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Printed in Japan
0301-3M (0796) (A)

OMRON

CompoBus/S

CompoBus/S

New Products

- Programmable Slaves
- SYSMAC CPM2C CPU Units with CompoBus/S Master Functions
- Waterproof Terminals
- Sensor Terminals
- Remote I/O Modules

Cat. No. Q103-E1-7

Complicated and Time-consuming Wiring,...,

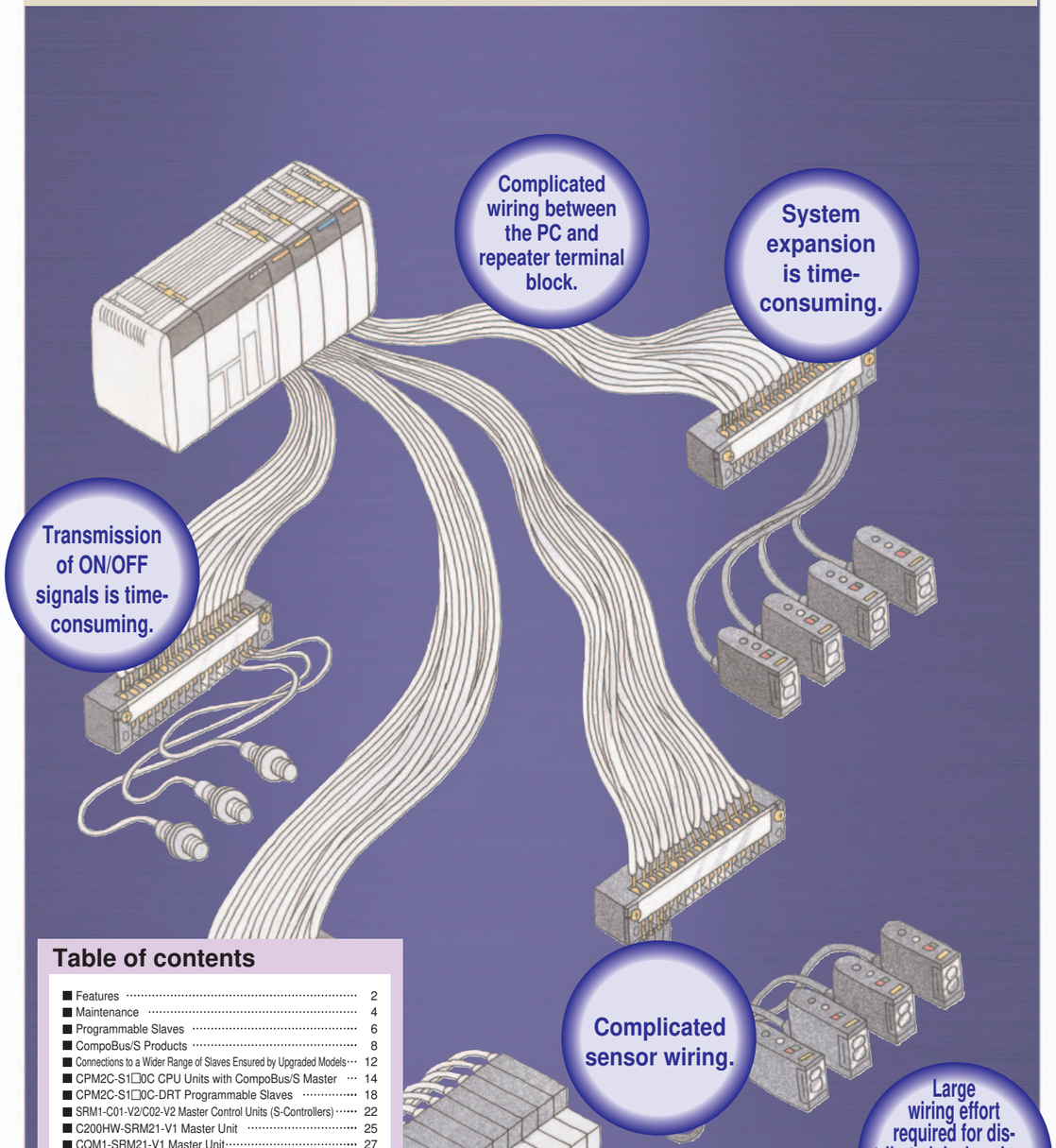


Table of contents

Now Easier and Quicker

Maximum Communications Cycle Time of Only 1 ms

(High-speed Communications Mode)
Exchanges 256 I/O points of data with a maximum of 32 Slaves at a maximum communications cycle time of only 1 ms per point.

Connects through a single dedicated cable, thus greatly saving wiring effort.

Cabtire or flat cable is selectable.

- Cabtire cable is available for multi-drop, T-branch, or multi-branch lines.
- Flat cable connects to T-branch connectors, thus ensuring ease of system expansion.

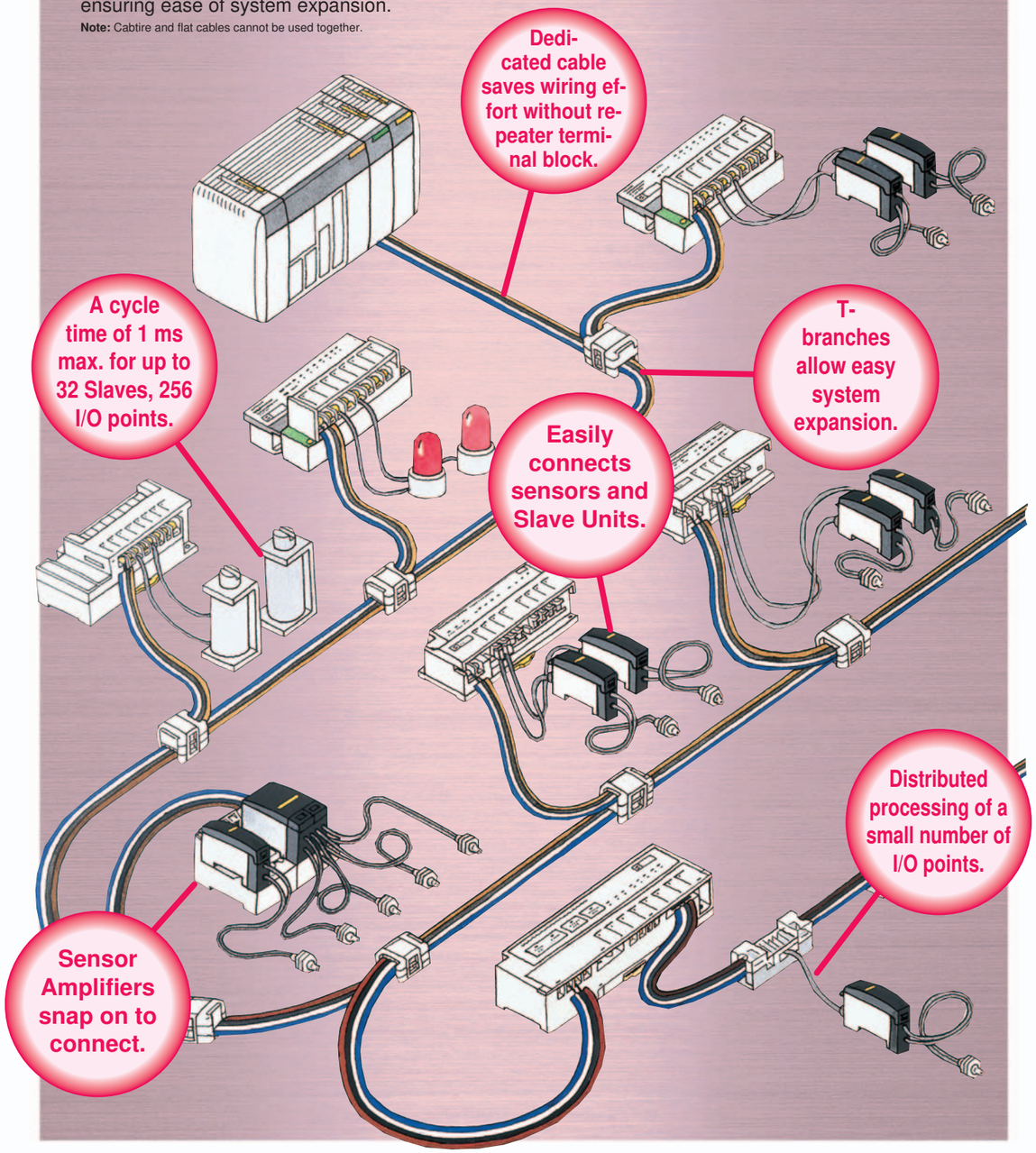
Note: Cabtire and flat cables cannot be used together.

Long-distance Communications Mode

With a trunk line length of 500 m and a total branch line length of 100 m (2-conductor VCTF cable), you can branch in any way required using a special flat cable or a 4-conductor VCTF cable as long as the total wiring length is 200 m or less. Communicate at a cycle time of only 6 ms.

*The Long-distance Communications Mode is not supported by the SRT1 Series.

An Analog Input Terminal with four points and an Analog Output Terminal with two points are available.

