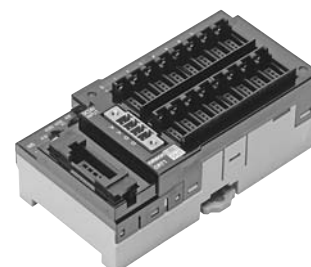


Digital I/O Slave Units with e-CON Connectors

# CRT1-□D16S(-1)/□D32S(-1)/□D16SH(-1)/□D32SH(-1)

## Industry-standard Sensor Connectors for Easy Connection to Pre-wired Sensors without Special Tools.

- A digital I/O terminal with industry-standard e-CON connectors.
- Easy to install without the use of special tools. Reduces wiring work.
- Equipped with load short-circuit detection.



### Ordering Information

Name	Specifications			Model	
e-CON Connectors	Inputs	16 inputs	NPN	Without Short-circuit and Disconnected Line Detection	CRT1-ID16S
			PNP		CRT1-ID16S-1
	Outputs	16 outputs	NPN		CRT1-OD16S
			PNP		CRT1-OD16S-1
	Inputs/ Outputs	8 inputs / 8 outputs	NPN		CRT1-MD16S
			PNP		CRT1-MD16S-1
	Inputs	32 inputs	NPN		CRT1-ID32S
			PNP		CRT1-ID32S-1
	Outputs	32 outputs	NPN		CRT1-OD32S
			PNP		CRT1-OD32S-1
	Inputs/ Outputs	16 inputs / 16 outputs	NPN	CRT1-MD32S	
			PNP	CRT1-MD32S-1	
	Inputs	16 inputs	NPN	With Short-circuit and Disconnected Line Detection	CRT1-ID16SH
			PNP		CRT1-ID16SH-1
	Outputs	16 outputs	NPN		CRT1-OD16SH
			PNP		CRT1-OD16SH-1
	Inputs/ Outputs	8 inputs / 8 outputs	NPN		CRT1-MD16SH
			PNP		CRT1-MD16SH-1
	Inputs	32 inputs	NPN		CRT1-ID32SH
			PNP		CRT1-ID32SH-1
Outputs	32 outputs	NPN	CRT1-OD32SH		
		PNP	CRT1-OD32SH-1		
Inputs/ Outputs	16 inputs / 16 outputs	NPN	CRT1-MD32SH		
		PNP	CRT1-MD32SH-1		

**Note.** Output power supply connectors (Phoenix Contact K.K.) are provided with Output Units and I/O Units.

Slave External I/O Connections in the appendix for applicable connectors.

### Performance Specifications

For Basic Performance Specifications of Slave Units, refer to page 30.

## Input Section Specifications

### ● Sixteen-point Input Units

Item	Specification			
Model	CRT1-ID16S	CRT1-ID16S-1	CRT1-ID16SH	CRT1-ID16SH-1
I/O capacity	16 inputs			
Internal I/O common	NPN	PNP	NPN	PNP
ON voltage	10.5 VDC min. (between each input terminal and the V terminal)	10.5 VDC min. (between each input terminal and the G terminal)	10.5 VDC min. (between each input terminal and the V terminal)	10.5 VDC min. (between each input terminal and the G terminal)
OFF current	1 mA max.			
Input current	At 24 VDC: 6.0 mA max./input At 11 VDC: 3.0 mA min./input			
ON delay	1.5 ms max.			
OFF delay	1.5 ms max.			
Power supply short-circuit detection	---		Operates at 50 mA/point min.	
Disconnection detection	---		Operates at 0.3 mA/point max.	
Number of circuits per common	16 inputs/common			
Isolation method	Photocoupler			
Input indicator	LED (yellow)			
Installation	DIN Track			
Power supply type	Network power supply			
Power short-circuit protection	Operates at 50 mA/point min.			
Current supplied to input devices	50 mA/input			
Communications power supply current consumption	110 mA max. for 24-VDC power supply voltage 125 mA max. for 14-VDC power supply voltage		125 mA max. for 24-VDC power supply voltage 145 mA max. for 14-VDC power supply voltage	
Weight	110 g max.			

