SYSMAC CJ-series Mixed I/O Units

CJ1W-MD

CSM_CJ1W-MD_DS_E_3_1

A Wide Range of Basic Mixed I/O Units for Different Applications and Wiring Methods

- One Mixed I/O Unit has connectors for both inputs and outputs. Use Mixed I/O Units to easily build space-saving systems.

CJ1W-MD231

CJ1W-MD261

CJ1W-MD563

Features

- Select the best interface for each application: Fujitsu connectors and MIL connectors.
- Select sinking outputs or sourcing outputs. The CJ1W-MD232 has load short-circuit protection.
- The ON and OFF response times can be set to between 0 and 32 ms in the PLC Setup in the CPU Unit.
- Mixed I/O Units with 5-V TTL inputs are also available. ✻
- A wide variety of Connector-Terminal Block Conversion Units are available to allow you to easily wire external I/O devices.

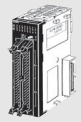
✻ Applies to the CJ1W-MD563.

Ordering Information

International Standards

- The standards are abbreviated as follows: U: UL, U1: UL (Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Contact your OMRON representative for further details and applicable conditions for these standards.

Mixed I/O Units

Unit type	Product name	Specifications						Current consumption (A)		Model	Standards
		Output type	I/O points	Input voltage, Input current / Maximum switching capacity	Commons	External connection	No. of words allocated	5 V	24 V		
CJ1 Basic I/O Units	DC Input/ Transistor Output Units 	Sinking	16 inputs	24 VDC, 7 mA	16 points, 1 common	Fujitsu connector	2 words	0.13	–	**CJ1W-MD231**	UC1, N, CE
			16 outputs	250 VAC/24 VDC, 0.5 A	16 points, 1 common						
		Sinking	16 inputs	24 VDC, 7 mA	16 points, 1 common	MIL connector	2 words	0.13	–	**CJ1W-MD233**	UC1, N, CE
			16 outputs	12 to 24 VDC, 0.5 A	16 points, 1 common						
		Sinking	32 inputs	24 VDC, 4.1 mA	16 points, 1 common	Fujitsu connector	4 words	0.14	–	**CJ1W-MD261**	
			32 outputs	12 to 24 VDC, 0.3 A	16 points, 1 common						
		Sinking	32 inputs	24 VDC, 4.1 mA	16 points, 1 common	MIL connector	4 words	0.14	–	**CJ1W-MD263**	
			32 outputs	12 to 24 VDC, 0.3 A	16 points, 1 common						
		Sourcing	16 inputs	24 VDC, 7 mA	16 points, 1 common	MIL connector	2 words	0.13	–	**CJ1W-MD232**	UC1, N, L, CE
			16 outputs	24 VDC, 0.5 A Short-circuit protection	16 points, 1 common						
	TTL I/O Units 	–	32 inputs	5 VDC, 35 mA	16 points, 1 common	MIL connector	4 words	0.19	–	**CJ1W-MD563**	UC1, N, CE
			32 outputs	5 VDC, 35 mA	16 points, 1 common						

Accessories

Connectors are not included for models with connectors. Either use one of the applicable connector listed below or use an applicable Connector-Terminal Block Conversion Unit or I/O Relay Terminal. For details on wiring methods, refer to *External Interface*.

Applicable Connectors

Fujitsu Connectors for 32-input, 32-output, 64-input, 64-output, 32-input/32-output, and 16-input/16-output Units

Name	Connection	Remarks	Applicable Units	Model	Standards
40-pin Connectors	Soldered	FCN-361J040-AU Connector FCN-360C040-J2 Connector Cover	Fujitsu Connectors: CJ1W-ID231(32 inputs): 1 per Unit CJ1W-ID261 (64 inputs): 2 per Unit CJ1W-OD231 (32 outputs): 1 per Unit CJ1W-OD261 (64 outputs): 2 per Unit CJ1W-MD261 (32 inputs, 32 outputs): 2 per Unit	**C500-CE404**	–
	Crimped	FCN-363J040 Housing FCN-363J-AU Contactor FCN-360C040-J2 Connector Cover		**C500-CE405**	
	Pressure welded	FCN-367J040-AU/F		**C500-CE403**	
24-pin Connectors	Soldered	FCN-361J024-AU Connector FCN-360C024-J2 Connector Cover	Fujitsu Connectors: CJ1W-MD231 (16 inputs, 16 outputs): 2 per Unit	**C500-CE241**	
	Crimped	FCN-363J024 Housing FCN-363J-AU Contactor FCN-360C024-J2 Connector Cover		**C500-CE242**	
	Pressure welded	FCN-367J024-AU/F		**C500-CE243**	

MIL Connectors for 32-input, 32-output, 64-input, 64-output, 32-input/32-output, and 16-input/16-output Units

Name	Connection	Remarks	Applicable Units	Model	Standards
40-pin Connectors	Pressure welded	FRC5-AO40-3TOS	MIL Connectors: CJ1W-ID232 (32 inputs): 1 per Unit CJ1W-OD232/233 (32 outputs): 1 per Unit CJ1W-ID262 (64 inputs): 2 per Unit CJ1W-OD262/263 (64 outputs): 2 per Unit CJ1W-MD263/563 (32 inputs, 32 outputs): 2 per Unit	**XG4M-4030-T**	–
20-pin Connectors	Pressure welded	FRC5-AO20-3TOS	MIL Connectors: CJ1W-MD232/233 (16 inputs, 16 outputs): 2 per Unit	**XG4M-2030-T**	

Applicable Connector-Terminal Block Conversion Units

Type	Series	I/O	Number of poles	Terminal type	Size			Mounting		Common terminals	Bleeder resistance	Indicators	Model	Standards
					Depth (mm)	Height (mm)	Width (mm)	DIN Track	Screws					
Slim	XW2D	I/O	20	M3	39	40	79	Yes	Yes	No	No	No	**XW2D-20G6**	–
			40				149						**XW2D-40G6**	
													XW2D-40C6	
		Input only									Built-in		**XW2D-40G6-RF**	
													XW2D-40G6-RM	
Through	XW2B	I/O	20	M3.5	45	45.3	112.5	Yes	Yes	No	No	No	**XW2B-20G5**	
				M3 (European type)			67.5						**XW2B-20G4**	
			40	M3.5			202.5						**XW2B-40G5**	
				M3 (European type)			135						**XW2B-40G4**	
With common terminals	XW2C	I/O	20	M3	39	40	149	Yes	Yes	Yes	No	No	**XW2C-20G6-IO16**	
		Input only	20	M3.5	50	38	160					Yes	**XW2C-20G5-IN16**	
With common terminals, 3-tier	XW2E	Inputs only, 3 tiers	20	M3.5	50	53	149	Yes	Yes	Yes	No	No	**XW2E-20G5-IN16**	
Screwless clamp terminals	XW2F	Input only	20	Clamp	50	40	95.5	Yes	Yes	Yes	No	No	**XW2F-20G7-IN16**	
		Outputs only	20	Clamp	50	40	95.5	Yes	Yes	Yes	No	No	**XW2F-20G7-OUT16**	
e-CON	XW2N	Input only	20	e-CON connector	50	40	95.5	Yes	Yes	Yes	No	No	**XW2N-20G8-IN16**	

Applicable I/O Relay Terminals

Type	Series		Specifications							Size (horizontal mounting)			Mounting		Model	Standards
			Classification		Polarity	Number of points	Rated ON current at contacts	Operation indicators	Terminal block for power supply wiring	Horizontal (mm)	Vertical (mm)	Height (mm)	DIN Track	Screws		
Space-saving	G70D	Vertical type G70D-V	Outputs	Relay outputs	NPN	16 (SPST-NO × 16)	5A or 3A	Yes	Expandable	135	46	81	Yes	Yes	**G70D-VSOC16**	U, C, CE
				MOSFET relay outputs			0.3A								**G70D-VFOM16**	
		Flat type G70D		Relay outputs	NPN	8 (SPST-NO × 8)	5A	Yes	–	68	93	44	Yes	Yes	**G70D-SOC08**	–
						16 (SPST-NO × 16)	3A			156	51	39			**G70D-SOC16**	–
					PNP	16 (SPST-NO × 16)	3A								**G70D-SOC16-1**	
				MOSFET relay outputs	NPN	16 (SPST-NO × 16)	0.3A								**G70D-FOM16**	–
					PNP										**G70D-FOM16-1**	
High-capacity, space-saving	G70R		Outputs	Relay outputs	NPN	8 (SPST-NO × 8)	10A	Yes	–	136	93	55	Yes	Yes	**G70R-SOC08**	–
Standard	G7TC		Inputs	AC inputs	NPN	16 (SPST-NO × 16)	1A	Yes	–	182	85	68	Yes	–	**G7TC-IA16**	U, C
				DC inputs											**G7TC-ID16**	
			Outputs	Relay outputs	NPN	8 (SPST-NO × 8)	5A			102					**G7TC-OC08**	
						16 (SPST-NO × 16)				182					**G7TC-OC16**	
					PNP	16 (SPST-NO × 16)									**G7TC-OC16-1**	–
High-capacity socket	G70A (Socket only)		Outputs	Relay outputs	NPN	16 (SPDT × 16 possible with G2R Relays)	10 A (Terminal block allowable current)	No	–	234	75	64	Yes	–	**G70A-ZOC16-3** (Socket only) + Relay/SSR/ MOSFET Relay/ Timer	U, C, CE
					PNP										**G70A-ZOC16-4** (Socket only) + Relay/SSR/ MOSFET Relay/ Timer	