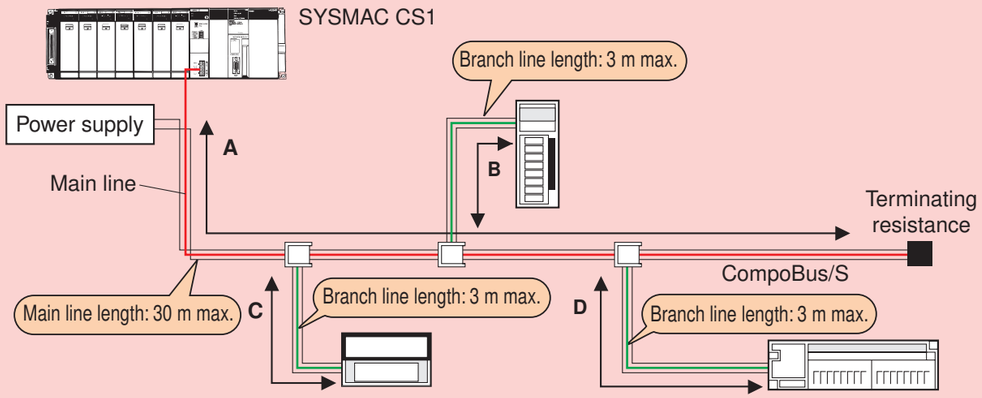


Long-distance Communications Mode Eliminates Wiring Restrictions for More Efficient System Design

System Design

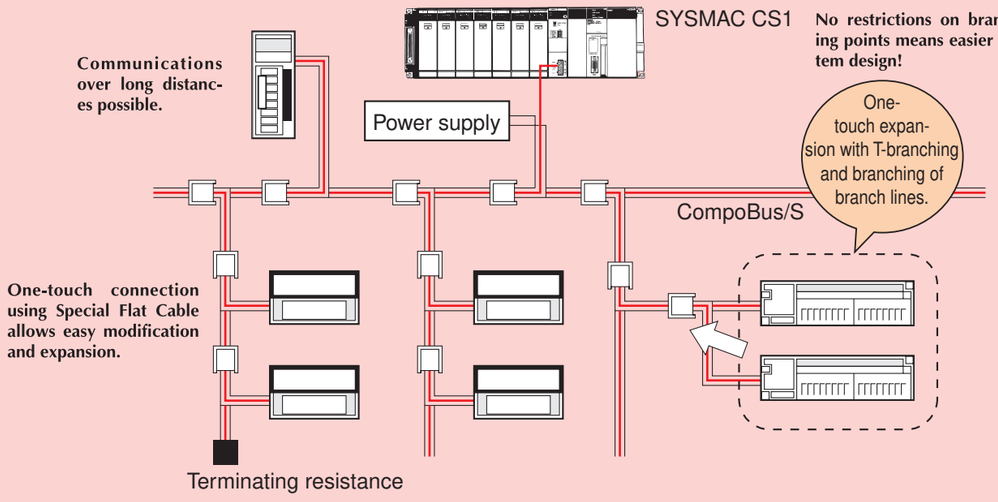
With conventional High-speed Communications Mode, the following restrictions on the number of branching points and cable length had to be considered when designing the system.

With a Special Flat Cable or a 4-conductor VCTF cable:
Main line length A: 30 m max. Branch line lengths B, C, and D: 3 m max. Total branch line length B + C + D: 30 m max.



* Baud rate: 750 kbps (in High-speed Communications Mode)
* With 2-conductor VCTF cable (in High-speed Communications Mode), main line length: 100 m max.

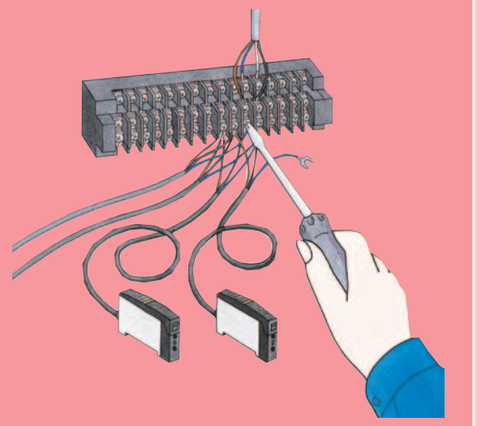
Using CompoBus/S Long-distance Communications Mode (with a Special Flat Cable or a 4-conductor VCTF cable) removes restrictions on main and branch line lengths. Branch freely up to a total cable length of 200 m.



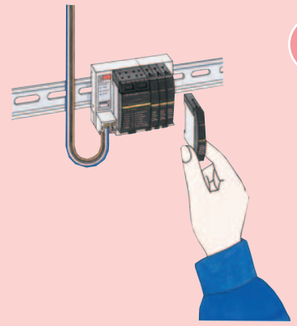
* Baud rate: 93.75 kbps
* Connect a terminating resistance at the end of the cable furthest from the Master.
* With 2-conductor VCTF cable (in Long-distance Communications Mode), main line length: 500 m max.

Greatly Saves Wiring and Installation Effort and Time for System Maintenance and Expansion

Maintenance

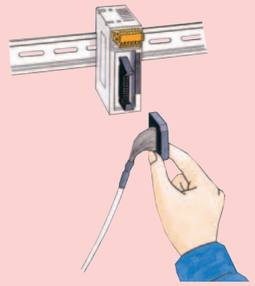


Individual wires must be replaced when using repeater terminal blocks.



1

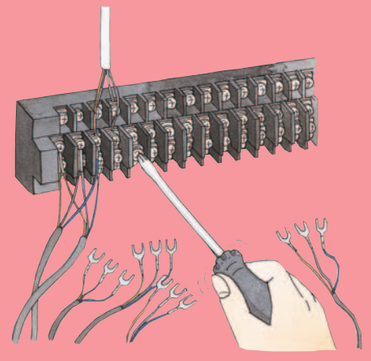
Sensor Amplifier Terminals allow easy replacement of sensors through a snap-on attachment.



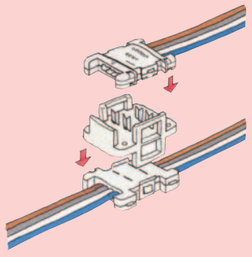
2

CompoBus/S connector models allow snap-on attachment.

Expansion

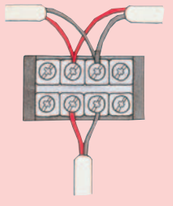


Repeater terminal blocks must be added and wired for I/O expansion.



1

Flat cable can be used with T-branch connectors which allow an increase in the number of Slaves.



2

2-conductor VCTF cable allows multi-branching, thus easily allowing an increase in the number of Slaves.

Programmable Slaves

A slave with the complex functional ity needed for distributed blocks.

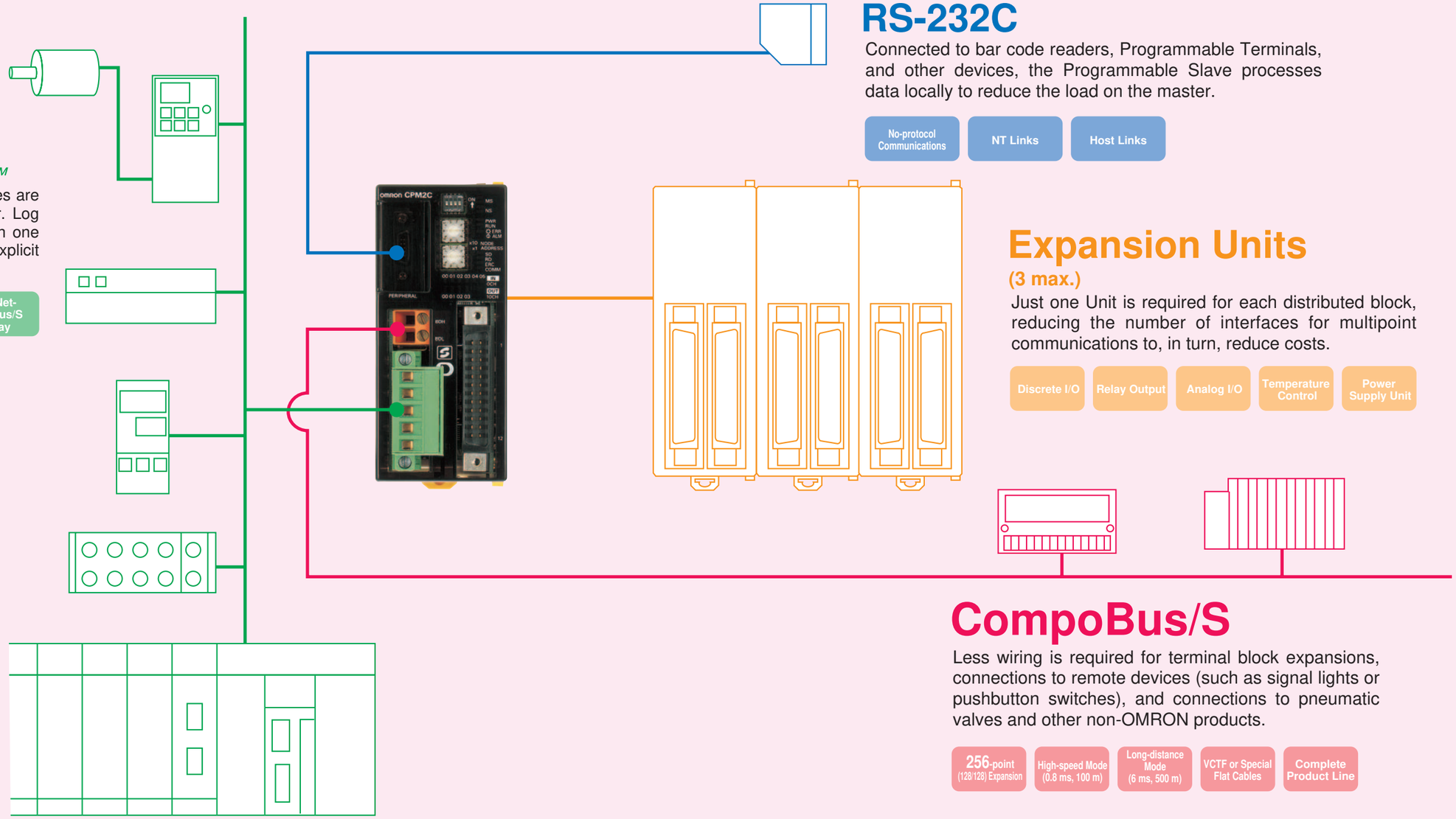
Programmable Slaves combine devices, such as sensors and actuators, into one functional unit that is treated as a DeviceNet slave.