### ● Thirty-two-point Input Units

Item	Specification			
Model	CRT1-ID32S	CRT1-ID32S-1	CRT1-ID32SH	CRT1-ID32SH-1
I/O capacity	32 inputs			
Internal I/O common	NPN	PNP	NPN	PNP
ON voltage	10.5 VDC min. (between each input terminal and the V terminal)	10.5 VDC min. (between each input terminal and the G terminal)	10.5 VDC min. (between each input terminal and the V terminal)	10.5 VDC min. (between each input terminal and the G terminal)
OFF current	1.0 mA max.			
Input current	At 24 VDC: 6.0 mA max./input At 11 VDC: 3.0 mA min./input			
ON delay	1.5 ms max.			
OFF delay	1.5 ms max.			
Power supply short-circuit detection	---		Operates at 50 mA/point min.	
Disconnection detection	---		Operates at 0.3 mA/point max.	
Number of circuits per common	32 inputs/common			
Isolation method	Photocoupler			
Input indicator	LED (yellow)			
Installation	DIN Track			
Power short-circuit protection	Operates at 50 mA/point min.			
Power supply type	Network power supply			
Current supplied to input devices	50 mA/input			
Communications power supply current consumption	195 mA max. for 24-VDC power supply voltage 200 mA max. for 14-VDC power supply voltage		210 mA max. for 24-VDC power supply voltage 235 mA max. for 14-VDC power supply voltage	
Weight	180 g max.			

## Output Section Specifications

### ● Sixteen-point Output Unit

Item	Specification			
Model	CRT1-OD16S	CRT1-OD16S-1	CRT1-OD16SH	CRT1-OD16SH-1
I/O capacity	16 outputs			
Internal I/O common	NPN	PNP	NPN	PNP
Rated output current	0.5 A/output, 4 A/common			
Residual voltage	1.2 V max. (0.5 A DC, between each output terminal and the G terminal)	1.2 V max. (0.5 A DC, between each output terminal and the V terminal)	1.2 V max. (0.5 A DC, between each output terminal and the G terminal)	1.2 V max. (0.5 A DC, between each output terminal and the V terminal)
Leakage current	0.1 mA max.			
ON delay	0.5 ms max.			
OFF delay	1.5 ms max.			
Load short-circuit detection	---		Supported.	
Disconnection detection	---		Operates at 3 mA/point max. (Does not operate at over 3 mA.)	
Number of circuits per common	16 outputs/common			
Isolation method	Photocoupler			
Output indicators	LED (yellow)			
Installation	DIN Track			
Power supply type	Multi-power supply			
Current supplied to output devices	100 mA/output			
Communications power supply current consumption	40 mA max. for 24-VDC power supply voltage 60 mA max. for 14-VDC power supply voltage		40 mA max. for 24-VDC power supply voltage 65 mA max. for 14-VDC power supply voltage	
I/O power supply current consumption	20 mA max. for 24-VDC power supply voltage		15 mA max. for 24-VDC power supply voltage	60 mA max. for 24-VDC power supply voltage
Output handling for communications errors	Select either hold or clear from CX-Integrator.			
Weight	110 g max.			

### ● Thirty-two-point Output Unit

Item	Specification			
Model	CRT1-OD32S	CRT1-OD32S-1	CRT1-OD32SH	CRT1-OD32SH-1
I/O capacity	32 outputs			
Internal I/O common	NPN	PNP	NPN	PNP
Rated output current	0.5 A/output, 4 A/common			
Residual voltage	1.2 V max. (0.5 A DC, between each output terminal and the G terminal)	1.2 V max. (0.5 A DC, between each output terminal and the V terminal)	1.2 V max. (0.5 A DC, between each output terminal and the G terminal)	1.2 V max. (0.5 A DC, between each output terminal and the V terminal)
Leakage current	0.1 mA max.			
ON delay	0.5 ms max.			
OFF delay	1.5 ms max.			
Load short-circuit detection	---		Supported.	
Disconnection detection	---		Operates at 3 mA/point max. (Does not operate at over 3 mA.)	
Number of circuits per common	16 outputs/common			
Isolation method	Photocoupler			
Output indicators	LED (yellow)			
Installation	DIN Track			
Power supply type	Multi-power supply			
Current supplied to output devices	100 mA/output			
Communications power supply current consumption	50 mA max. for 24-VDC power supply voltage 80 mA max. for 14-VDC power supply voltage		50 mA max. for 24-VDC power supply voltage 90 mA max. for 14-VDC power supply voltage	
I/O power supply current consumption	15 mA max. for 24-VDC power supply voltage			60 mA max. for 24-VDC power supply voltage
Output handling for communications errors	Select either hold or clear from CX-Integrator.			
Weight	170 g max.			

## Input and Output Section Specifications

### ●8-point Input and 8-point Output Units

#### Common Specifications

Item	Specification			
Model	CRT1-MD16S	CRT1-MD16S-1	CRT1-MD16SH	CRT1-MD16SH-1
Installation	DIN Track			
Communications power supply current consumption	75 mA max. for 24-VDC power supply voltage 95 mA max. for 14-VDC power supply voltage		95 mA max. for 24-VDC power supply voltage 115 mA max. for 14-VDC power supply voltage	
Weight	120 g max.			

