will backup memory for 10 days at 25° C. If a battery (optional CPM2C-BAT01 Battery) is installed, it will backup memory for 5 years at 25° C.					
Self-diagnostic functions	CPU Unit failure (watchdog timer), I/O bus error, battery error, and memory failure					
Program checks	No END instruction, programming errors (checked when operation is started)					

**CPM2C I/O Specifications**

**1. CPU Unit Input Specifications**

Item	Specifications			Circuit configuration
	Units with 10 I/O points	Units with 20 I/O points	Units with 32 I/O points	
Input voltage	24 V DC $+10\%$ / $-15\%$			<p>Input numbers: 00000 to 00001</p>
Input impedance	IN00000 to IN00001: 2.7 kΩ IN00002 to IN00004: 3.9 kΩ IN00005: 4.7 kΩ	IN00000 to IN00001: 2.7 kΩ IN00002 to IN00006: 3.9 kΩ IN00007 and up: 4.7 kΩ	IN00000 to IN00001: 2.7 kΩ IN00002 to IN00006: 3.9 kΩ IN00007: 4.7 kΩ IN00100 to IN00107: 4.7 kΩ	
Input current	IN00000 to IN00001: 8 mA IN00002 to IN00004: 6 mA IN00005: 5 mA	IN00000 to IN00001: 8 mA IN00002 to IN00006: 6 mA IN00007 and up: 5 mA	IN00000 to IN00001: 8 mA IN00002 to IN00006: 6 mA IN00007: 5 mA IN00100 to IN00107: 5 mA	
ON voltage/current	IN00000 to IN00001: 17 V DC min., 5 mA IN00002 and up: 14.4 V DC min., 3.5 mA			<p>Units with 10 I/O points: 00002 to 00004 Units with 20/32 I/O points: 00002 to 00006</p>
OFF voltage/current	5.0 V DC max., 1.1 mA			
ON delay	1 to 80 ms max. Default: 10 ms (See note.)			<p>Units with 10 I/O points: 00005 Units with 20 I/O points: 00007 to 00011 Units with 32 I/O points: 00007 to 00011, 00100 to 00107</p>
OFF delay	1 to 80 ms max. Default: 10 ms (See note.)			

**Note:** The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PC Setup.

**High-speed Counter Inputs**

The following CPU Unit input bits can be used as high-speed counter inputs. The maximum count frequency is 5 kHz in differential phase mode and 20 kHz in the other modes.

Input	Function			
	Differential phase mode	Pulse plus direction input mode	Up/down input mode	Increment mode
IN00000	A-phase pulse input	Pulse input	Increment pulse input	Increment pulse input
IN00001	B-phase pulse input	Direction input	Decrement pulse input	Normal input
IN00002	Z-phase pulse input or hardware reset input (IN00002 can be used as a normal input when it is not used as a high-speed counter input.)			

**Interrupt Inputs**

CPM2C PCs have inputs that can be used as interrupt inputs (interrupt input mode or counter mode) and quick-response inputs. The minimum pulse width for these inputs is 50 µs.  
In CPU Units with 10 I/O points, inputs IN00003 and IN00004 can be used as interrupt inputs. In CPU Units with 20 or 32 I/O points, inputs IN00003 through IN00006 can be used as interrupt inputs.

## 2. Expansion I/O Unit Input Specifications

Item	Specification
Input voltage	24 V DC $+10\%/_{-15\%}$
Input impedance	4.7 k $\Omega$
Input current	5 mA
ON voltage/current	14.4 V DC min., 3.5 mA
OFF voltage/current	5.0 V DC max., 1.1 mA
ON delay	1 to 80 ms max. Default: 10 ms (See note.)
OFF delay	1 to 80 ms max. Default: 10 ms (See note.)
Circuit configuration	

**Note:** The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PC Setup.

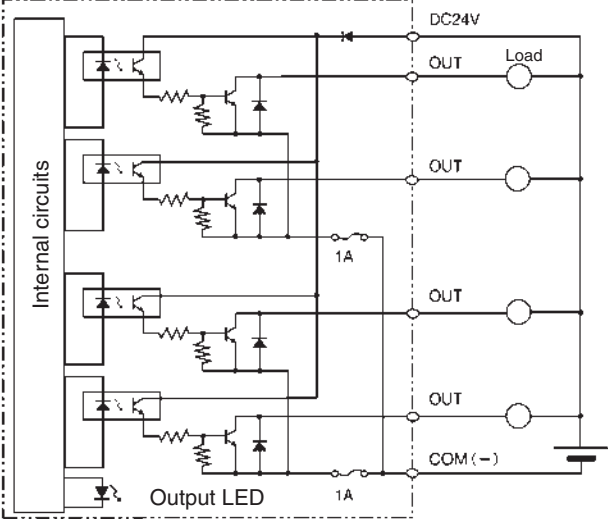
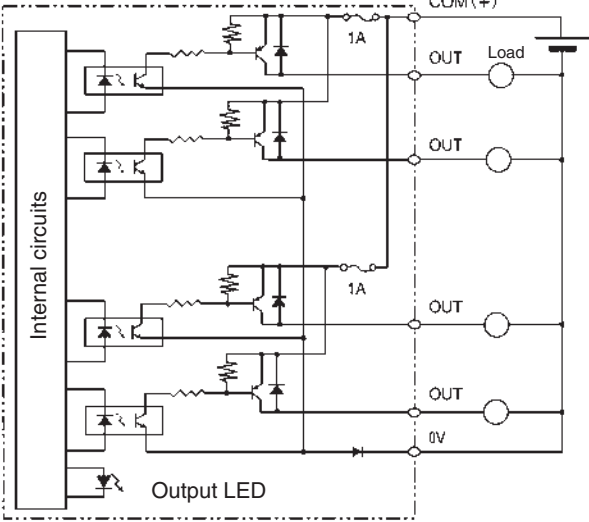
## 3. CPM2C Output Specifications (CPU Units and Expansion I/O Units)

### Relay Output

Item	Specification
Max. switching capacity	2 A, 250 V AC ( $\cos\phi = 1$ ) 2 A, 24 V DC (4 A/common)
Min. switching capacity	10 mA, 5 V DC
Service life of relay	Electrical:150,000 operations (24- V DC resistive load) 100,000 operations (240- V AC inductive load, $\cos\phi = 0.4$ ) Mechanical:20,000,000 operations
ON delay	15 ms max.
OFF delay	15 ms max.
Circuit configuration	

### Transistor Outputs (Sinking or Sourcing) for CPU Units and Expansion I/O Units

Item	Specification
Max. switching capacity	CPU Units with 10 or 20 I/O Points 01000 to 01007: 40 mA at 4.5 V DC to 300 mA at 20.4 V DC, 300 mA (20.4 to 26.4 V) CPU Units with 32 I/O Points 01000 to 01007: 40 mA at 4.5 V DC to 300 mA at 20.4 V DC, 300 mA (20.4 to 26.4 V) 01100 to 01107: 40 mA at 4.5 V DC to 100 mA at 20.4 V DC, 100 mA (20.4 to 26.4 V) (See note.) Expansion I/O Units 01□00 to 01□07: 40 mA at 4.5 V DC to 300 mA at 20.4 V DC, 300 mA (20.4 to 26.4 V) 01□08 to 01□15: 40 mA at 4.5 V DC to 100 mA at 20.4 V DC, 100 mA (20.4 to 26.4 V) (See note.)
Min. switching capacity	0.5 mA
Max. inrush current	0.9 A for 10 ms (charging and discharging waveform)
Leakage current	0.1 mA max.
Residual voltage	0.8 V max.
ON delay	OUT01000 and OUT01001:20 $\mu$ s max. OUT01002 and up:0.1 ms max.
OFF delay	OUT01000 and OUT01001:40 $\mu$ s max. for 4.5 to 26.5 V, 10 to 300 mA 0.1 ms max. for 4.5 to 30 V, 0.5 to 10 mA OUT01002 and up:1 ms max.
Fuse	1 fuse for each 2 outputs (The fuse cannot be replaced by the user.)

Item	Specification
Circuit configuration	<p style="text-align: center;"><b>Sinking Outputs</b></p>  <p style="text-align: center;"><b>Sourcing Outputs</b></p> 

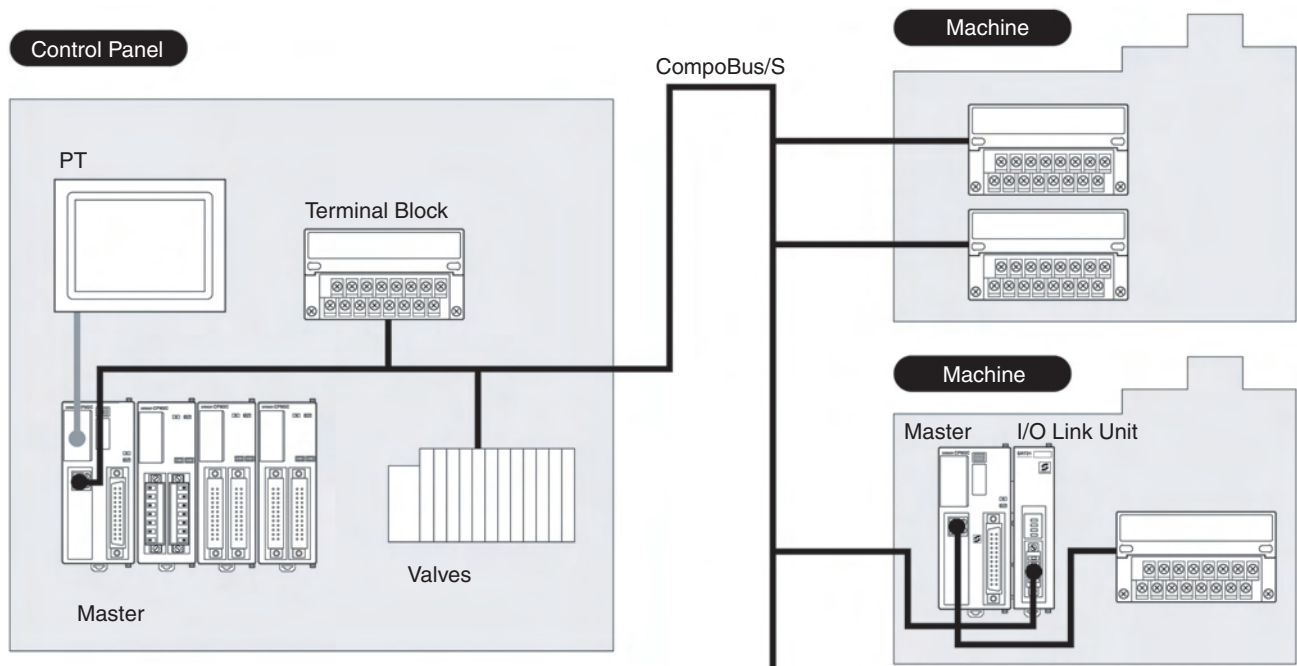
**Note:** Connect dummy resistance as required and maintain the load current between 10 and 150 mA when using 01000 and 01001 for pulse outputs. The ON/OFF response time will increase if the load current is below 10 mA, preventing outputting high-speed pulses. The transistors will heat if the output current is greater than 150 mA, possibly destroying the elements.

CPM2C-S1□0C

# CPU Units with CompoBus/S Master

## Ultra-compact CPM2C CPU unit with CompoBus/S master offering high speed remote I/O communication.

- The compact design makes this unit ideal for local control applications.  
At 40 x 90 x 65 mm (W x H x D) with 10 I/O points and CompoBus/S master offering versatile expandability it is possible to fulfill control systems needs.
- A large number of expansion I/O points reduces system construction cost.  
Up to three Expansion Up to three expansion terminals can be connected to the CPU unit. Furthermore, CompoBus/S remote I/O terminals can be used for expansion I/O points. Not only in-panel wiring but also external wiring is simplified. The miniaturization of the control panel reduces cable, terminal block, and wiring cost.
- Easy system designing, modification, and expansion by CompoBus/S remote I/O terminals.  
With this high-speed communication bus and no complicated wiring they can be used as expansion terminal blocks with minimal modifications to the system layout as long as room for expansion is reserved at the first designing stage.
- A calendar/clock ensures timed machine control, including data collection and error logs with date and time stamps.





