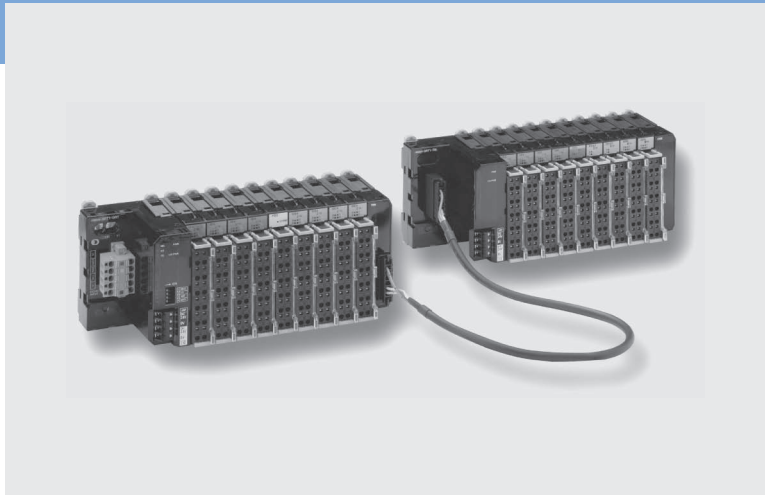
Remote I/O

GRT1 Modular I/O

SmartSlice

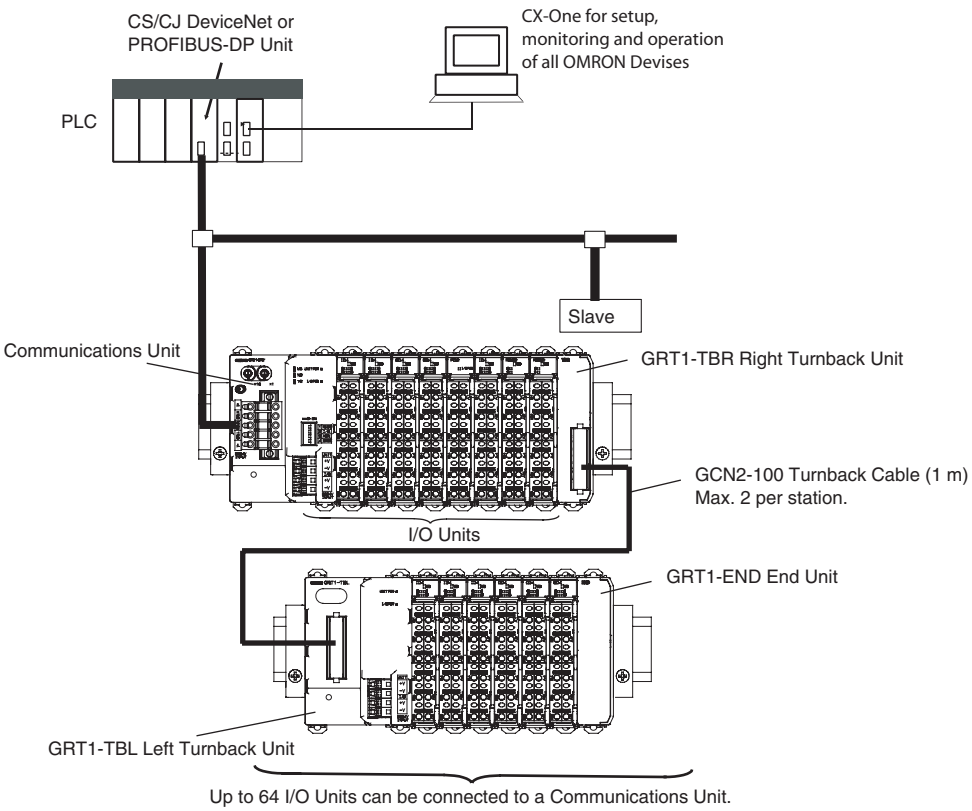


The smartest modular I/O system

OMRON's new SmartSlice I/O system is compact, intelligent and easy. When used with OMRON's CS1/CJ1 DeviceNet master units, no configuration tool is required. By using built-in functions such as pre-scaling, totalising, differentiation and alarming in analog I/O units, PLC programming can be minimised. Preventive maintenance data can be accessed using CX-Integrator software, standard PLC function blocks or NS-series Smart Active Parts.

- Most compact in the market (84 mm high)
- Easy set-up, backup and restore functions
- Diagnostics and preventive maintenance data at I/O level
- Detachable terminal blocks allow hot-swapping without re-wiring
- 3-wire connection with 'push-in' technology, no screwdriver required

System Configuration



Specifications

General Specifications

Common SmartSlice Specifications	
Unit power supply voltage	24 V DC (20.4 to 26.4 V DC)
I/O power supply voltage	24 V DC (20.4 to 26.4 V DC)
I/O connection	Screwless push-in technology
Noise immunity	Conforms to IEC61000-4-4, 2.0 kV (power supply line)
Vibration resistance	10 to 60 Hz: 0.7 mm double amplitude 60 to 150 Hz: 50 m/s^2
Shock resistance	150 m/s^2, 3 times in each direction
Dielectric strength	500 VAC (between isolated circuits)
Insulation resistance	20 MΩ min. (between isolated circuits)
Ambient operating temperature	-10 to 55°C (with no icing or condensation)
Ambient operating humidity	25% to 85%
Operating environment	No corrosive gases
Ambient storage temperature	-25 to 65°C (with no icing or condensation)
Mounting	35 mm DIN rail

Communication Units

Model name	GRT1-DRT	GRT1-PRT
Network Specification	DeviceNet	PROFIBUS-DPV1
Network connector	Open-stype DeviceNet connector, dual screwless push-in dual connections.	9-pin D-Sub
Network power supply	11 to 25 V DC, 22 mA	Internal
Number of I/O points	1,024 inputs and outputs max. (128 bytes each)	
Number of connectable Units	64 SmartSlice I/O Units max.	
I/O power supply	24 V DC, 4 A max.	
Status flags	1 word for Communications Unit status flags	
Parameter backup and restore	up to 2 KB of data per Unit.	

I/O Units

Model name	GRT1-ID4	GRT1-ID4-1
Signal type	DC input (for sinking outputs)	DC input (for sourcing outputs)
Number of points	4 inputs (3-wire connection)	
ON voltage	15 V DC min.	
ON current	6 mA max./point (at 24 V DC)	
OFF voltage	5 V DC max.	
OFF current	1 mA max.	
ON delay / OFF delay	1.5 ms max.	

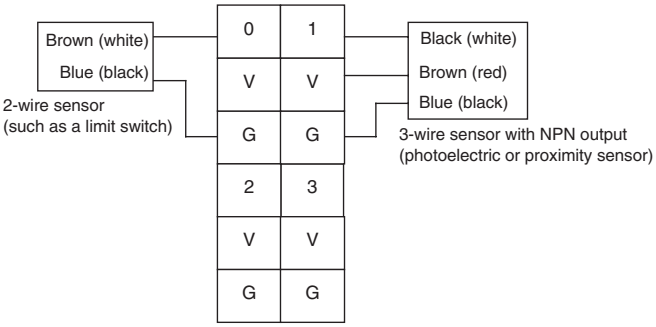
Model name	GRT1-OD4	GRT1-OD4-1	GRT1-ROS2
Signal type	Transistor output (sinking, NPN)	Transistor output (PNP, sourcing)	Relay output (normally open)
Number of points	4 outputs (2-wire connection)		2 outputs (with 2 terminals per connection)
Rated voltage	24 V DC (20.4 to 26.4 V DC)		250 V AC / 24 V DC
Rated output current	500 mA max./point		2 A (min. 1 mA @ 5 V DC)
Residual voltage	1.2 V DC max. (at 500 mA)		-
Leakage cuurent	0.1 mA max.		-
ON delay / Off delay	0.5 / 1.5 ms max.		15 ms max.
Mechanical life expectancy	-		20,000,000 times min.
Electrical life expectancy	-		100,000 times min.

Model name	GRT-AD2	GRT1-DA2V	GRT1-DA2C
Signal type	Analog Input: 0-20mA, 4-20mA, ±10V, 0-10V, 0-5V, 1-5V	Analog Output: ±10V, 0-10V, 0-5V, 1-5V	Analog Output: 0-20mA, 4-20mA,
Number of points	2 inputs	2 outputs	
Resolution	1/6000 full scale		
Conversion time	2ms / 2points		

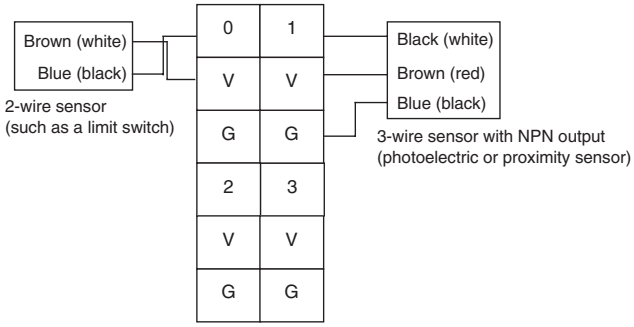
Model name	GRT1-CP1-L
Counter input	A/B/Z incremental encoder, or pulse/direction/reset
Counter signal type	24 V DC, or RS422 Line driver levels
Max. frequency	100 kHz
Counter range	32 bit double signed integer
Comparison values	2 independent ranges
Control Input	IN0, DC input (for sourcing outputs)
Control Input functions	Capture, Preset, Reset, Z enable
Control Outputs	OUT0, OUT1, Transistor Output (sourcing)
Control Output functions	Range comparison, manual override
Additional functions	On-the-fly reconfiguration, Frequency measurement

Connections

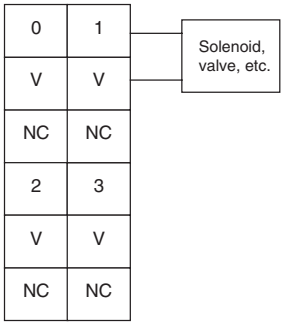
GRT1-ID4



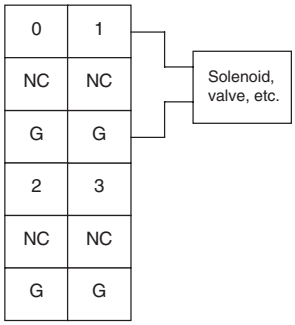
GRT1-ID4-1



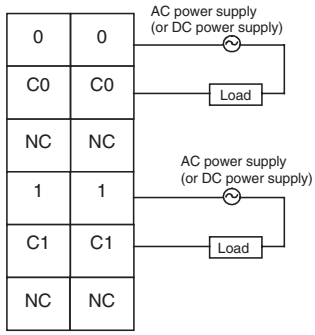
GRT1-OD4



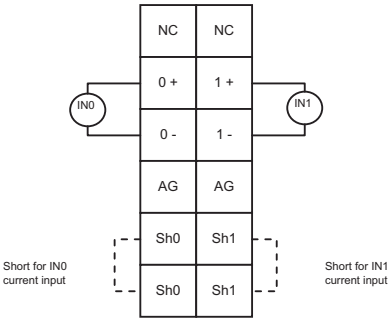
GRT1-OD4-1



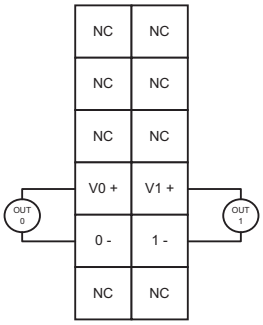
GRT1-ROS2



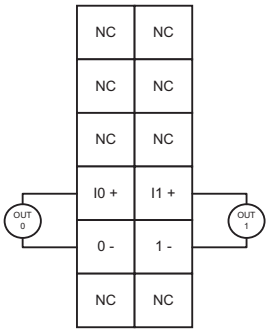
GRT-AD2



GRT1-DA2V

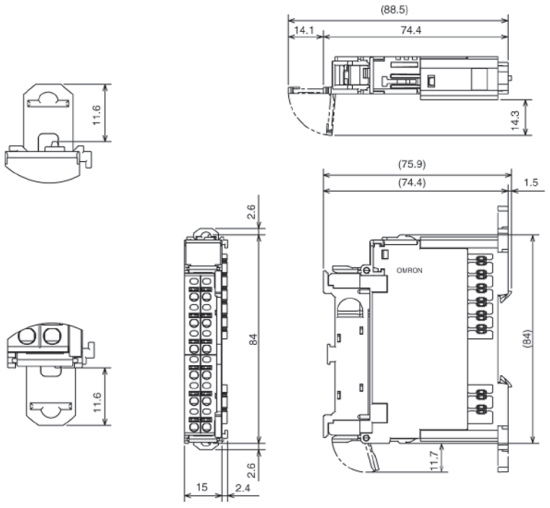


GRT1-DA2C



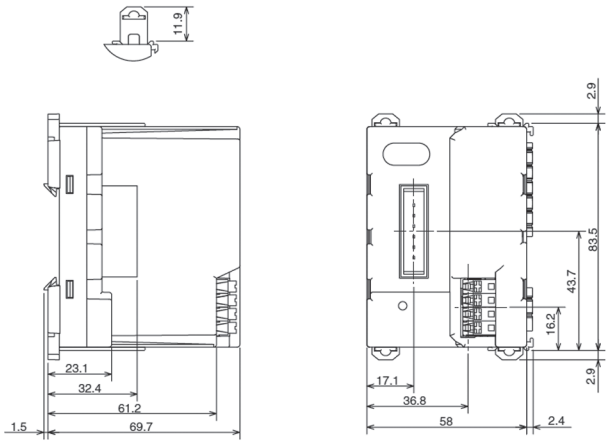
Dimensions

I/O-units



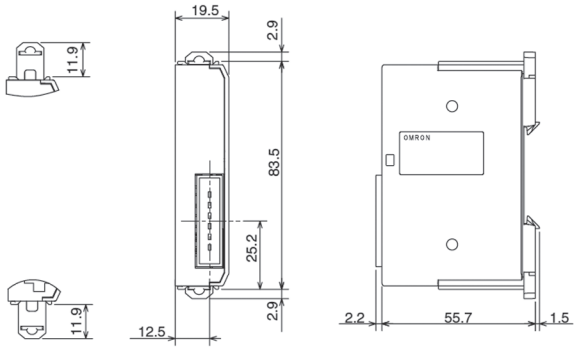
Communication Units

GRT1-DRT
GRT1-PRT
GRT1-TBL



End units

GRT1-END
GRT1-TBR



Ordering Information

Interface Units

Function	Specification	Model code
DeviceNet Interface Unit	For up to 64 I/O units	GRT1-DRT
Profibus-DP Interface Unit	For up to 64 I/O units	GRT1-PRT

I/O units

Function	Specification	Model code
4 NPN inputs	24 V DC, 7 mA, 3-wire connection	GRT1-ID4
4 PNP inputs	24 V DC, 7 mA, 3-wire connection	GRT1-ID4-1
4 NPN outputs	24 V DC, 500 mA, 2-wire connection	GRT1-OD4
4 PNP outputs	24 V DC, 500 mA, 2-wire connection	GRT1-OD4-1
2 relay outputs	240 V AC, 2A, normally-open contacts	GRT1-ROS2
100 kHz Counter / Positioner unit	A/B/Z encoder input (line driver or 24 V selectable) + 1 control input + 2 outputs (PNP-type)	GRT1-CP1-L*
2 Thermocouple inputs	Type R, S, K, J, T, L, B, U, N, W, E, and PLII selectable	GRT1-TS2T*
2 Pt100 inputs	Pt100 / JPt100 selectable	GRT1-TS2P*
2 analogue inputs, current/voltage	±10 V, 0-10 V, 0-5 V, 1-5 V, 0-20 mA, 4-20 mA	GRT1-AD2
2 analogue outputs, voltage	± 10 V, 0-10 V, 0-5 V, 1-5 V	GRT1-DA2V
2 analogue outputs, current	0-20 mA, 4-20 mA	GRT1-DA2C

Expansion

Function	Model code
I/O power feed unit, separates power supply between groups of I/O units	GRT1-PD2
Turnback Unit, right-hand side	GRT1-TBR
Turnback Unit, left-hand side	GRT1-TBL
Turnback cable, one meter	GCN1-100
End plate, one unit required per bus interface	GRT1-END

PLC Master Units

Function	Model code
DeviceNet Master Unit for CS1-series PLCs	CS1W-DRM21-V1
DeviceNet Master Unit for CJ1-series PLCs	CJ1W-DRM21
PROFIBUS-DP Master Unit for CS1-series PLCs	CS1W-PRM21
PROFIBUS-DP Master Unit for CJ1-series PLCs	CJ1W-PRM21

Software

Function	Model code
CX-One, Omron's integrated software for programming and configuration of all control system components, including PLCs, remote I/O, HMI, servo drives, inverters, temperature controllers and advanced sensors.	CX-ONE-AL□□ C-E □□ = number of licenses (01, 03, 10)

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. P15E-EN-01

In the interest of product improvement, specifications are subject to change without notice.

DRT-series Smart Slaves

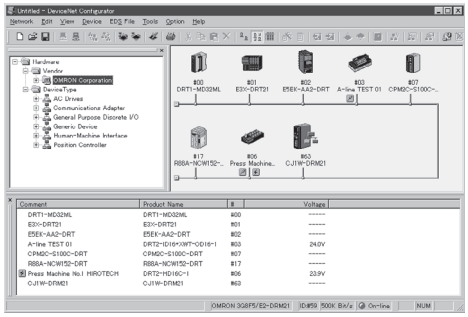
DeviceNet Remote I/O

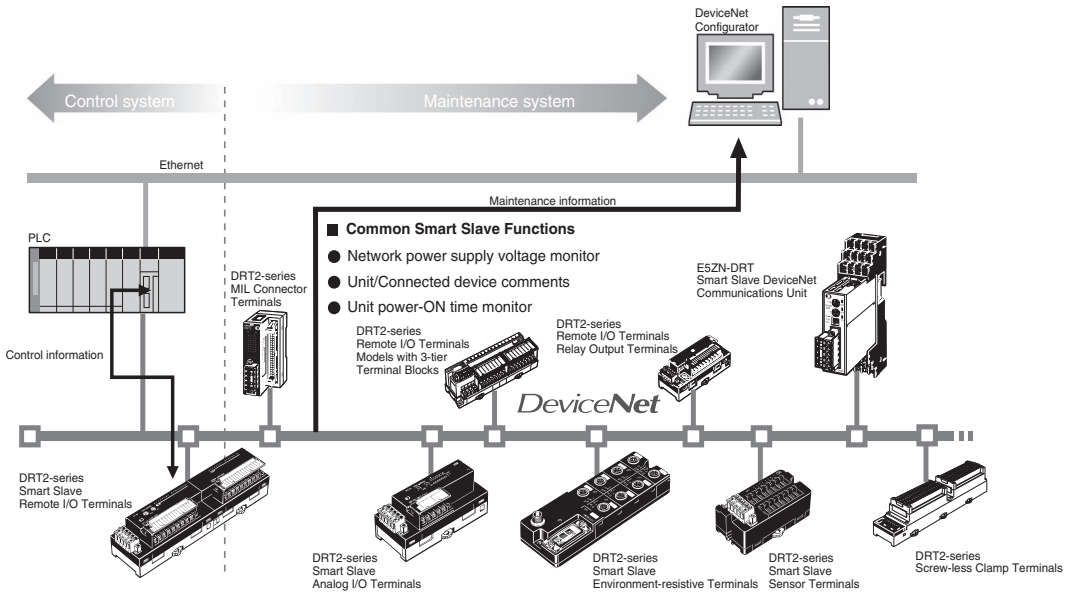
DRT2-series Smart Slaves provide you the necessary maintenance and product quality information.

DRT2-series Smart Slave Features

The DRT2-series Smart Slaves do not just handle the I/O information of field devices. They can also deliver a variety of information to improve the operating efficiency of the producion equipment. With this information a maintenance system can be fed with information to schedule preventive maintenence actions. This will reduce machine downtime caused by unscheduled repairs during production.

The control system and the maintenance system both use the same DeviceNet wiring. The benefits are:
reduced equipment setup time, reduced downtime in the event of a problem, provides preventive maintenance information.





Reduce Setup Time

- Network power supply monitor function
- Input filter function
- Power-ON inrush current protection function
- Communications speed auto-detect function
- Scaling function
- User compensation function
- Cumulative counter
- Moving average processing function
- Number of A/D conversion points (conversion cycle) setting
- Peak/bottom hold function
- Top/valley hold function
- Percentage change calculation function

Reduce Downtime

- Unit comments function
- Connected device comments function
- I/O power supply monitor function
- Sensor power supply short-circuit detection function
- External load short-circuit detection function
- Disconnected sensor detection function

Improve Maintenance

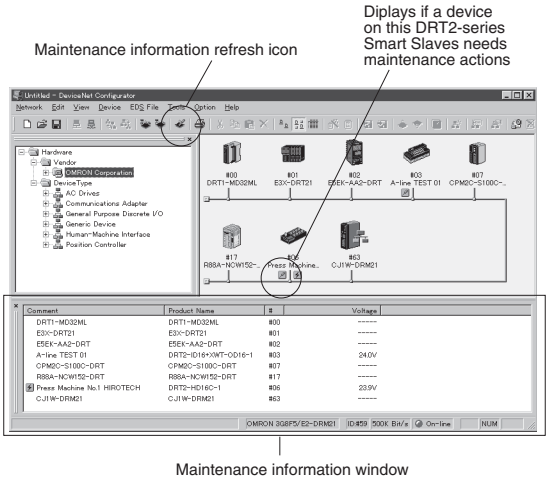
- Operation time monitor function
- Contact operations counter (See note.)
- Unit conduction time monitor function
- Total ON time monitor function (See note.)
- Network power supply voltage monitor function
- Communications error log function
- Last maintenance date
- Comparator function
- Selectable output value after error

Note: The number of contact operations monitor function and the cumulative ON time monitor function cannot be used simultaneously for the same contact.

Configurator Maintenance Window

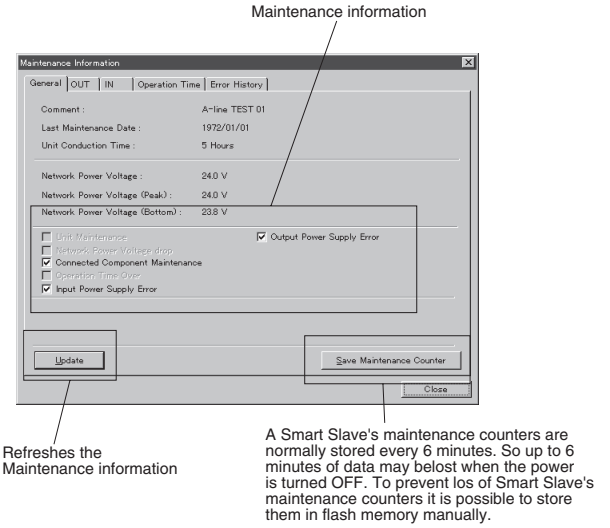
Various equipment information can be monitored from the following Configurator window throughDRT2-series Smart Slaves.

Maintenance Mode Window

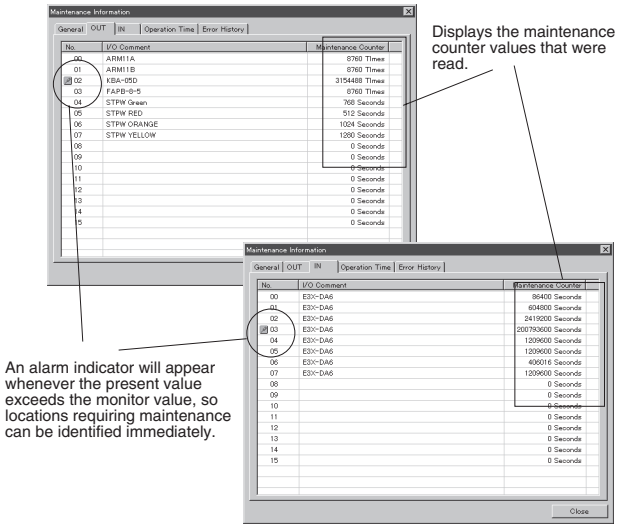


Individual Slave's Maintenance Information Window

A DRT2-series Smart Slave's maintenance information window can be opened by double-clicking the Slave's icon. If an alarm indicator appears next to the Slave's icon then equipment connected to this DRT2-series Smart Slave needs maintenance.



More details can be viewed by clicking the OUT tab, IN tab, or Operation Time tab.



Please refer to the software chapter on page 627 for more information on DeviceNet software.

Functions Supported by Smart Slaves

Group	General Slaves							
	Remote I/O Terminals						Sensor Connector Terminals	
Type	Transistors		Relays	Transistors with 3-tier terminal block			Transistors with connector	
Model	DRT2-□D16(-1)		DRT2-ROS16	DRT2-□D16TA(-1)			DRT2-□D16S(-1)	
Function	Input	Output	Output	Input	Output	I/O	Input	I/O
Operation time monitor	OK (Input+Output only)		---	OK			---	OK
Contact operation counter[1]	OK						OK	
Unit conduction time monitor	OK						OK	
Total ON time monitor[1]	OK						OK	
Unit comments	OK						OK	
Connected device comments	OK						OK	
Network power supply voltage monitor	OK						OK	
I/O power supply monitor	OK		---	OK				
Communications error log	OK						OK	
Input filter	OK	---		OK	---	OK	OK	
Power-ON inrush current protection	OK	---		OK	---	OK	OK	
Sensor power supply short-circuit detection	---						OK	
External load short-circuit detection	---						---	OK
External load disconnection detection	---						---	
Disconnected sensor detection	---						---	
Removable terminal block	OK		---				---	
Communications speed auto-detect	OK						OK	
No need to wire Unit power supply	OK						OK	
No need to wire input device power supply	---		OK	---			OK	
Expansion via Expansion I/O Units	OK			---			---	
Scaling	---						---	
User compensation	---						---	
Last maintenance date	OK						OK	
Cumulative counter	---							
Moving average processing	---						---	
Number of A/D conversion points (conversion cycle) setting	---						---	
Peak/bottom hold	---						---	
Top/valley hold	---						---	
Percentage change calculation	---						---	
Comparator	---						---	
Selectable output value after error	---						---	

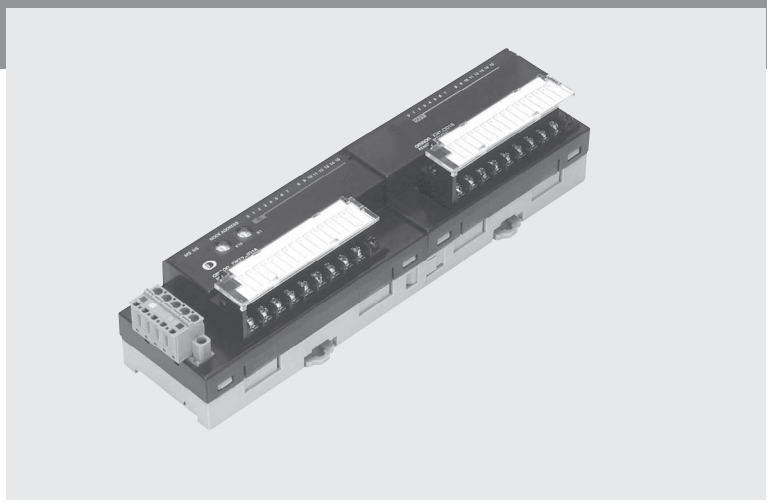
1. The contact operation counter function and the total ON time monitor function cannot be used simultaneously for the same contact.

Group	General Slaves						Environment-resistive Terminals		Analog Slave		
	Screw-less clamp terminals										
Type	Transistors						Transistors		Analog I/O Terminals		Temperature Input Terminals
	Detection function			No detection function							
Model	DRT2-□D32SL(-1)			DRT2-□D32SLH(-1)			DRT2-□D08C(-1) DRT2-HD16C(-1)		DRT2-AD04 DRT2-DA02 DRT2-AD04H		DRT2-TS04T DRT2-TS04P
Function	Input	Output	I/O	Input	Output	I/O	Input	Output	Input	Output	Input
Operation time monitor	OK						---		---		---
Contact operation counter[1]	OK						OK		---		---
Unit conduction time monitor	OK						OK		OK		OK
Total ON time monitor[1]	OK						OK		---		---
Unit comments	OK						OK		OK		OK
Connected device comments	OK						OK		OK		OK
Network power supply voltage monitor	OK						OK		OK		OK
I/O power supply monitor	OK						---	OK	---		---
Communications error log	OK						OK		OK		OK
Input filter	OK	---	OK		---	OK	OK	---	---		---
Power-ON inrush current protection	OK	---	OK		---	OK	OK	---	---		---
Sensor power supply short-circuit detection	---			OK	---	OK	OK	---	---		---
External load short-circuit detection	---						---	OK	---		---
External load disconnection detection	---				OK				---		---
Disconnected sensor detection	---			OK	---	OK	OK	---	---		---
Removable terminal block	OK						---		OK		OK
Communications speed auto-detect	OK						OK		OK		OK
No need to wire Unit power supply	OK						OK		OK		OK
No need to wire input device power supply	---						OK	---	---		---
Expansion via Expansion I/O Units	---						---		---		---
Scaling	---						---		OK		OK
User compensation	---						---		OK		OK
Last maintenance date	OK						OK		OK		OK
Cumulative counter	---						---		OK		OK
Moving average processing	---						---		OK	---	OK
Number of A/D conversion points (conversion cycle) setting	---						---		OK	---	OK
Peak/bottom hold	---						---		OK	---	OK
Top/valley hold	---						---		OK	---	OK
Percentage change calculation	---						---		OK	---	OK
Comparator	---						---		OK	---	OK
Selectable output value after error	---						---		---	OK	---
Top/valley count	---						---		---		OK
Operating time in a preset temperature range	---						---		---		OK
Temperature difference detection between input channels	---						---		---		OK

1. The contact operation counter function and the total ON time monitor function cannot be used simultaneously for the same contact.

DRT2-□D16(-1)

Digital I/O Terminals



I/O Device with DC-inputs and transistor outputs.

- Maintenance data can be collected without affecting the functionality of the control system.
- Valuable information can be collected and managed through the network, including information on the communications power supply voltage level, unit wear and tear, and equipment operating information.
- Easily locate trouble spots in the system.
- Setup has been simplified with features like auto-detection of the communication speed.

Smart Slave Functions

Compact unit

Basic Units are just 115-mm wide (just 77% of DRT1-series) and the Expansion Units are just 94-mm wide, so the overall width is 209 mm.

Detachable Terminal Block

The terminal block can be detached.

Expansion I/O Units

One Expansion Unit can be attached to the Basic Unit. Different I/O Terminals can be combined to suit the system requirements, for example, 16 inputs + 8 outputs or 24 inputs (16 inputs + 8 inputs.)

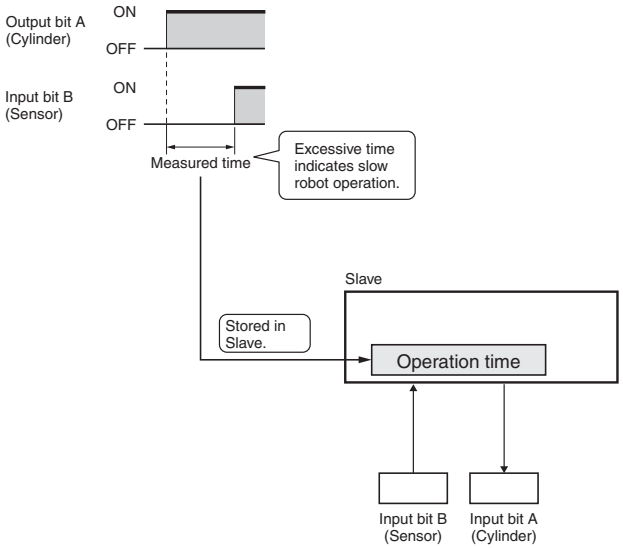
Operation Time Monitor Function

The device can measure the time it takes for an input to go

ON after a corresponding output is set (independent of the ladder program).

If this time exceeds the value that was preset in the device the master is notified through the status bits.

Note: This function is only supported in a device that has both inputs and outputs.

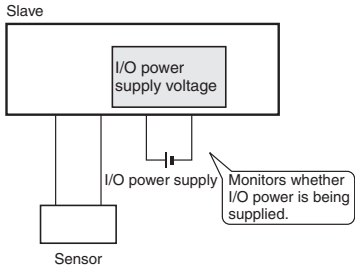


No Wiring Required for Internal Circuits

Power for the device's internal circuits is supplied from the communications power supply.

I/O Power Supply Status Monitor Function

This function checks if I/O power is being supplied. If I/O power is not present this is indicated in the status information.

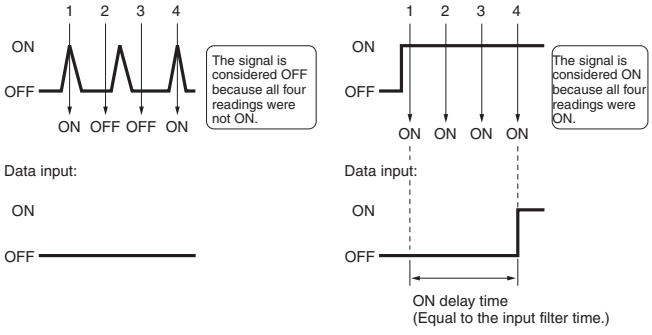


Input Filter Function

To eliminate incorrect signal interpretation due to contact bouncing or signal corruption by noise a filter is needed.

This filter is implemented by reading the input value several times within a preset period. If the input value is within the preset period for all measurements of the same state the input value is presumed to be of that state.

The input filter function can also be used to create a ON and OFF delay.



Power-ON Inrush Current Protection Function

When this function is set the inputs are not being read for 100 ms afer the I/O power supply is turned ON. This gives the power supply time to stabilize after being turned ON. The 100-ms delay is used to eliminate false inputs generated by inrush currents.

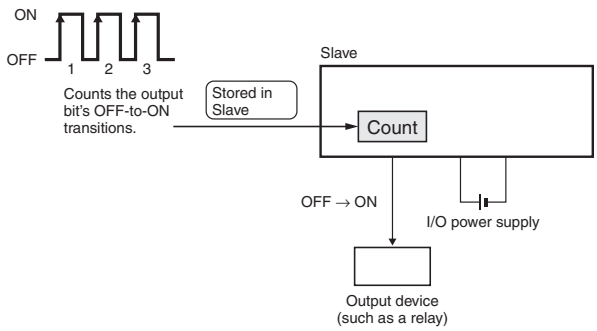
Contact Operation Counter

The number of times an input or output is switched ON is counted and stored in the device.

When the counter reaches a set value than this is indicated in the status information.

The maximum frequency that can be measured is 50 Hz.

Note: The contact operation counter function and the total ON time monitor function cannot be used simultaneously for the same contact.

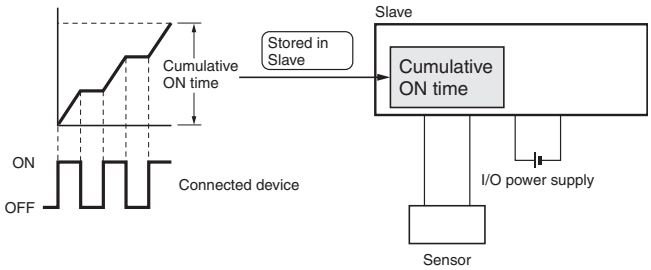


Total ON Time Monitor Function

The device keeps track of the total time an input or output is switch ON. This total On time is stored in the device.

When the counter reaches a set value than this is indicated in the status information.

Note: The contact operation counter function and the total ON time monitor function cannot be used simultaneously for the same contact.



Ordering Information

Basic Units

I/O type	Internal I/O common	Number of I/O points	I/O connections	Internal circuit power	Rated I/O power supply voltage	Model
Inputs	NPN (+ common)	16	Screw terminals	Supplied from communications connector.	24 V DC	DRT2-ID16
	PNP (–common)					DRT2-ID16-1
Outputs	NPN (–common)					DRT2-OD16
	PNP (+ common)					DRT2-OD16-1

Expansion Units

I/O type	Internal I/O common	Number of I/O points	I/O connections	Internal circuit power	Rated I/O power supply voltage	Model
Inputs	NPN (+ common)	8	Screw terminals	Supplied from Basic Unit.	24 V DC	XWT-ID08
	PNP (–common)					XWT-ID08-1
Outputs	NPN (–common)					XWT-OD08
	PNP (+ common)					XWT-OD08-1
Inputs	NPN (+ common)	16				XWT-ID16
	PNP (–common)					XWT-ID16-1
Outputs	NPN (–common)					XWT-OD16
	PNP (+ common)					XWT-OD16-1

Specifications

General Specifications

Communications power supply voltage	11 to 25 V DC
Unit power supply voltage	Not required (Supplied from the communications connector.)
I/O power supply voltage	20.4 to 26.4 V DC (24 V DC $^{+10\%}/_{-15\%}$)
Current consumption	Communications:Basic Unit:60 mA max. With 16-point expansion:70 mA max. With 8-input expansion:65 mA max. With 16-output expansion:64.5 mA max.
Dielectric strength	500 V AC (between isolated circuits)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 56 Hz, 0.7-mm double amplitude 56 to 150 Hz, 50 m/s^2
Shock resistance	150 m/s^2
Mounting method	35-mm DIN rail mounting
Screw tightening torque	M3 (power supply and I/O terminals): 0.3 to 0.5 Nm
Ambient temperature	Operating:–10°C to 55°C Storage:–25°C to 65°C
Ambient humidity	Operating:25% to 85% (with no condensation)
Weight	Basic Unit:140 g max. 16-point Expansion Unit:120 g max. 8-point Expansion Unit:80 g max.

Ratings

Inputs

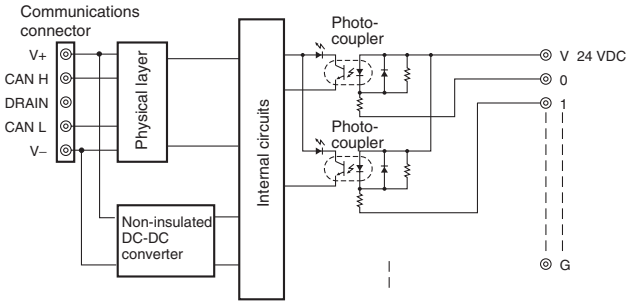
Input current		6 mA max./point (at 24 V DC)
ON delay time		1.5 ms max.
OFF delay time		1.5 ms max.
ON voltage	NPN	15 V DC min. between each input terminal and V
	PNP	15 V DC min. between each input terminal and G
OFF voltage	NPN	5 V DC max. between each input terminal and V
	PNP	5 V DC max. between each input terminal and G
OFF current		1 mA max.
Insulation method		Photocoupler
Input indicators		LED (yellow)

Outputs

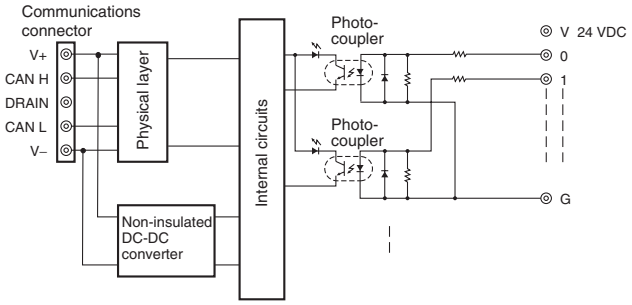
Rated output current	0.5 A/point, 4.0 A/common
ON delay time	0.5 ms max.
OFF delay time	1.5 ms max.
Residual voltage	1.2 V max.
Leakage current	0.1 ms max.
Isolation method	Photocoupler
Output indicators	LED (yellow)

Internal Circuit Configuration

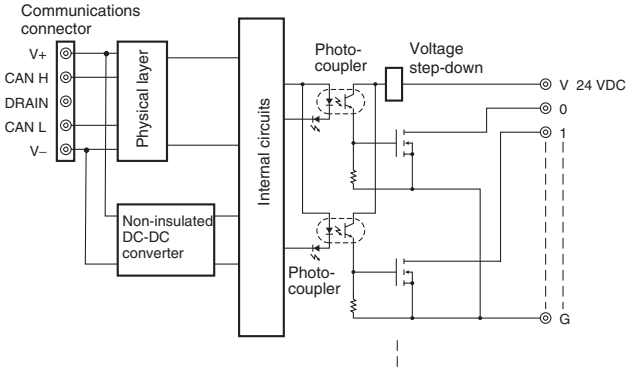
DRT2-ID16 (NPN)



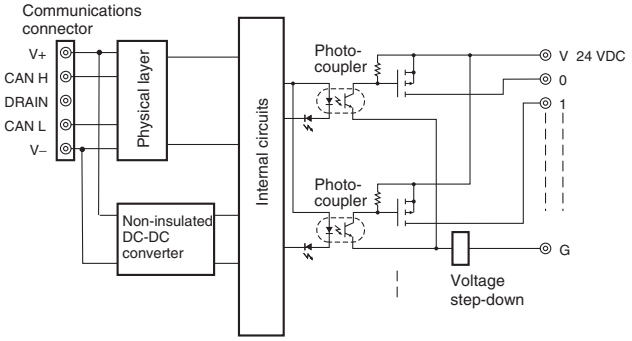
DRT2-ID16-1 (PNP)



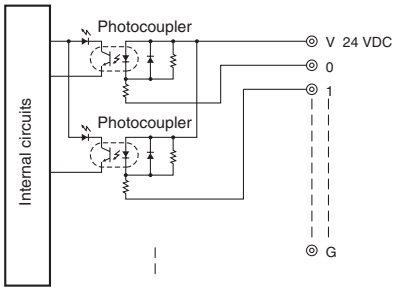
DRT2-OD16 (NPN)



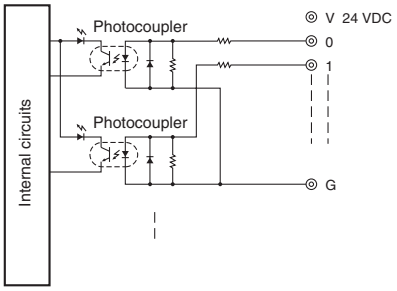
DRT2-OD16-1 (PNP)



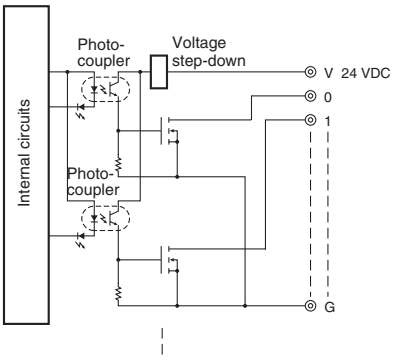
XWT-ID08 (NPN)
XWT-ID16 (NPN)



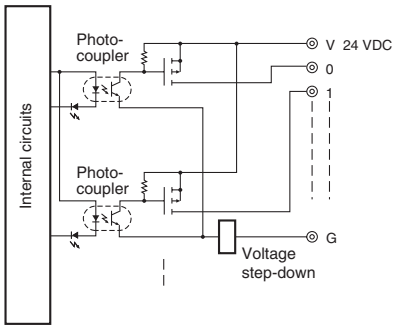
XWT-ID08-1 (PNP)
XWT-ID16-1 (PNP)



XWT-OD08 (NPN)
XWT-OD16 (NPN)



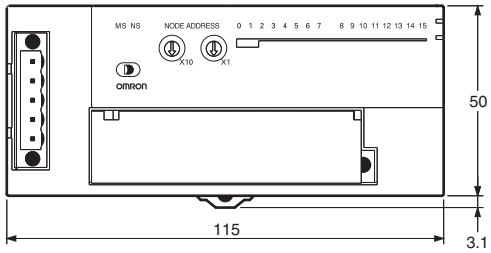
XWT-OD08-1 (PNP)
XWT-OD16-1 (PNP)

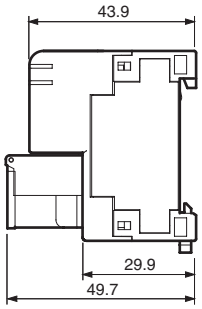


Dimensions

Remote I/O Terminals: Basic Units

DRT2-ID16
DRT2-ID16-1
DRT2-OD16
DRT2-OD16-1

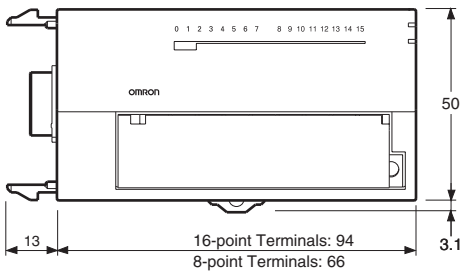


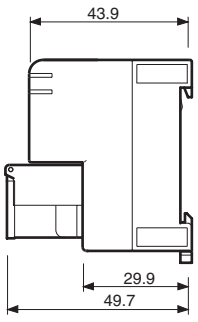


Remote I/O Terminals: Expansion Units

XWT-ID16
XWT-ID16-1
XWT-OD16
XWT-OD16-1

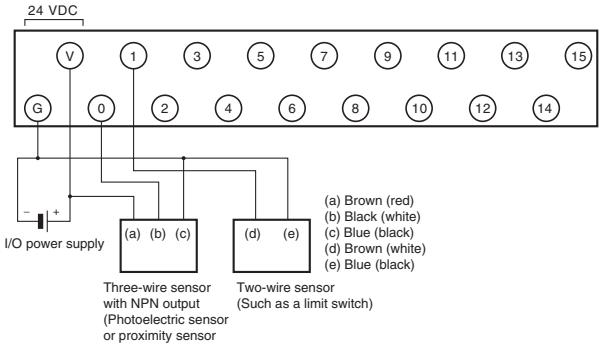
XWT-ID08
XWT-ID08-1
XWT-OD08
XWT-OD08-1



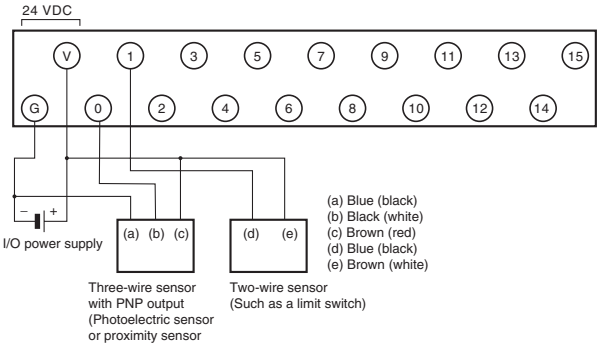


Wiring

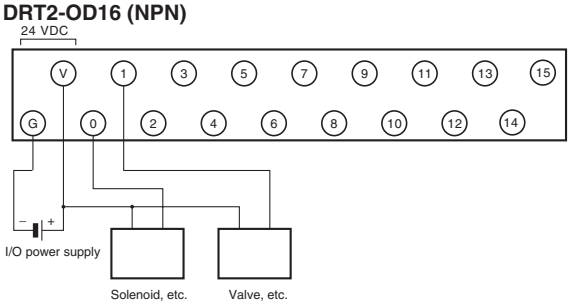
DRT2-ID16 (NPN)



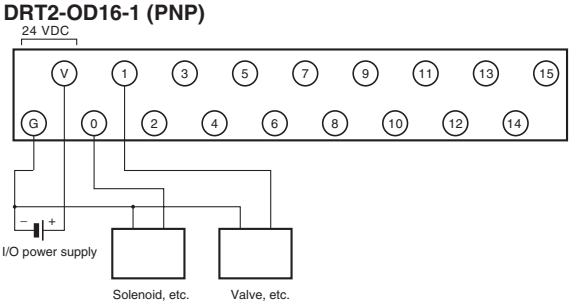
DRT2-ID16-1 (PNP)



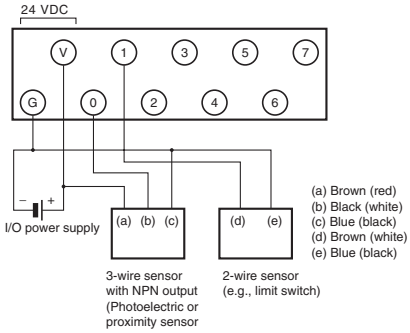
DRT2-OD16 (NPN)



