Remote I/O

	SmartSlice		464
DeviceNet			469
	Remote I/O	Digital I/O Terminals	473
		Harsh Environment Terminals	479
		Analog I/O Terminals	486
		Temperature Input Terminals	490
		Sensor Connector Terminals	493
		Relay output Terminal	497
		Screw-less Clamp Terminals	500
		3-tier Connection Terminals	506
		8 Points I/O Terminals	510
		Waterproof Terminals	515
		RS-232C Unit	520
	CompoBus/S		523
	Remote I/O	Digital I/O Terminals	524
		3-tier Connection Terminals	529
		Relay output terminals	532
		Waterproof Terminals	536
		Sensor Terminals	542
		Analog Input Terminal	547
		Analog Output Terminal	549
		Digital I/O Terminals	551
	Peripherals		554
	Wireless	CompoBus/S Wiring	568
	Communication	WD30	571
		WT30	574
	PROFIBUS-DP O	ateway	577

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 builtin 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



Up to 64 I/O Units can be connected to a Communications Unit.

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 M Ω 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	1,024 inputs and outputs max. (128 bytes each)	
Number of connectable Units	64 SmartSlice I/O Units max.	64 SmartSlice I/O Units max.	
I/O power supply	24 V DC, 4 A max.	24 V DC, 4 A max.	
Status flags	1 word for Communications Unit status flags	1 word for Communications Unit status flags	
Parameter backup and restore	up to 2 KB of data per Unit.	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)	4 inputs (3-wire connection)	
ON voltage	15 V DC min.	15 V DC min.	
ON current	6 mA max./point (at 24 V DC)	6 mA max./point (at 24 V DC)	
OFF voltage	5 V DC max.	5 V DC max.	
OFF current	1 mA max.	1 mA max.	
ON delay / OFF delay	1.5 ms max.	1.5 ms max.	

Model name	GBT1-OD4	GBT1-OD4-1	GBT1-BOS2
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









GRT-AD2











Dimensions

I/O-units





15



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,	CX-ONE-AL
including PLCs, remote I/O, HMI, servo drives, inverters, temperature controllers and advanced sensors.	\Box = 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 maintenance 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.



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



Maintenance information 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.

	Maintenance information
tenance Information	/
eneral OUT IN Operation Til	ime Error History
Comment :	A-line TEST 01
Last Maintenance Date :	1972/01/01
Unit Conduction Time :	5 Hours
Network Power Voltage :	24.0 V
Network Power Voltage (Peak) :	24.0 V
Network Power Voltage (Bottom) :	23.8 V
Interview Rower Voltage drop Network Rower Voltage drop Opnected Component Maintenar Operation Time Over Input Power Supply Error	noe
Update	Save Maintenance Counter
	Close
	A Smart Slave's maintena

Refreshes the Maintenance information A Smart Slave's maintenance counters are normally stored every 6 minutes. So up to 6 minutes of data may belost when the power is turned OFF. To prevent los of Smart Slave's maintenance counters it is possible to store them in flash memory manually.

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

General OUT IN Operation Time Error Histor	v]		Displays the maintenance
No. I/O Comment		Maintenance Counter	counter values that were
00 ABMUA		8750 Timer	Counter values that were
ABMUB		8760 Times	read.
KB4-05D		3154488 Times	
CO FARD-D-5		8760 Times	
M STRW Groen		708 Seconds	
105 STEW DED		512 Seconds	1
OS STRW OPANGE		1094 Seconds	
00 STPW VRANGE		1024 Seconds	1
07 319W 1000W		0 Seconds	
		0.0 0.0	
10		v Seconds	
10			
		U Seconds	
12		U Seconds	1
13		U Seconda	
4		U Seconda	
5		0 Seconda	
			1
	Maintenance Int	ormation	X
	Growall OI	T IN Operation Time For	w History
	140.	FOX DAG	Partice Counter
		E3X-DA6	obtou seconds
		E3X-DA6	604500 Seconda
		E3X=DA6	241920U Seconda
		E3X=DA6	200793600 Seconds
	N 04 /	E3X=DA6	1209900 Seconds
	0	E3X=DA6	1209900 Seconds
An alarm indicator will appear	06	E3X=DA6	405016 Seconds
when a ver the present value	07	E3X-DA6	1209600 Seconds
whenever the present value	08		0 Seconds
exceeds the monitor value so	09		0 Seconds
	10		
ocations requiring maintenance	11		0 Seconds
can be identified immediately	12		0 Seconds
san be laenanea ininioalatoly.	13		0 Seconds
	14		0 Seconda
	15		0 Seconda
	and the second sec		