Ordering Information

Unit	Inputs	Outputs	Clock	Model	
10 points (6 inputs/4 outputs)	Connector model	6 points at 24 V DC	4 transistor sinking outputs	Yes	CPM2C-S100C
			4 transistor sourcing outputs	Yes	CPM2C-S110C

Specifications

General Specifications

Item	Specification	
Control method	Stored program method	
I/O control method	Cyclic scan method (Immediate refreshing can be performed with IORF(97).)	
Programming language	Ladder diagram	
Instruction length	1 step per instruction 1 to 5 words per instruction	
Instructions	Basic instructions	14
	Special instructions	105 instructions, 185 variations
Execution time	Basic instructions	0.64 μs (LD instruction)
	Special instructions	7.8 μs (MOV instruction)
Program capacity	4,096 words	
Max. I/O capacity	CPU Unit only: 10 points Expansion I/O Unit: 96 points (32-point Expansion I/O Unit x 3) (Up to 3 Expansion Units can be connected.) CompoBus/S: 256 points (362 points in total)	
Input bits	IR 00000 to IR 00915 (Bits not used for input bits can be used for work bits.)	
Output bits	IR 01000 to IR 01915 (Bits not used for output bits can be used for work bits.)	
CompoBus/S input bits	128 bits: IR 02000 to IR 02715 (words IR 020 to IR 027)	
CompoBus/S output bits	128 bits: IR 03000 to IR 03715 (words IR 030 to IR 037)	
Work bits	672 bits: IR 02800 to IR 02915 (words IR 028 to IR 029) IR 03800 to IR 03915 (words IR 038 to IR 039) IR 04000 to IR 04915 (words IR 040 to IR 049) IR 20000 to IR 22715 (words IR 200 to IR 227)	
Special bits (SR area)	440 bits: SR 22800 to SR 25507 (words SR 228 to SR 255)	
Temporary bits (TR area)	8 bits: (TR 0 to TR 7)	
Holding bits (HR area)	320 bits: HR 0000 to HR 1915 (words HR 00 to HR 19)	
Auxiliary bits (AR area)	384 bits: AR 0000 to AR 2315 (words AR 00 to AR 23) These include CompoBus/S slave status flags (words AR 04 to AR 07).	
Link bits (LR area)	256 points: LR 0000 to LR 1515 (words LR 00 to LR 15)	
Timers/Counters	256 timers/counters: TIM/CNT 000 to TIM/CNT 255 1-ms timers: TMHH (-) 10-ms timers: TIMH (15) 100-ms timers: TIM 1-s/10-s timers: TIML (-) Decrementing counters: CNT Reversible counters: CNTR (12)	
Data memory	Read/Write	2,048 words (DM 0000 to DM 2047) The Error Log is contained in DM 2000 to DM 2021.
	Read only	456 words (DM 6144 to DM 6599)
	PC Setup	56 words (DM 6600 to DM 6655)
Basic interrupt functions	Interrupt inputs	2 interrupts (Used for both counter mode interrupts inputs and quick-response inputs.)
	Scheduled interrupts	1 interrupt
High-speed counter functions	High-speed counters	1 counter (single phase at 20 kHz or 2 phases at 5 kHz)
	Counter interrupts	1 interrupt (set value comparison or set-value range comparison)
	Interrupt inputs (counter mode)	2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
	Count-up interrupts	2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
Quick-response inputs	2 points (Used for both external interrupts inputs and counter mode interrupt inputs.) Min. input pulse width: 50 μs max.	
Pulse output	2 points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control: 1 point with trapezoid acceleration/deceleration, 10 Hz to 10 kHz with direction control: or 2 points with variable duty-ratio outputs	
Synchronized pulse control	1 point	
Input time constant (ON response time = OFF response time)	Can be set for CPU Unit inputs and Expansion Unit inputs only (1, 2, 3, 5, 10, 20, 40, or 80 ms)	
Clock	Equipped with clock (built-in RTC)	
Communications functions	Peripheral port: Supports Host Link, peripheral bus, no-protocol communications, and Programming Console connections. RS-232C port: Supports Host Link, no-protocol communications, 1-to-1 Link, or 1-to-1 NT Link connections.	
Power failure backup function	Data in HR, AR, Counter (CNT), and Data Memory (DM) areas is held.	
Memory backup	Non-volatile (flash) memory: Program, read-only DM area, and PC Setup Memory backup (lithium battery: 2 years lifetime): DM area, HR area, AR area, and counter values	
Self-diagnostic functions	CPU error (watchdog timer), memory errors, communications errors, setting errors, battery errors, and expansion I/O bus errors	
Program check	No END instruction, programming errors (checked when operation is started)	

Item		Specification
Programming devices	Programming Console	C200H-PRO27, CQM1-PRO01, or CQM1H-PRO01
	CX-One	Windows 2000 / XP

**Note:** Connecting Cable (CPM2C-CN111, CS1W-CN114, or CS1W-CN118) is required to connect to the communications peripheral /RS-232C port.

### Communications Specifications

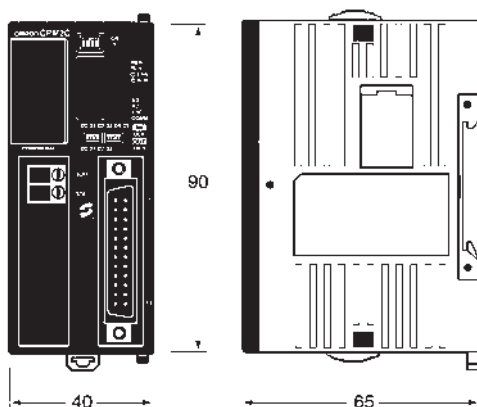
Communications method		Special CompoBus/S protocol
Coding method		Manchester coding
Connection form		Combination of multi-drop method and T-branch connections (see note 1)
Baud rate		High-speed Communications Mode: 750 kbps Long-distance Communications Mode: 93.75 kbps (see note 2)
Communications cycle time	High-speed Communications Mode	0.5 ms (with 8 input and 8 output slaves connected)
		0.8 ms (with 16 input and 16 output slaves connected)
	Long-distance Communications Mode	4.0 ms (with 8 input and 8 output slaves connected) 6.0 ms (with 16 input and 16 output slaves connected)
Communications media		2-conductor cable (VCTF 0.75 x 2), 4-conductor cable (VCTF 0.75 x 4), or Special Flat Cable
Communications distance	High-speed Communications Mode	2-conductor VCTF cable: Main line length:100 m max. Branch line length:3 m max. Total branch line length:50 m max. Special Flat Cable, 4-conductor VCTF cable: Main line length:30 m max. Branch line length:3 m max. Total branch line length:30 m max. (When Special Flat Cable is used to connect fewer than 16 Slaves, the main line can be up to 100 m long and the total branch line length can be up to 50 m.)
	Long-distance Communications Mode	2-conductor VCTF cable: Main line length:500 m max. Branch line length:6 m max. Total branch line length:120 m max. Special Flat Cable, 4-conductor VCTF cable: Variable branch wiring (total cable length 200 m max.) (There are no limits on the branching format or main, branch, or total line lengths. The terminator must be connected to the point in the system farthest from the master.)
Maximum number of nodes		32
Error control checks		Manchester code check, frame length check, and parity check

- Note:** 1. A terminator must be connected to the point in the system farthest from the Master.  
2. The baud rate is switched using DM settings (default setting is 750 kbps).

### Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

#### CPM2C-S100C CPM2C-S110C



**Note:** Refer to *CPM2C-S Programmable Controller Operation Manual (W377)* for detailed specifications.

CPM2C-S1□0C-DRT

# Programmable Slave PLC

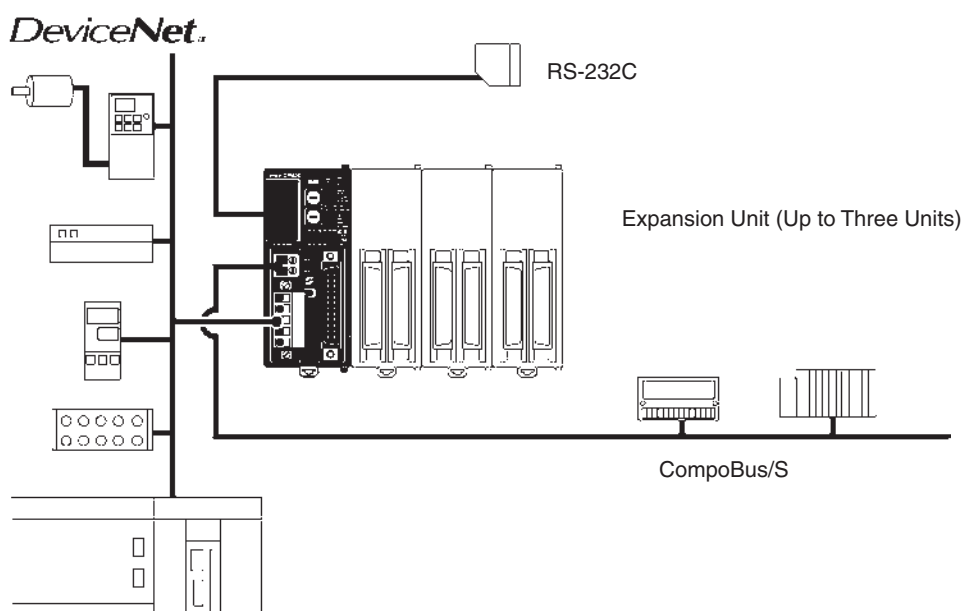
## Multi-functional programmable slave for distributed control

A part of an installation consisting of sensors, actuators and control is handled as one DeviceNet slave.

The distribution of device control enables the production of standard units with standardized programs and decreasing the load on the system master PLC. Conventional distributed I/O control networks do not allow I/O checks or operation checks until all devices on the networks are assembled and connected. Programmable slaves, however, allow I/O and operation checks

on any distributed unit independently.

- **DeviceNet slave functionality**  
Supports multi-word I/O links and explicit message communication, making it possible for the master to control the data of all the slaves on the network. Data that does not need immediate transmission, such as log data, can be transmitted in blocks using explicit message communication.
- **CompoBus/S master functionality**  
Connects to remote signal lights, pushbutton switches, terminal blocks, and pneumatic valves from other companies over VCTF or easy-to-branch flat cable.
- **RS-232C Communications**  
Barcodereaders and PTs can be connected to serial port. The data then will be processed locally and thus reduces the load on the central controlling PLC.
- **Expansion unit (Up to three units)**  
A wide variety of different expansion units is available to fit the application needs.



## Ordering Information

Unit		Inputs	Outputs	Clock	Model
10 points (6 inputs/4 outputs)	Connector model	6 points at 24 V DC	4 transistor sinking outputs	Yes	CPM2C-S100C-DRT
			4 transistor sourcing outputs	Yes	CPM2C-S110C-DRT

## Specifications

### General Specifications

Item	Specification	
Control method	Stored program method	
I/O control method	Cyclic scan method (Immediate refreshing can be performed with IORF(97).)	
Programming language	Ladder diagram	
Instruction length	1 step per instruction 1 to 5 words per instruction	
Instructions	Basic instructions	14
	Special instructions	105 instructions, 185 variations
Execution time	Basic instructions	0.64 μs (LD instruction)
	Special instructions	7.8 μs (MOV instruction)
Program capacity	4,096 words	
Max. I/O capacity	CPU Unit only: 10 points Expansion I/O Unit: 96 points (32-point Expansion I/O Unit x 3) (Up to 3 Expansion Units can be connected.) CompoBus/S: 256 points (362 points in total)	
Input bits	IR 00000 to IR 00915 (Bits not used for input bits can be used for work bits.)	
Output bits	IR 01000 to IR 01915 (Bits not used for output bits can be used for work bits.)	
CompoBus/S input bits	128 bits: IR 02000 to IR 02715 (words IR 020 to IR 027)	
CompoBus/S output bits	128 bits: IR 03000 to IR 03715 (words IR 030 to IR 037)	
Work bits	672 bits: IR 02800 to IR 02915 (words IR 028 to IR 029) IR 03800 to IR 03915 (words IR 038 to IR 039) IR 04000 to IR 04915 (words IR 040 to IR 049) IR 20000 to IR 22715 (words IR 200 to IR 227)	
Special bits (SR area)	440 bits: SR 22800 to SR 25507 (words SR 228 to SR 255)	
Temporary bits (TR area)	8 bits: (TR 0 to TR 7)	
Holding bits (HR area)	320 bits: HR 0000 to HR 1915 (words HR 00 to HR 19)	
Auxiliary bits (AR area)	384 bits: AR 0000 to AR 2315 (words AR 00 to AR 23) These include CompoBus/S slave status flags (words AR 04 to AR 07).	
Link bits (LR area)	256 points: LR 0000 to LR 1515 (words LR 00 to LR 15)	
Timers/Counters	256 timers/counters: TIM/CNT 000 to TIM/CNT 255 1-ms timers: TMHH (--) 10-ms timers: TIMH (15) 100-ms timers TIM 1-s/10-s timers: TIML (--) Decrementing counters: CNT Reversible counters: CNTR (12)	
Data memory	Read/Write	2,048 words (DM 0000 to DM 2047) The Error Log is contained in DM 2000 to DM 2021.
	Read only	456 words (DM 6144 to DM 6599)
	PC Setup	56 words (DM 6600 to DM 6655)
DeviceNet slave functions	DeviceNet Remote I/O Link No. of I/O Link points: 1,024 max. Explicit message communications Any PC data area can be accessed from the master.	
Basic interrupt functions	Interrupt inputs	2 interrupts (Used for both counter mode interrupts inputs and quick-response inputs.)
	Scheduled interrupts	1 interrupt

Item		Specification
High-speed counter functions	High-speed counters	1 counter (single phase at 20 kHz or 2 phases at 5 kHz)
	Counter interrupts	1 interrupt (set value comparison or set-value range comparison)
	Interrupt inputs (counter mode)	2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
	Count-up interrupts	2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
Quick-response inputs		2 points (Used for both external interrupts inputs and counter mode interrupt inputs.) Min. input pulse width: 50 μs max.
Pulse output		2 points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control: 1 point with trapezoid acceleration/deceleration, 10 Hz and 10 kHz with no direction control: or 2 points with variable duty-ratio outputs
Synchronized pulse control		1 point
Input time constant (ON response time = OFF response time)		Can be set for CPU Unit inputs and Expansion Unit inputs only (1, 2, 3, 5, 10, 20, 40, or 80 ms)
Clock		Equipped with clock (built-in RTC)
Communications functions		Peripheral port: Supports Host Link, peripheral bus, no-protocol communications, and Programming Console connections. RS-232C port: Supports Host Link, no-protocol communications, 1-to-1 Link, or 1-to-1 NT Link connections.
Power failure backup function		Data in HR, AR, Counter (CNT), and Data Memory (DM) areas is held.
Memory backup		Non-volatile (flash) memory: Program, read-only DM area, and PC Setup Memory backup (lithium battery: 2 years lifetime): DM area, HR area, AR area, and counter values
Self-diagnostic functions		CPU error (watchdog timer), memory errors, communications errors, setting errors, battery errors, and expansion I/O bus errors
Program check		No END instruction, programming errors (checked when operation is started)
Programming devices	Programming Console	C200H-PRO27, CQM1-PRO01, or CQM1H-PRO01
	CX-One	Windows 2000 / XP

**Note:** Connecting Cable (CPM2C-CN111, CS1W-CN114, or CS1W-CN118) is required to connect to the communications peripheral /RS-232C port.