Mountable Racks

Model	CJ system (CJ1, CJ2)		CP1H system	NSJ system	
	CPU Rack	Expansion Backplane	CP1H PLC	NSJ Controller	Expansion Backplane
CJ1W-MD231	10 Units	10 Units (Per Expansion Backplane)	Not supported	Not supported	10 Units (Per Expansion Backplane)
CJ1W-MD232					
CJ1W-MD233					
CJ1W-MD261					
CJ1W-MD263					
CJ1W-MD563					

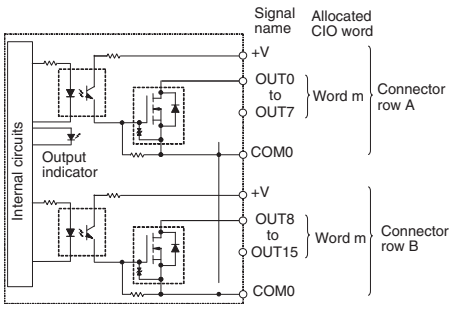
Specifications

CJ1W-MD231 DC Input/Transistor Output Unit (24 VDC, 16 Inputs/16 Outputs)

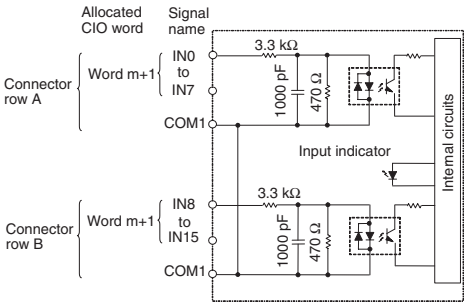
Name	16-point DC Input/16-point Transistor Output Unit with Fujitsu Connectors (Sinking Outputs)		
Model	CJ1W-MD231		
Output section (CN1)		**Input section (CN2)**	
Rated Voltage	12 to 24 VDC	**Rated Input Voltage**	24 VDC
Operating Load Voltage Range	10.2 to 26.4 VDC	**Operating Input Voltage**	20.4 to 26.4 VDC
Maximum Load Current	0.5 A/point, 2.0 A/Unit	**Input Impedance**	3.3 kΩ
Maximum Inrush Current	4.0 A/point, 10 ms max.	**Input Current**	7 mA typical (at 24 VDC)
Leakage Current	0.1 mA max.	**ON Voltage/ON Current**	14.4 VDC min./3 mA min.
Residual Voltage	1.5 V max.	**OFF Voltage/OFF Current**	5 VDC max./1 mA max.
ON Response Time	0.1 ms max.	**ON Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻
OFF Response Time	0.8 ms max.		
No. of Circuits	16 (16 points/common, 1 circuit)	**OFF Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻
Fuse	None		
External Power Supply	12 to 24 VDC, 20 mA min.	**No. of Circuits**	16 (16 points/common, 1 circuit)
		Number of Simultaneously ON Points	75% (at 24 VDC)
Insulation Resistance	20 MΩ between the external terminals and the GR terminal (at 100 VDC)		
Dielectric Strength	1,000 VAC between the external terminals and the GR terminal for 1 minute at a leakage current of 10 mA max.		
Internal Current Consumption	5 VDC 130 mA max.		
Weight	90 g max.		
Accessories	None		

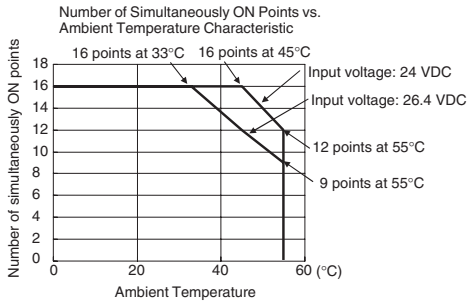
Circuit Configuration

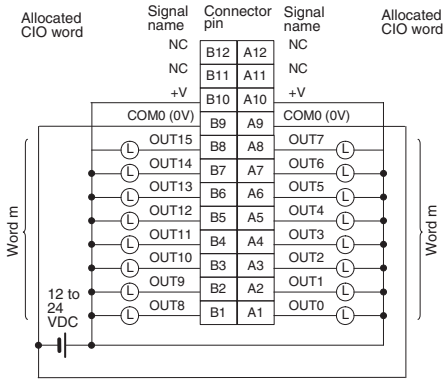
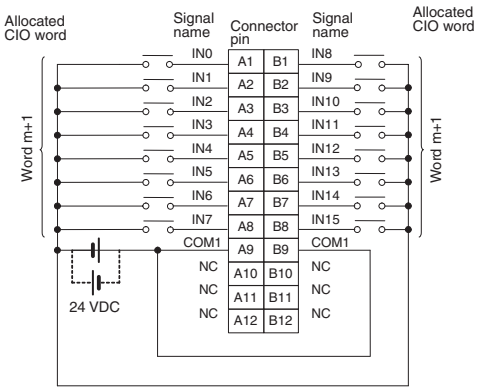
CN1 (OUT)



CN2 (IN)





	CN1 (OUT)	CN2 (IN)
Terminal Connections		
	• When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if polarity is reversed. • Be sure to wire both pins A9 and B9 (COM0 (0 V)) of CN1. • Be sure to wire both pins A10 and B10 (+V) of CN1.	• When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if polarity is reversed. • Be sure to wire both pins A9 and B9 (COM1) of CN2, and set the same polarity for both pins.

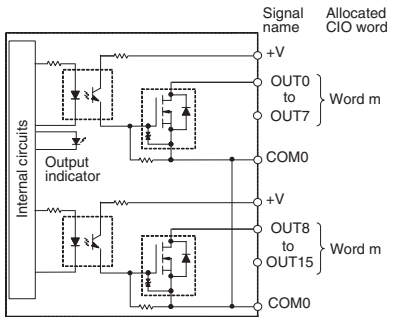
✻ The ON response time will be 20 μs maximum and OFF response time will be 400 μs maximum even if the response times are set to 0 ms due to internal element delays.

CJ1W-MD233 DC Input/Transistor Output Unit (24 VDC, 16 Inputs/16 Outputs)

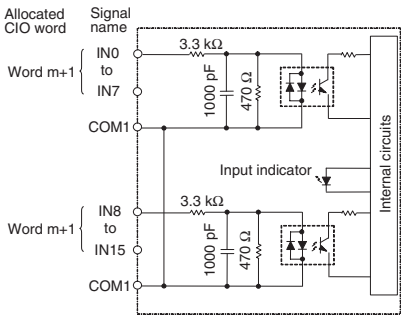
Name	16-point DC Input/16-point Transistor Output Unit with MIL Connectors (Sinking Outputs)		
Model	CJ1W-MD233		
Output section (CN1)		**Input section (CN2)**	
Rated Voltage	12 to 24 VDC	**Rated Input Voltage**	24 VDC
Operating Load Voltage Range	10.2 to 26.4 VDC	**Operating Input Voltage**	20.4 to 26.4 VDC
Maximum Load Current	0.5 A/point, 2.0 A/Unit	**Input Impedance**	3.3 kΩ
Maximum Inrush Current	4.0 A/point, 10 ms max.	**Input Current**	7 mA typical (at 24 VDC)
Leakage Current	0.1 mA max.	**ON Voltage/ON Current**	14.4 VDC min./3 mA min.
Residual Voltage	1.5 V max.	**OFF Voltage/OFF Current**	5 VDC max./1 mA max.
ON Response Time	0.1 ms max.	**ON Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻
OFF Response Time	0.8 ms max.		
No. of Circuits	16 (16 points/common, 1 circuit)	**OFF Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻
Fuse	None		
External Power Supply	12 to 24 VDC, 20 mA min.	**No. of Circuits**	16 (16 points/common, 1 circuit)
		Number of Simultaneously ON Points	75% (at 24 VDC)
Insulation Resistance	20 MΩ between the external terminals and the GR terminal (at 100 VDC)		
Dielectric Strength	1,000 VAC between the external terminals and the GR terminal for 1 minute at a leakage current of 10 mA max.		
Internal Current Consumption	5 VDC 130 mA max.		
Weight	90 g max.		
Accessories	None		

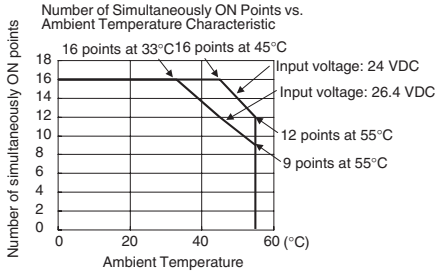
Circuit Configuration

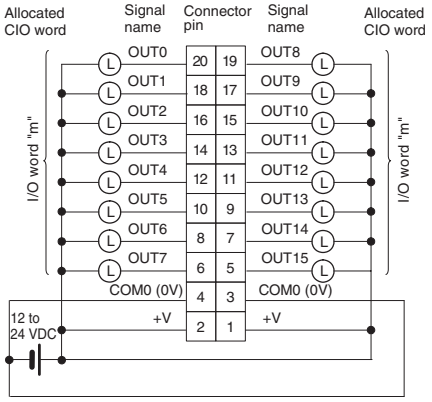
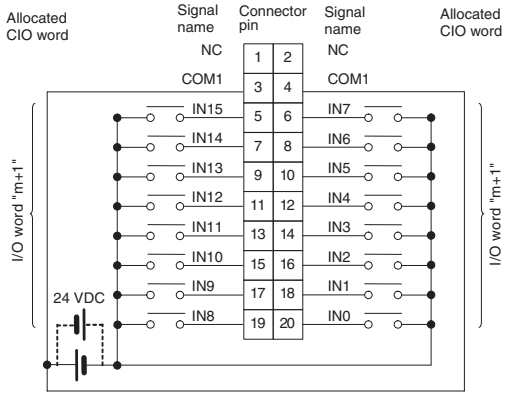
CN1 (OUT)



CN2 (IN)





	CN1 (OUT)	CN2 (IN)
Terminal Connections	 • When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if polarity is reversed. • Be sure to wire both terminals 3 and 4 (COM0 (0 V)) of CN1. • Be sure to wire both terminals 1 and 2 (+V) of CN1.	 • When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if polarity is reversed. • Be sure to wire both pins 3 and 4 (COM1) of CN2, and set the same polarity for both pins.