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.

● Functions

OMRON Programmable Slaves function as DeviceNet slaves, yet they provide PLC functionality to enable easy system expansion and create new potential.

- 2-ms Cycle Time (for 500 Steps)
- High-speed Counter
- Pulse Output
- Interrupt Inputs
- 256 Timers/ Counters
- Calendar/ Clock



DeviceNet™

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.

- 1,024-point I/O Links
- Explicit Messages
- DeviceNet-CompoBus/S Gateway

RS-232C

Connected to bar code readers, Programmable Terminals, and other devices, the Programmable Slave processes data locally to reduce the load on the master.

- No-protocol Communications
- NT Links
- Host Links

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.

- Discrete I/O
- Relay Output
- Analog I/O
- Temperature Control
- Power Supply Unit

CompoBus/S

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.

- 256-point (128/128) Expansion
- High-speed Mode (0.8 ms, 100 m)
- Long-distance Mode (6 ms, 500 m)
- VCTF or Special Flat Cables
- Complete Product Line

CompoBus/S Products

Master Units

CPU Units with CompoBus/S Master

Programmable Slaves

CPM2C-S100C
CPM2C-S110C

CPM2C-S100C-DRT
CPM2C-S110C-DRT

CompoBus/S Master Control Units

Without RS-232C port

SRM1-C01-V2

With RS-232C port

SRM1-C02-V2

CompoBus/S Master Units

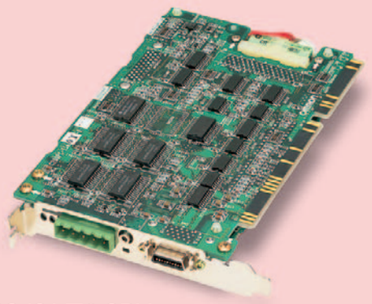
Master Unit with 256 points

C200HW-SRM21-V1

Master Unit with 128 points

CQM1-SRM21-V1

SYSMAC Board with CompoBus/S Master Functions



C200PC-ISA□3-SRM

Slave Units

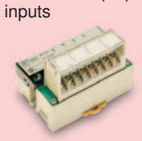
I/O Link Units

CPM2C-SRT21

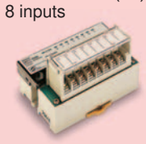
CPM1A-SRT21

Transistor Remote I/O Terminals (NPN/PNP Output)

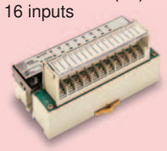
SRT2-ID04(-1)
4 inputs



SRT2-ID08(-1)
8 inputs

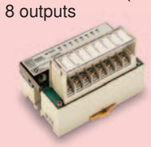


SRT2-ID16(-1)
16 inputs

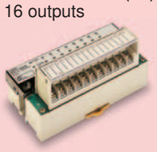


SRT2-OD04(-1)
4 outputs

SRT2-OD08(-1)
8 outputs

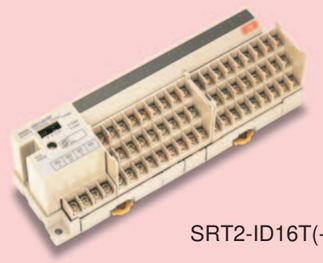


SRT2-OD16(-1)
16 outputs



Note: SRT2-□□□□ indicates NPN models and SRT2-□□□□-1 indicates PNP models.

Transistor Remote I/O Terminals with 3-tier Terminal Block

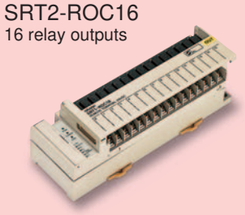


SRT2-ID16T(-1)

Relay-mounted Remote I/O Terminals

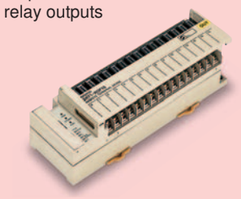
SRT2-ROC08
8 relay outputs

SRT2-ROC16
16 relay outputs



SRT2-ROF08
8 power MOS FET
relay outputs

SRT2-ROF16
16 power MOS FET
relay outputs



Transistor Remote I/O Terminals with Connectors

SRT2-□D32ML(-1)
32 I/O points

SRT2-V□D08S(-1)
8 I/O points

SRT2-V□D16ML(-1)
16 I/O points

CompoBus/S Products

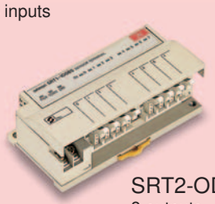
Slave Units

Waterproof Terminals

SRT2-□D04CL(-1) SRT2-□D08CL(-1)

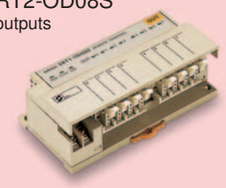
Sensor Terminals

SRT2-ID08S
8 inputs



SRT2-ND08S
4 inputs/4 outputs

SRT2-OD08S
8 outputs



Sensor Amplifier Terminals

SRT1-TID04S
Communications Unit

SRT1-TKD04S
Communications Unit

SRT1-XID04S
Expansion Unit

SRT1-XKD04S
Expansion Unit

Connector Units (Photoelectric Sensors)

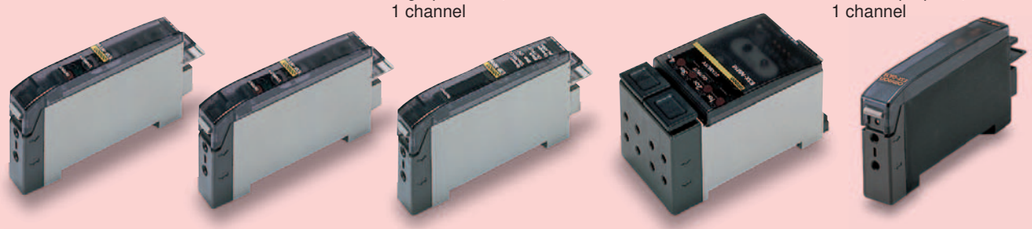
E3X-NT16
E3X-N Connector
General-purpose,
1 channel

E3X-NT26
E3X-N Connector
Multi-functional,
1 channel

E3X-NH16
E3X-N Connector
Long-distance,
High-precision,
1 channel

E3X-NM16
E3X-N Connector
Multi-functional,
4 channels

E3X-DA16
E3X-DA Connector
Digital,
General-purpose,
1 channel



Connector Unit (Terminal Block Unit)

E39-JID01
One input

Connector Units (Proximity Sensors)

E2CY-T16
Aluminum-detecting Proximity Sensor
E2CY-T Connector

E2C-T16
Teaching Proximity Sensor
E2C-T Connector

Slave Units

Analog Input Terminals

SRT2-AD04
4 inputs

SRT2-DA02
2 outputs

Remote I/O Modules

SRT2-ID16P
16 inputs
(For NPN: +common)

SRT2-OD16P
16 outputs
(For NPN: -common)

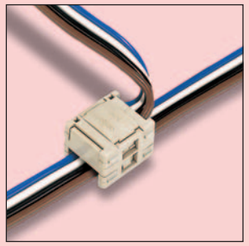
CompoBus/S Position Driver

FND-X□-SRT

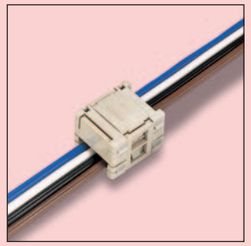
Peripheral Devices

Connectors

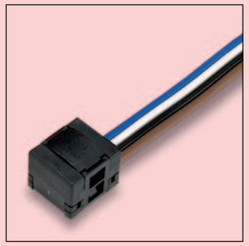
SCN1-TH4
Branch Connector



SCN1-TH4E
Extension Connector

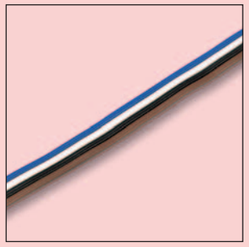


SCN1-TH4T
Connector Terminator



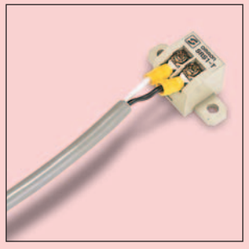
Flat Cable

SCA1-4F10



Terminal Block Terminator

SRS1-T



T-branch Connector
(for VCTF Cable)

XS2R-D427-5

Connector Terminator
(for 4-conductor VCTF Cable)