## Communications Specifications

### DeviceNet

Communications protocol		DeviceNet
Connection form		Combination of multi-drop and T-branch connections (see note 1)
Baud rate		500, 250, or 125 kbps (switchable)
Communications media		Special 5-conductor cable (2 signal lines, 2 power supply lines, and 1 shield line)
Communications distance	Baud rate	500 kbps: Max. network length (see note 2):100 m max. (see note 3) Main line length:6 m max. Total branch line length:39 m max.
		250 kbps: Max. network length (see note 2):250 m max. (see note 3) Main line length:6 m max. Total branch line length:78 m max.
		125 kbps: Max. network length (see note 2):500 m max. (see note 3) Main line length:6 m max. Total branch line length:156 m max.
Max. number of connecting nodes		64 (63 slaves and 1 master)
Error control checks		CRC error, node address duplication check, and scan list verification

- Note:**
1. A terminator must be connected to both ends of the trunk line.
  2. The maximum network length is the length of the trunk line.
  3. When Thin Cable is used for the main line, the main line must be 100 m or less in length.

CompoBus/S

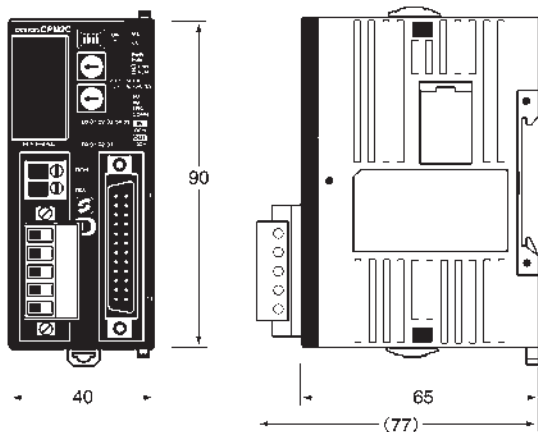
Communications method		Special CompoBus/S protocol
Coding method		Manchester coding
Connection form		Combination of multi-drop method and T-branch connections (see note 1)
Baud rate		High-speed Communications Mode: 750 kbps Long-distance Communications Mode: 93.75 kbps (see note 2)
Communications cycle time	High-speed Communications Mode	0.5 ms (with 8 input and 8 output slaves connected) 0.8 ms (with 16 input and 16 output slaves connected)
	Long-distance Communications Mode	4.0 ms (with 8 input and 8 output slaves connected) 6.0 ms (with 16 input and 16 output slaves connected)
Communications media		2-conductor cable (VCTF 0.75 x 2), 4-conductor cable (VCTF 0.75 x 4), or Special Flat Cable
Communications distance	High-speed Communications Mode	2-conductor VCTF cable: Main line length:100 m max. Branch line length:3 m max. Total branch line length:50 m max. Special Flat Cable, 4-conductor VCTF cable: Main line length:30 m max. Branch line length:3 m max. Total branch line length:30 m max. (When Special Flat Cable is used to connect fewer than 16 Slaves, the main line can be up to 100 m long and the total branch line length can be up to 50 m.)
	Long-distance Communications Mode	2-conductor VCTF cable: Main line length:500 m max. Branch line length:6 m max. Total branch line length:120 m max. Special Flat Cable, 4-conductor VCTF cable: Variable branch wiring (total cable length 200 m max.) (There are no limits on the branching format or main, branch, or total line lengths. The terminator must be connected to the point in the system farthest from the master.)
Maximum number of nodes		32
Error control checks		Manchester code check, frame length check, and parity check

- Note:** 1. A terminator must be connected to the point in the system farthest from the Master.  
2. The baud rate is switched using DM settings (default setting is 750 kbps).

Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

CPM2C-S100C-DRT  
CPM2C-S110C-DRT

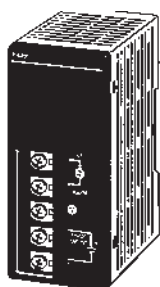


**Note:** Refer to *CPM2C-S Programmable Controller Operation Manual (W377)* for detailed specifications.

CPM2C-PA201

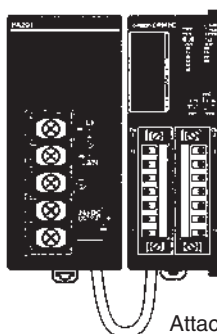
# AC Power Supply Unit

- The CPM2C-PA201 is a slim and compact AC Power Supply Unit of the same shape as the CPM2C's CPU Unit. It can be connected simply using the connecting cable (23 cm) provided. It can also be used for CPM1A and CPM2A CPU Units and as display power supply (wired by the user).

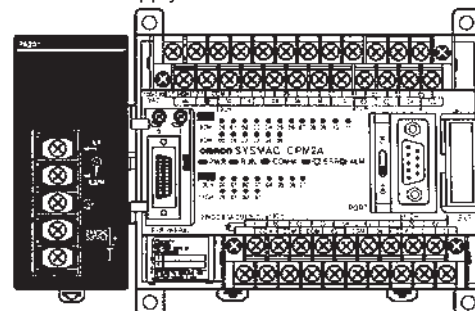


Service power supply for external devices such as sensors (24 V).

AC Power Supply Unit



AC Power Supply Unit



Attached connecting cable

## Specifications

Item	Specification		
Rated output	15 W		
Output voltage	24 V		
Output current	600 mA		
Efficiency	75% min. (at rated output)		
Input conditions	Rated voltage	100 to 240 V AC	
	Allowable voltage range	85 to 264 V AC	
	Frequency	47 to 63 Hz	
	Current	100 V	0.4 A
		200 V	0.2 A
	Leakage current	100 V	0.5 mA max. (at rated output)
		200 V	1 mA max. (at rated output)
Inrush current	100 V	15 A max. (at 25°C cold start)	
	200 V	30 A max. (at 25°C cold start)	
Output characteristics	Output voltage accuracy	10%~15% (including input, load, and temperature fluctuations)	
	Minimum output current	30 mA	
	Ripple noise voltage	2% (p-p) max.	
	Input fluctuation	0.75% max.	
	Load fluctuation	4% max.	
	Temperature fluctuation	0.05%/°C max.	
	Startup time	300 ms max. (at input voltage of 100 V AC or 200 V AC and the rated output)	
Output hold time	10 ms (at input voltage of 100 V AC or 200 V AC and the rated output)		
Overcurrent protection	Self-resetting, operates at 105% to 335% of the rated current, suspended and independent operation		
Overvoltage protection	None		
Ambient operating temperature	0° to 55°C		
Ambient storage temperature	-20° to 70°C (no condensation or icing)		
Ambient operating humidity	10% to 90% (no condensation)		
Dielectric strength	2,000 V for 1 min between all inputs and GR Leakage current: 10 mA 3,000 V for 1 min between all inputs and all outputs Leakage current: 10 mA 1,000 V for 1 min between all outputs and GR Leakage current: 10 mA		
Insulation resistance	100 MΩ min. at 500 V DC between all outputs and any input, and between all outputs and GR		
Vibration resistance	10 to 57 Hz, amplitude, 57 to 150 Hz, acceleration: 9.8 m/s <sup>2</sup> in X, Y, and Z directions for 80 minutes according (Time coefficient: 8 minutes × coefficient factor 10 = total time 80 min.)		
Shock resistance	147 m/s <sup>2</sup> 3 times each in X, Y, and Z directions		
Noise terminal voltage	FCC class A		
Weight	250 g max.		

CPM2C-MAD11

# Analog I/O Unit

- Up to four CPM2C-MAD11 Analog I/O Units can be connected to the CPM2C. Each Unit provides 2 analog inputs and 1 analog output, i.e., up to 8 analog inputs and 4 analog outputs can be supported by one CPM2C.
- Example Application: Packaging Machines



## Specifications

Item		Voltage I/O	Current I/O
Analog inputs	Number of inputs	2 (allocated 2 words)	
	Input signal ranges	0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V	
	Maximum rated input	±15 V	
	External input impedance	1 MΩ min.	
	Resolution	1/6,000 (full scale)	
	Overall precision	25° C:±0.3% of full scale	25° C:±0.4% of full scale
		0 to 55° C:±0.6% of full scale	0 to 55° C:±0.8% of full scale
	Converted A/D data	Binary data (4-digit hexadecimal) -10 to 10 V: F448 to 0BB8 Hex full scale Other:0000 to 1770 Hex full scale	
Averaging	Supported (set for each input with DIP switch)		
Disconnected line detection	Supported		
Analog output	Number of outputs	1 (allocated 1 word)	
	Output signal ranges	1 to 5 V, 0 to 10 V, -10 to 10 V	
	External output allowed load resistance	1 kΩ min.	
	External output impedance	0.5 Ω max.	
	Resolution	1/6,000 (full scale)	
	Overall precision	25° C:±0.4% of full scale	
		0 to 55° C:±0.8% of full scale	
D/A data setting	Binary data (4-digit hexadecimal) -10 to 10 V: F448 to 0BB8 Hex full scale Other:0000 to 1770 Hex full scale		
Conversion time	2 ms/point (6 ms/all analog I/O)		
Isolation method	Photocoupler isolation between analog I/O and internal circuits. (Individual analog I/O signals are not isolated.)		
Power consumption	3.5 W		
Weight	200 g max.		



CPM2C-TS001/-TS101

# Temperature Sensor Units

- Up to four CPM2C-TS001/TS101 Temperature Sensor Units can be connected to the CPM2C. Each Unit provides 2 input points for temperature sensors, including thermocouples or temperature resistance thermometers, i.e., up to 8 temperature sensors can be input to one CPM2C.
- Application Examples: Foodstuff Equipment and Packaging Machines



## Specifications

### General

Item	CPM2C-TS001	CPM2C-TS101
Temperature sensor	Thermocouple	Temperature resistance thermometer
Input types	K or J selectable (The same input type must be used for all inputs.)	Pt100, JPt100 selectable (The same input type must be used for all inputs.)
Number of inputs	2 (2 words allocated)	
Accuracy	$\pm 0.5\%$ or $\pm 2^\circ\text{C}$ of the stored value whichever is larger $\pm 1$ digit max. (see note)	$\pm 0.5\%$ or $\pm 1^\circ\text{C}$ of the stored value whichever is larger (see note) $\pm 1$ digit max.
Conversion cycle	250 ms/2 inputs	
Converted temperature data	Binary data (4-digit hexadecimal)	
Isolation method	Photocoupler isolation between input signals	
Power consumption	1.5 W	
Weight	200 g max.	

**Note:** Accuracy for K thermocouples at temperatures less than  $-100^\circ\text{C}$ :  $\pm 4^\circ\text{C} \pm 1$  digit max.

### Input Temperature Ranges for CPM2C-TS001

The input type is selected with a rotary switch. The ranges for each of the input types are shown in the following table.

Item	Range in $^\circ\text{C}$	Range in $^\circ\text{F}$
K	-200 to 1,300	-300 to 2,300
	0.0 to 500.0	0.0 to 900.0
J	-100 to 850	-100 to 1,500
	0.0 to 400.0	0.0 to 750.0

### Input Temperature Ranges for CPM2C-TS101

The input type is selected with a rotary switch. The ranges for each of the input types are shown in the following table.

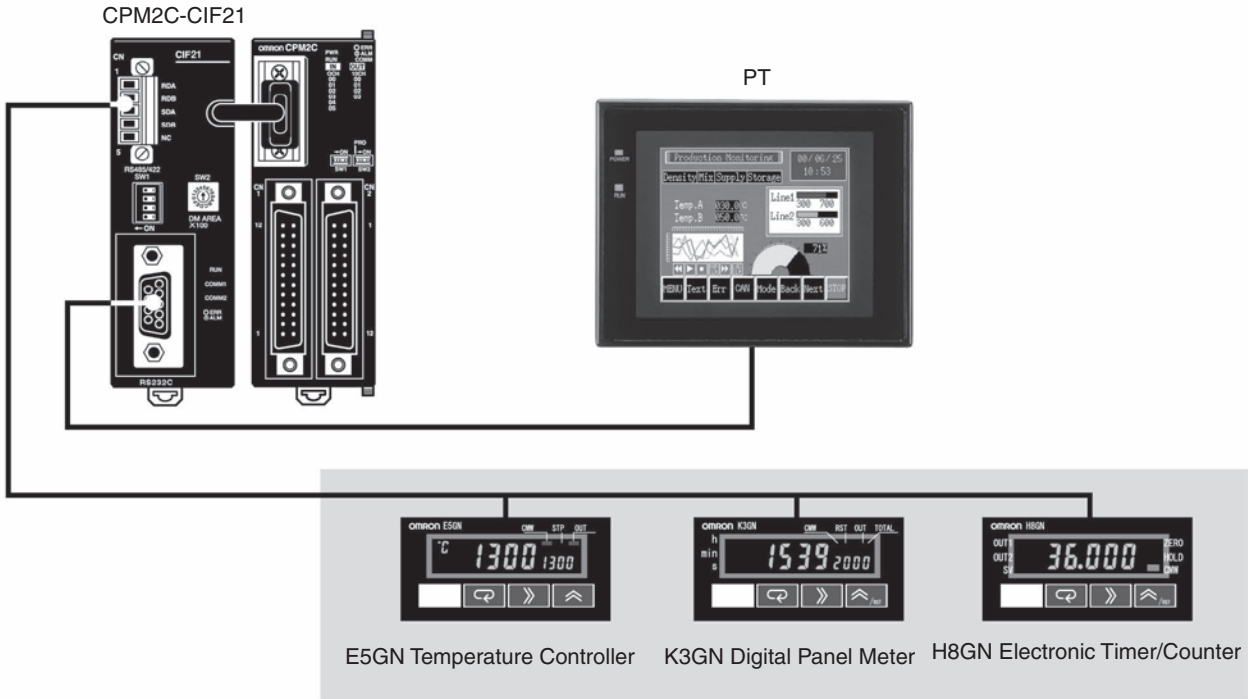
Item	Range in $^\circ\text{C}$	Range in $^\circ\text{F}$
Pt100	-200.0 to 650.0	-300 to 1,200.0
JPt100	-200.0 to 650.0	-300 to 1,200.0

CPM2C-CIF21

# Simple Communications Unit

Easy initial settings enable data exchange between the CPM2C and components.

