Programmable Slaves

CPM2C-S1□0C-DRT

Slaves with the Complex Functionality Needed for Distributed Blocks

Programmable Slaves combine devices, such as sensors and actuators, into one functional unit that is treated as a DeviceNet slave.

Programmable Slaves greatly facilitate device distribution and functional organization. They help standardize programming between units and reduce the amount of programming required at the master.

I/O and operational checks can be performed for each functional unit, rather than waiting for final system assembly, as with conventional distributed I/O systems.

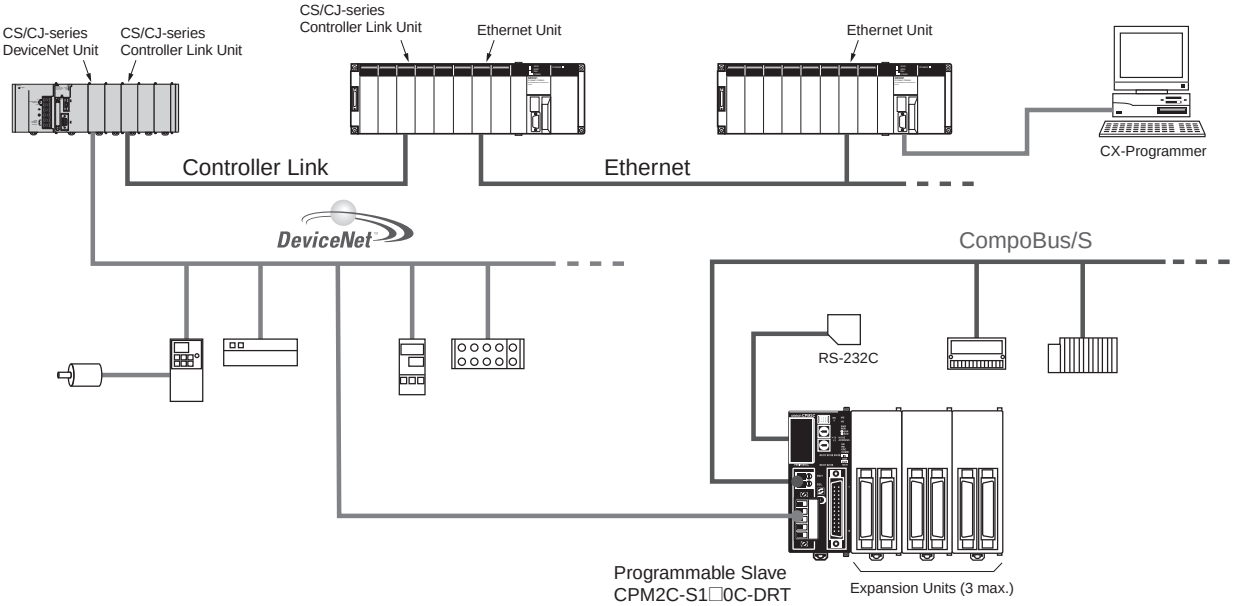
- A Programmable Slave can be programmed from a CX-Programmer up to 3 network levels away. (Includes the DeviceNet network itself. Possible only with CX-Programmer Ver. 2.1 or later and a Programmable Slave Ver. 1.04 or later.)
- DeviceNet Slave Functions
  Multiword I/O links and explicit messages are used to control slaves from the master. Log data for communications can be sent in one operation whenever necessary using explicit messages.
- CompoBus/S Master Functions
  Less wiring is required for terminal block expansions, connections to remote devices (such as signal lights or pushbutton switches), and connections to pneumatic valves and other non-OMRON products. Connect using VCTF cable or Special Flat Cable, which allows easy branching.
- RS-232C Communications
  Connected to bar code readers, Programmable Terminals, and other devices, the Programmable Slave processes data locally to reduce the load on the master.
- Expansion Units (3 max.)
  Just one Unit is required for each distributed block, reducing the number of interfaces for multipoint communications to, in turn, reduce costs.

Ordering Information

Unit type		Input	Output	Clock	Model
10 I/O points 6 inputs; 4 outputs	Connector	6 points: 24 VDC	4 points: transistor (sinking)	Yes	**CPM2C-S100C-DRT**
			4 points: transistor (sourcing)	Yes	**CPM2C-S110C-DRT**

Note 1: For details on CPM2C PLCs, refer to the *CPM2A/CPM2C Catalog* (P049).
Note 2: For details on Programmable Slave specifications, refer to the *Programmable Slave Catalog* (R071).