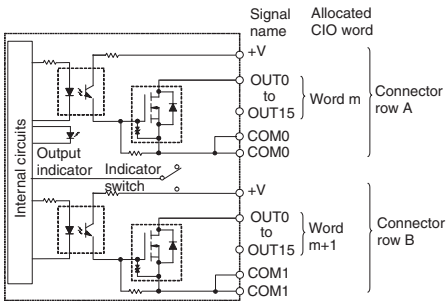
✻ The ON response time will be 20 μs maximum and OFF response time will be 400 μs maximum even if the response times are set to 0 ms due to internal element delays.

CJ1W-MD261 DC Input/Transistor Output Unit (24 VDC 32 Inputs/32 Outputs)

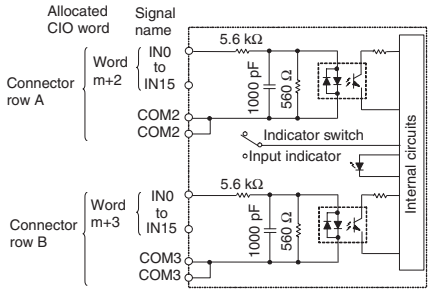
Name	32-point DC Input/32-point Transistor Output Unit with Fujitsu Connectors (Sinking Outputs)		
Model	CJ1W-MD261		
Output section (CN1)		**Input section (CN2)**	
Rated Voltage	12 to 24 VDC	**Rated Input Voltage**	24 VDC
Operating Load Voltage Range	10.2 to 26.4 VDC	**Operating Input Voltage**	20.4 to 26.4 VDC
Maximum Load Current	0.3 A/point, 1.6 A/common, 3.2 A/Unit	**Input Impedance**	5.6 kΩ
Maximum Inrush Current	3.0 A/point, 10 ms max.	**Input Current**	4.1 mA typical (at 24 VDC)
Leakage Current	0.1 mA max.	**ON Voltage/ON Current**	19.0 VDC min./3 mA min. ✻2
Residual Voltage	1.5 V max.	**OFF Voltage/OFF Current**	5 VDC max./1 mA max.
ON Response Time	0.5 ms max.	**ON Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻1
OFF Response Time	1.0 ms max.		
No. of Circuits	32 (16 points/common, 2 circuits)	**OFF Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻1
Fuse	None		
External Power Supply	12 to 24 VDC, 30 mA min.	**No. of Circuits**	32 (16 points/common, 2 circuits)
		Number of Simultaneously ON Points	75% (24 points) (at 24 VDC)
Insulation Resistance	20 MΩ between the external terminals and the GR terminal (at 100 VDC)		
Dielectric Strength	1,000 VAC between the external terminals and the GR terminal for 1 minute at a leakage current of 10 mA max.		
Internal Current Consumption	5 VDC 140 mA max.		
Weight	110 g max.		
Accessories	None		

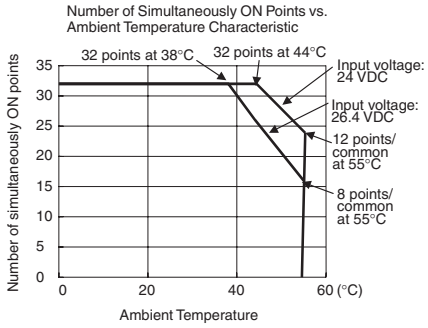
Circuit Configuration

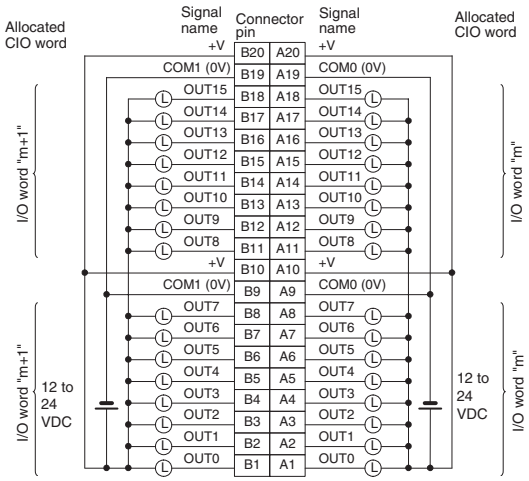
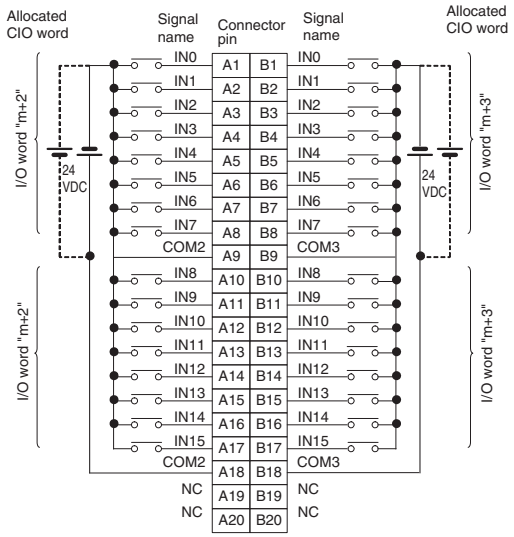
CN1 (OUT)



CN2 (IN)





	CN1 (OUT)	CN2 (IN)
Terminal Connections		
	• Be sure to wire both terminals A19 and A9 (COM0 (0 V)) of CN1. • Be sure to wire both terminals B19 and B9 (COM1 (0 V)) of CN1. • Be sure to wire both terminals A20 and A10 (+V) of CN1. • Be sure to wire both terminals B20 and B10 (+V) of CN1. • When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if polarity is reversed.	• Be sure to wire both pins A9 and A18 (COM2) of CN2, and set the same polarity for both pins. • Be sure to wire both pins B9 and B18 (COM3) of CN2, and set the same polarity for both pins. • When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if polarity is reversed.

***1.** The ON response time will be 120 μs maximum and OFF response time will be 400 μs maximum even if the response times are set to 0 ms due to internal element delays.

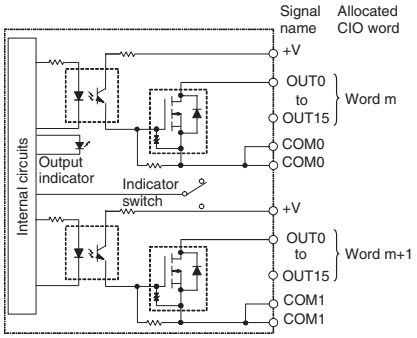
***2.** Observe the following restrictions when connecting to a 2-wire sensor.
- Make sure the input power supply voltage is larger than the ON voltage (19 V) plus the residual voltage of the sensor (approx. 3 V).
- Use a sensor with a minimum load current of 3 mA min.
- Connect bleeder resistance if you connect a sensor with a minimum load current of 5 mA or higher.