## System Configuration



## Connectable Devices

A Wide Range of Devices Supporting CompoWay/F or SYSWAY Communications

Classification	Product	Model	SYSWAY		CompoWay/F	Remarks
			Yes	Segments		
Controllers	Temperature Controllers	E5GN	Yes	1	Yes	---
		E5CN	Yes	1	Yes	---
		E5EN	Yes	1	Yes	---
		E5AN	Yes	1	Yes	---
	Modular Temperature Controller	E5ZN	No	---	Yes	---
	Digital Controllers	E5CK	Yes	1	No	---
		E5EK	Yes	1	No	---
		E5AK	Yes	1	No	---
	Digital Controllers for control valves	E5EK	Yes	1	No	Valve system communications not supported.
		E5AK	Yes	1	No	---
	Digital Controller, basic type	E5CK-T	No	---	No	---
		E5EK-T	No	---	No	---
		E5AK-T	No	---	No	---
	Digital Controllers for control valves, programmable	E5EK-T	No	---	No	---
		E5AK-T	No	---	No	---
Temperature Controllers	E5EJ	Yes	1	No	---	
	E5AJ	Yes	1	No	---	
	Fuzzy Temperature Controller	E5AF	Yes	1	No	---
Timers	Electronic Timer/Counter	H8GN	No	---	Yes	---

Classification	Product	Model	SYSWAY	Segments	CompoWay/F	Remarks
Digital Panels	Digital Panel Meter	K3GN	No	---	Yes	---
	Process Meter	K3NX	Yes	2	Limited	Some commands cannot be used with some models (options). Only the CompoWay/F variable area can be read.
	Weighing Meter	K3NV	Yes	2	Limited	
	Frequency/Rate Meter	K3NR	Yes	2	Limited	
	Period Meter	K3NP	Yes	2	Limited	
	Up/Down Counter Meter	K3NC	Yes	2	Limited	
	Temperature Meter	K3NH	Yes	2	Limited	
	Intelligent Signal Processor	K3TS	Yes	2	No	

Limited: Connection possible for limited functions.

- Note:** 1. SYSWAY segment 1 and SYSWAY segment 2 can be combined.  
 2. When a K3TS is connected, connect the other components via SYSWAY as well.

### Component Parameters Supported for Communications

The communications protocol for components can be set in the CPM2C's DM Area to CompoWay/F or SYSWAY. The data that can be read and written depends on the protocol that is set.

#### CompoWay/F

Reading and writing is possible for all component data (except for some Digital Panel Meters). The amount of data that can be read/written in one operation per component is limited to 12 data items for reading and 12 data items for writing. Reading and writing is enabled by setting the address for each parameter in DM.

#### SYSWAY

Reading and writing is possible for the data shown in the following table.

Segment	Read/write	Item	Command group				
			1	2	3	4	5
1: Controllers	Read	Present temperature	Yes	Yes	Yes	Yes	Yes
		Status	Yes	Yes	Yes	Yes	Yes
		Temperature set value	Yes	Yes	Yes	Yes	Yes
		Alarm 1 set value			Yes	Yes	Yes
		Alarm 2 set value			Yes	Yes	Yes
		Proportional band				Yes	Yes
		Integral time				Yes	Yes
		Derivative time				Yes	Yes
		Heater current					Yes
		Heater current status					Yes
		Write	Temperature set value	Yes	Yes	Yes	Yes
	Operation command			Yes	Yes	Yes	Yes
	Alarm 1 set value				Yes	Yes	Yes
	Alarm 2 set value				Yes	Yes	Yes
	Proportional band					Yes	Yes
	Integral time					Yes	Yes
	Derivative time					Yes	Yes
	Heater burnout detection value					Yes	
2: Digital Meters	Read	Display value	Yes	Yes	Yes	Yes	Yes
		Display status	Yes	Yes	Yes	Yes	Yes
		Peak hold		Yes	Yes		Yes
		Peak hold status		Yes	Yes		Yes
		Bottom hold		Yes	Yes		Yes
		Bottom hold status		Yes	Yes		Yes
		HH comparison value				Yes	Yes
		H comparison value				Yes	Yes
		L comparison value				Yes	Yes
		LL comparison value				Yes	Yes
	Write	Operation command			Yes		Yes
		HH comparison value				Yes	Yes
		H comparison value				Yes	Yes
		L comparison value				Yes	Yes
		LL comparison value				Yes	Yes

The command groups for which reading or writing is performed are determined by settings in the DM area.

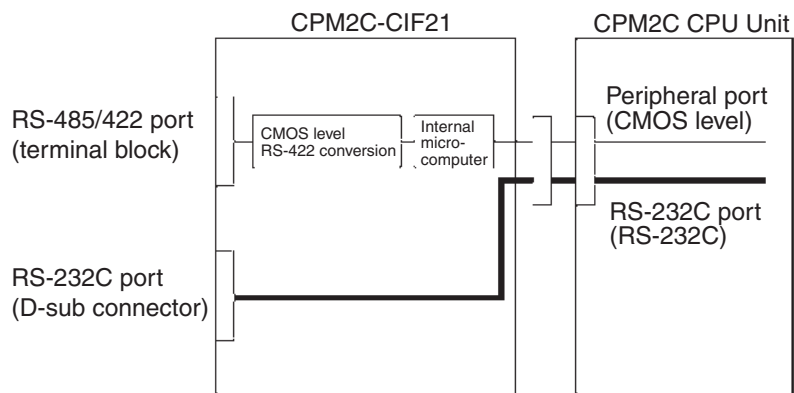
**Specifications**

**General**

Item		Specification
Applicable PLC		CPM2C
RS-485/422 (top port)	Maximum number of connectable components	32
	Component connection port	Components connected to RS-485/422 terminal block. Connected to CPM2C CPU Unit via peripheral port (see diagram below).
	Baud rate for connection to components	9.6, 19.2, 38.4, or 57.6 kbps
	Baud rate for connection to CPU Unit	9.6 or 19.2 kbps
RS-232C (bottom port)	Signal conversion	Output from CPU Unit's RS-232C interface with no conversion
	Communications functions	One of the following: Host Link, no-protocol, 1:1 Link, 1:1 NT Link
Power supply		From CPU Unit
Power consumption		1 W
Weight		150 g max.

**System Configuration**

**Internal**

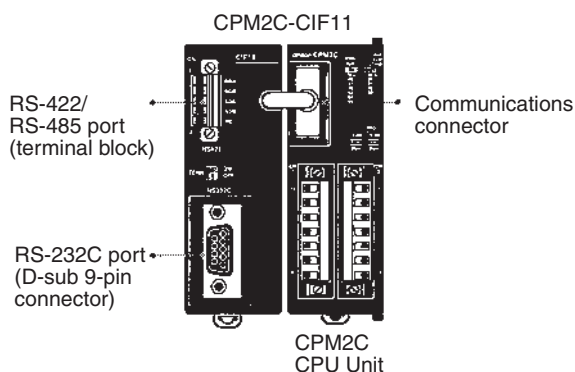
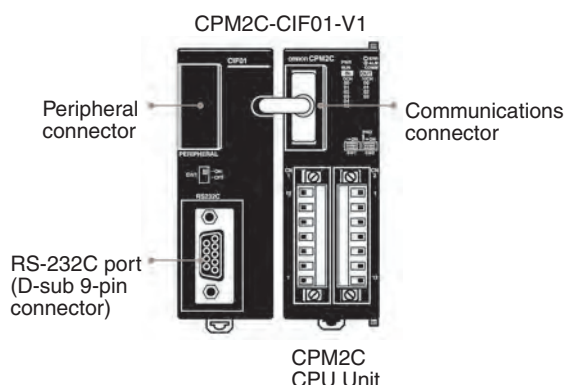


CPM2C-CIF□1(-V1)

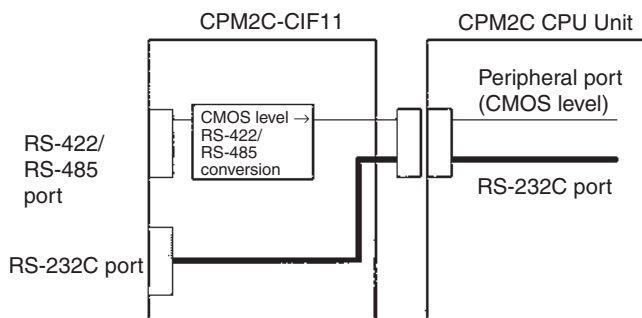
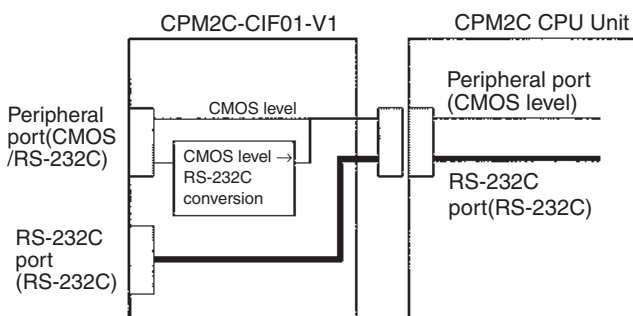
# RS-232C / RS-422 / RS-485 Adapter Units

## System Configuration

### External Configuration



### Internal Configuration



**Note:** When using the CS1W-CN226/CN626 Connecting Cable for personal computer connection, turn ON the switch.

**Note:** A Programming Console cannot be connected to the RS-422 port.

## Specifications

### General

Item	Specification	
	CPM2C-CIF01-V1	CPM2C-CIF11
Upper port	Signal conversion	Outputs signals from the CPU Unit's CMOS interface without conversion, or converts CMOS level (CPU Unit side) to RS-232C (connected device side).
	Function	Host Link, peripheral bus, no-protocol, or Programming Console connections.
Lower port	Signal conversion	Converts CMOS level (CPU Unit side) to RS-422 or RS-485 (connected device side). The externally connected device is insulated.
	Function	Host Link, peripheral bus, or no-protocol connections.
Power supply	Outputs signals from the CPU Unit's CMOS interface without conversion.	
Current consumption	Host Link, no-protocol, 1:1 Link, or 1:1 NT Link connections.	
Weight	Power supplied from CPU Unit.	
	0.3 A max. at 5 V	
	150 g max.	

**Note:** Neither the CPM2C-CIF01-V1 nor the CPM2C-CIF11 can be used with any PLC other than the CPM2C. A CPM2C-CIF11 or another CPM2C-CIF01-V1 cannot be connected to the CPM2C if a CPM2C-CIF01-V1 is already connected to it.

CPM2C-SRT21

# CompoBus/S I/O Link Unit

## I/O Link Unit for CPM2C

- Operates as a Slave of the CompoBus/S Master Unit.
- Exchanges eight inputs and eight outputs with the Master.



## Ordering Information

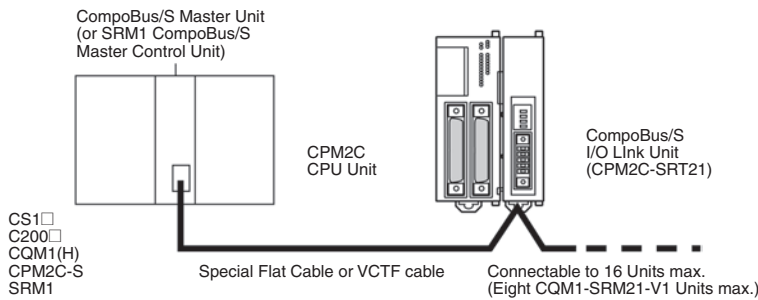
### CompoBus I/O Link Unit

Name	Specifications	Model
CompoBus/S I/O Link Unit	Number of points for I/O links: 8 inputs and 8 outputs	CPM2C-SRT21

## Application Examples

### Conveyor Line

Processing speed can be increased and system setup labor reduced by creating a distributed system with a CPM2C at each conveyor.



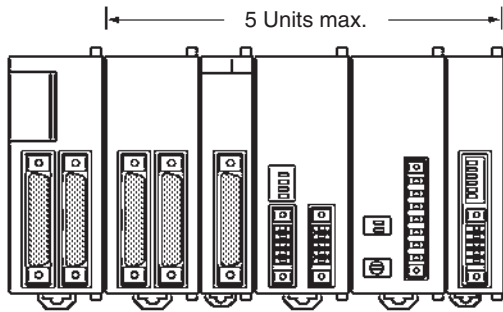
## Specifications

Item	CPM2C-SRT21
Master/Slave	CompoBus/S Slave
Number of I/O points	8 inputs and 8 outputs
Number of words occupied in CPM2C's I/O memory	1 input word and 1 output word (allocated in the same way as for other Expansion Units)
Node address setting	DIP switch
Power consumption	1 W
Weight	150 g

**Note:** For details of CPM2C PLCs, refer to the CPM2C catalog (Cat. No. P049).

# CPM2C General Information

## System Configuration



CPU Unit

### Number of Connectable Units

Up to 5 Units can be connected to a CPM2C CPU Unit except for the CPM2C-S1□OC-DRT Programmable Slave and CPM2C-S1□OC CompoBus/S Master Unit, which are limited to 3 Units. The number of words that can be used by Expansion Units, however, is limited, and these limits must not be exceeded.

