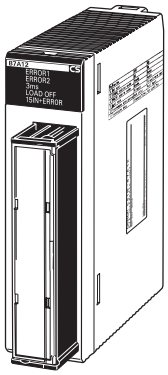
CS-series B7A Interface Unit

CS1W-B7A

CSM_CS1W-B7A_DS_E_3_1

It transmits 16 points of I/O signals per word with a pair of cables. Easy and minimized wiring effort,

- The B7A Interface Unit and B7A Link Terminal can be used in the same way as a standard Basic I/O Unit and I/O Terminal without any need to worry about communications. This characteristic reduces the wiring when using more than one relatively remote sensor or actuator.

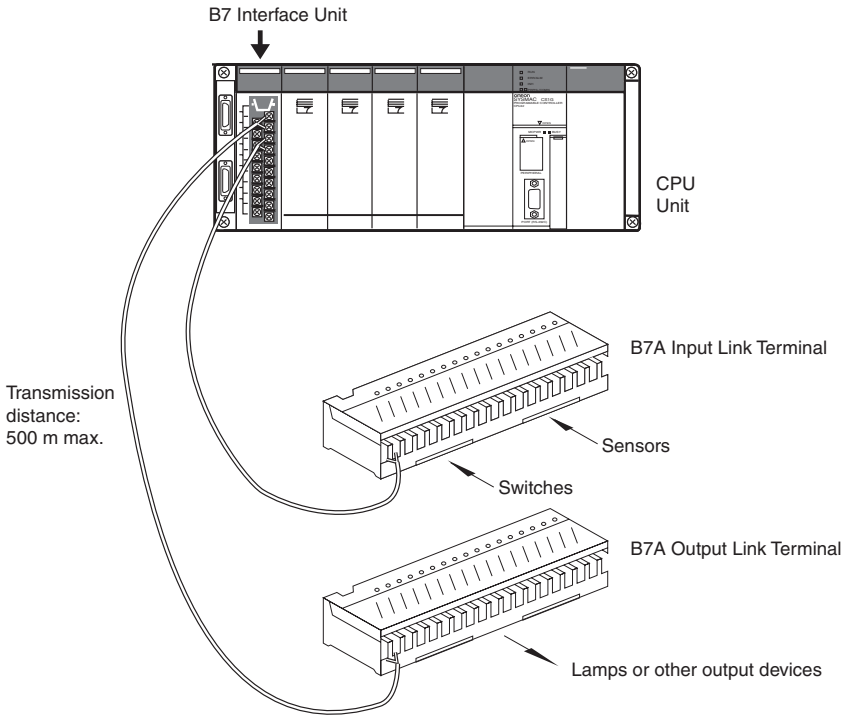


CS1W-B7A12

Features

- A CJ1W-B7A unit can transmit 64 points of I/O signals.
- The slim body can downsize machines to which CJ1W-B7A is connected.
- It is a basic I/O unit. No complicated setting and programs are required.

System Configuration



B7A Communications Specifications

Item	Specifications		
Transmission method	One-way time-sharing multiplex transmissions		
Transmission delay (communications delay on transmission path)	High-speed	3 ms typical, 5 ms max.	
	Standard	19.2 ms typical, 31 ms max.	
Transmission points	CS1W-B7A12	32 inputs (2 ports)	
	CS1W-B7A02	32 outputs (2 ports)	
	CS1W-B7A21	16 inputs (1 port), 16 outputs (1 port)	
	CS1W-B7A22	32 inputs (2 ports), 32 outputs (2 ports)	
External power supply voltage ✻1	12 to 24 V DC (allowable voltage range: 10.8 to 26.4 V)		
External supply current ✻2	CS1W-B7A12	20 mA min.	
	CS1W-B7A02	60 mA min.	
	CS1W-B7A21	30 mA min.	
	CS1W-B7A22	60 mA min.	
Minimum input time ✻3	High-speed	16 ms	
	Standard	2.4 ms	
Transmission distance	High-speed	Power supply on one side (common power supply)	10 m max.
			50 m max. (with shielded cable)
		Power supply on both sides (separate power supplies)	10 m max.
			100 m max. (with shielded cable)
	Standard	Power supply on one side (common power supply)	100 m max.
		Power supply on both sides (separate power supplies)	500 m max.
Cables	VCTF, 0.75 mm^2, 3 conductors (power supply on one side (common power supply)) VCTF, 0.75 mm^2, 2 conductors (power supply on both sides (separate power supplies)) Shielded cable, 0.75 mm^2, 3 conductors (power supply on one side (common power supply)) Shielded cable, 0.75 mm^2, 2 conductors (power supply on both sides (separate power supplies))		