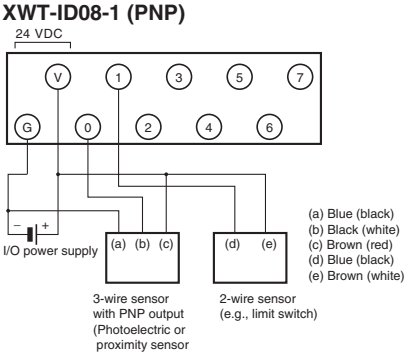
DRT2-OD16-1 (PNP)



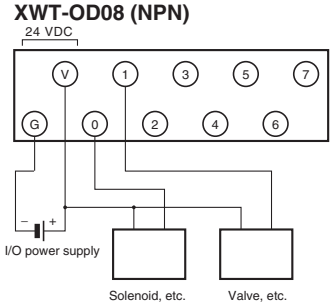
XWT-ID08 (NPN)



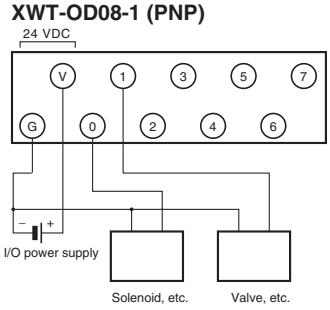
XWT-ID08-1 (PNP)



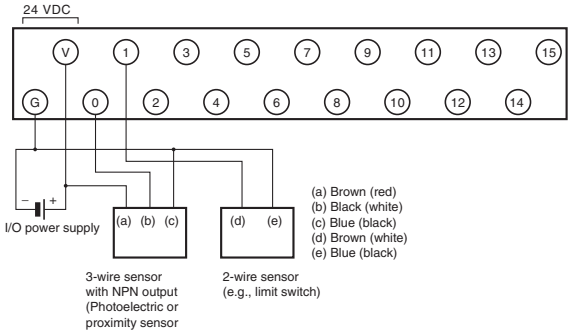
XWT-OD08 (NPN)



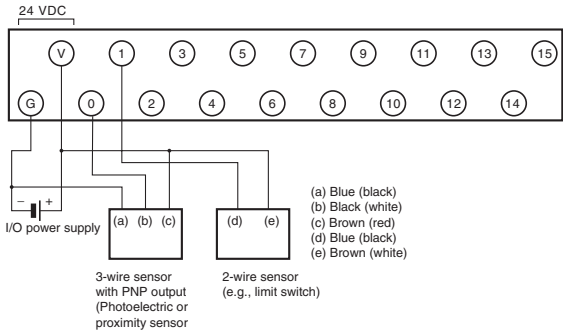
XWT-OD08-1 (PNP)



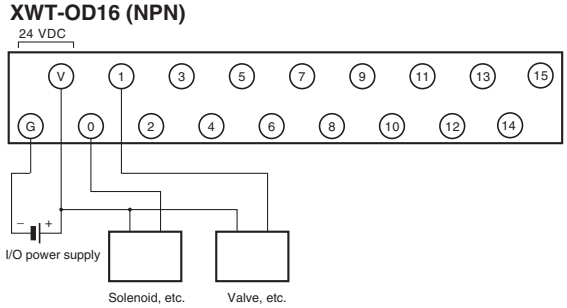
XWT-ID16 (NPN)



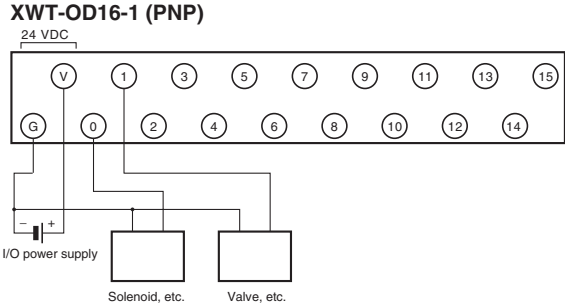
XWT-ID16-1 (PNP)



XWT-OD16 (NPN)

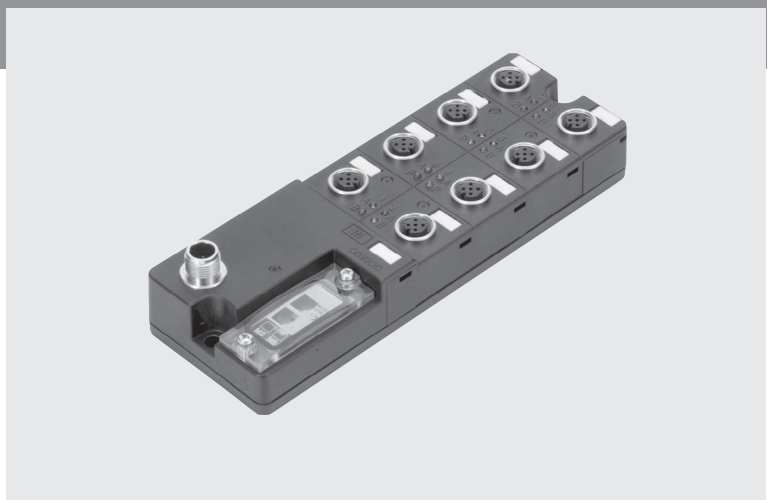


XWT-OD16-1 (PNP)



DRT2-□D08C(-1)/-□D16C(-1)

Harsh Environment Terminals

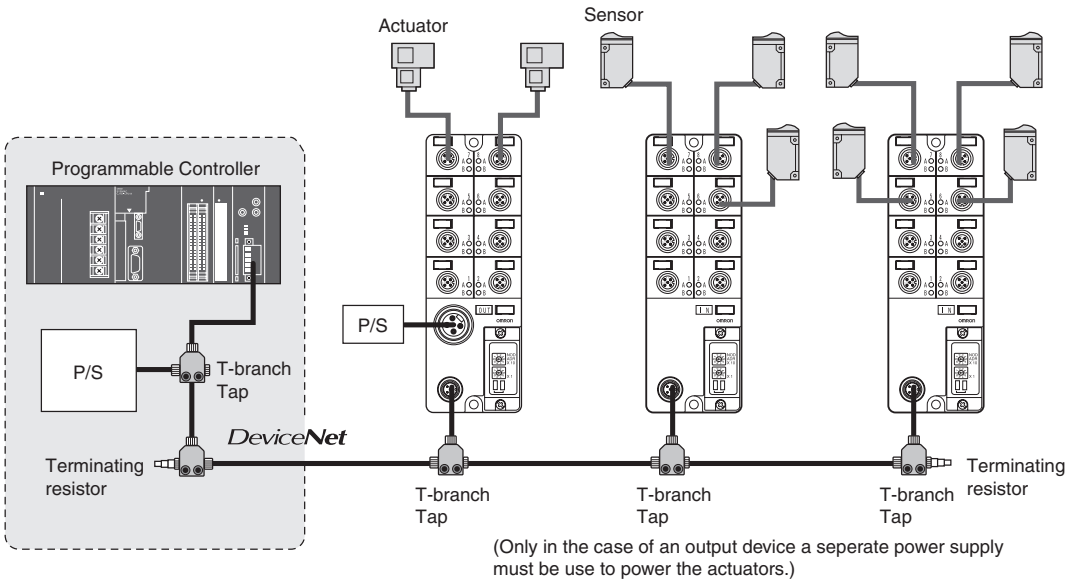


Environment-resistive (IP67) I/O terminals with fault-detection and maintenance functions

- Equipped with the standard Smart Slave functions for preventive maintenance and troubleshooting.
- Conforms to IP67 standards. The terminal housing is also oil- and spatter-resistant.
- The DeviceNet power supply is used by input devices to power the sensors. A extra power supply is not needed for this. (An extra power supply is required for output devices.)
- The terminal detects shortcircuits and broken wires in the cables of the sensors and actuators. In case of a fault the terminal notifies the master.

System Configuration

The communications and internal electronics of the terminal and in case of a input device also the sensors are fed by the DeviceNet power supply.



Smart Slave Functions

Superior Dust-tight, Drip-proof Construction (IP67)

The environment-resistive terminals are rated IP67, so they can be used in severe environments and subjected to direct oil and water spray without a protective enclosure. Because a enclosure is not needed space is saved and installation and wiring time is reduced.

Power Supply Wiring not required for Input Devices

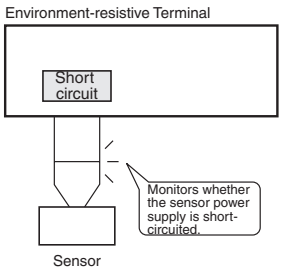
The same power supply is shared for communications, internal circuits, and input devices. Only the communications power supply needs to be wired.

High-load Devices (1.5 A max.) can be connected

The rated output current is 1.5 A, so even output devices with relatively large loads can be connected directly.

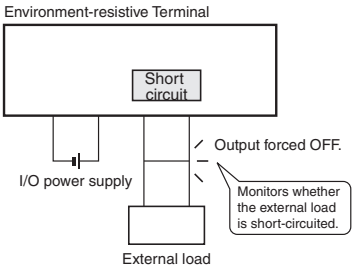
Sensor Power Supply Short-circuit Detection Function

The Slave monitors the I/O power supply current and detects a “sensor power supply short-circuit” if a connector’s current exceeds 100 mA. If a sensor power supply short circuit is detected, the sensor power supply output is turned OFF.



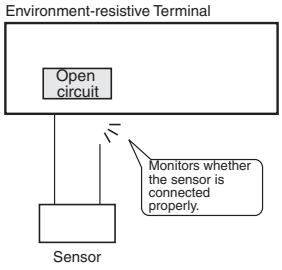
External Load Short-circuit Detection Function (Output Units Only)

The Slave monitors the Output Unit's load current and detects an "external load short-circuit" if the current to the Output Unit exceeds the rated maximum of 1.5A. If an external load short circuit is detected, the output is turned OFF in order to prevent damage to the Unit's output circuit.



Disconnected Sensor Detection Function (Input Units Only)

The Slave monitors the I/O power supply current and detects a "disconnected sensor" if a connector's current falls below 0.5 mA. The DeviceNet configurator or Explicit message communication can be used to read which sensor has been disconnected.

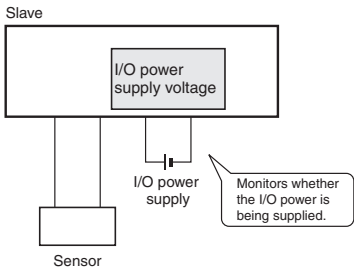


Power Supply Wiring not required for the Slave's Internal Circuits

Power is supplied to the Unit's internal circuits from the communications power supply, so there is no need for a extra power supply tpo power the units internal circuits.

I/O Power Supply Monitor Function

The Slave detects whether or not the I/O power supply is being supplied and notifies the Master through the status bits.

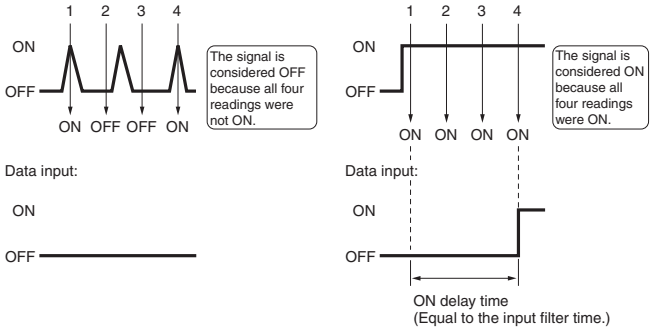


Input Filter Function (Input Units Only)

To eliminate incorrect signal interpretation due to contact bouncing or signal corruption by noise a filter is needed.

This filter is implemented by reading the input value several times within a preset period. If the input value is within the preset period for all measurements of the same state the input value is presumed to be of that state.

The input filter function can also be used to create a ON and OFF delay.



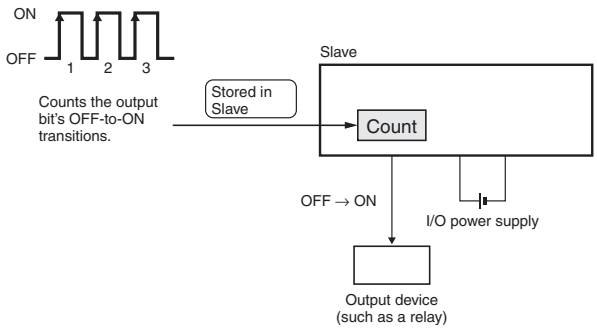
Contact Operation Counter

The number of times an input or output is switched ON is counted and stored in the device.

When the counter reaches a set value than this is indicated in the status information.

The maximum frequency that can be measured is 50 Hz.

Note: The contact operation counter function and the total ON time monitor function cannot be used simultaneously for the same contact.

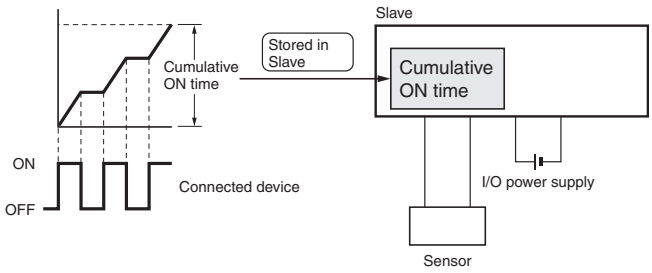


Total ON Time Monitor Function

The device keeps track of the total time an input or output is switch ON. This total On time is stored in the device.

When the counter reaches a set value than this is indicated in the status information.

Note: The contact operation counter function and the total ON time monitor function cannot be used simultaneously for the same contact.



Ordering Information

I/O type	Internal I/O common	Number of I/O points	I/O connections	Internal circuit power	Rated I/O power supply voltage	Model
Input	NPN (+ common)	8	Sensor I/O connector	Supplied from the communications connector.	Supplied from the communications connector.	DRT2-ID08C
	PNP (– common)					DRT2-ID08C-1
Output	NPN (– common)				24 V DC	DRT2-OD08C
	PNP (+ common)					DRT2-OD08C-1
Input	NPN (+ common)	16			Supplied from the communications connector.	DRT2-HD16C
	PNP (– common)					DRT2-HD16C-1

Specifications

Ratings

Inputs

Input current		11 mA max./point (at 24 V DC) 3 mA min./point (at 11 V DC)
ON delay time		1.5 ms max.
OFF delay time		1.5 ms max.
ON voltage	NPN	9 V DC min. between each input terminal and V
	PNP	9 V DC min. between each input terminal and G
OFF voltage	NPN	5 V DC max. between each input terminal and V
	PNP	5 V DC max. between each input terminal and G
OFF current		1 mA max.
Isolation method		Not isolated.
Input indicators		LED indicators (yellow)

Outputs

Rated output current	1.5 A/point, 8.0 A/common
ON delay time	0.5 ms max.
OFF delay time	1.5 ms max.
Residual voltage	1.2 V DC max.
Leakage current	0.1 mA max.
Isolation method	Photocoupler
Output indicators	LED indicators (yellow)

Characteristics

Item	DRT2-ID08C(-1) DRT2-HD16C(-1)	DRT2-OD08C(-1)
Communications power supply voltage	11 to 25 V DC	
Internal power supply voltage	Not required (Supplied from the communications connector.)	
I/O power supply voltage	Supplied from the communications connector.	20.4 to 26.4 V DC (24 V DC $^{+10\%}_{-15\%}$)
Current consumption	Communications power supply DRT2-ID08C(-1):115 mA max. DRT2-OD08C(-1):60 mA max. DRT2-HD16C(-1):190 mA max.	
Dielectric strength	500 V AC between insulated circuits	
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)	
Vibration resistance	10 to 56 Hz, 0.7-mm double amplitude 56 to 150 Hz, 50 m/s^2	
Shock resistance	150 m/s^2	
Mounting method	M5 screw mounting	
Screw tightening torque	M5 screws: 1.47 to 1.96 N • m Round connectors: 0.39 to 0.49 N • m	
Ambient temperature	Operating:–10°C to 55°C Storage:–25°C to 65°C	
Ambient humidity	Operating:25% to 85% (with no condensation)	
Weight	340 g max.	390 g max.

Connectors

Communications Cables

Thin Cable

Thin cable with attached Micro Connectors (formerly M12).

Model	Specifications
DCA1-5CN□□W1	Cable with shielded connectors on both ends
DCA1-5CN□□F1	Cable with shielded connector socket (female) on one end
DCA1-5CN□□H1	Cable with shielded connector plug (male) on one end
DCA1-5CN□□W5	Cable with shielded connectors on both ends (a Mini-size male connector plug on one end and a Micro-size female connector socket on the other end)
DCN2-1	Shielded T-branch Connector (1 branch)

Thick Cable

Thick cable with attached Mini Connectors

Model	Specifications
DCA2-5CN□□W1	Cable with shielded connectors on both ends
DCA2-5CN□□F1	Cable with shielded connector socket (female) on one end
DCA1-5CN□□H1	Cable with shielded connector plug (male) on one end
DCN3-11	Shielded T-branch Connector (1 branch)
DCN3-12	Shielded T-branch Connector (1 branch) The branch connector is M12 (Micro) size.

Terminating Resistors

Model	Specifications
DRS2-1	Micro-size male connector plug with terminating resistance
DRS2-2	Micro-size female connector socket with terminating resistance
DRS3-1	Mini-size male connector plug with terminating resistance

I/O Wiring Cables

I/O Power Supply Wiring

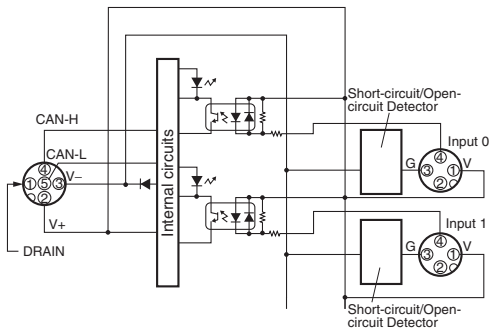
Model	Specifications
XS4W-D421-1□□-A	Cable with connectors on both ends (one socket and one plug)
XS4F-D421-1□□-A	Cable with female connectors (sockets) on both ends
XS4H-D421-1□□-A	Cable with male connectors (plugs) on both ends
XS4R-D424-5T	T-shaped Joint

I/O Wiring

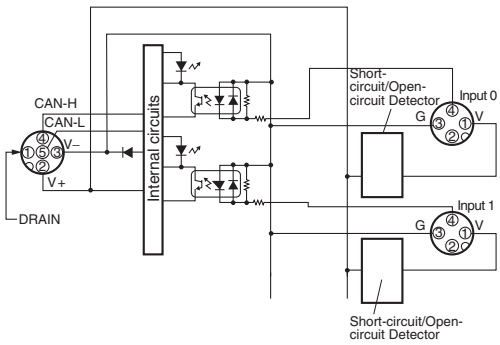
Model	Specifications
XS2H-D421-□80-A	Cable with male connector plug on one end
XS2W-D42□-□81-A	Cable with connectors on both ends (one socket and one plug)
XS2G-D4□□	Male connector plug for assembly (Crimp connection or solder connection)

Internal Circuit Configuration

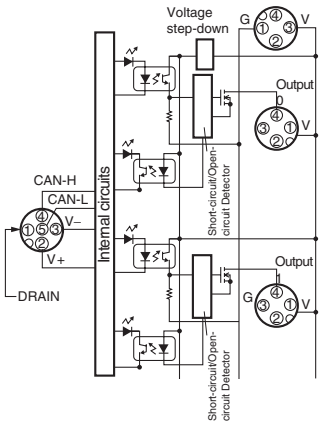
DRT2-ID08C (NPN)



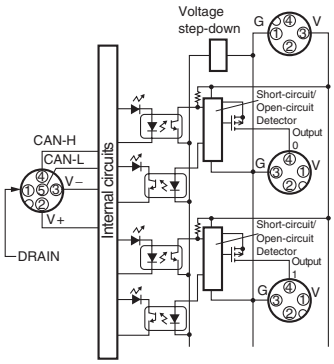
DRT2-ID08C-1 (PNP)



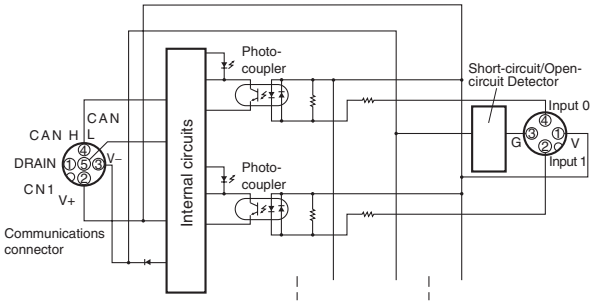
DRT2-OD08C (NPN)



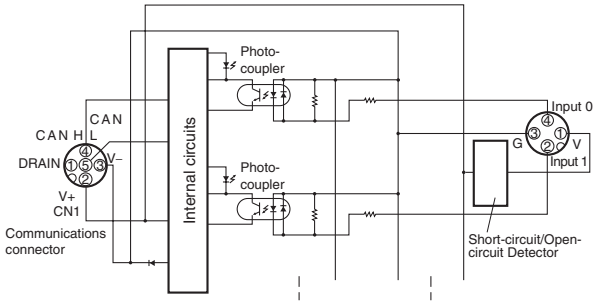
DRT2-OD08C-1 (PNP)



DRT2-HD16C (NPN)



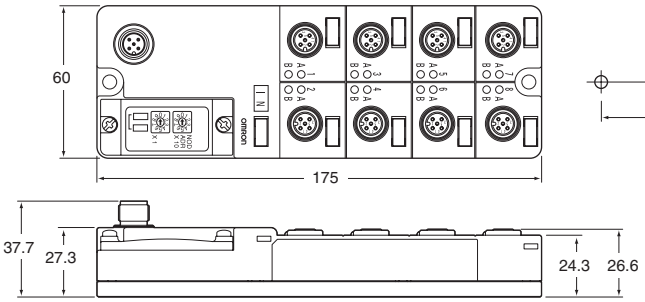
DRT2-HD16C-1 (PNP)



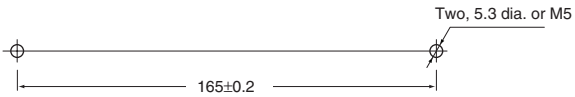
Dimensions

Environment-resistive Terminals (8 or 16 Inputs)

DRT2-ID08C
DRT2-ID08C-1
DRT2-IDHD16C
DRT2-ID16C-1

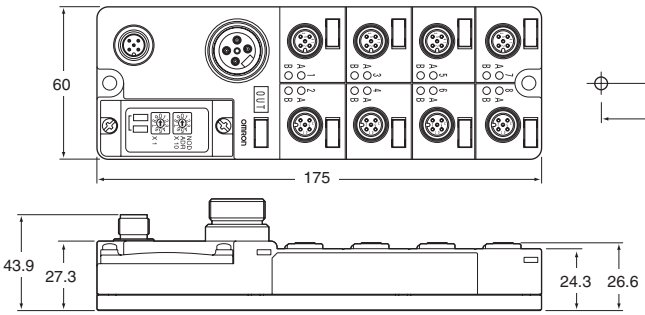


Mounting Hole Dimensions

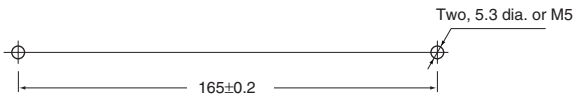


Environment-resistive Terminals (8 Outputs)

DRT2-OD08C
DRT2-OD08C-1

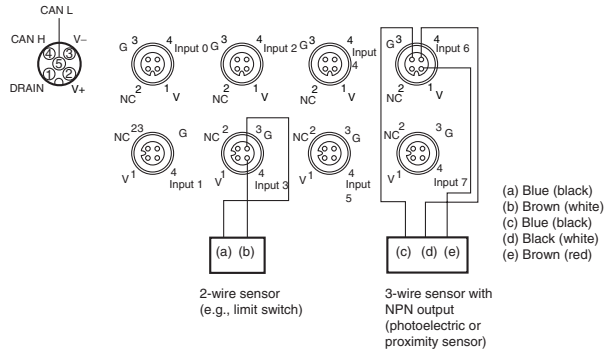


Mounting Hole Dimensions

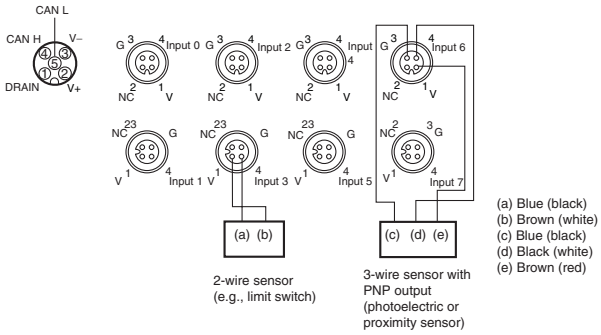


Wiring

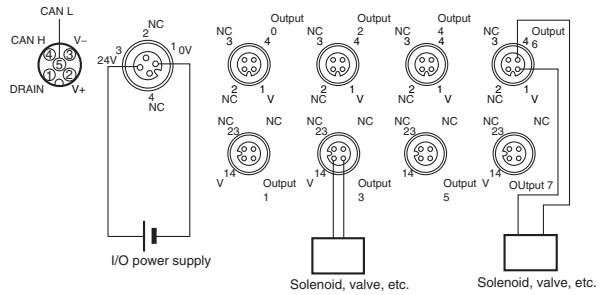
DRT2-ID08C (NPN)



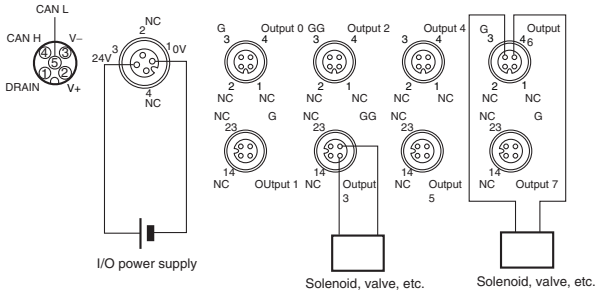
DRT2-ID08C-1 (PNP)



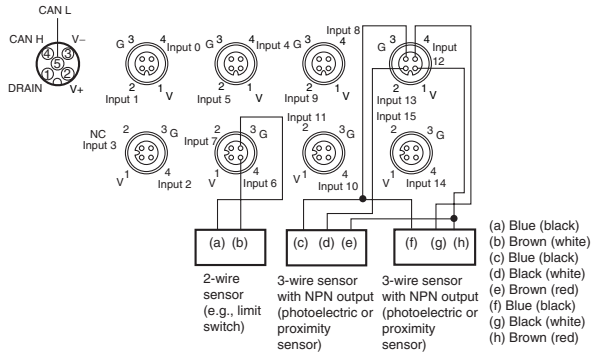
DRT2-OD08C (NPN)



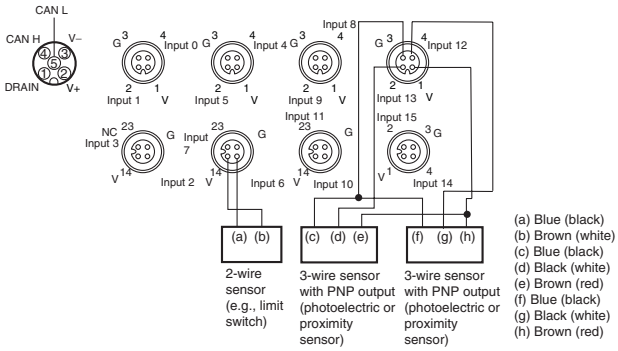
DRT2-OD08C-1 (PNP)



DRT2-HD16C (NPN)



DRT2-HD16C-1 (PNP)



DRT2-AD04/-DA02

Analog I/O Terminals

Calculations on Analog Values Can Be Performed within the Slave Itself

- Equipped with the standard Smart Slave functions for preventive maintenance and troubleshooting.
- Equipped with functions such as the scaling function, peak/bottom hold; top/valley hold; comparator function, cumulative counter, and rate of change.
- Two I/O values can be allocated to any two of the following values: analog input, peak/bottom, top, valley, or rate-of-change. Values without an allocated I/O point can be read with message communications.

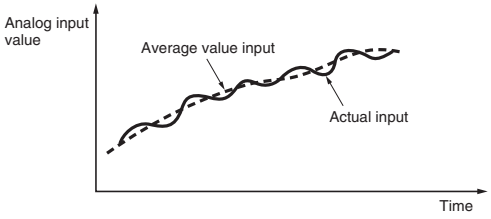
Smart Slave Functions

Number of A/D Conversion Points can be Selected (Input Terminals Only)

The conversion cycle is just 4 ms max. when all 4 analog inputs are being used. The conversion cycle can be made even shorter by reducing the number of inputs used (the number of A/D conversion points.)

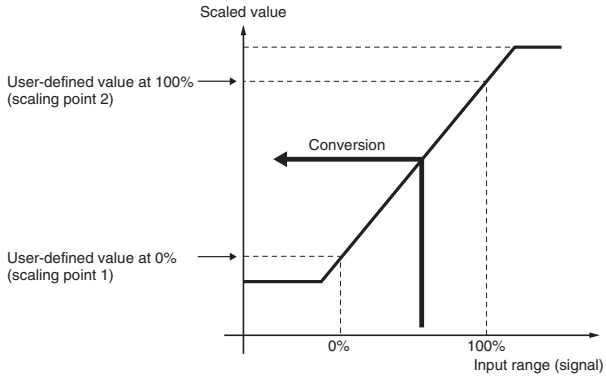
Moving Average Processing Function (Input Terminals Only)

The average of the last 8 inputs (the moving average) can be calculated in the Analog Input Terminal and used as the conversion data. The moving average can be used to obtain a smooth input value when the actual input value is fluctuating slightly.



Scaling Function

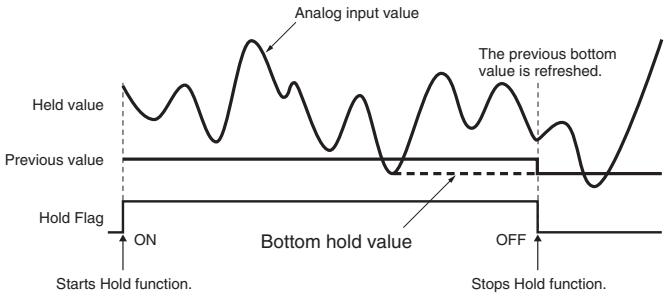
The analog input's raw data can be scaled to engineering value's. Using the scaling function in the Slave can reduce the ladder program processing load for the Master. If an offset is required, the offset value function can be used to offset the analog value calculated by the scaling function.



Note: The Output Terminals also support scaling.

Peak/Bottom Hold Function (Input Terminals Only)

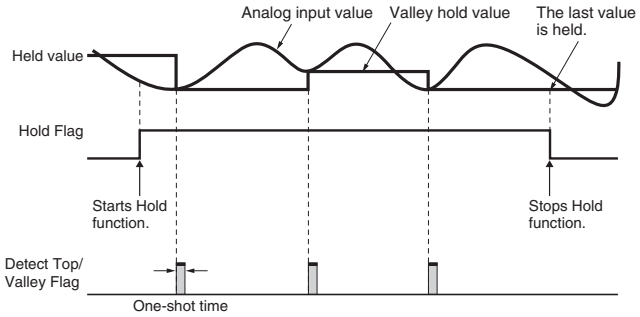
Holds the maximum (peak) value or minimum (bottom) value read by the Analog Input Terminal. In addition, the comparator function can be used to compare the peak value or bottom value to a preset alarm value and turn ON a flag in the status bits when the alarm value is exceeded.



Top/Valley Hold Function (Input Terminals Only)

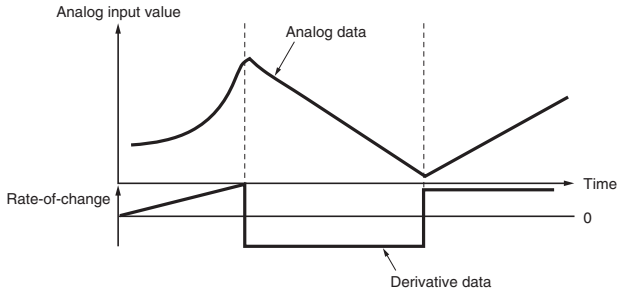
Holds the top value or valley value read by the Analog Input Terminal. The Top/Valley Detection Timing Flags can be used to set the timing for detection of the top/valley. In addition, the comparator function can be used to compare the top value or valley value to a preset alarm value and turn ON a flag in the status bits when the alarm value is exceeded.

Example: Valley Hold Operation



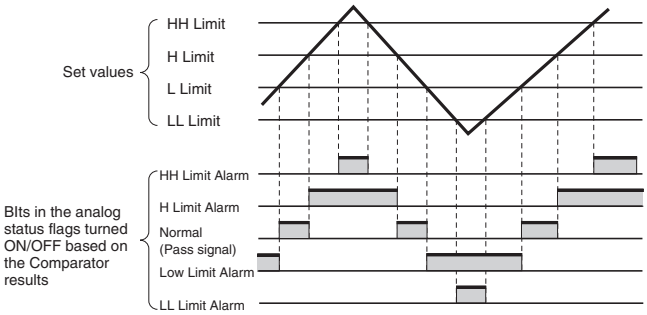
Rate-of-change Calculation Function (Input Terminals Only)

The rate-of-change in the analog input value data can be calculated for the data read by the Analog Input Terminal during each sampling period.



Comparator Function (Input Terminals Only)

Compares the raw data or processed data read by the Analog Input Terminal with the alarm SVs (High-High Limit, High Limit, Low Limit, and Low-Low Limit) and can reflect the result of the comparison in the status bits. The Normal Flag (Pass signal) will be turned ON if the value is within the set range.



Disconnection Detection Function (Input Terminals Only)

The disconnection detection function checks for open circuits in the analog input wiring (voltage inputs or current inputs) of channels for which A/D conversion is enabled. If an open circuit is detected, the Master can be notified through that channel's Disconnection Detection Flag. The input range must be set to 1 to 5 V (voltage input) or 4 to 20 mA (current input) in order to use this function.

User Adjustment Function

Depending on an input or output device's characteristics and connection method, it may be necessary to compensate for an offset in the value. This function can adjust the input or an output and compensate if an offset is required in the input or output's voltage or current. The conversion line can be compensated at two points: the 0% value and the 100% value.

Cumulative Counter

This function calculates the time integral of the input or output's analog value and reads the cumulative value. Also, a monitor value can be set in the Terminal so that the general-purpose status bits' Analog Cumulative Counter Flag will be turned ON when the cumulative value exceeds the monitor value.

Selectable Output Value after Error (Output Terminals Only)

This function can be used to set the Output Unit's output values that will be output from each channel when a communications error has occurred.

Ordering Information

Classification	I/O points	Model
Analog input	4 points	DRT2-AD04
Analog output	2 points	DRT2-DA02

Specifications

Ratings

Input

Item	DRT2-AD04	
	Voltage input	Current input
Input points	4 points (inputs 0 to 3)	
Input type	0 to 5 V 1 to 5 V 0 to 10 V –10 to 10 V	0 to 20 mA 4 to 20 mA
Max. signal input	±15 V	±30 mA
Input impedance	1 MΩ min.	Approx. 250 Ω
Resolution	1/6,000	
Accuracy	25°C: ±0.3% FS –10°C to 55°C: ±0.6% FS	25°C: ±0.4% FS –10°C to 55°C: ±0.8% FS
Conversion time	4 ms max. for 4 inputs (when calculation functions are not used and the DeviceNet communications cycle is 4 ms)	
Converted data	Input ranges other than –10 to 10 V: Full scale is 0000 to 1770 hexadecimal (0 to 6,000). –10 to 10 V input range: Full scale is F448 to 0BB8 hexadecimal (–3,000 to 3,000). A/D conversion range: ±5% FS	
Isolation method	Photocoupler isolation between inputs and communications lines (There is no isolation between input signals.)	
Insulation resistance	20 MΩ min. at 250 V DC (between isolated circuits)	
Accessories	Four shorting bars for use with current inputs.	

Output

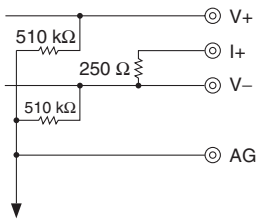
Item	DRT2-DA02	
	Voltage output	Current output
Output points	2 points	
Output type	0 to 5 V 1 to 5 V 0 to 10 V –10 to 10 V	0 to 20 mA 4 to 20 mA
Allowable output load resistance	1 KΩ min.	600 Ω max.
External output impedance	0.5 Ω max.	---
Resolution	1/6,000	
Accuracy	25°C: ±0.4% full scale –10°C to 55°C: ±0.8% full scale	
Conversion time	2 ms/2 points	
Converted data	Output ranges other than –10 to 10 V: Full scale is 0000 to 1770 hexadecimal (0 to 6,000). –10 to 10 V output range: Full scale is F448 to 0BB8 hexadecimal (–3,000 to 3,000). D/A conversion range: ±5% FS	
Isolation method	Photocoupler isolation between outputs and communications lines (There is no isolation between output signals.)	
Insulation resistance	20 MΩ min. at 250 V DC (between isolated circuits)	
Accessories	None	

Characteristics

Item	DRT2-AD04	DRT2-DA02
Communications power supply voltage	11 to 25 V DC	
Internal power supply voltage	Not required. (Supplied from the communications connector.)	
Current consumption	90 mA max. at 24 V DC	120 mA max. at 24 V DC
Dielectric strength	500 V AC for 1 min between the communications circuit and analog circuit (1-mA sensing current)	
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)	
Vibration resistance	10 to 150 Hz, 0.7-mm double amplitude	
Shock resistance	150 m/s^2	
Mounting strength	50 N (10 N in the DIN rail direction)	
Screw tightening torque	0.3 to 0.5 N·m (terminal screws) 0.25 to 0.3 N·m (communications connector screws)	
Ambient temperature	Operating:–10°C to 55°C Storage:–25°C to 65°C	
Ambient humidity	Operating:25% to 85% (with no condensation)	
Ambient environment	No corrosive gases	
Weight	170 g max.	150 g max.

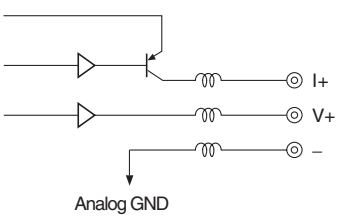
Internal Circuit Configuration

DRT2-AD04



Analog GND

DRT2-DA02

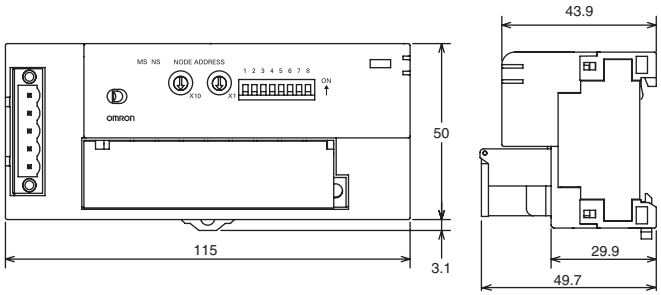


Analog GND

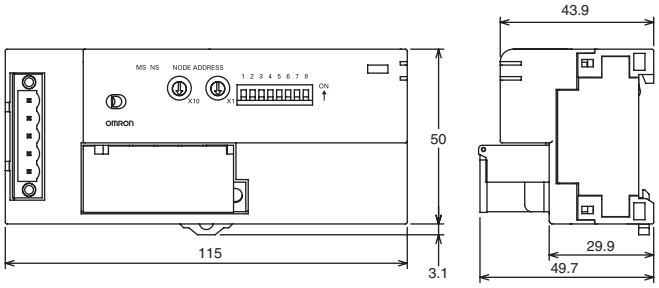
The – terminals of outputs 0 and 1 are connected internally.

Dimensions

DRT2-AD04

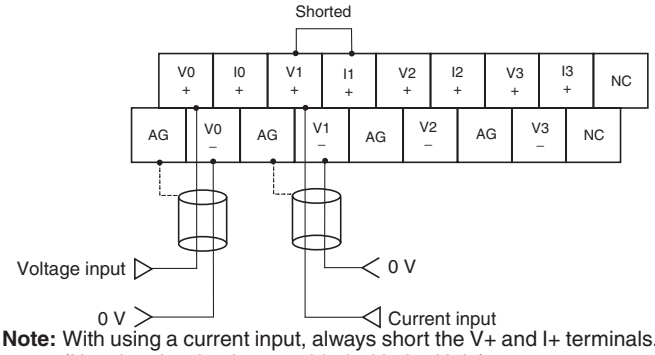


DRT2-DA02



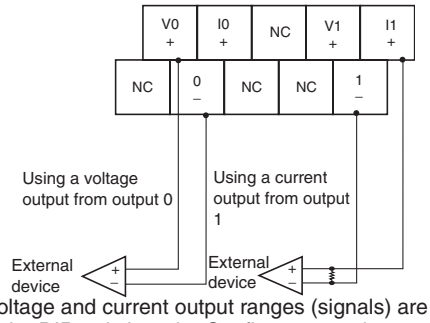
Wiring

DRT2-AD04



Note: With using a current input, always short the V+ and I+ terminals. (Use the shorting bar provided with the Unit.)

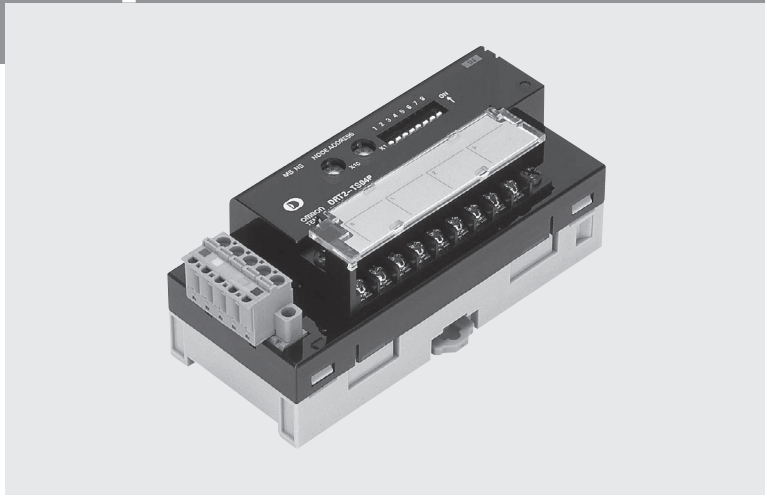
DRT2-DA02



Note: The voltage and current output ranges (signals) are set with either the DIP switch or the Configurator settings.

DRT2-TS04□

Temperature Input Terminals



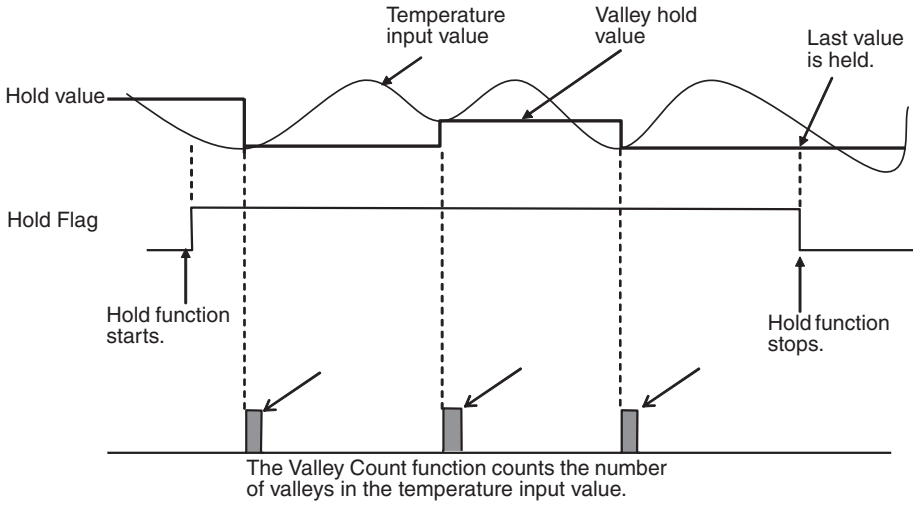
Measure temperatures. A wide range of temperature sensors is supported

- Four inputs
- Models for platinum resistance thermometers or thermocouples are available.
- Incorporating wire burnout detecting function.
- All inputs are insulated to one another

Smart Slave Functions

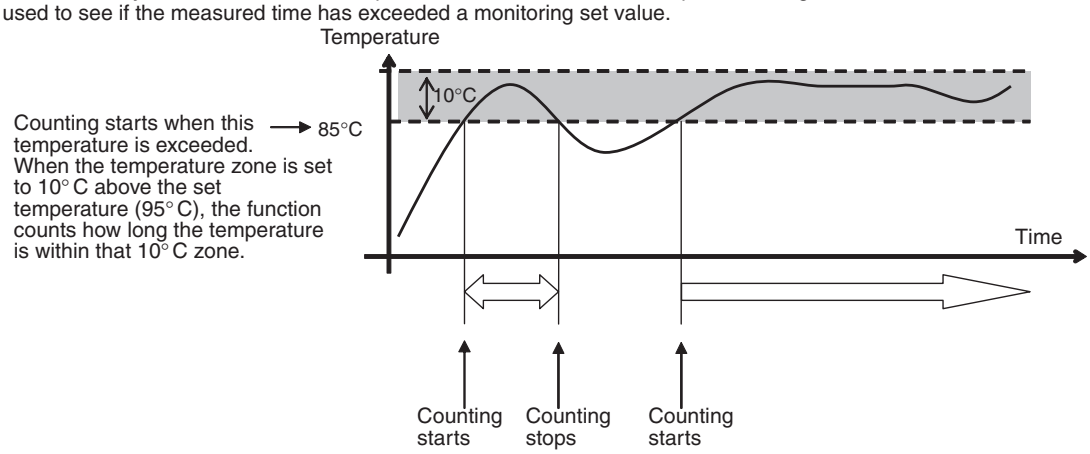
Top/Valley Count Function

The number of times the top or valley value is reached can be counted for an application that has fixed cycles of temperature changes. Explicit messages can be used to see if the number of times that is counted has exceeded a monitoring set value.



Temperature Range Timing Function

The length of time that the system is at a user-set temperature or within a user-set temperature range can be measured in seconds. Explicit messages can be used to see if the measured time has exceeded a monitoring set value.



Input Temperature Variation Detection Function

A relative comparison can be made between two inputs (0 to 3) and to detect temperature differences between two inputs or with a monitoring set value. Explicit messages can be used to see if the temperature difference has exceeded a monitoring set value.

Ordering Information

Classification	I/O points	Model
Temperature Input Terminal	4 inputs (Occupies 4 input words of the Master Unit)	DRT2-TS04T
		DRT2-TS04P

Specifications

Ratings

Model	DRT2-TS04T	DRT2-TS04P
Input type	Switchable between R, S, K1, K2, J1, J2, T, E, B, N, L1, L2, U, W, and PL2 types Configurator: Each input contact set separately. DIP switch: 4 points set at a time.	Switchable between PT, JPT, PT2, and JPT2 types Configurator: Each input contact set separately. DIP switch: 4 points set at a time.
Indicator accuracy	(Indicator value ±0.3% or ±1 °C, whichever is larger) ±1 digit max. (See note 2.)	Input range of –200 to 850 °C: (Indicator value ±0.3% or ±0.8 °C, whichever is larger) ±1 digit max. Input range of –200 to 200 °C: (Indicator value ±0.3% or ±0.5 °C, whichever is larger) ±1 digit max.
Conversion cycle	250 ms/4 points	
Temperature conversion data	Binary (4-digit hexadecimal, 8-digit hexadecimal for 1/100 display)	
Isolation method	Photocoupler isolation (between input and communications lines) Photocoupler isolation (between temperature input signals)	
I/O connection method	Terminal block connection	

Note: 1. Current flow to the Sensor is 0.35 mA when connected to the DRT2-TS04P.
2. Exceptional accuracy

Input type	Input accuracy
Less than –100 °C of K1, K2, T, or N	±2 °C ±1 digit max.
U, L1, L2	±2 °C ±1 digit max.
Less than 200 °C of R, S	±3 °C ±1 digit max.
Less than 400 °C of B	Not specified
W	(Command value ±0.3% or ±3 °C, whichever is larger) ±1 digit max.
PL2	(Command value ±0.3% or ±2 °C, whichever is larger) ±1 digit max.