SRS2-1

Connections to a Wider Range of Slaves Ensured by Upgraded Models

Slave		Master: Conventional models: C200HW-SRM21, CQM1-SRM21, SRM1-C01, SRM1-C02, SRM1-C01-V1, SRM1-C02-V1, C200PC-ISA02-SRM, C200PC-ISA12-SRM	New models: C200HW-SRM21-V1, CQM1-SRM21-V1, SRM1-C01-V2, SRM1-C02-V2, C200PC-ISA03-SRM, C200PC-ISA13-SRM, CPM2C-S100C (NEW), CPM2C-S110C (NEW), CPM2C-S100C-DRT (NEW), CPM2C-S110C-DRT (NEW)	
		NKE-made Uniwire CompoBus/S Send Unit SDD-CS1	Communications mode	
			High-speed communications mode	Long-distance communications mode
	SRT1 Series	Yes	Yes	No
	FND-X□-SRT	Yes	Yes	No
Existing product	SRT2-AD04	Yes	Yes	Yes
	SRT2-DA02	Yes	Yes	Yes
	SRT2-V□08S(-1)	Yes	Yes	Yes
	SRT2-□D08S(-1)	Yes	Yes	Yes
	SRT2-□D16ML(-1)	Yes	Yes	Yes
	SRT2-RO□16	Yes	Yes	Yes
	SRT2-V□08S(-1)	Yes	Yes	Yes
	SRT2-□D16(-1)	Yes	Yes	Yes
	SRT2-RO□08	Yes	Yes	Yes
	CPM2C-SRT21	Yes	Yes	Yes
	SRT2-□D32ML(-1)	Yes	Yes	Yes
	CPM1A-SRT21	Yes	Yes	Yes
New product	SRT2-ID04CL(-1)	Yes	Yes	Yes
	SRT2-OD04CL(-1)	Yes	Yes	Yes
	SRT2-ID08CL(-1)	Yes	Yes	Yes
	SRT2-OD08CL(-1)	Yes	Yes	Yes
	SRT2-ID08S	Yes	Yes	Yes
	SRT2-ND08S	Yes	Yes	Yes
	SRT2-OD08S	Yes	Yes	Yes
	SRT2-ID16P	Yes	Yes	Yes
	SRT2-OD16P	Yes	Yes	Yes

Note: 1. In high-speed communications mode, the maximum transmission distance is 100 m at a baud rate of 750 kbps. In long-distance communications mode (i.e., a newly available mode), the maximum transmission distance is 500 m at a baud rate of 93.75 kbps.

2. The SRT2-AD04 and SRT2-DA02 are available for 16-bit synchronous communications.

Company	Product	Model number	Communications mode	
			High-speed communications mode	Long-distance communications mode
CKD	Solenoid valve for saving wiring effort	4TB1/2/3/4 Series	Yes	Yes (See note.)
		4G Series	Yes	Yes (See note.)
		MN4SO Series	Yes	Yes (See note.)
	Parect regulator	SDA-C	Yes	Yes
SMC	Solenoid valve for SI manifold use	VQ, SY, SX, SQ, SZ Series	Yes	Yes (See note.)
Koganei	F-series solenoid valve	YS2A1, YS2A2	Yes	Yes
	X80M/X88M Series	YS1A1, YS1A2	Yes	Yes
	JA-series solenoid valve	YS5A1, YS5A2	Yes	Yes
	PA, PB-series solenoid valve	YS4A1, YS4A2	Yes	Yes

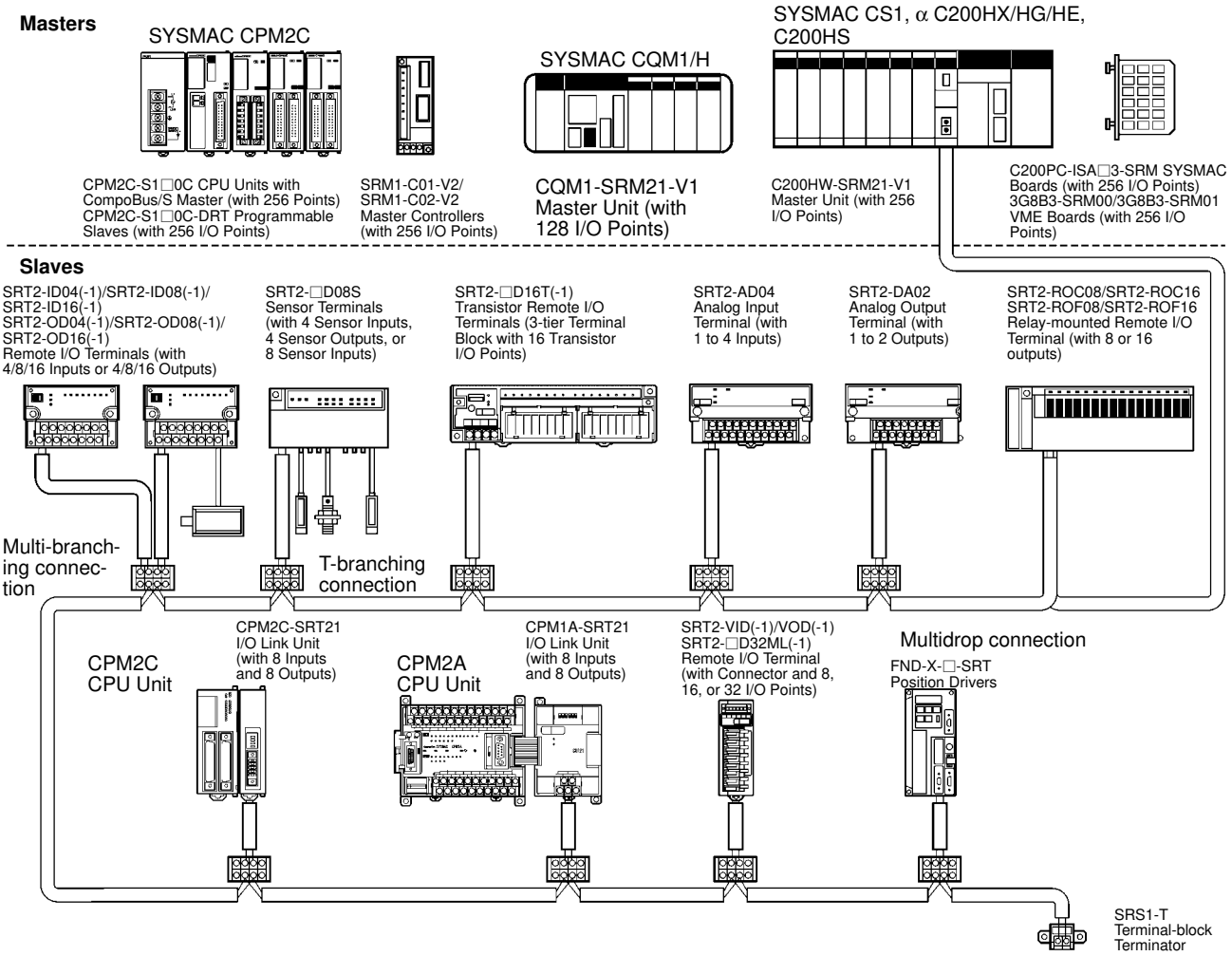
Note: Refer to the maker for information on long-distance communications mode.