System Configuration



General Specifications and Performance Specifications

Item		Specifications
Control method		Stored program method
I/O control method		Cyclic scan method (Immediate refreshing can be performed with IORF instruction.)
Programming language		Ladder diagram
Instruction length		1 step per instruction, 1 to 5 words per instruction
Instructions	**Basic instructions**	14 instructions
	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
Maximum I/O points		CPU Unit only: 10 points Expansion I/O: 96 points (32-point Expansion I/O Unit × 3) CompoBus/S: 256 points (362 in total)
Input bits		IR 00000 to IR 00915 (Bits not used for input bits can be used for work bits.)
Output bits		IR 01000 to IR 01915 (Bits not used for output bits can be used for work bits.)
CompoBus/S input bits		128 bits: IR 02000 to IR 02715 (Words IR 020 to IR 027)
CompoBus/S output bits		128 bits: IR 03000 to IR 03715 (Words IR 030 to IR 037)
Work bits		672 bits: IR 02800 to IR 02915 (Words IR 028 to IR 029) IR 03800 to IR 03915 (Words IR 038 to IR 039) IR 04000 to IR 04915 (Words IR 040 to IR 049) IR 20000 to IR 22715 (Words IR 200 to IR 227)
Special bits (SR area)		440 bits: SR 22800 to SR 25507 (Words IR 228 to IR 225)
Temporary bits (TR area)		8 bits (TR0 to TR7)
Holding bits (HR area)		320 bits: HR 0000 to HR 1915 (Words HR 00 to HR19)
Auxiliary bits (AR area)		384 bits: AR 0000 to AR 2315 (Words AR 00 to AR23) These include the CompoBus/S slave status flags (AR 04 to 07).
Link bits (LR area)		256 points: LR 0000 to LR 1515 (Words LR 00 to LR 15)
Timers/Counters		256 timers/counters: TIM/CNT 000 to TIM/CNT 255 1-ms timers: TMHH 10-ms timers: TIMH 100-ms timers: TIM 1-s/10-s timers: TIML Decrementing counters: CNT Reversible counters: CNTR
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 • Use 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 quick-response inputs.)
	Scheduled interrupts	1 interrupt
High-speed counter functions	**High-speed counters**	1 counter (20 kHz single-phase or 5 kHz 2-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.) Min. input pulse width: 50 s max.
Pulse output		2 points without 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 ms, 2 ms, 3 ms, 5 ms, 10 ms, 20 ms, 40 ms, or 80 ms)
Clock		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
		Memory backup (lithium battery; 2-year lifetime): DM area, HR area, AR area, and counter values
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
	CX-Programmer	Windows edition

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

Communications Specifications

● DeviceNet

Item	Specifications
Communications protocol	Conforms to DeviceNet
Connection form ✻1	Combination of multi-drop method and T-branch connections (for trunk and drop lines)
Baud rate	500, 250, or 125 kbps
Communications media	Special 5-wire cable (2 signal lines, 2 power supply lines, 1 shield line) 4-wire Special Flat Cable (2 signal lines and 2 power lines)
Communications distance	• Using special 5-wire Flat Cable **Baud rate** / **Network length (max.)** / **Branch line length** / **Total branch line length** 500 kbps / 100 m max. ✻2 / 6 m max. / 39 m max. 250 kbps / 250 m max. ✻2 / 6 m max. / 78 m max. 125 kbps / 500 m max. ✻2 / 6 m max. / 156 m max. • Using special 4-wire Flat Cable **Baud rate** / **Network length (max.)** / **Branch line length** / **Total branch line length** 500 kbps / 75 m max. / 6 m max. / 35 m max. 250 kbps / 150 m max. / 6 m max. / 48 m max. 125 kbps / 265 m max. / 6 m max. / 135 m max.
Communications power supply	24 VDC is supplied externally.
Maximum number of nodes	64 (including Masters, Slaves, and the Configurator)

✻1. Terminating resistance is required at both ends of the trunk line.
✻2. This value applies when using Thick Cable for the trunk line.
If Thin Cable is used, the value will be 100 m max.

● CompoBus/S

Item		Specifications
Communications protocol		Special CompoBus/S protocol
Coding method		Manchester coding
Connection form		Multi-drop method and T-branch connections ✻1
Baud rate		High-speed Communications Mode: 750 kbps Long-distance Communications Mode: 93.75 kbps ✻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 **Communications mode** / **Main line length** / **Branch line length** / **Total branch line length** **High-speed Communications Mode** / 100 m max. / 3 m max. / 50 m max. **Long-distance Communications Mode** / 500 m max. / 6 m max. / 120 m max. • 4-wire VCTF cable or Special Flat Cable **Communications mode** / **Main line length** / **Branch line length** / **Total branch line length** **High-speed Communications Mode ✻3** / 30 m max. / 3 m max. / 30 m max. **Long-distance Communications Mode ✻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

✻1. Connect external terminating resistance.
✻2. Switched using DM area setting. (Default setting: 750 kbps.)
✻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.
✻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.

Cables for I/O Connector

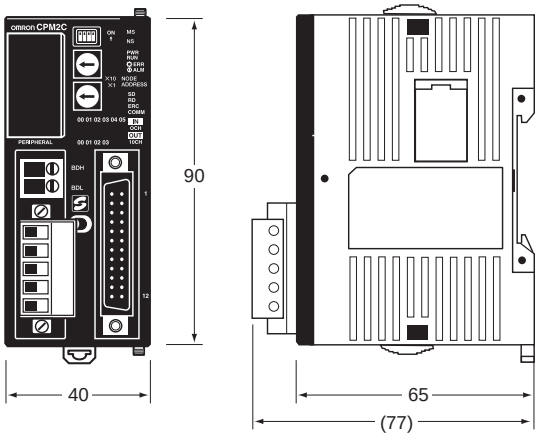
● Cables for Connector - Terminal Conversion Units

Cable	Connected product	Remarks
XW2Z-□□□A	XW2D-20G6	Slim type (with M3-screw terminal block)
	XW2B-20G4	Flat cable connector type (with M3 (minus) terminal block)

Dimensions

(Unit: mm)

CPM2C-S100C-DRT
CPM2C-S110C-DRT



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OMRON Corporation
Industrial Automation Company

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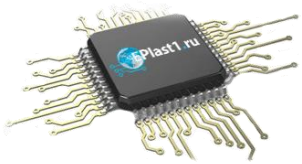

Как с нами связаться

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