CJ1W-MD263 DC Input/Transistor Output Unit (24 VDC 32 Inputs/32 Outputs)

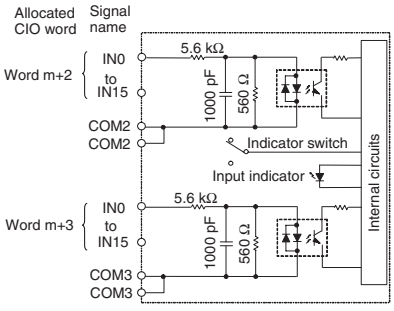
Name	32-point DC Input/32-point Transistor Output Unit with MIL Connectors (Sinking Outputs)		
Model	CJ1W-MD263		
Output section (CN1)		**Input section (CN2)**	
Rated Voltage	12 to 24 VDC	**Rated Input Voltage**	24 VDC
Operating Load Voltage Range	10.2 to 26.4 VDC	**Operating Input Voltage**	20.4 to 26.4 VDC
Maximum Load Current	0.3 A/point, 1.6 A/common, 3.2 A/Unit	**Input Impedance**	5.6 kΩ
Maximum Inrush Current	3.0 A/point, 10 ms max.	**Input Current**	4.1 mA typical (at 24 VDC)
Leakage Current	0.1 mA max.	**ON Voltage/ON Current**	19.0 VDC min./3 mA min. ✻2
Residual Voltage	1.5 V max.	**OFF Voltage/OFF Current**	5 VDC max./1 mA max.
ON Response Time	0.5 ms max.	**ON Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻1
OFF Response Time	1.0 ms max.		
No. of Circuits	32 (16 points/common, 2 circuits)	**OFF Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻1
Fuse	None		
External Power Supply	12 to 24 VDC, 30 mA min.	**No. of Circuits**	32 (16 points/common, 2 circuits)
		Number of Simultaneously ON Points	75% (24 points) (at 24 VDC)
Insulation Resistance	20 MΩ between the external terminals and the GR terminal (at 100 VDC)		
Dielectric Strength	1,000 VAC between the external terminals and the GR terminal for 1 minute at a leakage current of 10 mA max.		
Internal Current Consumption	5 VDC 140 mA max.		
Weight	110 g max.		
Accessories	None		

Circuit Configuration

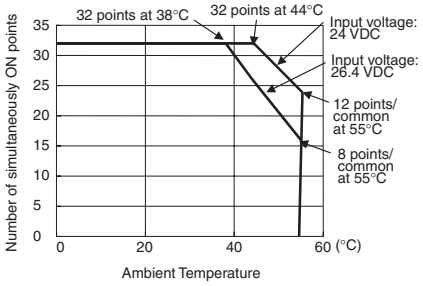
CN1 (OUT)

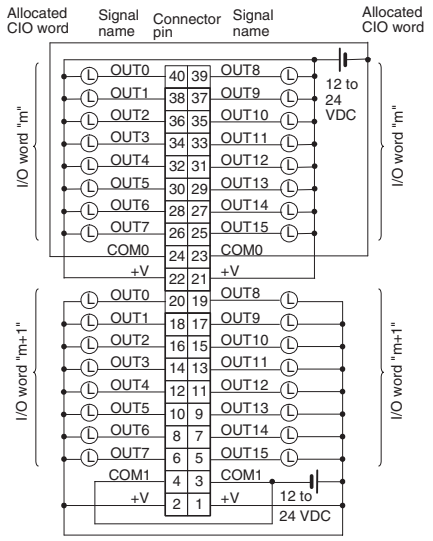
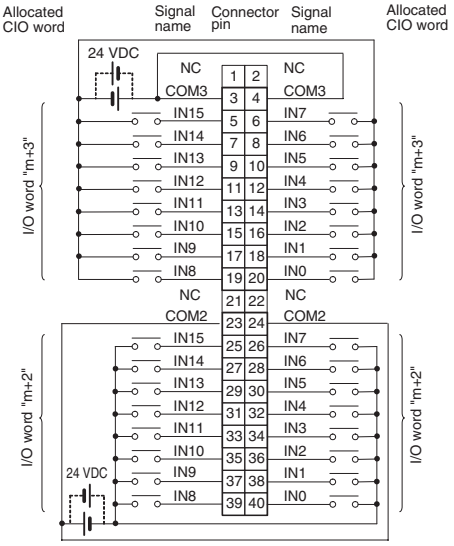


CN2 (IN)



Number of Simultaneously ON Points vs. Ambient Temperature Characteristic



	CN1 (OUT)	CN2 (IN)
Terminal Connections		
	• Be sure to wire both terminals 23 and 24 (COM0) of CN1. • Be sure to wire both terminals 3 and 4 (COM1) of CN1. • Be sure to wire both terminals 21 and 22 (+V) of CN1. • Be sure to wire both terminals 1 and 2 (+V) of CN1. • When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if polarity is reversed.	• Be sure to wire both pins 23 and 24 (COM2) of CN2, and set the same polarity for both pins. • Be sure to wire both pins 3 and 4 (COM3) of CN2, and set the same polarity for both pins. • When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if polarity is reversed.

***1.** The ON response time will be 120 μs maximum and OFF response time will be 400 μs maximum even if the response times are set to 0 ms due to internal element delays.

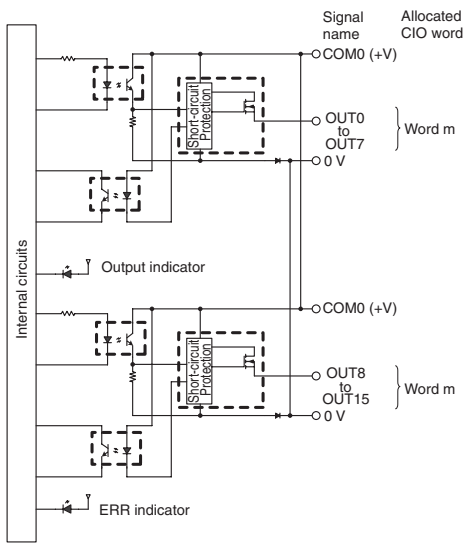
***2.** Observe the following restrictions when connecting to a 2-wire sensor.
- Make sure the input power supply voltage is larger than the ON voltage (19 V) plus the residual voltage of the sensor (approx. 3 V).
- Use a sensor with a minimum load current of 3 mA min.
- Connect bleeder resistance if you connect a sensor with a minimum load current of 5 mA or higher.

CJ1W-MD232 DC Input/Transistor Output Unit (24 VDC, 16 inputs/16 Outputs)

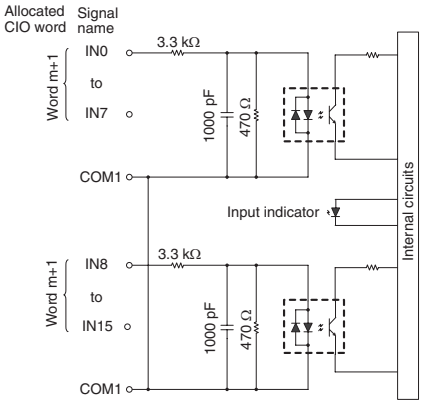
Name	16-point DC Input/16-point Transistor Output Unit with MIL Connectors (Sourcing Outputs)		
Model	CJ1W-MD232		
Output section (CN1)		**Input section (CN2)**	
Rated Voltage	24 VDC	**Rated Input Voltage**	24 VDC
Operating Load Voltage Range	20.4 to 26.4 VDC	**Operating Input Voltage**	20.4 to 26.4 VDC
Maximum Load Current	0.5 A/point, 2.0 A/Unit	**Input Impedance**	3.3 kΩ
Leakage Current	0.1 mA max.	**Input Current**	7 mA typical (at 24 VDC)
Residual Voltage	1.5 V max.	**ON Voltage/ON Current**	14.4 VDC min./3 mA min.
ON Response Time	0.5 ms max.	**OFF Voltage/OFF Current**	5 VDC max./1 mA max.
OFF Response Time	1.0 ms max.	**ON Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻
Load Short-circuit Protection	Detection current: 0.7 to 2.5 A min. Automatic restart after error clearance.	**OFF Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻
No. of Circuits	16 (16 points/common, 1 circuit)	**No. of Circuits**	16 (16 points/common, 1 circuit)
External Power Supply	20.4 to 26.4 VDC, 40 mA min.	**Number of Simultaneously ON Points**	75% (at 24 VDC)
Insulation Resistance	20 MΩ between the external terminals and the GR terminal (at 100 VDC)		
Dielectric Strength	1,000 VAC between the external terminals and the GR terminal for 1 minute at a leakage current of 10 mA max.		
Internal Current Consumption	5 VDC 130 mA max.		
Weight	100 g max.		
Accessories	None		

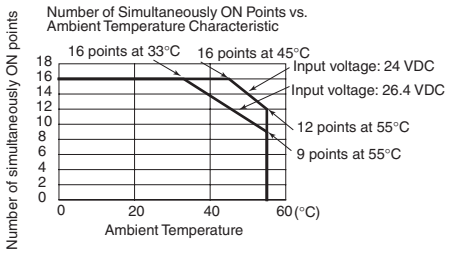
Circuit Configuration

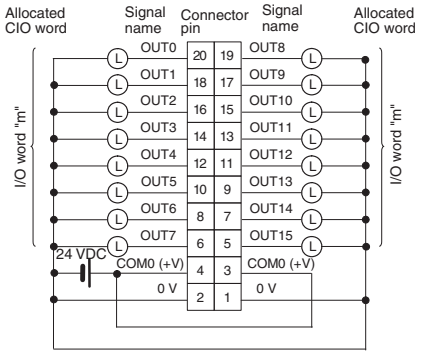
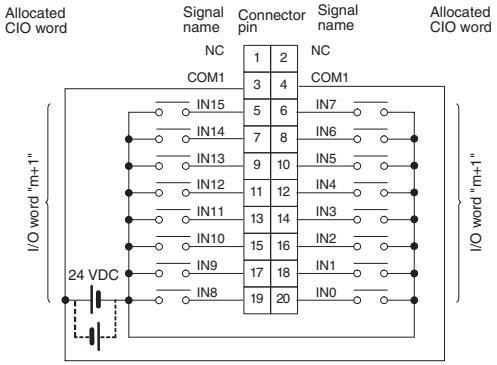
CN1 (OUT)



CN2 (IN)



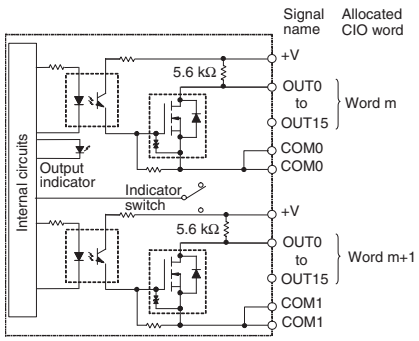


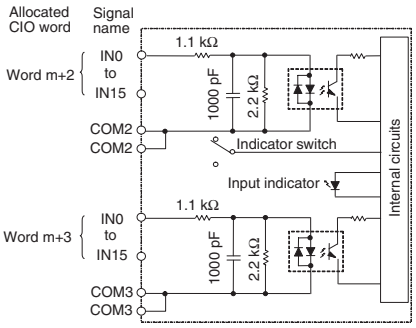
	CN1 (OUT)	CN2 (IN)
Terminal Connections	 • When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if polarity is reversed. • Be sure to wire both terminals 3 and 4 (COM0 (+V)) of CN1. • Be sure to wire both terminals 1 and 2 (0 V) of CN1.	 • When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if polarity is reversed. • Be sure to wire both pins 3 and 4 (COM1) of CN2, and set the same polarity for both pins.

