

# CPM2A Specifications

## ■ CPM2A General Specifications

Item		CPU Units with 20 I/O points	CPU Units with 30 I/O points	CPU Units with 40 I/O points	CPU Units with 60 I/O points
Supply voltage	AC power	100 to 240 VAC, 50/60 Hz			
	DC power	24 VDC			
Operating voltage range	AC power	85 to 264 VAC			
	DC power	20.4 to 26.4 VDC			
Power consumption	AC power	60 VA max.			
	DC power	20 W max. (See separate table following this one for details.)			
Inrush current	AC power	60 A max.			
	DC power	20 A max.			
External power supply (AC power supplies only)	Supply voltage	24 VDC			
	Output capacity	300 mA (See notes 1, 2, 3.)			
Insulation resistance		20 MΩ min. (at 500 VDC) between the external AC terminals and protective earth terminals			
Dielectric strength		2,300 VAC 50/60 Hz for 1 min between the external AC and protective earth terminals, leakage current: 10 mA max.			
Noise immunity		Conforms to IEC61000-4-4, 2 kV (power lines)			
Vibration resistance		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		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			
Humidity		10% to 90% (with no condensation)			
Atmosphere		Must be free from corrosive gas			
Terminal screw size		M3			
Power interrupt time		AC power supply: 10 ms min. DC power supply: 2 ms min.			
CPU Unit weight	AC power	650 g max.	700 g max.	800 g max.	1,000 g max.
	DC power	550 g max.	600 g max.	700 g max.	900 g max.
Expansion Unit weight		Units with 20 I/O Points: 300 g max. Units with 8 Output Points: 250 g max. Units with 8 Input Points: 200 g max. MAD01 Analog I/O Unit: 150 g max. MAD11 Analog I/O Unit: 250g max. Temperature Sensor Units 250 g max. CompoBus/S I/O Link Units: 200 g max. DeviceNet I/O Link Unit: 200 g max.			

- Note:**
1. Use the external power supply as the power supply for input devices only. (It cannot be used as to drive output devices.)
  2. If the external power supply current exceeds the rated current, or there is a short-circuit, the external power supply voltage will drop and PC operation will stop.
  3. If there are 3 CPM1A-MAD11 Units mounted to a CPM2A-60CDR-A, the current for the external power supply must not exceed 200 mA.

# CPM2A Specifications

## Power Consumption for CPM2A CPU Units with DC Power Supplies

Use the following information when computing CPM2A power capacities.

CPM2A CPU Unit	Power consumption (W)
CPM2A-20CDR-D	4
CPM2A-30CDR-D	4.5
CPM2A-40CDR-D	6
CPM2A-60CDR-D	7.5
CPM2A-20CDT/T1-D	3.5
CPM2A-30CDT/T1-D	4
CPM2A-40CDT/T1-D	4.5
CPM2A-60CDT/T1-D	5

CPM1A Expansion I/O Unit or Expansion Unit	Power consumption (W)
CPM1A-20EDR1	2.5
CPM1A-20EDT/T1	1.5
CPM1A-8ED	1
CPM1A-8ER	2
CPM1A-8ET/T1	1
CPM1A-DRT21	1
CPM1A-SRT21	1
CPM1A-MAD01/MAD11	3.5
CPM1A-TS001/TS101	3
CPM1A-TS002/TS102	3

**Note:** When calculating the total power consumption, it is also necessary to include the power consumption of Programming Consoles, RS-232C Adapter Units, and other devices.

## ■ CPM2A Characteristics

Item		Specification			
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 $\mu$ s (LD instruction) Special instructions: 7.8 $\mu$ s (MOV instruction)			
Program capacity		4,096 words			
I/O capacity	CPU Unit only	20 points	30 points	40 points	60 points
	With Expansion I/O Units	80 points max.	90 points max.	100 points max.	120 points max.
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.)			
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)			
Special bits (SR area)		448 bits: SR 22800 to SR 25515 (Words IR 228 to IR 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.			

# CPM2A Specifications

Item		Specification
Basic interrupts	Interrupt processing	External interrupts: 4 (Shared by the external interrupt inputs (counter mode) and the quick-response inputs.)
	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)
	Interrupt Inputs (counter mode)	Four inputs (Shared with external interrupt inputs (counter mode) and quick-response inputs.) Counter interrupts: 4 (Shared by the external interrupt inputs and quick-response inputs.)
Pulse output		Two points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control. One point with waveform 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 the pulse output 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		Four points (Min. input pulse width: 50 $\mu$ s min.)
Analog controls		2 controls, setting range: 0 to 200
Input time constant		Can be set for all input points. (1 ms, 2 ms, 3 ms, 5 ms, 10 ms, 20 ms, 40 ms, or 80 ms; default setting: 10 ms)
Clock function		Shows the year, month, day of the week, day, hour, minute, and second. (Battery backup)
Communications functions		Built-in peripheral port: Supports host link, peripheral bus, no-protocol, or Programming Console connections.  Built-in RS-232C port: Supports host link, no-protocol, 1:1 Slave Unit link, 1:1 Master Unit link, or 1:1 NT Link connections.
Functions provided by Expansion Units		Analog I/O Unit: Provides 2 analog inputs and 1 analog output. CompoBus/S I/O Link Unit: Provides 8 inputs and 8 outputs as a CompoBus/S Slave. Temperature Sensor Units: Provide 2 or 4 thermocouple inputs, or 2 or 4 temperature-resistance thermometer inputs.
Memory protection		HR area, AR area, program contents, read/write DM area contents, and counter values maintained during power interruptions.
Memory backup		Flash memory: Program, read-only DM area, and PC Setup  Battery backup: The read/write DM area, HR area, AR area, and counter values are backed up by a battery. (Battery life is approximately 5 years at an ambient temperature of 25°C.)
Self-diagnostic functions		CPU Unit failure (watchdog timer), I/O bus error, and memory failure, battery error
Program checks		No END instruction and programming errors are checked at the start of operation.

# CPM2A Specifications

## ■ CPM2A I/O Specifications

### 1. CPU Unit Input Specifications

Item	Inputs	Specification
Input voltage	All	24 VDC +10%/−15%
Input impedance	IN00000 to IN00001	2.7 kΩ
	IN00002 to IN00006	3.9 kΩ
	IN00007 and up	4.7 kΩ
Input current	IN00000 to IN00001	8 mA typical
	IN00002 to IN00006	6 mA typical
	IN00007 and up	5 mA typical
ON voltage/current	IN00000 to IN00001	17 VDC min., 5 mA
	IN00002 and up	14.4 VDC min., 3 mA
OFF voltage/current	All	5.0 VDC max., 1 mA
ON delay	All	1 to 80 ms max. Default: 10 ms (See note.)
OFF delay	All	1 to 80 ms max. Default: 10 ms (See note.)
Circuit configuration	IN00000 to IN00001	
	IN00002 to IN00006	
	IN00007 and up	

**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

Inputs IN00000 through IN00002 can be used as high-speed counter inputs, as shown in the following table. The maximum count frequency is 5 kHz in differential phase mode and 20 kHz in the other modes.

Input	Function			
	Differential phase mode	Pulse + 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/Hardware reset input (IN00002 can be used as a normal input when it is not used as a high-speed counter input.)			

### Interrupt Inputs

Inputs IN00003 through IN00006 can be used as interrupt inputs (interrupt input mode or counter mode) and quick-response inputs. The minimum pulse width for these inputs is 0.05 ms.

# CPM2A Specifications

## 2. Expansion I/O Unit Input Specifications

Item	Specification
Input voltage	24 VDC $+10\%/ -15\%$
Input impedance	4.7 k $\Omega$
Input current	5 mA typical
ON voltage	14.4 VDC min.
OFF voltage	5.0 VDC max.
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.

## ■ CPM2A Output Specifications (CPU Unit and Expansion I/O Unit)

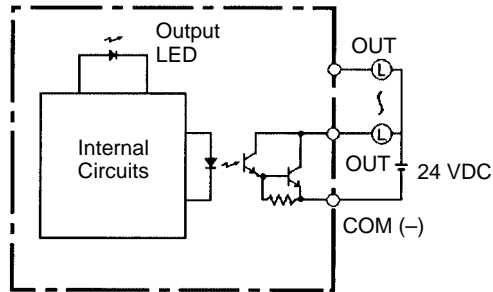
### 1. Relay Output

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

# CPM2A Specifications

## 2. Transistor Output (Sinking)

Item	Specification					
	20CDT-D	30CDT-D	40CDT-D	60CDT-D	8ET	20EDT
Max. switching capacity	OUT01000, 01001: 4.5 to 30 VDC, 0.2 A/output OUT01002 and up: 4.5 to 30 VDC, 0.3 A/output					24 VDC <sup>+10%/</sup> <sub>-5%</sub> , 0.3 A/output
	0.8 A/common 1.6 A/Unit	0.8 A/common 2.4 A/Unit	0.8 A/common 3.2 A/Unit	0.8 A/common 4.8 A/Unit	0.9 A/common 1.8 A/Unit	0.9 A/common 1.8 A/Unit
Leakage current	0.1 mA max.					
Residual voltage	1.5 V max.					
ON delay	OUT01000 and OUT01001: 20 μs max. OUT01002 and up: 0.1 ms max.					0.1 ms max.
OFF delay	OUT01000 and OUT01001: 40 μs max. (4.5 to 26.4 V, 10 to 100 mA) 0.1 ms max. (4.5 to 30 V, 10 to 200 mA) OUT01002 and up: 1 ms max. (4.5 to 30 V, 10 to 300 mA)					1 ms max. (24 VDC <sup>+10%/</sup> <sub>-5%</sub> , 5 to 300 mA)
Fuse (see note)	1 fuse/output					1 fuse/common
Circuit configuration	4.5 to 30 VDC, 0.3 A/output					



**Note:** Cannot be replaced by the user.

# CPM2A Specifications

## 3. Transistor Output (Sourcing)

Item	Specification					
	20CDT1-D	30CDT1-D	40CDT1-D	60CDT1-D	8ET1	20DET1
Max. switching capacity	OUT01000, 01001: 4.5 to 30 VDC, 0.2 A/output OUT01002 and up: 4.5 to 30 VDC, 0.3 A/output					24 VDC+10%/-5%, 0.3 A/output
	0.8 A/common 1.6 A/Unit	0.8 A/common 2.4 A/Unit	0.8 A/common 3.2 A/Unit	0.8 A/common 4.8 A/Unit	0.9 A/common 1.8 A/Unit	0.9 A/common 1.8 A/Unit
Leakage current	0.1 mA max.					
Residual voltage	1.5 V max.					
ON delay	OUT01000 and OUT01001: OUT01002 and up:				20 $\mu$ s max. 0.1 ms max.	0.1 ms max.
OFF delay	OUT01000 and OUT01001: OUT01002 and up:				40 $\mu$ s max. (4.5 to 26.4 V, 10 to 100 mA) 0.1 ms max. (4.5 to 30 V, 10 to 200 mA) 1 ms max. (4.5 to 30 V, 10 to 300 mA)	1 ms max. (24 VDC+10%/-5%, 5 to 300 mA)
Fuse (see note)	1 fuse/output					1 fuse/common
Circuit configuration	4.5 to 30 VDC, 0.3 A/output					

**Note:** Cannot be replaced by the user.

# CPM2A Specifications

## ■ CPM1A-MAD01/MAD11 Analog I/O Unit

Up to 3 Expansion I/O Units or Expansion Units (including the CPM1A-MAD01/MAD11 Analog I/O Unit) can be connected to a CPM2A CPU Unit.

Item		CPM1A-MAD01		CPM1A-MAD11	
		Voltage I/O	Current I/O	Voltage I/O	Current I/O
Analog inputs	Number of inputs	2		2 (allocated 2 words)	
	Input signal ranges	0 to 10 V or 1 to 5 V	4 to 20 mA	0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V	0 to 20 mA, 4 to 20 mA
	Maximum rated input	±15 V	±30 mA	±15 V	±30 mA
	External input impedance	1 MΩ min.	250 Ω rated	1 MΩ min.	250 Ω
	Resolution	1/256		1/6,000 (full scale)	
	Overall precision	1.0% of full scale		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	8-bit binary		Binary data (4-digit hexadecimal) -10 to 10 V: F448 to 0BB8 Hex full scale Other: 0000 to 1770 Hex full scale		
Analog output (See note 1.)	Averaging	---		Supported (set for each input with DIP switch)	
	Disconnected line detection	---		Supported	
	Number of outputs	1		1 (allocated 1 word)	
	Output signal ranges	0 to 10 V or -10 to 10 V	4 to 20 mA	1 to 5 V, 0 to 10 V, -10 to 10 V	0 to 20 mA, 4 to 20 mA
	External output max. current	5 mA	---	---	---
	External output allowed load resistance	---	350 Ω	1 kΩ min.	600 Ω max.
	External output impedance	---		0.5 Ω max.	---
	Resolution	1/256 (1/512 when the output signal range is -10 to 10 V.)		1/6,000 (full scale)	
	Overall precision	1.0% of full scale		25°C: ±0.4% of full scale	
				0 to 55°C: ±0.8% of full scale	
Data setting	8-bit binary with sign bit		---		
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 (See note 2.)	10 ms/Unit max.		2 ms/point (6 ms/all analog I/O)		
Isolation method	Photocoupler isolation between I/O terminals and PC (There is no isolation between the analog I/O signals.)		Photocoupler isolation between analog I/O and internal circuits. (Individual analog I/O signals are not isolated.)		

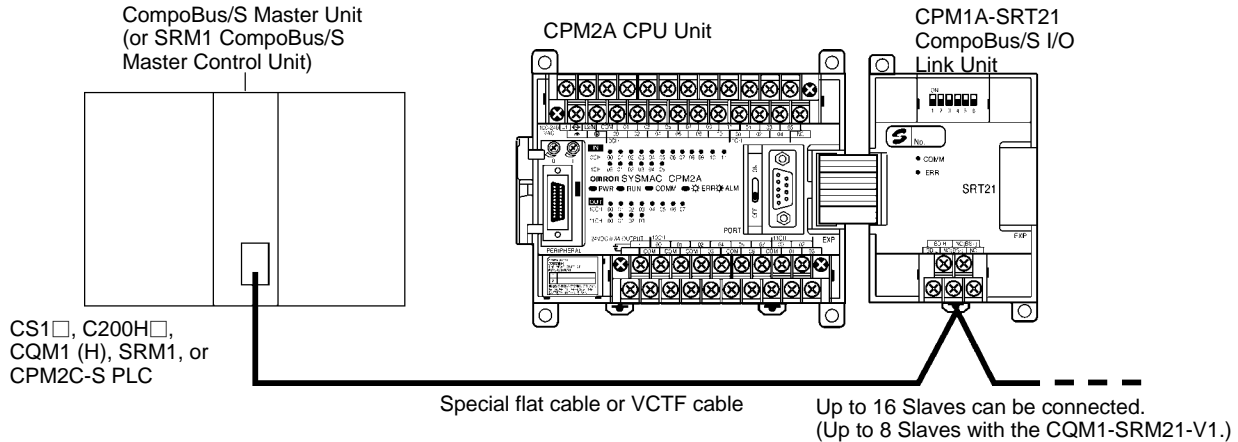
- Note**
1. The voltage output and current output can be used at the same time, but the total output current cannot exceed 21 mA.
  2. The conversion time is the total time for 2 analog inputs and 1 analog output.



