

**CPM2C-S1□0C-DRT offers local control, remote expandability and DeviceNet I/O “Link” with remote programming functions in a very compact package.**

This new member of the CPM2C programmable controller family combines local control, remote I/O and a DeviceNet intelligent slave to create a new decentralized approach to solve many application requirements. The result is an ultra compact (shirt-pocket-sized), high-performance device that can connect up to 362 I/O points, act as an I/O pass through in a DeviceNet system, and provide 2 ms program execution time for local control. Local expansion options include digital, analog and temperature as well as a standard 20 kHz pulse input capability & HMI port. The built-in remote I/O capability supports a total of 32 I/O modules that can be positioned anywhere within 500 meters of the controller and offers up to 256 I/O over simple twisted pair wiring.



#### Why add a DeviceNet Slave to CPM2C?

Many machine builders are tasked by their end customer to design machines capable of connecting to an open network, frequently DeviceNet. This product provides powerful, compact solutions that have a built-in DeviceNet intelligent slave function so that I/O can be monitored, the controller can be programmed over DeviceNet, and local, high-speed control functions can be utilized in stand-alone modules that can all be connected into a final machining system.

#### Simple expansion capabilities using built-in CompoBus/S master

End customers who use your machinery frequently request the ability to expand I/O. The CPM2C-S1□0C-DRT allows up to 256 additional I/O points (in addition to the 106 local I/O) for later expansion or remote I/O use. These additional I/O can be located anywhere the end customer needs them, within 500 meters of the CPM2C CPU location, using simple twisted pair cable. This unique solution simplifies adding I/O to any communications gateway.

#### Built-in DeviceNet slave Functions:

- 1024 I/O points (512 In, 512 Out)
- Explicit messaging support
- FINS messaging support

#### CPM2C Programmable Controller Functions:

- High-speed counters and interrupt outputs
- Position control for simple 2-axis applications
- Synchronized pulse outputs
- 10 I/O included with CPU
- Up to 106 local I/O
- Up to 362 total I/O points
- Local HMI support
- Serial inputs
- 3 local expansion I/O modules

#### Remote I/O (CompoBus/S) Functions:

- 32 remote slaves
- 500 meters total distance possible
- 256 I/O total expansion
- 0.8 ms update time for 256 I/O points

# Ordering Information

Unit	Connector type	Inputs	Outputs	Clock	Part Number
10 I/O point input type 6 inputs 4 outputs	Connector type	6, 24 VDC inputs	4 transistor (sinking) outputs	○	<b>CPM2C-S100C-DRT</b>
10 I/O point input type 6 inputs 4 outputs	Connector type	6, 24 VDC inputs	4 transistor (sourcing) outputs	○	<b>CPM2C-S110C-DRT</b>

## Specifications

### ■ General and Performance Specifications

Item	Specifications	
Control method	Stored program control	
I/O control method	Cyclic scan method – Immediate refreshing can be preformed 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	
Max. I/O capacity	CPU Unit only: 10 points Expanded I/O: 72 points (24-point Expanded I/O Unit X 3) (Up to 3 Expansion I/O Units can be connected) CompoBus/S: 256 points (total 338)	
Input bits	IR 00000 to 00915 (Bits not used for input bits can be used for work bits)	
Output bits	IR 01000 to IR 01915 (Bits not used for output bits can be used for work bits)	
CompoBus/S input bits	128 bits: IR 02000 to IR 02715	
CompoBus/S output bits	128 bits: IR 03000 to IR 03715	
Work bits	672 bits: IR 02800 to IR 02915 IR 03800 to IR 04915 IR 04000 to IR 04915 IR 20000 to IR 22715	
Special bits (SR area)	440 bits: SR 22800 to SR 25507	
Temporary bits (TR area)	8 bits (TR0 to TR7)	
Holding bits (HR area)	320 bits: HR 0000 to HR 1915	
Auxiliary bits (AR area)	384 bits: AR 0000 to AR 2315 These include the CompoBus/S slave status flags (AR 04 to AR 07)	
Link bits (LR area)	256 bits: LR 0000 to LR 1515	
Timers/Counters	256 timers/counters: TIM/CNT 000 to TIM/CNT 255 1-ms timer: TMHH(--) 10-ms timer: TIMH(15) 100-ms timer: TIM 1-s/10-s timer: TIM(--) Decrementing counter: CNT Reversible counter: CNTR(12)	