CompoBus/S Connection Examples

High-speed ON/OFF Bus Communications in Remote I/O Systems

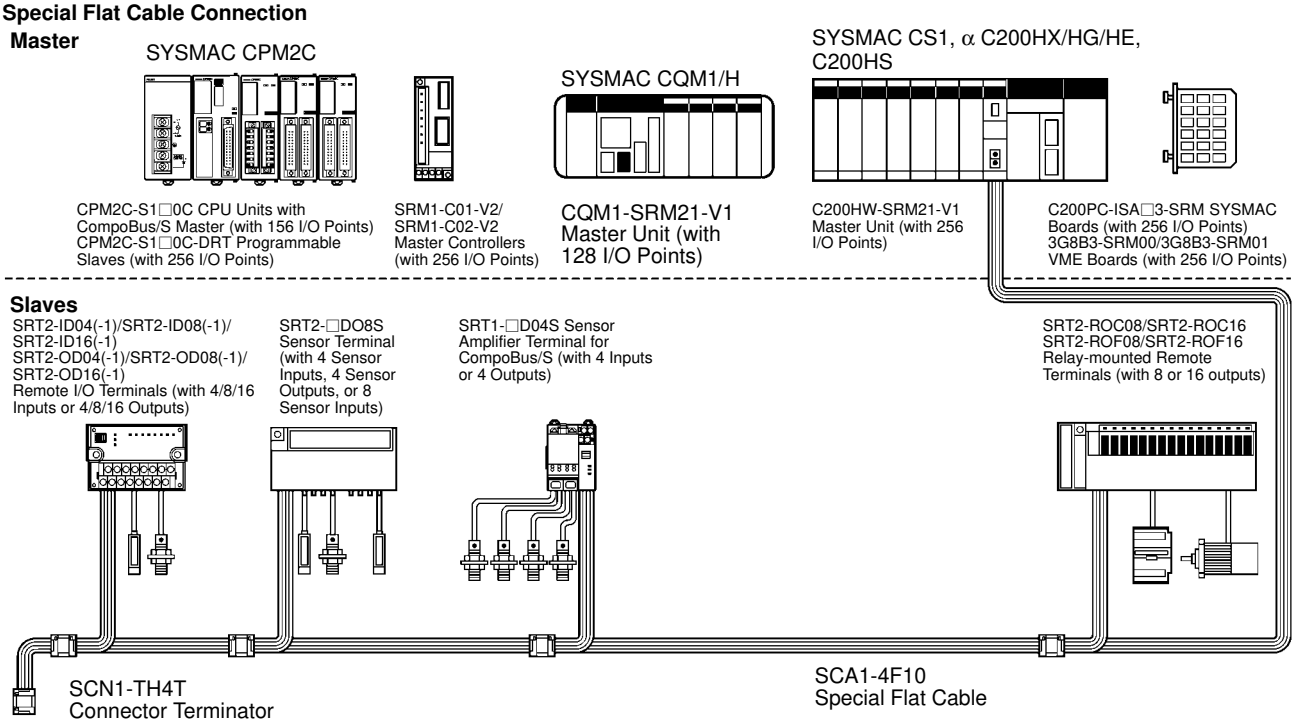
Cabtire Cable Connections

Masters



Special Flat Cable Connection

Master



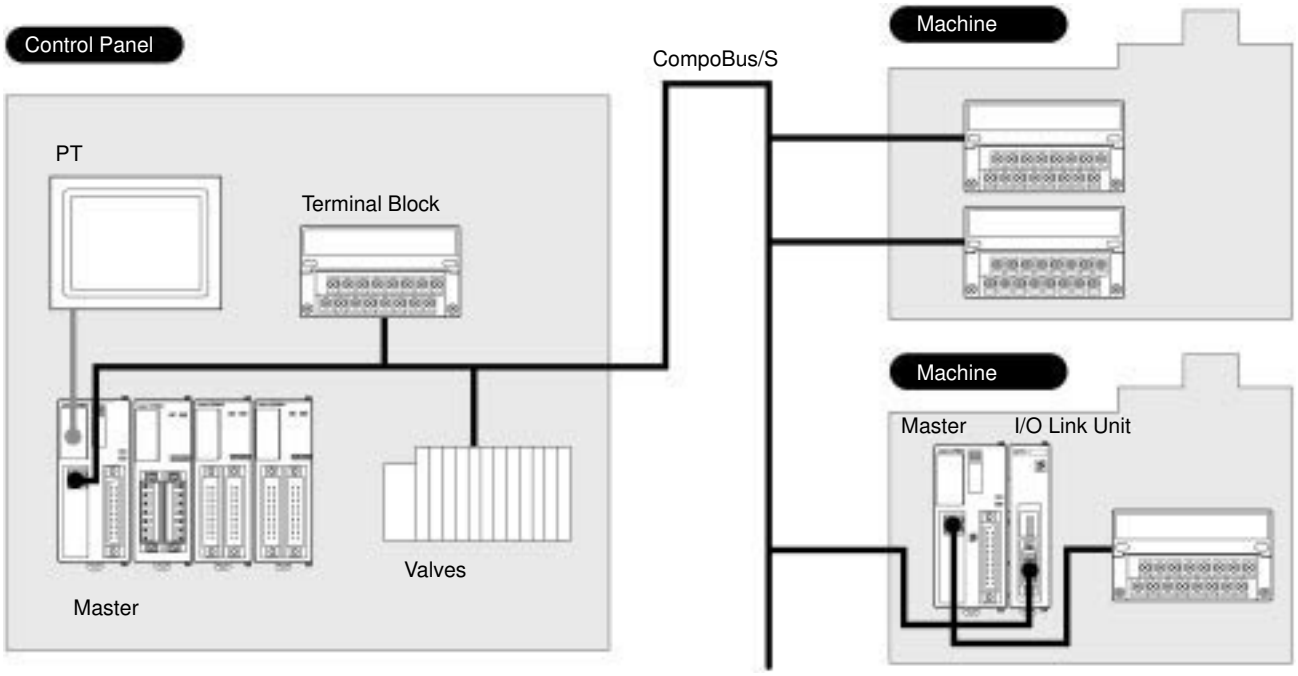
Note: Cabtire cable and flat cable cannot be used together.

OMRON

CPU Units with CompoBus/S Master | CPM2C-S1□0C

Ultra-compact, Thin-profile CPM2C CPU Unit with CompoBus/S Master Offering High-speed Bus Communications with No Complicated Wiring

- Ultra-compact, thin-profile design ideal for on-site applications
  Ultra-compact at 40 x 90 x 65 mm (W x H x D) with 10 I/O points and CompoBus/S Master offers versatile expandability to construct systems meeting on-site needs.
- A large number of expansion I/O points reduces system construction cost.
  Up to three Expansion Terminals can be connected. Furthermore, CompoBus/S Remote Terminals can be used for expansion I/O points.
  Not only in-panel wiring but also external wiring is simplified. Furthermore, the miniaturization of the control panel reduces cable, terminal block, and wiring costs.
- Easy System Designing, Modification, and Expansion
  CompoBus/S Remote Terminals with high-speed bus communications and no complicated wiring can be used as expansion terminal blocks with minimal modifications as long as room for expansion is reserved at the designing stage.
- A calendar/clock ensures easy machinery control, including data collection and error logs with date and time stamps. This functionality can be used as a weekly timer as well.



Ordering Information

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

Specifications

■ General Specifications

Item		Specification
Control method		Stored program method
I/O control method		Cyclic scan method (Immediate refreshing can be performed with IORF(97).)
Programming language		Ladder diagram
Instruction length		1 step per instruction 1 to 5 words per instruction
Instructions	Basic instructions	14
	Special instructions	105 instructions, 185 variations
Execution time	Basic instructions	0.64 μs (LD instruction)
	Special instructions	7.8 μs (MOV instruction)
Program capacity		4,096 words
Max. I/O capacity		CPU Unit only: 10 points Expansion I/O Unit: 96 points (32-point Expansion I/O Unit x 3) (Up to 3 Expansion Units can be connected.) CompoBus/S: 256 points (362 points in total)
Input bits		IR 00000 to IR 00915 (Bits not used for input bits can be used for work bits.)
Output bits		IR 01000 to IR 01915 (Bits not used for output bits can be used for work bits.)
CompoBus/S input bits		128 bits: IR 02000 to IR 02715 (words IR 020 to IR 027)
CompoBus/S output bits		128 bits: IR 03000 to IR 03715 (words IR 030 to IR 037)
Work bits		672 bits: IR 02800 to IR 02915 (words IR 028 to IR 029) IR 03800 to IR 03915 (words IR 038 to IR 039) IR 04000 to IR 04915 (words IR 040 to IR 049) IR 20000 to IR 22715 (words IR 200 to IR 227)
Special bits (SR area)		440 bits: SR 22800 to SR 25507 (words SR 228 to SR 255)
Temporary bits (TR area)		8 bits: (TR 0 to TR 7)
Holding bits (HR area)		320 bits: HR 0000 to HR 1915 (words HR 00 to HR 19)
Auxiliary bits (AR area)		384 bits: AR 0000 to AR 2315 (words AR 00 to AR 23) These include CompoBus/S slave status flags (words AR 04 to AR 07).
Link bits (LR area)		256 points: LR 0000 to LR 1515 (words LR 00 to LR 15)
Timers/Counters		256 timers/counters: TIM/CNT 000 to TIM/CNT 255 1-ms timers: TMHH (--) 10-ms timers: TIMH (15) 100-ms timers TIM 1-s/10-s timers: TIML (--) Decrementing counters: CNT Reversible counters: CNTR (12)
Data memory	Read/Write	2,048 words (DM 0000 to DM 2047) The Error Log is contained in DM 2000 to DM 2021.
	Read only	456 words (DM 6144 to DM 6599)
	PC Setup	56 words (DM 6600 to DM 6655)
Basic interrupt functions	Interrupt inputs	2 interrupts (Used for both counter mode interrupts inputs and quick-response inputs.
	Scheduled interrupts	1 interrupt

Item		Specification
High-speed counter functions	High-speed counters	1 counter (single phase at 20 kHz or 2 phases at 5 kHz)
	Counter interrupts	1 interrupt (set value comparison or set-value range comparison)
	Interrupt inputs (counter mode)	2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
	Count-up interrupts	2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
Quick-response inputs		2 points (Used for both external interrupts inputs and counter mode interrupt inputs.) Min. input pulse width: 50 μs max.
Pulse output		2 points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control: 1 point with trapezoid acceleration/deceleration, 10 Hz to 10 kHz with direction control: or 2 points with variable duty-ratio outputs
Synchronized pulse control		1 point
Input time constant (ON response time = OFF response time)		Can be set for CPU Unit inputs and Expansion Unit inputs only (1, 2, 3, 5, 10, 20, 40, or 80 ms)
Clock		Equipped with clock (built-in RTC)
Communications functions		Peripheral port: Supports Host Link, peripheral bus, no-protocol communications, and Programming Console connections. RS-232C port: Supports Host Link, no-protocol communications, 1-to-1 Link, or 1-to-1 NT Link connections.
Power failure backup function		Data in HR, AR, Counter (CNT), and Data Memory (DM) areas is held.
Memory backup		Non-volatile (flash) memory: Program, read-only DM area, and PC Setup
		Memory backup (lithium battery: 2 years lifetime): DM area, HR area, AR area, and counter values
Self-diagnostic functions		CPU error (watchdog timer), memory errors, communications errors, setting errors, battery errors, and expansion I/O bus errors
Program check		No END instruction, programming errors (checked when operation is started)
Programming devices	Programming Console	C200H-PRO27, CQM1-PRO01, or CQM1H-PRO01
	SSS	IBM PC/AT or compatible (SYSMAC Support Software version 1.1 or higher)
	CPT	Windows
	CX-P	Windows

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

■ Communications Specifications

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

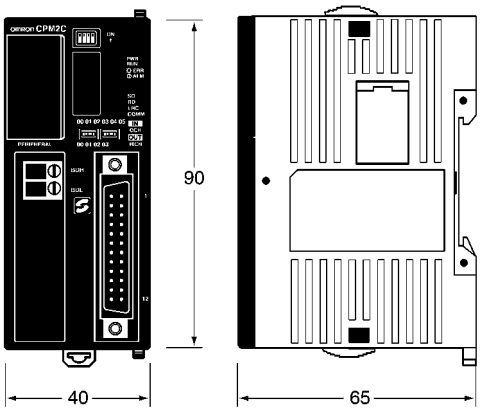
Note: 1. A terminator must be connected to the point in the system farthest from the Master.

2. The baud rate is switched using DM settings (default setting is 750 kbps).

Dimensions

Note: All units are in millimeters unless otherwise indicated.