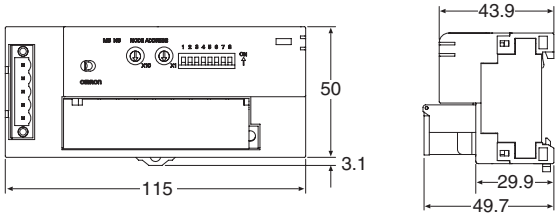
Characteristics

Model	DRT2-TS04T	DRT2-TS04P
Communications power supply voltage	11 to 25 VDC (supplied through communications connector)	
Current consumption	70 mA max. (24 VDC)	
Noise immunity	Conforms to IEC61000-4-4, 2.0 kV	
Vibration resistance	10 to 150 Hz, 0.7 mm double amplitude	
Shock resistance	150 m/s^2	
Dielectric strength	500 VAC between isolated circuits	
Insulation resistance	20 MΩ min. at 100 V DC (default value)	
Ambient temperature	Operating: -10 to 55°C (with no icing or condensation) Storage: -25 to 65°C	
Ambient operating humidity	25% to 85%	
Atmosphere	Must be free from corrosive gases.	
Mounting method	35-mm DIN track mounting	
Mounting strength	50 N (10 N in the DIN track direction)	
Terminal strength	Pulling: 50 N	
Weight	160 g max.	160 g max.

Dimension

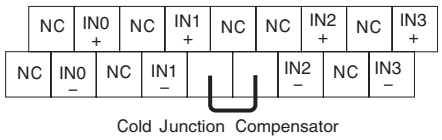
Note: All units are in millimeters unless otherwise indicated

DRT2-TS04

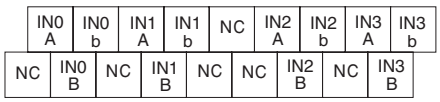


Terminal Arrangement

DRT2-TS04T

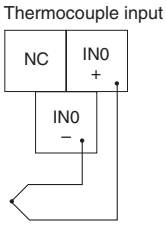


DRT2-TS04P

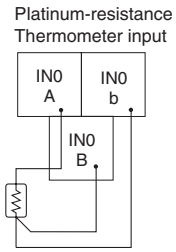


Wiring

DRT2-TS04T

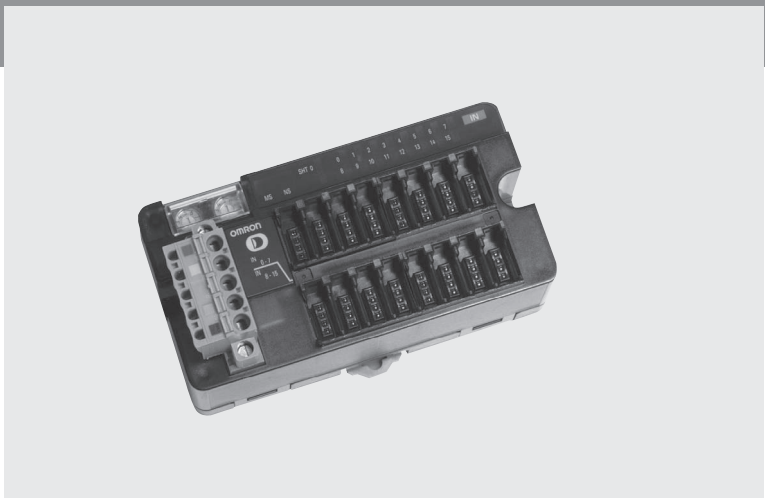


DRT2-TS04P



DRT2-□D16S(-1)

Sensor Connector Terminals



New Slave Equipped with Industry-standard Sensor Connectors

- Equipped with the standard Smart Slave functions that provide powerful preventative maintenance and troubleshooting capabilities.
- Digital I/O Terminal compatible with industry-standard sensor connectors
- Connect sensors easily without special tools. Reduce time required for wiring.
- Load short-circuit detection.

Ordering Information

I/O type	Internal I/O common	Number of I/O points	I/O connections	Internal circuit power	Rated I/O power supply voltage	Model
Input	NPN (+ common)	16	Sensor connector	Supplied from the communications connector	Supplied from the communications connector	DRT2-ID16S
	PNP (– common)					DRT2-ID16S-1
I/O	NPN (+common for inputs, –common for outputs)	8 inputs and 8 outputs			Supplied from external source for outputs	DRT2-MD16S
	PNP (–common for inputs, +common for outputs)					DRT2-MD16S-1

Specifications

Characteristics

Item	DRT2-ID16S(-1)	DRT2-MD16S(-1)
Communications power supply voltage	11 to 25 VDC	
Unit power supply voltage	Not required. (Supplied from the communications connector.)	
I/O power supply voltage	Supplied from the communications connector.	
Current consumption	Communications power supply: 230 mA max.	Communications power supply: 135 mA max.
Dielectric strength	500 VAC between isolated circuits	
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)	
Vibration resistance	10 to 56 Hz: 0.7-mm double amplitude 56 to 150 Hz: 50 m/s^2	
Shock resistance	150 m/s^2	
Mounting method	M4 screw mounting or 35-mm DIN track mounting	
Screw tightening torque	M4: 0.6 to 0.98 N·m	
Ambient temperature	Operating:–10°C to 55°C Storage:–25°C to 65°C	
Ambient humidity	Operating:35% to 85% (with no condensation)	
Weight	90 g max.	95 g max.

Input Ratings

Terminals with 16 inputs

Item	DRT2-ID16S	DRT2-ID16S-1
Internal I/O common	NPN	PNP
Number of inputs	16 inputs	
ON voltage	15 VDC min. between each input terminal and V	15 VDC min. between each input terminal and G
OFF voltage	5 VDC max. between each input terminal and V	5 VDC max. between each input terminal and G
OFF current	1 mA max.	
Input current	11 mA max./point (at 24 VDC) 3.0 mA min./point (at 11 VDC)	
ON delay time	1.5 ms max.	
OFF delay time	1.5 ms max.	
Number of circuits/ common	16 points/common	

Terminals with 8 Inputs and 8 Outputs

Item	DRT2-MD16S	DRT2-MD16S-1
Internal I/O common	NPN	PNP
Number of inputs	8	
ON voltage	9 VDC min. between each input terminal and V	9 VDC min. between each input terminal and G
OFF voltage	5 VDC max. between each input terminal and V	5 VDC max. between each input terminal and G
OFF current	1 mA max.	
Input current	11 mA max./point (at 24 VDC) 3.0 mA min./point (at 11 VDC)	
ON delay time	1.5 ms max.	
OFF delay time	1.5 ms max.	
Number of circuits/ common	8 points/common	
Sensor short-circuit detection current	100 mA min. (per input)	

Output Ratings

Terminals with 8 Inputs and 8 Outputs

Item	DRT2-MD16S	DRT2-MD16S-1
Internal I/O common	NPN	PNP
Number of inputs	8 (8 to 15)	
Rated output current	0.3 A/point, 2.4 A/ common	0.3 A/point, 1.6 A/ common
Residual voltage	2 VDC max. (0.3 A DC between output and G terminal)	2 VDC min. (0.3 A DC between input and V terminal)
Leakage current	0.1 mA max.	
ON delay time	1.5 ms max.	
OFF delay time	1.5 ms max.	
Number of circuits/ common	8 points/common	
Load short-circuit detection current	2.4 A min./common	1.6 A min./common

Connectors

OMRON Connectors

Model	Specifications	Compatible wire size
XN2A-1430	Spring-clamp style	28 to 20 AWG (0.08 to 0.5 mm^2) wire, 1.5 mm max. outer diameter including insulation

Tyco Electronics Connectors

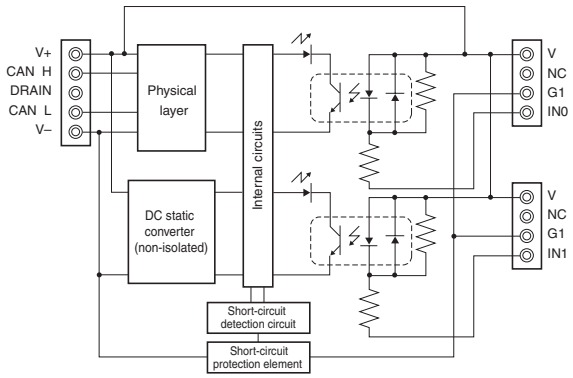
Model	Specifications	Compatible wire size
1-1473562-4	Red	28 to 24 AWG (0.08 to 0.2 mm^2) wire, 0.9 to 1.0 mm max. outer diameter including insulation
1473562-4	Yellow	24 to 22 AWG (0.2 to 0.3 mm^2) wire, 1.0 to 1.15 mm max. outer diameter including insulation
2-1473562-4	Blue	22 to 20 AWG (0.3 to 0.5 mm^2) wire, 1.15 to 1.35 mm max. outer diameter including insulation

Sumitomo 3M Connectors

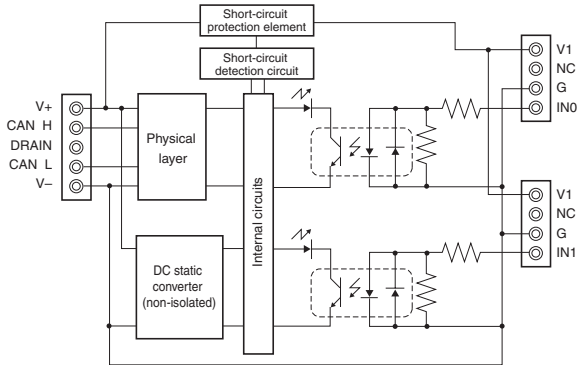
Model	Specifications	Compatible wire size
37104-3101-000FL	Red	26 to 24 AWG (0.14 to 0.2 mm^2) wire, 0.8 to 1.0 mm max. outer diameter including insulation
37104-3122-000FL	Yellow	26 to 24 AWG (0.14 to 0.2 mm^2) wire, 1.0 to 1.2 mm max. outer diameter including insulation
37104-3163-000FL	Orange	26 to 24 AWG (0.14 to 0.2 mm^2) wire, 1.2 to 1.6 mm max. outer diameter including insulation
37104-2124-000FL	Green	22 to 20 AWG (0.3 to 0.5 mm^2) wire, 1.0 to 1.2 mm max. outer diameter including insulation
37104-2165-000FL	Blue	22 to 20 AWG (0.3 to 0.5 mm^2) wire, 1.2 to 1.6 mm max. outer diameter including insulation
37104-2206-000FL	Gray	22 to 20 AWG (0.3 to 0.5 mm^2) wire, 1.6 to 2.0 mm max. outer diameter including insulation

Internal Circuit Configuration

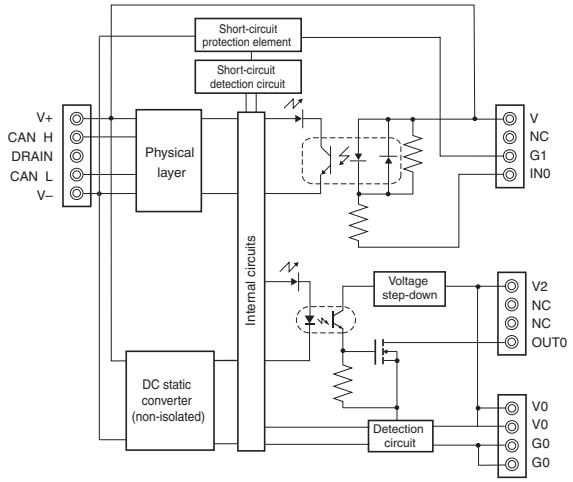
DRT2-ID16S (NPN)



DRT2-ID16S-1 (PNP)



DRT2-MD16S (NPN)



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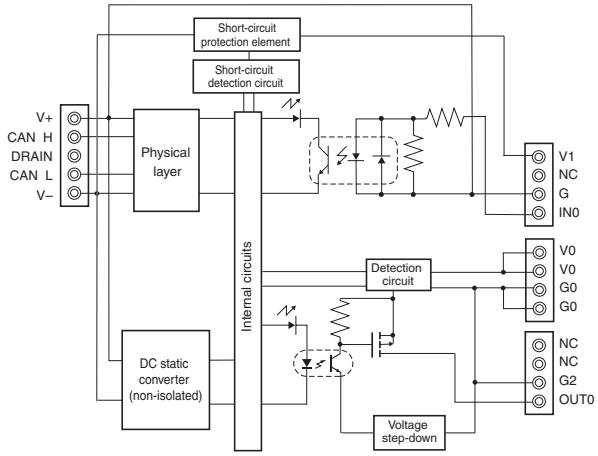
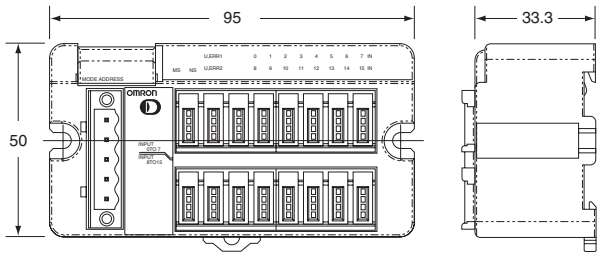
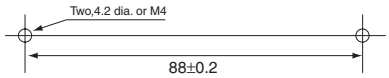


Dimensions

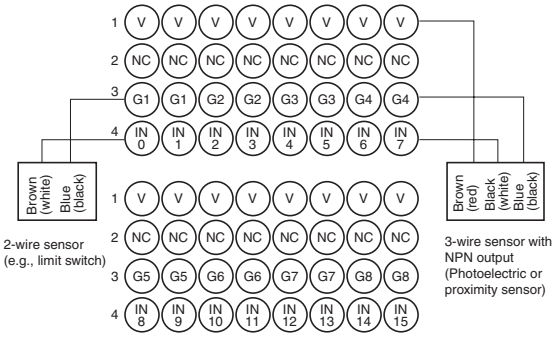


Mounting Hole Dimensions

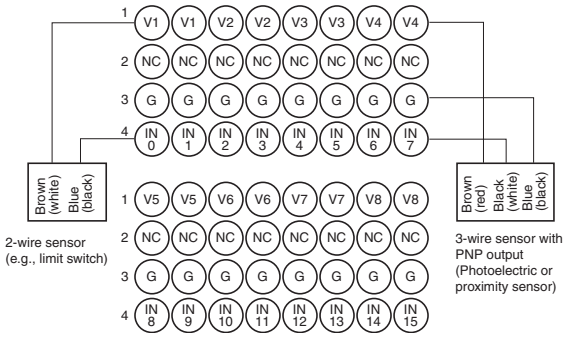


Wiring

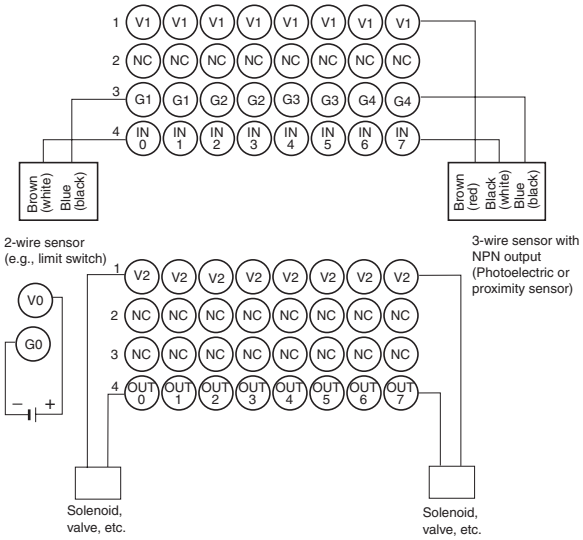
DRT2-ID16S (NPN)



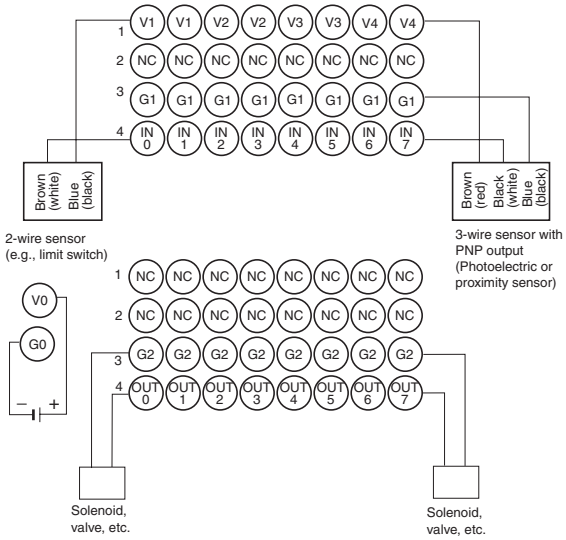
DRT2-ID16S-1 (PNP)



DRT2-MD16S (NPN)

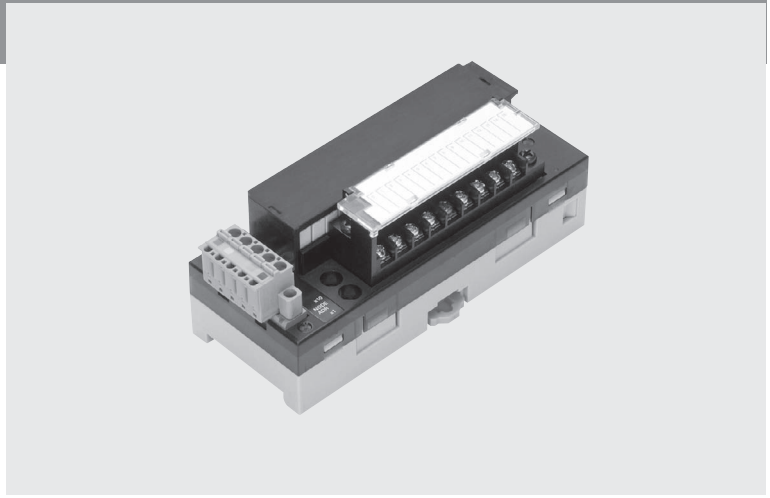


DRT2-MD16S-1 (PNP)



DRT2-ROS16

Relay output Terminal



I/O terminal enhances maintenance capabilities due replaceable relays.

- Smart DeviceNet slave that provides preventive maintenance and trouble shooting information
- 3A replaceable relays
- Relays replaced easily, without special tools needed
- Units can be extended with the XWT I/O blocks, reducing the number of network nodes required

Ordering information

I/O type	Number of I/O	I/O connections	Rated load	Rated carry current	Applicable relay	Model
Output	16	M3 screw terminals	250 V AC, 2 A, 8-A common 30 V DC, 2 A, 8-A common	3 A	DRTANY5W-K	DRT2-ROS16

Specifications

Common Specifications

Item	Specifications
Communication power supply voltage	11 to 25 V DC (Supplied from the communications connector)
Noise immunity	Conforms to IEC61000-4-4. 2kV (power lines)
Vibration resistance	10 to 55 Hz, 0.7-mm double amplitude
Shock resistance	100 m/s²
Dielectric strength	500 V AC (between isolated circuits)
Insulation resistance	20 MW min. at 250 V DC
Ambient temperature	-10 to +55°C
Ambient humidity	25% to 85% (with no condensation)
Operating environment	No corrosive gases
Storage temperature	-25 to +65°C
Mounting	35-mm DIN Track mounting
Screw thightening torque	M2 (communications connector without set screws): 0.26 to 0.3 Nm M3 (screw terminals): 0.3 to 0.5 Nm

Output Specifications (for One Relay)

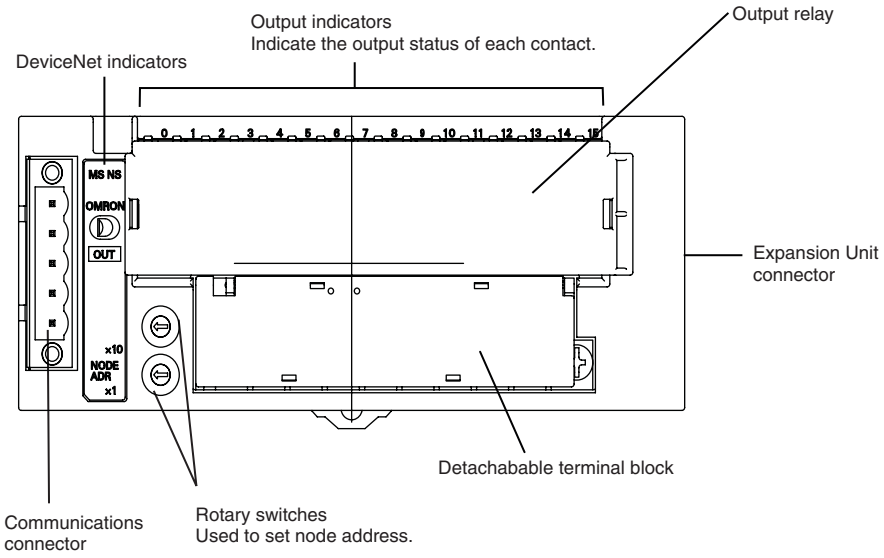
Item	Specifications
Relay	DRTANY5W-K
Rated load	Resistive load 250 V AC, 2 A, 8-A common 30 V DC, 2 A, 8-A common
Rated carry current	3 A[1]
Maximum switching voltage	250 V AC, 125 V DC
Maximum switching current	3 A
Maximum switching capacity	75o V AC, 90 V DC
Maximum applicable load (reference value)	5 V DC at 1 mA

1. The rated carry current can be as high as 3 A (10-A common) if the number of terminal that turn ON simultaneously is four or less per common, or if the ambient temperature is 45°C or lower.

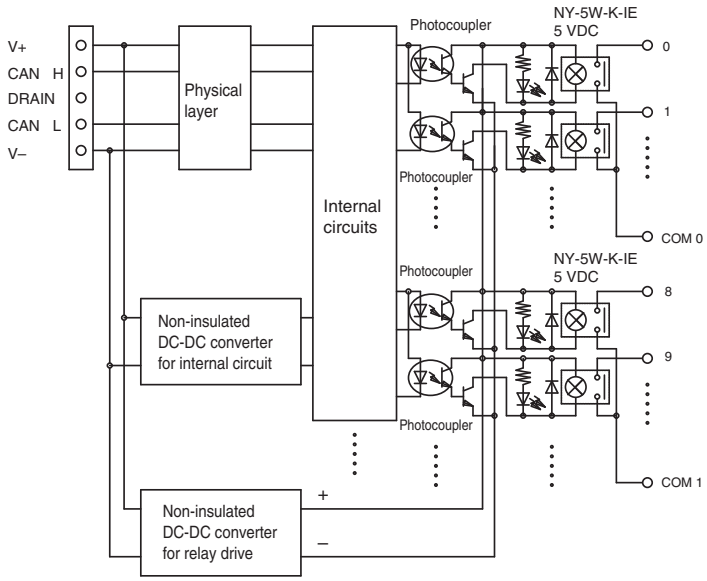
Real Life Expectancy

Item	Specifications
Mechanical life expectancy	20,000,000 times min.
Electrical life expectancy	100,000 times min.

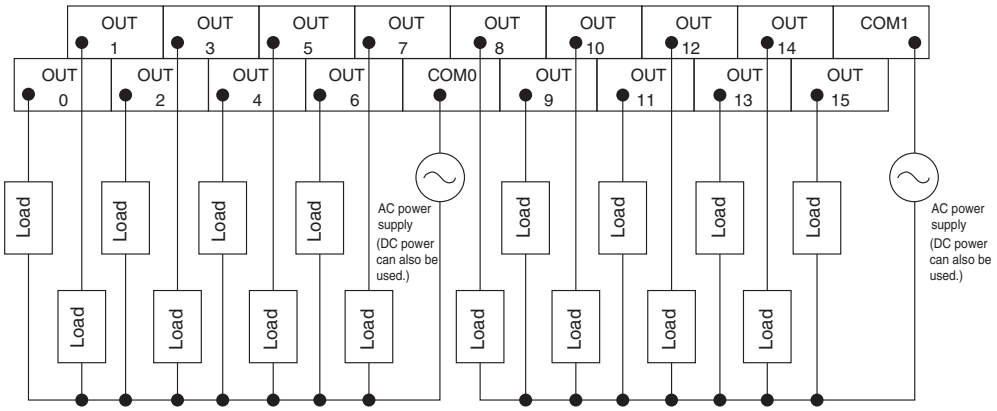
Nomenclature



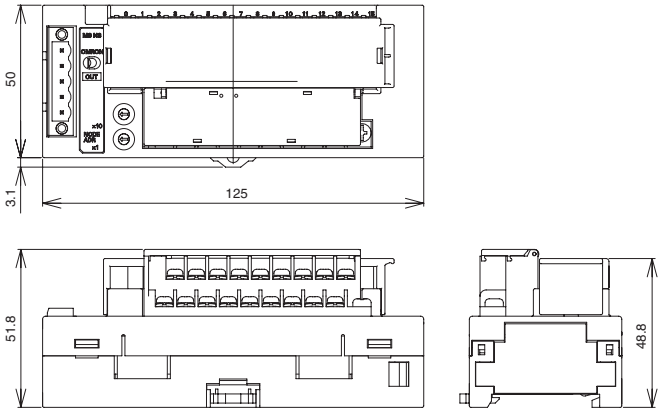
Internal Circuit Diagrams



Wiring



Dimensions



Engeneering Data

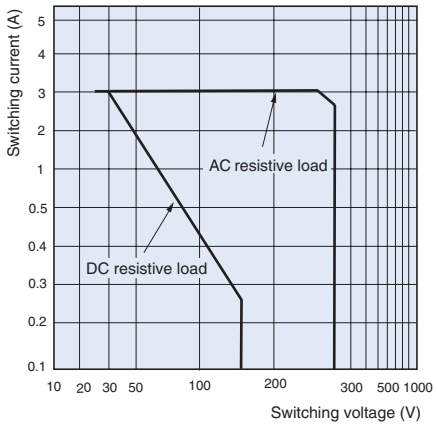
Reference Data

The data shown below is based on actual measurements of samples taken from the production line. There is some degree of variation in relay characteristics and so this data should be used only for reference purposes.

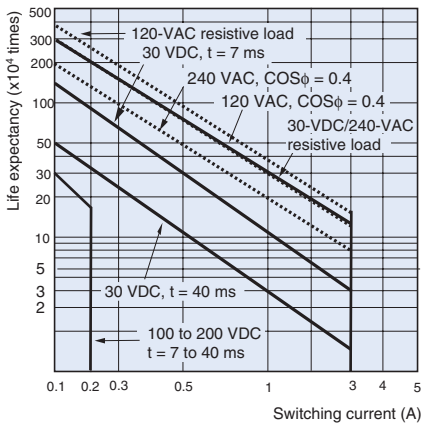
Note: 1. With a current between 2 and 3 A (common: 8 to 10 A), either ensure that the number of points per common that simultaneously turn ON does not exceed 4 or ensure that the temperature does not exceed 45°C. There are no restrictions if the current does not exceed 2 A (common: 8 A).

2. Using at the rated current value assures normal unit operation but does not assure the life expectancy of the relay itself. The relay's life expectancy varies greatly with the operating temperature, type of load, and switching conditions, and so be sure to check the relay characteristics under the actual conditions.

Maximum Switching Capacity

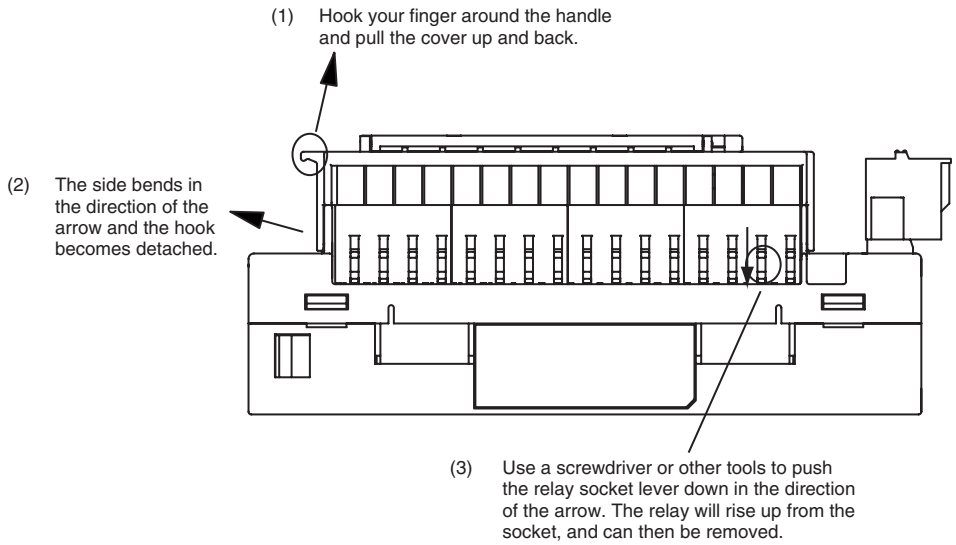


Life Expectancy Curve



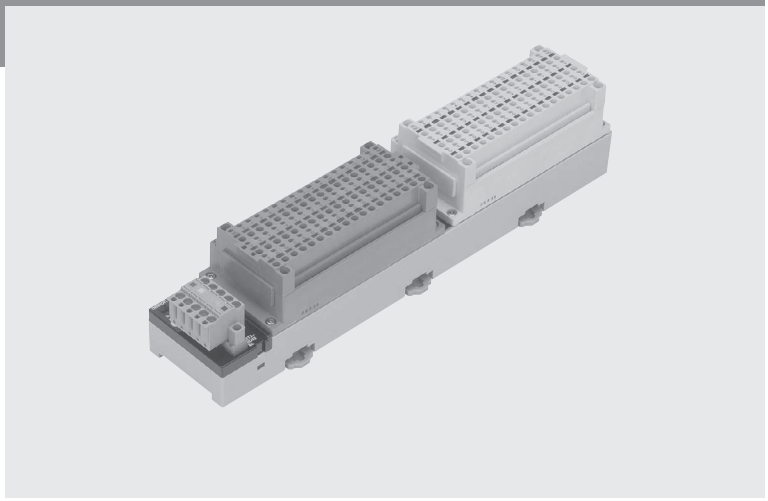
Relay Replacement Method

When replacing output relays, remove the cover as shown below.



DRT2-□D32SL(-1)/□D32SLH(-1)

Screw-less Clamp Terminals



Reduced Wiring and Labor on Factory Sites with Screw-less Terminal Wiring

- Screw-less (M3) structure eliminates tightening work.
- Removable terminal blocks for easier maintenance.
- Single-step wiring by simply inserting pole terminals.

Smart Slave Functions

I/O Short and Disconnection Detection. Communicate Detection Results to Host.

Improved Monitor Functions

- Operation time monitor
- Contact operation counter
- Unit conduction time monitor
- Total ON time monitor
- Unit comments
- Connected device comments
- Network power supply voltage monitor
- I/O power status monitor

Slave and Connected Device Comments

Expansion I/O Units Can Be Added.

Shared Internal and Communications Power Supply

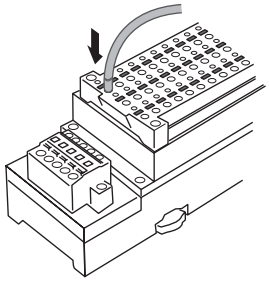
- Reduces wiring. (I/O power supplied externally.)

Automatic Detection of Communications Speed

Power-ON Inrush Current Protection on Input and I/O Terminals

Just Insert Pole Terminals to Complete Wiring

One Step



Ordering Information

Short/disconnection detection	I/O type	Internal I/O common	Number of I/O points	I/O terminals	Internal circuit power	Rated I/O power supply voltage	Model
Supported	Inputs	NPN (+ common)	32	Clamp terminals	Supplied from communications connector.	24 VDC	DRT2-ID32SLH
		PNP (–common)					DRT2-ID32SLH-1
	Outputs	NPN (+common)					DRT2-OD32SLH
		PNP (–common)					DRT2-OD32SLH-1
	I/O	NPN (+common for inputs, –common for outputs)	16 inputs and 16 outputs				DRT2-MD32SLH
		PNP (–common for inputs, +common for outputs)					DRT2-MD32SLH-1
Not supported	Inputs	NPN (+ common)	32				DRT2-ID32SL
		PNP (–common)					DRT2-ID32SL-1
	Outputs	NPN (+common)					DRT2-OD32SL
		PNP (–common)					DRT2-OD32SL-1
	I/O	NPN (+common for inputs, –common for outputs)	16 inputs and 16 outputs				DRT2-MD32SL
							DRT2-MD32SL-1

Specifications

Terminals with 32 Transistor Inputs (Input Ratings)

Item	DRT2-ID32SL	DRT2-ID32SL-1	DRT2-ID32SLH	DRT2-ID32SLH-1
Internal I/O common	NPN	PNP	NPN	PNP
Input points	32 inputs			
I/O power supply voltage	20.4 to 26.4 (24 VDC −15% to +10%)			
Input current	24 VDC: 6.0 mA max./point, 17 VDC: 3.0 mA max./point			
Input resistance	4 kΩ			
ON delay time	1.5 ms max.			
OFF delay time	1.5 ms max.			
ON voltage	15 VDC min. (between input and V terminal)	15 VDC min. (between input and G terminal)	15 VDC min. (between input and V terminal)	15 VDC min. (between input and G terminal)
OFF voltage	5 VDC max. (between input and V terminal)	5 VDC max. (between input and G terminal)	5 VDC max. (between input and V terminal)	5 VDC max. (between input and G terminal)
ON current	3 mA min.			
OFF current	1 mA max.			
Circuits per common	16			
Power short-circuit protection	---		Operates at 50 mA/point min.	
Disconnection detection	---		Operates at 0.3 mA/point max.	

Terminals with 32 Transistor Outputs (Output Rating)

Item	DRT2-OD32SL	DRT2-OD32SL-1	DRT2-OD32SLH	DRT2-OD32SLH-1
Internal I/O common	NPN	PNP	NPN	PNP
Output points	32 outputs			
I/O power supply voltage	20.4 to 26.4 (24 VDC −15% to +10%)			
Rated output current	0.5 A/point, 4.0 A/common (See note.)			
Residual voltage	1.2 V max.			
Leakage current	0.1 mA max.		0.1 mA max.	
ON delay time	0.5 ms max.			
OFF delay time	1.5 ms max.			
Disconnection detection	---		Operates at current consumption of 3 mA/point max. (Not detected at 3 mA or higher.)	
Output for errors	According to hold/clear setting for errors (default: clear)			

Input Ratings with 16 Transistor Inputs/16 Transistor Outputs

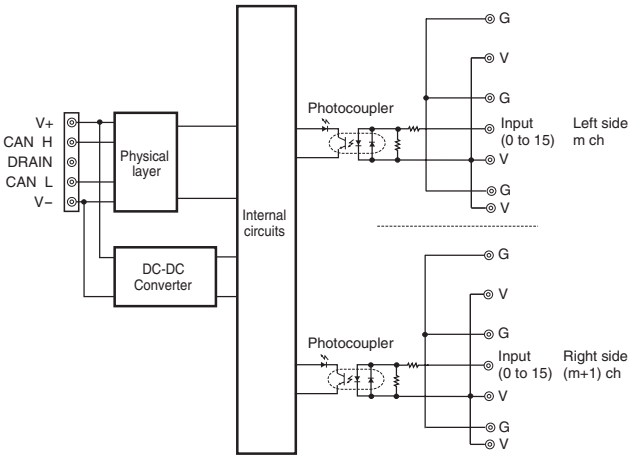
Item	DRT2-MD32SL	DRT2-MD32SL-1	DRT2-MD32SLH	DRT2-MD32SLH-1
Internal I/O common	NPN	PNP	NPN	PNP
I/O points	16 inputs			
I/O power supply voltage	20.4 to 26.4 (24 VDC −15% to +10%)			
Input current	24 VDC: 6.0 mA max./point, 17 VDC: 3.0 mA max./point			
Input resistance	4 kΩ			
ON delay time	1.5 ms max.			
OFF delay time	1.5 ms max.			
ON voltage	15 VDC min. (between input and V terminal)	15 VDC min. (between input and G terminal)	15 VDC min. (between input and V terminal)	15 VDC min. (between input and G terminal)
OFF voltage	5 VDC max. (between input and V terminal)	5 VDC max. (between input and G terminal)	5 VDC max. (between input and V terminal)	5 VDC max. (between input and G terminal)
ON current	3 mA min.			
OFF current	1 mA max.			
Circuits per common	16			
Power short-circuit protection	---		Operates at 50 mA/point min.	
Disconnection detection	---		Operates at 0.3 mA/point max.	

Output Ratings with 16 Transistor Inputs/16 Transistor Outputs

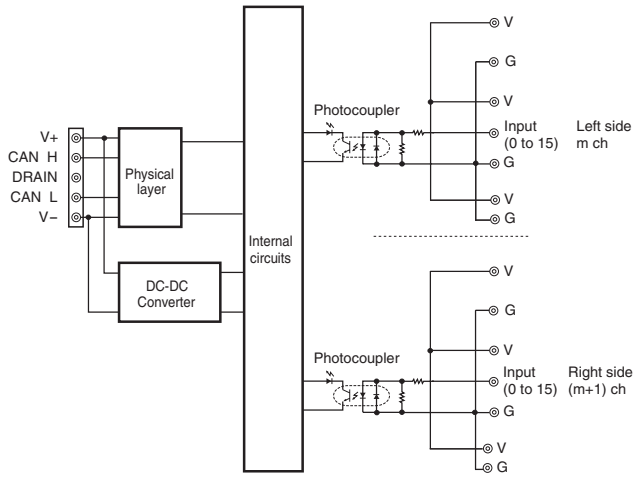
Item	DRT2-MD32SL	DRT2-MD32SL-1	DRT2-MD32SLH	DRT2-MD32SLH-1
Internal I/O common	NPN	PNP	NPN	PNP
Output points	16 outputs			
I/O power supply voltage	20.4 to 26.4 (24 VDC −15% to +10%)			
Rated output current	0.5 A/point, 4.0 A/common (See note.)			
Residual voltage	1.2 V max.			
Leakage current	0.1 mA max.			
ON delay time	0.5 ms max.			
OFF delay time	1.5 ms max.			
Disconnection detection	---		Operates at current consumption of 3 mA/point max. (Not detected at 3 mA or higher.)	
Output for errors	According to hold/clear setting for errors (default: clear)			

Internal Circuit Configuration

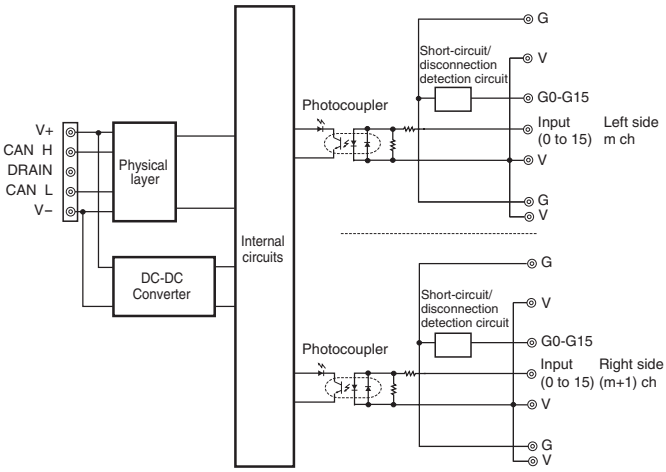
DRT2-ID32SL



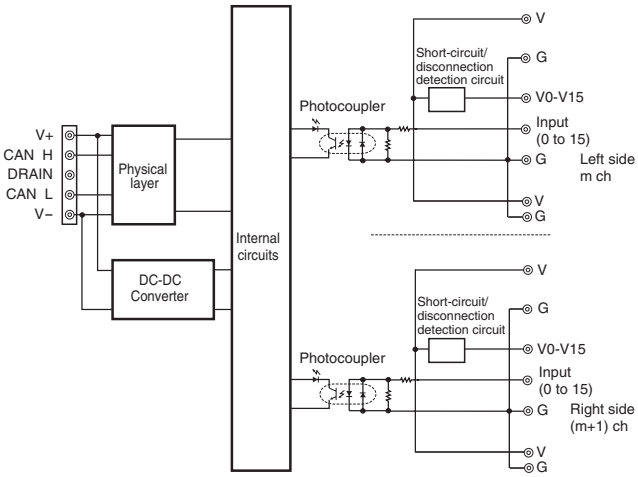
DRT2-ID32SL-1



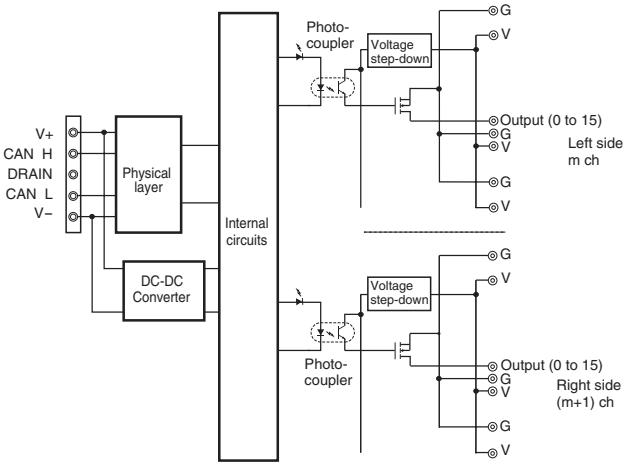
DRT2-ID32SLH



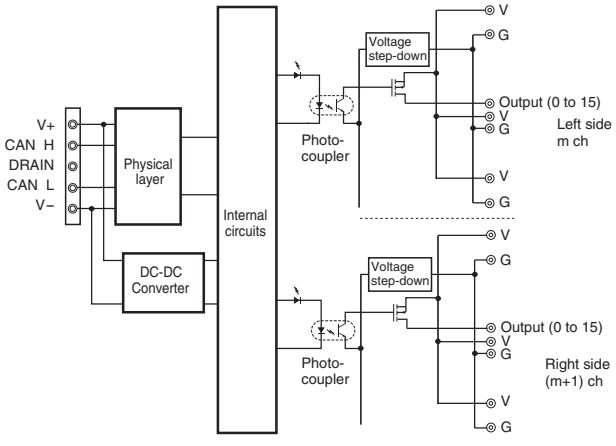
DRT2-ID32SLH-1



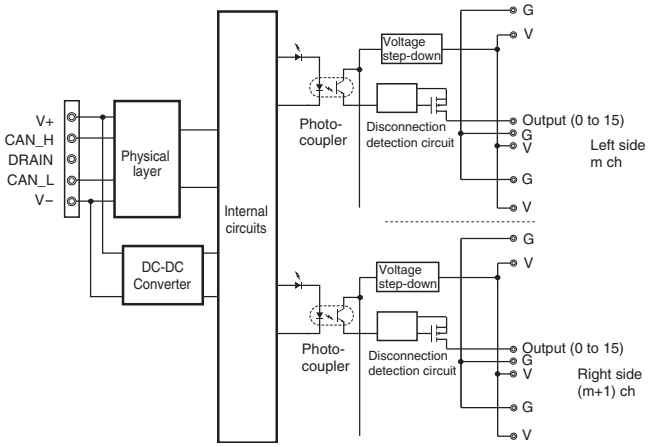
DRT2-OD32SL



DRT2-OD32SL-1



DRT2-OD32SLH



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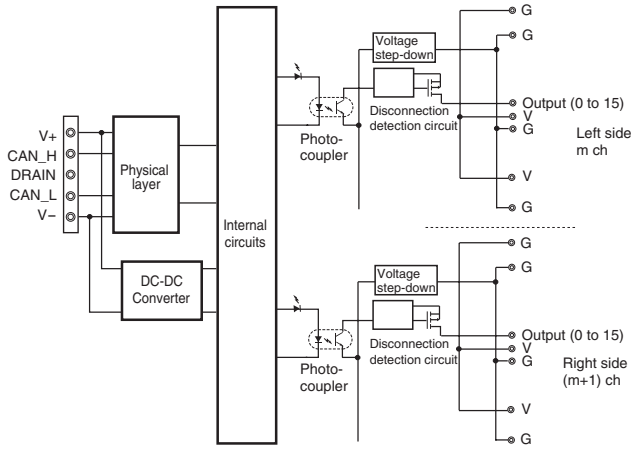

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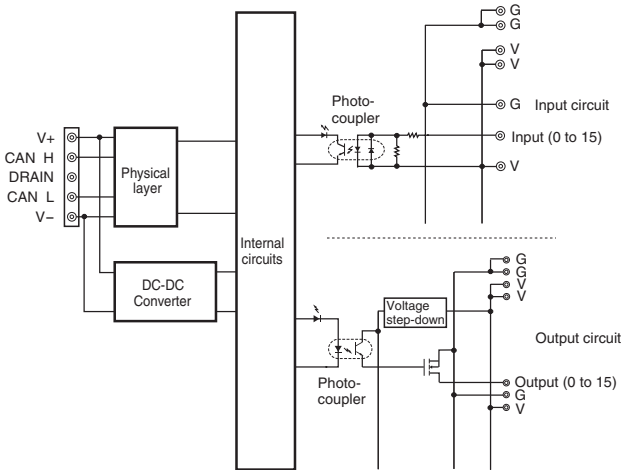

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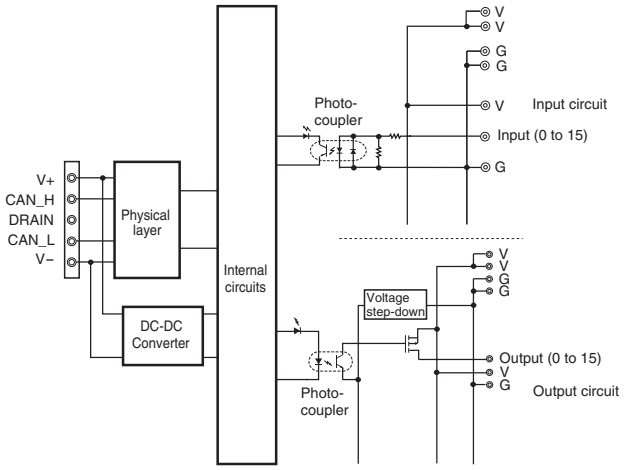

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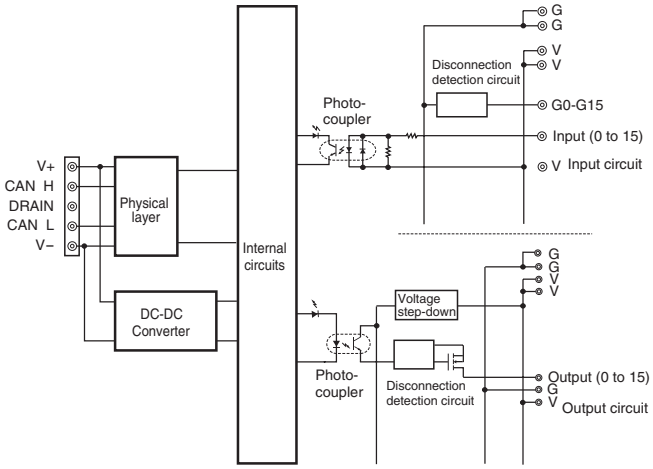
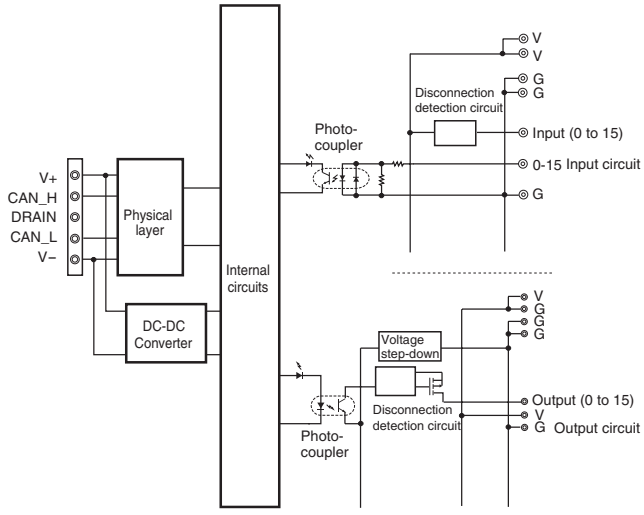
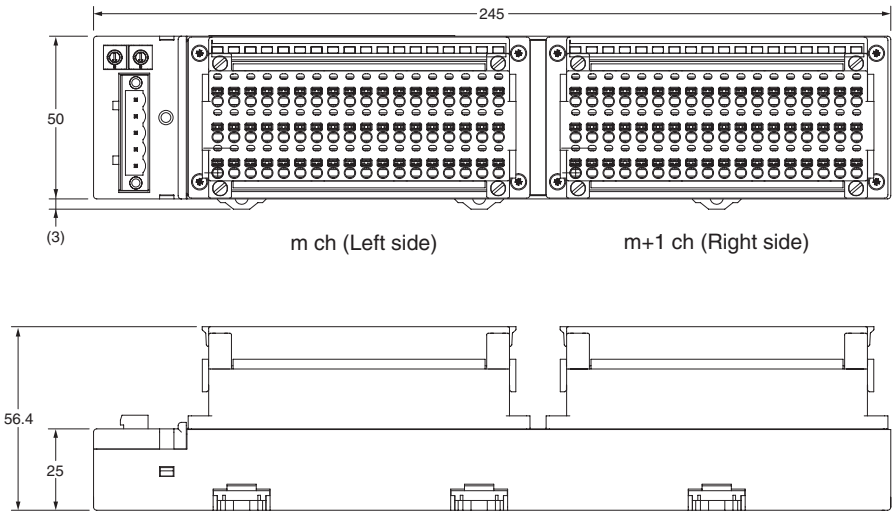