Model	Max. No. of Units	Applicable I/O words
CPU Units except those listed below	5	Inputs: IR 001 to IR 009 (CPU Unit uses IR 000) Outputs: IR 011 to IR 019 (CPU Unit uses IR 010)
CPU Units with 32 I/O points (CPM2C-32CDT□C-D)	5	Inputs: IR 002 to IR 009 (CPU Unit uses IR 000 and IR 001) Outputs: IR 012 to IR 019 (CPU Unit uses IR 010 and IR 011)
CPM2C-S1□OC-DRT Programmable Slave and CPM2C-S1□OC CompoBus/S Master Unit	3	Inputs: IR 001 to IR 009 (CPU Unit uses IR 000) Outputs: IR 011 to IR 019 (CPU Unit uses IR 010)

### Number of I/O Words Allocated to Expansion Units

Unit	Model number	Input words	Output words
Expansion Input Units	CPM2C-8ED□	1	---
	CPM2C-16ED□	1	---
Expansion Output Units	CPM2C-8ER	---	1
	CPM2C-8ET(1)□	---	1
	CPM2C-16ET(1)□	---	1
Expansion I/O Units	CPM2C-10EDR	1	1
	CPM2C-24EDT(1)□	1	1
Expansion I/O Units	CPM2C-20EDR	1	1
	CPM2C-32EDT(1)□	1	1
Analog I/O Unit	CPM2C-MAD11	2	1
Temperature Sensor Units	CPM2C-TS001	2	---
	CPM2C-TS101	2	---
CompoBus/S I/O Link Unit	CPM2C-SRT21	1	1

- Note:**
1. An AC Power Supply Unit can be used for the CPU Units.
  2. The CPM2C-CIF01-V1/CIF11/CIF21 can be used with the CPU Units

Unit	Model number	Inputs	Outputs
CPU Unit	CPM2C-20CDTC-D	IR 000	IR 010
Expansion I/O Unit	CPM2C-24EDTC	IR 001	IR 011
Expansion Output Unit	CPM2C-16ETC	---	IR 012
Analog I/O Unit	CPM2C-MAD11	IR 002 IR 003	IR 013
Temperature Sensor Unit	CPM2C-TS001	IR 004 IR 005	---
CompoBus/S I/O Link Unit	CPM2C-SRT21	IR 006	IR 014

### CPM2C Power Consumption

Use the following power consumption tables to calculate the total power capacity required when using a CPM2C PC. The rated output for the CPM2C-PA201 AC Power Supply Unit is 15 W. Any surplus power not required for the PC directly can be used as service power supply for sensors and other devices.

### CPM2C Power Supplies

CPU Unit	Power consumption (W)
CPM2C-10C(1)DR-D	4
CPM2C-20C(1)DR-D	4
CPM2C-S1□OC-DRT1	3
CPM2C-S1□OC	3
CPM2C-10C(1)DT(1)□-D	3
CPM2C-20C(1)DT(1)□-D	3
CPM2C-32C(1)DT(1)□-D	3

The power consumption of the CPU Unit includes power for the Programming Consoles and Adapter Units.

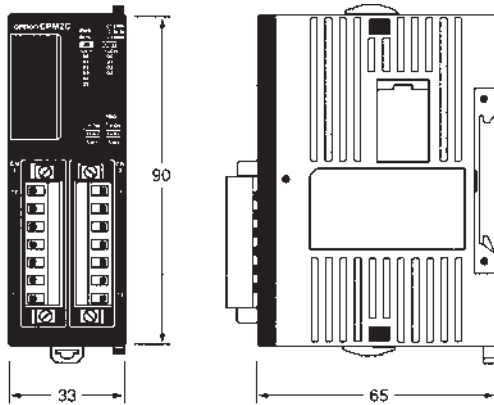
Add the following consumptions when using Expansion I/O Units.

Expansion I/O Unit	Power consumption (W)
CPM2C-10EDR	1
CPM2C-20EDR	2
CPM2C-24EDT(1)□	1
CPM2C-32EDT(1)□	1
CPM2C-MAD11	3.5
CPM2C-SRT21	1
CPM2C-TS001/002	1.5
CPM2C-8ED□/16ED□	1
CPM2C-8ER	2
CPM2C-8ET(1)□/16ET(1)□	1

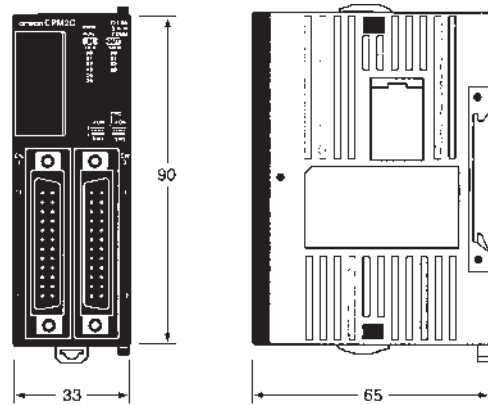
# Dimensions

## CPU Units

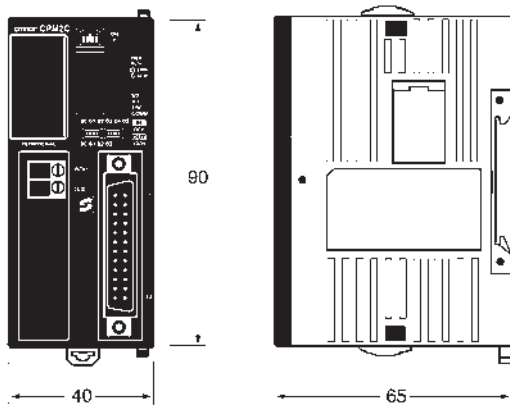
**CPU Units with Relay Outputs**  
(CPM2C-10C(1)DR-D, CPM2C-20C(1)DR-D)



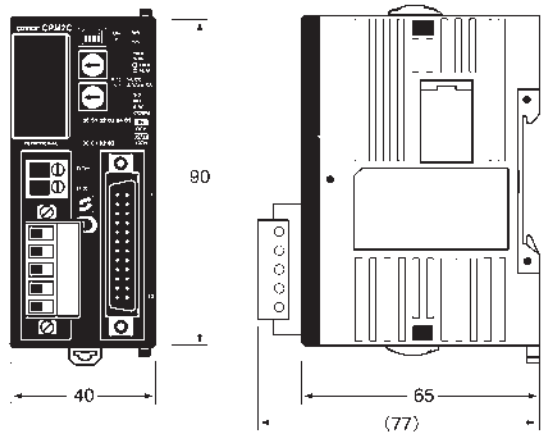
**CPU Units with Transistor Outputs**  
(CPM2C-10C(1)DT(1)C-D, CPM2C-10C(1)DT(1)M-D,  
CPM2C-20C(1)DT(1)C-D, CPM2C-20C(1)DT(1)M-D,  
CPM2C-32CDT(1)C-D, CPM2C-32CDT(1)M-D)



**CPU Units with Relay Outputs**  
(CPM2C-S1□0C)



**CPU Units with Transistor Outputs**  
(CPM2C-S1□0C-DRT)

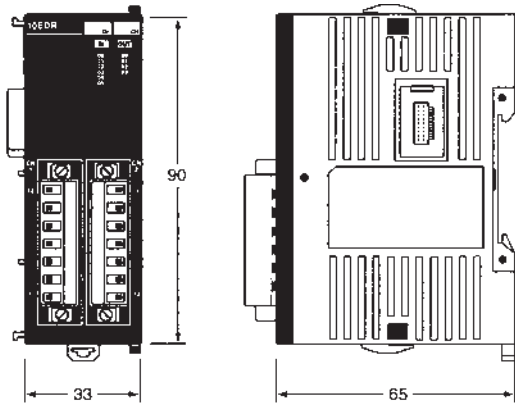


**Note:** All dimensions are in mm.

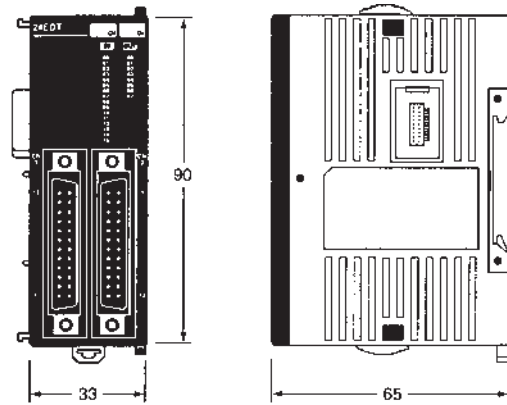


I/O Expansion Units

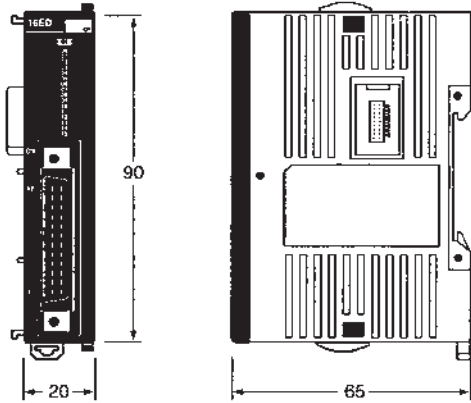
Units with Relay Outputs  
(CPM2C-8ER, CPM2C-10EDR, CPM2C-20EDR)



Units with Transistor Outputs  
(CPM2C-24EDT(1)C, CPM2C-24EDT(1)M,  
CPM2C-32EDT(1)C, CPM2C-32EDT(1)M)

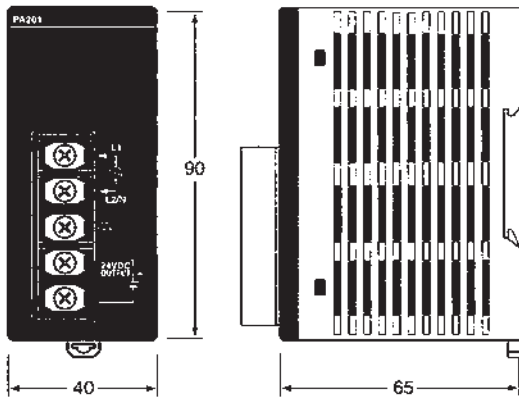


Units with Transistor Outputs Only and Units with Inputs Only  
(CPM2C-8ED(1), CPM2C-8ET(1)C, CPM2C-8ET(1)M,  
CPM2C-16ED(1), CPM2C-16ET(1)C, CPM2C-16ET(1)M)

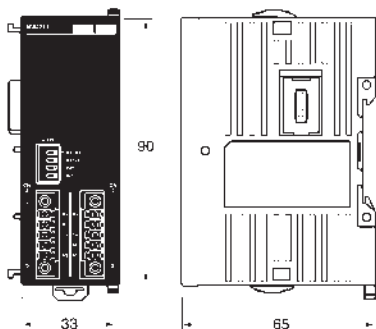


Note: All dimensions are in mm.

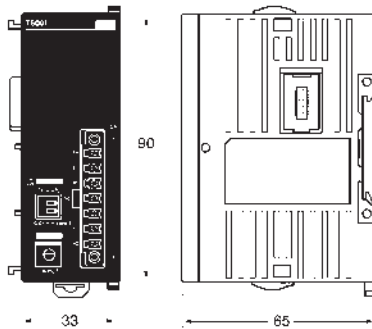
AC Power Supply Unit  
(CPM2C-PA201)



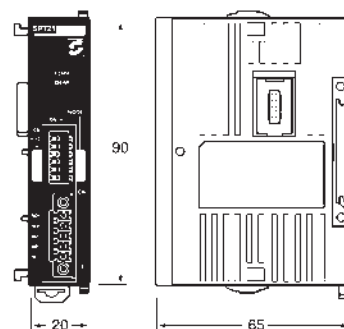
Analog I/O Unit  
(CPM2C-MAD11)



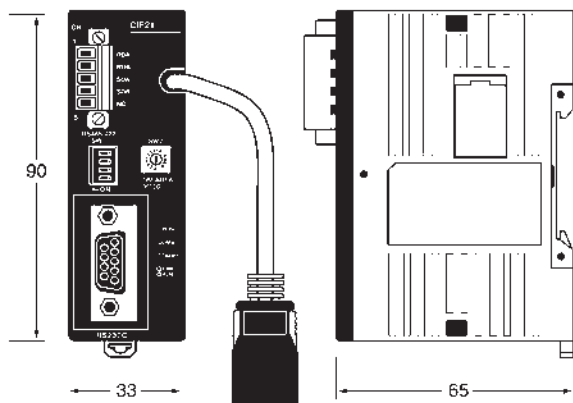
Temperature Sensor Unit  
(CPM2C-TS001, CPM2C-TS101)



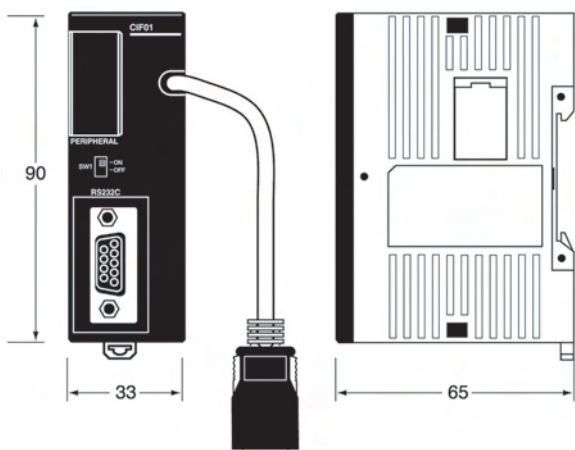
CompoBus/S I/O Link Unit  
(CPM2C-SRT21)



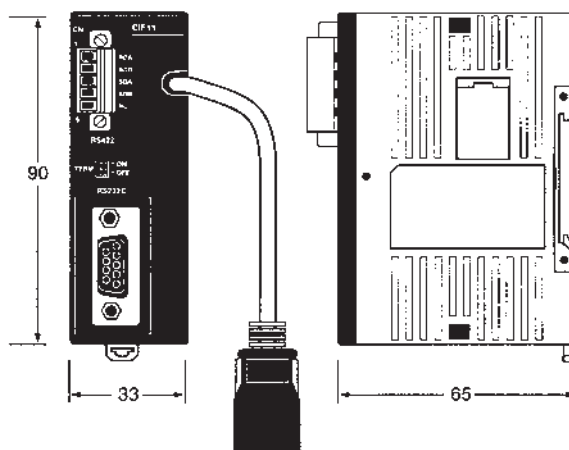
Simple Communications Unit  
(CPM2C-CIF21)



Peripheral/RS-232C Adapter Unit  
(CPM2C-CIF01-V1)



RS-422/RS-485/RS-232C Adapter Unit  
(CPM2C-CIF11)



# CPM2C Ordering Information

## International Standards

The products shown in the attached tables are those that conform to the UL, CSA, cULus, cUL, NK, Lloyd's Register, and EC Directives as of September 2003.