✻1. Use a SELV power supply with overcurrent protection. A SELV power supply refers to a power supply with double or reinforced insulation between input and output and with an output voltage of 30 V rms with a 42.4-V peak or an output voltage of 60 VDC max. We recommend OMRON S8□□-series Power Supply Units for the external power supplies.

✻2. The capacity of the external supply current does not include the capacity required by the B7A Link Terminal.

✻3. The minimum input time is the minimum time required by the B7A Interface Unit to read the input signals from the CPU Unit.

Note: 1. When separate power supplies are used, the B7A Interface Unit and B7A Link Terminal are supplied by separate external power supplies.

2. When a common power supply is used, the B7A Interface Unit and B7A Link Terminal are supplied by the same external power supply.

Ordering Information

Unit type	Name	Specifications		No. of words allocated	Current consumption (A)		Model	Standards
		I/O points	External connection		5 V	26 V		
CS Series Basic I/O Units	B7A Interface Units 	32 inputs	Removable terminal block	2 words	0.09	–	**CS1W-B7A12**	UC1, CE
		32 outputs		2 words	0.09	–	**CS1W-B7A02**	
		16 inputs/outputs		2 words	0.09	–	**CS1W-B7A21**	
		32 inputs/outputs		4 words	0.09	–	**CS1W-B7A22**	

International Standards

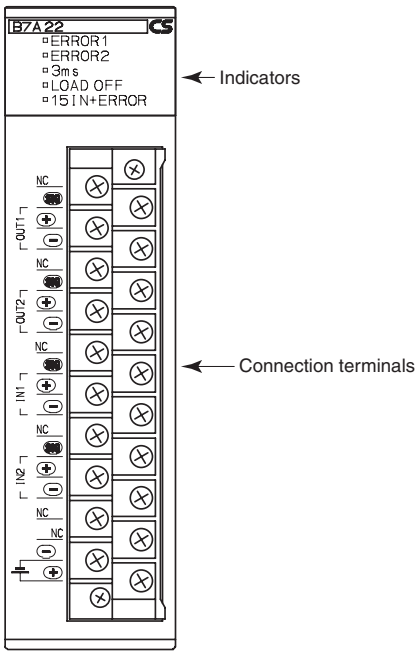
- The standards indicated in the "Standards" column are those current for UL, CSA, cULus, cUL, NK, and Lloyd standards and EC Directives as of the end of October 2008. (The standards are abbreviated as follows: U: UL, U1: UL Class I Division 2 Products for Hazardous Locations, C: CSA, US: cULus Class I Division 2 Products for Hazardous Locations, CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Ask your OMRON representatives for the conditions under which the standards were met.