DRT2-MD32SLH-1



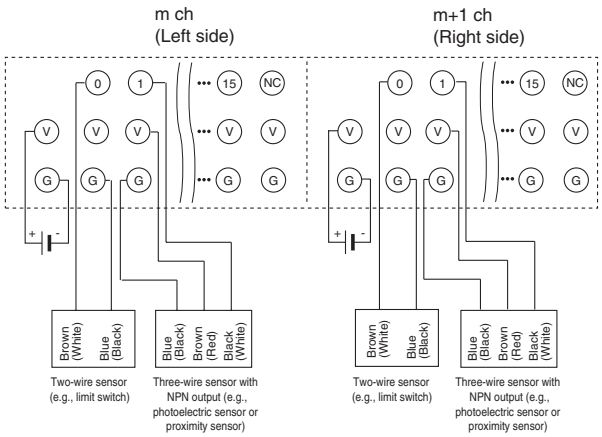
Dimensions (Unit: mm)

DRT2-ID32SLH(-1)
DRT2-OD32SLH(-1)
DRT2-MD32SLH(-1)
DRT2-ID32SL(-1)
DRT2-OD32SL(-1)
DRT2-MD32SL(-1)



Wiring

DRT2-ID32SL



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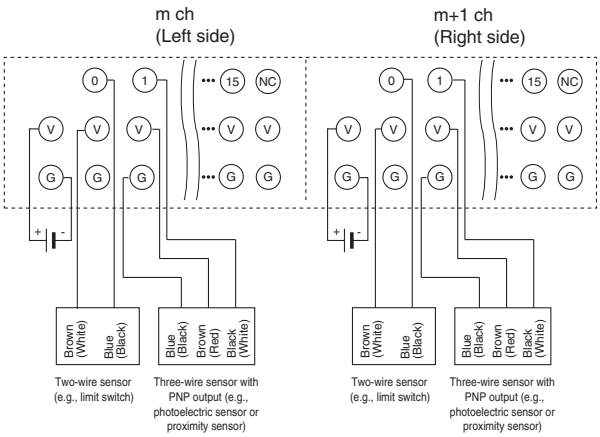

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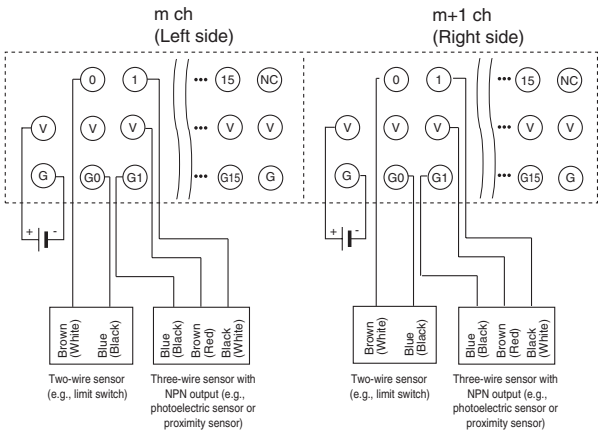

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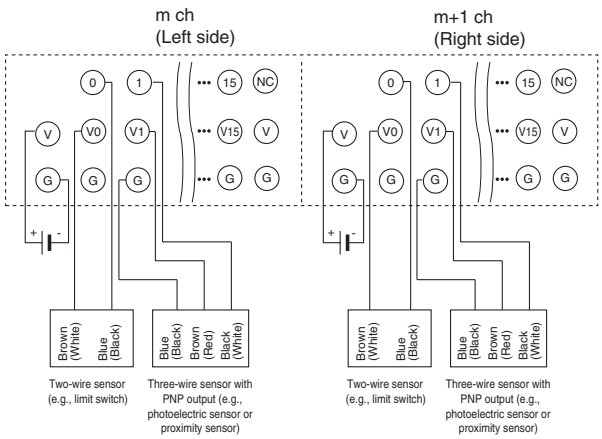

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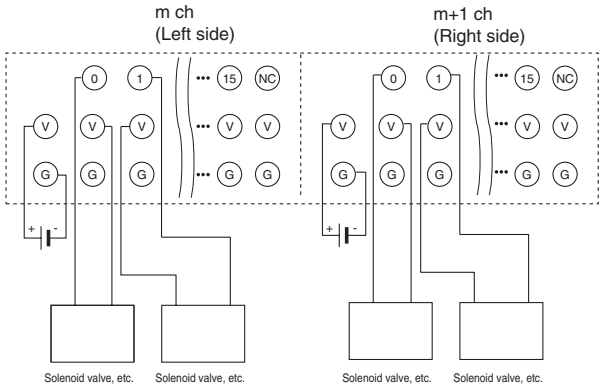

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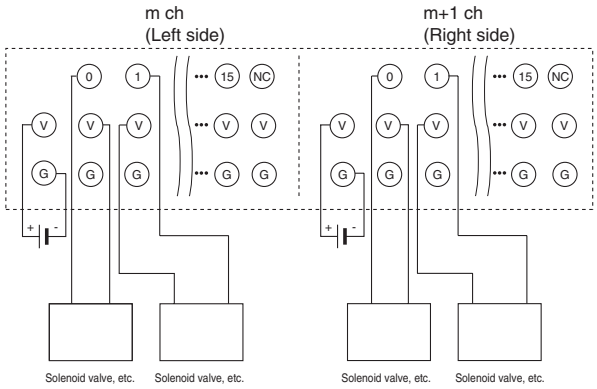

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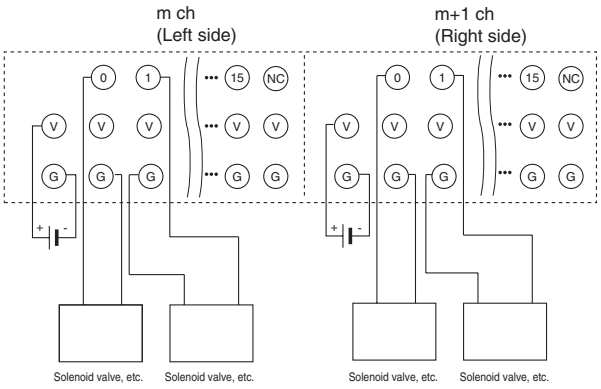

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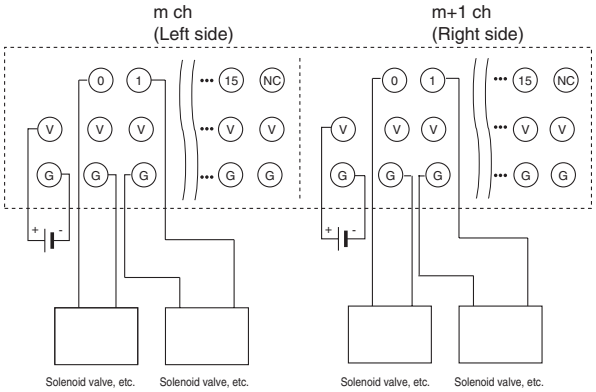

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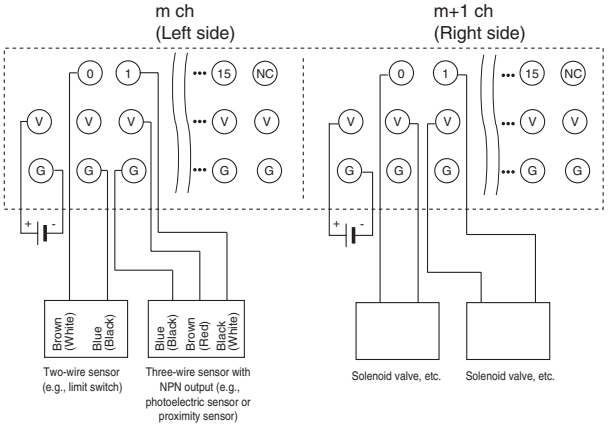

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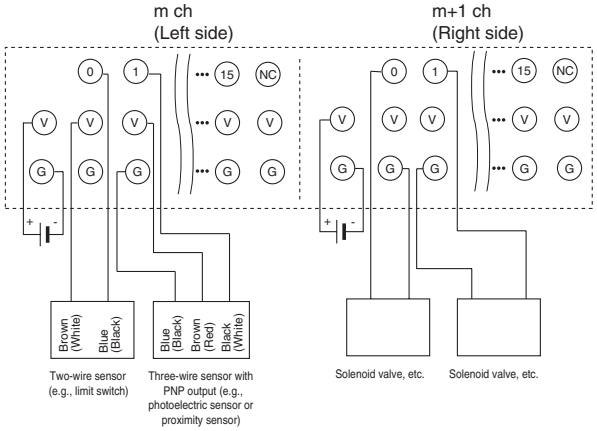

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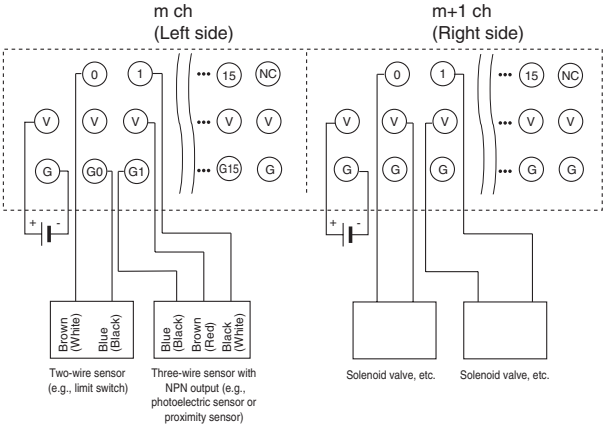
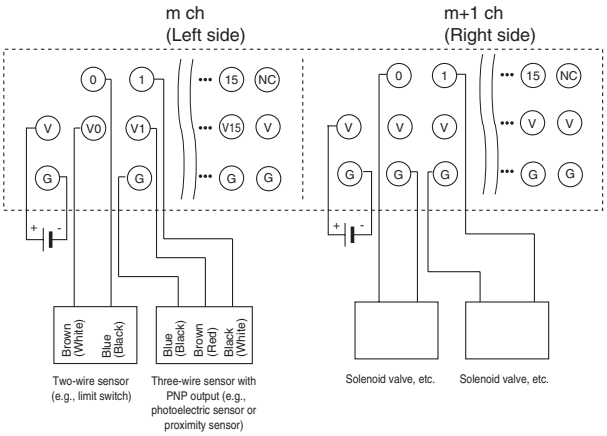
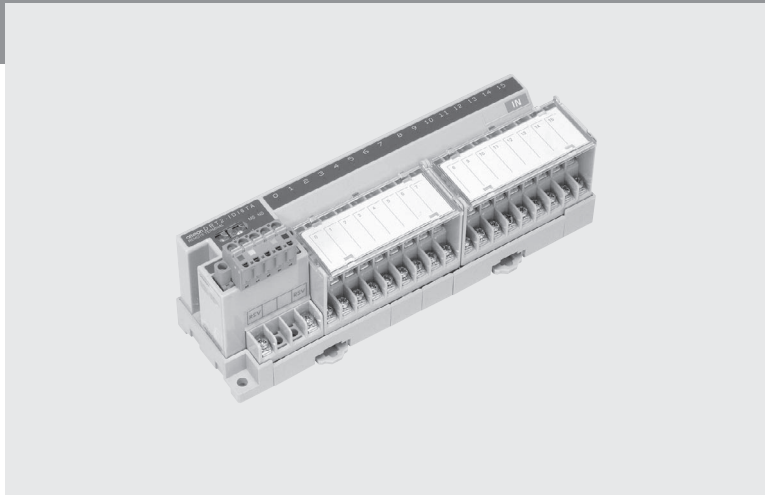


DRT2-MD32SLH-1



DRT2-□D16TA(-1)

3-tier Connection Terminals



Terminals with 3-tier Terminal Blocks Added to DRT2 Smart Slaves

- Easy wiring with no sharing of terminals. Easy-to-understand wiring locations.
- No relay terminal block terminals required.
- Removable cassette-type circuit sections.

Smart Slave Functions

Improved Monitor Functions

- Contact operation counter
- Unit conduction time monitor
- Total ON time monitor
- Network power supply voltage monitor
- Communications error log
- Last maintenance date
- Operation time monitor

Slave and Connected Device Comments

Automatic Detection of Communications Speed

Input filter on Input and I/O Terminals

Power-ON Inrush Current Protection on Input and I/O Terminals

Ordering Information

I/O type	Internal I/O common	Number of I/O points	I/O terminals	Internal circuit power	Rated I/O power supply voltage	Model
Inputs	NPN (+ common)	16	M3 terminal block	Supplied from communications connector.	24 VDC	DRT2-ID16TA
	PNP (–common)					DRT2-ID16TA-1
Outputs	NPN (+common)					DRT2-OD16TA
	PNP (–common)					DRT2-OD16TA-1
I/O	NPN (+common for inputs, –common for outputs)	8 inputs and 8 outputs				DRT2-MD16TA
	PNP (–common for inputs, +common for outputs)					DRT2-MD16TA-1

Specifications

Input Ratings

Terminals with 16 Transistor Inputs

Item	DRT2-ID16TA	DRT2-ID16TA-1
Internal I/O common	NPN	PNP
I/O points	16 inputs	
ON voltage	15 VDC min. (between input and V terminal)	15 VDC min. (between input and G terminal)
OFF voltage	5 VDC max. (between input and V terminal)	5 VDC max. (between input and G terminal)
OFF current	1.0 mA max.	
Input current	24 VDC: 6.0 mA max./point 17 VDC: 3.0 mA max./point	
ON delay time	1.5 ms max.	
OFF delay time	1.5 ms max.	
Circuits per common	8	

Terminals with 8 Transistor Inputs and 8 Transistor Outputs

Item	DRT2-MD16TA	DRT2-MD16TA-1
Internal I/O common	NPN	PNP
I/O points	8 inputs	
ON voltage	15 VDC min. (between input and V terminals)	15 VDC min. (between input and G terminals)
OFF voltage	5 VDC max. (between input and V terminals)	5 VDC max. (between input and G terminals)
OFF current	1.0 mA max.	
Input current	24 VDC: 6.0 mA max./point 17 VDC: 3.0 mA max./point	
ON delay time	1.5 ms max.	
OFF delay time	1.5 ms max.	
Circuits per common	8	

Output Ratings

Terminals with 16 Transistor Outputs

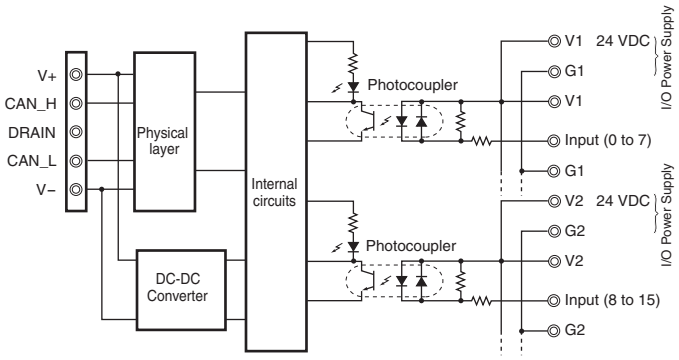
Item	DRT2-OD16TA	DRT2-OD16TA-1
Internal I/O common	NPN	PNP
I/O points	16 outputs	
Rated output voltage	0.5 A/point	
Residual voltage	1.2 VDC max. (0.5 A DC between output and G terminal)	1.2 VDC min. (0.5 A DC between input and V terminal)
Leakage current	0.1 mA max.	
ON delay time	0.5 ms max.	
OFF delay time	1.5 ms max.	
Circuits per common	8	

Terminals with 8 Transistor Inputs and 8 Transistor Outputs

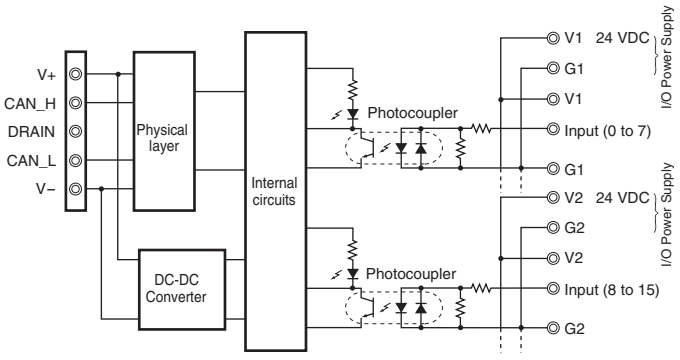
Item	DRT2-MD16TA	DRT2-MD16TA-1
Internal I/O common	NPN	PNP
I/O points	8 outputs	
Rated output voltage	0.5 A/point	
Residual voltage	1.2 VDC max. (0.5 A DC between output and G terminal)	1.2 VDC min. (0.5 A DC between input and V terminal)
Leakage current	0.1 mA max.	
ON delay time	0.5 ms max.	
OFF delay time	1.5 ms max.	

Internal Circuit Configuration

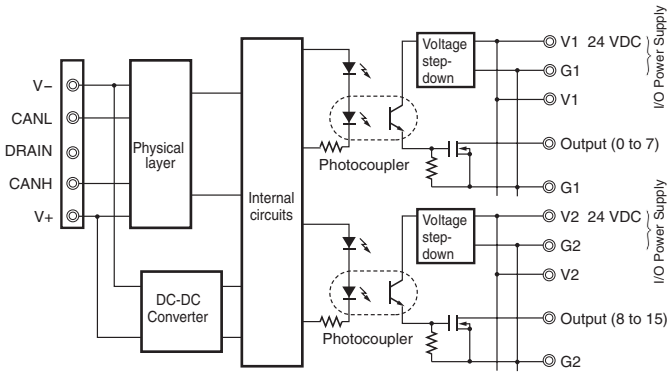
DRT2-ID16TA



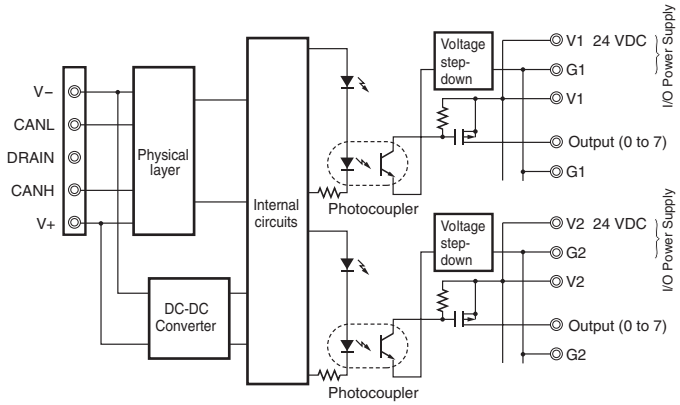
DRT2-ID16TA-1



DRT2-OD16TA



DRT2-OD16TA-1



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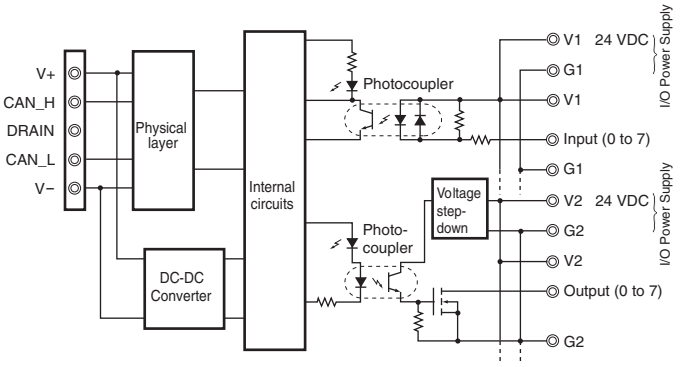

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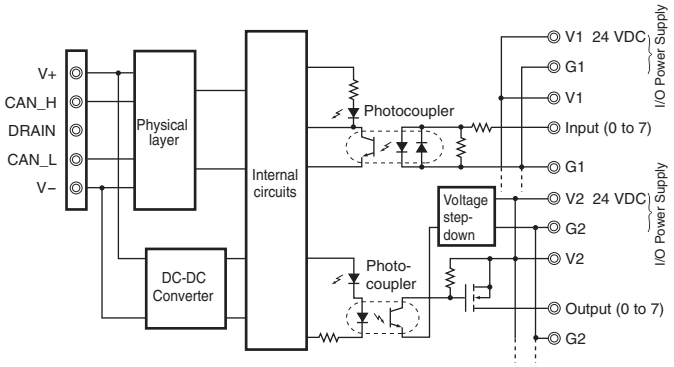
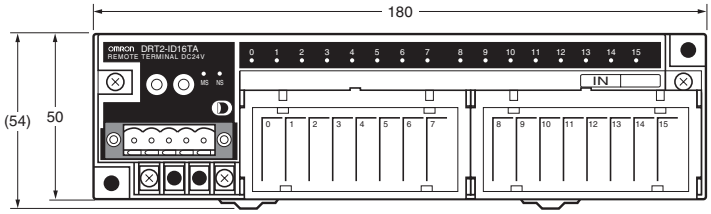
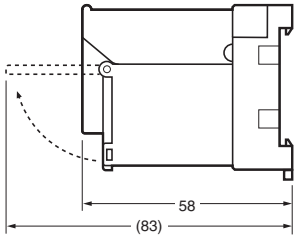


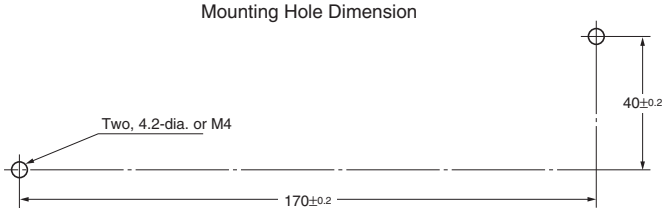
Dimensions (Unit: mm)

DRT2-ID16TA(-1)
DRT2-OD16TA(-1)
DRT2-MD16TA(-1)





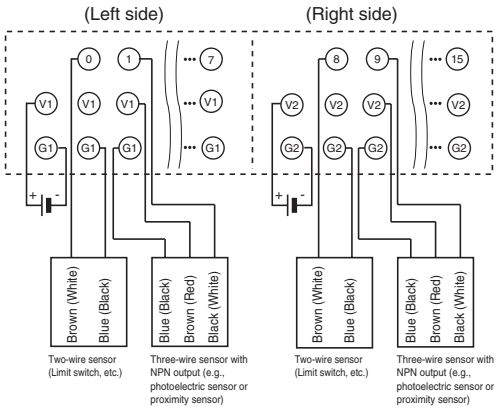
Mounting Hole Dimension



Dimensions in parentheses are reference values.

Wiring

DRT2-ID16TA



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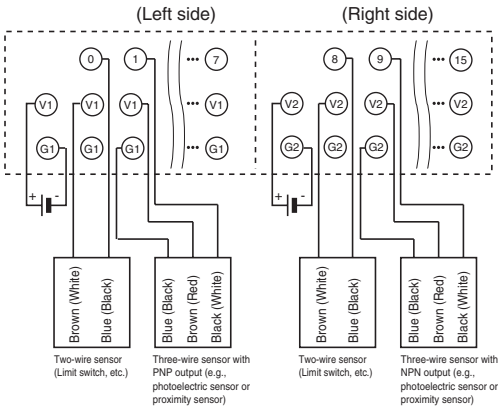

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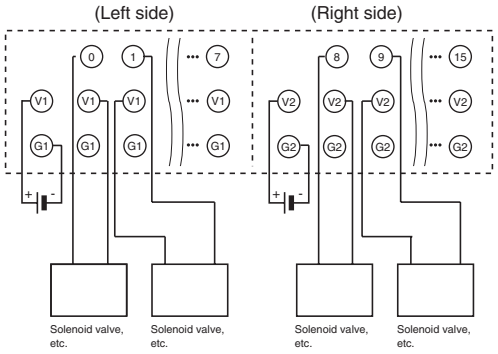

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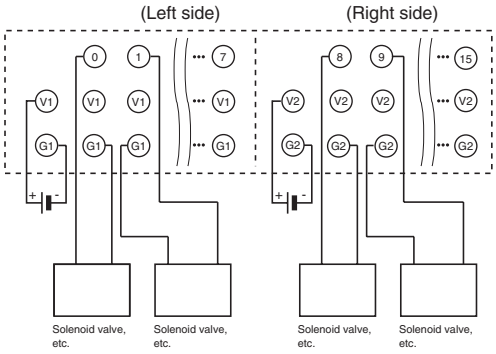

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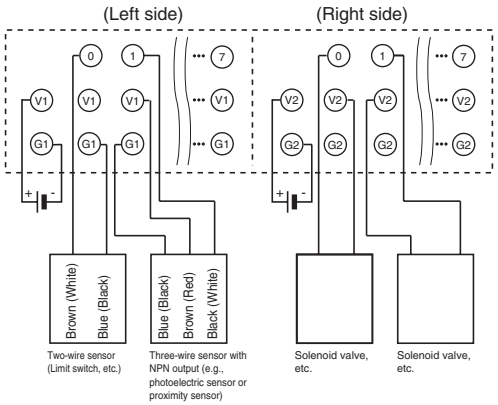

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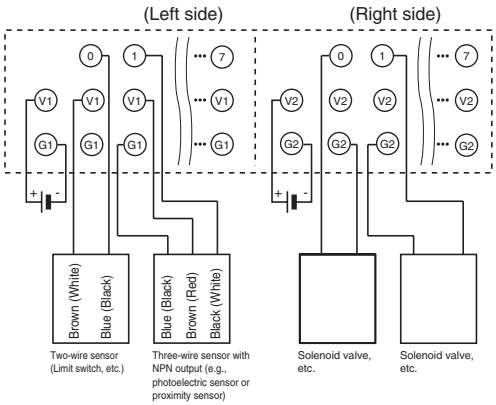


DRT1-□D08(-1)/-MD16

8 Points I/O Terminals

Compact 8-point and 16-point Transistorized Terminals

- Compact
  (8-point models: 125 x 40 x 50 mm (W x H x D),
  16-point models: 150 x 40 x 50 mm (W x H x D))
- Two independent power supplies can be used because the I/O terminals are insulated from the internal circuits.
- DIN rail mounting and screw mounting are available.
- Approved by UL and CSA.

Ordering Information

I/O classification	Internal I/O circuit common	I/O points	I/O connections	Internal circuit rated voltage	I/O rated voltage	Model
Input	NPN (+ common)	8	M3 terminal block	24 V DC	24 V DC	DRT1-ID08
	PNP (– common)					DRT1-ID08-1
Output	NPN (– common)					DRT1-OD08
	PNP (+ common)					DRT1-OD08-1
I/O	NPN inputs (inputs: + common; outputs: – common)	8 inputs and 8 outputs				DRT1-MD16

Specifications

Ratings

Input

Item		DRT1-ID(-1)/DRT1-MD
Input current		10 mA max./point
ON delay time		1.5 ms max.
OFF delay time		1.5 ms max.
ON voltage	NPN	15 V DC min. between each input terminal and V
	PNP	15 V DC min. between each input terminal and G
OFF voltage	NPN	5 V DC max. between each input terminal and V
	PNP	5 V DC max. between each input terminal and G
OFF current		1 mA max.
Insulation method		Photocoupler
Input indicators		LED (yellow)

Output

Item	DRT1-OD(-1)/DRT1-MD
Rated output current	0.3 A/point (See note.)
Residual voltage	1.2 V max.
Leakage current	0.1 mA max.
Insulation method	Photocoupler
Output indicators	LED (yellow)

Note: Do not connect the DRT1-OD16 (-1) to loads consuming a total current exceeding 2.4 A.

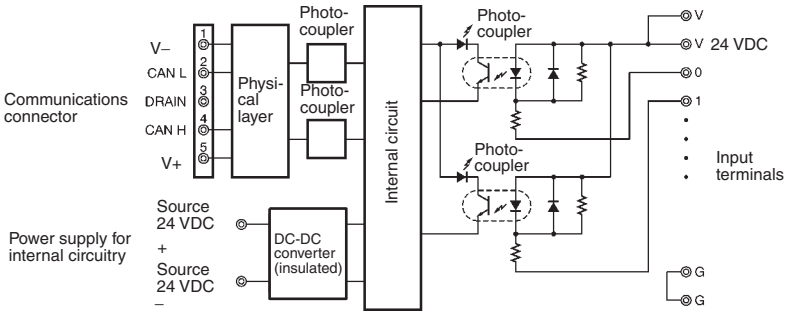
Characteristics

Communications power supply voltage	11 to 25 V DC
Internal power supply voltage	20.4 to 26.4 V DC (24 V DC $^{+10\%}/_{-15\%}$)
I/O power supply voltage	
Current consumption (See note.)	Communications:30 mA max. (25 mA max. for DRT1-MD16) Internal circuit:50 mA max. at 24 V DC (See note.)
Dielectric strength	500 V AC for 1 min (1-mA sensing current between insulated circuits)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Malfunction:200 m/s^2 Destruction:300 m/s^2
Mounting strength	No damage when 50 N pull load was applied for 10 s in all directions (10 N min. in the DIN rail direction)
Terminal strength	No damage when 50 N pull load was applied for 10 s
Screw tightening torque	0.6 to 1.18 N • m
Ambient temperature	Operating:0° C to 55° C (with no icing or condensation) Storage:–20° C to 65° C (with no icing or condensation)
Ambient humidity	Operating:35% to 85%
Weight	8-point model:135 g max. 16-point model:170 g max.

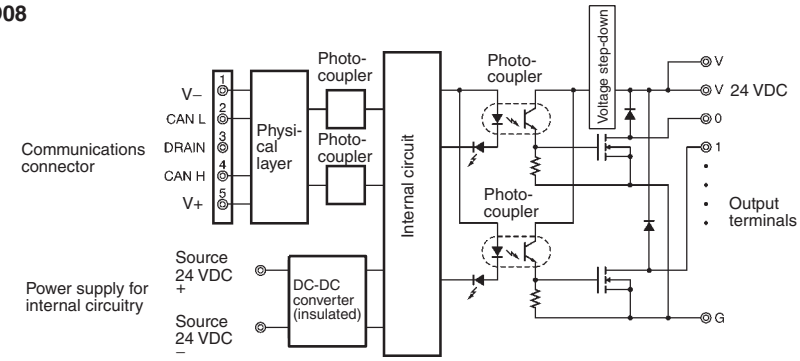
Note: The above current consumption is a value with all 8 and 16 points turned ON excluding the current consumption of the external sensor connected to the input Remote Terminal and the current consumption of the load connected to the output Remote Terminal.

Internal Circuit Configuration

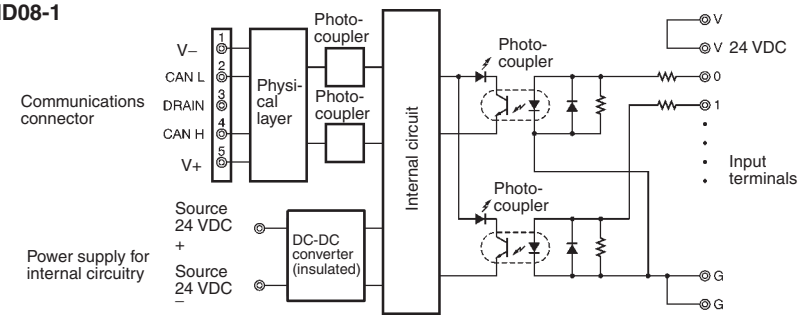
DRT1-ID08



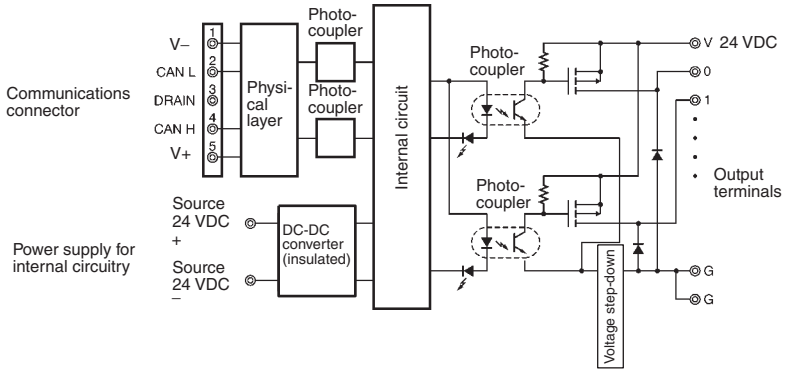
DRT1-OD08



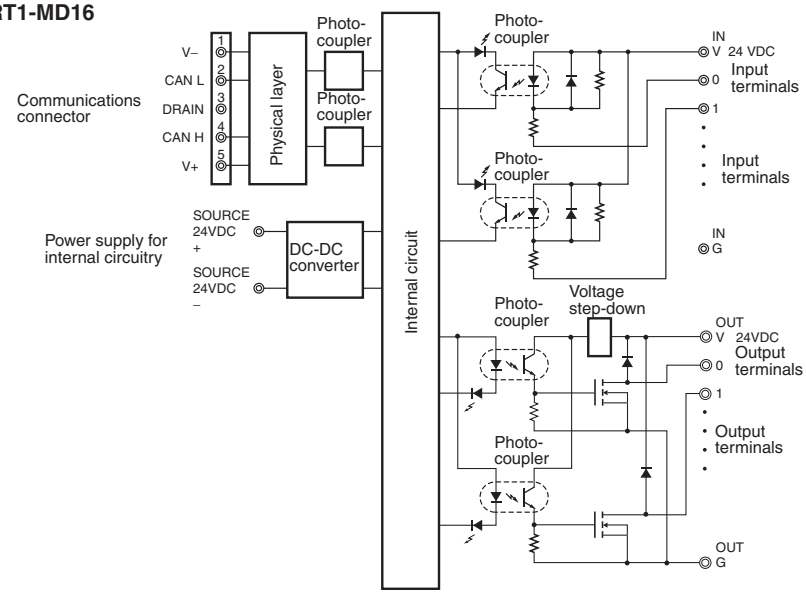
DRT1-ID08-1



DRT1-OD08-1



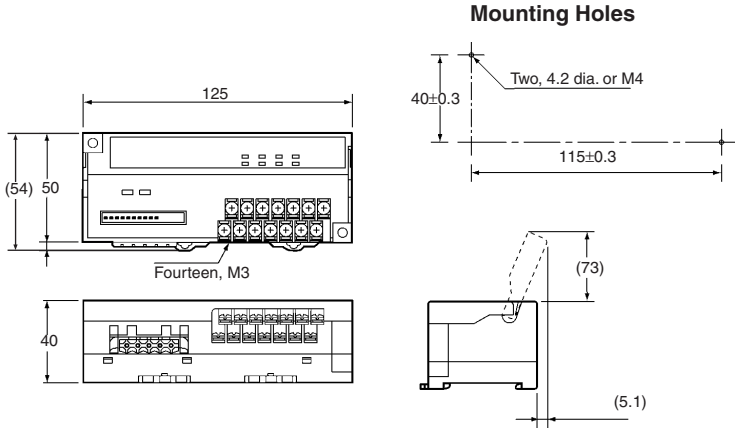
DRT1-MD16



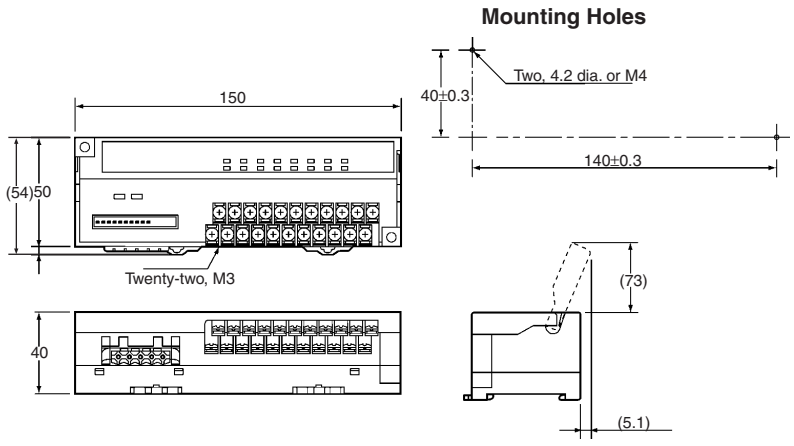
Dimensions

Note: All units are in millimeters unless otherwise indicated.

DRT1-ID08 (-1)
DRT1-OD08 (-1)

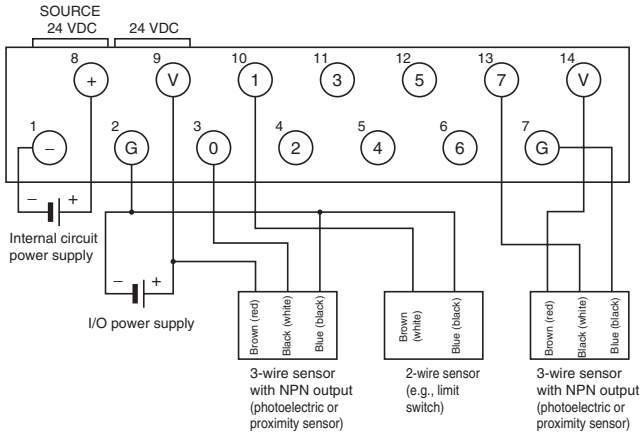


DRT1-MD16

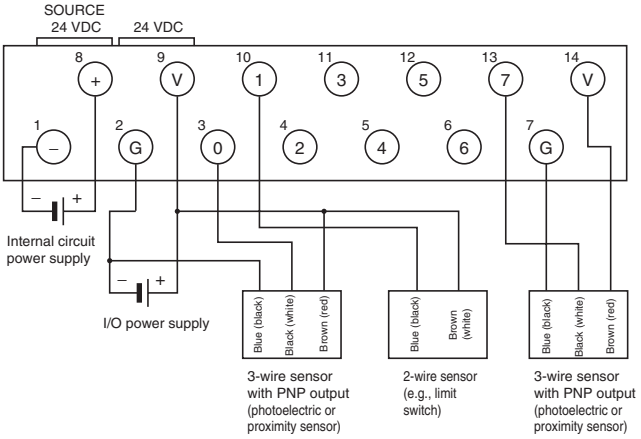


Wiring

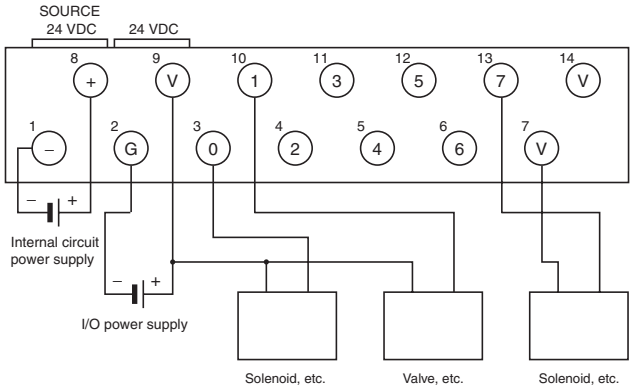
DRT1-ID08 (NPN)



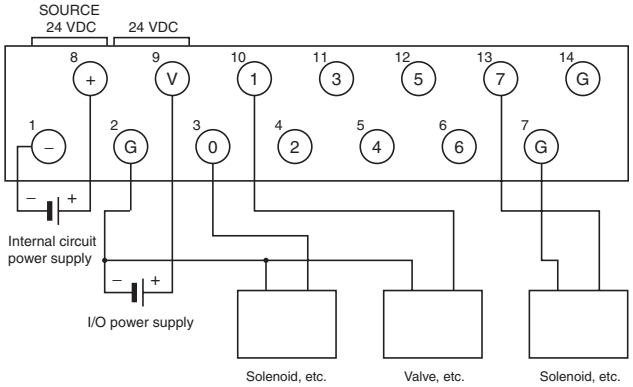
DRT1-ID08-1 (PNP)



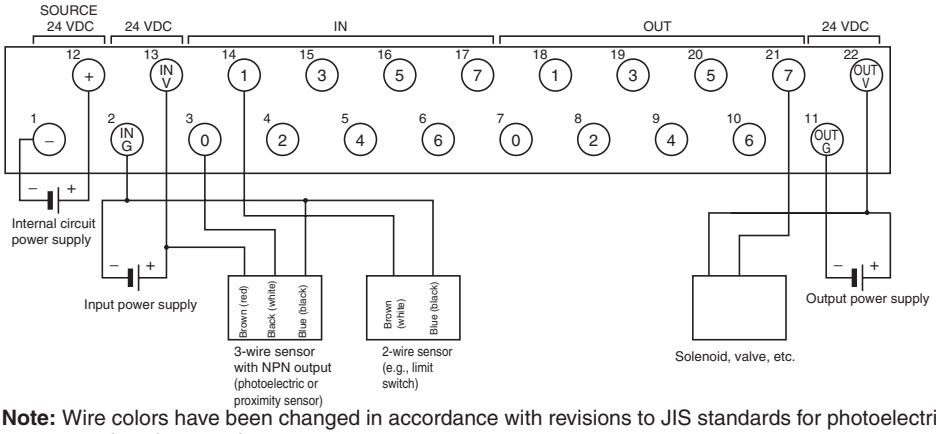
DRT1-OD08 (NPN)



DRT1-OD08-1 (PNP)



DRT1-MD16



Note: Wire colors have been changed in accordance with revisions to JIS standards for photoelectric and proximity sensors. The previous colors are given in parentheses.

DRT1-□D0□CL(-1)

Waterproof Terminals

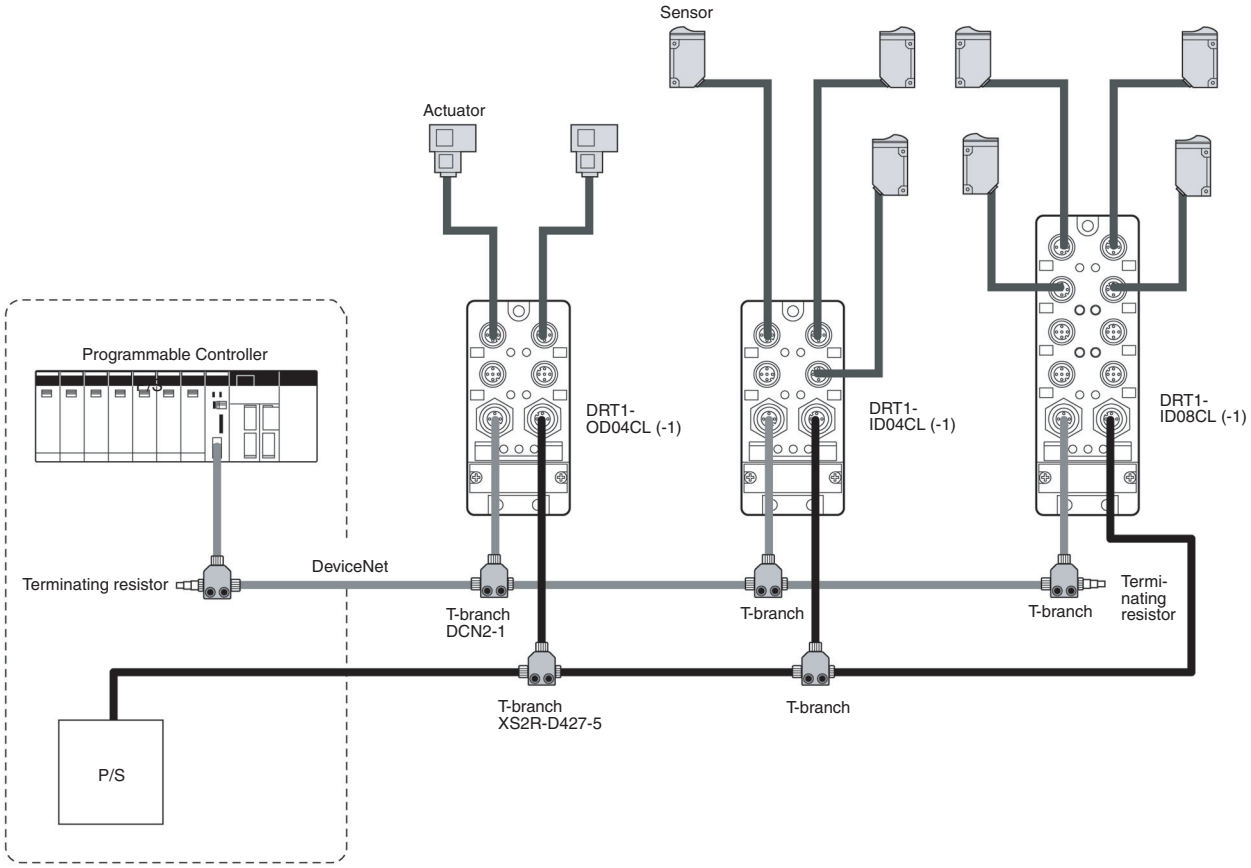
Economical Waterproof Terminals Available in 8 Different Models

- **Reduced Labor**
  Connectors eliminate the need for connection tools.
- **Reduced Wiring**
  The Terminals can be mounted closer to Sensors and so less wiring is required for signal lines.
- **Relay Box Not Required**
  Waterproof, dust-tight, drip-proof construction (IP67) enables direct, on-site mounting.
- **Easier Maintenance**
  Significant reductions not only in setup time but also maintenance time.
- **Reduced Space, Improved Operability**
  Compact design: 160 × 54 (W × H) (8-point models)
  Connect to devices using connectors on front side.
  Switch settings also available.

Ordering Information

I/O classification	Internal I/O circuit common	I/O points	I/O connection method	Rated voltage for I/O power supply	Model
Input	NPN (+ common)	4 points	Sensor I/O connector	24 V DC	DRT1-ID04CL
		8 points			DRT1-ID08CL
	PNP (– common)	4 points			DRT1-ID04CL-1
		8 points			DRT1-ID08CL-1
Output	NPN (– common)	4 points			DRT1-OD04CL
		8 points			DRT1-OD08CL
	PNP (+ common)	4 points			DRT1-OD04CL-1
		8 points			DRT1-OD08CL-1

System Configuration



Specifications

General Specifications

Item	DRT1-ID04CL DRT1-ID04CL-1	DRT1-OD04CL DRT1-OD04CL-1	DRT1-ID08CL DRT1-ID08CL-1	DRT1-OD08CL DRT1-OD08CL-1
Communications power supply voltage	11 to 25 V DC			
I/O power supply voltage	20.4 to 26.4 V DC (24 V DC –15%/+10%)			
Communications power supply current consumption	25 mA max.	35 mA max.	30 mA max.	40 mA max.
Ambient operating temperature	–10 to 55° C (with no icing)			
Ambient operating humidity	25% to 85% (with no condensation)			
Ambient storage temperature	–25 to 65° C			
Ambient storage humidity	25% to 85% (with no condensation)			
Connector tightening torque	0.39 to 0.49 Nm			
Construction	IEC IP67			
Mounting method	M5 screw mounting			
Weight	180 g max.		240 g max.	