# CPM2A Specifications

## ■ CPM1A-SRT21 CompoBus/S I/O Link Unit

The CPM2A PC can function as a Slave to a CompoBus/S Master Unit (or SRM1 CompoBus/S Master Control Unit) when a CPM1A-SRT21 CompoBus/S I/O Link Unit is connected. The CompoBus/S I/O Link Unit establishes an I/O link of 8 inputs and 8 outputs between the Master Unit and the CPM2A. Up to 3 Expansion I/O Units or Expansion Units can be connected to a CPM2A CPU Unit.



## Specifications

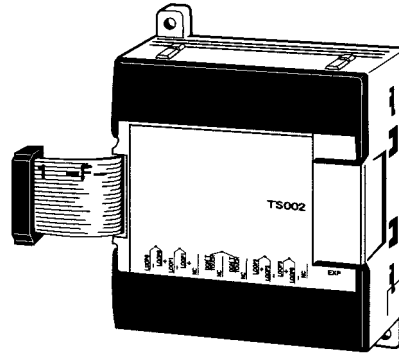
Item	Specification
Model number	CPM1A-SRT21
Master/Slave	CompoBus/S Slave
Number of I/O bits	8 input bits, 8 output bits
Number of words occupied in CPM2A I/O memory	1 input word, 1 output word (Allocated in the same way as other Expansion I/O Units or Expansion Units)
Node number setting	Set using the DIP switch. (Set before turning ON power for the CPU Unit.)

**Note:** See the *CompoBus/S Catalog (Q103)* for more details on CompoBus/S communications.

# CPM2A Specifications

## ■ CPM1A-TS001/TS002/TS101/TS102 Temperature Sensor Units

By connecting a Temperature Sensor Unit (CPM1A-TS001/TS002/TS101/TS102) to the CPM2A, inputs can be received from thermocouples or temperature-resistance thermometers. Inputs converted to binary data (4-digit hexadecimal) and stored in the IR area. Refer to page 29 for details on the maximum number of connectable Units.



## Specifications

Item	Specification	
Model	CPM1A-TS001/002	CPM1A-TS101/102
Number of inputs	TS001: 2; TS002: 4	TS101: 2; TS102: 4
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.)
Accuracy	$\pm 0.5\%$ or $\pm 2\%$ of the stored value whichever is larger (see note) $\pm 1$ digit max.	$\pm 0.5\%$ or $\pm 1\%$ of the stored value whichever is larger (see note) $\pm 1$ digit max.
Conversion cycle	250 ms/2 points (TS001 or TS101) or 250 ms/4 points (TS002 or TS102)	
Converted temperature data	Binary data (4-digit hexadecimal)	
Isolation method	Photocoupler isolation between input signals	

**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 CPM1A-TS001/002

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 CPM1A-TS101/102

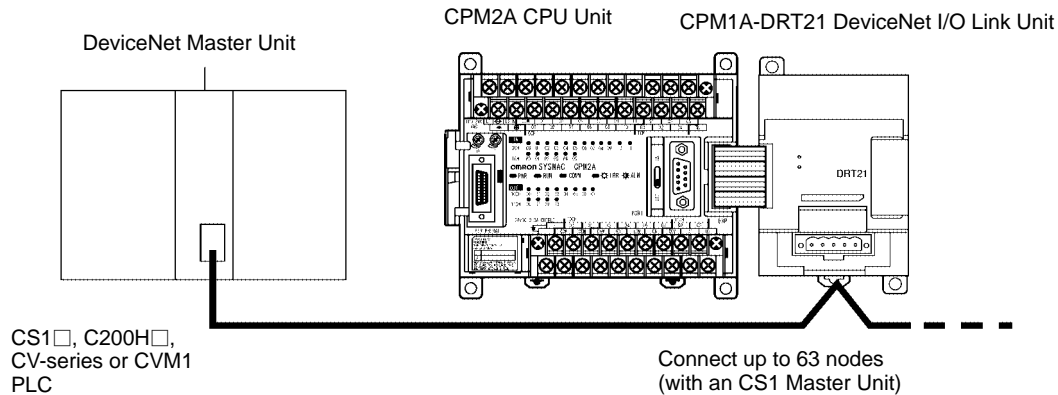
The input type is selected with a rotary switch. The ranges for each of the input types are shown in the following table.

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	

# CPM2A Specifications

## ■ CPM1A-DRT21 DeviceNet I/O Link Unit

The CPM1A-DRT21 DeviceNet I/O Link Unit can be connected to the CPM2A to function as a slave under a DeviceNet Master Unit. This enables an I/O Link with the Master Unit via 32 input and 32 output points.



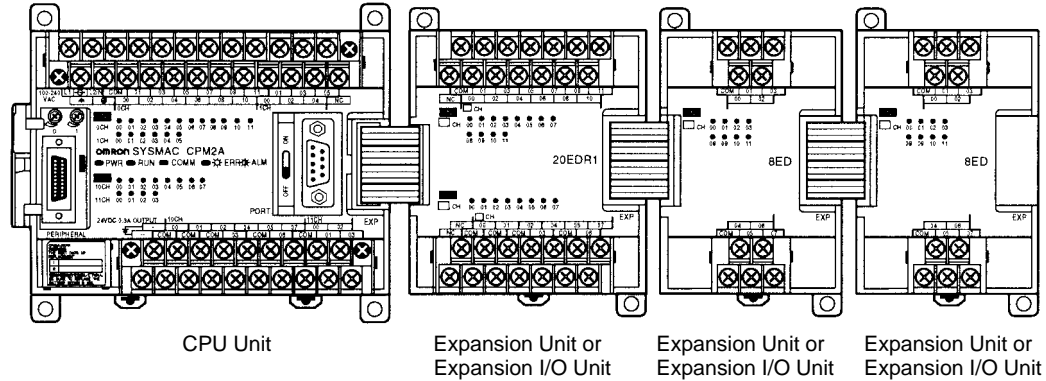
## ■ Specifications

Item	Specification
Model number	CPM1A-DRT21
Master/slave	DeviceNet slave
I/O capacity to master	32 input and 32 output points
I/O memory allocated in CPM2A	2 input words and 2 output words (same as other Expansion Units)
Node address setting	DIP switch (Set before turning ON power for the CPU Unit.)
Maximum number of nodes (depending on PC to which Master Unit is mounted)	CS1: 63 nodes CVM1/CV: 32 nodes C200HX/HG/HE: 25 nodes C200HS: 16 nodes

# CPM2A Dimensions

## CPM2A System Configuration Example

Up to three Expansion I/O Units or Expansion Units other than the CPM1A-TS002/102 Temperature Sensor Units can be connected to a CPM2A CPU Unit. If a CPM1A-TS002/102 is connected to the CPU Unit, only one other Unit (and not a CPM1A-TS002/102) can be connected.



## Expansion Unit Connection Groups

Group 1 (G1)	Group 2 (G2)
Expansion I/O Units Analog I/O Units CompoBus/S I/O Link Units CPM1A-TS001/TS101 Temperature Sensor Units DeviceNet I/O Link Unit	CPM1A-TS002/TS102 Temperature Sensor Units

The sequences in which Units in the above groups can be connected to the CPU Unit are shown in the following table.

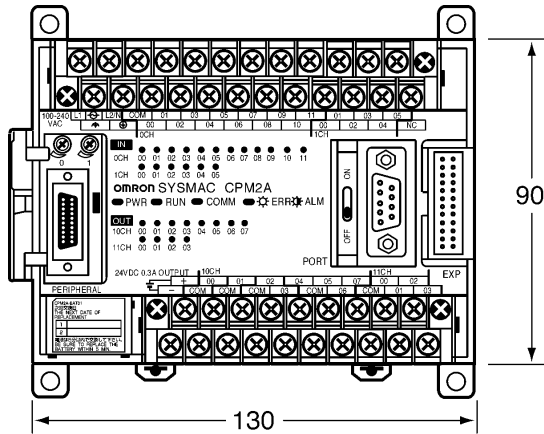
## Expansion Unit Group Combinations

Expansion sequence 1	Expansion sequence 2	Expansion sequence 3
G1	G1	G1
G2	G1	G2 Units cannot be connected after a G1 Unit.

- Note:**
- The mounting sequence does not affect the number of Units that can be mounted.
  - If the NT-AL001 RS-422 Adapter is connected to the RS-232C port, only one Expansion Unit or Expansion I/O Unit can be added.
  - If three CPM1A-MAD11/MAD01 Analog I/O Units are connected to a CPM2A-60CDR-A CPU Unit, keep the output capacity of the external power supply (24 VDC) to 200 mA or less.

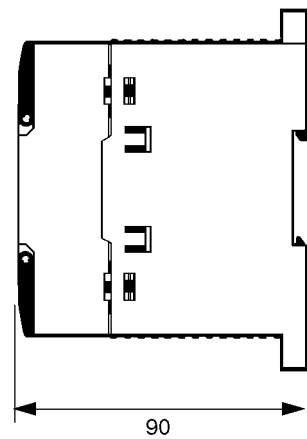
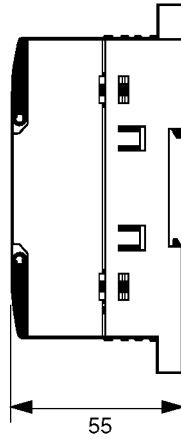
# CPM2A Dimensions

## CPM2A-20CD□-□/30CD□-□ CPU Units

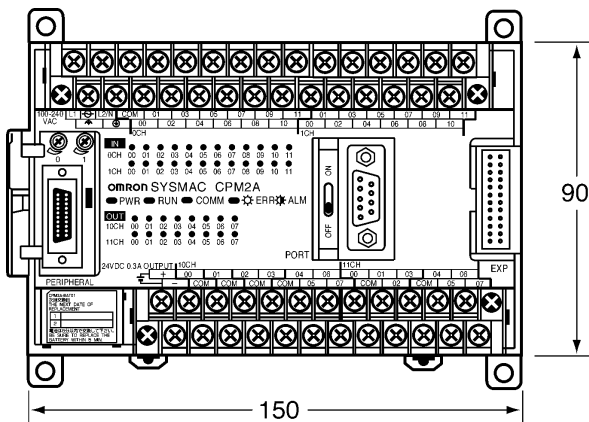


CPU Units with DC Power

CPU Units with AC Power

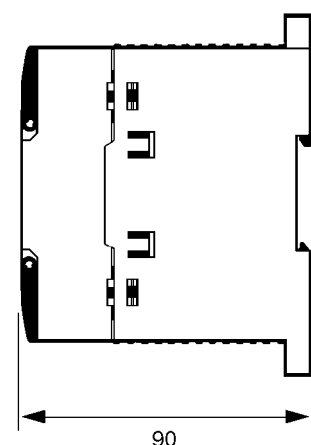
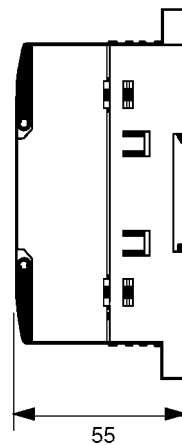


## CPM2A-40CD□-□ CPU Units

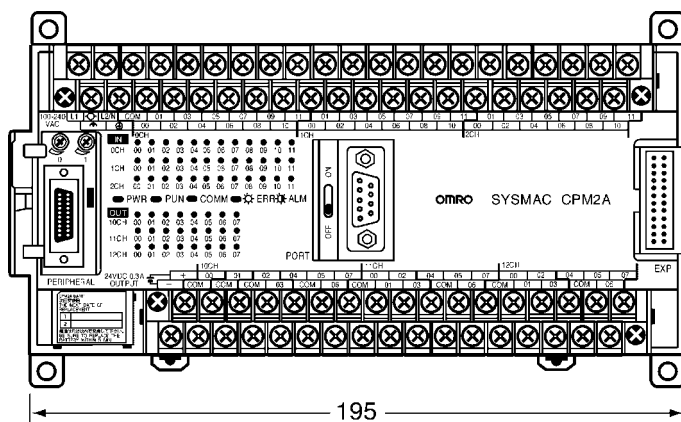


CPU Units with DC Power

CPU Units with AC Power

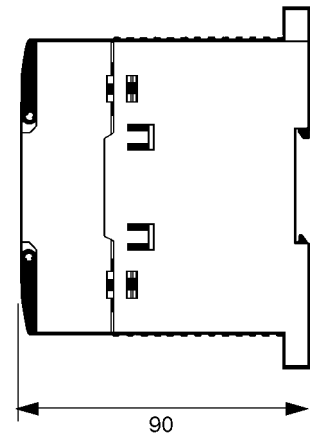
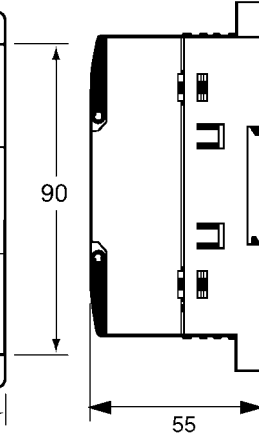


## CPM2A-60CD□-□ CPU Units



CPU Units with DC Power

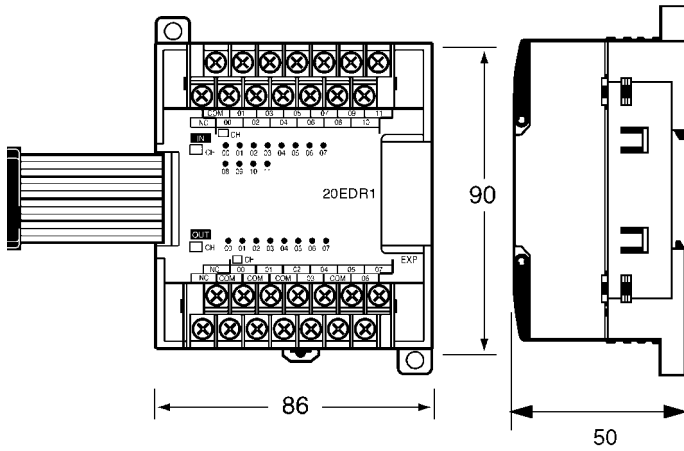
CPU Units with AC Power



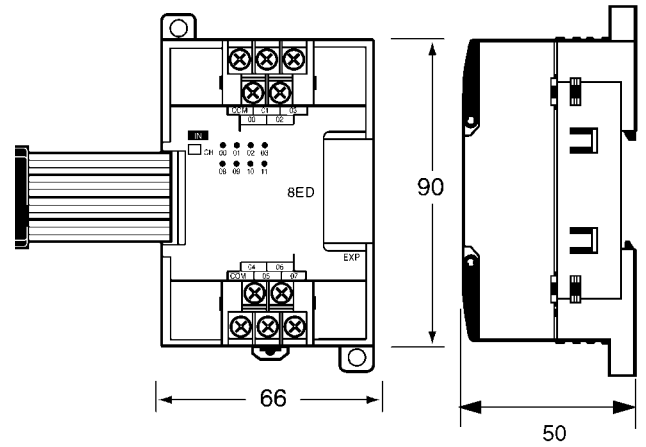
**Note:** All dimensions are in mm.