Specifications

Model		CS1W-B7A12	CS1W-B7A02	CS1W-B7A21	CS1W-B7A22
Applicable PLC		CS-series PLCs			
Unit type		CS1 Basic I/O Unit			
I/O points	Input	32 inputs	–	16 inputs	32 inputs
	Output	–	32 outputs	16 outputs	32 outputs
Transmission distance		Normal: 500m max. when the interface unit and the link terminal units have separate external power supplies, Normal: 100m max. when the interface unit and the link terminal units use a common external power supply, High speed: 100m max. with shielded cables, 10m max. with unshielded cables, when the interface unit and the link terminal units have separate external power supplies, High speed: 50m max. with shielded cables, 10m max. with unshielded cables, when the interface unit and the link terminal units use a common external power supply,			
Transmission delay		Normal: 19.2ms (typ.), 31ms max. Short 3ms (typ.), 5ms max. ✻1			
Weight		230g max.		240g max.	
Power supply voltage from external source ✻2		12 to 24VDC ±10%, 20mA min.	12 to 24VDC ±10%, 60mA min.	12 to 24VDC ±10%, 30mA min.	12 to 24VDC ±10%, 60mA min.
I/O memory allocation		Each Unit is allocated 4 words in the I/O Area (which starts at CIO 0000). The words are allocated according to the mounting position of the Unit.			
		2 words (32 points).			4 words (64 points).
Current consumption		5 V DC: 90 mA max. (supplied from Power Supply Unit)			

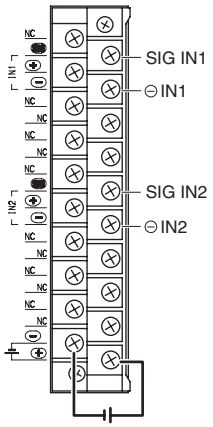
✻1. The I/O delay time is selectable by the selector switch between normal and short.
✻2. The value does not include the power supplied to B7A link terminal units.

Parts and Names

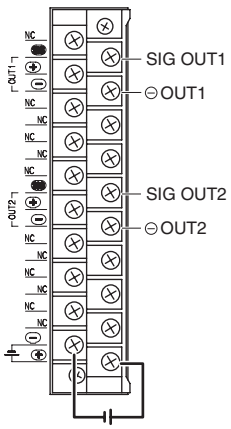


Terminal Names and Allocations

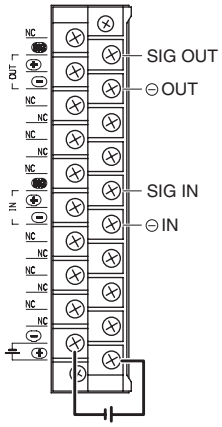
CS1W-B7A12

Terminal	Name	Function	Word	Appearance
B0	SIG IN1	Connect to SIG terminal on Input B7A Link Terminal.	n	
A1	+V	Connect to + terminal on external power supply.		
B1	⊖IN1	Connect to – power supply terminal on Input B7A Link Terminal.		
B4	SIG IN2	Connect to SIG terminal on Input B7A Link Terminal.	n+1	
A5	+V	Connect to + terminal on external power supply.		
B5	⊖IN2	Connect to – power supply terminal on Input B7A Link Terminal.		
A0, A2 to A4, A6 to A8, B2, B3, B6 to B8	NC	Not used.	–	
A9	–V	Connect to – terminal on external power supply.		
B9	+V	Connect to + terminal on external power supply.		

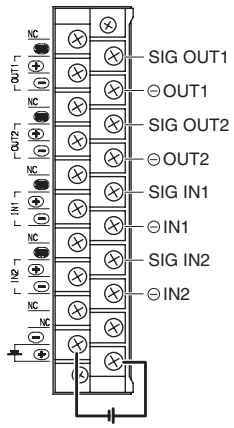
CS1W-B7A02

Terminal	Name	Function	Word	Appearance
B0	SIG OUT1	Connect to SIG terminal on Output B7A Link Terminal.	n	
A1	+V	Connect to + terminal on external power supply.		
B1	⊖OUT1	Connect to – power supply terminal on Output B7A Link Terminal.		
B4	SIG OUT2	Connect to SIG terminal on Output B7A Link Terminal.	n+1	
A5	+V	Connect to + terminal on external power supply.		
B5	⊖OUT2	Connect to – power supply terminal on Output B7A Link Terminal.		
A0, A2 to A4, A6 to A8, B2, B3, B6 to B8	NC	Not used.	–	
A9	–V	Connect to – terminal on external power supply.		
B9	+V	Connect to + terminal on external power supply.		