## ■ General and Performance Specifications (continued)

Item		Specifications
Data Memory	Read/Write	2,048 words (DM 0000 to DM 2047) The Error Log is contained in DM 2000 to DM 2021
	Read-only	456 words (DM 6144 to DM 6599)
	PC Setup	56 words (DM 6600 to DM 6655)
DeviceNet slave functions		DeviceNet Remote I/O Link Uses up to 1,024 I/O points in the I/O Link. Explicit Message Communications Any PC data area can be accessed from the master.
Basic interrupt functions	Interrupt inputs	2 interrupts (used for both counter mode interrupt inputs and the quick-response inputs)
	Scheduled interrupts	1 interrupt
High-speed counter functions	High-speed counters	1 counter (20 kHz single-phase or 5 kHz two-phase)
	Counter interrupts	1 interrupt (set value comparison or set-value range comparison)
	Interrupt inputs (counter mode)	2 interrupts (used for both external interrupt inputs and quick-response inputs)
	Count-up interrupts	2 interrupts (used for both external interrupt inputs and quick-response inputs)
Quick-response inputs		2 inputs (used for both external interrupt inputs and counter mode interrupt inputs) Minimum input pulse width: 50 μs max. Shared by input interrupts and input interrupt counter mode
Pulse outputs		2 points with acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control; 1 point with trapezoid acceleration/deceleration, 10 Hz to 10 kHz, and direction control; 2 points with variable duty-ratio outputs
Synchronized pulse control		1 point
Input time constant (ON response time = OFF response time)		Can be set for CPU inputs and Expansion Unit inputs only (1, 2, 3, 5, 10, 20, 40, or 80 ms)
Clock function		Equipped with clock (built-in RTC)
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 Link, or 1:1 NT Link connections
Memory protection		HR area, AR area, program contents, DM area contents, and counter values maintained during power interruptions
Memory backup		Non-volatile (flash) memory: Program, read-only DM area and PC Setup Lithium battery (2-year) DM area, HR area, AR area and counter values are backed up
Self-diagnostic functions		CPU errors (watchdog timer), memory errors, communications errors, setting errors, battery errors, and expansion I/O bus errors
Program checks		No END instruction, programming errors (checked when operation is started)
Programming Devices	Programming Console	C200H-PRO27, CQM1-PRO01, or CQM1H-PRO01
	Ladder Support Software (V3/V6)	IBM PC/AT or compatible
	SYSMAC Support Software (V1.1)	IBM PC/AT or compatible

## ■ Communication Specifications

### • DeviceNet

Item		Specifications
Communications protocol		DeviceNet
Connection form		Combination of multi-drop and T-branch connections (See note 1)
Baud rate		500 kbps, 250 kbps, or 125 kbps (switchable)
Communications media		Special 5-wire cables (2 signal lines, 2 power lines, and 1 shield line)
Communications distance	Baud rate 500 kbps	Network length (See note 2): 100 m max. (See note 3) Main line length: 6 m max. Total branch line length: 39 m max.
	Baud rate 250 kbps	Network length (See note 2): 250 m max. (See note 3) Main line length: 6 m max. Total branch line length: 78 m max.
	Baud rate 125 kbps	Network length (See note 2): 500 m max. (See note 3) Main line length: 6 m max. Total branch line length: 156 m max.
Maximum number of nodes		64 (This figure includes the master. Maximum number of connectable slaves: 63)
Error controls		CRC error check, node address duplication check, scan list verification

**Note: 1.** Connect external terminating resistance.

**Note: 2.** Distance between the farthest nodes.

**Note: 3.** If thin, special cables are used for the main lines, this figure will be 100 m max.

### • CompoBus/S

Item		Specifications
Communications protocol		Special CompoBus/S protocol
Coding method		Manchester coding
Connection form		Combination of multi-drop method and T-branch connections (See note 1)
Baud rate		High-speed communications mode: 750 kbps Long-distance communications mode: 93.75 kbps (See note 2)
Communications cycle time	High-speed communications mode	0.5 ms. (with 8 input and 8 output slaves connected) 0.8 ms. (with 16 input and 16 output slaves connected)
	Long-distance communications mode	4.0 ms. (with 8 input and 8 output slaves connected) 6.0 ms. (with 16 input and 16 output slaves connected)
Communications media		2-wire cable (VCTF 0.75 X 2), 4-wire cable (VCTF 0.75 X 4), or Special Flat Cable
Communications distance	2-wire VCTF cable	High-speed communications mode Main line length: 100 m max. Branch line length: 3 m max. Total branch line length: 50 m max.  Long-distance communications mode Main line length: 500 m max. Branch line length: 6 m max. Total branch line length: 120 m max.
	4-wire VCTF cable or Special Flat Cable	High-speed communications mode (see note 3) Main line length: 30 m max. Branch line length: 3 m max. Total branch line length: 30 m max.  Long-distance communications mode (see note 4) Free branching (up to a total cable length of 200 m)
Maximum number of nodes		32
Error control checks		Manchester code check, frame length check, and parity check

**Note: 1.** Connect external terminating resistance.

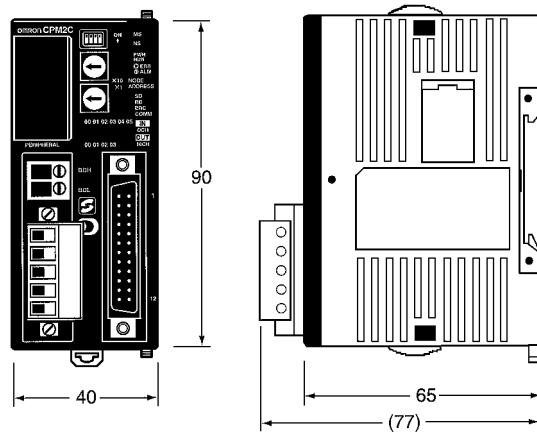
**Note: 2.** Switched using DM area setting (default setting: 750 kbps).