# CPM2A Dimensions

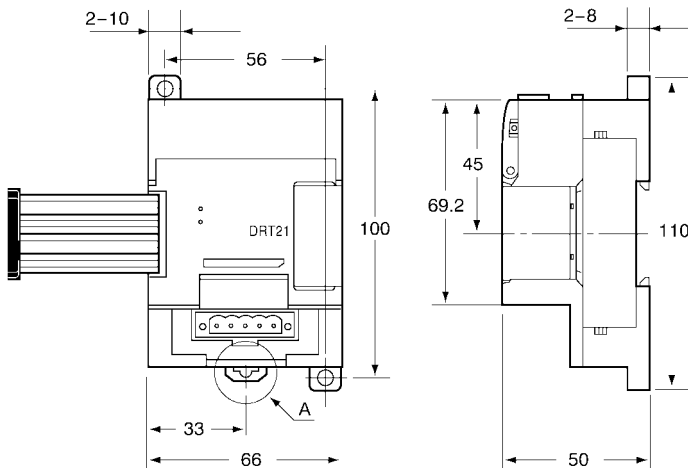
**CPM1A-20ED Expansion I/O Units**



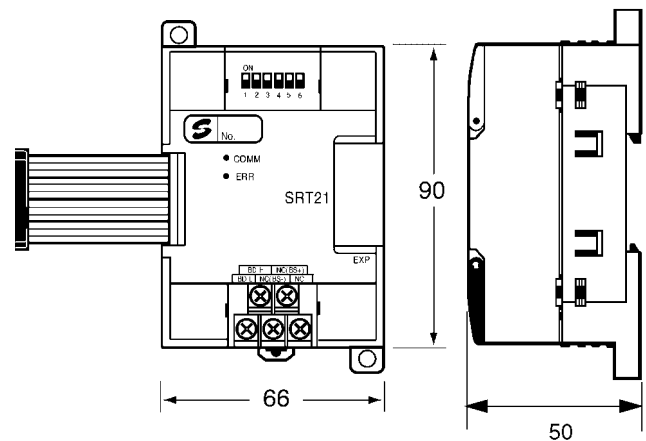
**CPM1A-8 Expansion I/O Units**



**CPM1A-DRT21 DeviceNet I/O Link Unit**

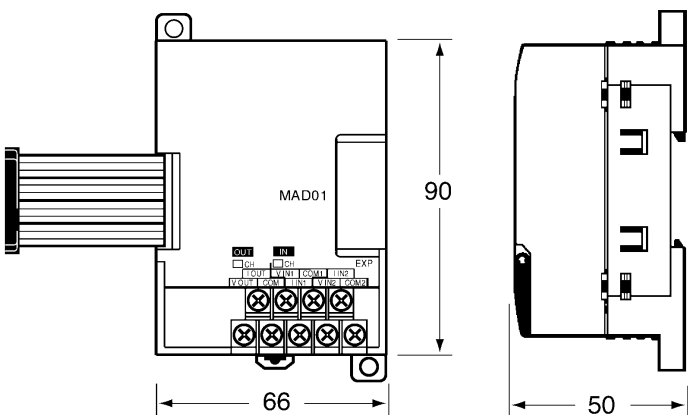


**CPM1A-SRT21 CompoBus/S I/O Link Unit**

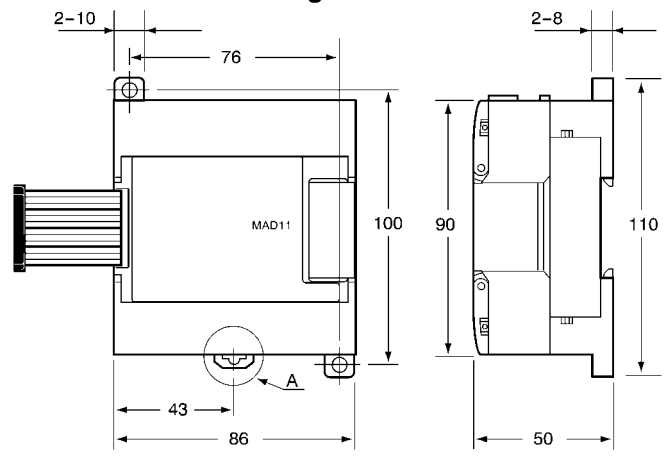


The terminal block is included.

**CPM1A-MAD01 Analog I/O Unit**



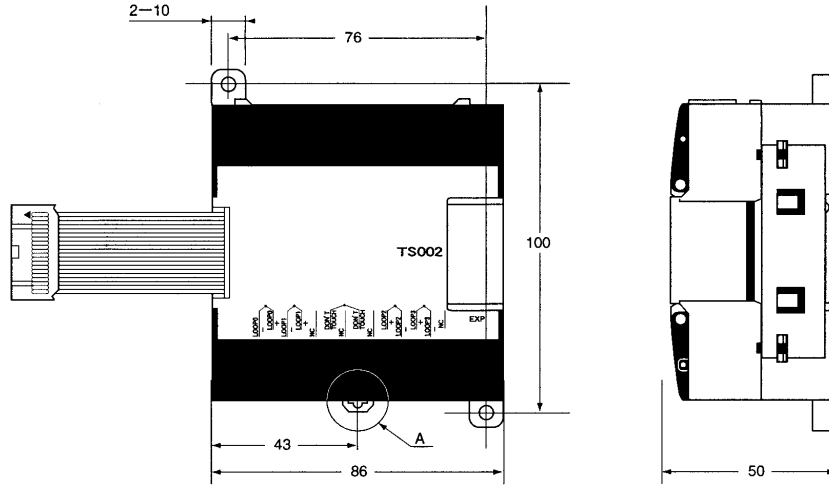
**CPM1A-MAD11 Analog I/O Unit**



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

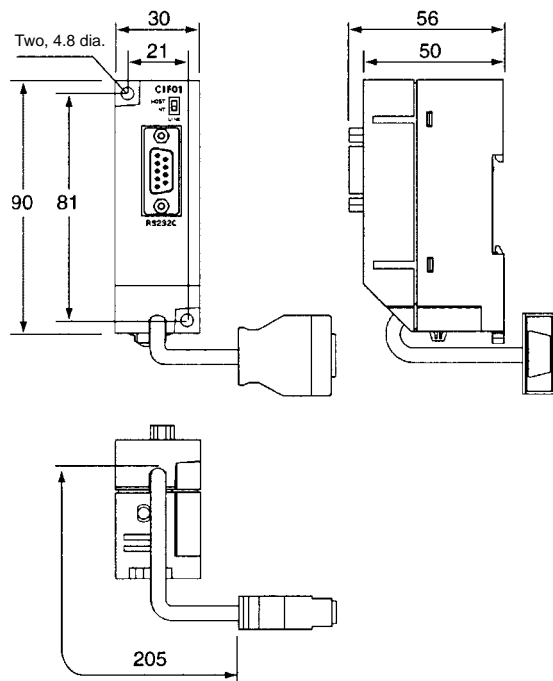
# CPM2A Dimensions

## CPM1A-TS□□□ Temperature Sensor Unit

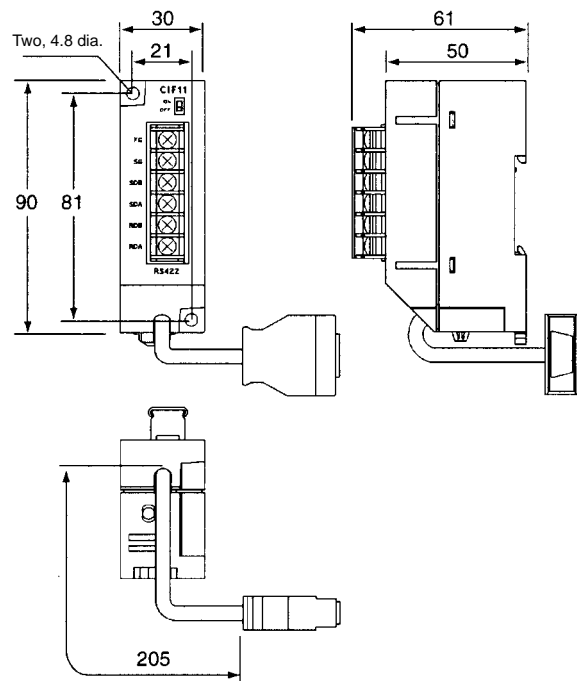


**Note:** All dimensions are in mm.

## CPM1-CIF01 RS-232C Adapter



## CPM1-CIF11 RS-422 Adapter



# CPM2C Specifications

## ■ CPM2C General Specifications

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 VDC					
Operating voltage range	20.4 to 26.4 VDC					
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 VDC) between isolated circuits					
Dielectric strength	2,300 VAC for 1 min (between isolated circuits)					
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)					
Vibration resistance	Conforming to 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 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 Specifications

## 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□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 Specifications

## ■ CPM2C Characteristics

Item		CPU Unit Specification					CPM2C-S CPU Unit with 10 I/O points (transistor outputs)
		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)	
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	32 points	10 points		
	With Expansion I/O Units	170 points max.	180 points max.	192 points max.	362 points max.		
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 for 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.					

# CPM2C Specifications

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)	
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 links (See note.) Up to 1,024 I/O link points Explicit messages Read/write of specified areas from PC with Master Unit
Basic interrupts	Interrupt processing	2 interrupts	2 interrupts	4 interrupts	4 interrupts	4 interrupts	2 interrupts	
	Interval timer interrupts	Shared by the external interrupt inputs (counter mode) and the quick-response inputs.						
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	2 inputs	
	Counter interrupts	Shared by the external interrupt inputs and the quick-response 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		2 inputs	2 inputs	4 inputs	4 inputs	4 inputs	2 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)						
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.						

# CPM2C Specifications

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)
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)					

**Note:** CPM2C-S1□OC-DRT only.

# CPM2C Specifications

## ■ 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 VDC $+10\%/_{-15\%}$			<p>Input numbers: 00000 to 00001</p> <p>Units with 10 I/O points: 00002 to 00004 Units with 20/32 I/O points: 00002 to 00006</p> <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>
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 IN001007: 4.7 kΩ	
Input current	IN00000 to IN00001: 8 mA typical IN00002 to IN00004: 6 mA typical IN00005: 5 mA typical	IN00000 to IN00001: 8 mA typical IN00002 to IN00006: 6 mA typical IN00007 and up: 5 mA typical	IN00000 to IN00001: 8 mA typical IN00002 to IN00006: 6 mA typical IN00007: 5 mA typical IN00100 to IN001007: 5 mA typical	
ON voltage/current	IN00000 to IN00001: 17 VDC min., 5 mA IN00002 and up: 14.4 VDC min., 3.5 mA			
OFF voltage/current	5.0 VDC 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.)			

**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.

# CPM2C Specifications

## ■ CPM2C-S

### ■ Communications Specifications

#### DeviceNet

Item	Specification																
Communications method	DeviceNet																
Connection types	Multi-drop or T-branch (See note 1.)																
Baud rate	125, 250, or 500 kbps (set via switch)																
Communications media	Special 5-wire cable (2 signal lines, 2 power supply lines, 1 shield)																
Communications distances	<table border="1"><thead><tr><th>Baud rate</th><th>Max. network length (See notes 2 and 3.)</th><th>Branch length</th><th>Total branch length</th></tr></thead><tbody><tr><td>500 kbit/s</td><td>100 m max.</td><td>6 m max.</td><td>39 m max.</td></tr><tr><td>250 kbit/s</td><td>250 m max.</td><td>6 m max.</td><td>78 m max.</td></tr><tr><td>125 kbit/s</td><td>500 m max.</td><td>6 m max.</td><td>156 m max.</td></tr></tbody></table>	Baud rate	Max. network length (See notes 2 and 3.)	Branch length	Total branch length	500 kbit/s	100 m max.	6 m max.	39 m max.	250 kbit/s	250 m max.	6 m max.	78 m max.	125 kbit/s	500 m max.	6 m max.	156 m max.
Baud rate	Max. network length (See notes 2 and 3.)	Branch length	Total branch length														
500 kbit/s	100 m max.	6 m max.	39 m max.														
250 kbit/s	250 m max.	6 m max.	78 m max.														
125 kbit/s	500 m max.	6 m max.	156 m max.														
Maximum number of nodes	64 nodes (Including master, max. slaves: 63)																
Error control	CRC, node address duplications, scan list verification																

- Note:**
1. Terminating resistance required.
  2. Distance to farthest node.
  3. If Thin Cable is used, 100 m maximum.

# CPM2C Specifications

## CompoBus/S

Item		Specification			
Communications method		CompoBus/S protocol			
Code		Manchester			
Connection types		Multi-drop or T-branch (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 slaves and 8 output slaves 0.8 ms with 16 input slaves and 16 output slaves			
	Long-distance Communications Mode	4.0 ms with 8 input slaves and 8 output slaves 6.0 ms with 16 input slaves and 16 output slaves			
Communications media		2-conductor cable (VCTF0.75X2), 4-conductor cable (VCTF0.75X4), or special flat cable			
Communications distances		2-conductor VCTF Cable			
		Communications mode	Trunk line	Branch lines	Total of branch lines
		High-speed	100 m max.	3 m max.	50 m max.
		Long-distance	500 m max.	6 m max.	120 m max.
		4-conductor VCTF Cable/Special Flat Cable			
		Communications mode	Trunk line	Branch lines	Total of branch lines
		High-speed (See note 3.)	30 m max.	3 m max.	30 m max.
		Long-distance (See note 4.)	Flexible branching to a maximum of 200 m total cable length.		
Maximum number of nodes		32			
Error control		Manchester code check, frame length check, parity check			

- Note:**
1. Terminating resistance required.
  2. Set in DM Area (default: 750 kbps).
  3. Maximum total length is 100 m and maximum branch length is 50 m for 16 nodes or less.
  4. There are no restrictions in branching, trunk length, branch length, or total branch length. Connect terminating resistance to node farthest from master.

# CPM2C Specifications

## 2. Expansion I/O Unit Input Specifications

Item	Specification
Input voltage	24 VDC $+10\%/-15\%$
Input impedance	4.7 k $\Omega$
Input current	5 mA typical
ON voltage/current	14.4 VDC min., 3.5 mA
OFF voltage/current	5.0 VDC 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.

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

### 1. Relay Output

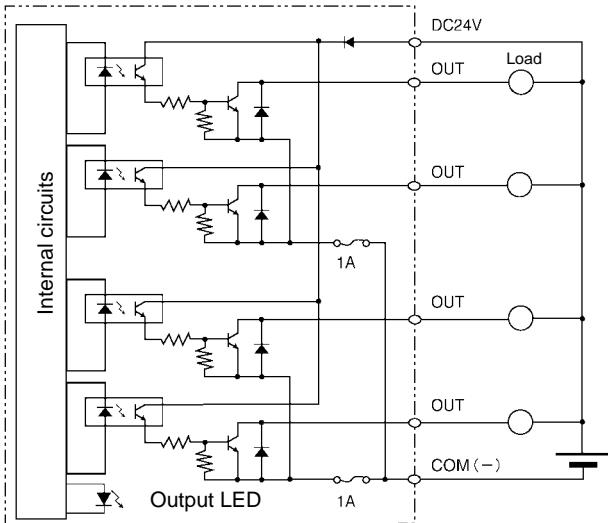
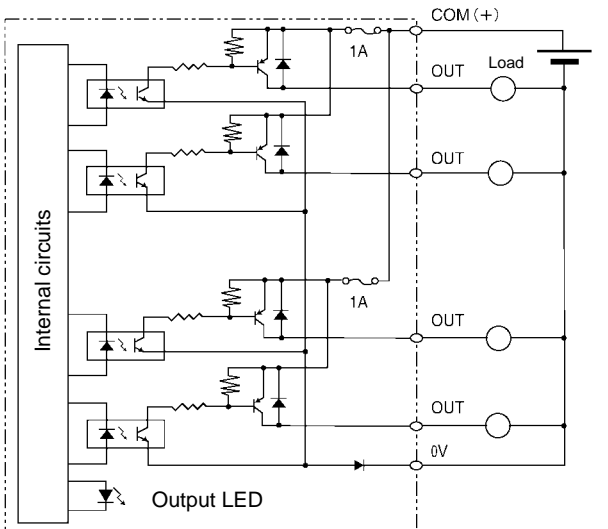
Item	Specification
Max. switching capacity	2 A, 250 VAC ( $\cos\phi = 1$ ) 2 A, 24 VDC (4 A/common)
Min. switching capacity	10 mA, 5 VDC
Service life of relay	Electrical: 150,000 operations (24-VDC resistive load) 100,000 operations (240-VAC inductive load, $\cos\phi = 0.4$ ) Mechanical: 20,000,000 operations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

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

Item	Specification
Max. switching capacity	<p>CPU Units with 10 or 20 I/O Points 01000 to 01007: 40 mA at 4.5 VDC to 300 mA at 20.4 VDC, 300 mA (20.4 to 26.4 V)</p> <p>CPU Units with 32 I/O Points 01000 to 01007: 40 mA at 4.5 VDC to 300 mA at 20.4 VDC, 300 mA (20.4 to 26.4 V) 01100 to 01107: 40 mA at 4.5 VDC to 100 mA at 20.4 VDC, 100 mA (20.4 to 26.4 V) (See note.)</p> <p>Expansion I/O Units 01□00 to 01□07: 40 mA at 4.5 VDC to 300 mA at 20.4 VDC, 300 mA (20.4 to 26.4 V) 01□08 to 01□15: 40 mA at 4.5 VDC to 100 mA at 20.4 VDC, 100 mA (20.4 to 26.4 V) (See note.)</p>



# CPM2C Specifications

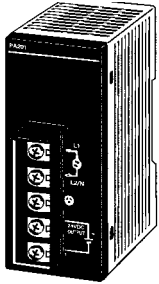
Item	Specification
Min. switching capacity	0.5 mA
Max. inrush current	0.9 A for 10 ms (charging and discharging waveform)
Leakage current	0.1 mA max.
Residual voltage	0.8 V max.
ON delay	OUT01000 and OUT01001: 20 $\mu$ s max. OUT01002 and up: 0.1 ms max.
OFF delay	OUT01000 and OUT01001: 40 $\mu$ s max. 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.)
Circuit configuration	<p><b>Sinking Outputs</b></p>  <p><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 Specifications

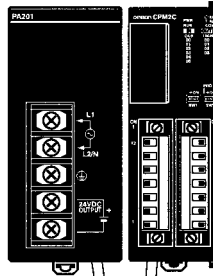
## ■ CPM2C-PA201 AC Power Supply Unit

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).