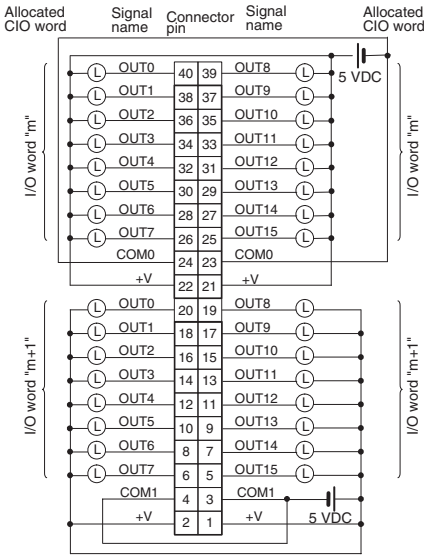
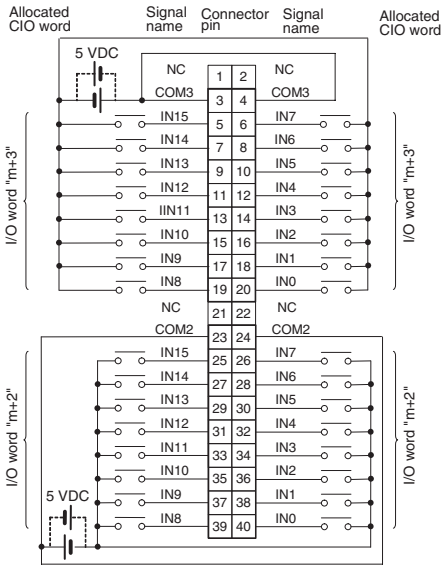
✻ The ON response time will be 20 μs maximum and OFF response time will be 400 μs maximum even if the response times are set to 0 ms due to internal element delays.

CJ1W-MD563 TTL I/O Unit (32 Inputs/32 Outputs)

Name	32-point Input /32-point Output TTL I/O Unit with MIL Connectors		
Model	CJ1W-MD563		
Output section (CN1)		**Input section (CN2)**	
Rated Voltage	5 VDC±10%	**Rated Input Voltage**	5 VDC±10%
Operating Load Voltage Range	4.5 to 5.5 VDC	**Input Impedance**	1.1 kΩ
Maximum Load Current	35 mA/point, 560 mA/common, 1.12 A/Unit	**Input Current**	Approx. 3.5 mA (at 5 VDC)
Leakage Current	0.1 mA max.	**ON Voltage**	3.0 VDC min.
Residual Voltage	0.4 V max.	**OFF Voltage**	1.0 VDC max.
ON Response Time	0.2 ms max.	**ON Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻
OFF Response Time	0.3 ms max.	**OFF Response Time**	8.0 ms max. (Can be set to between 0 and 32 in the PLC Setup.) ✻
No. of Circuits	32 points (16 points/common, 2 circuits)		
Fuse	None	**No. of Circuits**	32 points (16 points/common, 2 circuits)
External Power Supply	5 VDC±10%, 40 mA min. (1.2 mA × No. of ON points)	**Number of Simultaneously ON Points**	100% (16 points/common)
Insulation Resistance	20 MΩ between the external terminals and the GR terminal (at 100 VDC)		
Dielectric Strength	1,000 VAC between the external terminals and the GR terminal for 1 minute at a leakage current of 10 mA max.		
Internal Current Consumption	5 VDC 190 mA max.		
Weight	110 g max.		
Accessories	None		
Circuit Configuration	**CN1 (OUT)**	**CN2 (IN)**	





	CN1 (OUT)	CN2 (IN)
Terminal Connections		
	• When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if the polarity is reversed. • Be sure to wire both terminals 23 and 24 (COM0) of CN1. • Be sure to wire both terminals 3 and 4 (COM1) of CN1. • Be sure to wire both terminals 21 and 22 (+V) of CN1. • Be sure to wire both terminals 1 and 2 (+V) of CN1.	• When wiring, pay careful attention to the polarity of the external power supply. The load may operate incorrectly if the polarity is reversed. • Be sure to wire both pins 23 and 24 (COM2) of CN2, and set the same polarity for both pins. • Be sure to wire both pins 3 and 4 (COM3) of CN2, and set the same polarity for both pins.

✻ The ON response time will be 120 μs maximum and OFF response time will be 400 μs maximum even if the response times are set to 0 ms due to internal element delays.

Bit Allocations for Mixed I/O Unit

32-point Mixed I/O Unit

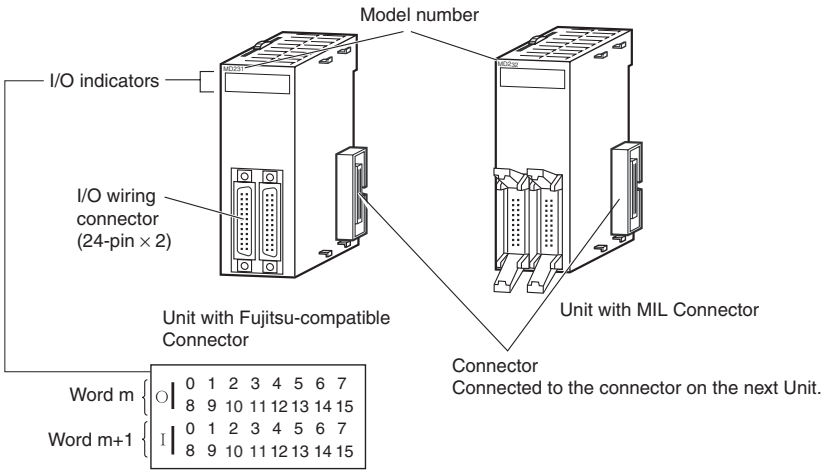
Allocated CIO word		Signal name
CIO	Bit	
Wd m (Output)	00	OUT0
	01	OUT1
	:	:
	14	OUT14
	15	OUT15
Wd m+1 (Input)	00	IN0
	01	IN1
	:	:
	14	IN14
	15	IN15

64-point Mixed I/O Unit

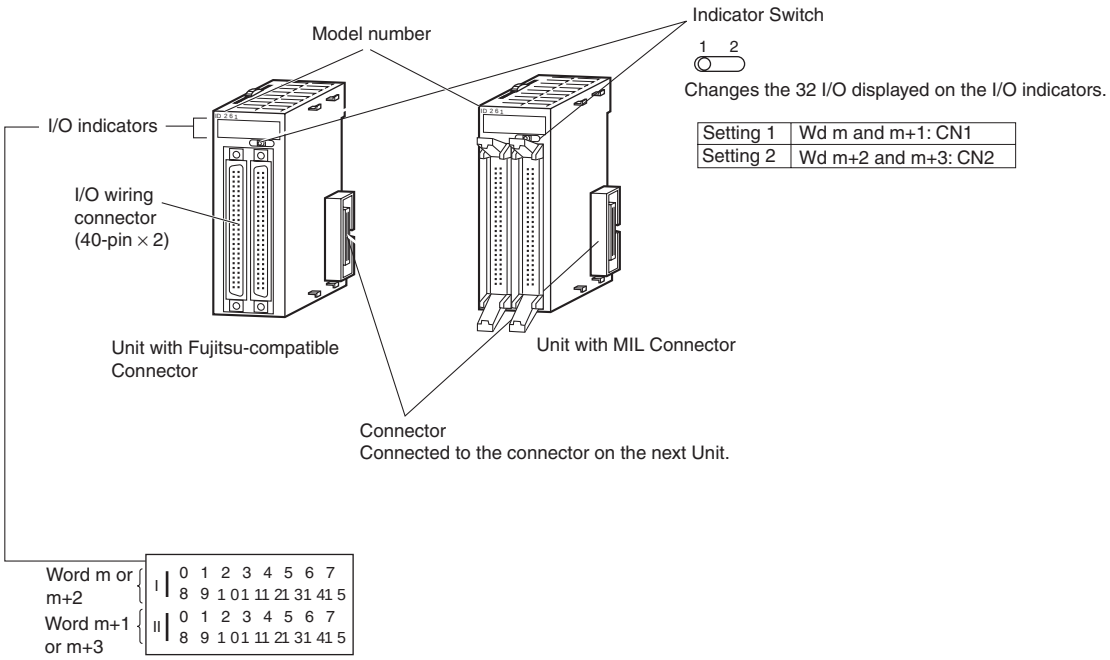
Allocated CIO word		Signal name
CIO	Bit	
Wd m (Output)	00	OUT0
	01	OUT1
	:	:
	14	OUT14
	15	OUT15
Wd m+1 (Output)	00	OUT0
	01	OUT1
	:	:
	14	OUT14
	15	OUT15
Wd m+2 (Input)	00	IN0
	01	IN1
	:	:
	14	IN14
	15	IN15
Wd m+3 (Input)	00	IN0
	01	IN1
	:	:
	14	IN14
	15	IN15