CPM2C-S100C
CPM2C-S110C



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

OMRON

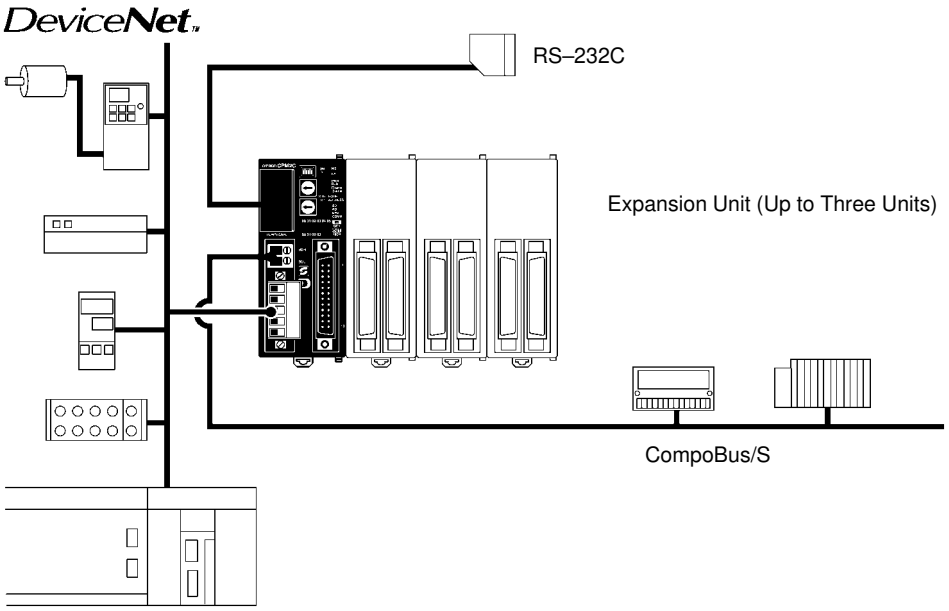
Programmable Slaves

CPM2C-S1□0C-DRT

Multi-functional Slave for Distributed Blocks

An entire installation consisting of sensors and actuators is handled as a DeviceNet slave.
Powerfully supports the device distribution and production of standard units while standardizing programs and decreasing the load on the master. Conventional distributed I/O control networks do not allow I/O checks or operation checks until all devices on the networks are assembled and connected. Programmable Slaves, however, allow I/O and operation checks on any distributed unit independently.

- DeviceNet Slave Functions
  Supports multi-word I/O Links and message communications, making it possible for the master to control the data of all the slaves on the network. Data that does not need immediate transmission, such as log data, can be transmitted in blocks using message communications.
- CompoBus/S Master Functions
  Connects to remote signal lights, pushbutton switches, terminal blocks, and pneumatic valves from other companies over VCTF or easy-to-branch flat cable.
- RS-232C Communications
  Connects to the BCRs and PTs to process data, alleviating the load on the master.
- Expansion Unit (Up to Three Units)
  A single node is used to control distributed blocks and decrease the size of the communications block in multi-point operation, thus making the cost reduction of the system possible.



Ordering Information

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

Specifications

■ General Specifications

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

Item			Specification
High-speed counter functions	High-speed counters		1 counter (single phase at 20 kHz or 2 phases at 5 kHz)
		Count er interrupts	1 interrupt (set value comparison or set-value range comparison)
	Interrupt inputs (counter mode)		2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
		Count-up interrupts	2 interrupts (Used for both external interrupts inputs and quick-response inputs.)
Quick-response inputs			2 points (Used for both external interrupts inputs and counter mode interrupt inputs.) Min. input pulse width: 50 μs max.
Pulse output			2 points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control: 1 point with trapezoid acceleration/deceleration, 10 Hz and 10 kHz with no direction control: or 2 points with variable duty-ratio outputs
Synchronized pulse control			1 point
Input time constant (ON response time = OFF response time)			Can be set for CPU Unit inputs and Expansion Unit inputs only (1, 2, 3, 5, 10, 20, 40, or 80 ms)
Clock			Equipped with clock (built-in RTC)
Communications functions			Peripheral port: Supports Host Link, peripheral bus, no-protocol communications, and Programming Console connections. RS-232C port: Supports Host Link, no-protocol communications, 1-to-1 Link, or 1-to-1 NT Link connections.
Power failure backup function			Data in HR, AR, Counter (CNT), and Data Memory (DM) areas is held.
Memory backup			Non-volatile (flash) memory: Program, read-only DM area, and PC Setup
			Memory backup (lithium battery: 2 years lifetime): DM area, HR area, AR area, and counter values
Self-diagnostic functions			CPU error (watchdog timer), memory errors, communications errors, setting errors, battery errors, and expansion I/O bus errors
Program check			No END instruction, programming errors (checked when operation is started)
Programming devices	Programming Console		C200H-PRO27, CQM1-PRO01, or CQM1H-PRO01
	SSS		IBM PC/AT or compatible (SYSMAC Support Software version 1.1 or higher)
	CPT		Windows
	CX-P		Windows

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

■ Communications Specifications

DeviceNet

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

Note: 1. A terminator must be connected to the point in the system farthest from the Master.

2. The maximum network length is the distance from the master to the farthest node.

3. When Thin Cable is used for the main line, the main line must be 100 m or less in length.

CompoBus/S

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

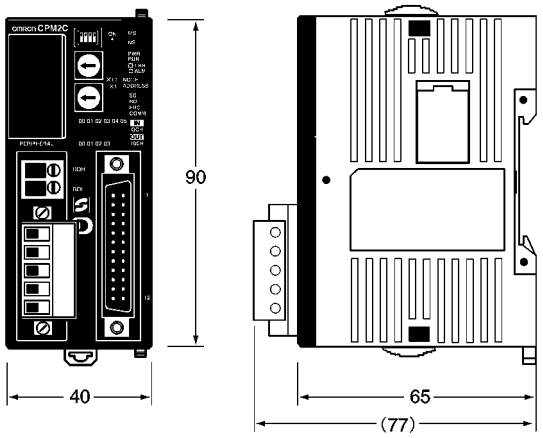
Note: 1. A terminator must be connected to the point in the system farthest from the Master.

2. The baud rate is switched using DM settings (default setting is 750 kbps).

Dimensions

Note: All units are in millimeters unless otherwise indicated.

CPM2C-S100C-DRT
CPM2C-S110C-DRT



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

OMRON

Master Control Units (S-Controllers)

SRM1-C01-V2/C02-V2

Subminiature, Stand-alone Model with CompoBus/S Master and SYSMAC Controller Functions

- Maximum number of Remote I/O points per Master: 256
- Maximum number of Slaves per Master: 32
- Communications cycle time: 0.5 ms max. (at baud rate 750 kbps).
- Communications distance: Extended to 500 m max. (at baud rate 93.75 kbps).
- Additional instructions (PID, SCL, NEG, ZCP) ensure analog compatibility.
- RS-232C port incorporated (SRM1-C02-V2).

Ordering Information

Specifications		Model
Built-in stand-alone controller functions	Without RS-232C	SRM1-C01-V2
	With RS-232C	SRM1-C02-V2

Specifications

■ Master Specifications

Number of I/O points	256 points (128 inputs/128 outputs) 128 points (64 inputs/64 outputs) Selectable by DM setting. The default setting is 256 points.
Max. number of Slaves per Master	256 points: 32 128 points: 16
I/O words	Input words: 000 to 007 Output words: 010 to 017
Programming language	Ladder diagram
Types of instruction	14 basic and 81 special instructions (125 instructions in total)
Execution time	LD instruction: 0.97 μs MOV instruction: 9.1 μs
Program capacity	4,096 words
Data memory	2,022 + 512 (read-only) words
Timers/Counters	128 timers/counters
Work bits	640 bits
Memory backup	Flash memory (without battery): User programs Lithium battery: Data memory etc. (Battery life: 10 years min. at an ambient temperature of 25°C.)
Peripheral port	1 point
RS-232C port	1 point (SRM1-C02 only) Host Link, NT Link, 1:1 Link, or no protocol
Programming tool	Programming Consoles: CQM1-PRO01-E, C200H-PRO27-E CX-Programmer (Supported for versions 2 or later.) WS02-CXP1-E SYSMAC Support Software (MS-DOS version): C500-ZL3AT1-E

■ Communications Specifications

Communications method		CompoBus/S protocol
Coding method		Manchester coding method
Connection method		Multi-drop method and T-branch method (see note 1)
Communications baud rate		750,000 bps/93,750 bps (see note 2)
Communications cycle time	**High-speed communications mode**	0.5 ms with 8 Slaves for inputs and 8 Slaves for outputs
		0.8 ms with 16 Slaves for inputs and 16 Slaves for outputs
	Long-distance communications mode	4.0 ms with 8 Slaves for inputs and 8 Slaves for outputs
		6.0 ms with 16 Slaves for inputs and 16 Slaves for outputs
Communications cable		2-conductor VCTF cable (0.75 x 2), 4-conductor VCTF cable (0.75 x 4) Dedicated flat cable
Communications distance	**High-speed communications mode**	2-conductor VCTF cable: Main line length: 100 m max. Branch line length: 3 m max. Total branch line length: 50 m max. Flat cable, 4-conductor VCTF cable: Main line length: 30 m max. Branch line length: 3 m max. Total branch line length: 30 m max. (When flat cable is used to connect fewer than 16 Slaves, the main line can be up to 100 m long and the total branch line length can be up to 50 m.)
	Long-distance communications mode	2-conductor VCTF cable: Main line length: 500 m max. Branch line length: 6 m max. Total branch line length: 120 m max. Flat cable, 4-conductor VCTF cable: Variable branch wiring (total cable length 200 m max.) (There are no limits on the branching format or main, branch, or total line lengths. The terminator must be connected to the point in the system farthest from the master.)
Max. number of connecting nodes		32
Error control checks		Manchester code check, frame length check, and parity check