CS1W-B7A21

Terminal	Name	Function	Word	Appearance
B0	SIG OUT1	Connect to SIG terminal on Output B7A Link Terminal.	n	
A1	+V	Connect to + terminal on external power supply.		
B1	⊖OUT1	Connect to – power supply terminal on Output B7A Link Terminal.		
B4	SIG IN1	Connect to SIG terminal on Input B7A Link Terminal.	n+1	
A5	+V	Connect to + terminal on external power supply.		
B5	⊖IN1	Connect to – power supply terminal on Input B7A Link Terminal.		
A0, A2 to A4, A6 to A8, B2, B3, B6 to B8	NC	Not used.	–	
A9	–V	Connect to – terminal on external power supply.		
B9	+V	Connect to + terminal on external power supply.		

CS1W-B7A22

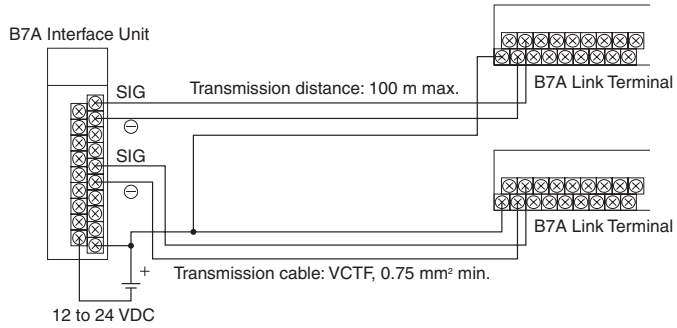
Terminal	Name	Function	Word	Appearance
B0	SIG OUT1	Connect to SIG terminal on Output B7A Link Terminal.	n	
A1	+V	Connect to + terminal on external power supply.		
B1	⊖OUT1	Connect to – power supply terminal on Output B7A Link Terminal.		
B2	SIG OUT2	Connect to SIG terminal on Output B7A Link Terminal.	n+1	
A3	+V	Connect to + terminal on external power supply.		
B3	⊖OUT2	Connect to – power supply terminal on Output B7A Link Terminal.		
B4	SIG IN1	Connect to SIG terminal on Input B7A Link Terminal.	n+2	
A5	+V	Connect to + terminal on external power supply.		
B5	⊖IN1	Connect to – power supply terminal on Input B7A Link Terminal.		
B6	SIG IN2	Connect to SIG terminal on Input B7A Link Terminal.	n+3	
A7	+V	Connect to + terminal on external power supply.		
B7	⊖IN2	Connect to – power supply terminal on Input B7A Link Terminal.		
A0, A2, A4, A6, A8, B8	NC	Not used.	–	
A9	–V	Connect to – terminal on external power supply.		
B9	+V	Connect to + terminal on external power supply.		

Wiring Methods

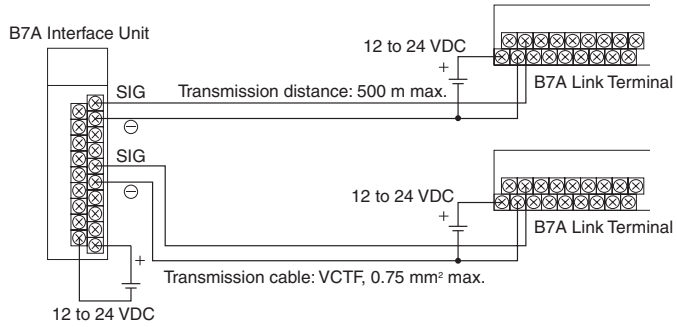
Note: 1. Confirm that terminals are connected correctly. If connections are incorrect, the internal components of the B7A Interface Unit and B7A Link Terminal may be damaged.
2. Route the signal lines in separate ducts both inside and outside the control panel to isolate them from power lines.
3. Connect cables at a distance that is within the range given in the specifications.
4. Always turn OFF the power to the CPU Unit and all other Units before connecting the communications cables.
5. Always lay communications cables within ducts.