External Interface

32-point Units (Model with 24-pin × 2 Fujitsu Connectors or with 20-pin × 2 MIL Connectors)



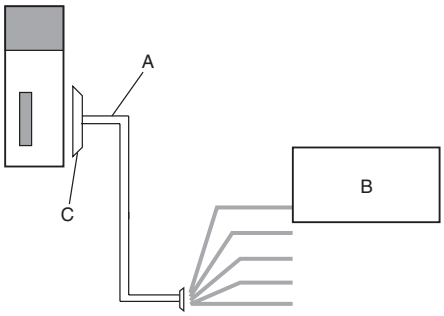
64-point Units (Models with Two 40-point Fujitsu Connectors or MIL Connector)



I/O Unit Wiring Methods

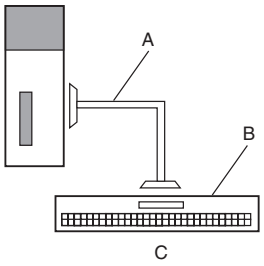
An I/O Unit can be connected to an external device by any of the following three methods.

1. User-provided Cable
An I/O Unit can be directly connected to an external device by using a connector.



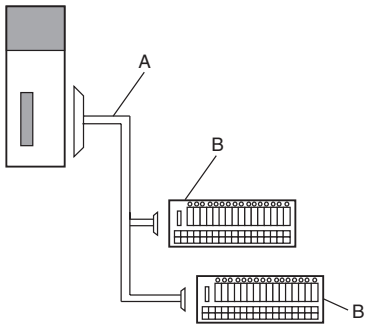
A	User-provided cable
B	External device
C	Connector

2. Connector-Terminal Block Conversion Unit
Use a Connecting Cable to connect to a Connector-Terminal Block Conversion Unit.
Converting the I/O Unit connector to a screw terminal block makes it easy to connect external devices.



A	Connecting Cable for Connector-Terminal Block Conversion Unit XW2Z
B	Connector-Terminal Block Conversion Unit XW2□
C	Conversion to a screw terminal block

3. I/O Relay Terminal
Use a Connecting Cable to connect to an I/O Relay Terminal.
The I/O specifications can be converted to relay outputs and AC inputs by connecting the I/O Relay Terminal to an I/O Unit.



A	G79 I/O Relay Terminal Connecting Cable
B	G7□□ I/O Relay Terminals Or, conversion to relay outputs and AC inputs.

1. Using User-made Cables with Connector

Available Connectors

Use the following connectors when assembling a connector and cable.

32- and 64-point Basic I/O Units with Fujitsu-compatible Connectors

Applicable Units

Model	Specifications	Pins
CJ1W-MD261	24-VDC Input/Transistor Output Units, 32 Inputs, 32 Outputs	40
CJ1W-MD231	24-VDC Input/Transistor Output Units, 16 Inputs, 16 Outputs	24

Applicable Cable-side Connectors

Connection	Pins	OMRON set	Fujitsu parts
Solder-type	40	C500-CE404	Socket: FCN-361J040-AU Connector cover: FCN-360C040-J2
	24	C500-CE241	Socket: FCN-361J024-AU Connector cover: FCN-360C024-J2
Crimped	40	C500-CE405	Socket: FCN-363J040 Connector cover: FCN-360C040-J2 Contacts: FCN-363J-AU
	24	C500-CE242	Socket: FCN-363J024 Connector cover: FCN-360C024-J2 Contacts: FCN-363J-AU
Pressure-welded	40	C500-CE403	FCN-367J040-AU/F
	24	C500-CE243	FCN-367J024-AU/F

32- and 64-point Basic I/O Units with MIL Connectors

Applicable Units

Model	Specifications	Pins
CJ1W-MD263	24-VDC Input/Transistor Output Units, 32 inputs, 32 outputs	40
CJ1W-MD563	TTL Input/TTL Output Units, 32 inputs, 32 outputs	
CJ1W-MD232	24-VDC Input/Transistor Output Units, 16 inputs, 16 outputs	20
CJ1W-MD233	24-VDC Input/Transistor Output Units, 16 inputs, 16 outputs	

Applicable Cable-side Connectors

Connection	Pins	OMRON set	DDK parts
Pressure-welded	40	XG4M-4030-T	FRC5-A040-3T0S
	20	XG4M-2030-T	FRC5-A020-3T0S

Wire Size

We recommend using cable with wire gauges of AWG 24 or AWG 28 (0.2 mm^2 to 0.08 mm^2). Use cable with external wire diameters of 1.61 mm max.

Crimping Tools

The following models are recommended for crimping tools and pressure-welding tools for Fujitsu connectors.

Tools for Crimped Connectors (Fujitsu Component)

Product Name	Model
Hand Crimping Tool	FCN-363T-T005/H
Contact Withdrawal Tool	FCN-360T-T001/H

Tools for Pressure-welded Connectors (Fujitsu Component)

Product Name	Model
Hand Press	FCN-707T-T101/H
Cable Cutter	FCN-707T-T001/H
Locator Plate	FCN-367T-T012/H

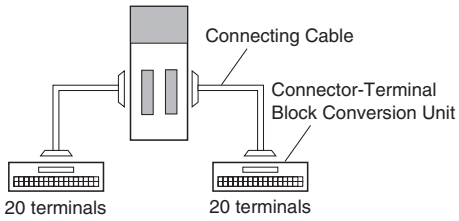
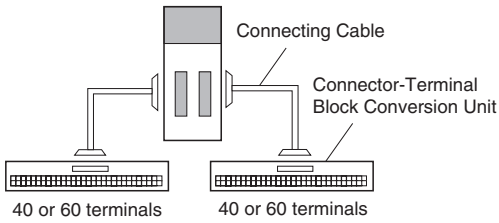
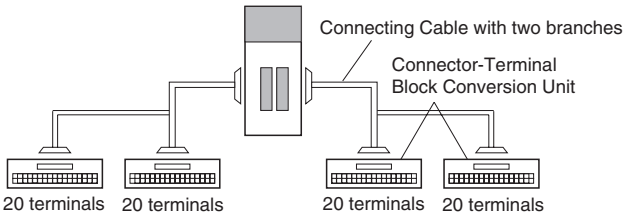
The following models are recommended for crimping tools for MIL connectors.

Tools for Crimped Connectors (OMRON)

Product Name	Model
Crimping Tool	XY2B-0002
Attachment	XY2B-1007

2. Connecting Connector-Terminal Block Conversion Units

Connection Patterns for Connector-Terminal Block Conversion Units

Pattern	Configuration	Number of connectors	Branching
C		2	None
D			
F			2 branches

Combination of I/O Units with Connector-Terminal Block Conversion Units

Unit	I/O capacity	Number of connectors	Polarity	Connection pattern ✻1	Number of branches	Connecting Cable	Connector-Terminal Block Conversion Unit	Common terminal
CJ1W-MD231	16 inputs	1 Fujitsu connector	NPN/PNP	C	None	XW2Z-□□□A	XW2D-20G6	None
				C	None	XW2Z-□□□A	XW2B-20G5	None
				C	None	XW2Z-□□□A	XW2B-20G4	None
				C	None	XW2Z-□□□A	XW2C-20G6-IO16	Yes
				C	None	XW2Z-□□□A	XW2C-20G5-IN16 ✻2	Yes
				C	None	XW2Z-□□□A	XW2E-20G5-IN16 ✻2	Yes
				C	None	XW2Z-□□□A	XW2F-20G7-IN16 ✻2	Yes
				C	None	XW2Z-□□□A	XW2N-20G8-IN16 ✻2	Yes
	16 outputs	1 Fujitsu connector	NPN	C	None	XW2Z-□□□A	XW2D-20G6	None
				C	None	XW2Z-□□□A	XW2B-20G5	None
				C	None	XW2Z-□□□A	XW2B-20G4	None
				C	None	XW2Z-□□□A	XW2C-20G6-IO16	Yes
				C	None	XW2Z-□□□A	XW2F-20G7-OUT16	Yes
CJ1W-MD232	16 inputs	1 MIL connector	NPN/PNP	C	None	XW2Z-□□□X	XW2D-20G6	None
				C	None	XW2Z-□□□X	XW2B-20G5	None
				C	None	XW2Z-□□□X	XW2B-20G4	None
	16 outputs	1 MIL connector	PNP	C	None	XW2Z-□□□X	XW2D-20G6	None
				C	None	XW2Z-□□□X	XW2B-20G5	None
				C	None	XW2Z-□□□X	XW2B-20G4	None
CJ1W-MD233	16 inputs	1 MIL connector	NPN/PNP	C	None	XW2Z-□□□X	XW2D-20G6	None
				C	None	XW2Z-□□□X	XW2B-20G5	None
				C	None	XW2Z-□□□X	XW2B-20G4	None
	16 outputs	1 MIL connector	NPN	C	None	XW2Z-□□□X	XW2D-20G6	None
				C	None	XW2Z-□□□X	XW2B-20G5	None
				C	None	XW2Z-□□□X	XW2B-20G4	None