Input Specifications

Item	DRT1-ID04CL DRT1-ID04CL-1	DRT1-ID08CL DRT1-ID08CL-1
Input current	For input voltage of 24 V DC: 6 mA max. per point For input voltage of 17 V DC: 3 mA min. per point	
Input impedance	4.4 kΩ	
ON delay time	1.5 ms max.	
OFF delay time	1.5 ms max.	
ON voltage	15 V DC min.	
OFF voltage	5 V DC max.	
OFF current	1 mA max.	
Number of circuits	4 points with 1 common	8 points with 1 common

Output Specifications

Item	DRT1-OD04CL DRT1-OD04CL-1	DRT1-OD08CL DRT1-OD08CL-1
Rated output current	0.5 A per point (2 A per common)	0.5 A per point (2.4 A per common)
Residual voltage	1.2 V max.	
Leakage current	0.1 mA max.	
ON delay time	0.5 ms max.	
OFF delay time	1.5 ms max.	
Number of circuits	4 points with 1 common	8 points with 1 common

Applicable Connectors

Communications Connectors

Model	Specifications
DCA1-5CN□□W1	Cable with a connector at both ends
DCA1-5CN□□F1	Cable with a connector at one end (socket)
DCA1-5CN□□H1	Cable with a connector at one end (plug)
DCN2-1	T-branch connector
DRS2-1	Connector with terminating resistor (plug)

I/O Connectors

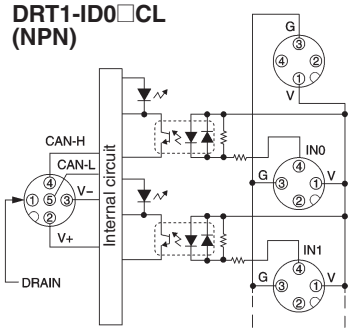
Model	Specifications
XS2G-D4□□	Assembling-type connector (crimp, solder, or screw)
XS2H-D421-□□□-□	Cable with connector at one end (plug)
XS2W-D42□-□□□-□	Cable with connector at both ends
XS2Z-12	Waterproof cover
XS2Z-15	Dust cover

Power Supply Connectors

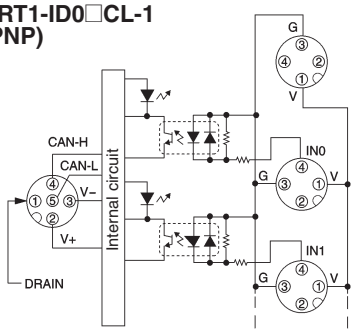
Model	Specifications
XS2C-D4□□	Assembling-type socket (crimp, solder, or screw)
XS2W-D42□-□□□-□	Cable with connector at both ends
XS2F-D42□-□80-□	Cable with connector at one end (socket)
XS2R-D427-5	T-branch connector

Internal Circuit Diagrams

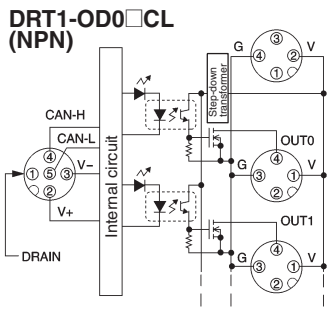
DRT1-ID0□CL (NPN)



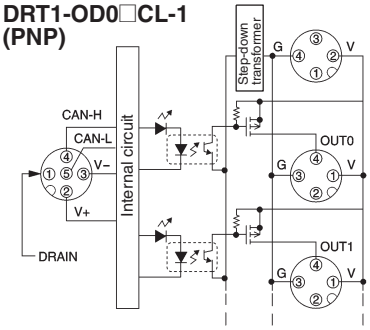
DRT1-ID0□CL-1 (PNP)



DRT1-OD0□CL (NPN)



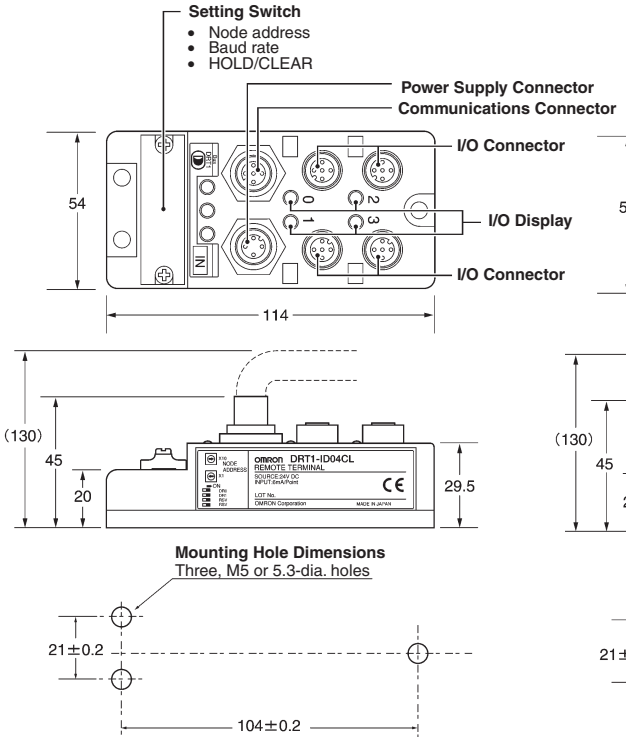
DRT1-OD0□CL-1 (PNP)



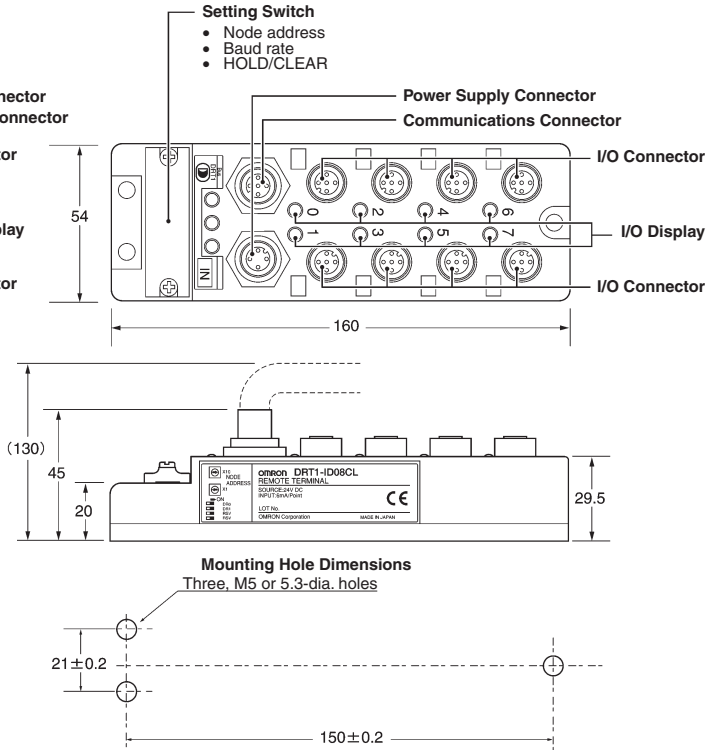
Dimensions

Note: All units are in millimeters unless otherwise indicated.

Models with 4 Points
DRT1-ID04CL/DRT1-ID04CL-1
DRT1-OD04CL/DRT1-OD04CL-1



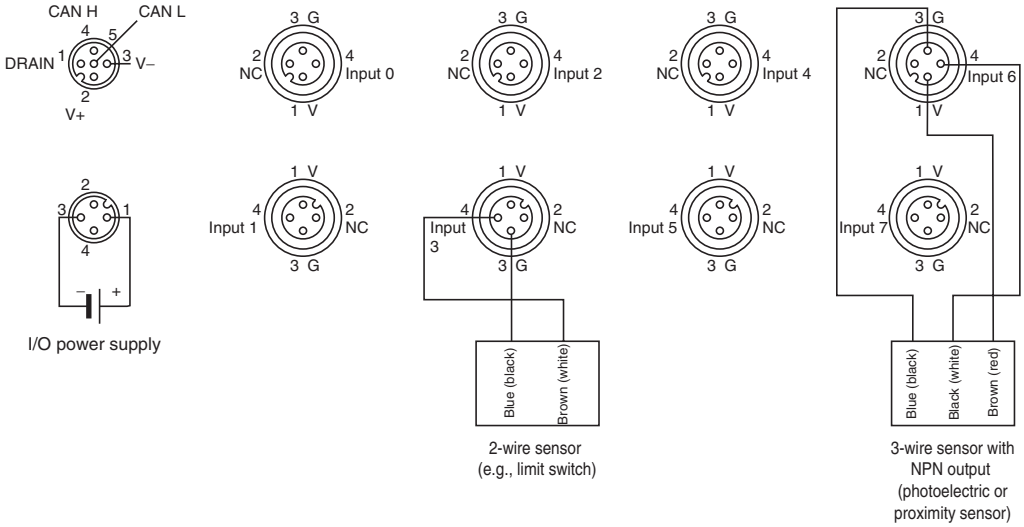
Models with 8 Points
DRT1-ID08CL/DRT1-ID08CL-1
DRT1-OD08CL/DRT1-OD08CL-1



Wiring

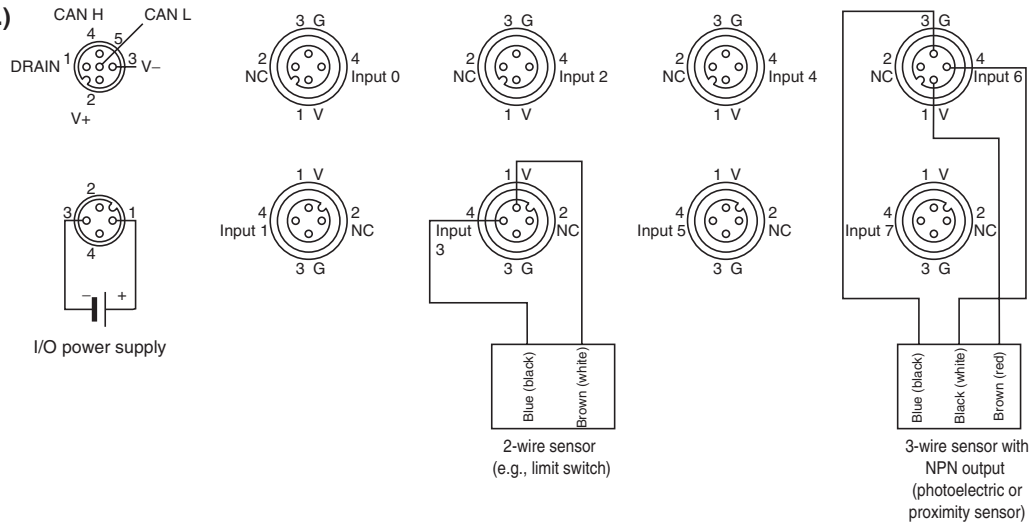
DRT1-ID04CL (See note.)
DRT1-ID08CL
(NPN)

Note: The DRT1-ID04CL has only inputs 0 to 3



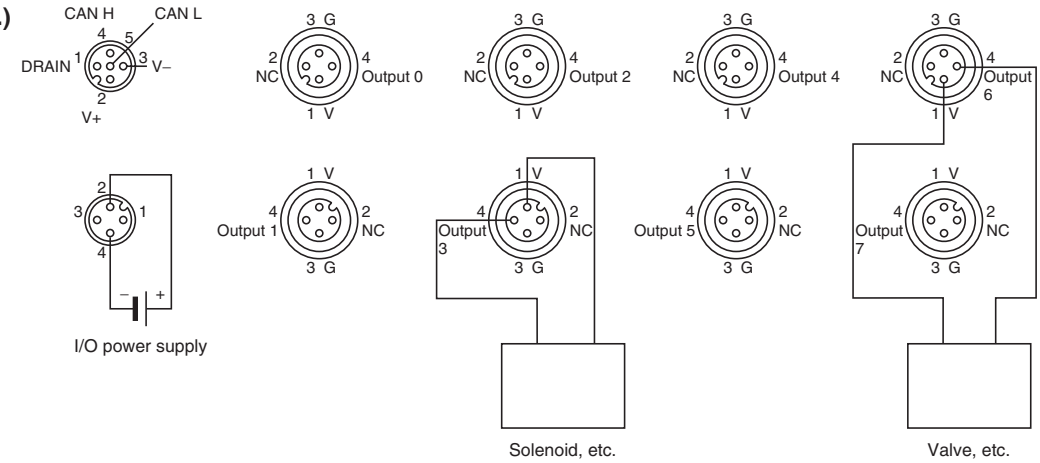
DRT1-ID04CL-1 (See note.)
DRT1-ID08CL-1
(PNP)

Note: The DRT1-ID04CL-1 has only inputs 0 to 3.



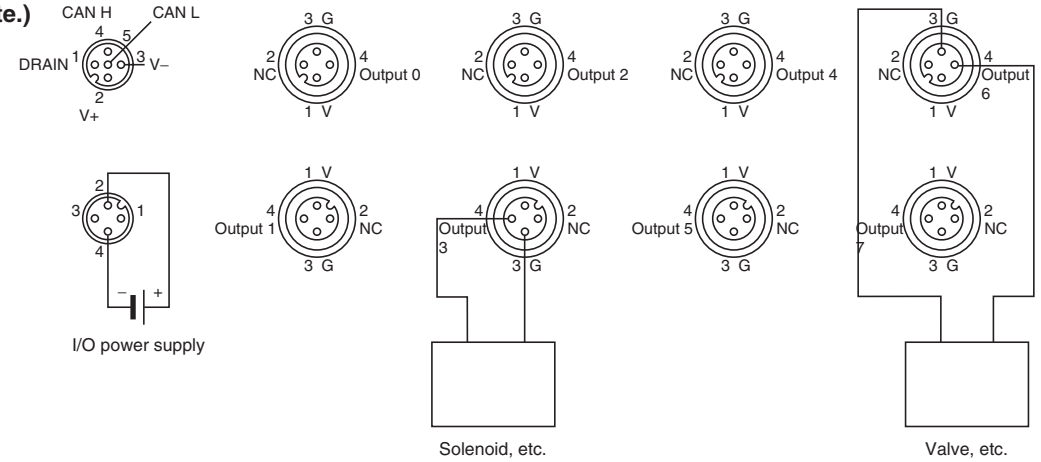
DRT1-OD04CL (See note.)
DRT1-OD08CL
(NPN)

Note: The DRT1-OD04CL has only outputs 0 to 3.



DRT1-OD04CL-1 (See note.)
DRT1-OD08CL-1
(PNP)

Note: The DRT1-OD04CL-1 has only outputs 0 to 3.

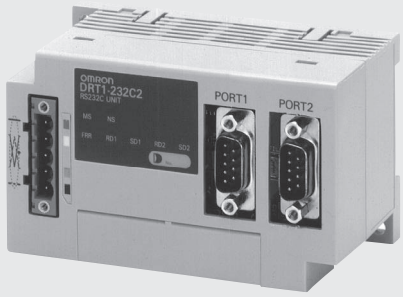


DRT1-232C2

RS-232C Unit

Enables Data Exchange between DeviceNet and Peripheral Devices, Such as Bar Code Readers with an RS-232C Port

- Equipped with two RS-232C ports that can be set and controlled independently.
- Data exchanged using explicit message communications.
- Allows reading and writing of up to 151 bytes.



Ordering Information

Name	No. of words	Model
RS-232C Unit (DeviceNet-compatible)	One input word as status area	DRT1-232C2

Specifications

Ratings/Characteristics

General Specifications

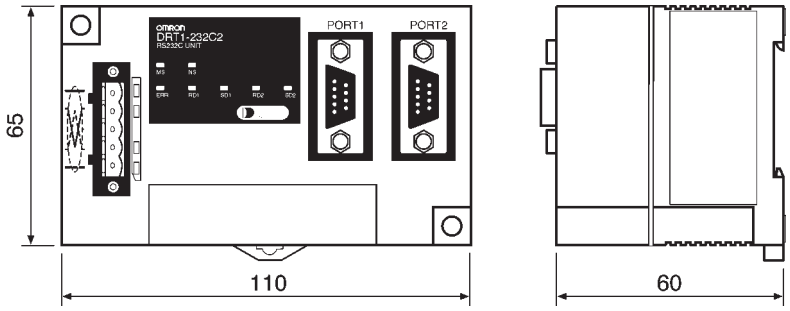
Item	Specification
Communications power supply voltage	11.0 to 25.0 V DC
Internal circuit power supply voltage	20.4 to 26.4 V DC (24 V DC +10%/–15%)
Current consumption	Communications power supply: 50 mA max. Internal circuit power supply: 100 mA max.
Insulation resistance	20 MΩ max. (at 100 V DC) between all DC power supply terminals and FG
Dielectric strength	500 V AC at 50/60 Hz for 1 min between all DC power supply terminals and FG with a leakage current of less than 1 mA
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 57.7 Hz, 0.75-mm single amplitude and 57.7 to 150 Hz at 98 m/s^2 acceleration
Shock resistance	Malfunction: 196 m/s^2 three times each in X, Y, and Z directions Destruction: 294 m/s^2 three times each in X, Y, and Z directions
Ambient temperature	Operating: –10°C to 55°C (with no icing or condensation)
Ambient temperature	Storage: –25°C to 65°C
Ambient humidity	25% to 85% (with no icing or condensation)
Operating environment	With no corrosive gas
Mounting method	M4 screw or 35-mm DIN rail mounting
Mounting strength	100 N: 10 s 10 N in track direction: 10 s
Terminal strength	Pulling force: 100 N: 10 s
Weight	250 g max.
External dimensions	110 x 65 x 60 mm

RS-232C Communications Specifications

Item	Specification
Communications method	Full duplex, start-stop synchronization communications control
Transmission distance	15 m max.
Baud rate	1,200/2,400/4,800/9,600/19,200 bps
Transmission code	ASCII (7 bits)
Parity check	Even, odd, or none
Stop bit length	1/2 bit
No. of ports	2
Connector	9-pin D-sub connector (male) x 2 ports
Communications memory capacity	1,024 bytes x 2 ports
Header code	Enabled (1 byte)/Disabled (selectable)
Delimiter code	Enabled (1 byte)/Disabled (selectable)
Flow control	Enabled/Disabled (selectable) for RS/CS control only

Dimensions

Note: All units are in millimeters unless otherwise indicated.



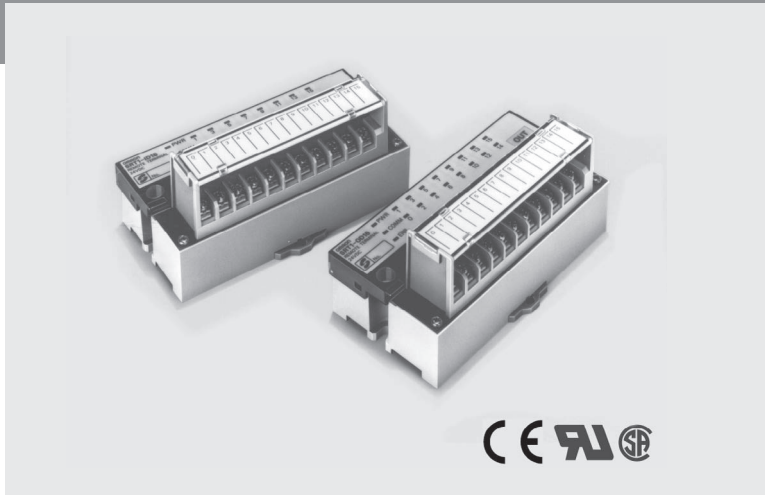
SRT-series Slaves

CompoBus/S Remote I/O

SRT2-ID/-OD(-1)

Digital I/O Terminals

- The standard in/output models
- Very compact at 80 x 48 x 50 (W x H x D) mm for 4- and 8-point terminals and 105 x 48 x 50 (W xH x D) mm for 16-point terminals.
- Two independent power supplies can be used because the I/O terminals are insulated from the internal circuits.
- DIN rail mounting and screw mounting are both supported.



Ordering Information

I/O classification	Internal I/O circuit common	I/O points	Rated voltage	I/O rated voltage	Model
Input	NPN (+ common)	4	24 V DC	24 V DC	SRT2-ID04
	PNP (– common)				SRT2-ID04-1
Output	NPN (– common)				SRT2-OD04
	PNP (+ common)				SRT2-OD04-1
Input	NPN (+ common)	8			SRT2-ID08
	PNP (– common)				SRT2-ID08-1
Output	NPN (– common)				SRT2-OD08
	PNP (+ common)				SRT2-OD08-1
Input	NPN (+ common)	16			SRT2-ID16
	PNP (– common)				SRT2-ID16-1
Output	NPN (– common)				SRT2-OD16
	PNP (+ common)				SRT2-OD16-1

Note: For more details about connections supported by the Master Unit, refer to page 368.

Specifications

Ratings

Inputs

Input current	6 mA max./point
ON delay time	1.5 ms max.
OFF delay time	1.5 ms max.
ON voltage	15 V DC min. between each input terminal and V
OFF voltage	5 V DC max. between each input terminal and V
OFF current	1 mA max.
Insulation method	Photocoupler
Input indicators	LED (yellow)

Outputs

Rated output current	0.3 A/point
Residual voltage	0.6 V max.
Leakage current	0.1 mA max.
Insulation method	Photocoupler
Output indicators	LED (yellow)

Characteristics

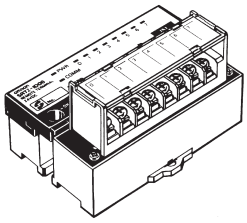
Communications power supply voltage	14 to 26.4 V DC
I/O power supply voltage	24 V DC $^{+10\%}_{-15\%}$
I/O power supply current	1 A max.
Current consumption (see note)	50 mA max. at 24 V DC
Connection method	Multi-drop method and T-branch method
Connecting Units	4-point and 8-point Terminals:16 Input Terminals and 16 Output Terminals per Master 16-point Terminals: 8 Input Terminals and 8 Output Terminals per Master
Dielectric strength	500 V AC for 1 min (1-mA sensing current between insulated circuits)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Malfunction:200 m/s^2 Destruction:300 m/s^2
Mounting strength	No damage when 50 N pull load was applied for 10 s in all directions
Terminal strength	No damage when 50 N pull load was applied for 10 s
Screw tightening torque	0.6 to 1.18 Nm
Ambient temperature	Operating:0°C to 55°C (with no icing or condensation) Storage:–20°C to 65°C (with no icing or condensation)
Ambient humidity	Operating:35% to 85%
Weight	4-point and 8-point Terminals:80 g max. 16-point Terminals:110 g max.
Approved standards (4/8 points)	UL 508, CSA C22.2 No. 14

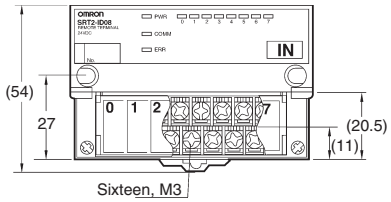
Note: The above current consumption is the value with all 4 and 8 and 16 points turned ON excluding the current consumption of the external sensor connected to the input Remote Terminal and the current consumption of the load connected to the output Remote Terminal.

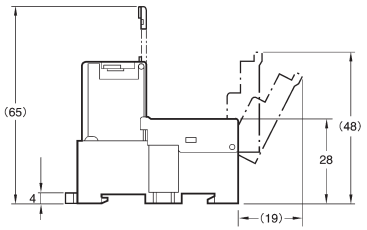
Dimensions

Note: All units are in millimeters unless otherwise indicated.

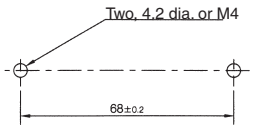
SRT2-ID04 (-1)
SRT2-OD04 (-1)
SRT2-ID08 (-1)
SRT2-OD08 (-1)

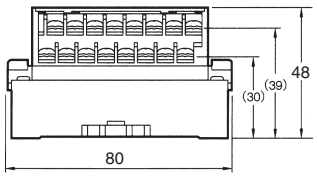




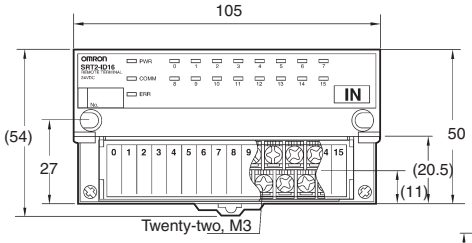


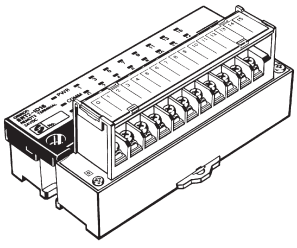
Mounting Holes

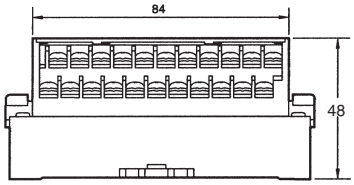


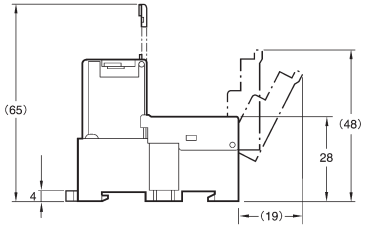


SRT2-ID16 (-1)
SRT2-OD16 (-1)

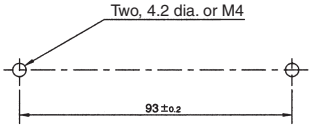








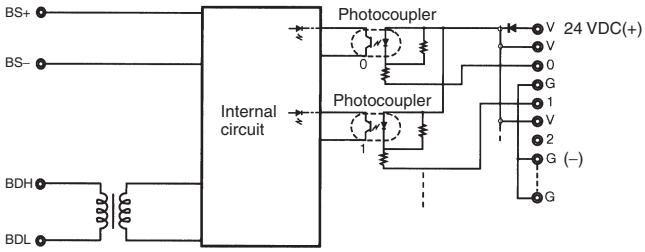
Mounting Holes



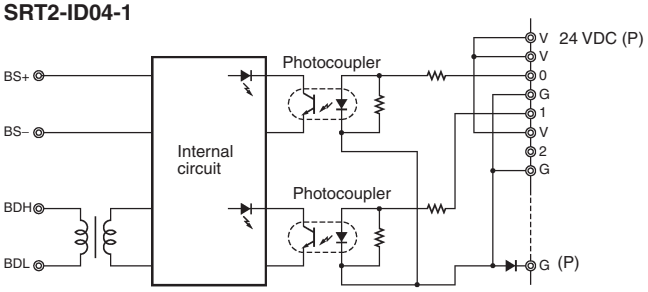
Installation

Internal Circuit Configuration

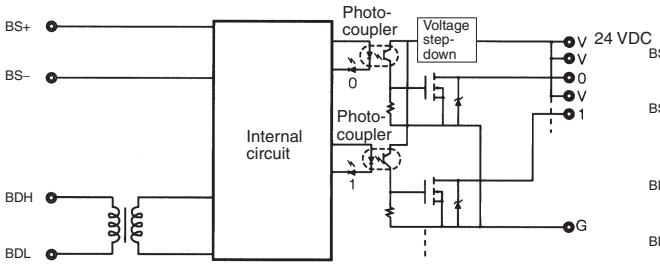
SRT2-ID04



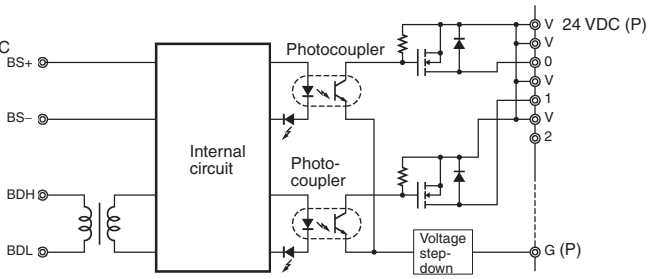
SRT2-ID04-1



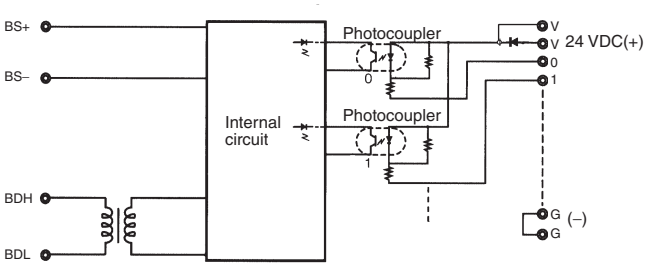
SRT2-OD04



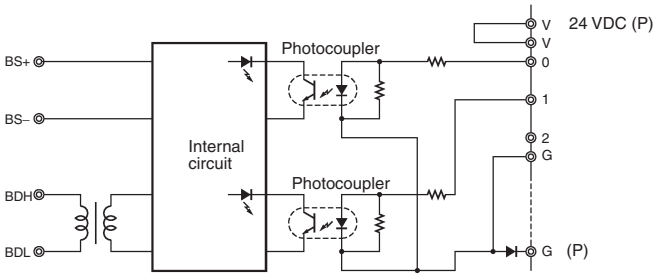
SRT2-OD04-1



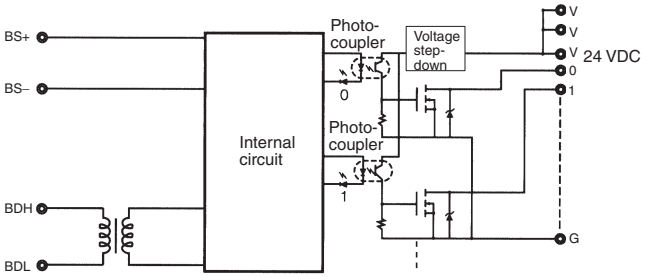
SRT2-ID08



SRT2-ID08-1



SRT2-OD08



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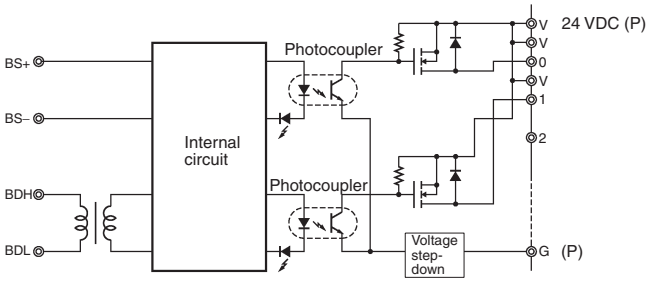

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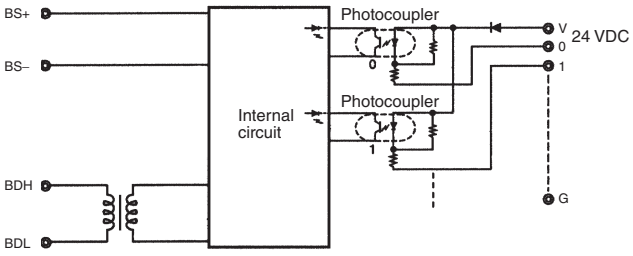

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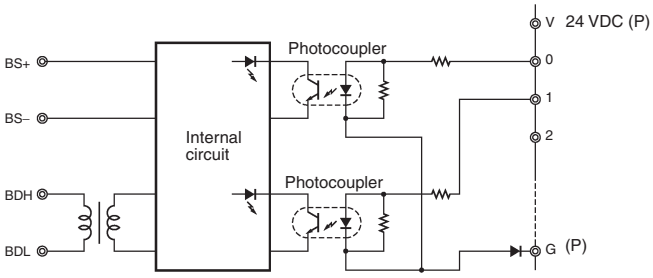

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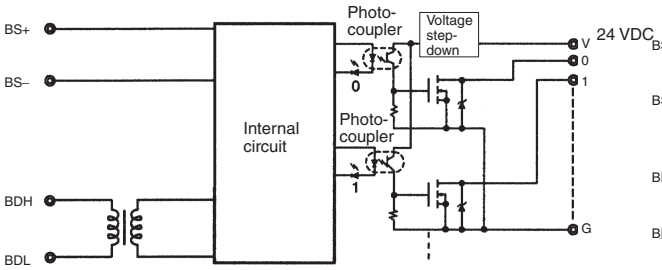

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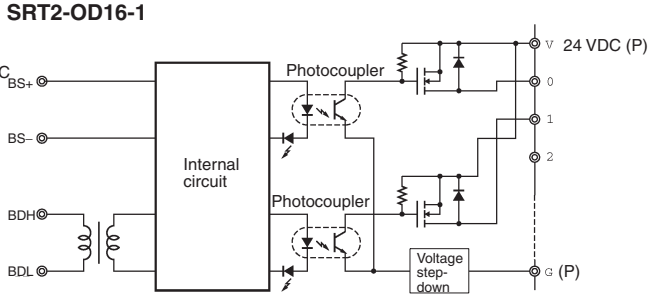
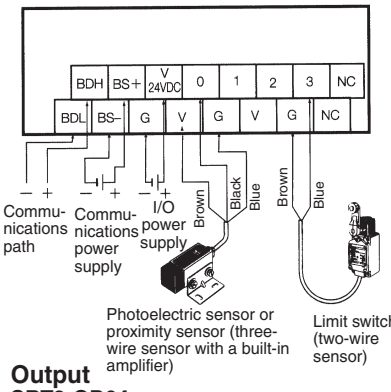


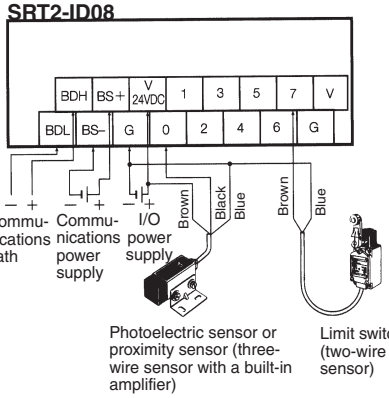
Terminal Arrangement and I/O Device Connection Example (NPN Models)

Input

SRT2-ID04



SRT2-ID08



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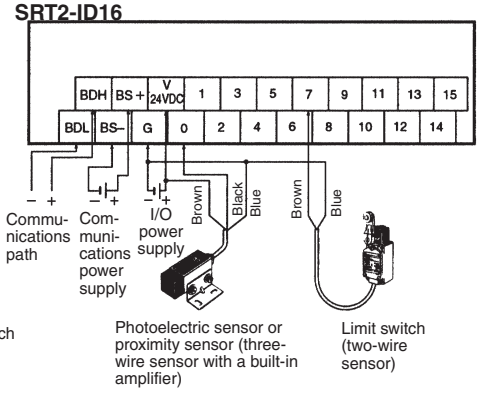
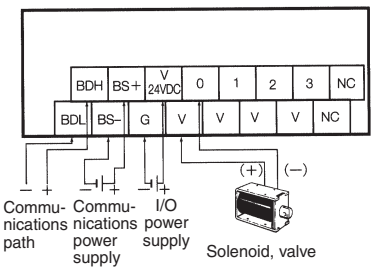


Output

SRT2-OD04



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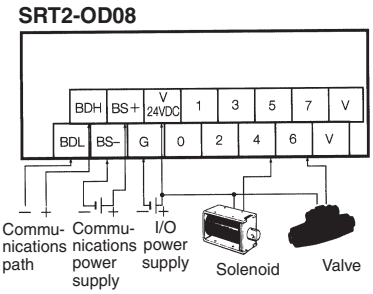

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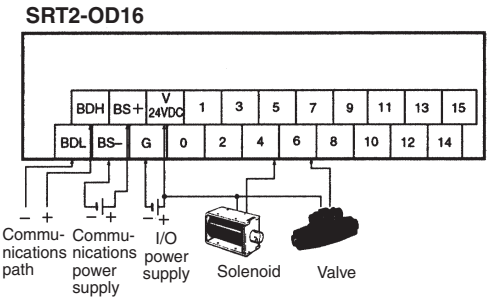
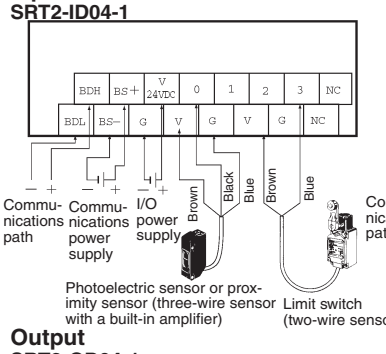


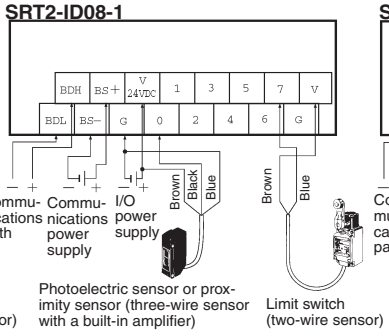
Terminal Arrangement and I/O Device Connection Example (PNP Models)

Input

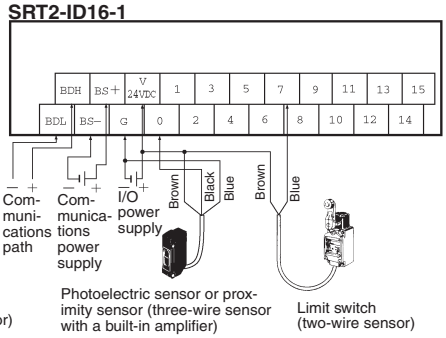
SRT2-ID04-1



SRT2-ID08-1

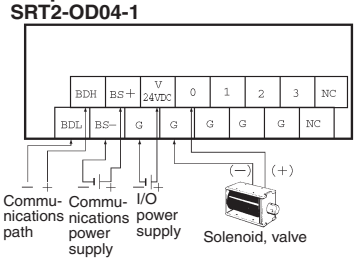


SRT2-ID16-1

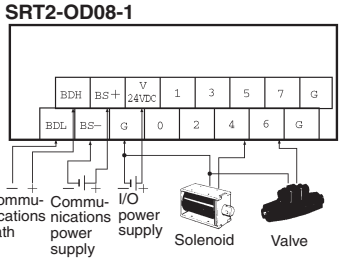


Output

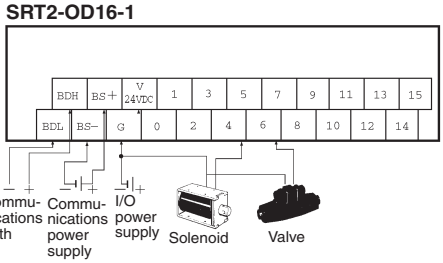
SRT2-OD04-1



SRT2-OD08-1



SRT2-OD16-1



SRT2-□D16T(-1)

3-tier Connection Terminals

- Models with a 3 layer connection terminal (16 Points)
- Reduces designing and wiring effort.
- Incorporates a removable circuit block
- Very compact
- DIN rail mounting and screw mounting are both supported.

Ordering Information

I/O classification	Internal I/O circuit common	I/O points	I/O connection method	Model
Digital input	NPN (+ common)	16	M3 terminal block	SRT2-ID16T
	PNP (– common)			SRT2-ID16T-1
Digital I/O	NPN (– common)			SRT2-MD16T
	PNP (+ common)			SRT2-MD16T-1
Digital output	NPN (– common)			SRT2-OD16T
	PNP (+ common)			SRT2-OD16T-1

Specifications

Ratings

Inputs

Input current	6 mA max./point at 24 V and 3 mA min./point at 17 V
ON delay time	1.5 ms max.
OFF delay time	1.5 ms max.
ON voltage	NPN: 15 V DC min. between V terminals and each input terminal PNP: 15 V DC min. between G terminals and each input terminal
OFF voltage	NPN: 5 V DC max. between V terminals and each input terminal PNP: 5 V DC max. between G terminals and each input terminal
OFF current	1 mA max.
Insulation method	Photocoupler

Outputs

Rated output current	0.5 A max./point
Residual voltage	1.2 V max.
ON delay time	0.5 ms max.
OFF delay time	1.0 ms max.
Leakage current	0.1 mA max.
Insulation method	Photocoupler

Characteristics

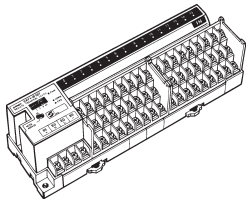
Communications power supply voltage	14 to 26.4 V DC
I/O power supply voltage	24 V DC $^{+10\%}/_{-15\%}$
I/O power supply current	4 A max./common
Current consumption (see note)	50 mA max. at 24 V DC
Connection method	Multi-drop method and T-branch method
Dielectric strength	500 V AC between insulated circuits
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)
Vibration resistance	10 to 150 Hz, 1.0-mm double amplitude or 70 m/s^2
Shock resistance	200 m/s^2
Mounting strength	No damage with 100 N pull load applied in all directions.
Terminal strength	No damage with 100 N pull load applied
Screw tightening torque	0.3 to 0.5 Nm
Ambient temperature	Operating:–10° C to 55° C Storage:–25° C to 65° C
Ambient humidity	Operating:25% to 85% (with no condensation)
Weight	300 g max.

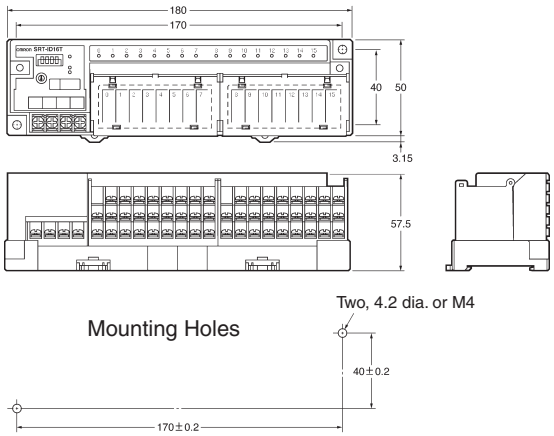
Note: The above current consumption is the value with all points turned ON excluding the current consumption of the external sensor connected to the input Remote Terminal and the current consumption of the load connected to the output Remote Terminal.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

SRT2-ID16T (-1)
SRT2-MD16T (-1)
SRT2-OD16T (-1)

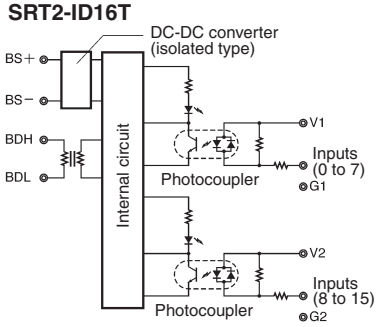




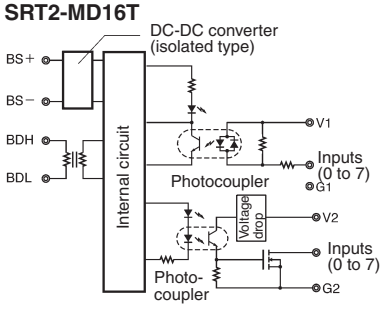
Installation

Internal Circuit Configuration

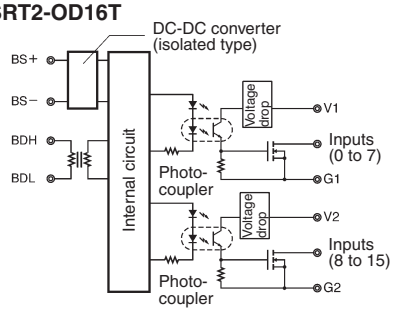
SRT2-ID16T



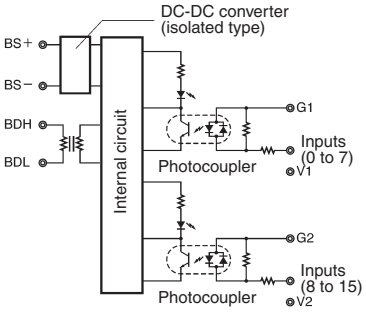
SRT2-MD16T



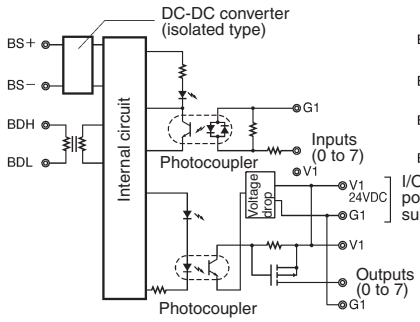
SRT2-OD16T



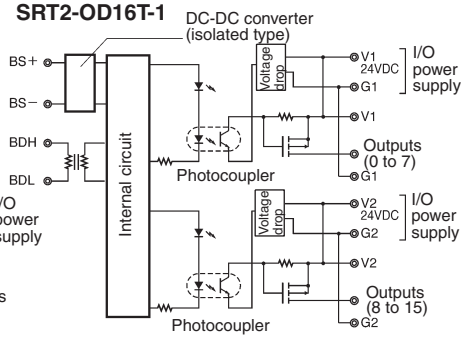
SRT2-ID16T-1



SRT2-MD16T-1



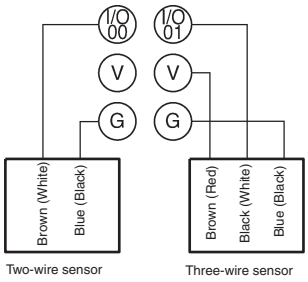
SRT2-OD16T-1



External Connections

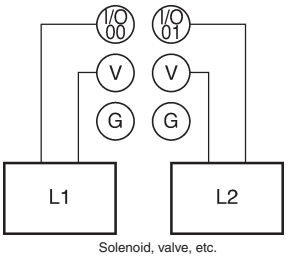
Input (NPN Models)

SRT2-ID16T
SRT2-MD16T



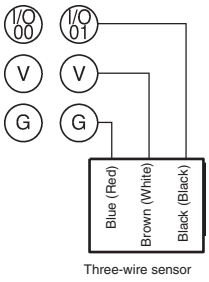
Output (NPN Models)

SRT2-OD16T
SRT2-MD16T



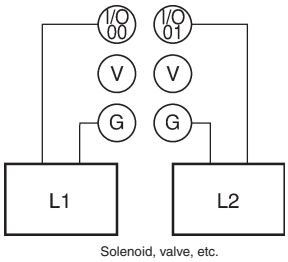
Input (PNP Models)

SRT2-ID16T-1
SRT2-MD16T-1



Output (PNP Models)

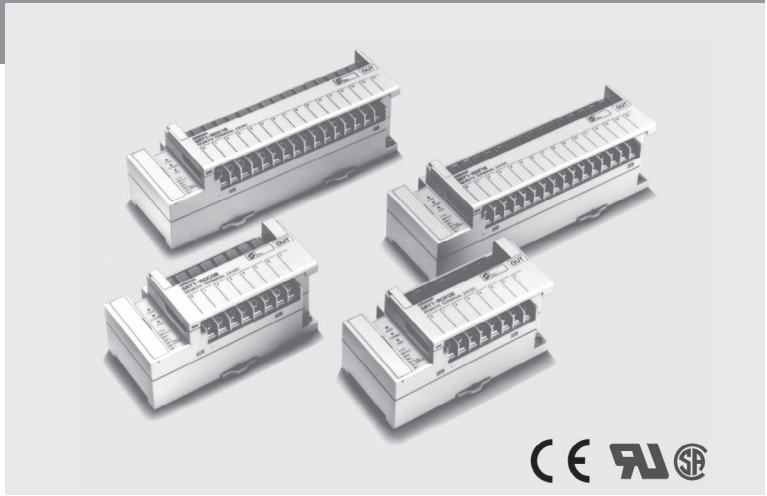
SRT2-OD16T-1
SRT2-MD16T-1



SRT2-R

Relay output terminals

- Power MOS FET Relay and Relay models.
- Very compact
- 8-point models: 101 x 51 x 51 mm (W x H x D);
- 16-point models: 156 x 51 x 51 mm (W x H x D)
- DIN rail mounting and screw mounting are both supported.



Ordering Information

Classification	I/O points	Rated voltage	Relay coil rating	Model	Applicable relay
Relay output	8 points	24 V DC	24 V DC	SRT2-ROC08	G6D-1A
	16 points			SRT2-ROC16	
Power MOS FET relay output	8 points			SRT2-ROF08	G3DZ-2R6PL
	16 points			SRT2-ROF16	

Specifications

Ratings

Relay Output

Item	SRT2-ROC08, SRT2-ROC16
Applicable relay	G6D-1A (one for each output point)
Rated load	3 A at 250 V AC, 3 A at 30 V DC (resistive load)
Rated carry current	3 A (see note 1)
Max. contact voltage	250 V AC, 30 V DC
Max. contact current	3 A
Max. switching capacity	730 VA (AC), 90 W (DC)
Min. permissible load (see note 2)	10 mA at 5 V DC
Life expectancy	Electrical:100,000 operations min. (rated load, at 1,800 operations/h) Mechanical:20,000,000 operations min. (at 18,000 operations/h)

Note: 1. The maximum permissible current of COM0 to COM7 is 3 A.

2. This value fulfills the P reference value of opening/closing at a rate of 120 times per min (ambient operating environment and determination criteria according to JIS C5442).