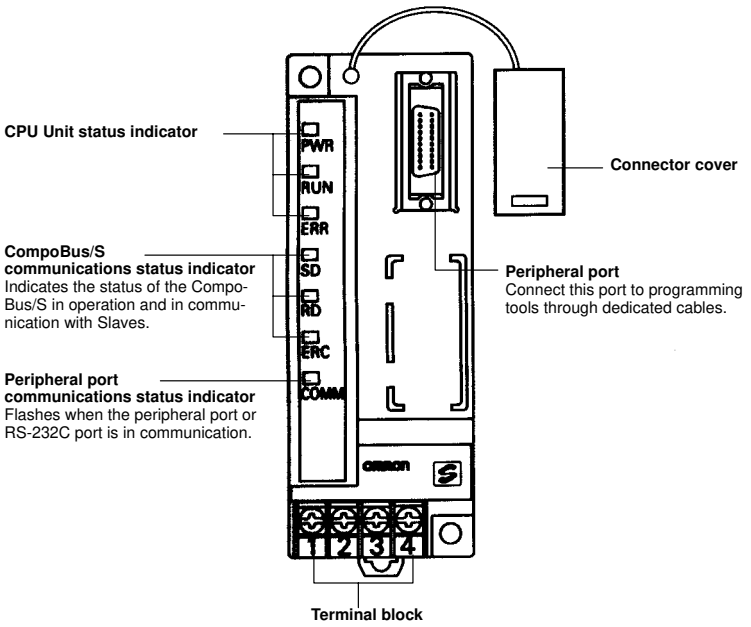
Note: 1. A terminator must be connected to the point in the system farthest from the Master.
2. The communications baud rate is switched using DM settings (default setting is 750,000 bps).

■ General Specifications

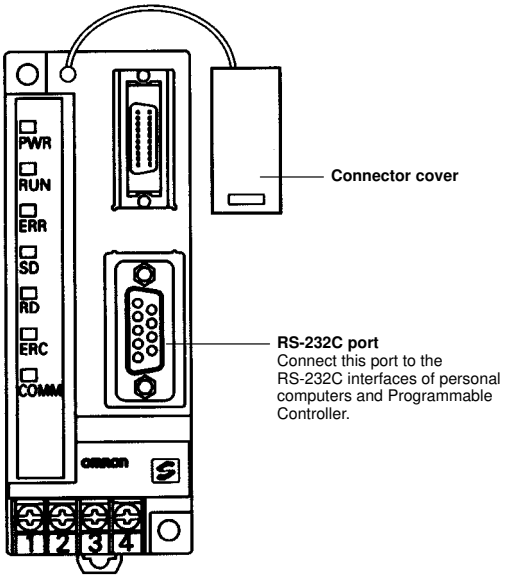
Supply voltage	24 VDC
Allowable supply voltage	20.4 to 26.4 VDC
Power consumption	3.5 W max.
Inrush current	12.0 A max.
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)
Vibration resistance	10 to 57 Hz, 0.075-mm amplitude, 57 to 150 Hz, acceleration: 9.8 m/s^2 in X, Y, and Z directions for 80 minutes each (Time coefficient; 8 minutes × coefficient factor 10 = total time 80 minutes)
Shock resistance	147 m/s^2 three times each in X, Y, and Z directions
Ambient temperature	Operating: 0°C to 55°C Storage: –20°C to 75°C
Humidity	10% to 90% (with no condensation)
Atmosphere	Must be free from corrosive gas.
Terminal screw size	M3
Power interrupt time	DC type: 2 ms min.
Weight	150 g max.

Nomenclature

SRM1-C01-V2



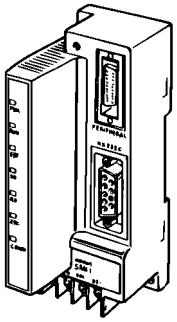
SRM1-C02-V2

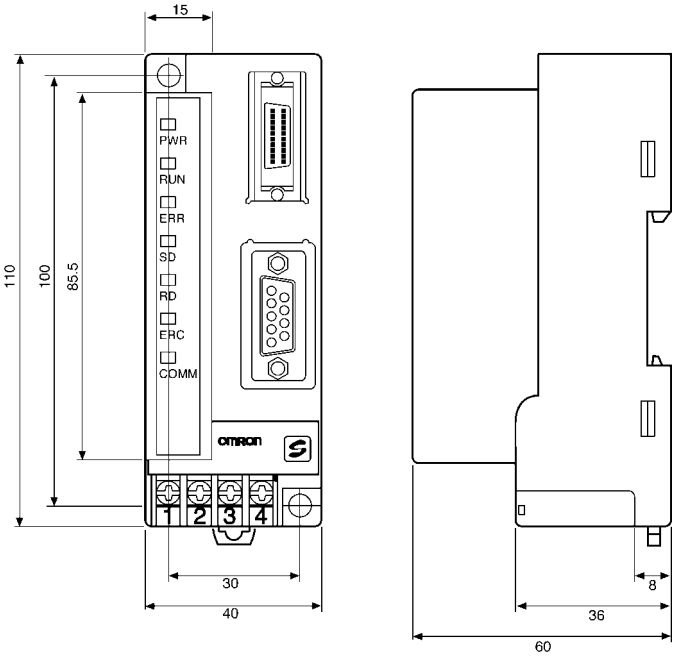


Dimensions

Note: All units are in millimeters unless otherwise indicated.

SRM1-C01/C02-V2





The above dimensions apply to the SRM1-C02-V2. The SRM1-C01-V2 has no RS-232C port.

Precautions

For details on safety precautions, refer to the *CompoBus/S Master Control Units Operation Manual* (W318).

OMRON

Master Unit

C200HW-SRM21-V1

Master Unit for CS1, C200HX, C200HG, C200HE, and C200HS

- A maximum of 256 I/O points available.
- Connects to a maximum of 32 Slaves.
- Communications cycle time: 0.5 ms max. (at baud rate 750 kbps).
- Communications distance: Extended to 500 m max. (at baud rate 93.75 kbps).
- Connection to Analog Terminals now supported.

Ordering Information

PC	Max. number of I/O points	Model
C200HX (-Z), C200HG (-Z), C200HE (-Z), C200HS, CS1	256 points (128 inputs/128 outputs)	C200HW-SRM21-V1

Specifications

■ Communications Specifications

Communications method		CompoBus/S protocol
Coding method		Manchester coding method
Connection method		Multi-drop method and T-branch method (see note 1)
Communications baud rate		750,000 bps, 93,750 bps (see note 2)
Communications cycle time	**High-speed communications mode**	0.5 ms with 8 Slaves for inputs and 8 Slaves for outputs
		0.8 ms with 16 Slaves for inputs and 16 Slaves for outputs
	Long-distance communications mode	4.0 ms with 8 Slaves for inputs and 8 Slaves for outputs
		6.0 ms with 16 Slaves for inputs and 16 Slaves for outputs
Communications cable		2-conductor VCTF cable (0.75 x 2), 4-conductor VCTF cable (0.75 x 4) Special Flat Cable
Communications distance	**High-speed communications mode**	2-conductor VCTF cable: Main line length: 100 m max. Branch line length: 3 m max. Total branch line length: 50 m max. Special Flat Cable, 4-conductor VCTF cable: Main line length: 30 m max. Branch line length: 3 m max. Total branch line length: 30 m max. (When Special Flat Cable is used to connect fewer than 16 Slaves, the main line can be up to 100 m long and the total branch line length can be up to 50 m.)
	Long-distance communications mode	2-conductor VCTF cable: Main line length: 500 m max. Branch line length: 6 m max. Total branch line length: 120 m max. Special Flat Cable, 4-conductor VCTF cable: Variable branch wiring (total cable length 200 m max.) (There are no limits on the branching format or main, branch, or total line lengths. The terminator must be connected to the point in the system farthest from the master.)
Max. number of connecting nodes		32
Error control checks		Manchester code check, frame length check, and parity check

Note: 1. A terminator must be connected to the point in the system farthest from the Master.

2. The communications baud rate is switched with the DIP switch.

■ Unit Specifications

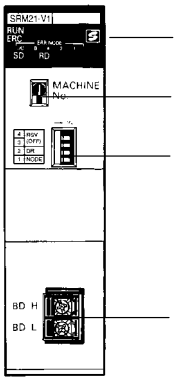
Current consumption		150 mA max. at 5 VDC
Number of I/O points		256 points (128 inputs/128 outputs), 128 points (64 inputs/64 outputs) (switchable)
Number of occupied words		256 points: 20 words (8 input words/8 output words, 4 status data) 128 points: 10 words (4 input words/4 output words, 2 status data)
PLC		CS1, C200HX (-ZE), C200HG (-ZE), C200HE (-ZE), C200HS
Number of Master Units mountable	**C200HE**	128 points: 10, 256 points: 5
	C200HG-CPU33/43	128 points: 10, 256 points: 5
	C200HG-CPU53/63	128 points: 16, 256 points: 8
	C200HX-CPU34/44	128 points: 10, 256 points: 5
	C200HX-CPU54/64	128 points: 16, 256 points: 8
	C200HS	128 points: 10, 256 points: 5
	CS1	128 points: 16, 256 points: 8
Number of points per node number		8 points
Max. number of Slaves per Master		32
Status data		Communications Error Flag and Active Slave Node (see note)
Weight		200 g max.
Approved standards		UL 508 (E95399), CSA C22.2 No. 142 (LR51460)

Note: These flags use the AR area.

■ Ratings

The ratings of the Unit are the same as those of the CS1, C200HX, C200HG, C200HE, and C200HS.