(U: UL, C: CSA, UC: cULus, CU: cUL, N: NK, L: Lloyd, CE: EC Directives)

Please contact OMRON representative for application conditions.

## CPM2C CPU Units

CPU Unit	Inputs	Outputs	Internal clock	Model	Standards	
Units with 10 I/O points Inputs: 6 Outputs: 4	I/O terminal block	6 inputs (24 V DC)	4 relay outputs	---	CPM2C-10CDR-D	U, C, CE
				Yes	CPM2C-10C1DR-D	
Units with 10 I/O points Inputs: 6 Outputs: 4	2 Fujitsu connectors	6 inputs (24 V DC)	4 sinking transistor outputs	---	CPM2C-10CDTC-D	U, C, CE
			4 sourcing transistor outputs	---	CPM2C-10C1DTC-D	
			4 sinking transistor outputs	---	CPM2C-10CDT1C-D	
			4 sourcing transistor outputs	---	CPM2C-10C1DT1C-D	
	2 MIL connectors	6 inputs (24 V DC)	4 sinking transistor outputs	---	CPM2C-10CDTM-D	U, C, CE
			4 sinking transistor outputs	Yes	CPM2C-10C1DTM-D	
			4 sourcing transistor outputs	---	CPM2C-10CDT1M-D	
			4 sourcing transistor outputs	Yes	CPM2C-10C1DT1M-D	
Units with 20 I/O points Inputs: 12 Outputs: 8	2 terminal blocks	12 inputs (24 V DC)	8 relays	---	CPM2C-20CDR-D	U, C, CE
			8 sinking transistor outputs	---	CPM2C-20CDTC-D	
			8 sourcing transistor outputs	---	CPM2C-20C1DTC-D	
			8 sourcing transistor outputs	Yes	CPM2C-20C1DT1C-D	
	2 Fujitsu connectors	12 inputs (24 V DC)	8 sinking transistor outputs	---	CPM2C-20CDTM-D	U, C, CE
			8 sinking transistor outputs	Yes	CPM2C-20C1DTM-D	
			8 sourcing transistor outputs	---	CPM2C-20CDT1M-D	
			8 sourcing transistor outputs	Yes	CPM2C-20C1DT1M-D	
Units with 32 I/O points Inputs: 16 Outputs: 16	2 Fujitsu connectors	16 inputs (24 V DC)	16 sinking transistor outputs	---	CPM2C-32CDTC-D	U, C, CE
			16 sourcing transistor outputs	---	CPM2C-32CDT1C-D	
	2 MIL connectors	16 inputs (24 V DC)	16 sinking transistor outputs	---	CPM2C-32CDTM-D	U, C, CE
			16 sourcing transistor outputs	---	CPM2C-32CDT1M-D	
Programmable Slave with DeviceNet slave and CompoBus/S Master, 10 I/O points Inputs: 6 Outputs: 4	1 Fujitsu connector	6 inputs (24 V DC)	4 sinking transistor outputs	Yes	CPM2C-S100C-DRT	U, C, CE
			4 sourcing transistor outputs	Yes	CPM2C-S110C-DRT	
Units with CompoBus/S Master, 10 I/O points Inputs: 6 Outputs: 4	1 Fujitsu connector	6 inputs (24 V DC)	4 sinking transistor outputs	Yes	CPM2C-S100C	U, C, CE
			4 sourcing transistor outputs	Yes	CPM2C-S110C	

## Power Supply Unit

Unit	Input	Output	Model	Standards
AC Power Supply Unit	100 to 240 V AC	24 V DC/600 mA	CPM2C-PA201	U, C, CE

## Expansion I/O Units

Expansion I/O Unit	Inputs	Outputs	Model	Standards	
Units with inputs only Inputs: 8	1 Fujitsu connector	8 inputs (24 V DC)	---	CPM2C-8EDC	U, C, CE
	1 MIL connector	8 inputs (24 V DC)	---	CPM2C-8EDM	
Units with inputs only Inputs: 16	1 Fujitsu connector	16 inputs (24 V DC)	---	CPM2C-16EDC	U, C, CE
	1 MIL connector	16 inputs (24 V DC)	---	CPM2C-16EDM	
Units with relay outputs only Outputs: 8	I/O terminal block	---	8 relay outputs	CPM2C-8ER	U, C, CE
			8 sinking transistor outputs	CPM2C-8ETC	
	1 Fujitsu connector	---	8 sourcing transistor outputs	CPM2C-8ET1C	U, C, CE
			8 sinking transistor outputs	CPM2C-8ETM	
1 MIL connector	---	8 sourcing transistor outputs	CPM2C-8ET1M	U, C, CE	
		8 sinking transistor outputs	CPM2C-8ETM		
Units with transistor outputs only Outputs: 8	1 Fujitsu connector	---	16 sinking transistor outputs	CPM2C-16ETC	U, C, CE
			16 sourcing transistor outputs	CPM2C-16ET1C	
	1 MIL connector	---	16 sinking transistor outputs	CPM2C-16ETM	U, C, CE
			16 sourcing transistor outputs	CPM2C-16ET1M	
Units with 10 I/O points Inputs: 6 Outputs: 4	1 I/O terminal block	6 inputs (24 V DC)	4 relay outputs	CPM2C-10EDR	U, C, CE

Expansion I/O Unit		Inputs	Outputs	Model	Standards
Units with 20 I/O points Inputs: 12 Outputs: 8	1 I/O terminal block	12 inputs (24 V DC)	8 relay outputs	CPM2C-20EDR	U, C, CE
Units with 24 I/O points Inputs: 16 Outputs: 8	2 Fujitsu connectors	16 inputs (24 V DC)	8 sinking transistor outputs 8 sourcing transistor outputs	CPM2C-24EDTC CPM2C-24EDT1	U, C, CE U, C, CE
	2 MIL connectors	16 inputs (24 V DC)	8 sinking transistor outputs 8 sourcing transistor outputs	CPM2C-24EDTM CPM2C-24EDT1M	U, C, CE U, C, CE
Units with 32 I/O points Inputs: 16 Outputs: 16	2 Fujitsu connectors	16 inputs (24 V DC)	16 sinking transistor outputs 16 sourcing transistor outputs	CPM2C-32EDTC CPM2C-32EDT1C	U, C, CE U, C, CE
	2 MIL connectors	16 inputs (24 V DC)	16 sinking transistor outputs 16 sourcing transistor outputs	CPM2C-32EDTM CPM2C-32EDT1M	U, C, CE U, C, CE

### Analog I/O Units

Product	Specifications	Model	Standards
Analog I/O Unit	2 analog inputs and 1 analog output	CPM2C-MAD11	CE

### Temperature Sensor Unit

Product	Specifications	Model	Standards
Temperature Sensor Unit	2 inputs for thermocouples	CPM2C-TS001	CE
	2 inputs for temperature resistance thermometers	CPM2C-TS101	

### CompoBus/S I/O Link Units

Product	Specifications	Model	Standards
CompoBus/S I/O Link Units	I/O Links: 8 inputs, 8 outputs	CPM2C-SRT21	CE

### I/O Connectors

(Connectors are not provided with CPU Unit. Select the appropriate ones from the following table. One CPU Unit requires two sets of Connectors.)

#### Fujitsu Connectors

Connection method	From OMRON		From Fujitsu
Soldered	C500-CE241	1 set	FCN-361J024-AUConnector FCN-360C024-J2Connector Cover
Crimped	C500-CE242		FCN-363J024Housing FCN-363J-AUCContacts FCN-360C024-J2Connector Cover
Pressure-welded	C500-CE243		FCN-367J024-AU/F

#### MIL Connectors

Connection method	Model	Number in box	Specifications
Pressure-welded	XG4M-2030-T	100	Poles: 20

**Note:** Any commercially available 20-pole (IDC) connectors, according to MIL-C-83503, DIN 41651 or IEC 60603-1 specification, can be used.

### Programming Consoles and Cables

Product	Model	Standards	
Programming Console (2-m cable attached)	CQM1-PRO01-E	U, C, CE, N	
Programming Console (Requires separate cable. See below.)	C200H-PRO27-E	U, C, N, CE	
Connecting Cable for connecting CQM1-PRO01-E to a peripheral port	CS1W-CN114	CE	
Connecting Cable for C200H-PRO27-E	2-m cable	C200H-CN222	N
	4-m cable	C200H-CN422	---
Connecting Cable for C200H-PRO27-E allowing direct connection to the CPM2C CPU Unit	2-m cable	CS1W-CN224	CE
	6-m cable	CS1W-CN624	CE

### Support Software

Product	Functions	Model	Standards
CX-One	Omron's integrated software for programming and configuration of all control system components, including PLCs, HMI, drives, temperature controllers and advanced sensors.	CX-ONE-AL□□C-E* <sup>1</sup>	---

\*1 □□ = Number of licenses (01, 03, 10)

Product	Model	Standards
Expansion Memory Unit	CPM1-EMU01-V1	---
EEPROM (256 K)	EEROM-JD	---

Peripheral Port Adapters and Connecting Cables

Description		Computer port	Length	Model	Standards
Personal Computer Connecting Cables	Peripheral Port Cable	For a D-sub 9-pin port	2 m	CS1W-CN226	CE
			6 m	CS1W-CN626	CE
			3.3 m	CQM1-CIF02	U, C, N, L, CE
			0.05 m	CS1W-CN114	CE

RS-232C Cables

Product	Computer port	Specifications	Length	Model	Standards
RS-232C Cable	For a D-sub 9-pin port	Can be used with a peripheral bus or Host Link. Uses connector that prevents ESD (electrostatic discharge.)	2 m	XW2Z-200S-V	---
			5 m	XW2Z-500S-V	---
			2 m	XW2Z-200S-CV	---
			5 m	XW2Z-500S-CV	---

Communications Port Connecting Cables

Description	Cable length	Model	Standards
Converts to a Peripheral port and RS-232C port.	0.1 m (about 4")	CPM2C-CN111	CE
Converts to a Peripheral port only.	0.05 m (about 2")	CS1W-CN114	CE
Converts to an RS-232C port only.	0.1 m (about 4")	CS1W-CN118	CE

Simple Communications Unit

Product	Specifications	Model	Standards
Simple Communications Unit	RS-485/RS-232C ports for connection to components	CPM2C-CIF21	U, C, CE

Adapters

Product	Function	Model	Standards
Peripheral/RS 232C Adapter Unit	Peripheral port level conversion	CPM2C-CIF01-V1	---
RS-422/RS-485/RS-232C Adapter Unit		CPM2C-CIF11	U, C, CE
Link Adapter	RS-232C to RS-422A conversion	3G2A9-AL004-E	---
RS-422A Adapter			

Battery

Product	Function	Model	Standards
Battery	Backs up memory in the CPM2C CPU Unit.	CPM2C-BAT01	CE

I/O Terminal Blocks and Connecting Cables

Product	Description	No. of inputs/outputs	Model	Comments
I/O Terminal Blocks	Slim type with M3 slotted screw terminal block	20	XW2D-20G6	For more information refer to "Wiring Systems" on page 384
	Flat cable connector with M2.5 slotted screw terminal block	20	XW2B-20G4	
Common terminals (3-tier inputs)	---	---	XW2E-20G5-IN16	
Common terminals (2-tier outputs)	---	---	XW2C-20G6-IO16	

Product	Cable length	Model	Comments	
Special Connecting Cable	With Fujitsu connector	0.5 m	XW2Z-050A	For more information refer to "Wiring Systems" on page 384
		1 m	XW2Z-100A	
		1.5 m	XW2Z-150A	
		2 m	XW2Z-200A	
		3 m	XW2Z-300A	
		5 m	XW2Z-500A	
	With MIL connector	2.5 m	G79-025C	
		5 m	G79-050C	

Relay I/O Terminals and Connecting Cables

Product	Mounted relay	I/O points	Processing	Rated voltage	Model	Standards	Output	Fujitsu connector	MIL connector
Relay I/O terminals	G7TC	16 inputs	NPN (– common)	24 V DC	G7TC-ID16	---	---	G79-□00C	G79-O□00C
				100 (110) V AC	G7TC-IA16				
				200 (220) V AC					
		16 outputs	NPN (+ common, sinking output)	24 V DC	G7TC-OC16	Sink	G79-□00C	G79-O□00C	
	16 outputs	PNP (– common, sourcing output)	24 V DC	G7TC-OC16-1	Source	G79-□00C	G79-O□00C		
	8 outputs	NPN (+ common, sinking output)	24 V DC	G7TC-OC08	---	Sink	G79-□00C	G79-O□00C	
	G6D	16 outputs	NPN (+ common, sinking output)	24 V DC	G70D-SOC16	---	Sink	G79-□00C	G79-O□00C
			PNP (– common, sourcing output)	24 V DC	G70D-SOC16-1	---	Source		G79-□00C
	G3DZ (Power MOSFET Relay)	16 outputs	NPN (+ common, sinking output)	24 V DC	G70D-FOM16	---	Sink	G79-□00C	G79-O□00C
			PNP (– common, sourcing output)	24 V DC	G70D-FOM16-1	---	Source		G79-□00C
	G6D	16 outputs	NPN (+ common, sinking output)	24 V DC	G70D-VSOC16	---	Sink	G79-□00C	G79-O□00C
	G3DZ (Power MOSFET Relay) (Sold separately) G2R G3R G3RN H3RN	16 outputs	NPN (+ common, sinking output)	24 V DC	G70D-VFOM16	---	Sink	G79-□00C	G79-O□00C
			NPN (+ common, sinking output)	24 V DC	G70A-ZOC16-3	---	Sink	G79-□00C	G79-O□00C
			PNP (– common, sourcing output)			G70A-ZOC16-4	---	Source	---