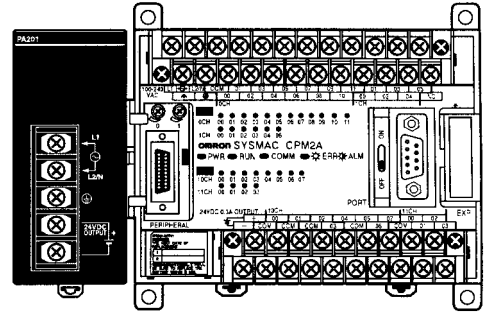


Service power supply for external devices such as sensors (24 V).

AC Power Supply Unit



AC Power Supply Unit



Attached connecting cable

# CPM2C Specifications

## ■ CPM2C-PA201 AC Power Supply Unit 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 VAC
	Allowable voltage range		85 to 264 VAC
	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 VAC or 200 VAC and the rated output)
	Output hold time		10 ms (at input voltage of 100 VAC or 200 VAC 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 75°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 VDC 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 Specifications

## ■ 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

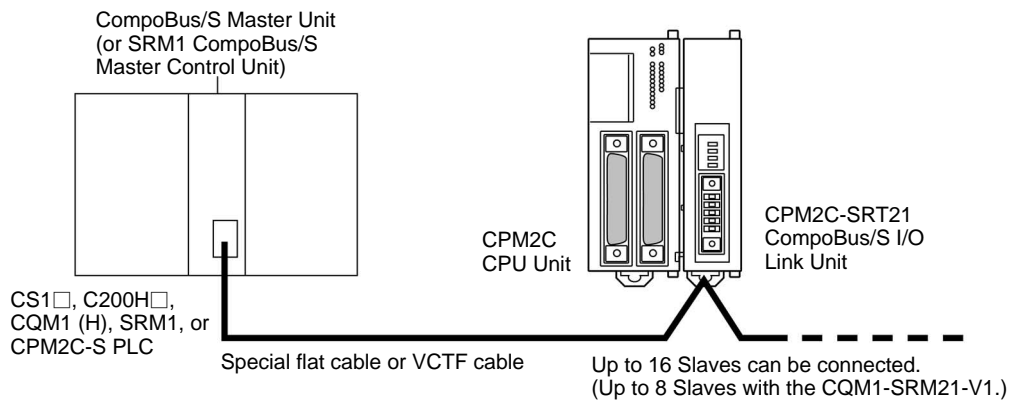
#### Specifications

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	0 to 20 mA, 4 to 20 mA	
	Maximum rated input	±15 V	±30 mA	
	External input impedance	1 MΩ min.	Approx. 250 Ω	
	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	0 to 20 mA, 4 to 20 mA	
	External output allowed load resistance	1 kΩ min.	600 Ω max.	
	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 Specifications

## ■ CPM2C-SRT21 CompoBus/S I/O Link Unit

The CPM2C PC can function as a Slave to a CompoBus/S Master Unit (or SRM1 CompoBus/S Master Control Unit) when a CPM2C-SRT21 CompoBus/S I/O Link Unit is connected. The CompoBus/S I/O Link Unit establishes an I/O link of 8 inputs and 8 outputs between the Master Unit and the CPM2C. Up to 3 Expansion I/O Units or Expansion Units can be connected to a CPM2C CPU Unit.



## Specifications

Item	Specification
Model number	CPM2C-SRT21
Master/Slave	CompoBus/S Slave
Number of I/O bits	8 input bits, 8 output bits
Number of words occupied in CPM2C I/O memory	1 input word, 1 output word (Allocated in the same way as other Expansion I/O Units or Expansion Units)
Node number setting	Set using the DIP switch.
Power consumption	1 W
Weight	150 g

**Note:** See the *CompoBus/S Catalog (Q103)* for more details on CompoBus/S communications.

# CPM2C Specifications

## ■ 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

Item	CPM2C-TS001	CPM2C-TS002
Temperature sensor	Thermocouple	Temperature resistance thermometer
Input types	K or J selectable (The same input type must be used for all inputs.)	Pt100, JPt1100 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

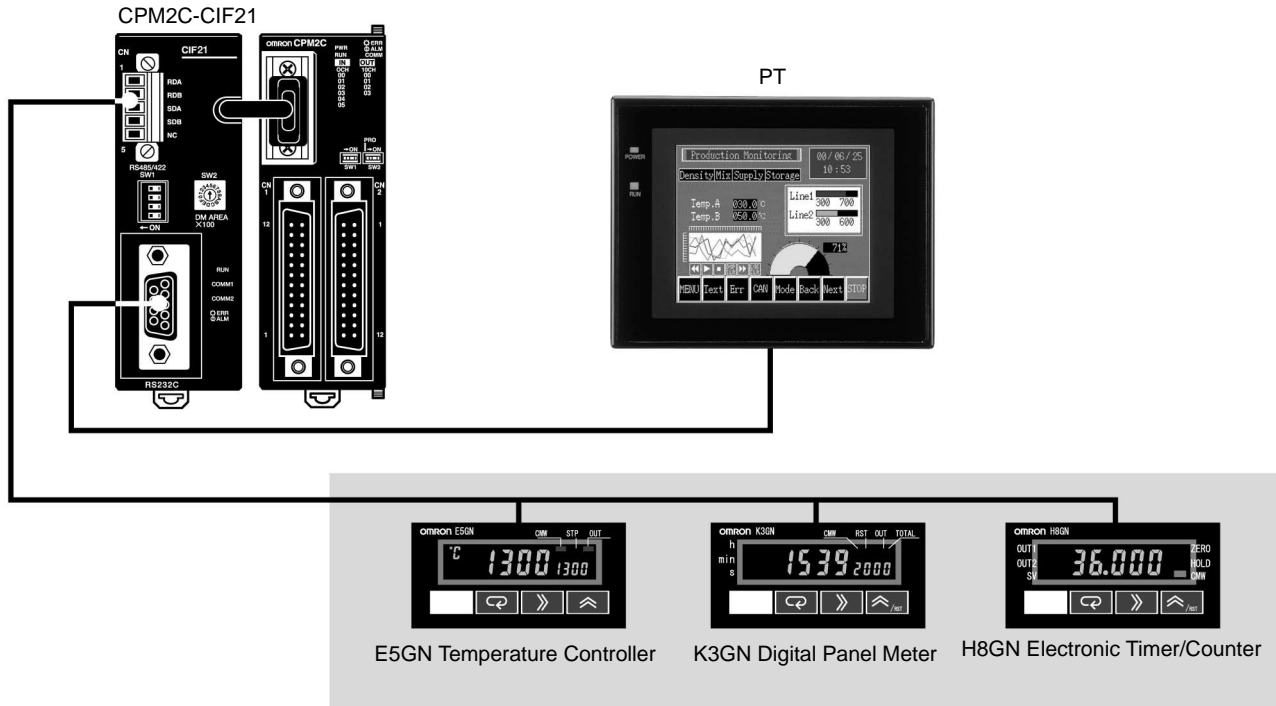
The input type is selected with a rotary switch. The ranges for each of the input types are shown in the following table.

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 Specifications

## ■ CPM2C-CIF21 Simple Communications Unit

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



# CPM2C Specifications

## ■ Connectable Devices

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

Classification	Product	Model	SYSWAY		Compo Way/F	Remarks
				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	---
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	SYSWAY communications only (See note 2.)

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.



# CPM2C Specifications

## ■ CMP2C-CIF21 Simple Communications Unit

### ■ 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	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

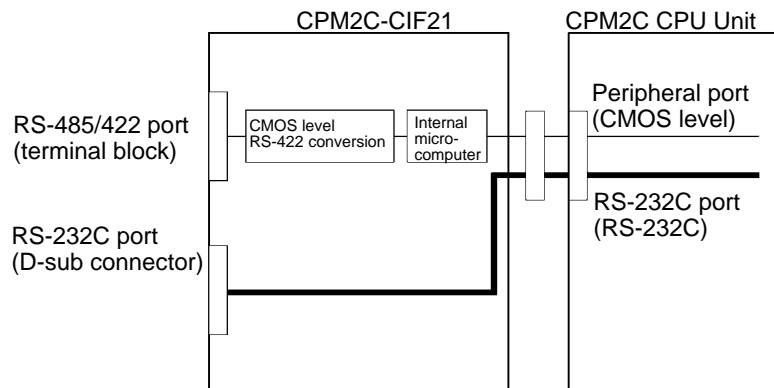
The command groups for which reading or writing is performed are determined by settings in the DM area.

# CPM2C Specifications

## ■ CPM2C-CIF21 Simple Communications Unit Specifications

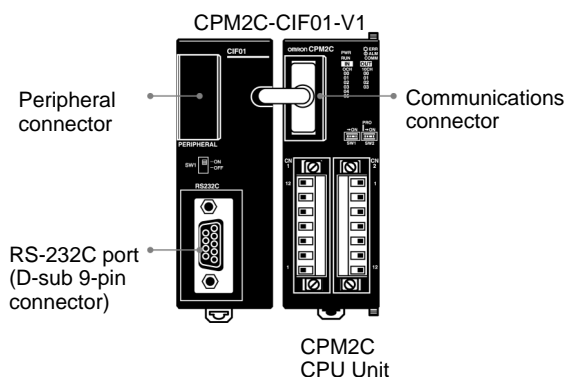
Item		Specification
Applicable PLC		CPM2C
RS-485/422 (top port)	Maximum number of connectable components	32
	Component connection port	Components connected to RS-485/422 terminal block. Connected to CPM2C CPU Unit via peripheral port (see diagram below).
	Baud rate for connection to components	9.6, 19.2, 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.

## ■ Internal Configuration

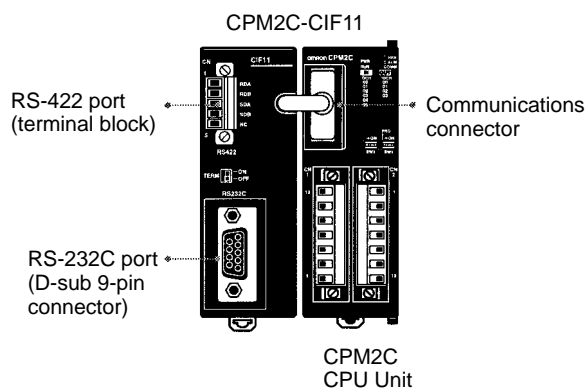


# CPM2C Specifications

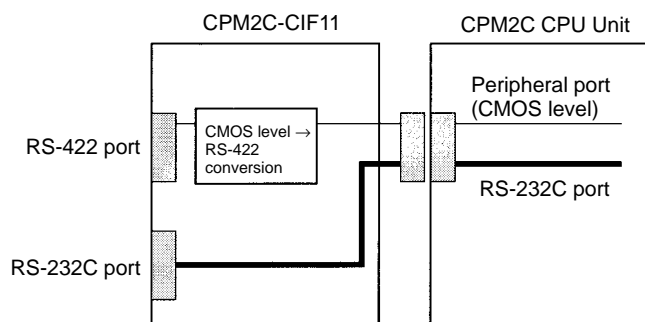
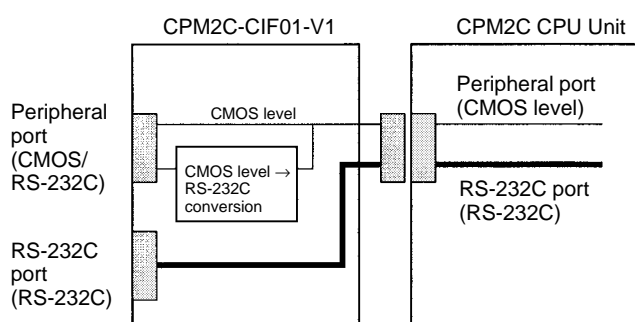
## CPM2C-CIF01-V1 Peripheral/RS-232C Adapter Unit



## CPM2C-CIF11 RS-422/RS-232C Adapter Unit



## 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.

## CPM2C-CIF01-V1/CIF11 Specifications

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).	Converts CMOS level (CPU Unit side) to RS-422 (connected device side). RS-422 (externally connected device) insulated using DC/DC converter or photocoupler.
	Function	Host Link, peripheral bus, no-protocol, or Programming Console connections.	Host Link, peripheral bus, or no-protocol connections.
Lower port	Signal conversion	Outputs signals from the CPU Unit's CMOS interface without conversion.	Outputs signals from the CPU Unit's CMOS interface without conversion.
	Function	Host Link, no-protocol, 1:1 Link, or 1:1 NT Link connections.	Host Link, no-protocol, 1:1 Link, or 1:1 NT Link connections.
Power supply		Power supplied from CPU Unit.	
Current consumption		0.3 A max. at 5 V	
Weight		150 g max.	

**Note:** Neither the CPM2C-CIF01-V1 nor the CPM2C-CIF11 can be used with any PC 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 Specifications

## ■ Number of Connectable Units

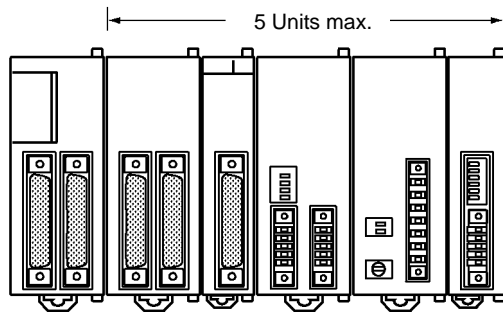
Up to 5 Units can be connected to a CPM2C CPU Unit except for the CPM2C-S1□OC-DRT Programmable Slave and CPM2C-S1□OC CompoBus/S Master Unit, which are limited to 3 Units. The number of words that can be used by Expansion Units, however, is limited, and these limits must not be exceeded.