Power MOS FET Relay Output

Item	SRT2-ROF08, SRT2-ROF16
Applicable relay	G3DZ-2R6PL (one for each output point)
Load voltage	3 to 264 V AC, 3 to 125 V DC
Load current	100 μA to 0.3 A
Inrush current	6 A (10 ms)

Characteristics

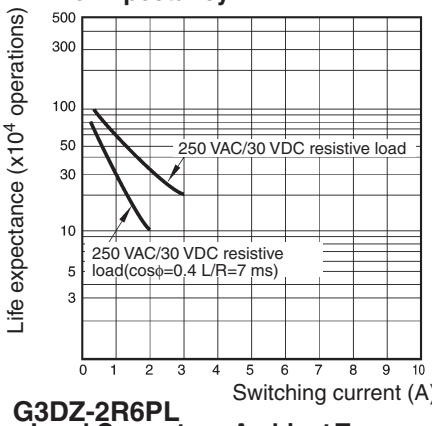
Power supply voltage	24 V DC $^{+10\%}/_{-15\%}$
Current consumption (see note)	350 mA max. at 24 V DC
Connection method	Multi-drop method and T-branch method
Connecting Units	8-point Units:16 per Master 16-point Units:8 per Master
Dielectric strength	2,000 V AC for 1 min (1-mA sensing current) between all output terminals and power supply, between communication terminals, and between contacts of different polarities 500 V AC for 1 min (1-mA sensing current) between all output terminals and power supply, between communication terminals, and between all power supply terminals and communications terminals
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)
Vibration resistance	10 to 55 Hz, 0.75-mm double amplitude
Shock resistance	Malfunction:100 m/s^2 Destruction:300 m/s^2
Mounting strength	No damage when 50 N pull load was applied for 10 s in all directions
Terminal strength	No damage when 50 N pull load was applied for 10 s
Screw tightening torque	0.6 to 1.18 Nm
Ambient temperature	Operating:0°C to 55°C (with no icing or condensation) Storage:–20°C to 65°C (with no icing or condensation)
Ambient humidity	Operating:35% to 85%
Weight	8-point models: 145 g max., 16-point models: 240 g max.
Approved standards	UL 508, CSA C22.2 No. 14

Note: The above current consumption is a value with all the points turned ON including the current consumption of the G6D coil for the Remote Output Terminal, and the G3DZ's input current.

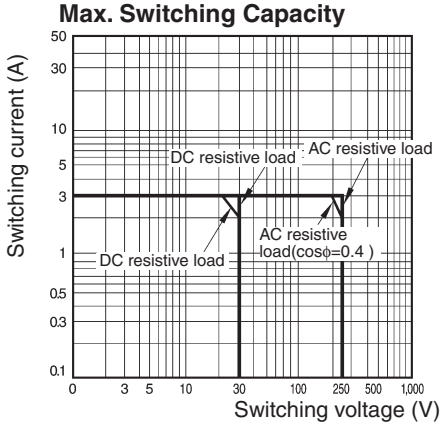
Reference Data

G6D-1A (24 VDC)

Life Expectancy



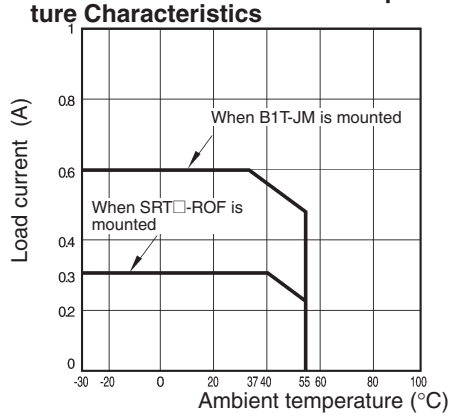
Max. Switching Capacity



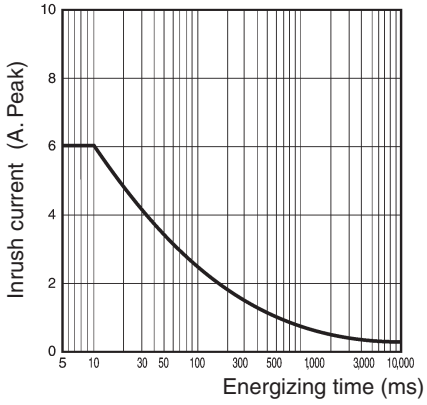
Note: These graphs show the characteristics for when the SRT2-ROC□□ or B1T-JR model is mounted.

G3DZ-2R6PL

Load Current vs. Ambient Temperature Characteristics



Inrush Current Resistivity



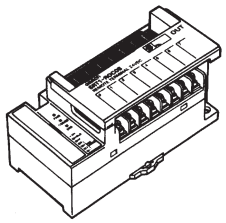
Non-repetitive: (Keep the inrush current to half the rated value if it occurs repetitively.)

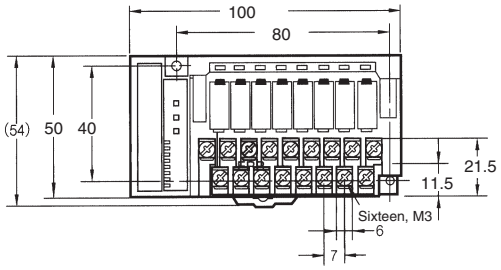
Note: The above graph shows the charac teristics for when the SRT2-ROF□□ or B1T-JM model is mounted.

Dimensions

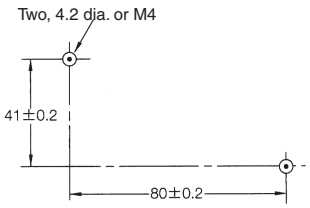
Note: All units are in millimeters unless otherwise indicated.

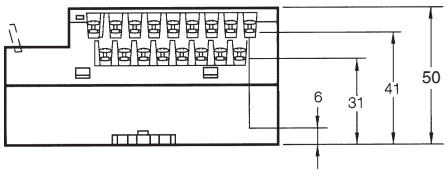
SRT2-ROC08
SRT2-ROF08

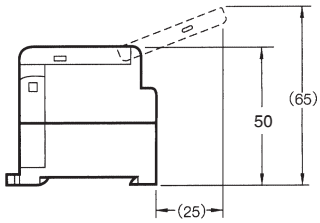




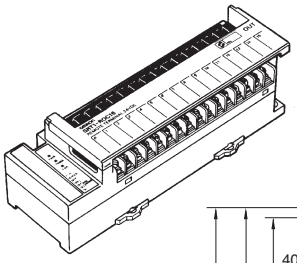
Mounting Holes

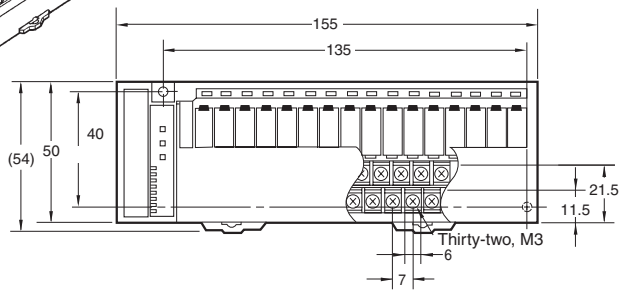




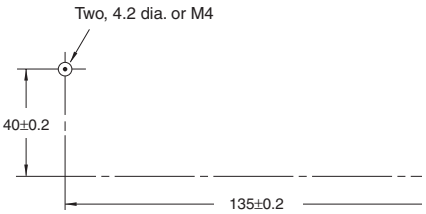


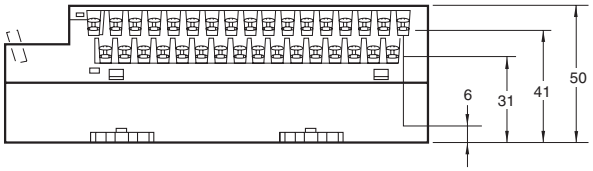
SRT2-ROC16
SRT2-ROF16

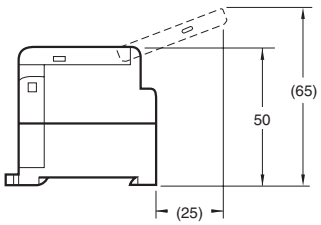




Mounting Holes



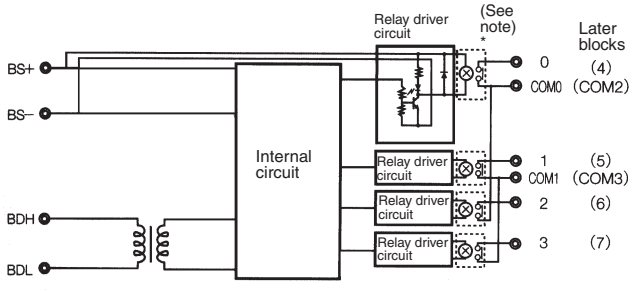




Installation

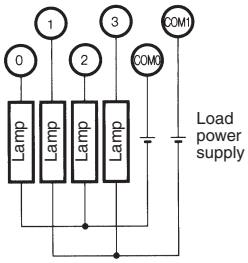
Internal Circuit Configuration

SRT2-ROC08
SRT2-ROC16



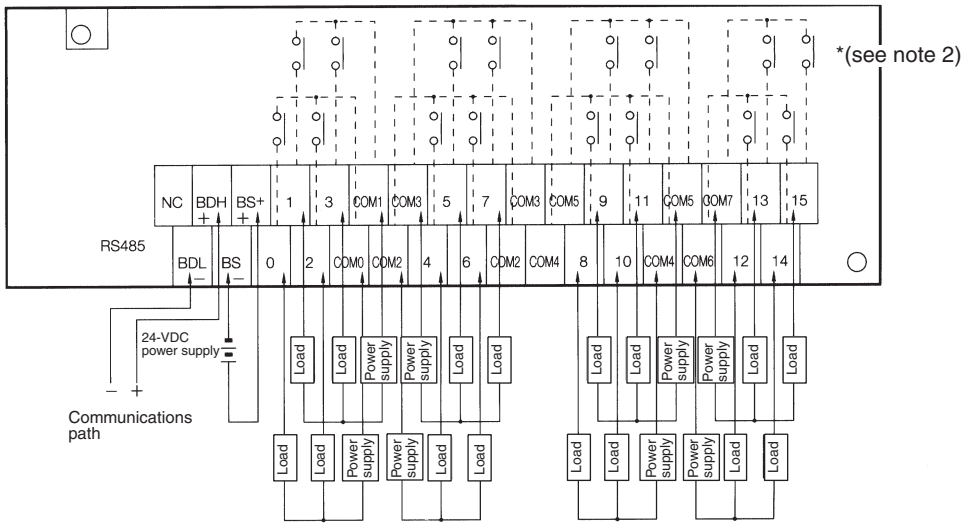
Note: The G3DZ-2R6PL Power MOS FET Relay is inserted into this portion of the SRT2-ROF08 and SRT2-ROF16.

External Connections



Terminal Arrangement and I/O Device Connection Example

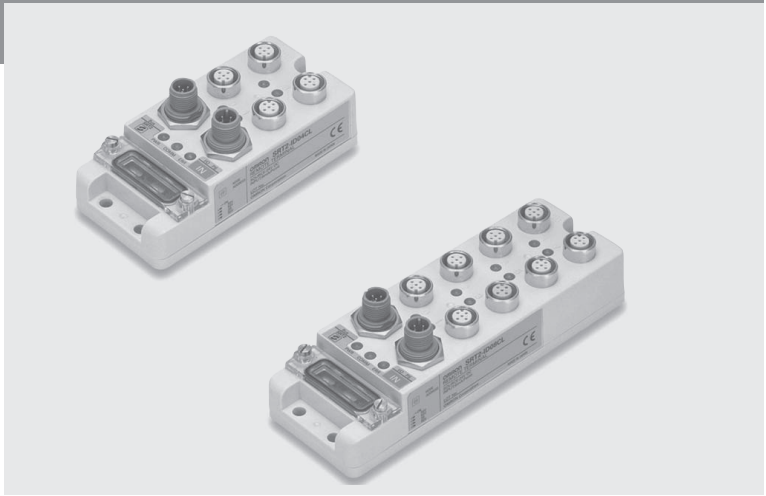
Output
SRT2-ROC16
SRT2-ROF16



Note: 1. Dotted lines indicate internal connections.
SRT2-ROC08 and SRT2-ROF08 have the 0 to 7 and COM0 to COM3 terminals only.
2. The above is a connection example of the SRT2-ROC16 with G6D Relays mounted.
G3DZ Power MOS FET Relays are mounted to the SRT2-ROF08 and SRT2-ROF16.

SRT2-□D0□CL(-1)

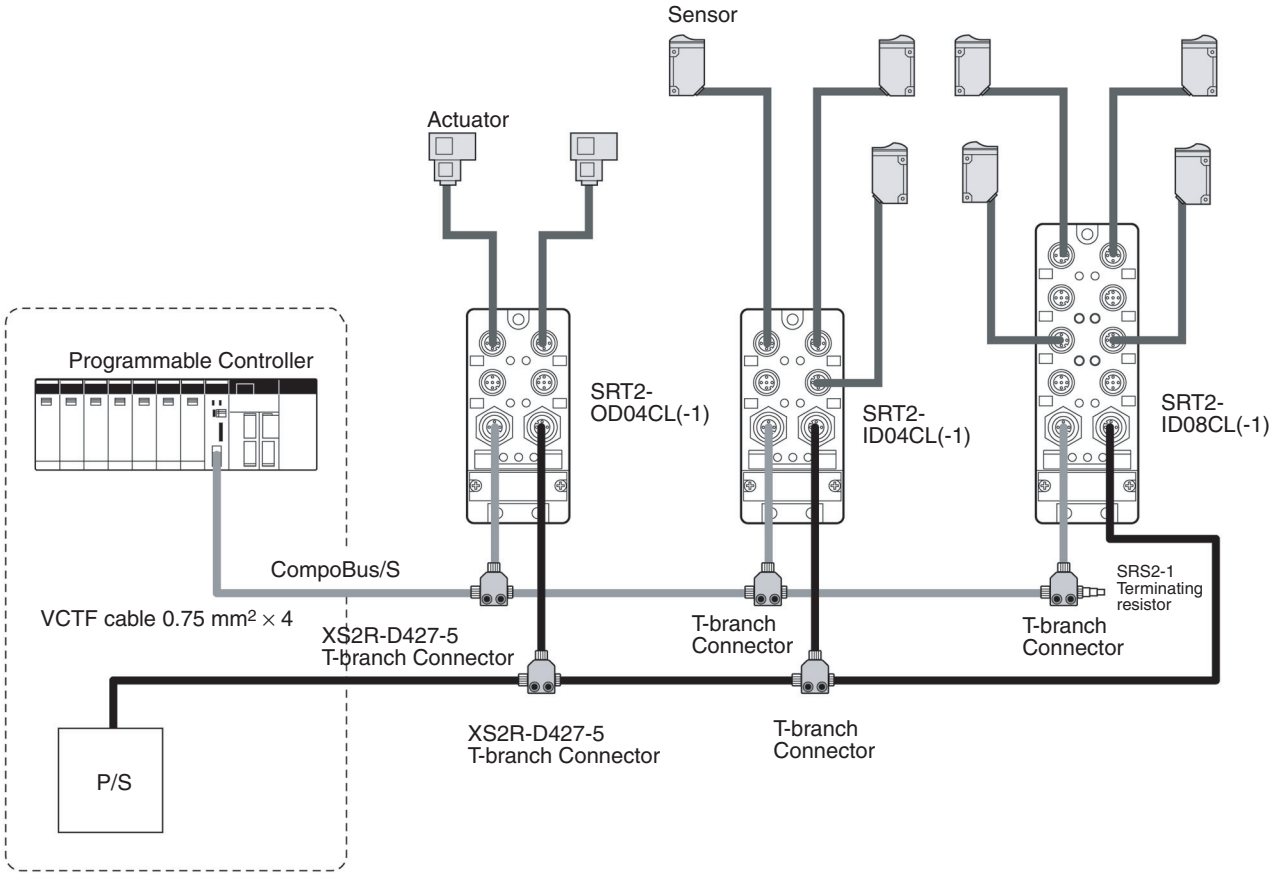
Waterproof Terminals



IP67 rated I/O terminals.
Compact and waterproof.

- Reduced Labor
  The use of standard connectors reduces the installation time
- Reduced Wiring
  The I/O terminal can be mounted closer to sensors and other devices.
- Easier Maintenance
  Significant reductions not only in setup time but also maintenance time.
- Reduced Space, Improved Operability
  Compact design (160 x 54 mm (W x H)) (8-point models)
  Settings and connections can be performed using the switch and connectors on the front side of the Terminal.

System Configuration



Ordering Information

Input/Output	Internal I/O circuit common	I/O points	I/O connections method	Rated voltage for I/O power supply	Model
Inputs	NPN (+ common)	4 points	Sensor I/O connector	24 V DC	SRT2-ID04CL
		8 points			SRT2-ID08CL
	PNP (– common)	4 points			SRT2-ID04CL-1
		8 points			SRT2-ID08CL-1
Outputs	NPN (– common)	4 points			SRT2-OD04CL
		8 points			SRT2-OD08CL
	PNP (+ common)	4 points			SRT2-OD04CL-1
		8 points			SRT2-OD08CL-1

Specifications

General Specifications

Item	SRT2-ID04CL SRT2-ID04CL-1 SRT2-OD04CL SRT2-OD04CL-1	SRT2-ID08CL SRT2-ID08CL-1 SRT2-OD08CL SRT2-OD08CL-1
Communications power supply voltage	14 to 26.4 V DC (supplied via communications connectors)	
I/O power supply voltage	20.4 to 26.4 V DC (24 V DC $_{-15\%}^{+10\%}$)	
Communications current consumption	15 mA max.	20 mA max.
Ambient temperature	Operating:–10°C to 55°C (with no icing) Storage:–25°C to 65°C	
Ambient humidity	Operating:25% to 85% (with no condensation) Storage:25% to 85% (with no condensation)	
Connector tightening torque	0.39 to 0.49 Nm	
Enclosure rating	IEC IP67	
Mounting method	Mounted using M5 screws	
Weight	Approx. 180 g	Approx. 240 g

Communications Media/Distances

Communications medium		4-conductor cable (VCTF, 0.75 mm^2 x 4)
Communications distance	High-speed Communications Mode	4-conductor VCTF cable: Main line length:30 m max. Branch line length:3 m max. Total branch line length:30 m max. (When 4-conductor VCTF 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	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.)

Note: Use in combination with two-conductor VCTF cables and special flat cables is not possible.

Input Specifications

Item	SRT2-ID04CL SRT2-ID04CL-1	SRT2-ID08CL SRT2-ID08CL-1
Input current	For input voltage of 24 V DC: 6 mA max. per point For input voltage of 17 V DC: 3 mA min. per point	
Input impedance	4.4 kΩ	
ON delay time	1.5 ms max.	
OFF delay time	1.5 ms max.	
ON voltage	15 V DC min.	
OFF voltage	5 V DC max.	
OFF current	1 mA max.	
Number of circuits	4 points with 1 common	8 points with 1 common

Output Specifications

Item	SRT2-OD04CL SRT2-OD04CL-1	SRT2-OD08CL SRT2-OD08CL-1
Rated output current	0.5 A per point (2 A per common)	0.5 A per point (2.4 A per common)
Residual voltage	1.2 V max.	
Leakage current	0.1 mA max.	
ON delay time	0.5 ms max.	
OFF delay time	1.5 ms max.	
Number of circuits	4 points with 1 common	8 points with 1 common

Applicable Connectors

Power Supply Connectors

Model	Specification
XS2C-D4□□	Assembling-type connector (crimp, soldering, or screw) socket
XS2W-D42□-□□□-□	Cable with connector on each end
XS2F-D42□-□80-□	Cable with connector at one end (socket end)
XS2R-D427-5	T-branch connector

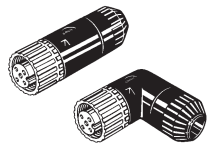
I/O Connectors

Model	Specification
XS2G-D4□□	Assembling type connector (crimp, soldering, or screw) Socket
XS2H-D421-□□□-□	Cable with connector at one end (plug end)
XS2W-D42□-□□□-□	Cable with connector on each end
XS2Z-12	Waterproof cover
XS2Z-15	Dust cover

Communications Connector

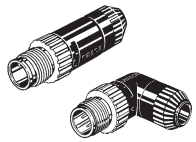
Model	Specification
XS2R-D427-5	T-branch connector
SRS2-1	Connector with terminating resistor (plug)
XS2G-D4S7	Assembling-type connector (for 4-conductor VCTF cable) plug (See note.)
XS2C-D4S7	Assembling-type connector (for 4-conductor VCTF socket) socket (See note.)

Assembling-type Connector Socket
Power Supply and Communications

Model	Applicable cable external dia.	Cable pull-out direction	No. of poles	Connection method		
				Crimp	Solder	Screw
	6 dia. (5 to 6 dia.)	Straight	4	XS2C-D4C1	XS2C-D421	XS2C-D4S1
		L-shaped		XS2C-D4C2	XS2C-D422	XS2C-D4S2
	5 dia. (4 to 5 dia.)	Straight		XS2C-D4C3	XS2C-D423	XS2C-D4S3
		L-shaped		XS2C-D4C4	XS2C-D424	XS2C-D4S4
	3 dia. (3 to 4 dia.)	Straight		XS2C-D4C5	XS2C-D425	XS2C-D4S5
		L-shaped		XS2C-D4C6	XS2C-D426	XS2C-D4S6
	7 dia. (7 to 8 dia.)	Straight		---	---	XS2C-D4S7 (see note)

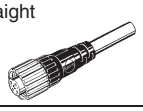
Note: Only the XS2C-D4S7 with a diameter of 7 mm can be used for communications.

Assembling-type Connector Plug
Power Supply and Communications

Appearance	Applicable cable external dia.	Cable pull-out direction	No. of poles	Connection method		
				Crimp	Solder	Screw
	6 dia. (5 to 6 dia.)	Straight	4	XS2G-D4C1	XS2G-D421	XS2G-D4S1
		L-shaped		---	XS2G-D422	XS2G-D4S2
	5 dia. (4 to 5 dia.)	Straight		XS2G-D4C3	XS2G-D423	XS2G-D4S3
		L-shaped		---	XS2G-D424	XS2G-D4S4
	3 dia. (3 to 4 dia.)	Straight		XS2G-D4C5	XS2G-D425	XS2G-D4S5
		L-shaped		---	XS2G-D426	XS2G-D4S6
	7 dia.	Straight		---	---	XS2G-D4S7 (see note)

Note: Only the XS2G-D4S7 with a diameter of 7 mm can be used for communications.

Connectors with Cables (Single-end Socket Each)
Power Supply

Appearance	Cable pull-out direction	No. of cable conductor	Cable length (m)	Standard cable	Robot cable (vibration resistive)
	Straight 	4	1	XS2F-D421-C80-A	XS2F-D421-C80-R
			2	XS2F-D421-D80-A	XS2F-D421-D80-R
			5	XS2F-D421-G80-A	XS2F-D421-G80-R
			10	XS2F-D421-J80-A	XS2F-D421-J80-R
	L-shaped 	4	1	XS2F-D422-C80-A	XS2F-D422-C80-R
			2	XS2F-D422-D80-A	XS2F-D422-D80-R
			5	XS2F-D422-G80-A	XS2F-D422-G80-R
			10	XS2F-D422-J80-A	XS2F-D422-J80-R

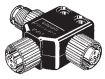
Connectors with Cables (Sockets and Plugs)
Power Supply and I/O

Appearance	Cable pull-out direction	No. of cable conductor	Cable length (m)	Standard cable	Robot cable (vibration resistive)
	Straight/Straight	4	1	XS2W-D421-C81-A	XS2W-D421-C81-R
			2	XS2W-D421-D81-A	XS2W-D421-D81-R
			5	XS2W-D421-G81-A	XS2W-D421-G81-R
	L-shaped/L-shaped		2	XS2W-D422-D81-A	---
			5	XS2W-D422-G81-A	
	Straight/L-shaped		2	XS2W-D423-D81-A	
			5	XS2W-D423-G81-A	
	L-shaped/Straight		2	XS2W-D424-D81-A	
			5	XS2W-D424-G81-A	

Connectors with Cables (Single-end Connector Each) I/O

Appearance	Cable pull-out direction	No. of cable conductor	Cable length (m)	Standard cable
	Straight	3	0.3	XS2H-D421-AC0-A
		4		XS2H-D421-A80-A
		3	1	XS2H-D421-CC0-A
		4		XS2H-D421-C80-A

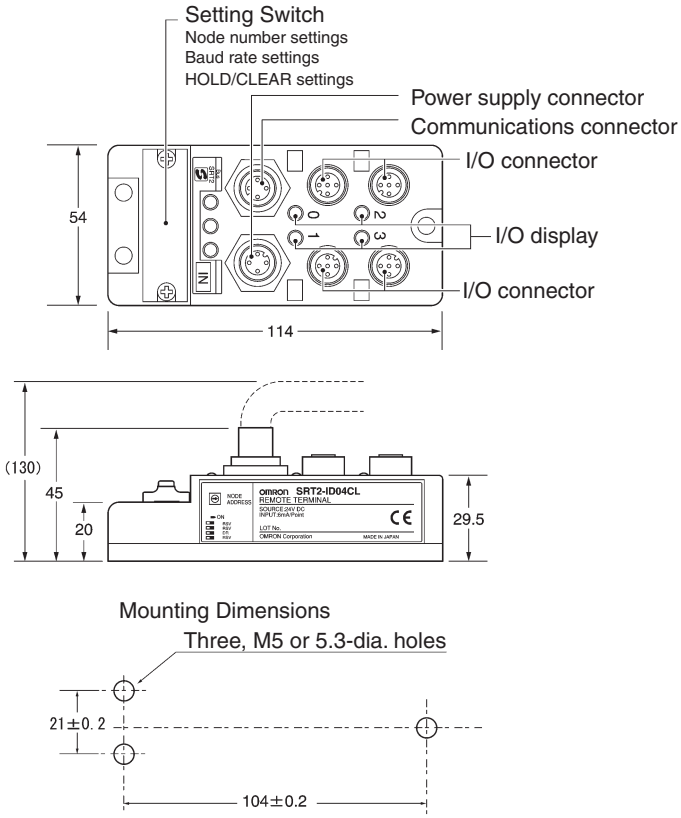
Connector Covers

Appearance	Product	Model	Application
	T-branch Connector	XS2R-D427-5	Branching communications lines and power lines
	Connector Terminator (plug)	SRS2-1	Waterproof terminator
	Waterproof cover	XS2Z-12	Covers for unused I/O connectors
	Dust cover	XS2Z-15	

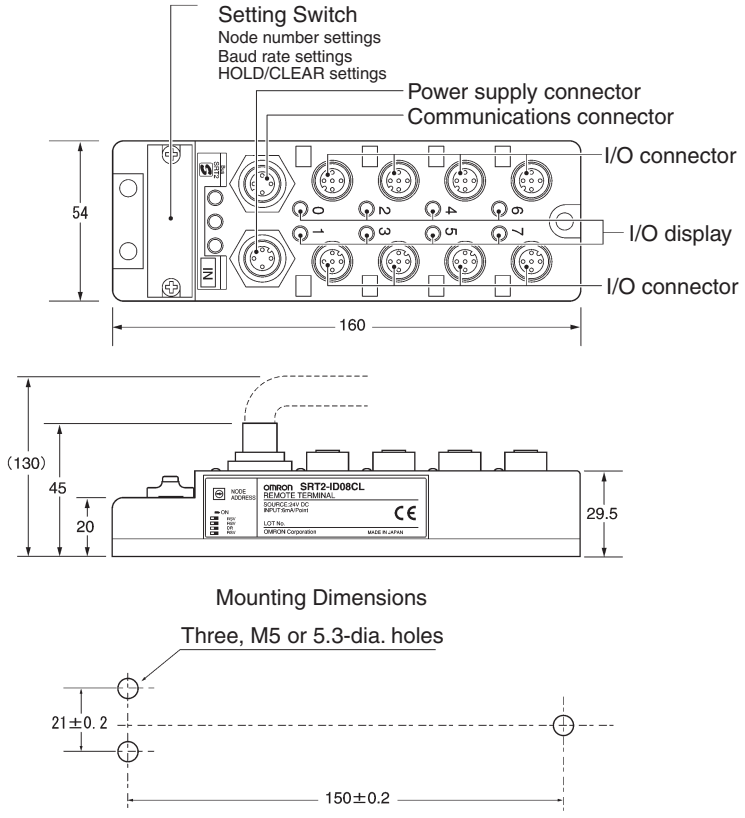
Dimensions

Note: All units are in millimeters unless otherwise indicated.

Models with 4 points
SRT2-ID04CL/SRT2-ID04CL-1
SRT2-OD04CL/SRT2-OD04CL-1



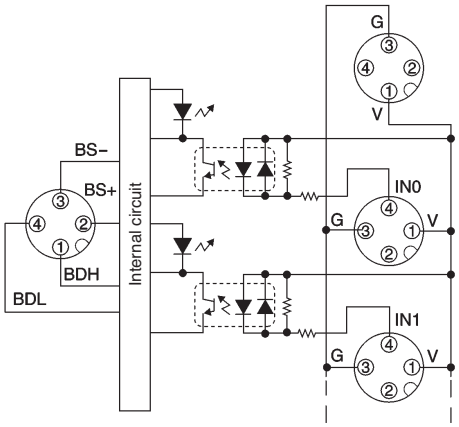
Models with 8 points
SRT2-ID08CL/SRT2-ID08CL-1
SRT2-OD08CL/SRT2-OD08CL-1



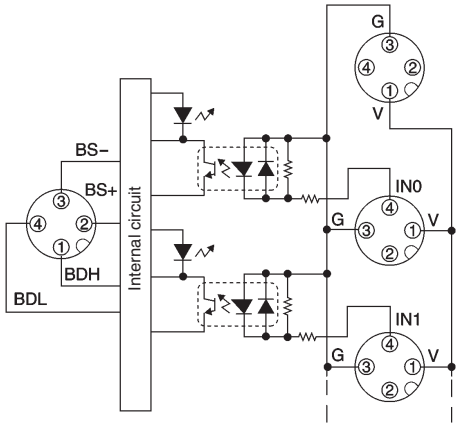
Installation

Internal Circuit Diagrams

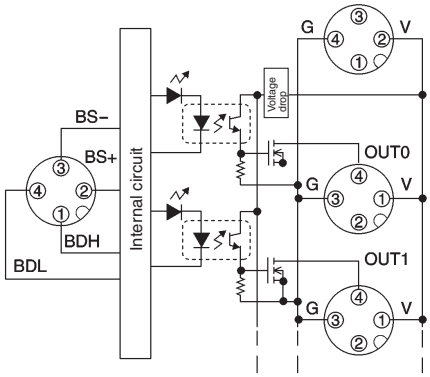
SRT2-ID0□CL (NPN)



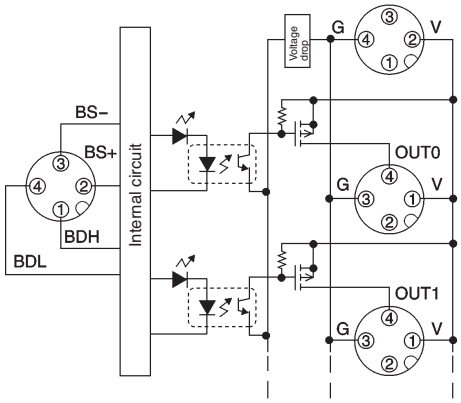
SRT2-ID0□CL-1 (PNP)



SRT2-OD0□CL (NPN)

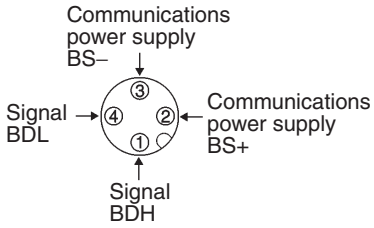


SRT2-OD0□CL-1 (PNP)

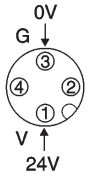


Connections Diagrams for Connectors

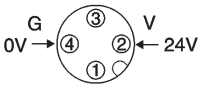
Communications Connector



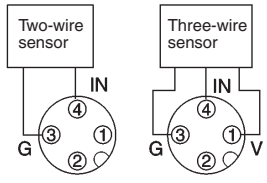
ID0□(-1) Power Supply Connector



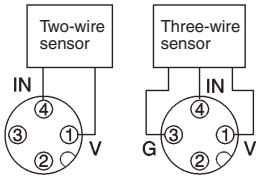
OD0□(-1) Power Supply Connector



ID0□ Input Connector (NPN)

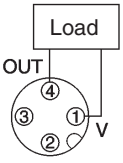


ID0□-1 Input Connector (PNP)



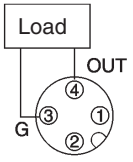
OD0□ Output Connector (NPN)

Solenoid and Voltage



OD0□ Output Connector (PNP)

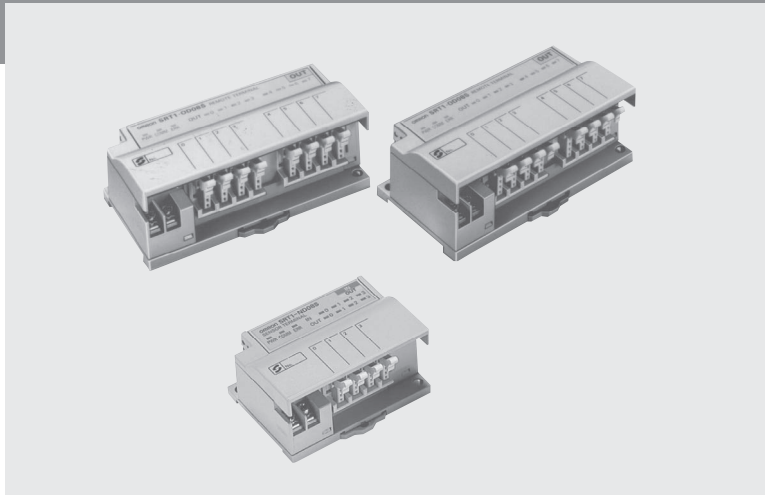
Solenoid and Voltage



SRT2-□D08S

Sensor Terminals

- Sensor connector models
- For sensors with easy-to-wire connectors
- Connects to 2-wire sensors.
- Very compact
- DIN rail mounting and screw mounting are both supported.



Ordering Information

Classification	Internal I/O circuit common	I/O points	Model
For input	NPN (– common)	8 input points	SRT2-ID08S
For I/O	NPN (– common)	4 input/4 output points	SRT2-ND08S
For output	NPN (– common)	8 output points	SRT2-OD08S

Specifications

Ratings

Input

Item	SRT2-ID08S/-ND08S
Input current	10 mA max./point
ON delay time	1 ms max.
OFF delay time	1.5 ms max.
ON voltage	12 V DC min. between each input terminal and V_{CC}, the external sensor power supply
OFF voltage	4 V DC max. between each input terminal and V_{CC}, the external sensor power supply
OFF current	1 mA max.
Insulation method	Photocoupler
Input indicator	LED (yellow)

Output

Item	SRT2-ND08S	SRT2-OD08S
Rated output current	20 mA/point	300 mA/point
Residual voltage	1 V max.	0.6 V max.
ON delay time	1 ms max.	---
OFF delay time	1.5 ms max.	---
Leakage current	0.1 mA max.	
Insulation method	Photocoupler	
Output indicator	LED (yellow)	

Characteristics

Communications power supply voltage (see note 1)	14 to 26.4 V DC
Current consumption (see note 2)	50 mA max. at 24 V DC
Connection method	Multi-drop method and T-branch method
Dielectric strength	500 V AC for 1 min (1-mA sensing current between insulated circuits)
Noise immunity	Conforms to IEC61000-4-4 2kV (power lines)
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Malfunction:200 m/s^2 Destruction:300 m/s^2
Mounting method	M4 screw mounting or 35-mm DIN rail mounting
Mounting strength	No damage when 50 N pull load was applied for 10 s in all directions (except the DIN rail directions and a pulling force of 10 N)
Terminal strength	No damage when 50 N pull load was applied for 10 s in all directions Tighten each screw to a torque of 0.6 to 1.18 N • m
Ambient temperature	Operating:0° C to 55° C (with no icing or condensation) Storage:–20° C to 65° C (with no icing or condensation)
Ambient humidity	Operating:35% to 85%
Weight	SRT2-ID08S/OD08S: 100 g max., SRT2-ND08S: 80 g max.

Note: 1. The communications power supply voltage must be 20.4 to 26.4 V DC if the Unit is connected to 2-wire proximity sensors.

2. The above current consumption is a value with all the points turned OFF excluding the current consumption of the sensor connected to the Sensor Terminal.

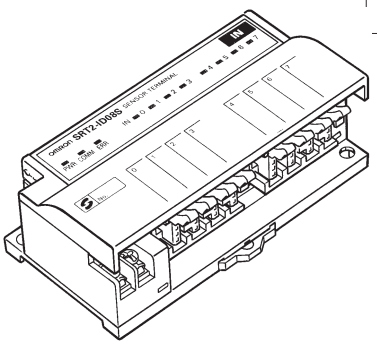
External Sensor Power Supply

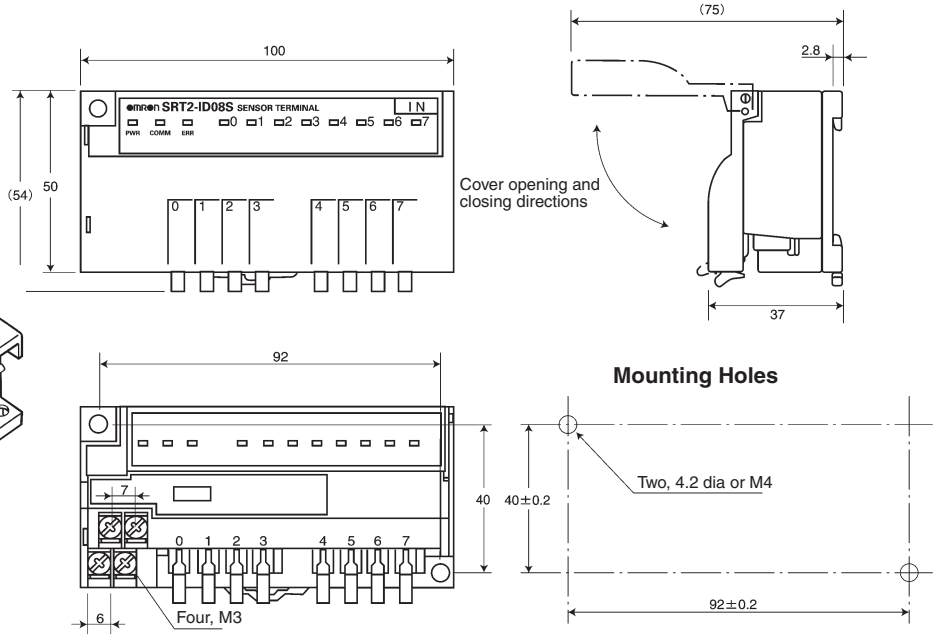
Power supply voltage	13.5 to 26.4 V DC
Current consumption	500 mA max. in total

Dimensions

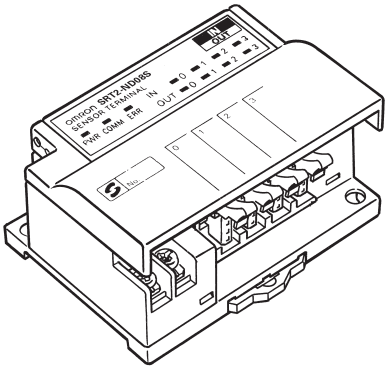
Note: All units are in millimeters unless otherwise indicated.

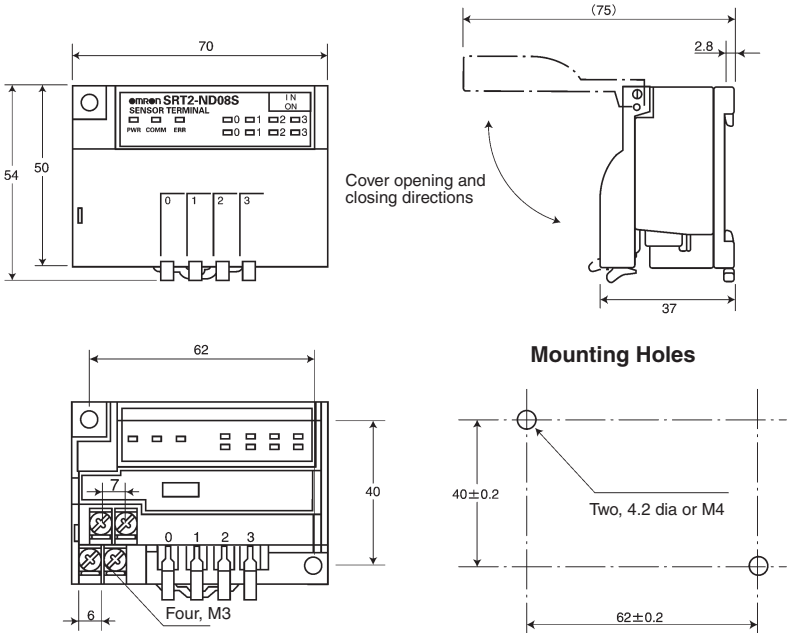
SRT2-ID08S



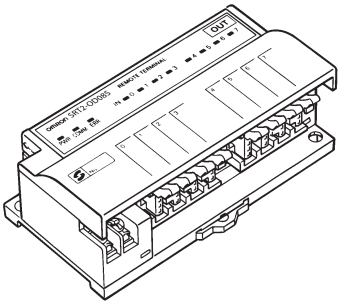


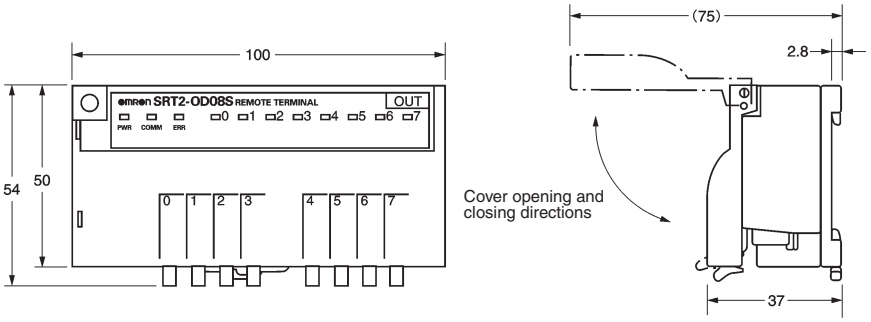
SRT2-ND08S

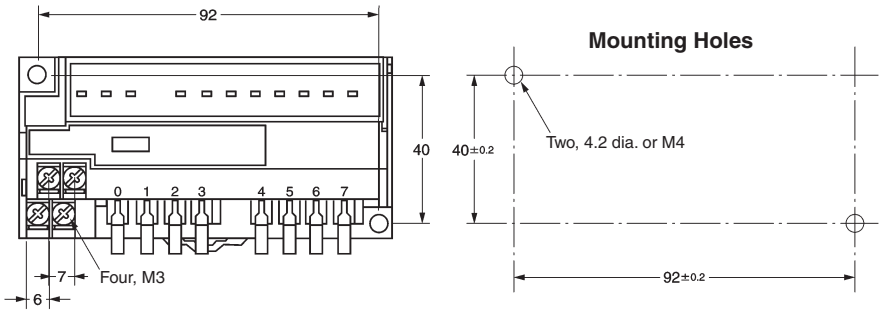




SRT2-OD08S







Cable Connector for SRT2-□D08S

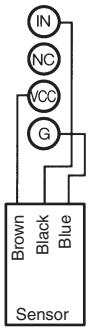
Applicable conductor size (mm^2)	Model
0.3 to 0.5	XS8A-0441
0.14 to 0.2	XS8A-0442
0.3 to 0.5	XS8B-0443

Installation

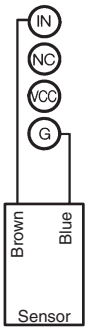
External Connections

SRT2-ID08S

Three-wire Sensor

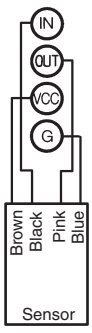


Two-wire Sensor

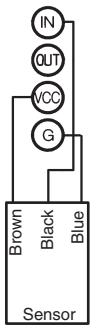


SRT2-ND08S

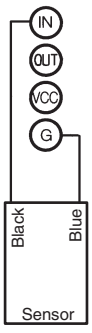
Sensor with Teaching Function
Sensor with External Diagnostic function
Sensor with Bank-switching Function



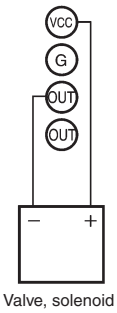
Three-wire Sensor



Two-wire Sensor



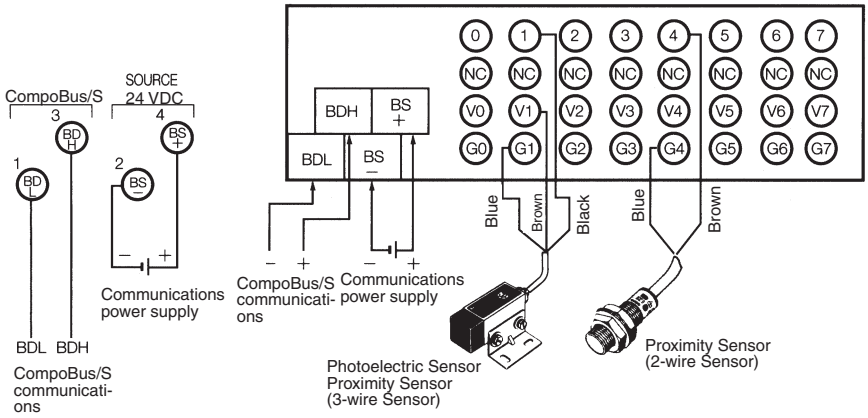
SRT2-OD08S



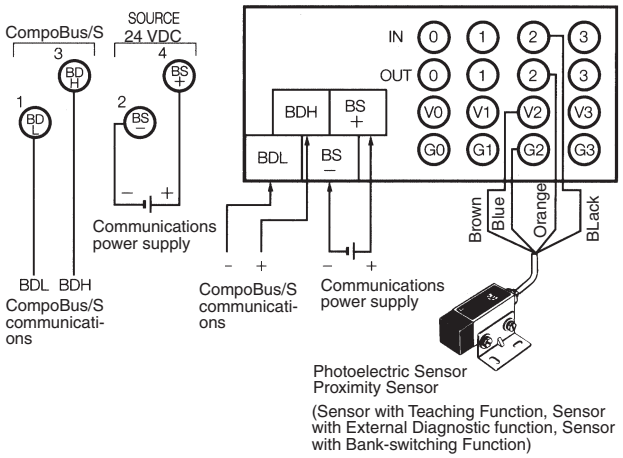
Valve, solenoid

Terminal Arrangement and I/O Device Connection Example

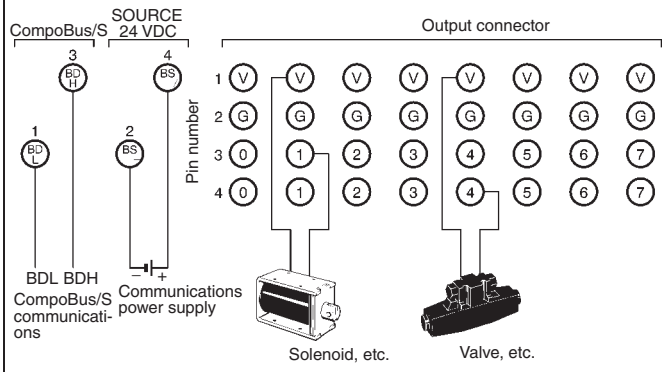
Input
SRT2-ID08S



I/O
SRT2-ND08S



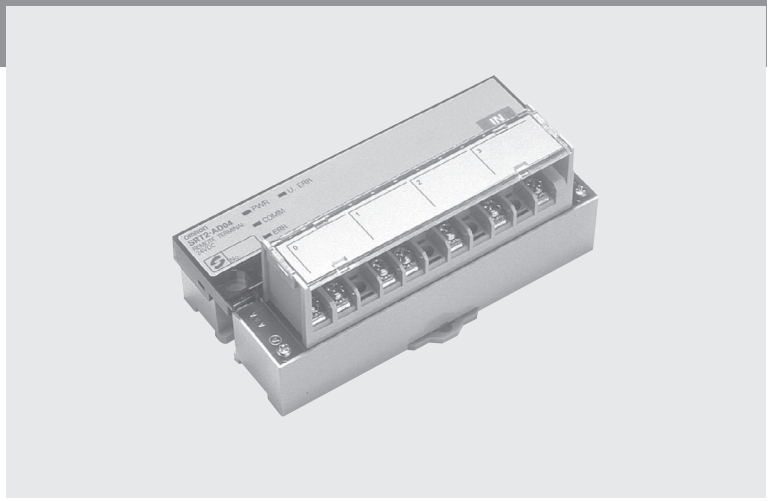
Output
SRT2-OD08S



SRT2-AD04

Analog Input Terminal

- Compact Analog Input Model
- Allows flexible input point settings up to a maximum of four points.
- Resolution: 1/6,000
- Conversion time is 1 ms only
- Wide input ranges available.
- 105 x 48 x 50 (W x H x D)



Ordering Information

Classification	I/O points	Model
Analog Input Terminal	1 to 4 (selectable with DIP switch)	SRT2-AD04

Note: For details about connecting the SRT2-AD04 to the master unit. Refer to page 368.