Product	Cable length	Model	Comments
Connecting Cable with connector (1:1)	With Fujitsu connector	1 m	G79-100C
		1.5 m	G79-150C
		2 m	G79-200C
		3 m	G79-300C
		5 m	G79-500C
	With MIL connector	0.25 m	G79-O25C
		5 m	G79-O50C
		0.25 m	G79-I25C
		0.5 m	G79-I50C
			For more information refer to "Wiring Systems" on page 384

DC Power Supplies

Product	Output voltage/current	Input voltage	Model	Standards
DC Power Supply (3 W)	24 V DC, 0.13 A	85 V AC to 264 V AC	S82K-00324	U, C
DC Power Supply (7.5 W)	24 V DC, 0.3 A	85 V AC to 264 V AC	S82K-00724	U, C
DC Power Supply (15 W)	24 V DC, 0.6 A	85 V AC to 264 V AC	S82K-01524	U, C
DC Power Supply (30 W)	24 V DC, 1.3 A	85 V AC to 264 V AC	S82K-03024	U, C
DC Power Supply (50 W)	24 V DC, 2.1 A	85 V AC to 264 V AC	S82K-05024	U, C

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Compact PLC series

# CPM2A/CPM2B/CPM2C

**Advanced functions and high performance in a compact shape. Ideal for automation of packaging and conveyor systems. Provides increased performance and added value to any compact machine.**

**High Performance**

**Versatile Functions for More Advanced Systems**

- High-speed counter inputs for position sensing or object counting.
- Synchronous control simplifies timing adjustment.
- High-speed processing with an interrupt function for immediate response.
- Supports both stand-alone and distributed control.

**Efficient and effective**

**Highly Economical**

The combination of advanced functions and high performance in an economical PLC range will add value to your machines.

**Compact**

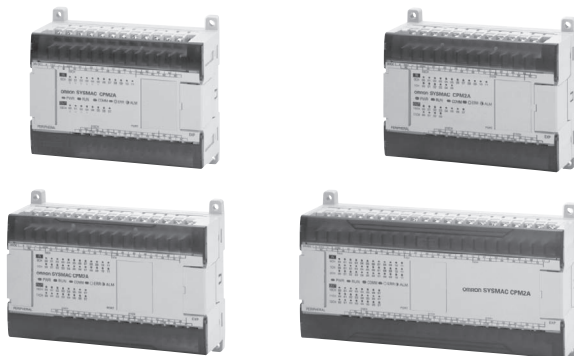
**Fits into your available space**

A choice of three different compact form factors means you can more easily fit the functions you need in the space you have available in your control cabinet or machine.

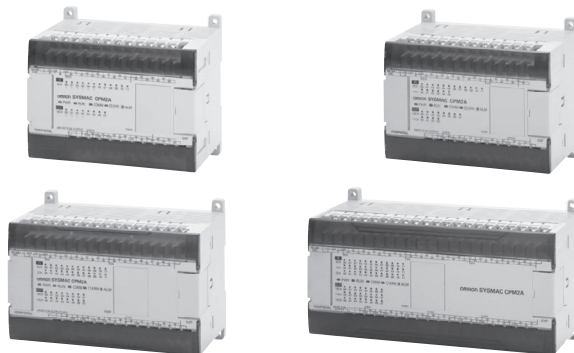
**Compact block-type PLCs**

**SYSMAC CPM2A**

**AC Power Supply**



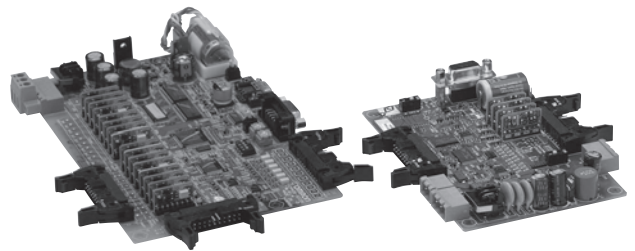
**DC Power Supply**



**Modular Board PLCs**

**SYSMAC CPM2B**

Proven CPM2 technology to fit in the tightest spaces. And if the standard models do not fit, we'll make the exact shape and I/O combination you need.



**Compact slim-line PLCs**

**SYSMAC CPM2C**

**10 I/O Points**



**20 I/O Points**



**32 I/O Points**



**Power Supply**



**Communication Adapter**



**Expansion I/O: Digital, Analog**



**Temperature Sensor**

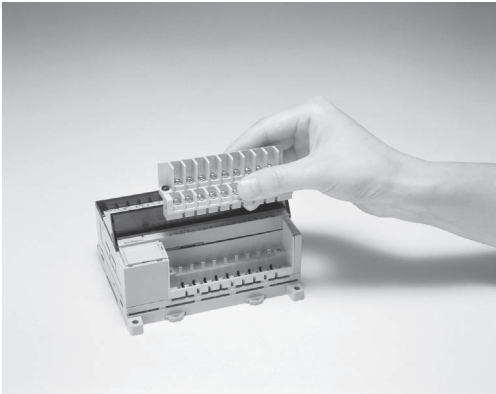


**A full line-up to fit your needs**

A wide range of models is available to achieve the machine or line controller that you require. Select from 16 CPU types, for AC power, DC power, relay output, transistor output, etc. Match the power supply, output, number of I/O points, and size to your particular needs. Expansion I/O Units can also be easily added to increase I/O points.

**Removable Terminal Blocks for Easy Maintenance**

Removable terminal blocks\* simplify installation, troubleshooting and machine maintenance.  
(\*CPU Unit only)

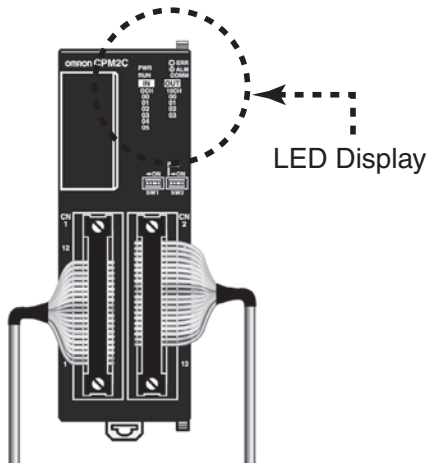


**Expandable up to 140 I/O Points**

Even with its ultracompact size, the CPM2C features a wide range of models for efficient machine control. Ten CPU types, all with DC power supply, allow selection of relay output or transistor output, terminal block or connector wiring, clock function, and other functions. Choose the output type, number of I/O points and other features to meet your needs. Expansion I/O Units (8, 10, 16, or 24 I/O points) are also available to provide control for a maximum of 140 I/O points.

**Easy-to-Read LED Display**

The LED display on the upper part of the CPM2C is easy to read, even when cables are connected.

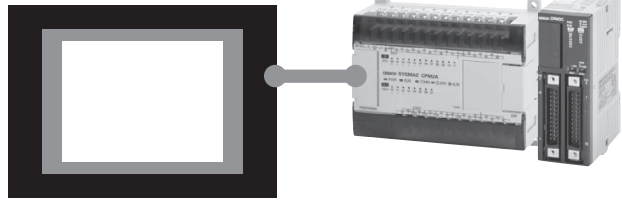


**Built-in RS-232C Port**

The built-in RS-232C port enables connection with a variety of equipment. The communication port can be used for configuration, maintenance, troubleshooting, visualisation or general-purpose serial communication.

**PT Connection**

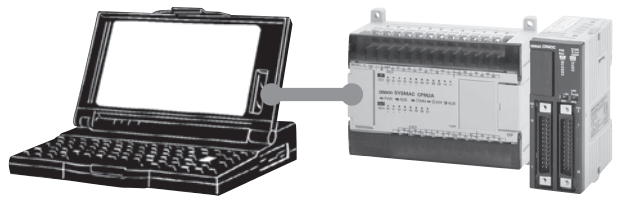
Compatible with the OMRON Programmable Terminal's Programming Console functions. Maintenance is simplified with the on-screen programming operations.



**Host Link**

Host Link allows reading and writing of the I/O memory and operation modes of the CPM2A or CPM2C by a personal computer. The following RS422/RS-232C Communications Adapters also provide 1:n communications.

- CPM2A: CPM1-CIF11
- CPM2C: CPM2C-CIF11



**One-to-one Link**

A 1:1 PLC Link connection can be established with another CPM2C, or a CQM1(H), CPM1, CPM1A, CPM2A, SRM1(-V2), C200HS, or C200HX/HG/HE PLC.

**Windows-based Programming Support**

The Windows-based CX-One Support Software is available for programming all OMRON PLC's, including the CPM2A or CPM2C. Being able to program in the Windows environment reduces programming steps, and gives you access to a large number of display monitor and debugging functions. It also means that you can use existing Windows applications to help with CPM2A or CPM2C programming, which adds up to a highly advanced programming environment.



# CPM2-series Features

The illustrations in this section show CPM2A PLCs, but the same functions are available in CPM2B/CPM2C PLCs unless otherwise stated.

### Interrupts

The CPM2-series PLCs provide the following kinds of interrupt processing.

#### Interrupt Inputs

Interrupt programs are executed when inputs to the CPU Unit's built-in input points (00003 to 00006) are turned from OFF to ON. Interrupt subroutine numbers 000 to 003 are allocated to input points 00003 to 00006.

#### Interval Timer Interrupts

Interval timer interrupt programs are executed with a precision of 0.1 ms. Interrupt subroutine numbers 000 to 049 are allocated by instructions.

#### Count-up Interrupts

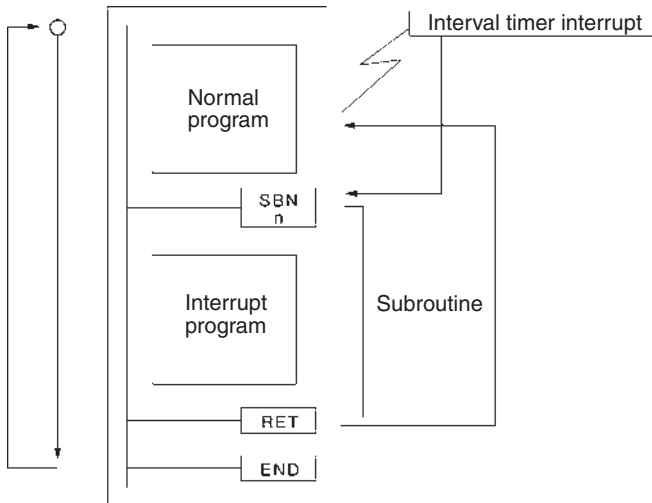
Input signals to the CPU Unit's built-in input points (00003 to 00006) are counted at high speed (up to 2 kHz), and the normal program is stopped and an interrupt program is executed when the count reaches the SV. Interrupt subroutine numbers 000 to 003 are allocated to input points 00003 to 00006.

#### Count-check Interrupts Using the High-speed Counter

Pulse inputs to the CPU Unit's built-in input points (00000 to 00002) are counted at high speed (up to 20 kHz or 5 kHz), and an interrupt program is executed when the present value matches the target value or falls within a given range. Interrupt subroutine numbers 000 to 049 are allocated by instructions.

### Interval Timer Interrupts

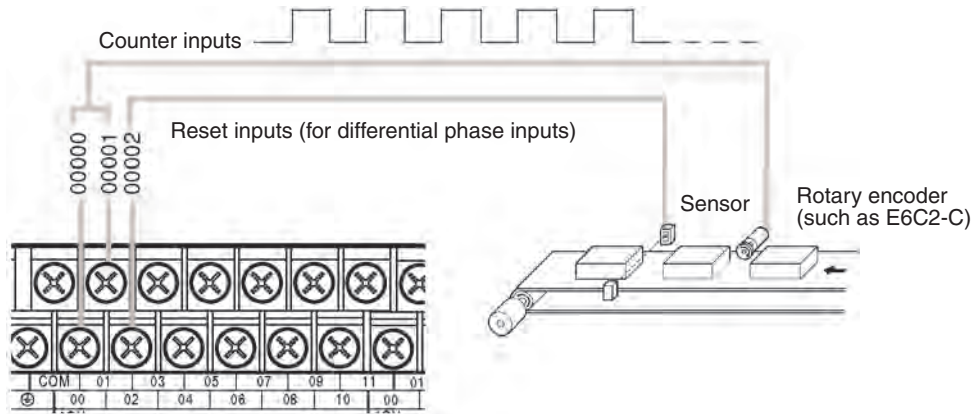
The CPM2 has one interval timer (precision: 0.1 ms) that can be set from 0.5 ms to 319,968 ms. There are two interrupt modes: the single-interrupt mode, in which a single interrupt is executed when the time is up, and the scheduled-interrupt mode, in which interrupts are executed at regular intervals.