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

Functions Supported by Smart Slaves

Group				Conora	I Slavaa			
Group			Domoto 1/0	Genera	i Slaves		Concer C	
		henote i/o terminais				Sensor C Term	inals	
Туре	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			0	К			0	К
Unit conduction time monitor			0	К			0	К
Total ON time monitor ¹			0	К			0	К
Unit comments			0	K			0	К
Connected device comments			0	К			0	К
Network power supply voltage monitor			0	К			0	К
I/O power supply monitor	C	ЭK			OK			
Communications error log			0	К			ОК	
Input filter	OK			OK		OK	0	К
Power-ON inrush current protection	ОК		OK		OK	0	К	
Sensor power supply short-circuit detection				-			0	К
External load short-circuit detection				-				OK
External load disconnection detection				-				-
Disconnected sensor detection				-				-
Removable terminal block	ОК						-	
Communications speed auto-detect	ОК					0	К	
No need to wire Unit power supply	ОК				0	К		
No need to wire input device power supply			ОК			OK		
Expansion via Expansion I/O Units		OK						-
Scaling				-				-
User compensation				-				-
Last maintenance date			0	К			0	К
Cumulative counter				-				
Moving average processing				-				-
Number of A/D conversion points (conver- sion 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-		Analog Slave				
	Screw-less clamp terminals			Term	inals						
Туре	Transis			stors		Transistors		Analo	og I/O	Temperature	
	Dete	ection fund	ction	No detection function				Ierm	inais	Input Terminals	
Model	DR'	DRT2-□D32SL(-1)		DRT	DRT2-□D32SLH(-1)		DRT2-□D08C(-1) DRT2-HD16C(-1)		DRT2 DRT2 DRT2-	-AD04 -DA02 AD04H	DRT2-TS04T DRT2-TS04P
Function	Input	Output	I/O	Input	Output	I/O	Input	Output	Input	Output	Input
Operation time monitor			0	K				-	-	-	
Contact operation counter ¹	1		0	ĸ			0	ĸ	-		
Unit conduction time monitor			0	к			0	к	С	к	ОК
Total ON time monitor ¹			0	K			0	ĸ	-		
Unit comments			0	к			0	ĸ	C	к	OK
Connected device comments			0	к			0	ĸ	C	к	OK
Network power supply voltage monitor			0	ĸ			0	ĸ	C	ĸ	OK
I/O power supply monitor			0	ĸ				OK	-	-	
Communications error log			0	ĸ			0	K	C	ĸ	OK
Input filter	OK		0	ĸ		OK	OK		-		
Power-ON inrush current protection	OK		0	ĸ		OK	OK		-		
Sensor power supply short-circuit detection				OK		OK	OK				
External load short-circuit detection			-				OK	-			
External load disconnection detection				0	К			-			
Disconnected sensor detection			OK		OK	ОК		-			
Removable terminal block			0	ЭК				C	ĸ	ОК	
Communications speed auto-detect	L		C	ОК		0	ĸ	C	ĸ	OK	
No need to wire Unit power supply			C	ЭК		OK		C	ĸ	OK	
No need to wire input device power supply			-			OK		-			
Expansion via Expansion I/O Units	L		-					-			
Scaling			-				-	C	ĸ	ОК	
User compensation			-						C	ĸ	OK
Last maintenance date			0	ĸ			ОК		OK		ОК
Cumulative counter			-	-					C	ĸ	ОК
Moving average processing			-				-	OK		ОК	
Number of A/D conversion points (conversion cycle) setting			-					OK		OK	
Peak/bottom hold			-						OK		OK
Top/valley hold			-						OK		ОК
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			-						-		ОК
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.

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 autodetection 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.





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.



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 commu-	24 V DC	DRT2-ID16
	PNP (– common)			nications connector.		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	24 V DC	XWT-ID08
	PNP (– common)			Unit.		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.

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.



Ratings

Inputs

Input curren	t	6 mA max./point (at 24 V DC)				
ON delay tir	ne	1.5 ms max.				
OFF delay t	ime	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 volt-	NPN	5 V DC max. between each input terminal and V				
age	PNP	5 V DC max. between each input terminal and G				
OFF current		1 mA max.				
Insulation method		Photocoupler				
Input indicat	ors	LED (yellow)				

Internal Circuit Configuration

DRT2-ID16 (NPN)



DRT2-OD16 (NPN)



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



Outputs

0.5 A/point, 4.0 A/common
0.5 ms max.
1.5 ms max.
1.2 V max.
0.1 ms max.
Photocoupler
LED (yellow)



DRT2-OD16-1 (PNP)



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







Wiring

DRT2-ID16 (NPN)





XWT-ID08 (NPN)







XWT-ID16 (NPN)



DRT2-ID16-1 (PNP)







XWT-ID08-1 (PNP)



XWT-OD08-1 (PNP)



XWT-ID16-1 (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 de

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 connec-	Supplied from the	Supplied from the	DRT2-ID08C
	PNP (– common)		tor	communications connector.	communications connector.	DRT2-ID08C-1
Output	NPN (- common)				24 V DC	DRT2-OD08C
	PNP (+ common)					DRT2-OD08C-1
Input	NPN (+ common)	16			Supplied from the	DRT2-HD16C
	PNP (– common)				communications connector.	DRT2-HD16C-1