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 (CMP2C-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)

- 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

## ■ Word Allocation Examples

### CPM2C-20CDTC-D CPU Unit



CPU Unit

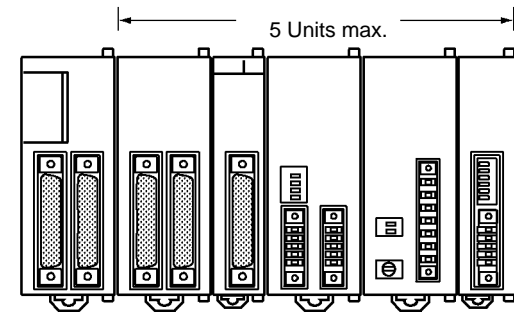
## ■ Number of I/O Words Allocated to Expansion Units

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

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 Specifications

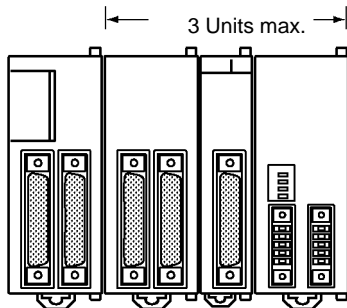
## CMP2C-32CDTC-D CPU Unit



CPU Unit

Unit	Model number	Inputs	Outputs
CPU Unit	CPM2C-32CDTC-D	IR 000 IR 001	IR 010 IR 011
Expansion I/O Unit	CPM2C-24EDTC	IR 002	IR 012
Expansion Output Unit	CPM2C-16ETC	---	IR 013
Analog I/O Unit	CPM2C-MAD11	IR 003 IR 004	IR 014
Temperature Sensor Unit	CPM2C-TS001	IR 005 IR 006	---
CompoBus/S I/O Link Unit	CPM2C-SRT21	IR 007	IR 015

## CMP2C-S100-DRT Programmable Slave



CPU Unit

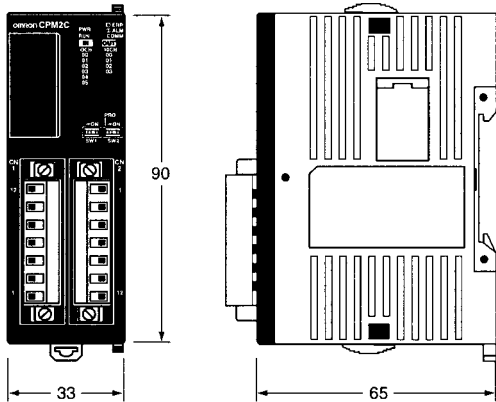
Unit	Model number	Inputs	Outputs
Programmable Slave	CPM2C-S100-DRT	IR 000	IR 010
Expansion I/O Unit	CPM2C-24EDTC	IR 001	IR 011
Expansion Output Unit	CPM2C-16ETC	---	IR 012
Analog I/O Unit	CPM2C-MAD11	IR 002 IR 003	IR 013

**Note:** Words allocated for CompoBus/S I/O are not affected by the Expansion Units that are connected.  
 CompoBus/S inputs: IR 20 to IR 27  
 CompoBus/S outputs: IR 30 to IR 37

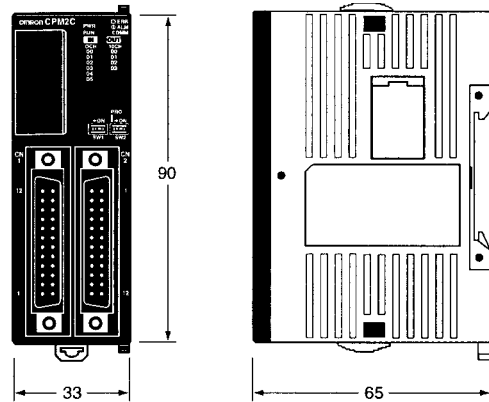
# CPM2C Dimensions

## CPU Units

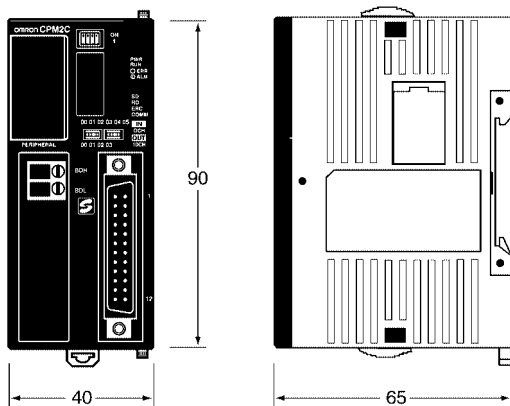
**CPU Units with Relay Outputs**  
(CPM2C-10C(1) DR-D, CPM2C-20C(1)DR-D)



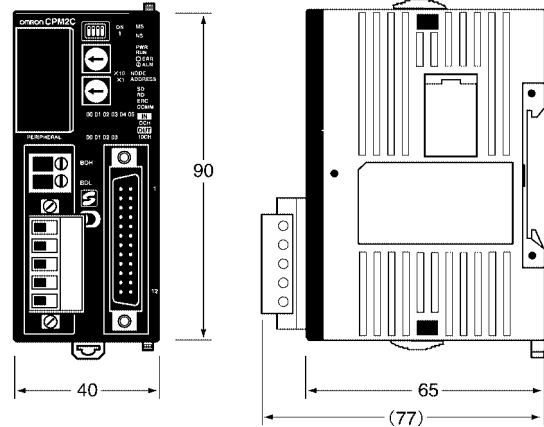
**CPU Units with Transistor Outputs**  
(CPM2C-10C(1)DT(1)C-D, CPM2C-10C(1)DT(1)M-D,  
CPM2C-20C(1)DT(1)C-D, CPM2C-20C(1)DT(1)M-D,  
CPM2C-32CDT(1)C-D, CPM2C-32CDT(1)M-D)



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



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

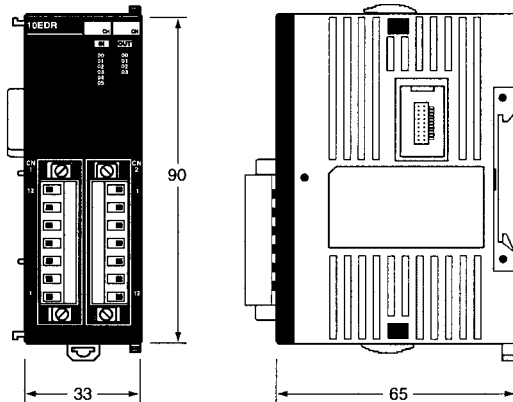


**Note:** All dimensions are in mm.

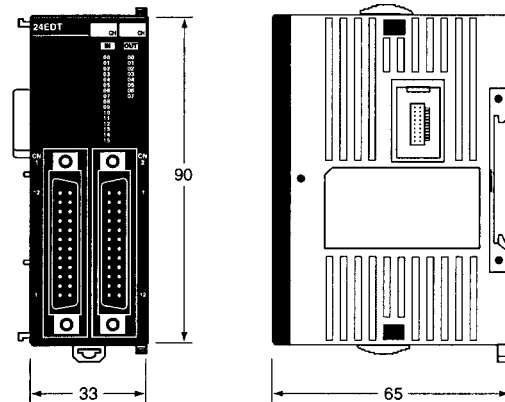
# CPM2C Dimensions

## Expansion I/O Units

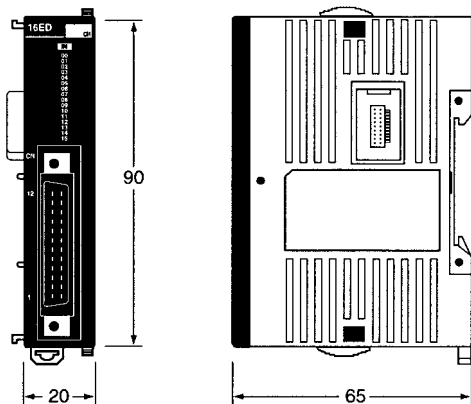
Units with Relay Outputs  
(CPM2C-8ER, CPM2C-10EDR, CPM2C-20EDR)



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



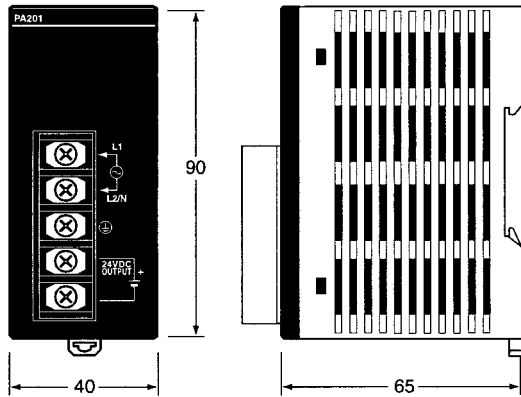
Units with Transistor Outputs Only and Units with Inputs Only  
(CPM2C-8ED(1), CPM2C-8ET(1)C, CPM2C-8ET(1)M,  
CPM2C-16ED(1), CPM2C-16ET(1)C, CPM2C-16ET(1)M)



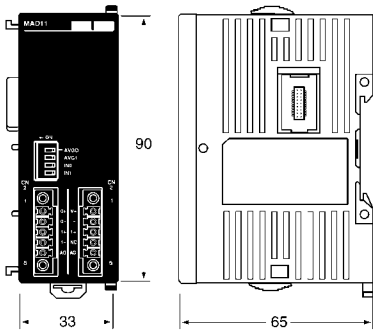
**Note:** All dimensions are in mm.

# CPM2C Dimensions

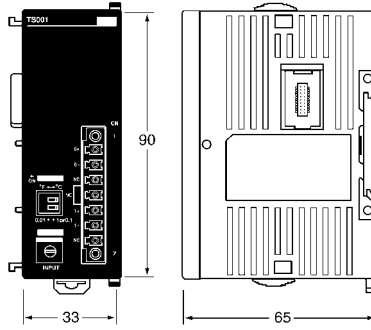
## AC Power Supply Unit (CPM2C-PA201)



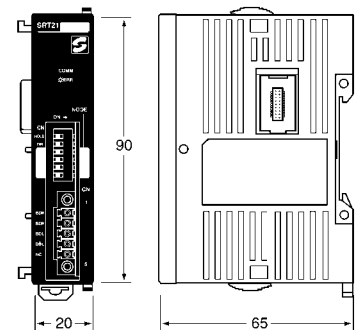
## Analog I/O Unit (CPM2C-MAD11)



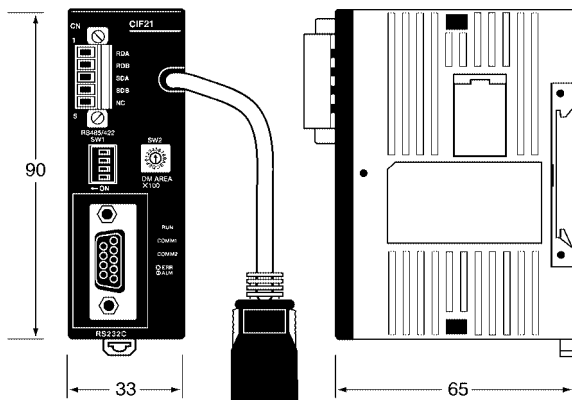
## Temperature Sensor Unit (CPM2C-TS001, CPM2C-TS101)



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



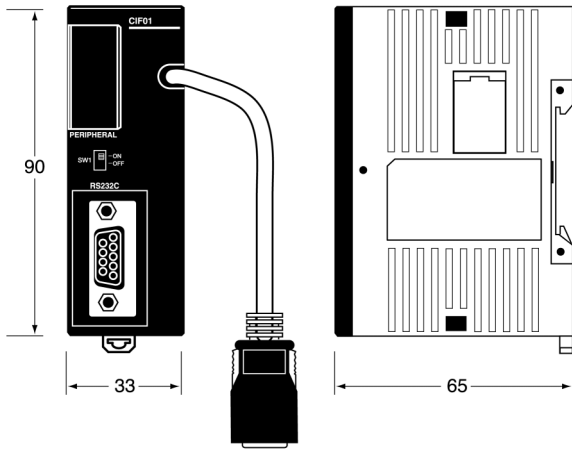
## Simple Communications Unit (CPM2C-CIF21)



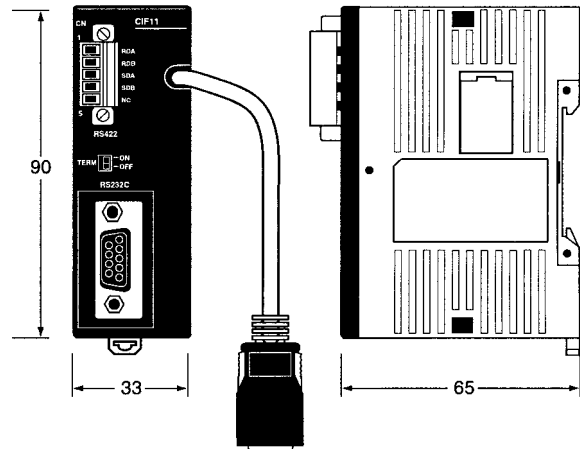


# CPM2C Dimensions

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



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



# Functions

*The illustrations in this section show CPM2A PCs, but the same functions are available in CPM2C PCs unless otherwise stated.*

## ■ Interrupts

The CPM2A and CPM2C 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

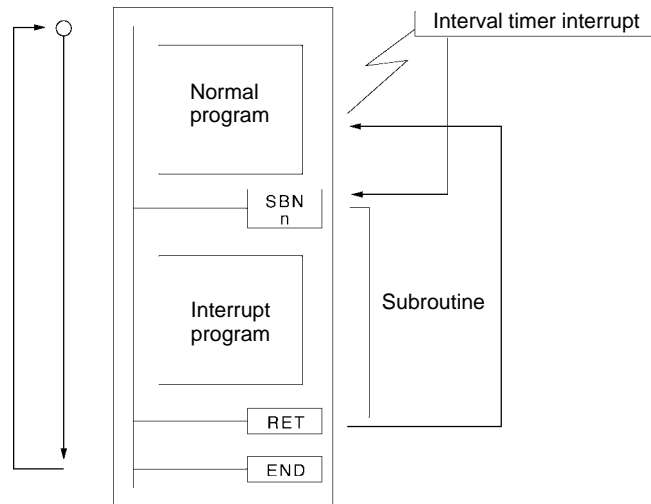
Input signals to the CPU Unit's built-in input points (00003 to 00006) are counted at high speed (up to 2 kHz), and the normal program is stopped and an interrupt program is executed when the count reaches the SV. Interrupt subroutine numbers 000 to 003 are allocated to input points 00003 to 00006.

### 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 CPM2A/CPM2C 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.