Unit	I/O capacity	Number of connectors	Polarity	Connection pattern ✻1	Number of branches	Connecting Cable	Connector-Terminal Block Conversion Unit	Common terminal
CJ1W-MD261	32 inputs	1 Fujitsu connector	NPN/PNP	D	None	XW2Z-□□□B	XW2D-40G6	None
				D	None	XW2Z-□□□B	XW2D-40G6-RF ✻3	None
				D	None	XW2Z-□□□B	XW2B-40G5	None
				D	None	XW2Z-□□□B	XW2B-40G4	None
				D	None	XW2Z-□□□BU	XW2D-40C6	None
				F	2	XW2Z-□□□D	XW2D-20G6 (2 Units)	None
				F	2	XW2Z-□□□D	XW2B-20G5 (2 Units)	None
				F	2	XW2Z-□□□D	XW2B-20G4 (2 Units)	None
				F	2	XW2Z-□□□D	XW2C-20G6-IO16 (2 Units)	Yes
				F	2	XW2Z-□□□D	XW2C-20G5-IN16 (2 Units) ✻2	Yes
				F	2	XW2Z-□□□D	XW2E-20G5-IN16 (2 Units) ✻2	Yes
				F	2	XW2Z-□□□D	XW2F-20G7-IN16 (2 Units) ✻2	Yes
				F	2	XW2Z-□□□D	XW2N-20G8-IN16 (2 Units) ✻2	Yes
	32 outputs	1 Fujitsu connector	NPN	D	None	XW2Z-□□□B	XW2D-40G6	None
				D	None	XW2Z-□□□B	XW2B-40G5	None
				D	None	XW2Z-□□□B	XW2B-40G4	None
				D	None	XW2Z-□□□BU	XW2D-40C6	None
				F	2	XW2Z-□□□L	XW2D-20G6 (2 Units)	None
				F	2	XW2Z-□□□L	XW2B-20G5 (2 Units)	None
				F	2	XW2Z-□□□L	XW2B-20G4 (2 Units)	None
				F	2	XW2Z-□□□L	XW2C-20G6-IO16 (2 Units)	Yes
				F	2	XW2Z-□□□L	XW2F-20G7-OUT16 (2 Units)	Yes
CJ1W-MD263	32 inputs	1 MIL connector	NPN/PNP	D	None	XW2Z-□□□K	XW2D-40G6	None
				D	None	XW2Z-□□□K	XW2D-40G6-RM ✻3	None
				D	None	XW2Z-□□□K	XW2B-40G5	None
				D	None	XW2Z-□□□K	XW2B-40G4	None
				F	2	XW2Z-□□□N	XW2D-20G6 (2 Units)	None
				F	2	XW2Z-□□□N	XW2B-20G5 (2 Units)	None
				F	2	XW2Z-□□□N	XW2B-20G4 (2 Units)	None
				F	2	XW2Z-□□□N	XW2C-20G6-IO16 (2 Units)	Yes
				F	2	XW2Z-□□□N	XW2C-20G5-IN16 (2 Units) ✻2	Yes
				F	2	XW2Z-□□□N	XW2E-20G5-IN16 (2 Units) ✻2	Yes
				F	2	XW2Z-□□□N	XW2F-20G7-IN16 (2 Units) ✻2	Yes
				F	2	XW2Z-□□□N	XW2N-20G8-IN16 (2 Units) ✻2	Yes
	32 outputs	1 MIL connector	NPN	D	None	XW2Z-□□□K	XW2D-40G6	None
				D	None	XW2Z-□□□K	XW2B-40G5	None
				D	None	XW2Z-□□□K	XW2B-40G4	None
				F	2	XW2Z-□□□N	XW2D-20G6 (2 Units)	None
				F	2	XW2Z-□□□N	XW2B-20G5 (2 Units)	None
				F	2	XW2Z-□□□N	XW2B-20G4 (2 Units)	None
				F	2	XW2Z-□□□N	XW2C-20G6-IO16 (2 Units)	Yes
				F	2	XW2Z-□□□N	XW2F-20G7-OUT16 (2 Units)	Yes
CJ1W-MD563	32 inputs	1 MIL connector	NPN/PNP	D	None	XW2Z-□□□K	XW2D-40G6	None
				D	None	XW2Z-□□□K	XW2D-40G6-RM ✻3	None
				D	None	XW2Z-□□□K	XW2B-40G5	None
				D	None	XW2Z-□□□K	XW2B-40G4	None
				F	2	XW2Z-□□□N	XW2D-20G6 (2 Units)	None
				F	2	XW2Z-□□□N	XW2B-20G5 (2 Units)	None
				F	2	XW2Z-□□□N	XW2B-20G4 (2 Units)	None
	32 outputs	1 MIL connector	NPN	D	None	XW2Z-□□□K	XW2D-40G6	None
				D	None	XW2Z-□□□K	XW2B-40G5	None
				D	None	XW2Z-□□□K	XW2B-40G4	None
				F	2	XW2Z-□□□N	XW2D-20G6 (2 Units)	None
				F	2	XW2Z-□□□N	XW2B-20G5 (2 Units)	None
				F	2	XW2Z-□□□N	XW2B-20G4 (2 Units)	None

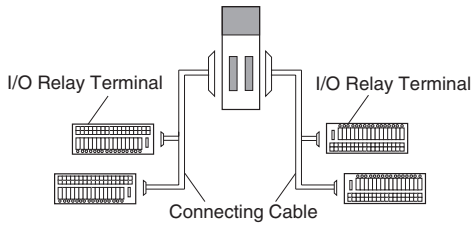
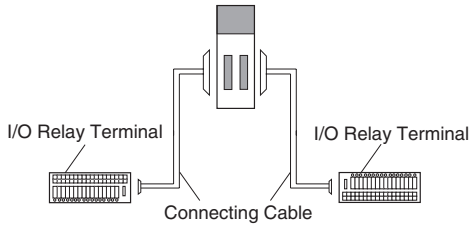
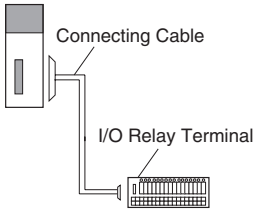
✻1. For Units with both inputs and outputs, refer to the connection patterns for both input and output connections.
✻2. The inputs are NPN. For PNP inputs, reverse the polarity of the external power supply connections to the power supply terminals on the Connector-Terminal Block Conversion Unit.
✻3. Bleeder resistance (5.6 kΩ) is built in.

Types of connecting cables

Cable length	XW2Z-□□A	XW2Z-□□B	XW2Z-□□BU	XW2Z-□□D	XW2Z-□□L	XW2Z-□□X
0.25m	–	–	–	–	–	–
0.5m	XW2Z-050A	XW2Z-050B	XW2Z-050BU	–	–	XW2Z-C50X
1.0m	XW2Z-100A	XW2Z-100B	XW2Z-100BU	XW2Z-100D	XW2Z-100L	XW2Z-100X
1.5m	XW2Z-150A	XW2Z-150B	XW2Z-150BU	XW2Z-150D	XW2Z-150L	–
2.0m	XW2Z-200A	XW2Z-200B	XW2Z-200BU	XW2Z-200D	XW2Z-200L	XW2Z-200X
3.0m	XW2Z-300A	XW2Z-300B	XW2Z-300BU	XW2Z-300D	XW2Z-300L	XW2Z-300X
5.0m	XW2Z-500A	XW2Z-500B	XW2Z-500BU	XW2Z-500D	XW2Z-500L	XW2Z-500X
10.0m	XW2Z-010A	XW2Z-010B	–	XW2Z-010D	XW2Z-010L	XW2Z-010X
15.0m	XW2Z-15MA	XW2Z-15MB	–	XW2Z-15MD	XW2Z-15ML	–
20.0m	XW2Z-20MA	XW2Z-20MB	–	XW2Z-20MD	XW2Z-20ML	–