#### Input Section Specifications

Item	Specification			
Model	CRT1-MD16S	CRT1-MD16S-1	CRT1-MD16SH	CRT1-MD16SH-1
I/O capacity	8 inputs			
Internal I/O common	NPN	PNP	NPN	PNP
ON voltage	10.5 VDC min. (between each input terminal and the V terminal)	10.5 VDC min. (between each input terminal and the G terminal)	10.5 VDC min. (between each input terminal and the V terminal)	10.5 VDC min. (between each input terminal and the G terminal)
OFF current	1.0 mA max.			
Input current	At 24 VDC: 6.0 mA max./input At 11 VDC: 3.0 mA min./input			
ON delay	1.5 ms max.			
OFF delay	1.5 ms max.			
Power supply short-circuit detection	---		Operates at 50 mA/point min.	
Disconnection detection	---		Operates at 0.3 mA/point max.	
Number of circuits per common	8 inputs/common			
Isolation method	Photocoupler			
Input indicator	LED (yellow)			
Power supply type	Network power supply			
Power short-circuit protection	Operates at 50 mA/point min.			
Current supplied to input devices	50 mA/input			

#### Output Section Specifications

Item	Specification			
Model	CRT1-MD16S	CRT1-MD16S-1	CRT1-MD16SH	CRT1-MD16SH-1
I/O capacity	8 outputs			
Internal I/O common	NPN	PNP	NPN	PNP
Rated output current	0.5 A/output, 2 A/common			
Residual voltage	1.2 V max. (0.5 A DC, between each output terminal and the G terminal)	1.2 V max. (0.5 A DC, between each output terminal and the V terminal)	1.2 V max. (0.5 A DC, between each output terminal and the G terminal)	1.2 V max. (0.5 A DC, between each output terminal and the V terminal)
Leakage current	0.1 mA max.			
ON delay	0.5 ms max.			
OFF delay	1.5 ms max.			
Load short-circuit detection	---		Supported.	
Disconnection detection	---		Operates at 3 mA/point max. (Does not operate at over 3 mA.)	
Number of circuits per common	8 outputs/common			
Isolation method	Photocoupler			
Output indicators	LED (yellow)			
Power supply type	Multi-power supply			
Current supplied to output devices	100 mA/output			
I/O power supply current consumption	15 mA max. for 24-VDC power supply voltage			35 mA max. for 24-VDC power supply voltage
Output handling for communications errors	Select either hold or clear from CX-Integrator.			

●16-point Input and 16-point Output Units

Common Specifications

Item	Specification			
Model	CRT1-MD32S	CRT1-MD32S-1	CRT1-MD32SH	CRT1-MD32SH-1
Installation	DIN Track			
Communications power supply current consumption	120 mA max. for 24-VDC power supply voltage 140 mA max. for 14-VDC power supply voltage		135 mA max. for 24-VDC power supply voltage 155 mA max. for 14-VDC power supply voltage	
Weight	180 g max.			

Input Section Specifications

Item	Specification			
Model	CRT1-MD32S	CRT1-MD32S-1	CRT1-MD32SH	CRT1-MD32SH-1
I/O capacity	16 inputs			
Internal I/O common	NPN	PNP	NPN	PNP
ON voltage	10.5 VDC min. (between each input terminal and the V terminal)	10.5 VDC min. (between each input terminal and the G terminal)	10.5 VDC min. (between each input terminal and the V terminal)	10.5 VDC min. (between each input terminal and the G terminal)
OFF current	1.0 mA max.			
Input current	At 24 VDC: 6.0 mA max./input At 11 VDC: 3.0 mA min./input			
ON delay	1.5 ms max.			
OFF delay	1.5 ms max.			
Power supply short-circuit detection	---		Operates at 50 mA/point min.	
Disconnection detection	---		Operates at 0.3 mA/point max.	
Number of circuits per common	16 inputs/common			
Isolation method	Photocoupler			
Input indicator	LED (yellow)			
Power supply type	Network power supply			
Power short-circuit protection	Operates at 50 mA/point min.			
Current supplied to input devices	50 mA/input			