**Note: 3.** If the number of slaves connected is 16 or less, the maximum main line length will be 100 m max., and the maximum total branch line length will be 50 m max.

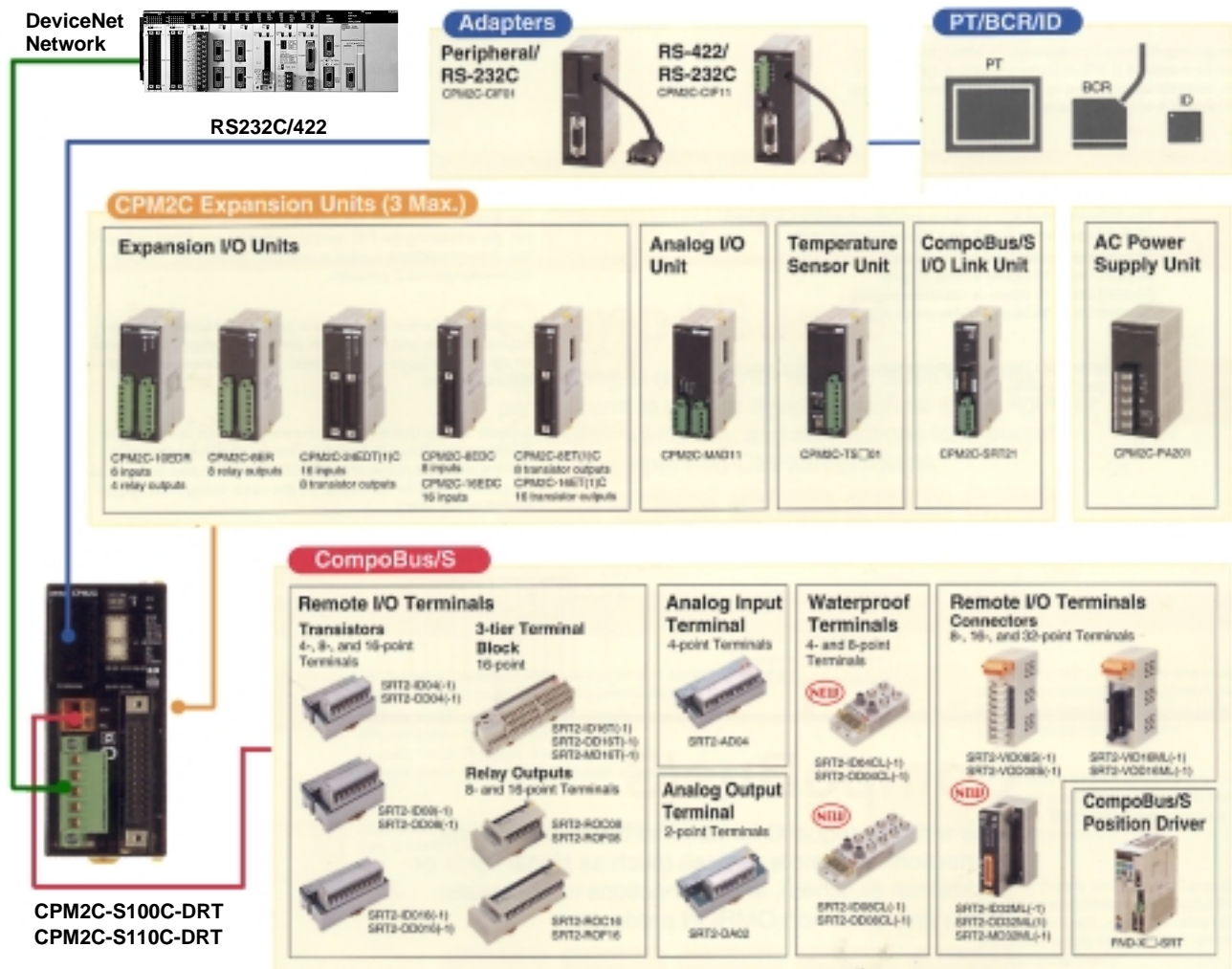
**Note: 4.** There are no restrictions on the branching configuration, main line length, branch line length, or total branch line length. Connect external terminating resistance to the node farthest from the master.

# Dimensions

CPM2C-S100C-DRT  
CPM2C-S110C-DRT



## ■ System Device Configuration



**NOTE: DIMENSIONS ARE SHOWN IN MILLIMETERS. To convert millimeters to inches divide by 25.4.**

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Specifications subject to change without notice.

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