Specifications

Ratings

Input

Item		Voltage input	Current input
Max. signal input		±15 V	±30 mA
Input impedance		1 MΩ max.	Approx. 250 Ω
Resolution		1/6,000 (FS)	
Total accuracy	**25°C**	±0.3% FS	±0.4% FS
	–10 to 55°C	±0.6% FS	±0.8% FS
Conversion time		4 ms/4 points, 3 ms/3 points, 2 ms/2 points, and 1 ms/1 point	
Dielectric strength		500 V AC for 1 min between communications power supply, analog input, and communications terminals (see note)	

Note: There is no insulation between analog inputs.

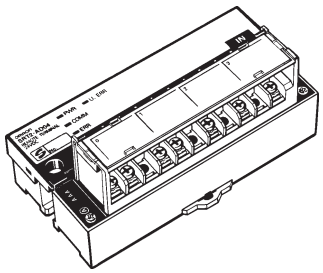
Characteristics

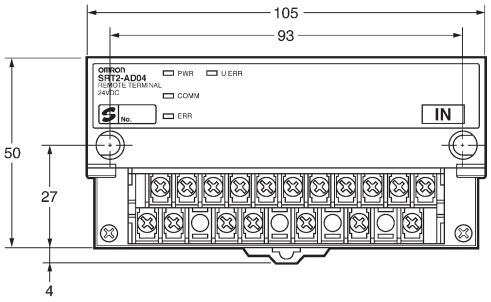
Communications power supply voltage	14 to 26.4 V DC (possible to provide through Special Flat Cable)
Current consumption	100 mA max.
Connection method	Multi-drop method and T-branch method
Dielectric strength	500 V AC (between insulated circuits)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)
Vibration resistance	10 to 150 Hz, 1.0-mm double amplitude or 70 m/s^2
Shock resistance	200 m/s^2
Mounting strength	No damage with 100 N pull load applied in all directions.
Terminal strength	No damage with 100 N pull load applied
Screw tightening torque	0.3 to 0.5 Nm
Ambient temperature	Operating:–10°C to 55°C Storage:–25°C to 65°C
Ambient humidity	Operating:25% to 85% (with no condensation)
Weight	Approx. 120 g

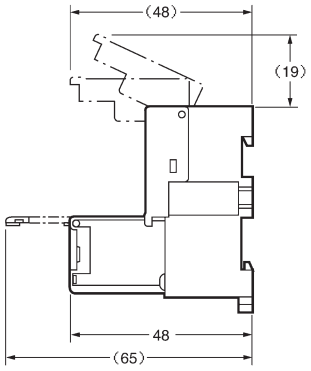
Dimensions

Note: All units are in millimeters unless otherwise indicated.

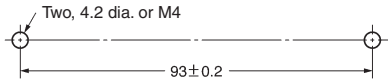
SRT2-AD04







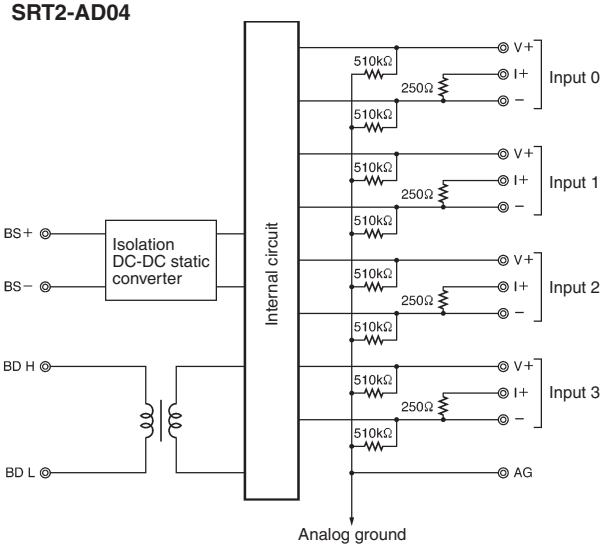
Mounting Holes



Installation

Internal Circuit Configuration

SRT2-AD04



Terminal Arrangement

SRT2-AD04

BD H	BS +	AG	V0 +	I0 +	V1 +	I1 +	V2 +	I2 +	V3 +	I3 +
BD L	BS −	NC	AG	0−	NC	1−	NC	2−	NC	3−

Note: When the input is current input, short-circuit the “V+” terminals and the “I+” terminals. When short-circuiting, use the short-circuiting tool provided as an accessory.

SRT2-DA02

Analog Output Terminal

- Compact Analog Output Model
- Two output points or 1 output point is selectable.
- Resolution: 1/6,000
- 105 x 48 x 50 (W x H x D)

Ordering Information

Classification	I/O points	Model
Analog Output Terminal	1 or 2 (selectable with DIP switch)	SRT2-DA02

Note: For details about connecting the SRT2-DA02 to the master unit, refer to page 368.

Specifications

Ratings

Output

Item		Voltage output	Current output
External output permissible load resistance		5 kΩ min.	600 Ω max.
Output impedance		0.5 Ω max.	---
Resolution		1/6,000 (FS)	
Total accuracy	25°C	±0.4% FS	
	–10 to 55°C	±0.8% FS	
Conversion time		2 ms/2 points and 2 ms/1 point	
Dielectric strength		500 V AC for 1 min between communications power supply, analog output, and communications terminals (see note)	

Note: There is no insulation between analog outputs.

Characteristics

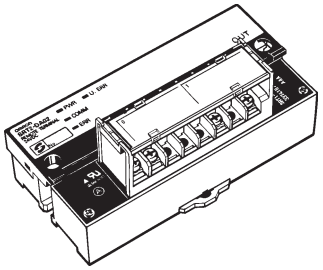
Communications power supply voltage	14 to 26.4 V DC (power supply possible from Special Flat Cable)
Current consumption (see note)	170 mA max.
Connection method	Multi-drop method and T-branch method
Dielectric strength	500 V AC (between insulated circuits)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)
Vibration resistance	10 to 150 Hz, 1.0-mm double amplitude or 70 m/s^2
Shock resistance	200 m/s^2
Mounting strength	No damage when 100 N pull load was applied in all directions
Terminal strength	No damage when 100 N pull load was applied
Screw tightening torque	0.3 to 0.5 N • m
Ambient temperature	Operating:–10°C to 55°C Storage:–25°C to 65°C
Ambient humidity	Operating:25% to 85% (with no condensation)
Weight	Approx. 100 g

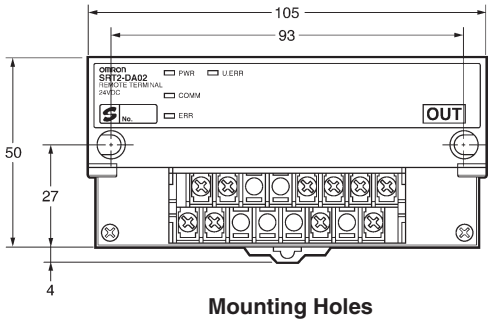
Note: The above current consumption is the value with all points turned ON excluding the current consumption of the external load.

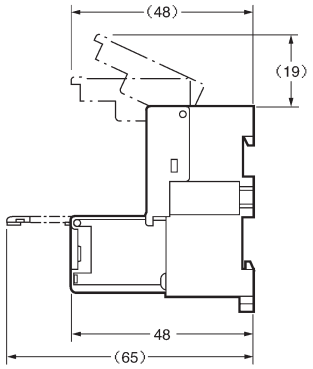
Dimensions

Note: All units are in millimeters unless otherwise indicated.

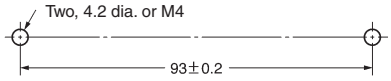
SRT2-DA02







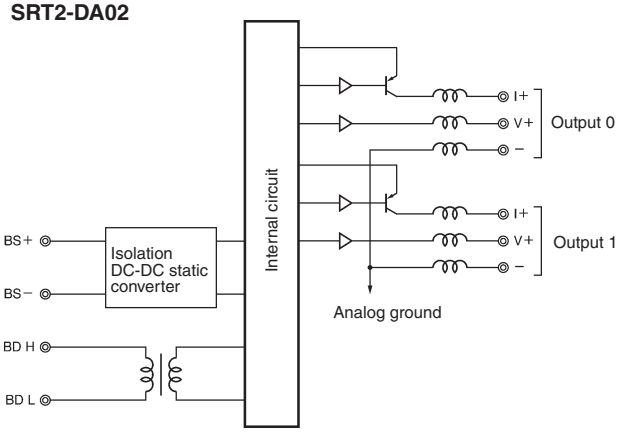
Mounting Holes



Installation

Internal Circuit Configuration

SRT2-DA02



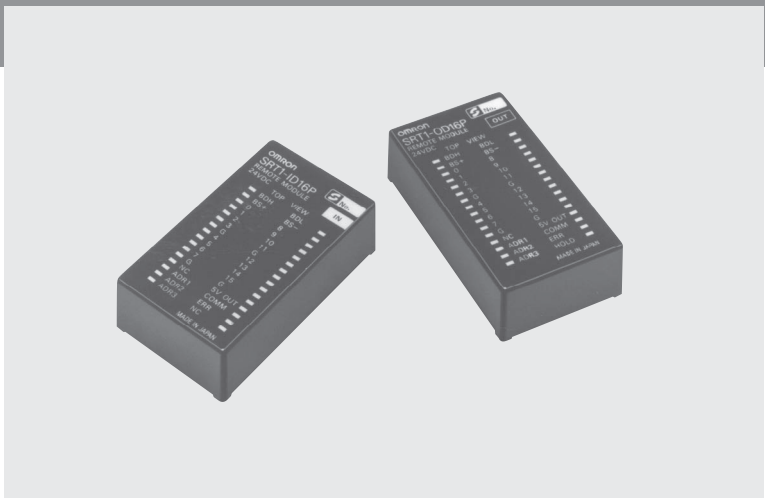
Terminal Arrangement

SRT2-DA02

H	BS +	NC	NC	V0 +	I0 +	V1 +	I1 +
BD L	BS −	NC	NC	NC	0 −	NC	1 −

SRT2-ID16P/-OD16P

Digital I/O Terminals



Module Type that Allows PCB Mounting

- Compact size at 60 x 16 x 35 (W x H x D)
- Lineup now includes the 16-point input model and 16-point output model.

Ordering Information

I/O classification	Internal I/O circuit common	I/O points	Rated voltage	I/O rated voltage	Model
Input	NPN (+ common)	16	24 V DC	24 V DC	SRT2-ID16P
Output	NPN (– common)				SRT2-OD16P

Specifications

Ratings

Input (SRT2-ID16P)

Input current	2 mA max./point
ON delay time	1.5 ms max.
OFF delay time	1.5 ms max.
ON voltage	15 V DC min. between each input terminal and BS+ terminal
OFF voltage	5 V DC max. between each input terminal and BS + terminal

Output (SRT2-OD16P)

Rated output current	0.2 A/point, 0.6 A/common
Residual voltage	0.6 V max. between each output terminal and G terminal at 0.2 A
Leakage current	0.1 mA max. between each output terminal and G terminal at 24 V DC

Characteristics

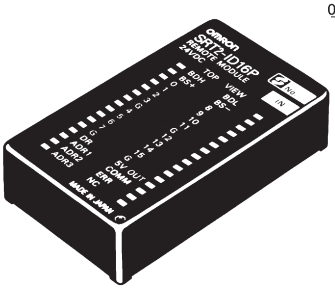
Communications power supply voltage	20.4 to 26.4 V DC
I/O power supply voltage	24 V DC $^{+10\%}_{-15\%}$
Current consumption (see note)	60 mA max.
Connection method	Multi-drop method and T-branch method
Connecting Units	8 Input Terminals and 8 Output Terminals per Master
Dielectric strength	500 V AC for 1 min (1-mA sensing current between insulated circuits)
5-V output current	20 mA max. (5 V ±0.5 V)
LED drive current (COMM, ERR)	10 mA max. (5 V DC)
SW carry current (ADR0 to 3, HOLD)	1 mA max.
Ambient temperature	Operating:0°C to 55°C (with no icing or condensation) Storage:–20°C to 65°C (with no icing or condensation)
Ambient humidity	Operating:35% to 85%
Weight	35 g max.

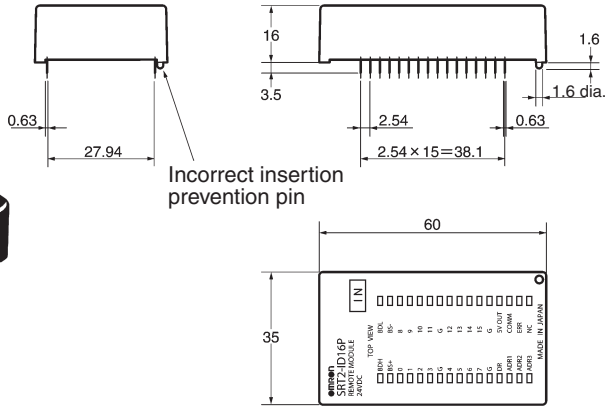
Note: The above current consumption is the value with all points turned ON excluding the current consumption of the external sensor connected to the input model and the current consumption of the load connected to the output model.

Dimensions

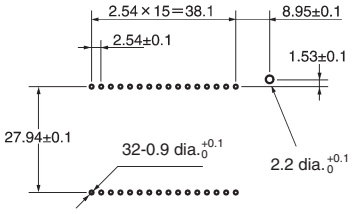
Note: All units are in millimeters unless otherwise indicated.

SRT2-ID16P
SRT2-OD16P





PCB dimensions (top view)

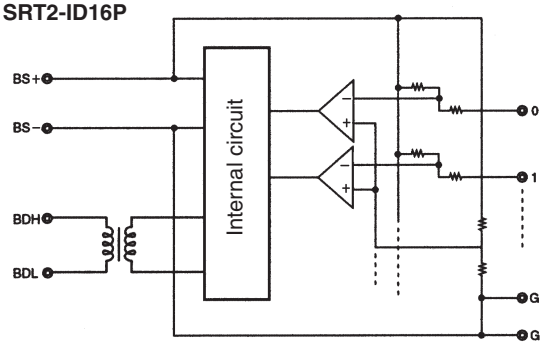


No cumulative tolerance allowed

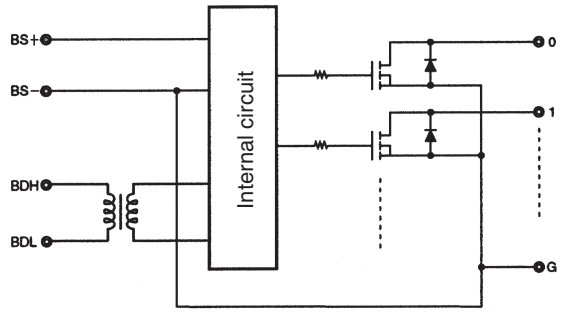
Installation

Internal Circuit Configuration

SRT2-ID16P

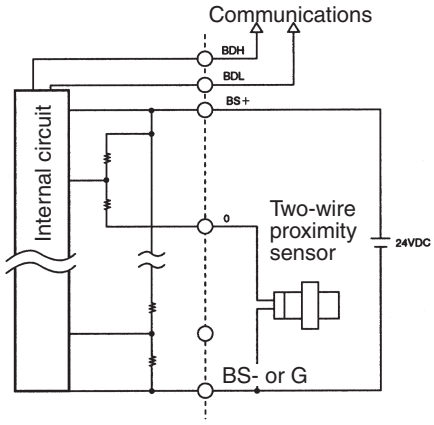


SRT2-OD16P

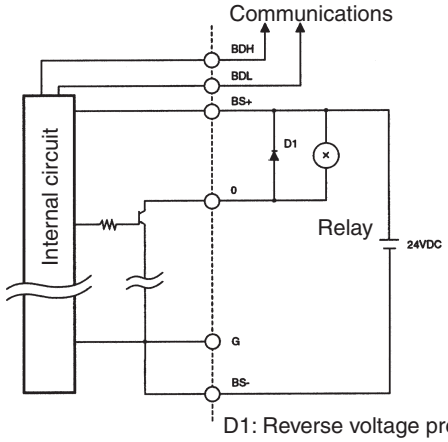


External Connections

Input Module (SRT2-ID16P)

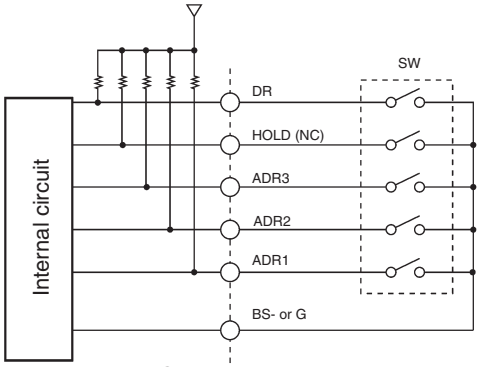


Output Module (SRT2-OD16P)



D1: Reverse voltage prevention diode

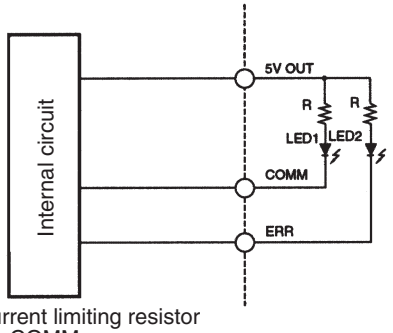
Node Number Settings and Output HOLD/CLEAR Mode



Note: NC in parentheses is for the Input Modules.

Note: Refer to the *CompoBus/S Operation Manual (W266-E1)* for details on the switch.

Indicators



R: LED current limiting resistor
LED1: LED for COMM
LED2: LED for ERR
The maximum current for LED1 and 2 is 10 mA.

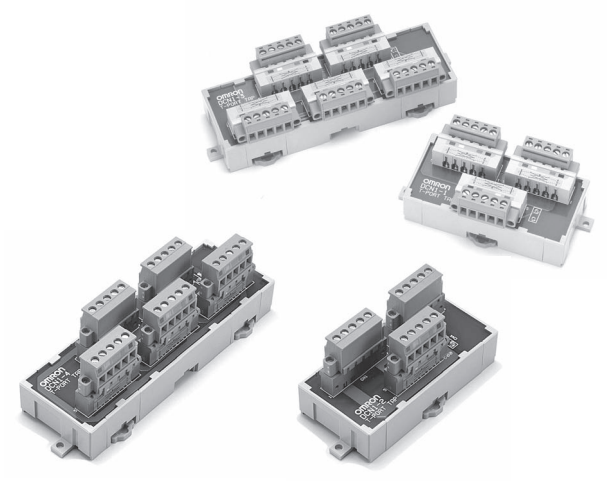
The 5-V Output Terminals have positive power supplies (maximum output current of 20 mA) for the ERR and COMM LEDs. Recommended LED colors are red for ERR and yellow for COMM.

OMRON

DeviceNet Wiring

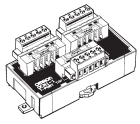
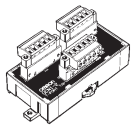
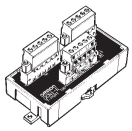
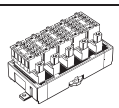
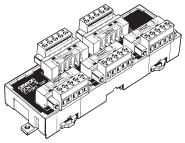
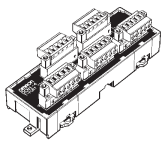
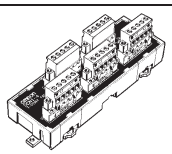
DeviceNet Cables and connectors

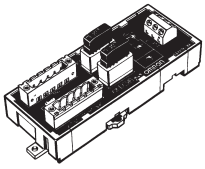
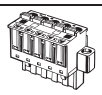
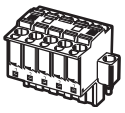
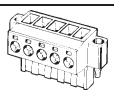
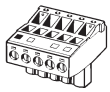
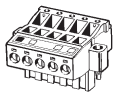
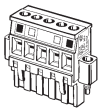
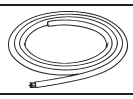
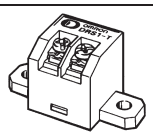
- T-branch taps
- Network terminators
- Network connectors
- DeviceNet cable



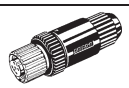
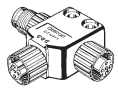
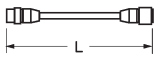
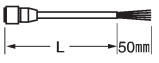
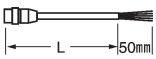
Ordering Information

General-purpose Models

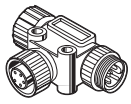
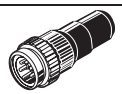
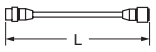
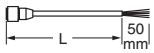
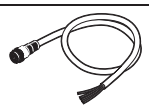
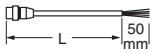
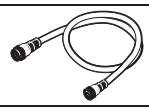
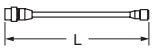
Product	Appearance	Model	Specification	
T-branch Tap for 1 branch line		DCN1-1NC	Cable wiring direction: Toward top Cable lock direction: From top Connector screw direction: From top	Provided with 3 parallel connectors with clamps (XW4G-05C1-H1-D), standard terminating resistor
		DCN1-1C	Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From side	Provided with 3 parallel connectors with screws (XW4B-05C1-H1-D), standard terminating resistor
		DCN1-2C	Cable wiring direction: Toward top Cable screw direction: From side Connector screw direction: From top	
		DCN1-2R	Cable wiring direction: From side Cable screw direction: From top Connector screw direction: From top	Provided with 3 orthogonal connectors with screws (XW4B-05C1-VIR-D), standard terminating resistor
T-branch Tap for 3 branch lines		DCN1-3NC	Cable wiring direction: Toward top Cable lock direction: From top Connector screw direction: From top	Provided with 5 parallel clamp connectors with screws (XW4G-05C1-H1-D), standard terminating resistor
		DCN1-3C	Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From side	Provided with 5 parallel connectors with screws (XW4B-05C1-H1-D), standard terminating resistor
		DCN1-4C	Cable wiring direction: Toward top Cable screw direction: From side Connector screw direction: From top	
		DCN1-4R	Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From top	Provided with 5 orthogonal clamp connectors with screws (XW4B-05C1-VIR-D), standard terminating resistor

Product		Appearance	Model	Specification
Power Supply Tap			DCN1-1P	One-branch tap provided with 2 connectors, standard terminating resistor, and fuse
Connectors			XW4G-05C1-H1-D	Parallel clamp connector with screws Connector insertion and wiring both performed horizontally.
			XW4G-05C4-HF-D	Parallel multi-branching clamp connector with screws Connector insertion and wiring performed in same direction.
			XW4B-05C1-H1-D	Parallel connector with screws Connector insertion and wiring performed in same direction.
			XW4B-05C4-T-D	Parallel, screwless, multi-branching connector Connector insertion and wiring performed in same direction.
			XW4B-05C4-TF-D	Parallel, multi-branching connector with screws Connector insertion and wiring performed in same direction.
			XW4B-05C1-VIR-D	Orthogonal connector with screws Connector insertion and wiring performed at a right angle.
Omron supplied DeviceNet Cables	Thin Cables		DCA1-5C10	Outer diameter: 7.00 mm Length: 100 m
	Thick Cables		DCA2-5C10	Outer diameter: 11.6 mm Length: 100 m
Terminal-block Terminator			DRS1-T	Resistance of 121 Ω

Environment-resistive Models for Thin Cable

Product	Appearance		Model	Specifications	
Sealed Assembling-type Connector (male)			XS2G-D5S7	For communications (plug)	
Sealed Assembling-type Connector (female)			XS2C-D5S7	For communications (socket)	
Sealed T-branch Connector			DCN2-1	For 1 branch line	
Sealed Connector with Terminating Resistor			DRS2-1	Plug	
			DRS2-2	Socket	
Cables with Sealed Connectors			DCA1-5CNC5W1	Length (L): 0.5 m	Cable with connectors on both ends
			DCA1-5CN01W1	Length (L): 1 m	
			DCA1-5CN02W1	Length (L): 2 m	
			DCA1-5CN03W1	Length (L): 3 m	
			DCA1-5CN05W1	Length (L): 5 m	
			DCA1-5CN10W1	Length (L): 10 m	
			DCA1-5CNC5F1	Length (L): 0.5 m	Cable with connector socket on one end
			DCA1-5CN01F1	Length (L): 1 m	
			DCA1-5CN02F1	Length (L): 2 m	
			DCA1-5CN03F1	Length (L): 3 m	
			DCA1-5CN05F1	Length (L): 5 m	
			DCA1-5CN10F1	Length (L): 10 m	
			DCA1-5CNC5H1	Length (L): 0.5 m	Cable with connector plug on one end
			DCA1-5CN01H1	Length (L): 1 m	
			DCA1-5CN02H1	Length (L): 2 m	
			DCA1-5CN03H1	Length (L): 3 m	
			DCA1-5CN05H1	Length (L): 5 m	
			DCA1-5CN10H1	Length (L): 10 m	

Environment-resistive Models for Thick Cable

Product	Appearance		Model	Specifications	
Sealed T-branch Connector			DCN3-11	T-branch Connector	
			DCN3-12	T-branch Connector (Branch connector is M12.)	
Sealed Connector with Terminating Resistor			CRS3-1	Plug	
Cables with Sealed Connectors			DCA2-5CN01W1	Length (L): 1 m	Cable with connectors on both ends
			DCA2-5CN02W1	Length (L): 2 m	
			DCA2-5CN05W1	Length (L): 5 m	
			DCA2-5CN10W1	Length (L): 10 m	
			DCA2-5CN01F1	Length (L): 1 m	Cable with connector socket on one end
			DCA2-5CN02F1	Length (L): 2 m	
			DCA2-5CN05F1	Length (L): 5 m	
			DCA2-5CN10F1	Length (L): 10 m	
			DCA2-5CN01H1	Length (L): 1 m	Cable with connector plug on one end
			DCA2-5CN02H1	Length (L): 2 m	
			DCA2-5CN05H1	Length (L): 5 m	
			DCA2-5CN10H1	Length (L): 10 m	
			DCA1-5CN01W5	Length (L): 1 m	Cable with connectors on both ends Thin cable M12 socket
			DCA1-5CN02W5	Length (L): 2 m	
			DCA1-5CN05W5	Length (L): 5 m	
			DCA1-5CN10W5	Length (L): 10 m	
Panel-mounting Connector (female)			DCA2-5CNC5P1	Connector socket for panel mounting Cable: 0.5 m	
Panel-mounting Connector (male)			XS4M-D521-1	Connector plug for panel mounting DIP terminals	

Recommended cable types, non-Omron

Network	Reference	Description
DeviceNet	Belden 46012 or compatible	DeviceNet thick cable (trunk). For use in Europe only. 18AWG/1PR 15AWG/1PR STR TC IND.
Device Net	Belden 3082A or compatible	DeviceNet thick cable (trunk). For global use. 18AWG/1PR 15AWG/1PR STR TC IND.
DeviceNet	Belden 3084A or compatible	DeviceNet thin cable (drop). 22AWG/1PR 24AWG/1PR STR TC IND.
PROFIBUS-DP	Belden 3079A or compatible	PROFIBUS cable. Type A (EN50170 vol. 2) Multi conductor, twisted, 22AWG

Specifications

General-purpose Models (T-branch Taps)

Ratings/Characteristics

Rated current	Between main lines:8 A (power supply line) and 2 A (signal line) Between main and branch lines:3 A (power supply line) and 1 A (signal line)
Insulation resistance	100 MΩ min. (at 500 V DC)
Dielectric strength	500 V AC for 1 min, leakage current: 1 mA max.
Ambient temperature	Operating: 0°C to 55°C

Materials

Item	Component	Materials
Unit	Main and Expansion Units	PBT resin with glass (UL14V-0)/gray
	DIN rail lock	POM resin/yellow
Terminal block connector (See note.)	Housing	PA66 resin (UL94V-0)
	Contact	Phosphor bronze coated with gold
PCB		Glass epoxy resin

Environment-resistive Models (Thin Cable Communications Connectors)

Ratings/Characteristics

Item	DCA1-5CN□□□1 Connectors with Cables	DCN2-1 T-branch Connector	XS2□-D5S7 Assembling-type Connector	DRS2-□ Connectors with Terminating Resistor
Rated current	3 A			
Rated voltage	125 V DC			
Contact resistance (connector)	40 mΩ max. (at 20 m V DC max. and 100 mA max.)			
Insulation resistance	1,000 MΩ min. (at 500 V DC)			
Dielectric strength (connector)	1,500 V AC for 60 seconds (leakage current: 1 mA max.)			
Ambient temperature range	–20 to 65°C			
Storage temperature range	–25 to 70°C			
Enclosure rating	IEC IP67			
Insertion durability	200 times			
Cable strength	98 N for 15 s	---		
Vibration resistance	No current interruptions of more than 1 μm while performing simple vibrations at either 10 to 500 Hz with 1.52-mm full amplitude or at acceleration 100 m/s^2, whichever is smaller			

Environment-resistive Models (Thick Cable Communications Connectors)

Ratings/Characteristics

Item	DCA2-5CN□□□1 Connectors with Thick Cable	DCA1-5CN□□W5 Connectors with Thick Cable	DCN3-11 T-branch Connector	DCN3-12 T-branch Connector	DRS3-1 Connectors with Terminating Resistor	DCA2-5CNC5P1 Panel Mounting Connector	XS4M-D521-1 Panel Mounting Connector
Rated current	8 A	3 A	8 A	3 A (See note.)	8 A		
Rated voltage	125 V DC						
Contact resistance (connector)	30 mΩ max. (at 20 m V DC max. and 100 mA max.)						
Insulation resistance	1,000 MΩ min. (at 500 V DC)						
Dielectric strength (connector)	1,500 V AC for 60 seconds (leakage current: 1 mA max.)						
Ambient temperature range	–20 to 65°C						
Storage temperature range	–25 to 70°C						
Enclosure rating	IEC IP67						
Insertion durability	200 times						
Cable strength	98 N for 15 s		---			98 N for 15 s	---
Vibration resistance	No current interruptions of more than 1 μm while performing simple vibrations at either 10 to 500 Hz with 1.52-mm full amplitude or at acceleration 100 m/s^2, whichever is smaller						

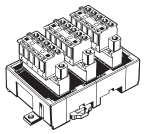
Note: The rated current between thick wires is 8 A.

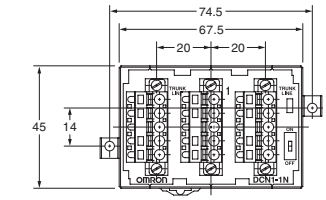
Dimensions

Note: All units are in millimeters unless otherwise indicated.

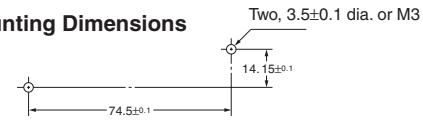
General-purpose Models

DCN1-1NC
T-branch Tap for 1 Branch Line
(With Three Branching Connectors)

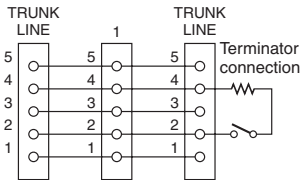




Mounting Dimensions

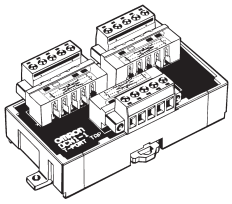


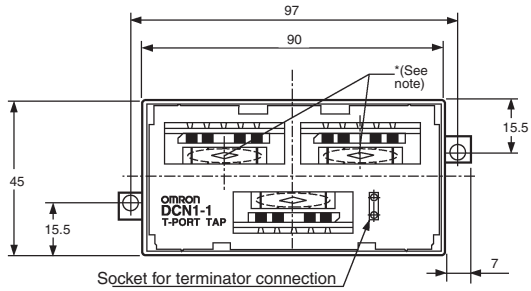
Internal Circuit



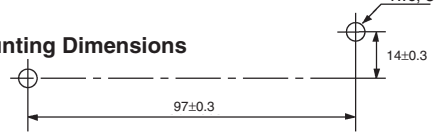
Terminal No.	Name
1	V–
2	CAN-L
3	DRAIN
4	CAN-H
5	V+

DCN1-1C
T-branch Tap for 1 Branch Line
(With Three Branching Connectors)

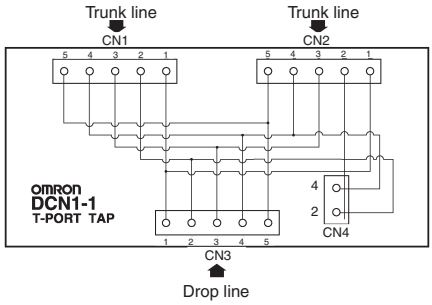




Mounting Dimensions



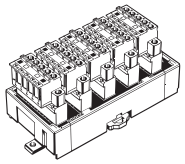
Internal Circuit

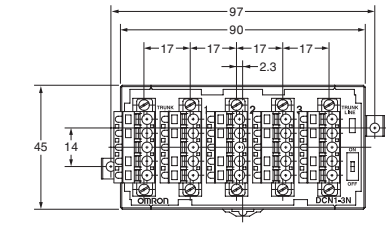


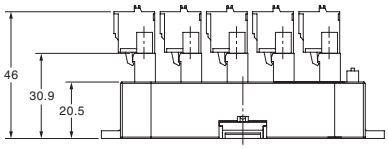
Terminal No.	Name
1	V–
2	CAN-L
3	DRAIN
4	CAN-H
5	V+

Note: When connecting a branch line to the main line, connect the trunk line to the connector marked with an asterisk because the resistance between the trunk line is minimal.

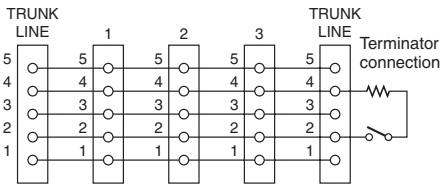
DCN1-3NC
T-branch Tap for 3 Branch Lines
(With Five Branching Connectors)





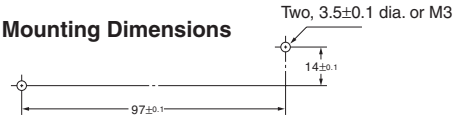


Internal Circuit

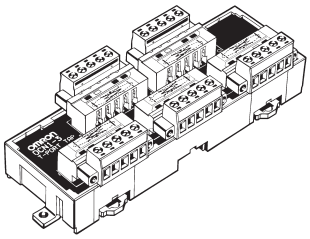


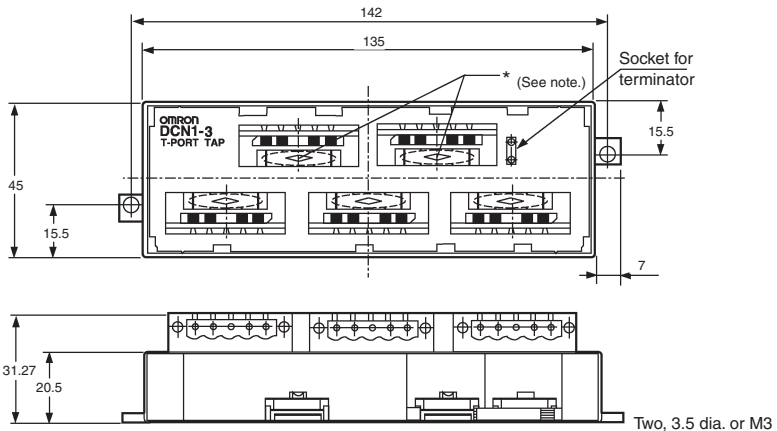
Terminal No.	Name
1	V–
2	CAN-L
3	DRAIN
4	CAN-H
5	V+

Mounting Dimensions

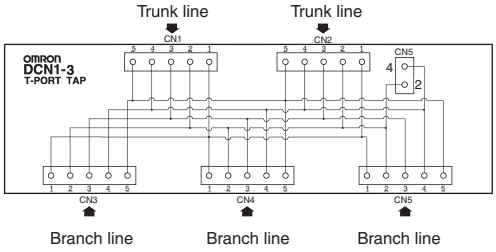


DCN1-3C
T-branch Tap for 3 drop Lines
(With Five Branching Connectors)





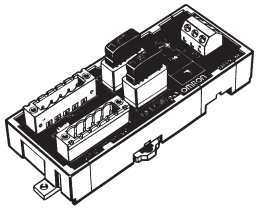
Internal Circuit

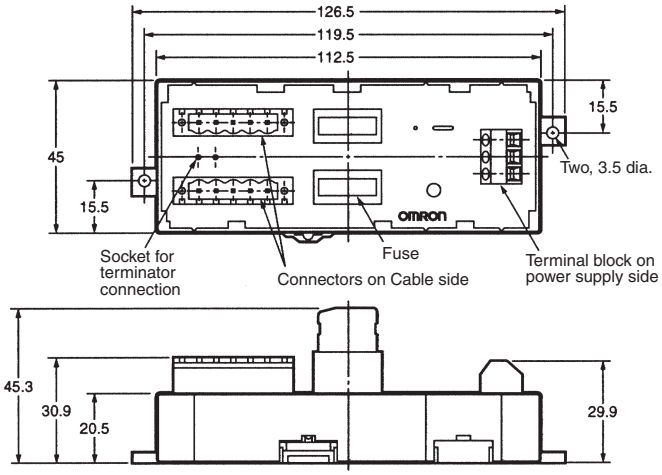


Terminal No.	Name
1	V–
2	CAN-L
3	DRAIN
4	CAN-H
5	V+

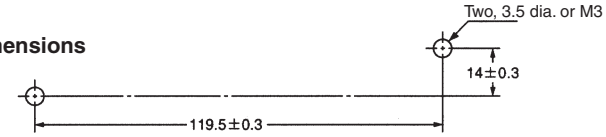
Note: When connecting a drop line to the trunk line, connect the trunk line to the connector marked with an asterisk because the resist ance between the trunk line connectors portion is minimal.

DCN1-1P
Power Supply Tap
(With Two Branching Connectors)

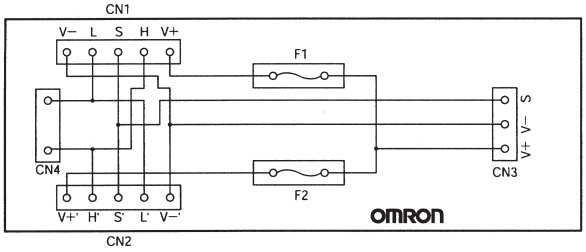




Mounting Dimensions

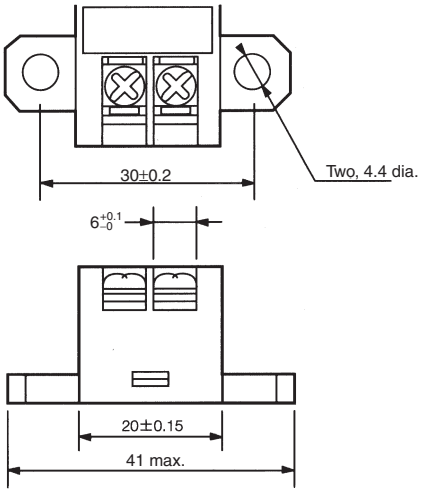


Internal Circuit

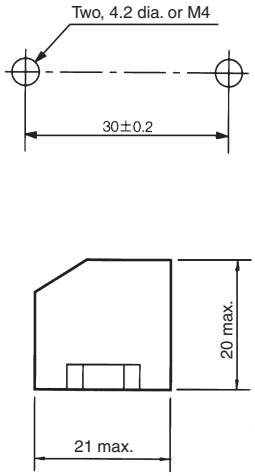


Terminal No.	Name
V–	V–
L	CAN-L
S	DRAIN
H	CAN-H
V+	V+

DRS1-T Terminal-block Terminator

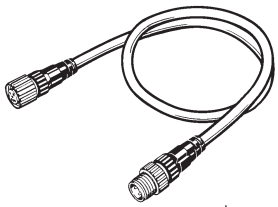


Mounting Holes

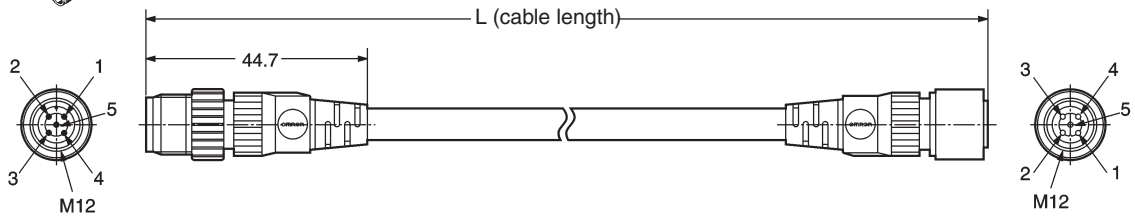


Environment-resistive Models for thin cable

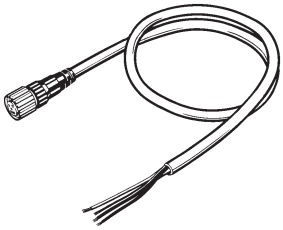
DCA1-5CN□□W1
Cables with Connectors on Both Ends



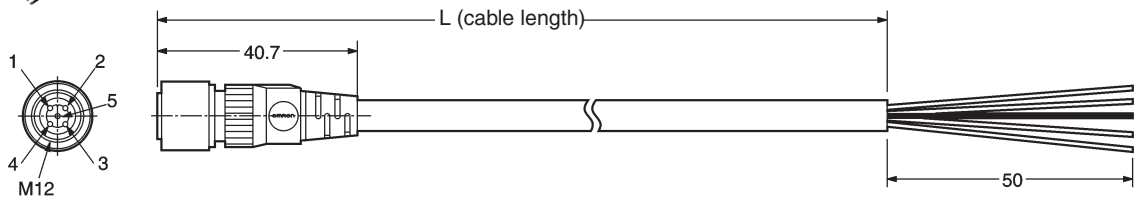
Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN L



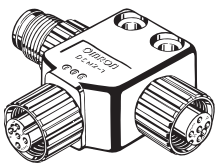
DCA1-5CN□□F1
Cables with Connector (Socket) on Single End



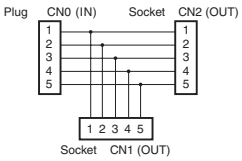
Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN L



DCN2-1
T-branch Connector

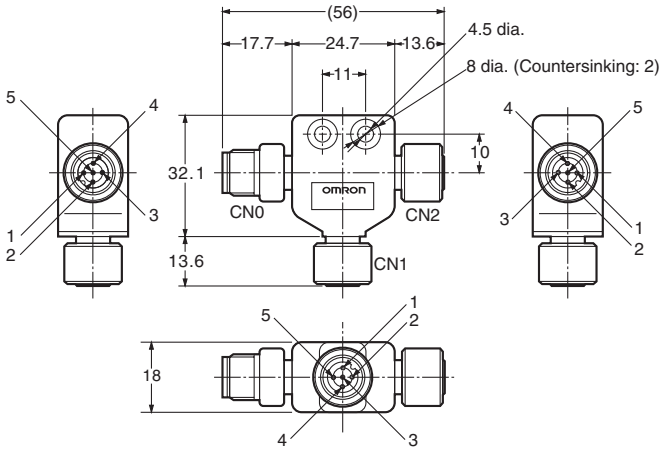


Connections Diagram

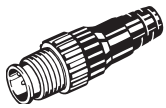


Wiring

Terminal No.	Name
1	SHIELD
2	V+
3	V–
4	CAN-H
5	CAN-L



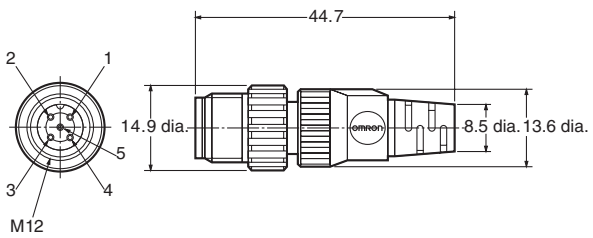
DRS2-1 (Plug)
DRS2-2 (Socket)
Connectors with Terminating Resistance



Wiring

Terminal No.	Name
1	DRAIN: NC
2	V+: NC
3	V–: NC
4	CAN-H: 121 Ω
5	CAN-L:

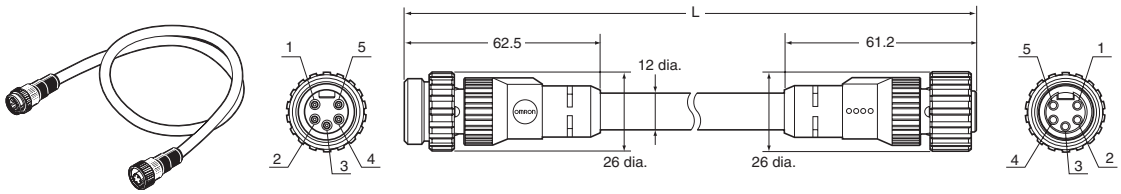
Note: Terminating resistance (121 Ω) is connected between terminals 4 and 5.



Note: The diagram shows the DRS2-1 (plug).