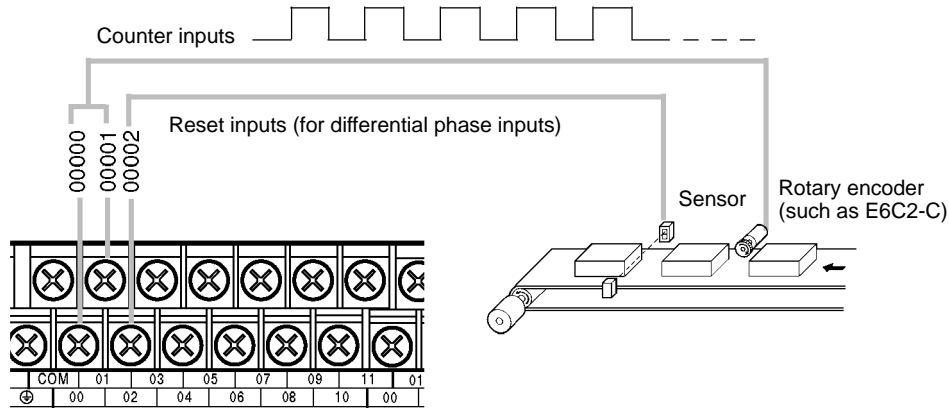


Item	Single-interrupt mode	Scheduled-interrupt mode
Operation	Interrupt is executed once when time has elapsed.	Interrupts are executed at regular intervals.
Set time	0.5 to 319,968 ms (Unit: 0.1 ms)	
Interrupt response time	0.3 ms (from when time has elapsed until execution of interrupt program)	

# Functions

## ■ High-speed Counters

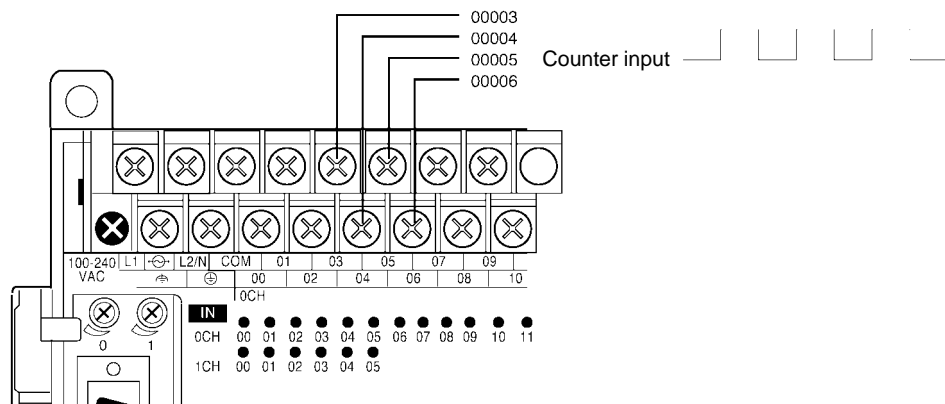
The CPM2A/CPM2C CPU Unit has a built-in high-speed counter that can count input pulses at up to 20 kHz. When combined with the interrupt function, the high-speed counter can be used for target-value comparison or range comparison control that is unaffected by the cycle time.



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)

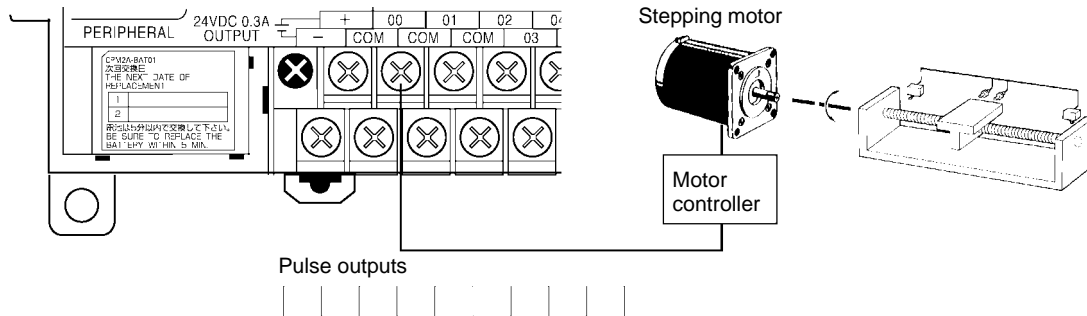
The four built-in interrupt inputs in the CPM2A/CPM2C's CPU Unit can be used in counter mode to count inputs of up to 2 kHz. These inputs can be used as either incrementing counters or decrementing counters and can trigger an interrupt (i.e., execute an interrupt subroutine) when the count matches the 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 CPM2A/CPM2C has two pulse outputs. The PC 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.



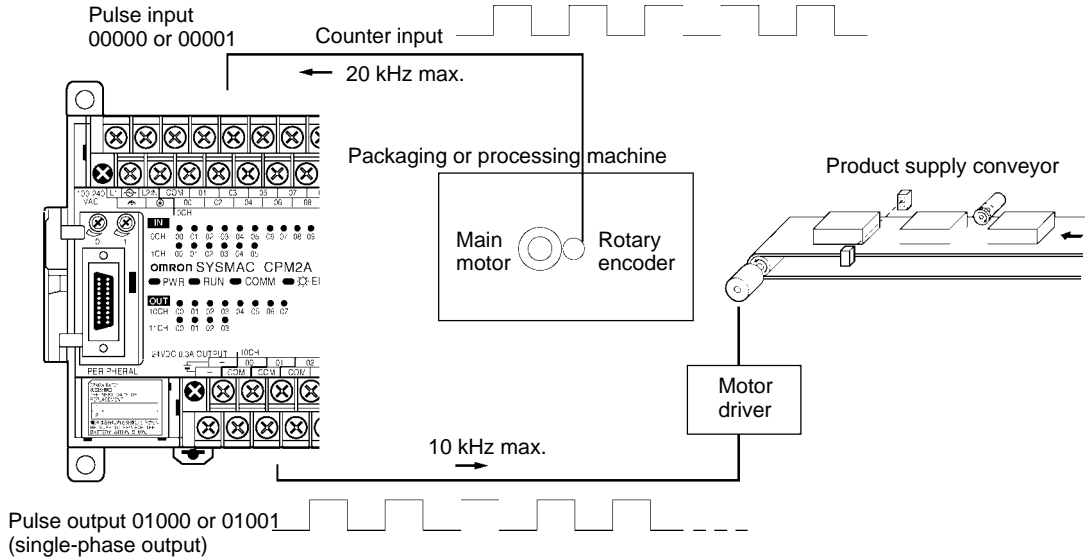
Item		Single-phase pulse output without accel/decel	Variable duty-ratio pulse output	Single-phase pulse output with trapezoidal acceleration/deceleration			
				Pulse + direction output		Up/down pulse output	
Controlling instruction(s)		PULS(65) and SPED(64)	PWM(—)	PULS(65) and ACC(—)			
Output number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

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

# Functions

## ■ Synchronized Pulse Control

The CPM2A/CPM2C'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. (This function is supported only by the SSS.)

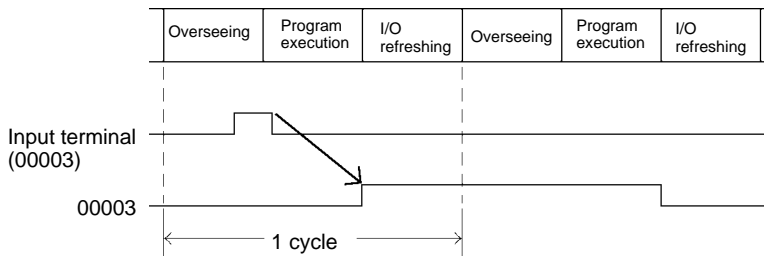


Item		Input mode			
		Phase differential input mode	Pulse + direction input mode	Up/down pulse input mode	Increment mode
Input number	00000	A-phase input	Count input	CW input	Count input
	00001	B-phase input	Direction input	CCW input	See note 1.
Input method		Phase differential quadruple input	Single-phase 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**
1. Can be used as an ordinary input.
  2. The accuracy is  $\pm 10$  Hz when the input frequency is 10 kHz or less.

## ■ Quick-response Inputs

The CPM2A 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)

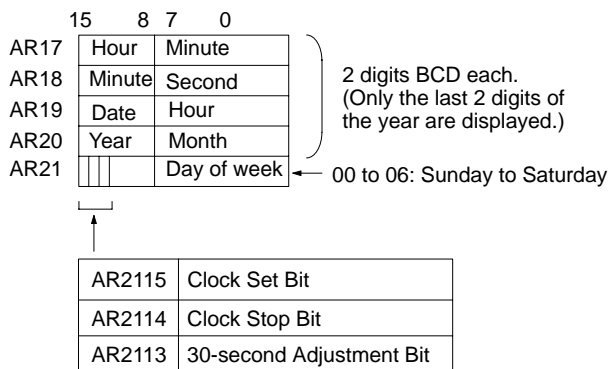
The CPM2A CPU Unit has two analog controls that can be used for a wide range of timer and counter analog settings. As these controls are turned, values from 0 to 200 (BCD) are stored in the SR Area.

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 CPM2Cs 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 CPM2C CPU Units have models with the clock function and models without.)



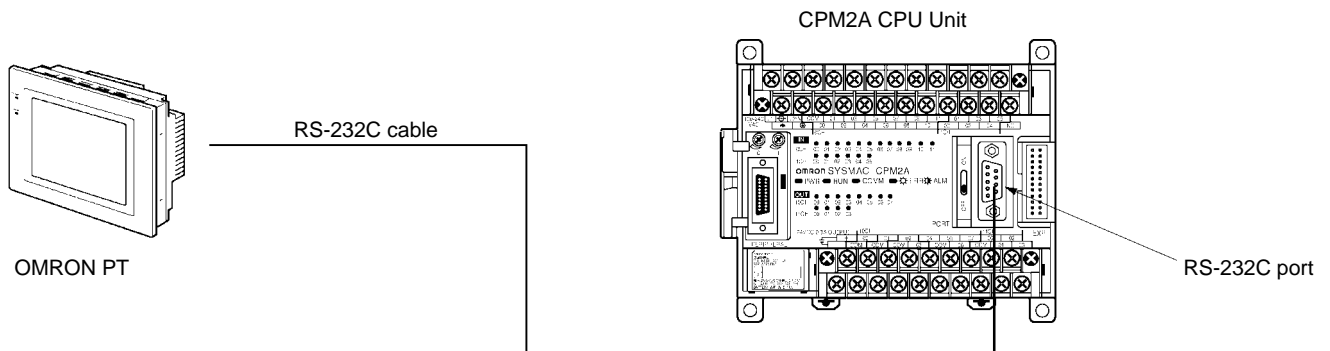
## ■ Additional Timer Functions

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).

**Note:** This function is supported only by the SSS.

## ■ NT Link

The CPM2A/CPM2C can be connected to an OMRON PT (Programmable Terminal) in NT Link mode (1:1). A communications program is not required in the CPM2A/CPM2C. The RS-232C port can be used for the NT Link.



# Instructions

The CPM2A and CPM2C support 119 basic and special instructions.

## ■ Ladder Diagram Instructions

Name	Mnemonic	Variations
LOAD	LD	---
LOAD NOT	LD NOT	---
AND	AND	---
AND NOT	AND NOT	---
OR	OR	---
OR NOT	OR NOT	---
AND LOAD	AND LD	---
OR LOAD	OR LD	---

## ■ Bit Control Instructions

Name	Mnemonic	Variations
OUTPUT	OUT	---
OUTPUT NOT	OUT NOT	---
SET	SET	---
RESET	RSET	---
KEEP	KEEP(11)	---
DIFFERENTIATE UP	DIFU(13)	---
DIFFERENTIATE DOWN	DIFD(14)	---

## ■ Sequence Control Instructions

Name	Mnemonic	Variations
NO OPERATION	NOP(00)	---
END	END(01)	---
INTERLOCK	IL(02)	---
INTERLOCK CLEAR	ILC(03)	---
JUMP	JMP(04)	---
JUMP END	JME(05)	---

## ■ Timer and Counter Instructions

Name	Mnemonic	Variations
TIMER	TIM	---
COUNTER	CNT	---
REVERSIBLE COUNTER	CNTR(12)	---
HIGH-SPEED TIMER	TIMH(15)	---
ONE-MS TIMER	TMHH( $-1$ ) <sup>2</sup>	---
LONG TIMER	TIML( $-1$ ) <sup>2</sup>	---

## ■ Comparison Instructions

Name	Mnemonic	Variations
COMPARE	CMP(20)	---
TABLE COMPARE	TCMP(85)	@
DOUBLE COMPARE	CMPL(60) <sup>1</sup>	---
BLOCK COMPARE	BCMP(68) <sup>1</sup>	@
AREA RANGE COMPARE	ZCP( $-1$ ) <sup>2</sup>	---
DOUBLE AREA RANGE COMPARE	ZCPL( $-1$ ) <sup>2</sup>	---

## ■ Data Movement Instructions

Name	Mnemonic	Variations
MOVE	MOV(21)	@
MOVE NOT	MVN(22)	@
BLOCK TRANSFER	XFER(70)	@
BLOCK SET	BSET(71)	@
DATA EXCHANGE	XCHG(73)	@
SINGLE WORD DISTRIBUTE	DIST(80)	@
DATA COLLECT	COLL(81)	@
MOVE BIT	MOVB(82)	@
MOVE DIGIT	MOVD(83)	@

## ■ Shift Instructions

Name	Mnemonic	Variations
SHIFT REGISTER	SFT(10)	---
WORD SHIFT	WSFT(16)	@
ARITHMETIC SHIFT LEFT	ASL(25)	@
ARITHMETIC SHIFT RIGHT	ASR(26)	@
ROTATE LEFT	ROL(27)	@
ROTATE RIGHT	ROR(28)	@
ONE DIGIT SHIFT LEFT	SLD(74)	@
ONE DIGIT SHIFT RIGHT	SRD(75)	@
REVERSIBLE SHIFT REGISTER	SFTR(84)	@
ASYNCHRONOUS SHIFT REGISTER	ASFT(17) <sup>1</sup>	@

## ■ Increment/Decrement Instructions

Name	Mnemonic	Variations
INCREMENT	INC(38)	@
DECREMENT	DEC(39)	@

## ■ Calculation Instructions

Name	Mnemonic	Variations
BCD ADD	ADD(30)	@
BCD SUBTRACT	SUB(31)	@
BCD MULTIPLY	MUL(32)	@
BCD DIVIDE	DIV(33)	@
BINARY ADD	ADB(50)	@
BINARY SUBTRACT	SBB(51)	@
BINARY MULTIPLY	MLB(52)	@
BINARY DIVIDE	DVB(53)	@
DOUBLE BCD ADD	ADDL(54)	@
DOUBLE BCD SUBTRACT	SUBL(55)	@
DOUBLE BCD MULTIPLY	MULL(56)	@
DOUBLE BCD DIVIDE	DIVL(57)	@

**Note** 1. Expansion instructions with default function codes.  
2. Instructions not supported by the CPM1A.

# Instructions

## ■ Conversion Instructions

Name	Mnemonic	Variations
BCD-TO-BINARY	BIN(23)	@
BINARY-TO-BCD	BCD(24)	@
DOUBLE BCD-TO-DOUBLE BINARY	BINL(58) <sup>2</sup>	@
DOUBLE BINARY-TO-DOUBLE BCD	BCDL(59) <sup>2</sup>	@
DATA DECODER	MLPX(76)	@
DATA ENCODER	DMPX(77)	@
ASCII CONVERT	ASC(86)	@
ASCII-TO-HEXADECIMAL	HEX(—) <sup>1,2</sup>	@
2'S COMPLEMENT	NEG(—) <sup>1,2</sup>	@
HOURS-TO-SECONDS	SEC(—) <sup>1,2</sup>	@
SECONDS-TO-HOURS	HMS(—) <sup>1,2</sup>	@

## ■ Table Data Manipulation Instructions

Name	Mnemonic	Variations
FRAME CHECKSUM	FCS(—) <sup>1,2</sup>	@
SUM	SUM(—) <sup>1,2</sup>	@
DATA SEARCH	SRCH(—) <sup>1,2</sup>	@
FIND MAXIMUM	MAX(—) <sup>1,2</sup>	@
FIND MINIMUM	MIN(—) <sup>1,2</sup>	@