3. Connecting I/O Relay Terminals

Connection Patterns for I/O Relay Terminals

Pattern	Configuration
B	
E	
F	

Combination of I/O Units with I/O Relay Terminals

Unit	I/O capacity	Number of connectors	Polarity	Connection pattern ✻	Number of branches	Connecting Cable	I/O Relay Terminal
CJ1W-MD231	16 inputs	1 Fujitsu connector	NPN	F	None	G79-□C	G7TC-ID16
				F	None	G79-□C	G7TC-IA16
	16 outputs	1 Fujitsu connector	NPN	F	None	G79-□C	G7TC-OC16
				F	None	G79-□C	G7TC-OC08
				F	None	G79-□C	G70D-SOC16
				F	None	G79-□C	G70D-FOM16
				F	None	G79-□C	G70D-VSOC16
				F	None	G79-□C	G70D-VFOM16
				F	None	G79-□C	G70A-ZOC16-3 and Relay
				F	None	G79-□C	G70R-SOC08
				F	None	G79-□C	G70D-SOC08
CJ1W-MD232	16 outputs	1 MIL connector	PNP	F	None	G79-O□C	G7TC-OC16-1
				F	None	G79-I□C	G70D-SOC16-1
				F	None	G79-I□C	G70D-FOM16-1
				F	None	G79-I□C	G70A-ZOC16-4 and Relay
CJ1W-MD233	16 inputs	1 MIL connector	NPN	E	None	G79-O□C	G7TC-ID16
				E	None	G79-O□C	G7TC-IA16
	16 outputs	1 MIL connector	NPN	E	None	G79-O□C	G7TC-OC16
				E	None	G79-O□C	G7TC-OC08
				E	None	G79-O□C	G70D-SOC16
				E	None	G79-O□C	G70D-FOM16
				E	None	G79-O□C	G70D-VSOC16
				E	None	G79-O□C	G70D-VFOM16
				E	None	G79-O□C	G70A-ZOC16-3 and Relay
				E	None	G79-O□C	G70R-SOC08
				E	None	G79-O□C	G70D-SOC08

Unit	I/O capacity	Number of connectors	Polarity	Connection pattern ✻	Number of branches	Connecting Cable	I/O Relay Terminal
CJ1W-MD261	32 inputs	1 Fujitsu connector	NPN	B	2	G79-I□C-□	G7TC-ID16
				B	2	G79-I□C-□	G7TC-IA16
	32 outputs	1 Fujitsu connector	NPN	B	2	G79-O□C-□	G7TC-OC16
				B	2	G79O□C-□	G7TC-OC08
				B	2	G79-O□C-□	G70D-SOC16
				B	2	G79-O□C-□	G70D-FOM16
				B	2	G79-O□C-□	G70D-VSOC16
				B	2	G79-O□C-□	G70D-VFOM16
				B	2	G79O□C-□	G70A-ZOC16-3 and Relay
				B	2	G79-O□C-□	G70R-SOC08
				B	2	G79-O□C-□	G70D-SOC08
CJ1W-MD263	32 inputs	1 MIL connector	NPN	B	2	G79-O□-□-D1	G7TC-ID16
				B	2	G79-O□-□-D1	G7TC-IA16
	32 outputs	1 MIL connector	NPN	B	2	G79-O□-□-D1	G7TC-OC16
				B	2	G79-O□-□-D1	G7TC-OC08
				B	2	G79-O□-□-D1	G70D-SOC16
				B	2	G79-O□-□-D1	G70D-FOM16
				B	2	G79-O□-□-D1	G70D-VSOC16
				B	2	G79-O□-□-D1	G70D-VFOM16
				B	2	G79-O□-□-D1	G70A-ZOC16-3 and Relay
				B	2	G79-O□-□-D1	G70R-SOC08
				B	2	G79-O□-□-D1	G70D-SOC08

✻ For Units with both inputs and outputs, refer to the connection patterns for both input and output connections.

Types of connecting cables

Cable length	G79-□C	G79-I□C	G79-I□C-□	G79-O□C	G79-O□C-□	G79-O□-□-D1
0.25m	–	G79-I25C	–	G79-O25C	–	–
0.5m	–	G79-I50C	–	G79-O50C	–	G79-O50-25-D1
1.0m	G79-100C	–	G79-I100C-75	–	G79-O100C-75	G79-O75-50-D1
1.5m	G79-150C	–	G79-I150C-125	–	G79-O150C-125	–
2.0m	G79-200C	–	G79-I200C-175	–	G79-O200C-175	–
3.0m	G79-300C	–	G79-I300C-275	–	G79-O300C-275	–
5.0m	G79-500C	–	G79-I500C-475	–	G79-O500C-475	–

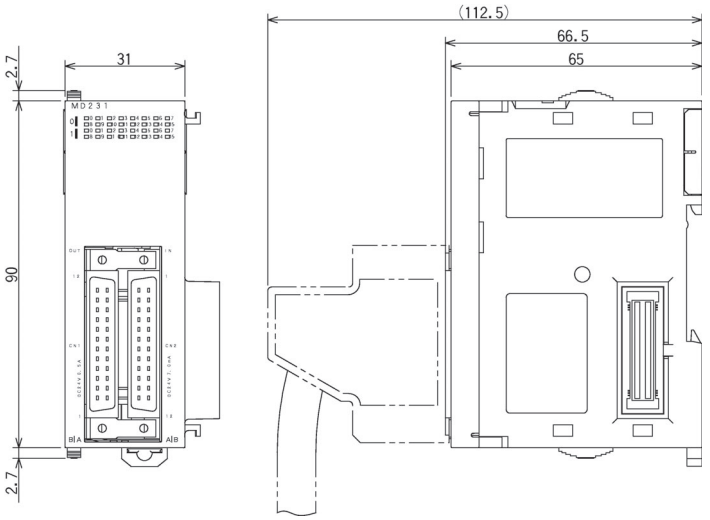
Dimensions

(Unit: mm)

32-point Units (Mixed I/O Units)

With Fujitsu-compatible connector (24-pin × 2)

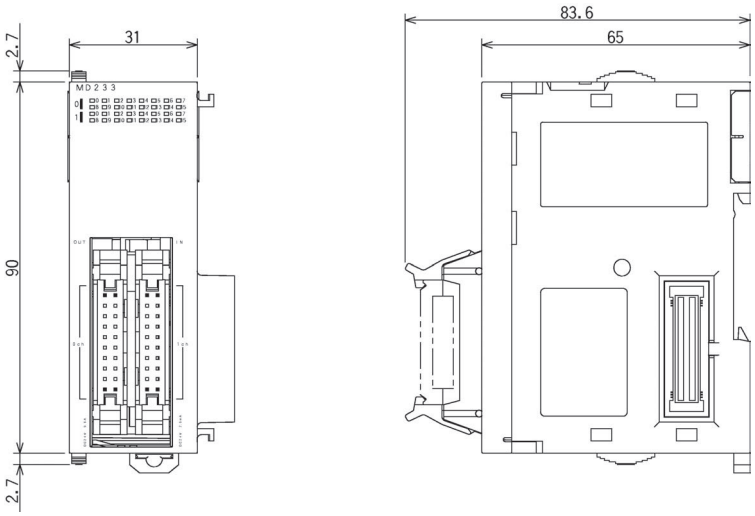
CJ1W-MD231



With MIL connector (20-pin × 2)

CJ1W-MD232

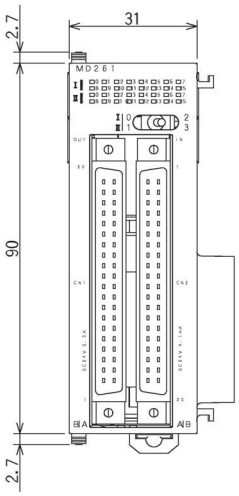
CJ1W-MD233

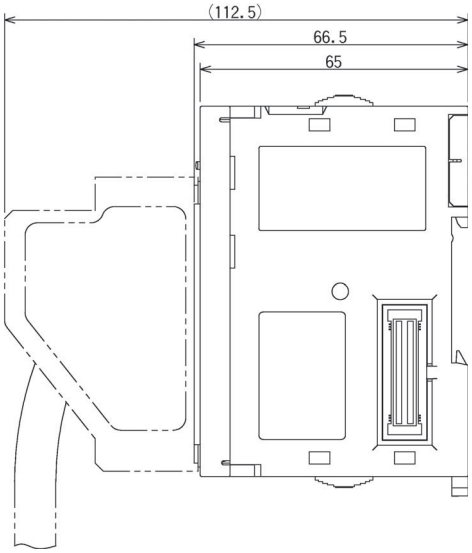


64-point Units (Mixed I/O Units)

With Fujitsu-compatible connector (40-pin × 2)

CJ1W-MD261

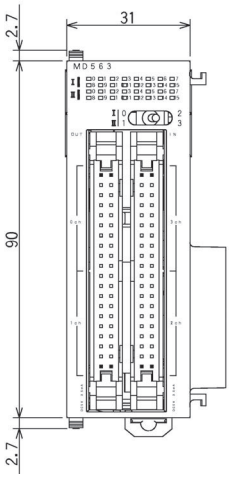


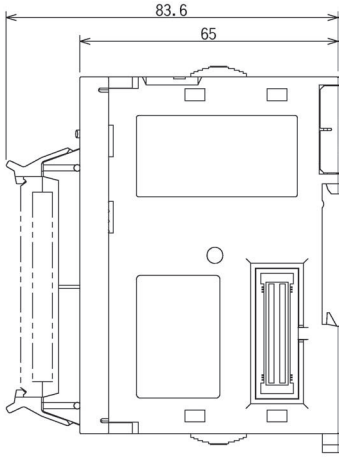


With MIL connector (40-pin × 2)

CJ1W-MD263

CJ1W-MD563





Related Manuals

Name	Cat. No.	Contents
SYSMAC CJ Series CJ1H-CPU□□H-R, CJ1G/H-CPU□□H, CJ1G-CPU□□P, CJ1G-CPU□□, CJ1M-CPU□□ Programmable Controllers Operation Manual	W393	Provides an outlines of and describes the design, installation, maintenance, and other basic operations for the CJ-series PLCs.

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