Standard Mode

Common Power Supply



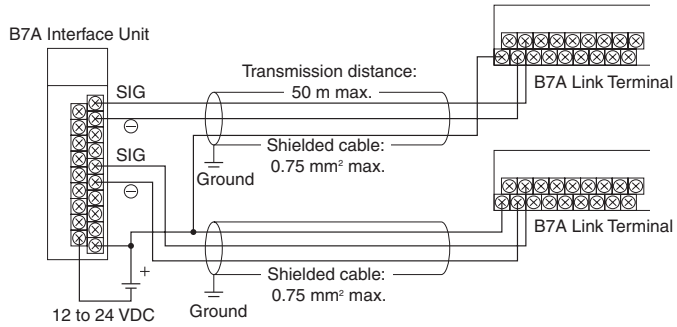
Separate Power Supplies



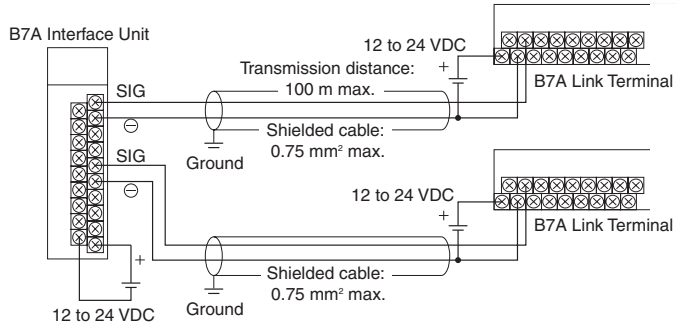
High-speed Mode

Note: If shielded cable is not used, the maximum transmission distance is 10 m regardless of whether a common or separate power supplies are used. (Use VCTF cable of 0.75 mm² or higher.)

Common Power Supply



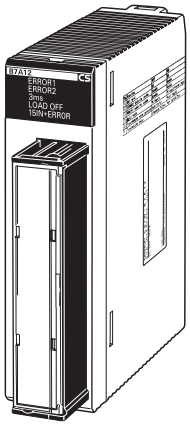
Separate Power Supplies

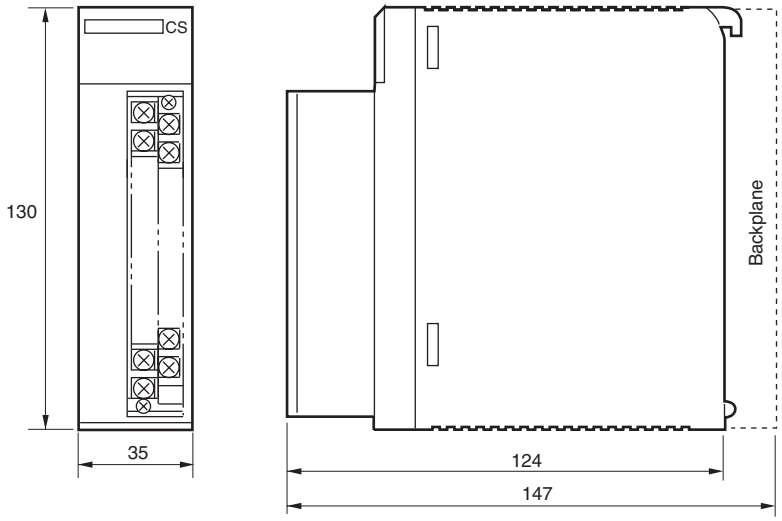


Dimensions

(Unit: mm)

CS1W-B7A12/02/21/22





Related Manual

Cat.No.	Name	Contents
W339	SYSMAC CS Series CS1G/H-CPU□□H, CS1G/H-CPU□□-EV1 Programmable Controllers OPERATION MANUAL	Provides an outlines of and describes the design, installation, maintenance, and other basic operations for the CS-series PLCs.

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2009.7

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