## ■ Data Control Instructions

Name	Mnemonic	Variations
SCALING	SCL(66) <sup>1,2</sup>	@
SCALING 2	SCL2(—) <sup>1,2</sup>	@
SCALING 3	SCL3(—) <sup>1,2</sup>	@
PID CONTROL	PID(—) <sup>1,2</sup>	---
AVERAGE VALUE	AVG(—) <sup>1,2</sup>	---

## ■ Logic Instructions

Name	Mnemonic	Variations
COMPLEMENT	COM(29)	@
LOGICAL AND	ANDW(34)	@
LOGICAL OR	ORW(35)	@
EXCLUSIVE OR	XORW(36)	@
EXCLUSIVE NOR	XNRW(37)	@

## ■ Special Calculation Instructions

Name	Mnemonic	Variations
BIT COUNTER	BCNT(67) <sup>1</sup>	@

## ■ Subroutine Instructions

Name	Mnemonic	Variations
SUBROUTINE CALL	SBS(91)	@
SUBROUTINE ENTRY	SBN(92)	---
SUBROUTINE RETURN	RET(93)	---
MACRO	MCRO(99)	@

## ■ Interrupt Control Instructions

Name	Mnemonic	Variations
INTERRUPT CONTROL	STIM(69) <sup>1</sup>	@
INTERVAL TIMER	INT(89) <sup>1,3</sup>	@

## ■ Pulse Control Instructions

Name	Mnemonic	Variations
MODE CONTROL	INI(61) <sup>1,3</sup>	@
HIGH-SPEED COUNTER PV READ	PRV(62) <sup>1,3</sup>	@
REGISTER COMPARISON TABLE	CTBL(63) <sup>1,3</sup>	@

## ■ Pulse Output Control Instructions

Name	Mnemonic	Variations
SPEED OUTPUT	SPED(64) <sup>1,3</sup>	@
SET PULSES	PULS(65) <sup>1,3</sup>	@
PULSE W/ VARIABLE DUTY RATIO	PWM(—) <sup>1,2</sup>	@
ACCELERATION CONTROL	ACC(—) <sup>1,2</sup>	@
SYNCHRONIZED PULSE CONTROL	SYNC(—) <sup>1,2</sup>	@

## ■ I/O Unit Instructions

Name	Mnemonic	Variations
7-SEGMENT DECODER	SDEC(78)	@
I/O REFRESH	IORF(97)	@

## ■ Communications Instructions

Name	Mnemonic	Variations
RECEIVE	RXD(47) <sup>1,2</sup>	@
TRANSMIT	TXD(48) <sup>1,2</sup>	@
CHANGE RS-232C SETUP	STUP(—) <sup>1,2</sup>	@

## ■ Step Instructions

Name	Mnemonic	Variations
STEP DEFINE	STEP(08)	---
STEP START	SNXT(09)	---

## ■ User Error Instructions

Name	Mnemonic	Variations
FAILURE ALARM AND RESET	FAL(06)	@
SEVERE FAILURE ALARM	FALS(07)	---

## ■ Display Instructions

Name	Mnemonic	Variations
MESSAGE DISPLAY	MSG(46)	@

## ■ Carry Flag Instructions

Name	Mnemonic	Variations
SET CARRY	STC(40)	@
CLEAR CARRY	CLC(41)	@

- Note**
1. Expansion instructions with default function codes.
  2. Instructions not supported by the CPM1A.
  3. Instructions improved in the CPM2A/CPM2C.



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# ORDERING GUIDE

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## **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 the end of September 2001.

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

Please contact your OMRON representative for application conditions.

## **EMC Directives**

OMRON devices that comply with EC Directives also conform to the related EMC standards so that they can be more easily built into other devices or the overall machine. The actual products have been checked for conformity to EMC standards (see the following note). Whether the products conform to the standards in the system used by the customer, however, must be confirmed by the customer.

EMC-related performance of the OMRON devices that comply with EC Directives will vary depending on the configuration, wiring, and other conditions of the equipment or control panel on which the OMRON devices are installed. The customer must, therefore, perform the final check to confirm that devices and the overall machine conform to EMC standards.

## **Applicable EMC Standards**

EMS (Electromagnetic Susceptibility):

EN61131-2

EMI (Electromagnetic Interference):

EN50081-2

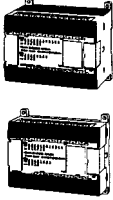
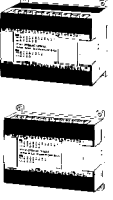
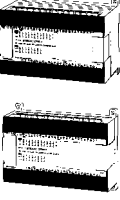
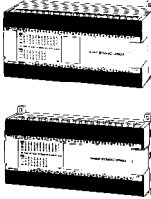
(Radiated emission: 10-m regulations)

## **Low Voltage Directive**

OMRON Power Supply Units and I/O Units have been determined safe when operating at voltages of 50 to 1,000 VAC and 75 to 1,500 VDC according to the safety standards in EN61131-2.












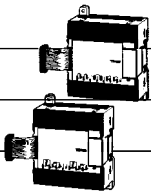
# CPM2A Ordering Guide

## ■ CPM2A CPU Units

CPU Unit	Power supply	Output type	Inputs	Outputs	Model	Standards
20 I/O points 	AC	Relay	12	8	CPM2A-20CDR-A	U, C, CE
	DC	Relay			CPM2A-20CDR-D	U, C, CE
		Transistor (sinking)			CPM2A-20CDT-D	U, C, CE
		Transistor (sourcing)			CPM2A-20CDT1-D	U, C, CE
30 I/O points 	AC	Relay	18	12	CPM2A-30CDR-A	U, C, CE
	DC	Relay			CPM2A-30CDR-D	U, C, CE
		Transistor (sinking)			CPM2A-30CDT-D	U, C, CE
		Transistor (sourcing)			CPM2A-30CDT1-D	U, C, CE
40 I/O points 	AC	Relay	24	16	CPM2A-40CDR-A	U, C, CE
	DC	Relay			CPM2A-40CDR-D	U, C, CE
		Transistor (sinking)			CPM2A-40CDT-D	U, C, CE
		Transistor (sourcing)			CPM2A-40CDT1-D	U, C, CE
60 I/O points 	AC	Relay	36	24	CPM2A-60CDR-A	U, C, CE
	DC	Relay			CPM2A-60CDR-D	U, C, CE
		Transistor (sinking)			CPM2A-60CDT-D	U, C, CE
		Transistor (sourcing)			CPM2A-60CDT1-D	U, C, CE

# CPM2A Ordering Guide

## ■ Expansion Units and Expansion I/O Units

Unit	Output type	Inputs	Outputs	Model	Standards
Expansion I/O Units	Relay	12	8	 CPM1A-20EDR1	U, C, CE
	Transistor (sinking)			 CPM1A-20EDT	U, C, CE
	Transistor (sourcing)			 CPM1A-20EDT1	U, C, CE
	---	8	---	 CPM1A-8ED	U, C, CE
	Relay	---	8	 CPM1A-8ER	U, C, CE
	Transistor (sinking)	---	8	 CPM1A-8ET	U, C, CE
	Transistor (sourcing)	---	8	 CPM1A-8ET1	U, C, L, CE
Analog I/O Unit	Analog (resolution: 1/256)	2	1	 CPM1A-MAD01	U, C, CE
	Analog (resolution: 1/6,000)	2	1	 CPM1A-MAD11	U, C, CE
DeviceNet I/O Link Unit	---	I/O Link of 32 input bits and 32 output bits		 CPM1A-DRT21	U, C, CE
CompoBus/S I/O Link Unit	---	I/O Link of 8 input bits and 8 output bits		 CPM1A-SRT21	U, C, CE
Temperature Sensor Units	2 thermocouple inputs			CPM1A-TS001	U, C, CE
	4 thermocouple inputs			CPM1A-TS002	U, C, CE
	2 platinum resistance thermometer inputs			CPM1A-TS101	U, C, CE
	4 platinum resistance thermometer inputs			CPM1A-TS102	U, C, CE

## ■ Programming Consoles and Cables

Product	Model	Standards	
Programming Console (2-m cable attached)	CQM1-PRO01-E	U, C, N, CE	
Programming Console (Requires separate cable. See below.)	C200H-PRO27-E	U, C, N, CE	
Connecting Cable for C200H-PRO27-E	2-m cable	C200H-CN222	N
	4-m cable	C200H-CN422	---

# CPM2A Ordering Guide

## ■ Support Software

Product	Functions	Model	Standards
CX-Programmer	Windows-based Programming Device OS: Windows 95/98/NT	WS02-CXPC1-EV2	---
SYSMAC Support Software (SSS)	For IBM PC/AT or compatible computer, 1.44 MB, 3.5" disk	C500-ZL3AT1-E	---

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

## ■ Personal Computer Connecting Cables

CPM2A port	Computer port	Specifications	Cable length	Model	Standards	
Peripheral	For a D-sub 9-pin port	---	3.3 m	CQM1-CIF02	U, C, N, L, CE	
RS-232C	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	---	
	For a D-sub 25-pin port	---	2 m	XW2Z-200S	---	
			5 m	XW2Z-500S	---	
	For a half-pitch 14-pin port	---	---	2 m + 0.15 m	XW2Z-200S	---
					XW2Z-S001	---
				5 m + 0.15 m	XW2Z-500S	---
					XW2Z-S001	---

## ■ Adapters

Product	Function	Model	Standards
RS-232C Adapter	Peripheral port level conversion	CPM1-CIF01	N, L, CE
RS-422 Adapter		CPM1-CIF11	N, L, CE
Link Adapter	RS-232C to RS-422A conversion	3G2A9-AL004-E	---
RS-232C to RS422A Conversion Adapter		NT-AL001	---





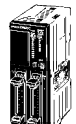
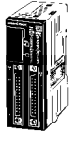
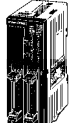

## ■ Battery

Product	Function	Model	Standards
Backup Battery (See note.)	Backs up memory in the CPM2A CPU Unit.	CPM2A-BAT01	---


**Note:** One internal Backup Battery is provided as standard.

# CPM2C Ordering Guide


## ■ 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 VDC)	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 VDC)	4 sinking transistor outputs	---	CPM2C-10CDTC-D	U, C, CE
			4 sourcing transistor outputs	Yes	CPM2C-10C1DTC-D	
			4 sinking transistor outputs	---	CPM2C-10CDT1C-D	
			4 sourcing transistor outputs	Yes	CPM2C-10C1DT1C-D	
	2 MIL connectors	6 inputs (24 VDC)	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 VDC)	8 relays	---	CPM2C-20CDR-D	U, C, CE
			8 relays	Yes	CPM2C-20C1DR-D	
			8 sinking transistor outputs	---	CPM2C-20CDTC-D	
			8 sourcing transistor outputs	Yes	CPM2C-20C1DTC-D	
	2 I/O connector	12 inputs (24 VDC)	8 sinking transistor outputs	---	CPM2C-20CDT1C-D	U, C, CE
			8 sourcing transistor outputs	Yes	CPM2C-20C1DT1C-D	
			8 sinking transistor outputs	---	CPM2C-20CDTM-D	
			8 sourcing transistor outputs	Yes	CPM2C-20C1DTM-D	
Units with 32 I/O points Inputs: 16 Outputs: 16  	2 Fujitsu connectors	16 inputs (24 VDC)	16 sinking transistor outputs	---	CPM2C-32CDTC-D	U, C, CE
			16 sourcing transistor outputs	---	CPM2C-32CDT1C-D	
			16 sinking transistor outputs	---	CPM2C-32CDTM-D	
			16 sourcing transistor outputs	---	CPM2C-32CDT1M-D	
	2 MIL connectors	16 inputs (24 VDC)	16 sinking transistor outputs	---	CPM2C-32CDTM-D	U, C, CE
			16 sourcing transistor outputs	---	CPM2C-32CDT1M-D	
			16 sinking transistor outputs	---	CPM2C-32CDTM-D	
			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 VDC)	4 sinking transistor outputs	Yes	CPM2C-S100C-DRT	U, C, CE
			4 sourcing transistor outputs	Yes	CPM2C-S110C-DRT	






# CPM2C Ordering Guide

CPU Unit	Inputs	Outputs	Internal clock	Model	Standards	
Unit with CompoBus/S Master, 10 I/O points Inputs: 6 Outputs: 4 	1 Fujitsu connector	6 inputs (24 VDC)	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 VAC	24 VDC/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 VDC)	---	CPM2C-8EDC	U, C, CE
	1 MIL connector	8 inputs (24 VDC)	---	CPM2C-8EDM	U, C, CE
Units with inputs only Inputs: 16 	1 Fujitsu connector	16 inputs (24 VDC)	---	CPM2C-16EDC	U, C, CE
	1 MIL connector	16 inputs (24 VDC)	---	CPM2C-16EDM	U, C, CE
Units with relay outputs only Outputs: 8 	I/O terminal block 	---	8 relay outputs	CPM2C-8ER	U, C, CE
	1 Fujitsu connector	---	8 sinking transistor outputs	CPM2C-8ETC	U, C, CE
		---	8 sourcing transistor outputs	CPM2C-8ET1C	U, C, CE
	1 MIL connector	---	8 sinking transistor outputs	CPM2C-8ETM	U, C, CE
---		8 sourcing transistor outputs	CPM2C-8ET1M	U, C, CE	
Units with transistor outputs only Outputs: 16 	1 Fujitsu connector	---	16 sinking transistor outputs	CPM2C-16ETC	U, C, CE
		---	16 sourcing transistor outputs	CPM2C-16ET1C	U, C, CE
	1 MIL connector	---	16 sinking transistor outputs	CPM2C-16ETM	U, C, CE
		---	16 sourcing transistor outputs	CPM2C-16ET1M	U, C, CE


# CPM2C Ordering Guide

Expansion I/O Unit		Inputs	Outputs	Model	Standards
Units with 10 I/O points Inputs: 6 Outputs: 4 	1 I/O terminal block	6 inputs (24 VDC)	4 relay outputs	CPM2C-10EDR	U, C, CE
Units with 20 I/O points Inputs: 12 Outputs: 8 	1 I/O terminal block	12 inputs (24 VDC)	8 relay outputs	CPM2C-20EDR	U, C, CE
Units with 24 I/O points Inputs: 16 Outputs: 8  	2 Fujitsu connectors	16 inputs (24 VDC)	8 sinking transistor outputs	CPM2C-24EDTC	U, C, CE
			8 sourcing transistor outputs	CPM2C-24EDT1C	U, C, CE
	2 MIL connectors	16 inputs (24 VDC)	8 sinking transistor outputs	CPM2C-24EDTM	U, C, CE
			8 sourcing transistor outputs	CPM2C-24EDT1M	U, C, CE
Units with 32 I/O points Inputs: 16 Outputs: 16  	2 Fujitsu connectors	16 inputs (24 VDC)	16 sinking transistor outputs	CPM2C-32EDTC	U, C, CE
			16 sourcing transistor outputs	CPM2C-32EDT1C	U, C, CE
	2 MIL connectors	16 inputs (24 VDC)	16 sinking transistor outputs	CPM2C-32EDTM	U, C, CE
			16 sourcing transistor outputs	CPM2C-32EDT1M	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	

# CPM2C Ordering Guide

## ■ 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-AU Connector FCN-360C024-J2 Connector Cover
Crimped	C500-CE242	
Pressure-welded	C500-CE243	FCN-363J024 Housing FCN-363J-AU Contacts FCN-360C024-J2 Connector Cover FCN-367J024-AU/F

### MIL Connectors

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

## ■ 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-Programmer	Windows-based Programming Device OS: Windows 95/98/NT/2000/Me	WS02-CXPC1-EV2	---
SYSMAC Support Software (SSS)	For IBM PC/AT or compatible computer, 1.44 MB, 3.5" disk	C500-ZL3AT1-E	---