Nomenclature



Indicators
Indicates the operating status of the Master Unit and the status of communications with the Slaves.

Rotary Switch
This switch sets the Master's one-digit hexadecimal unit number.

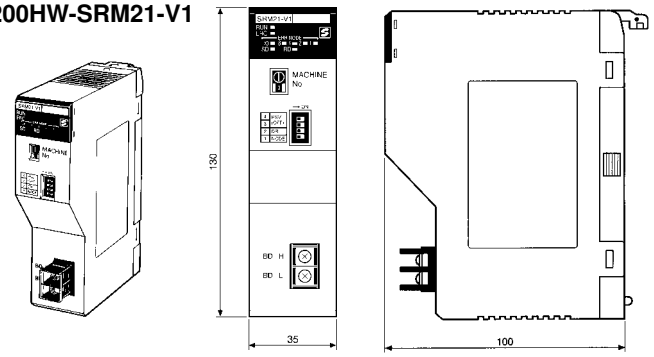
DIP Switch
These pins have the following functions:
Pin 1: Max. number of Slaves setting
Pin 2: Baud rate setting
Pins 3 to 4: Reserved (Always OFF.)

Communications Terminals
Connect the Slaves' transmission cable to these terminals.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

C200HW-SRM21-V1



Note: Refer to the *C200HX, C200HG, C200HE, C200HS*, or *CS1 Operation Manual* for details on the dimensions when the Master Unit is installed in the PC's Backplane.

Precautions

Refer to the *CompoBus/S Operation Manual (W266-E1)* before using the Unit.

OMRON

Master Unit

CQM1-SRM21-V1

Master Unit for CQM1/CQM1H

- A maximum of 128 I/O points available (Possible to set 32, 64, or 128 I/O points).
- Connects to a maximum of 16/32 Slaves.
- Communications cycle time: 0.5 ms max. (at baud rate 750 kbps).
- Communications distance: Extended to 500 m max. (at baud rate 93.75 kbps).
- Connection to Analog Terminals now supported.

Ordering Information

PLC	Max. number of I/O points	Model
CQM1-series PLC	128 points (64 inputs/64 outputs)	CQM1-SRM21-V1

Specifications

■ Communications Specifications

Communications method		CompoBus/S protocol
Coding method		Manchester coding method
Connection method		Multi-drop method and T-branch method (see note 1)
Communications baud rate		750,000 bps, 93,750 bps (see note 2)
Communications cycle time	**High-speed communications mode**	0.5 ms with 8 Slaves for inputs and 8 Slaves for outputs
		0.8 ms with 16 Slaves for inputs and 16 Slaves for outputs
	Long-distance communications mode	4.0 ms with 8 Slaves for inputs and 8 Slaves for outputs
		6.0 ms with 16 Slaves for inputs and 16 Slaves for outputs
Communications cable		2-conductor VCTF cable (0.75 x 2), 4-conductor VCTF cable (0.75 x 4) Special Flat Cable
Communications distance	**High-speed communications mode**	2-conductor VCTF cable: Main line length: 100 m max. Branch line length: 3 m max. Total branch line length: 50 m max. Special Flat Cable, 4-conductor VCTF cable: Main line length: 30 m max. Branch line length: 3 m max. Total branch line length: 30 m max. (When Special Flat Cable is used to connect fewer than 16 Slaves, the main line can be up to 100 m long and the total branch line length can be up to 50 m.)
	Long-distance communications mode	2-conductor VCTF cable: Main line length: 500 m max. Branch line length: 6 m max. Total branch line length: 120 m max. Special Flat Cable, 4-conductor VCTF cable: Variable branch wiring (total cable length 200 m max.) (There are no limits on the branching format or main, branch, or total line lengths. The terminator must be connected to the point in the system farthest from the master.)
Max. number of connecting nodes		32
Error control checks		Manchester code check, frame length check, and parity check

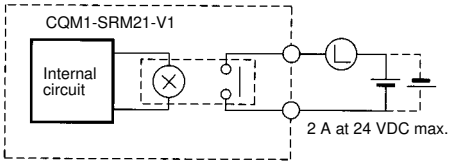
Note: 1. A terminator must be connected to the point in the system farthest from the Master.

2. The communications baud rate is switched with the DIP switch.

■ Unit Specifications

Current consumption	180 mA max. at 5 VDC
Number of I/O points	128 points (64 inputs/64 outputs), 64 points (32 inputs/32 outputs), 32 points (16 inputs/16 outputs) (switchable)
Number of occupied words	128 points: 4 input words/4 output words 64 points: 2 input words/2 output words 32 points: 1 input word/1 output word
PC	128 points: CQM1-CPU41-EV1/CPU42-EV1/CPU43-EV1/CPU44-EV1 64 points: CQM1-CPU11-E/CPU21-E/CPU41-EV1/CPU42-EV1/CPU43-EV1/CPU44-EV1 32 points: CQM1-CPU11-E/CPU21-E/CPU41-EV1/CPU42-EV1/CPU43-EV1/CPU44-EV1
Number of points per node number	4/8 points (switchable)
Max. number of Slaves per Master	32 (4 points per node number)
Status data	Alarm terminal output
Weight	200 g max.
Approved standards	UL 508 (E95399), CSA C22.2 No. 142 (LR51460)

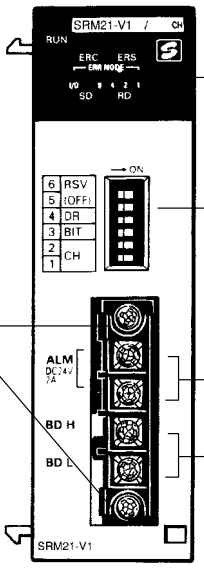
■ Alarm Output Specifications

Maximum switching capacity	2 A at 24 VDC
Minimum switching capacity	10 mA at 5 VDC
Relay	G6D-1A
Minimum ON time	100 ms
Circuit configuration	

■ Ratings

The ratings of the Unit are the same as those for the CQM1.

Nomenclature



Terminal block screws

These screws attach the terminal block. The terminal block can be removed when these screws are loosened.

Indicators

Indicates the operating status of the Master Unit and the status of communications with the Slaves.

DIP Switch

These pins have the following functions:
Pins 1 and 2: PC word allocation setting
Pin 3: Number of points setting
Pin 4: Baud rate setting
Pins 5 to 6: Reserved (Always OFF.)

Alarm Output Terminals

These terminals are shorted when an error occurs. Connect to a warning device.

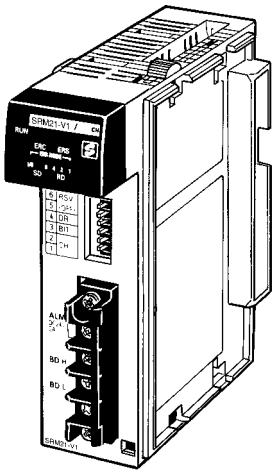
Communications Terminals

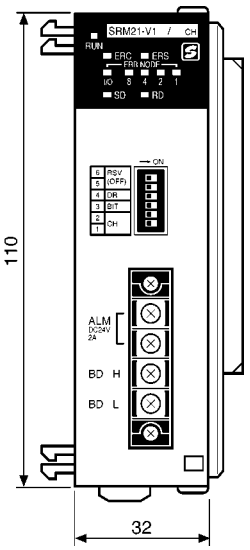
Connect the Slaves' transmission cable to these terminals.

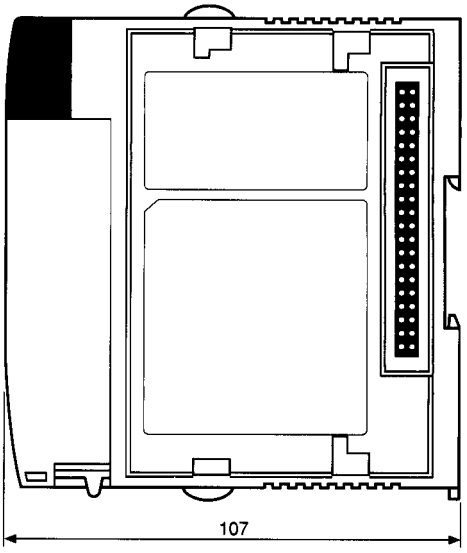
Dimensions

Note: All units are in millimeters unless otherwise indicated.

CQM1-SRM21-V1







Note: Refer to the *CQM1 Operation Manual* for details on the dimensions when the Master Unit is installed in the PC's Backplane.

Precautions

Refer to the *CompoBus/S Operation Manual (W266-E1)* before using the Unit.

OMRON

SYSMAC Boards with CompoBus/S Master

C200PC-ISA□3-SRM

Intelligent Computer Board that Integrates SYSMAC C200HX/HG/HE and CompoBus/S Master Functions Equipped with Backup Power Supply System

- Can be mounted to an ISA bus, the standard bus for IBM compatible computers, thus contributing to the downsizing of installations using computers.
- Communications between the SYSMAC Board and the computer are performed via an ISA bus, enabling a communications speed much higher than with RS-232C communications.
- Incorporates CompoBus/S communications functions. Simply connect a CompoBus/S Slave to enable distributed control of I/O in remote locations.
- A power supply sub-board is also available. This makes it possible to provide power externally, and allows control to be continued even when the computer power supply is interrupted.
- Data settings at CompoBus/S Slaves are reflected automatically.
- Enables communications at a maximum distance of 500 m (at a baud rate of 93.75 kbps).
- Conforms to EC Directives.

Ordering Information

PLC	Max. number of I/O points	Model
C200HG-CPU43	256 points (128 inputs/128 outputs)	C200PC-ISA03-SRM
C200HX-CPU64		C200PC-ISA13-SRM