Item	Single-interrupt mode	Scheduled-interrupt mode
Operation	Interrupt is executed once when time has elapsed.	Interrupts are executed at regular intervals.
Set time	0.5 to 319,968 ms (Unit: 0.1 ms)	
Interrupt response time	0.3 ms (from when time has elapsed until execution of interrupt program)	

**High-speed Counters**

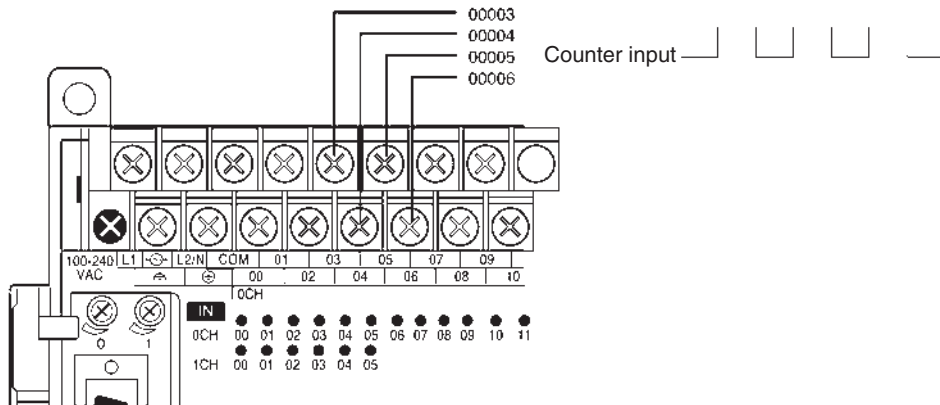
The CPM2 CPU Unit has a built-in high-speed counter that can count input pulses at up to 20 kHz. When combined with the interrupt function, the high-speed counter can be used for target-value comparison or range comparison control that is unaffected by the cycle time.



Input	Response frequency	Input mode (count value)	Counter PV Storage	Control method
00000	5 kHz	Differential phase input mode (-8,388,608 to 8,388,607)	SR 248 and SR 249	Target value comparison interrupts Range comparison interrupts
00001	20 kHz	Pulse + direction input mode (-8,388,608 to 8,388,607)		
00002		Up/down pulse input mode (-8,388,608 to 8,388,607)		
		Increment mode (0 to 16,777,215)		

**Interrupt Inputs (Counter Mode)**

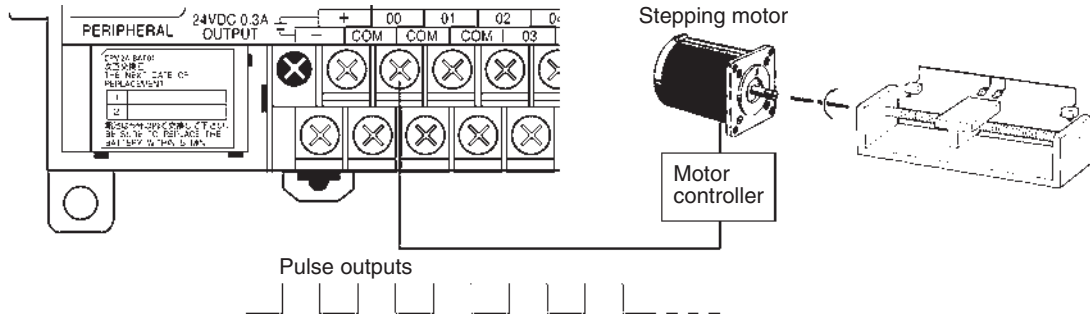
The four built-in interrupt inputs in the CPM2 CPU Unit can be used in counter mode to count inputs of up to 2 kHz. These inputs can be used as either incrementing counters or decrementing counters and can trigger an interrupt (i.e., execute an interrupt subroutine) when the count matches the set value.



Input	Counter number	Set value location	Present value location	Response frequency	Input mode (count value)	Control method
00003	Counter 0	SR 240	SR 244	2 kHz	Incrementing counter (0000 to FFFF) Decrementing counter (0000 to FFFF)	Count-up interrupts
00004	Counter 1	SR 241	SR 245			
00005	Counter 2	SR 242	SR 246			
00006	Counter 3	SR 243	SR 247			

### Pulse Outputs

The CPM2 has two pulse outputs. The PLC Setup can be set to use these outputs as two single-phase outputs without acceleration and deceleration, two variable duty-ratio pulse outputs, or pulse outputs with trapezoidal acceleration/deceleration (one pulse + direction output and one up/down pulse output). The pulse output's PV coordinate system can also be specified in the PC Setup as either relative or absolute.

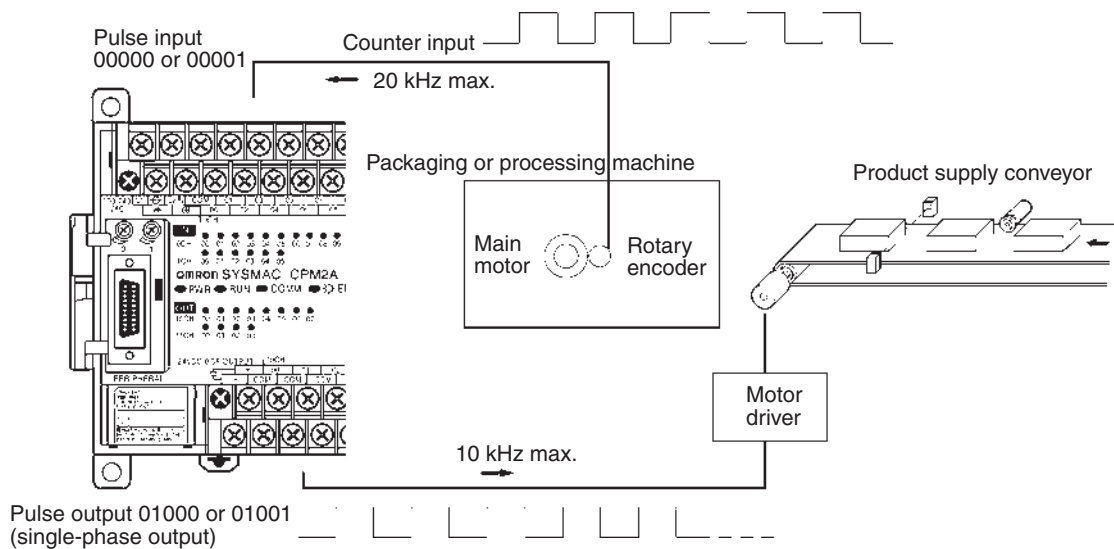


Item	Single-phase pulse output without accel/decel	Variable duty-ratio pulse output	Single-phase pulse output with trapezoidal acceleration/deceleration	
			Pulse + direction output	Up/down pulse output
Controlling instruction(s)	PULS(65) and SPED(64)	PWM(—)	PULS(65) and ACC(—)	
Output number	01000	Pulse output 0 (See note.)	Pulse output 0	Pulse output
	01001	Pulse output 1 (See note.)	Direction output	Direction output
Output frequency range	10 Hz to 10 kHz	0.1 Hz to 999.9 Hz	10 Hz to 10 kHz	
	Pitch	10 Hz	10 Hz	
Duty ratio	50%	0 to 100%	50%	

Note: With single-phase pulse outputs, pulse outputs 0 and 1 can each be output independently.

### Synchronized Pulse Control

The CPM2's high-speed counter function can be combined with the pulse output function to generate an output pulse at a specified multiple of the input pulse frequency.

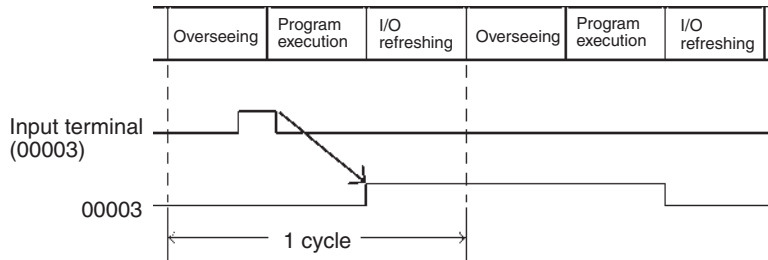


Item	Input mode			
	Phase differential input mode	Pulse + direction input mode	Up/down pulse input mode	Increment mode
Input number	00000	A-phase input	Count input	CW input
	00001	B-phase input	Direction input	CCW input
Input method	Phase differential quadruple input	Single-phase input	Single-phase input	Single-phase input
Input frequency range	10 Hz to 500 Hz (accuracy $\pm 1$ Hz) 20 Hz to 1 kHz (accuracy $\pm 1$ Hz) 300 Hz to 20 kHz (accuracy $\pm 25$ Hz) (See note 2.)			
Output frequency range	10 Hz to 10 kHz (accuracy 10 Hz)			
Frequency ratio (scaling factor)	1 % to 1,000% (Can be specified in units of 1%.)			
Synchronized control cycle	10 ms			

- Note:**
- Can be used as an ordinary input.
  - The accuracy is  $\pm 10$  Hz when the input frequency is 10 kHz or less.

## Quick-response Inputs

The CPM2A/CPM2B CPU Units and CPM2C CPU Units with 20 I/O points have four inputs that can be used for quick-response inputs. The CPM2C CPU Units with 10 I/O points have two inputs that can be used for quick response inputs. These inputs are shared with interrupt inputs and 2-kHz high-speed counter inputs. Quick-response inputs are received into an internal buffer, so signals that change status within a cycle can be received.



Input number	Min. input signal
00003	50 $\mu$ s
00004	
00005	
00006	

Inputs 00003 through 00006 can be used as interrupt inputs, 2-kHz high-speed counter inputs, or quick-response inputs. These inputs can be used as ordinary inputs if they are not used as interrupt inputs, 2-kHz high-speed counter inputs, or quick-response inputs.

Inputs 00005 and 00006 cannot be used with the CPM2C CPU Unit with 10 I/O points.

## Analog Controls (CPM2A Only)

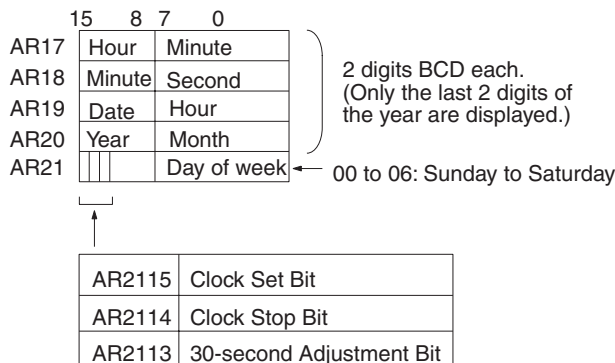
The CPM2A CPU Unit has two analog controls that can be used for a wide range of timer and counter analog settings. As these controls are turned, values from 0 to 200 (BCD) are stored in the SR Area.

Control	Storage area	Set value (BCD)
Analog control 0	SR 250	0000 to 0200
Analog control 1	SR 251	0000 to 0200

## Clock Function

The CPM2A and some CPM2B/2Cs have a built-in clock (accuracy:  $\pm 1$  minute/month) that allows the date and time to be read from the ladder program. The time can be overwritten from a Programming Console or other Programming Device, but the CPM2A is also equipped with a 30-second Compensation Bit. The time will be rounded off to the nearest minute when this bit is turned ON, so the time can be set very accurately by turning ON this bit when the "time tone" is heard on the radio.

(The CPM2B/CPM2C CPU Units have models with the clock function and models without.)

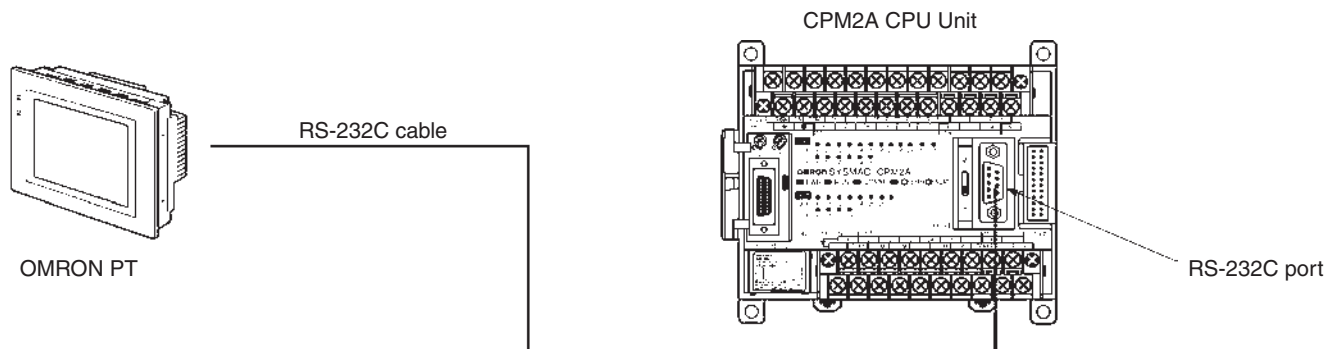


## Additional Timer Functions

VERY HIGH-SPEED TIMER (Units: 1 ms)	Starts a very high-speed decrementing ON-delay timer with the specified timer number. The set value can be 0 to 9,999 ms. (Set in 1-ms units.)
LONG TIMER (Units: 1 s or 10 s)	Starts a long-term decrementing ON-delay timer with the specified timer number. The set value can be 0 to 9,999 s (when set in 1-s units) or 0 to 99,990 s (when set in 10-s units).

## NT Links

The CPM2 can be connected to an OMRON PT (Programmable Terminal) in NT Link mode (1:1). A communications program is not required in the CPM2. The RS-232C port can be used for the NT Link.



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  - (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
  - (ii) Use in consumer products or any use in significant quantities.
  - (iii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
  - (iv) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this Product.
 NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON'S PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
2. **Programmable Products.** Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.
3. **Performance Data.** Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.
4. **Change in Specifications.** Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.
5. **Errors and Omissions.** Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

Complete "Terms and Conditions of Sale" for product purchase and use are on Omron's website at [www.omron247.com](http://www.omron247.com) – under the "About Us" tab, in the Legal Matters section.

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.



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