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



# CPM2C Ordering Guide

## ■ 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

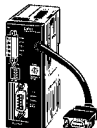
## ■ RS-232C Cables

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

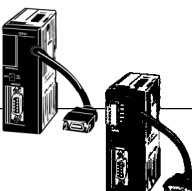
## ■ Communications Port Connecting Cables

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

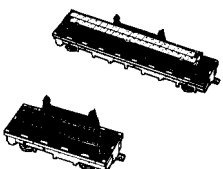
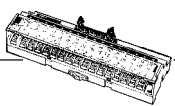
Product	Function	Model	Standards	
Peripheral/RS-232C Adapter Unit 	Peripheral port level conversion	CPM2C-CIF01-V1	---	
		CPM2C-CIF11	U, C, CE	
Link Adapter	RS-232C to RS-422A conversion	For personal computer connection (Can also be connected to the CPM2A.)	3G2A9-AL004-E	---
RS-422A Adapter		For CPM2A connection (Can also be connected to a personal computer, but requires an external 5-V power supply.)	NT-AL001	---


# CPM2C Ordering Guide

## ■ Battery

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

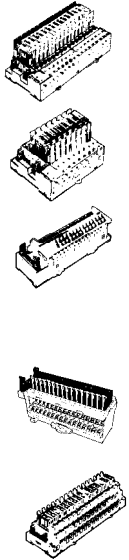
## ■ Connector-Terminal Conversion Units and Connecting Cables


Product	Description	No. of inputs/outputs	Model	Standards
Connector-Terminal Block Conversion Units 	Slim type with M3 slotted screw terminal block	20	XW2D-20G6	---
	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	Standards
Special Connecting Cable 	With Fujitsu connector	0.5 m	XW2Z-050A	---
		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	---

# CPM2C Ordering Guide

## ■ I/O Terminals and Connecting Cables

Product	Mounted relay	I/O points	Processing	Rated voltage	Model	Standards	
 <p>I/O Relay Terminals</p>	G7T	16 inputs	NPN (– common)	24 VDC	G7TC-ID16-5	---	
				100 (110) VAC	G7TC-IA16-5		
				200 (220) VAC			
			16 outputs	NPN (+ common, sinking output)	24 VDC	G7TC-OC16	
			8 outputs	NPN (+ common, sinking output)	24 VDC	G7TC-OC08	---
		G6D	16 outputs	NPN (+ common, sinking output)	24 VDC	G70D-SOC16	---
				PNP (– common, sourcing output)	24 VDC	G70D-SOC16-1	---
		G3DZ (Power MOS FET Relay)		NPN (+ common, sinking output)	24 VDC	G70D-FOM16	---
			PNP (– common, sourcing output)	24 VDC	G70D-FOM16-1	---	
		G6D		NPN (+ common, sinking output)	24 VDC	G70D-VSOC16	---
	G3DZ (Power MOS FET Relay)		NPN (+ common, sinking output)	24 VDC	G70D-VFOM16	---	
			NPN (+ common, sinking output)	24 VDC	G70A-ZOC16-3	---	
	(Sold separately) G2R G3R G3RN H3RN		PNP (– common, sourcing output)		G70A-ZOC16-4	---	




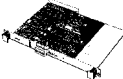
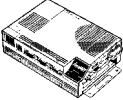
Product	Cable length	Model	Standards	
 <p>Connecting Cable with connector (1:1)</p>	With Fujitsu connector	1 m	G79-100C	---
		1.5 m	G79-150C	---
		2 m	G79-200C	---
		3 m	G79-300C	---
		5 m	G79-500C	---
	With MIL connector	2.5 m	G79-025C	---
		5 m	G79-050C	---

## ■ DC Power Supplies


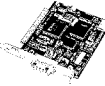
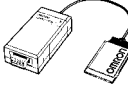
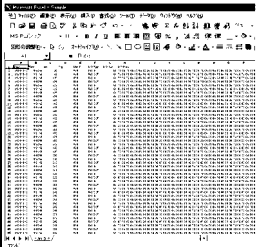
Product	Output voltage/current	Input voltage	Model	Standards
DC Power Supply (3 W)	24 VDC, 0.13 A	85 VAC to 264 VAC	S82K-00324	U, C
DC Power Supply (7.5 W)	24 VDC, 0.3 A	85 VAC to 264 VAC	S82K-00724	U, C
DC Power Supply (15 W)	24 VDC, 0.6 A	85 VAC to 264 VAC	S82K-01524	U, C
DC Power Supply (30 W)	24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

# CPM2C Ordering Guide

## ■ DeviceNet Masters

Product	Appearance	Model	Specifications	Standards
DeviceNet Unit		CS1W-DRM21	Master and slave functions for CS1-series PLC; 1,024 inputs, 1,024 outputs, 2,048 total	U, C, CE
DeviceNet Master Units		C200HW-DRM21-V1	Master functions for CS1-series or C200HX/HG/HE PLC; 800 inputs, 800 outputs, 1,600 total (C200HS: 512 inputs, 512 outputs, 1,024 total)	U, C, NK, L, CE
		CVM1-DRM21-V1	Master functions for CVM1 or CV-series PLC; 1,024 inputs, 1,024 outputs, 2,048 total	U, C, CE
DeviceNet Master Board		3G8B3-DRM21	VME board, 12,288 allocatable I/O bytes	---
Open Network Controller		ITNC-EIS01-DRM	No expansion slots, COM port, DeviceNet	U, C, CE
		ITNC-EIX01-DRM	Expansion slots, COM port, DeviceNet	

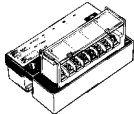
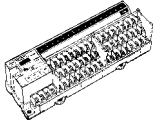
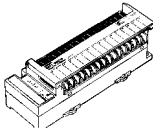

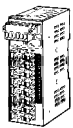
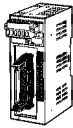

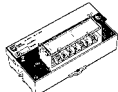
## ■ DeviceNet Configurator/Software

Product	Appearance	Model	Specifications	Standards
DeviceNet Configurator		WS02-CFDC1-E	Software for Windows 95, 98, 2000, or NT4.0	---
		3G8F5-DRM21-E	ISA board with software for Windows 95, 98, or NT	---
		3G8E2-DRM21-E	PC card with software for Windows 95 or 98	---
NX-Server		WS02-NXD1-E	DDE Edition	---

**Note:** Refer to the following catalogs for details: SYSMAC CS1 Series (P047), SYSMAC C200HX/HG/HE (P036), and DeviceNet (Q102).

# CPM2C Ordering Guide

## ■ CompoBus/S Slaves

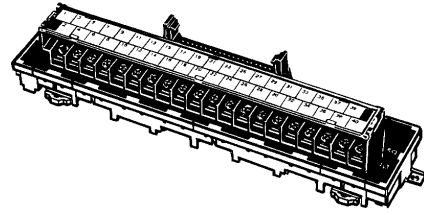
Product	Appearance	Model	Specifications	Standards
Remote I/O Terminals with Transistors		SRT2-ID04	4 NPN inputs (+ common)	U, C, CE
		SRT2-ID04-1	4 PNP inputs (- common)	
		SRT2-OD04	4 NPN outputs (- common)	
		SRT2-OD04-1	4 PNP outputs (+ common)	
		SRT2-ID08	8 NPN inputs (+ common)	
		SRT2-ID08-1	8 PNP inputs (- common)	
		SRT2-OD08	8 NPN outputs (- common)	
		SRT2-OD08-1	8 PNP outputs (+ common)	
		SRT2-ID16	16 NPN inputs (+ common)	
		SRT2-ID16-1	16 PNP inputs (- common)	
		SRT2-OD16	16 NPN outputs (- common)	
		SRT2-OD16-1	16 PNP outputs (+ common)	
Remote I/O Terminals with Transistors (3 tiers)		SRT2-ID16T	16 NPN inputs (+ common)	U, C, CE
		SRT2-ID16T-1	16 PNP inputs (- common)	
		SRT2-MD16T	16 NPN I/O points (inputs: + common, outputs: - common)	
		SRT2-MD16T-1	16 PNP I/O points (inputs: - common, outputs: + common)	
		SRT2-OD16T	16 NPN outputs (- common)	
		SRT2-OD16T-1	16 PNP outputs (+ common)	
Remote I/O Terminals with Mounted Relays		SRT2-ROC08	8 output relays mounted	U, C, CE
		SRT2-ROC16	16 output relays mounted	
		SRT2-ROF08	8 power MOS FET relays mounted	
		SRT2-ROF16	16 power MOS FET relays mounted	
32-point Remote I/O Terminals with Transistors and MIL Connectors		SRT2-ID32ML	32 NPN inputs (+ common)	CE
		SRT2-ID32ML-1	32 PNP inputs (- common)	
		SRT2-OD32ML	32 NPN outputs (- common)	
		SRT2-OD32ML-1	32 PNP outputs (+ common)	
		SRT2-MD32ML	32 NPN inputs (inputs: + common, outputs: - common)	
		SRT2-MD32ML-1	32 PNP inputs (inputs: - common, outputs: + common)	
Remote I/O Terminals with Transistors and Sensor Connectors		SRT2-VID08S	8 NPN inputs (+ common)	U, C, CE
		SRT2-VID08S-1	8 PNP inputs (- common)	
		SRT2-VOD08S	8 NPN outputs (- common)	
		SRT2-VOD08S-1	8 PNP outputs (+ common)	
16-point Remote I/O Terminals with Transistors and MIL Connectors		SRT2-VID16ML	16 NPN inputs (+ common)	U, C, CE
		SRT2-VID16ML-1	16 PNP inputs (- common)	
		SRT2-VOD16ML	16 NPN outputs (- common)	
		SRT2-VOD16ML-1	16 PNP outputs (+ common)	
Analog Input Terminal		SRT2-AD04	1 to 4 analog inputs (set via DIP switch)	U, C, CE
Analog Output Terminal		SRT2-DA02	1 or 2 analog outputs (set via DIP switch)	U, C, CE

**Note:** Refer to the CompoBus/S catalog (P040) for details.

# CPM2C Peripheral Devices

## ■ Connector-Terminal Conversion Unit Wiring

The wiring for input terminals is as shown below.



## ■ Connecting to the CPM2C CPM2C Input Wiring

Connector-Terminal Conversion Unit	XW2D-20G6
Connecting Cable	XW2Z-□□□A
Connection diagram	

## CPM2C Output Wiring for Sourcing Outputs

Connector-Terminal Conversion Unit	XW2D-20GB
Connecting Cable	XW2Z-□□□A
Connection diagram	

## CPM2C Output Wiring for Sinking Outputs

Connector-Terminal Conversion Unit	XW2D-20G6
Connecting Cable	XW2Z-□□□A
Connection diagram	

**Note:** The relay numbers that can be used vary with the Unit used, as shown in the following table.

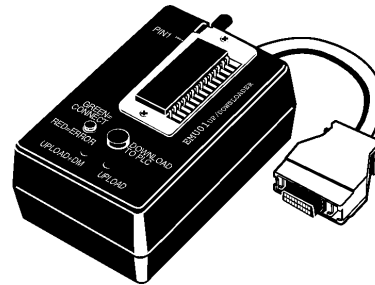
Unit	Input numbers	Output numbers
CPU Unit with 10 I/O points	00□00 to 00□05	01□00 to 01□03
CPU Unit with 20 I/O points	00□00 to 00□11	01□00 to 01□07
CPU Unit with 32 I/O points	00□00 to 00□15	01□00 to 01□15
Expansion I/O Unit with 10 I/O points	00□00 to 00□05	01□00 to 01□03
Expansion I/O Unit with 24 I/O points	00□00 to 00□15	01□00 to 01□07
Expansion I/O Unit with 32 I/O points	00□00 to 00□15	01□00 to 01□15
Expansion I/O Unit with 8 input points	00□00 to 00□07	---
Expansion I/O Unit with 16 input points	00□00 to 00□15	---
Expansion I/O Unit with 8 output points	---	01□00 to 01□07
Expansion I/O Unit with 16 output points	---	01□00 to 01□15

**Note:** Allocations to 32-point CPU Units are as follows: Inputs: 00000 to 00007, 00100 to 00107; Outputs: 01000 to 01007, 01100 to 01107

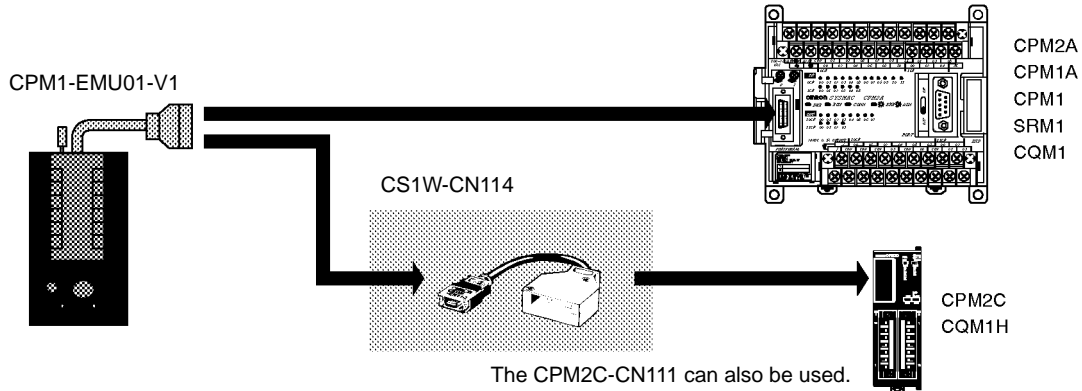
# CPM2C Peripheral Devices

## ■ Expansion Memory Unit

The Expansion Memory Unit can be used to upload and download user programs and data memory with the press of a button allowing simple program maintenance.



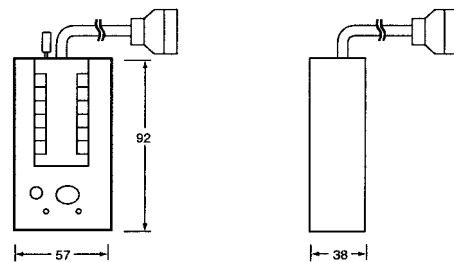
## ■ Connections



## ■ Specifications

Item	Specification
Supported PCs	CPM1, CPM1A, CPM2A, CPM2C, SRM1 (-V2), CQM1, CQM1H
Read/Write memory areas	User program: 15.2 Kwords max. Data memory: DM 6144 to DM 6655 (Read-only DM and PC Setup) Expansion instructions: 18 instructions
Connector	Connector compatible with peripheral port on CPM1, CPM1A, CPM2A, SRM1 (-V2), and CQM1 PCs.  For CPM2C and CQM1H PCs, connect via CS1W-CN114 or CPM2C-CN111 Connecting Cable.
EEPROM (See note.)	256-Kbit EEPROM ATMEL: AT28C256 OMRON: EEROM-JD
Current consumption	129 mA max.
Dimensions	Main body (not including cables or connectors): 57 × 92 × 38 mm (W × H × D)
Weight	200 g max. (not including EEPROM)

## ■ Dimensions (mm)



**Note:** The EEPROM must be purchased separately.

## ■ Memory Areas

The memory areas that are uploaded or downloaded vary with the button used as shown in the following table.

Area	Button		
	UPLOAD + DM	UPLOAD	DOWNLOAD TO PLC
Ladder program and expansion instructions	Read from PLC to EEPROM.	Read from PLC to EEPROM.	All contents of EEPROM written to PLC.
DM 6144 to 6655		Not affected.	

For details on program size, DM area, and the availability of expansion instructions, refer to the relevant PLC manual.