Output Section Specifications

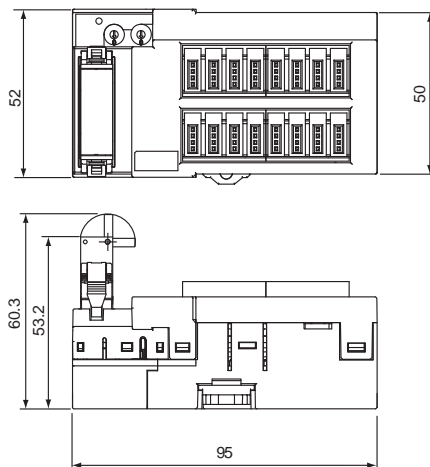
Item	Specification			
Model	CRT1-MD32S	CRT1-MD32S-1	CRT1-MD32SH	CRT1-MD32SH-1
I/O capacity	16 outputs			
Internal I/O common	NPN	PNP	NPN	PNP
Rated output current	0.5 A/output, 4 A/common			
Residual voltage	1.2 V max. (0.5 A DC, between each output terminal and the G terminal)	1.2 V max. (0.5 A DC, between each output terminal and the V terminal)	1.2 V max. (0.5 A DC, between each output terminal and the G terminal)	1.2 V max. (0.5 A DC, between each output terminal and the V terminal)
Leakage current	0.1 mA max.			
ON delay	0.5 ms max.			
OFF delay	1.5 ms max.			
Load short-circuit detection	---		Supported.	
Disconnection detection	---		Operates at 3 mA/point max. (Does not operate at over 3 mA.)	
Number of circuits per common	16 outputs/common			
Isolation method	Photocoupler			
Output indicators	LED (yellow)			
Power supply type	Multi-power supply			
Current supplied to output devices	100 mA/output			
I/O power supply current consumption	20 mA max. for 24-VDC power supply voltage		15 mA max. for 24-VDC power supply voltage	60 mA max. for 24-VDC power supply voltage
Output handling for communications errors	Select either hold or clear from CX-Integrator.			

Dimensions

(Unit: mm)

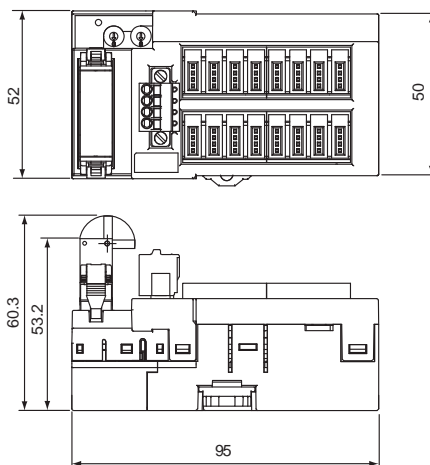
CRT1-ID16S (-1)  
 CRT1-ID16SH (-1)

When a DCN4-TB4 Open Type Connectors Is Mounted



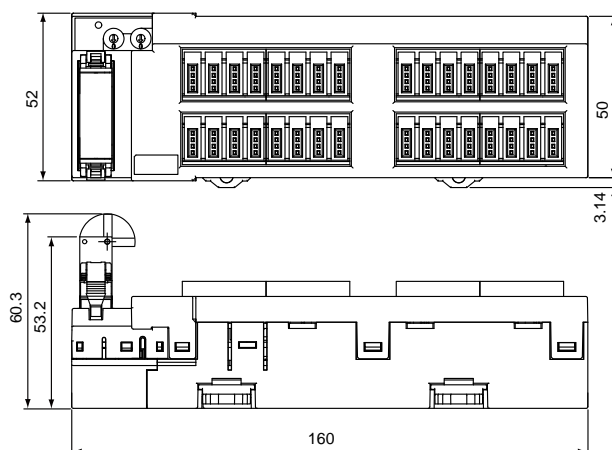
CRT1-MD16S (-1)  
 CRT1-MD16SH (-1)  
 CRT1-OD16S (-1)  
 CRT1-OD16SH (-1)

When a DCN4-TB4 Open Type Connectors Is Mounted



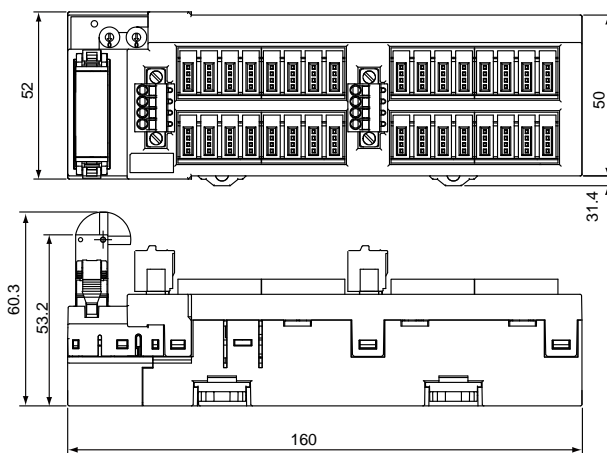
CRT1-ID32S (-1)  
 CRT1-ID32SH (-1)

When a DCN4-TB4 Open Type Connectors Is Mounted



CRT1-OD32S (-1)  
 CRT1-OD32SH (-1)

When a DCN4-TB4 Open Type Connectors Is Mounted



CRT1-MD32S (-1)  
 CRT1-MD32SH (-1)

When a DCN4-TB4 Open Type Connectors Is Mounted