Environment-resistive Models for Thick Wires

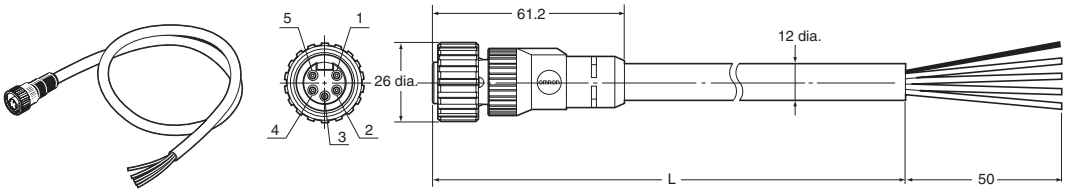
DCA2-5CN□□W1
Thick Cable with Connectors on Both Ends
(5 Conductors for Communications)



Wiring

Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN-L

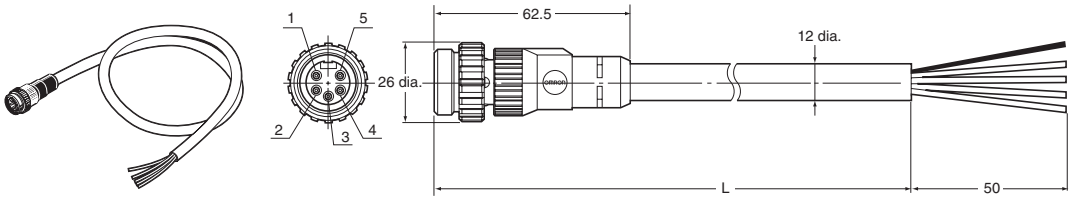
DCA2-5CN□□F1
Thick Cable with Connector Socket on One End
(5 Conductors for Communications)



Wiring

Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN-L

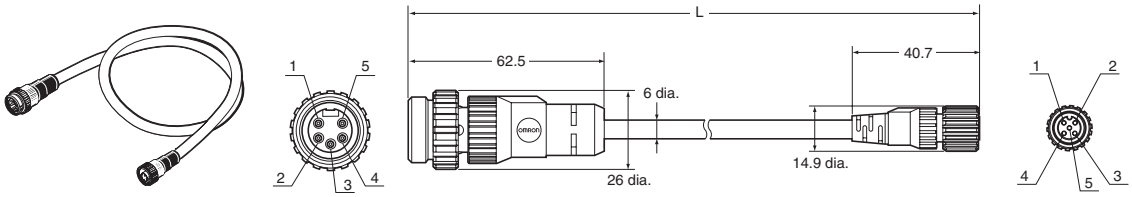
DCA2-5CN□□H1
Thick Cable with Connector Plug on One End
(5 Conductors for Communications)



Wiring

Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN-L

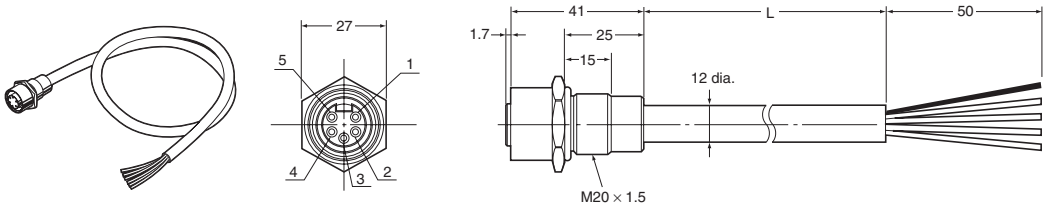
DCA1-5CN□□W5
Thin Cable with Connectors on Both Ends (5 Conductors for Communications)



Wiring

Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN-L

DCA2-5CNC5P1
Thin Cable with Panel-mounting Connector Socket on One End (5 Conductors for Communications)

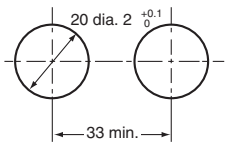


Wiring

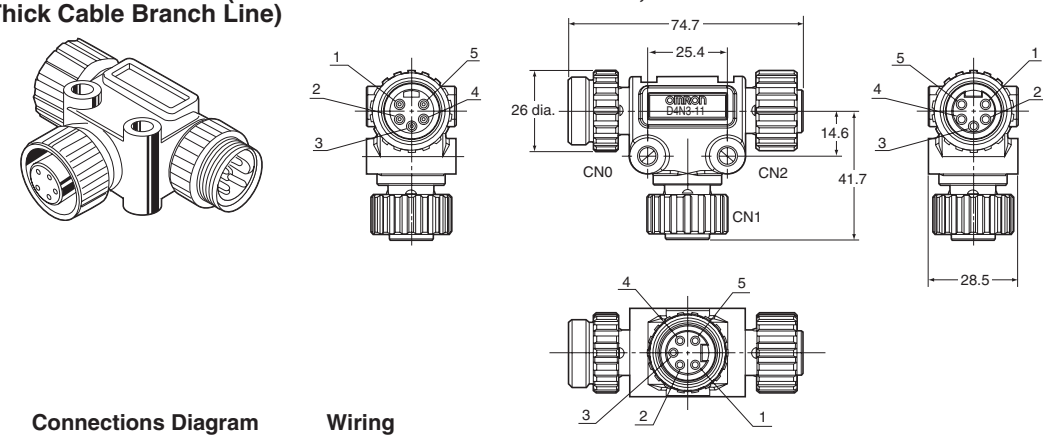
Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN-L

Note: A rubber seal and nut for panel mounting are included.

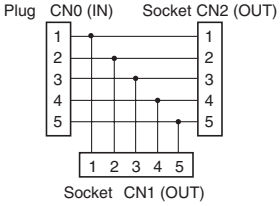
Panel Cutout Dimensions



DCN3-11
T-branch Connector (5 Conductors for Communications, Thick Cable Branch Line)



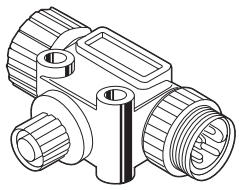
Connections Diagram

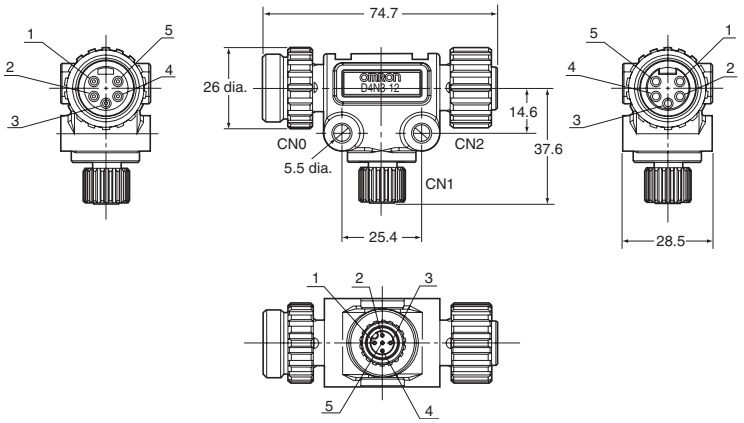


Wiring

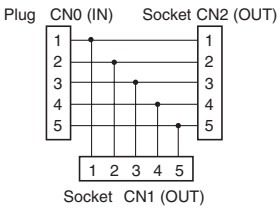
Terminal No.	Name
1	DRAIN
2	V+
3	V–
4	CAN-H
5	CAN-L

DCN3-11
T-branch Connector (5 Conductors for Communications, Thin Cable Branch Line)





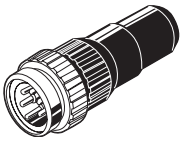
Connections Diagram



Wiring

Terminal No.	Name
1	DRAIN
2	V+
3	V–
4	CAN-H
5	CAN-L

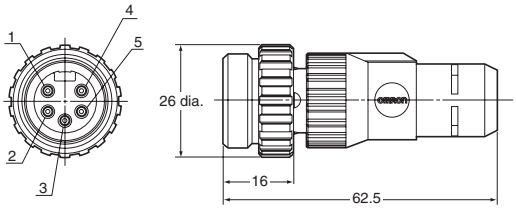
DRS3-1
Connector Plug with Terminating Resistance



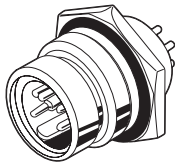
Wiring

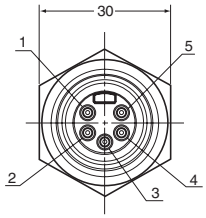
Terminal No.	Name
1	DRAIN: NC
2	V+: NC
3	V–: NC
4	CAN-H: 121 Ω
5	CAN-L: 121 Ω

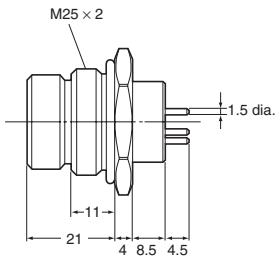
Note: Terminating resistance (121 Ω) is connected between terminals 4 and 5.



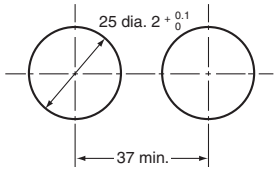
XS4M-D521-1
Panel-mounting Connector Plug (5 Pins for Communications)



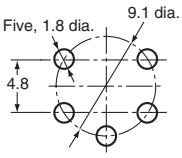




Panel Cutout Dimensions



PCB Processing Dimensions



Note: A rubber seal and nut for panel mounting are included.

Environment-resistive Peripheral Devices

Applicable Connectors

Power Supply Connectors (M12 Microconnectors)

Model number	Specifications
XS2C-D4□□	Connector assembly with socket (press-fit, solder, and screw types)
XS2W-D42□-□□□-□	Cable with connectors on both ends
XS2F-D42□-□80-□	Cable with connector socket on one end
XS2R-D427-5	T-branch connector

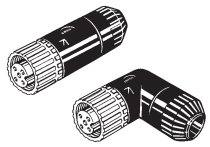
Power Supply Connectors (7/8-16UN Miniconnectors)

Model number	Specifications
XS4W-D421-1□□-A	Cable with connectors on both ends
XS4F-D421-1□□-A	Cable with connector socket on one end
XS4H-D421-1□□-A	Cable with connector plug on one end
XS4R-D424-5	T-branch connector

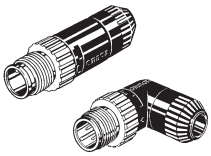
I/O Connectors (M12 Microconnectors)

Model number	Specifications
XS2G-D4□□	Connector assembly (crimp, solder, and screw types)
XS2H-D421-□□□-□	Cable with connector plug on one end
XS2W-D42□-□□□-□	Cable with connectors on both ends
XS2R-D426-□11F	Y-shaped joint with plug/socket at both ends of cable (Can be used with DRT1-□D08C/□D16C(-1) only.)
XS2R-D426-□10F	Y-shaped joint with sockets on one end of cable (Can be used with DRT1-□D08C/□D16C(-1) only.)
XS2R-D426-1	Y-shaped joint with plug/socket (no cable) (Can be used with DRT1-□D08C/□D16C(-1) only.)
XS2Z-12	Waterproof cover
XS2Z-15	Dust cover

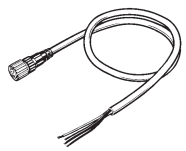
Connector Assemblies with Socket (M12 Microconnectors for Power Supply)

Appearance	Dimensions of applicable cable (mm)	Cable direction	Number of pins	Connection method		
				Crimp	Solder	Screw
	6 dia. (5 to 6 dia.)	Straight	4	XS2C-D4C1	XS2C-D421	XS2C-D4S1
		L-shaped		XS2C-D4C2	XS2C-D422	XS2C-D4S2
	5 dia. (4 to 5 dia.)	Straight		XS2C-D4C3	XS2C-D423	XS2C-D4S3
		L-shaped		XS2C-D4C4	XS2C-D424	XS2C-D4S4
	3 dia. (3 to 4 dia.)	Straight		XS2C-D4C5	XS2C-D425	XS2C-D4S5
		L-shaped		XS2C-D4C6	XS2C-D426	XS2C-D4S6
	7 dia. (6 to 7 dia.)	Straight		---	---	XS2C-D4S9
	8 dia. (7 to 8 dia.)					XS2C-D4S7

Connector Assemblies with Plug (M12 Microconnectors for Power Supply)

Appearance	Dimensions of applicable cable (mm)	Cable direction	Number of pins	Connection method		
				Crimp	Solder	Screw
	6 dia. (5 to 6 dia.)	Straight	4	XS2G-D4C1	XS2G-D421	XS2G-D4S1
		L-shaped		---	XS2G-D422	XS2G-D4S2
	5 dia. (4 to 5 dia.)	Straight		XS2G-D4C3	XS2G-D423	XS2G-D4S3
		L-shaped		---	XS2G-D424	XS2G-D4S4
	3 dia. (3 to 4 dia.)	Straight		XS2G-D4C5	XS2G-D425	XS2G-D4S5
		L-shaped		---	XS2G-D426	XS2G-D4S6
	7 dia. (6 to 7 dia.)	Straight		---	---	XS2G-D4S9
	8 dia. (7 to 8 dia.)					XS2G-D4S7

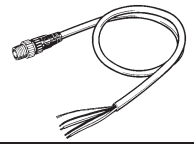
Cables with Connector Socket on One End (M12 Microconnectors for Power Supply)

Appearance	Cable direction	Number of core wires	Cable length (m)	Standard cable	Earthquake-resistant cable
	Straight 	4	1	XS2F-D421-C80-A	XS2F-D421-C80-R
			2	XS2F-D421-D80-A	XS2F-D421-D80-R
			5	XS2F-D421-G80-A	XS2F-D421-G80-R
			10	XS2F-D421-J80-A	XS2F-D421-J80-R
	L-shaped 		1	XS2F-D422-C80-A	XS2F-D422-C80-R
			2	XS2F-D422-D80-A	XS2F-D422-D80-R
			5	XS2F-D422-G80-A	XS2F-D422-G80-R
			10	XS2F-D422-J80-A	XS2F-D422-J80-R

Cables with Connector (Socket/Plug) on Both Ends (M12 Microconnectors for Power Supply and I/O)

Appearance	Cable direction	Number of core wires	Cable length (m)	Standard cable	Earthquake-resistant cable
	Straight/straight	4	1	XS2W-D421-C81-A	XS2W-D421-C81-R
			2	XS2W-D421-D81-A	XS2W-D421-D81-R
			5	XS2W-D421-G81-A	XS2W-D421-G81-R
	L-shaped/L-shaped		2	XS2W-D422-D81-A	---
			5	XS2W-D422-G81-A	
	Straight/L-shaped		2	XS2W-D423-D81-A	
			5	XS2W-D423-G81-A	
	L-shaped/straight		2	XS2W-D424-D81-A	
			5	XS2W-D424-G81-A	

Cables with connector plug on One End (M12 Microconnectors for I/O)

Appearance	Cable direction	Number of core wires	Cable length (m)	Standard cable
	Straight	3	0.3	XS2H-D421-AC0-A
		4		XS2H-D421-A80-A
		3	1	XS2H-D421-CC0-A
		4		XS2H-D421-C80-A

Plugs and Sockets on Y-shaped Joints (M12 Microconnectors for I/O)

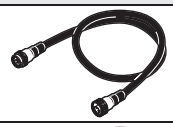
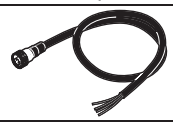
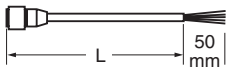
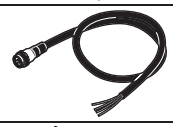
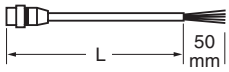
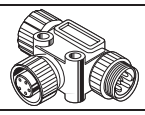
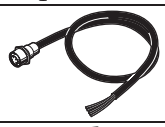
Appearance	With/without cable	Connector	DC models	
			Cable length (m)	Model number
	With cable	Connectors on both ends	0.5	XS2R-D426-B11-F
			1	XS2R-D426-C11-F
			2	XS2R-D426-D11-F
			3	XS2R-D426-E11-F
		Connector on one end	2	XS2R-D426-D10-F
			5	XS2R-D426-G10-F
	Without cable	Connectors on both ends	---	XS2R-D426-1

Note: These Plugs and Sockets can be used with Environment-resistive Terminals (DRT□-□16C(-1)) only.

T-branch Connectors and Connector Covers (M12 Microconnectors)

Appearance	Type	Model number	Application
	T-branch connector	XS2R-D427-5	For branching power lines
	Waterproof cover	XS2Z-12	For covering unused I/O connectors
	Dust cover	XS2Z-15	

Power Supply Connectors (7/8-16UN Miniconnectors)

Appearance		Cable length	Model
		1 m	XS4W-D421-101-A
		2 m	XS4W-D421-102-A
		5 m	XS4W-D421-105-A
		10 m	XS4W-D421-110-A
		1 m	XS4F-D421-101-A
		2 m	XS4F-D421-102-A
		5 m	XS4F-D421-105-A
		10 m	XS4F-D421-110-A
		1 m	XS4H-D421-101-A
		2 m	XS4H-D421-102-A
		5 m	XS4H-D421-105-A
		10 m	XS4H-D421-110-A
	T-branch Connector	---	XS4R-D424-5
	Panel mounting connector socket Cable: 50 cm	---	XS4P-D421-1C5-A
	Panel mounting connector plug DIP terminals	---	CS4M-D421-1

Accessory: Waterproof Caps (for 7/8-16UN Miniconnectors)

Type	Model
Waterproof Cap for Plug	XS4Z-11
Waterproof Cap for Socket	XS4Z-12

Recommended cable types, non-Omron

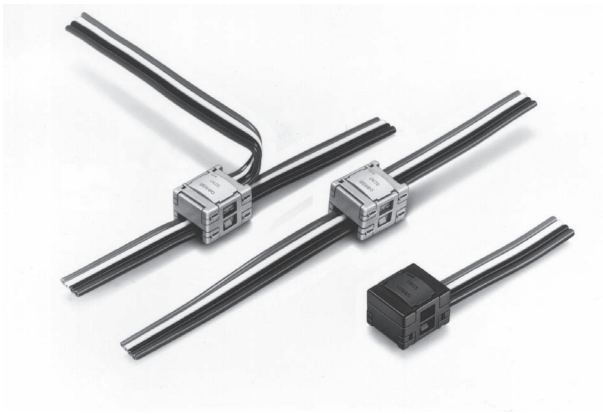
Network	Reference	Description
DeviceNet	Belden 46012 or compatible	DeviceNet thick cable (trunk). For use in Europe only. 18AWG/1PR 15AWG/1PR STR TC IND.
DeviceNet	Belden 3082A or compatible	DeviceNet thick cable (trunk). For global use. 18AWG/1PR 15AWG/1PR STR TC IND.
DeviceNet	Belden 3084A or compatible	DeviceNet thin cable (drop). 22AWG/1PR 24AWG/1PR STR TC IND
PROFIBUS-DP	Belden 3079A or compatible	Profibus cable. Type A (EN50170 vol.2) Multi conductor. twisted. 22 AWG

Note: Please contact either your local Omron or Belden distributor for the availability of these cables

OMRON

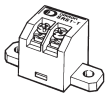
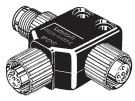
CompoBus/S Wiring

Cables and Connectors for CompoBus/S

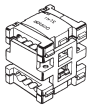
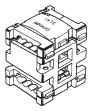


Ordering Information

VCTF Cable Products

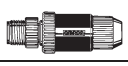
Product	Appearance	Model	Specification
Terminal-block Terminator		SRS1-T	Resistance: 100 Ω
T-branch Connector		XS2R-D427-5	Used to branch communications lines and power lines. (Waterproof specifications)
Connector Terminator (plug)		SRS2-1	Waterproof terminating resistance

Special Flat Cable Products

Product	Appearance	Model	Specification
Branch Connector		SCN1-TH4	Used with Special Flat Cable.
Extension Connector		SCN1-TH4E	Used with Special Flat Cable.
Connector Terminator		SCN1-TH4T	Used with Special Flat Cable.
Special Flat Cable		SCA1-4F10	100 m

Note: Branch Connectors and Extension Connectors are sold in blocks of 10 Units.

Four-core VCTF Cable Products

Product	Appearance	Model	Specification
Assembling Connector		XS2C-D4S7	Communications connector plug for 4-conductor VCTF cable
		XS2G-D4S7	Communications connector socket for 4-conductor VCTF cable

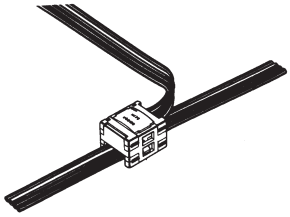
Recommended cable types, non-Omron

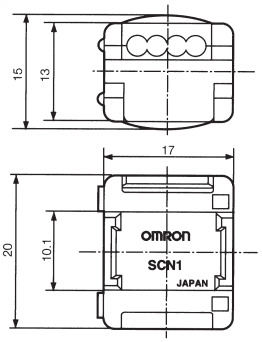
Belden 9409 or compatible	Non shielded two conductor VCTF communication cable
Belden 5341 UE or compatible	Non shielded four conductor VCTF communication cable

Dimensions

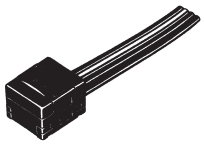
Note: All units are in millimeters unless otherwise indicated.

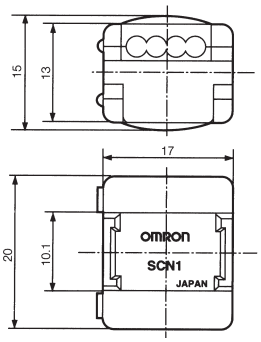
SCN1-TH4 Branch Connector
SCN1-TH4E Extension Connector



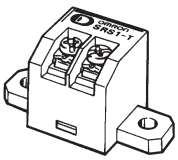


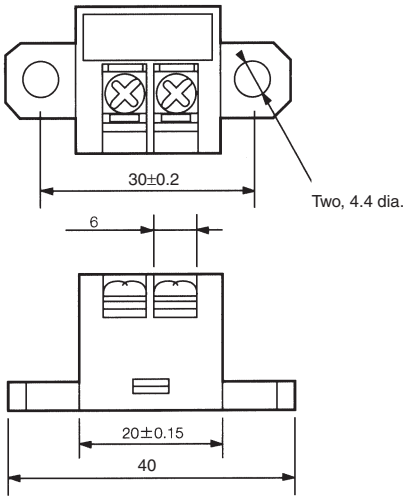
SCN1-TH4T Connector Terminator



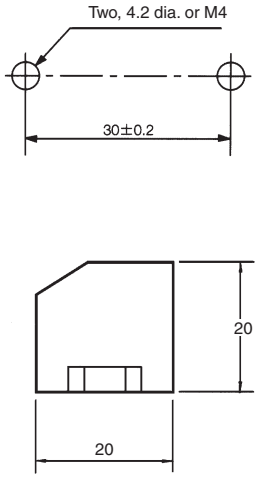


SRS1-T Terminal-block Terminator





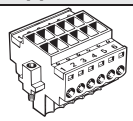
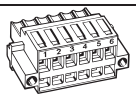
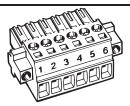
Mounting Holes



Weidmuller Communications Connectors for CompoBus/S Connector Terminals

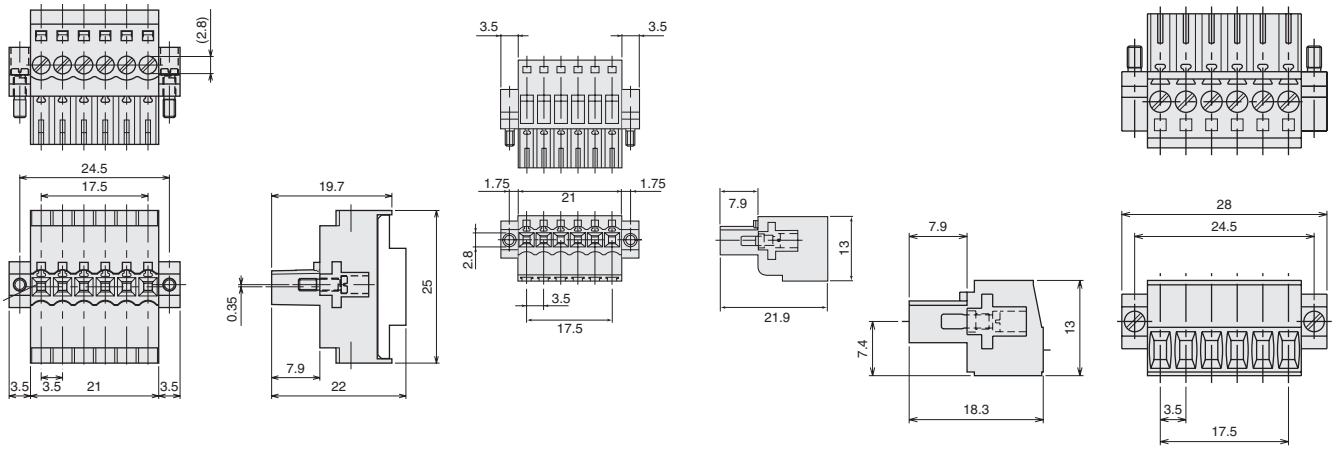
- The communications connectors provided with the SRT2-VID/VOD Connector Terminals are Weidmuller BL3.5/6F (part number 160668) PCB Plugs. These connectors do not require any special tools; the cables can be connected with just a standard flat-blade screwdriver. Two kinds of connectors are available to suit different applications.

Ordering Information

Connector type	Appearance	Model	Application
Branching connector		BLDZ3.5/6F	Ideal for multi-drop wiring
Tension Clamp Connectors		BLZF3.5/6F	Ideal for "one touch" connections
Communications Connectors for Connector Terminals		BL3.5/6F	Connector for the SRT2-□D32ML and SRT2-VID/VOD

Dimensions

Note: All units are in millimeters unless otherwise indicated.



DeviceNet Wireless Communication

WD30

The DeviceNet wireless units, consisting of a DeviceNet wireless master station and a DeviceNet wireless slave station, allow wireless communication with DeviceNet slaves.

- Up to 3,200 I/O points can be communicated through a single Unit.
- Uses spread spectrum technology for superior noise resistance in manufacturing environments.
- Compact construction.
- Long-range communications have been achieved with a relay function (3 repeaters max.).
- Explicit message communication is supported.

Ordering Information

List of Models

Name	Number of I/O points (words used)	Model	Antenna style
DeviceNet Wireless Master	1,600 inputs max. (100 words) 1,600 outputs max. (100 words)	WD30-ME	Pencil antenna
		WD30-ME01	Magnetic base antenna
DeviceNet Wireless Slave	512 inputs max. (32 words) 512 outputs max. (32 words)	WD30-SE	Pencil antenna
		WD30-SE01	Magnetic base antenna
Magnetic Base Antenna (1)	---	WD30-AT001 (See note.)	---

Note: The WD30-AT001 Magnetic Base Antenna can be used with the WD30-ME, WD30-ME01, WD30-SE, and WD30-SE01.

Optional Accessories (Micro Connectors)

Name	Model	Specifications
Shielded T-branch Connector	DCN2-1	Connector with one branch
Cable with Shielded Connectors	DCA1-5CN□□W1	Cables with connectors on both ends
	DCA1-5CN□□F1	Cables with a connector socket on one end
Shielded Terminator	DRS2-1	Terminator with plug connector

Included Accessories

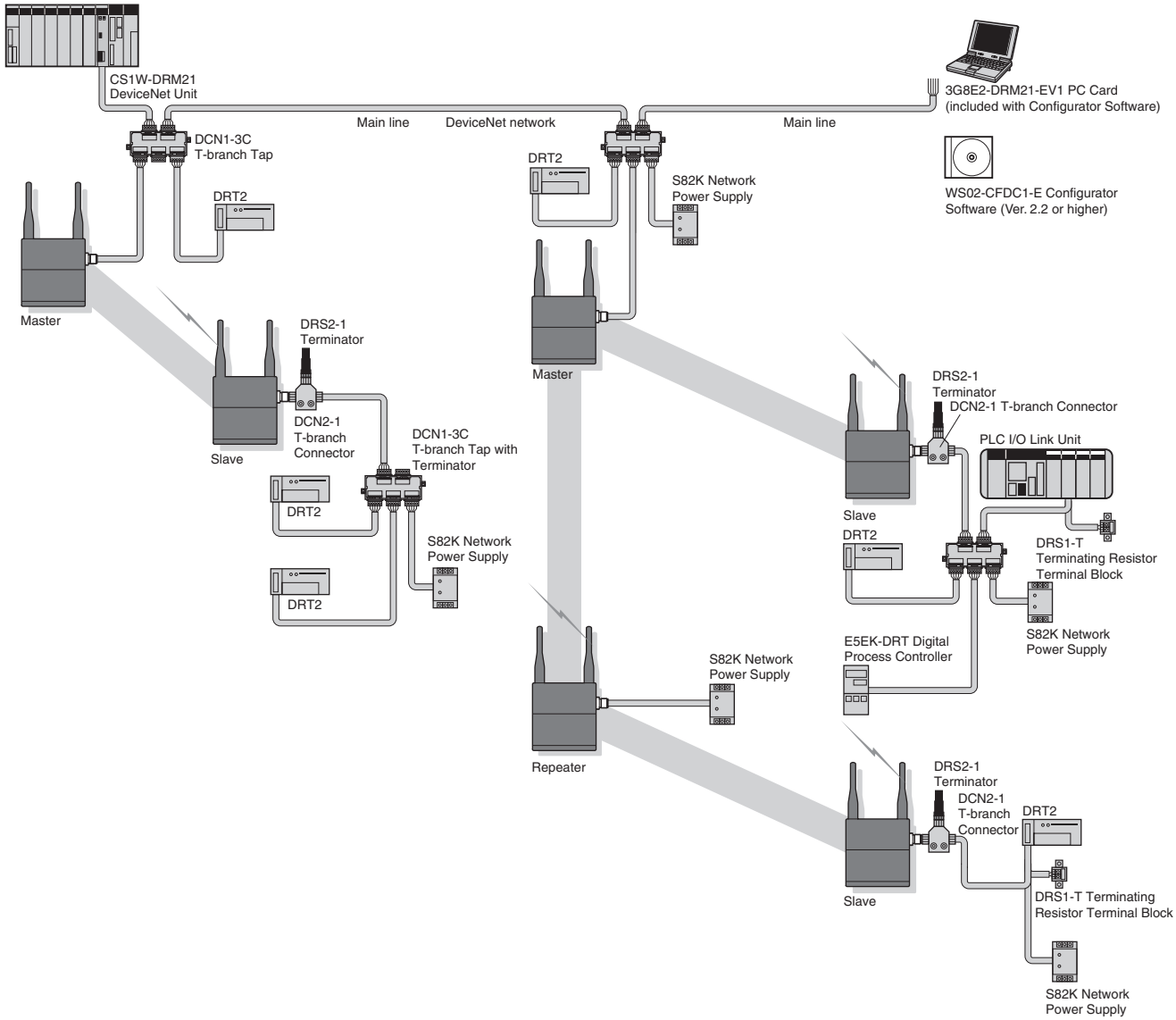
The following accessories are included with a DeviceNet Wireless Master or DeviceNet Wireless Slave.

- Two antennas
- DeviceNet Wireless Units Instruction Sheet
- Sticker
- Two M4 mounting bolts (with nuts, flat washers, and spring washers)

Optional Accessories (Configurator Software)

Name	Model
Configurator (PC Card)	3G8E2-DRM21-EV1
Configurator Software	WS02-CFDC1-E

System Configuration



Specifications

General Specifications

Item	Specifications
DeviceNet communications power supply voltage	11 to 25 V DC (Supplied from the DeviceNet network power supply.)
Current consumption (See note.)	350 mA max. (at startup), 120 mA average
Ambient temperature	Operating: −10° to 50° C Storage: −20° to 65° C
Ambient humidity	Operating: 25% to 85% (with no condensation)
Weight	Approx. 200 g

Note: Select a power supply with excess capacity. (We recommend a minimum of 25 W.)

Wireless Interface Specifications

Item	Specifications
Wave type	Spread Spectrum (direct sequence; DS-SS)
Communication method	Simplex (half duplex)
Frequency band	2.4 GHz (2401 MHz to 2480.2 MHz)
Number of channels	34 channels (based on frequency division)
Antenna power	10 mW
Data transfer speed between wireless units	100 kbps
Transmission distance (See note 1.)	Indoors: 60 m (approx. 50 m with magnetic base antennas) Outdoors: 300 m (unobstructed)
Relay stations	3 repeaters max.
Max. number of sets in the same area (See note 1.)	10 sets max.
Max. number of wireless Slaves	64 max.

Note: 1. The actual transmission distance depends on many factors in the installation environment.
2. The wireless system is not suitable for applications requiring real-time control.

DeviceNet Interface Specifications (Summary)

Item	Specifications	
Communications functions (See note.)	Master/Slave connections	Remote I/O functions and Explicit message communications functions
Self-diagnostic functions	Unit	WDT error, hardware errors (such as memory and CAN errors), and setting errors
	DeviceNet communications	Duplicate node address errors, Bus OFF detection, and connection timeout
Device profiles	Communication control unit	Refer to Appendix A of the *WD30 DeviceNet Wireless Units Operation Manual* for various DeviceNet IDs (vendor, device type = communication adapter, product code, product revision, product name, serial number, status, and I/O unit IDs.)

Note: FINS message communications are not supported. Explicit messages must be handled in the ladder program. Refer to the *WD30 DeviceNet Wireless Units Operation Manual* for details.

I/O Points

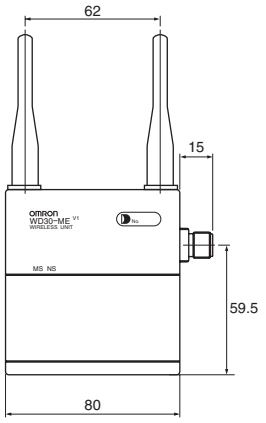
Name	Number of I/O points (words used)
DeviceNet Wireless Master	1,600 inputs max. (100 words) 1,600 outputs max. (100 words)
DeviceNet Wireless Slave	512 inputs max. (32 words) 512 outputs max. (32 words)

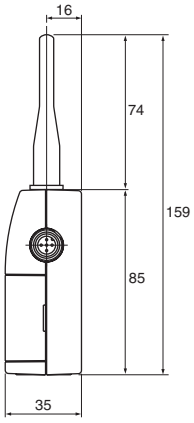
Note: Relay Stations can be used to create up to 3 levels and DeviceNet Slaves can be connected in each level. Terminators are required when Slaves are connected to a Relay Station or Slave Station. Refer to the *WD30 DeviceNet Wireless Units Operation Manual* for details on Terminator installation.

Dimensions

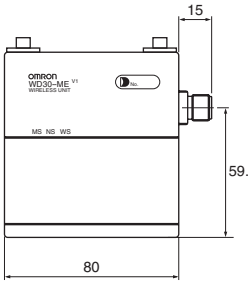
Note: All units are in millimeters unless otherwise indicated.

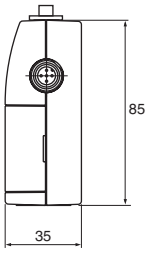
WD30-ME and WD30-SE DeviceNet Wireless Units



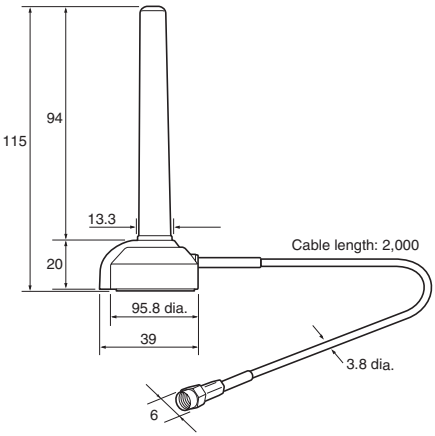


WD30-ME01 and WD30-SE01 DeviceNet Wireless Units





WD30-AT001 Magnetic Base Antenna (Included with the WD30-ME01 and WD30-SE01.)

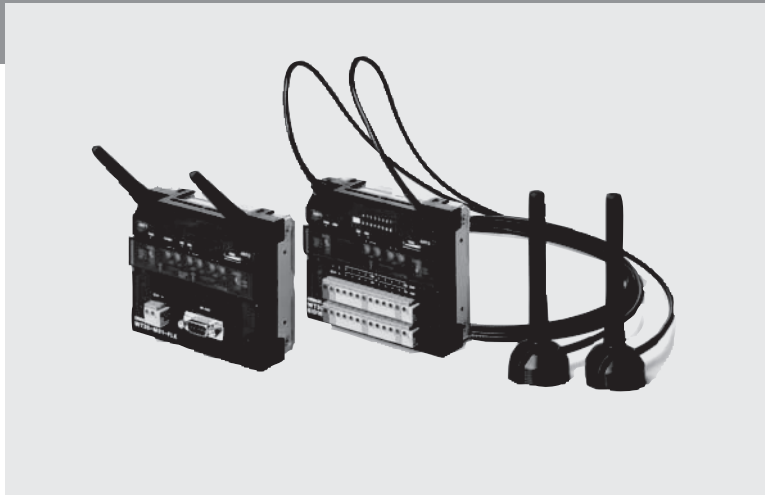


Precautions

Refer to the *WD30 DeviceNet Wireless Units Datasheet (*Catalog No. M502-E1-□, M503-E1-□) or *WD30 DeviceNet Wireless Units Operation Manual* (Catalog No. M071-E1-□) for more detailed specifications.

Wireless I/O Terminal

WT30



Construct a Wireless System for ON/OFF Data Collection That Is Ideal for Monitoring Production Site Equipment

- Wireless Slave Station equipped with I/O.
- Height of 90 mm and DIN Rail mounting enables installation in control panels.
- Easily check wireless communications status from indicator display.
- I/O Slave Stations can also be used as Slave Stations in WD30 systems.

Ordering Information

List of Models

Wireless Unit model	Type	Specifications/No. of I/O points
WT30-M01-FLK	Serial master	RS-232C
WT30-SID16	I/O slaves	16 DC inputs (NPN/PNP)
WT30-SMD16		8 DC inputs (NPN/PNP) + 8 transistor outputs (NPN)
WT30-SMD16-1		8 DC inputs (NPN/PNP) + 8 transistor outputs (PNP)

Accessories

Antennas

Model	Type
WT30-AT001	Magnet-base Antenna (2 antennas per set)
WT30-AT002	Flat Diversity Antenna (1 antenna)
WT30-AT003	Pencil Antenna (2 antennas per set)

Communications Cables

Model	Length	Application
XW2Z-0100U-3	1 m	For personal computer
XW2Z-0200U-3	2 m	
XW2Z-0500U-3	5 m	
XW2Z-0200U-5	2 m	Cross cable for PLC
XW2Z-0500U-5	5 m	

Other

Model	Type
WT30-FT001	DIN Rail Mounting Bracket (for TH35-7.5)
WT30-FT002	DIN Rail Mounting Bracket (for TH35-15)
WT30-FT003	Surface Mounting Bracket (screw-mounting)
(2 brackets per set)	
WT30-FT011	Flat Diversity Antenna Mounting Brackets
(with magnets)	
WT30-CA2M	Antenna Extension Cable (1 cable, 2 m)

Applicable Countries

Wireless standards have been met for the following countries.

Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungry, Iceland, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK, USA

Specifications

General Specifications

Item		WT30-M01-FLK Serial Master	WT30-SID16/SMD16/SMD16-1 I/O Slaves
Power supply (wireless communications power supply)	Rated voltage	24 V DC	
	Allowable voltage range	20.4 to 26.4 V DC	
	Power consumption	3 W max. (See note 1.)	
Error output/output power supply (for output circuits)	Rated voltage	---	24 V DC
	Allowable voltage range	---	20.4 to 26.4 V DC
Insulation resistance		20 MΩmin. (at 100 V DC) between the power supply and chassis	20 MΩmin. (at 100 V DC) between the power supply and all I/O and I/O power supply and between the power supply and chassis
Dielectric strength		1,500 V AC for 1 min between power supply and chassis	1,500 V AC for 1 min between the power supply and all I/O and I/O power supply and between the power supply and chassis
Noise immunity		IEC61000-4-4. 1 kV (power supply line)	
Vibration resistance (See note 2.)		JIS C0040 Frequency: 10 to 55 Hz; Amplitude of 0.35 mm or acceleration of 50 m/s², whichever is smaller (DIN Rail mounting: single amplitude of 0.1 mm or acceleration of 15 m/s²) 10 sweeps of 8 min each (i.e., 80 min in total) in X, Y, Z directions	
Shock resistance		Conforms to JIS C0041: 300 m/s2 3 times each in X, Y, and Z directions	
Ambient operating temperature		-10 to 55°C (with no condensation or icing) (with the Terminal mounted with the dust-proof label facing up)	Number of simultaneously ON I/O points 10 max.: -10 to 55°C (with no condensation or icing) 16 max.: -10 to 50°C (with no condensation or icing) (with the Terminal mounted with the dust-proof label facing up)
Ambient operating humidity		25% to 85% (with no condensation or icing)	
Ambient environment		No corrosive gases	
Storage temperature		-25 to 65°C (with no condensation or icing)	
Protective structure		IP20	
Terminal construction	Power supply and I/O	Screwless terminal block (Phoenix Contact FFKDS/V1-5.08 or equivalent)	
	Serial	D-sub, 9-pin (female) Inch screws (OMRON XM2F-0910-132 or equivalent), Master station only	---
Safety standards		UL: UL508 (Listing)	
Weight		330 g max.	

Note: 1. Provide a power supply of at least 15 W, considering the inrush current generated at startup.
2. Use the WT30-FT003 Surface Mounting Bracket when installing the WT30 in environments subject to vibration.

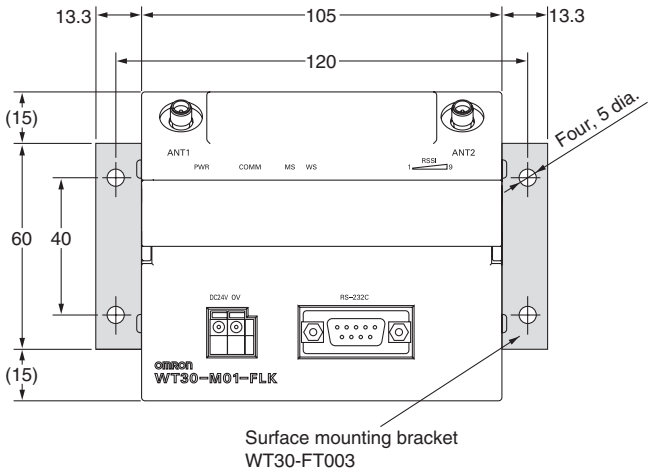
Wireless Interface Specifications

Item	Specifications
Wave type	Spread Spectrum (direct sequence; DS-SS)
Communication method	Simplex
Frequency band	2,401 to 2,480.2 MHz
Number of channels	67 channels (based on switching)
Transmitter output power	10 mW/MHz
Baud rate between wireless stations	100 kbps
Communications distance (See note.)	Indoors: 60 m min. (approx. 50 m min. with Magnet-base Antennas and Flat Diversity Antennas) Outdoors: Approx. 300 m min. (anticipated distances) (without using relay stations)
Error detection method	CRC-CCITT (16 bits)
Relay functions	One stage using I/O slave for the serial master configuration.
Number of stations per area (See note.)	10 sets max. (recommended)
Number of I/O Slaves connected	64 max.

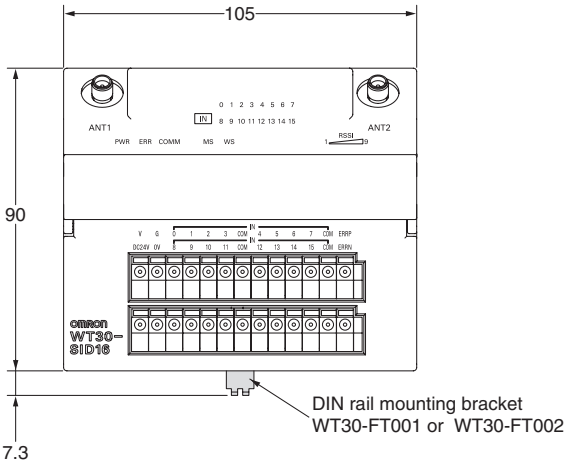
Note: Varies according to the installation environment.

Dimensions

WT30-M01-FLK

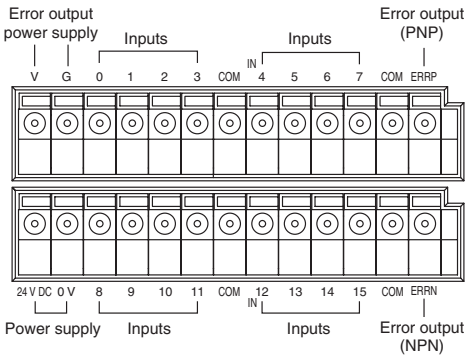


WT30-SID16/SMD16/SMD16-1

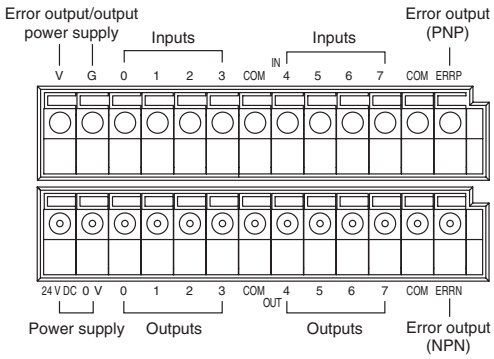


Wiring

WT30-SID16



WT30-SMD16/SMD16-1



PRT1-SCU11

PROFIBUS-DP Gateway

Omron's intelligent PROFIBUS gateway

- Supports all Compoway-F-equipped products (temperature controllers, digital panel meters, etc.).
- Can be used in Host Link mode for connecting MCW151-E.
- Cost-effectively integrates existing instruments into a PROFIBUS network.
- Requires no complex protocol conversion writing.
- Has function blocks for drag-and-drop configuration.
- Connects up to 15 instruments to a single PROFIBUS point.

Model Number Structure

PRT1-SCU11

- 1: Version
- 1: Wired
- SCU: Serial Communication Unit
- PRT1: PROFIBUS Remote Terminal

Specifications

Unit Specifications

Storage temperature	-20 to +75 °C
Ambient temperature	0 to +55 °C
Ambient humidity	10 to 90% (non-condensing)
EMC compliance	EN 50081-2, EN 61131-2
Power supply	+ 24 VDC (+10% / -15%) Current consumption 80 mA (typical)
Weight	125 g (typical)
Communication interface	RS-485 based PROFIBUS-DP
	RS-422A Host Link RS-485 Compoway-F
	RS-232C Peripheral Port supporting connection to Thermotools

Peripheral Port

- The Peripheral Port is intended to allow communication between Personal Computer based software (i.e. Thermo-tools) and temperature controllers.
- Use OMRON's CS1W-CN226 cable to setup the connection.

PROFIBUS Cable

- Only use shielded twisted pair cable, line type A as specified by EN 50170 vol. 2 (e.g. Belden 3079A).
- The maximum cable length per bus segment (32 stations) depends on the selected communication speed:

Baud rate (kbit/s)	Length/segment
9.6, 19.2, 45.45, 93.75	1200
187.5	1000
500	400
1500	200
3000, 6000, 12000	100

PROFIBUS Communication Specifications

Applicable standard	EN 50170 vol. 2 (PROFIBUS-DP)
Type	PROFIBUS-DP Slave
Bus connector	9-pin sub-D female, RS-485
Bus termination	NOT included
Baud rates in kbit/s (auto-detect)	9.6, 19.2, 45.45, 93.75, 187.5, 500, 1500, 3000, 6000, 12000
PROFIBUS address range	01-99
Communication cable	Type A (EN 50170 vol. 2)
Minimum slave interval	0.5 ms
Input data	200 bytes maximum
Output data	200 bytes maximum
Supported DP functions (as responder)	Data_Exchange Chk_Cfg / Set_Prm Slave_Diag Global_Control (SYNC/FREEZE/CLEAR) RD_Inp / RD_Outp / Get_Cfg
GSD file	OC_0780.GSD

Host Link / Compoway-F Communication Specifications

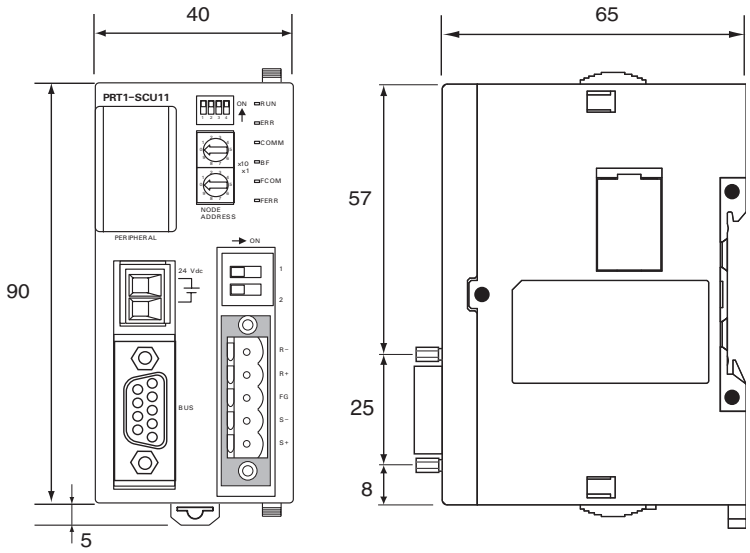
Host Link slaves supported	MCW151-E E5EK / E5AK
Compoway-F slaves supported	E5AN / E5CN / E5EN / E5GN E5ZN E5ER / E5AR
Max. No of devices	15
Connection type	RS-422A (4-wire) for Host Link RS-485 (2-wire) for Compoway-F
Baud rates in kbit/s	9.6, 19.2, 34.8
Slave address range supported	1 ~ 15 (address and selected PROFIBUS I/O module must match)

I/O Configuration Options

Type			Device	Description
Compoway-F	Fixed Comm. Blocks	Basic	E5□N E5ZN E5□R	1 word I/O per loop
		Extended	E5□N	6 word in / 2 word out
			E5ZN	11 word in / 3 word out
			E5□R	21 word in / 5 word out
	Free Comm.	READ	See note	5 word in / 4 word out
		WRITE		2 word in / 7 word out
		OPERATE		2 word in / 3 word out
Host Link			MCW151-E	5, 10, 15 word I/O

Note:
- Host Link and Compoway-F devices can not be intermixed on the same network.
- Total maximum I/O size: 100 words I/O.
- Other non-listed Compoway-F devices can be handled using Free Communication Block. Refer to the PRT1-SCU11 Operation Manual (W01E-EN-01).
- Fixed Communication Blocks are pre-defined I/O blocks designed for the listed Compoway-F devices.
- Free Communication Blocks require programming in the PROFIBUS master to assemble Compoway-F commands.

Dimensions



Units: mm

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. P12E-EN-03A