Specifications

Ratings

Inputs

Input current		11 mA max./point (at 24 V DC)			
		S 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	ł	Not isolated.			
Input indicators		LED indicators (vellow)			

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	
DCA2-5CNUUW1	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-OD08C (NPN)



DRT2-HD16C (NPN)

DRT2-ID08C-1 (PNP)



DRT2-OD08C-1 (PNP)



DRT2-HD16C-1 (PNP)



Dimensions

Environment-resistive Terminals (8 or 16 Inputs)

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





Wiring

DRT2-ID08C (NPN)



DRT2-OD08C (NPN)



DRT2-HD16C (NPN)



DRT2-ID08C-1 (PNP)



DRT2-OD08C-1 (PNP)



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)	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 M Ω 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 0 to 20 mA 1 to 5 V 4 to 20 mA 0 to 10 V -10 to 10 V		
Allowable output load resistance	1 KΩ min.	600 Ω max.	
External output im- pedance	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 communica- tions lines (There is no isolation between output signals.)		
Insulation resis- tance	20 M Ω 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



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

Dimensions



Remote I/O



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



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 $\pm 0.3\%$ or ± 0.8 °C, whichever is larger) ± 1 digit max. Input range of –200 to 200 °C: (Indicator value $\pm 0.3\%$ 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 di	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)	1 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 M Ω 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



Wiring

DRT2-TS04T



DRT2-TS04P

	IN A	۶ 10	IN t	0 10	11	V1 A	۱۱ ا	V1 b	Ν	С	IN A	12 A	IN t	12 5	IN A	13 13	IN k	3)
N	С	IN E	10 3	N	С	IN E	V1 3	N	С	N	С	IN E	12 3	N	С	IN E	13 3	

DRT2-TS04P

Platinum-resistance Thermometer input



DRT2-016S(-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

J						
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	Supplied from the	DRT2-ID16S
	PNP (– common)			communications connector	communications connector	DRT2-ID16S-1
I/O	NPN (+ common for inputs, – common for outputs)	8 inputs and 8 outputs			Supplied from ex- ternal source for	DRT2-MD16S
	PNP (– common for inputs, + common for outputs)				outputs	DRT2-MD16S-1

Specifications

Characteristics

Item	DRT2-ID16S(-1)	DRT2-MD16S(-1)		
Communications power supply voltage	11 to 25 VDC			
Unit power supply volt- age	Not required. (Supplie cations connector.)	ed from the communi-		
I/O power supply voltage	Supplied from the cor tor.	nmunications connec-		
Current consumption	Communications power supply: 230 mA max.	Communications power supply: 135 mA max.		
Dielectric strength	500 VAC between iso	lated circuits		
Noise immunity	Conforms to IEC6100 line)	0-4-4, 2 kV (power		
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 o mounting	r 35-mm DIN track		
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 condensa- tion)			
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 2 3.0 mA min./point (at 1	24 VDC) 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 2 3.0 mA min./point (at 1	24 VDC) 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 de- tection current	100 mA min. (per inpu	t)

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 de- tection current	2.4 A min./common 1.6 A min./commo	

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-MD16S (NPN)



DRT2-ID16S-1 (PNP)



DRT2-MD16S-1 (PNP)



Dimensions





Wiring

DRT2-ID16S (NPN)



DRT2-MD16S (NPN)



DRT2-ID16S-1 (PNP)



DRT2-MD16S-1 (PNP)



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



Remote I/O

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	11 to 25 V DC
supply voltage	(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/s ²
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	M2 (communications connector without set screws):
torque	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	750 V AC, 90 V DC
Maximum applicable load (reference value)	5 V DC at 1 mA

 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



Maximum Switching Capacity

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).
 - 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.



Life Expectancy Curve



Relay Replacement Method

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





DRT2-0D32SL(-1)/0D32SLH(-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

Ordering Information

Short/disconnec- tion detection	I/O type	Internal I/O common	Number of I/O points	I/O termi- nals	Internal circuit power	Rated I/O power supply voltage	Model
Supported	Inputs	NPN (+ common)	32	Clamp ter-	Supplied from com-	24 VDC	DRT2-ID32SLH
		PNP (– common)		minals	munications con-		DRT2-ID32SLH-1
	Outputs	NPN (+ common)	1		nector.		DRT2-OD32SLH
		PNP (– common)	1				DRT2-OD32SLH-1
1/C	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)	1				DRT2-OD32SL
		PNP (– common)					DRT2-OD32SL-1
	I/O	NPN (+ common for inputs, -	16 inputs and				DRT2-MD32SL
		common for outputs)	16 outputs				DRT2-MD32SL-1

• 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





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	o +10%)			
Input current	24 VDC: 6.0 mA max./point, 1	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.			Χ.	

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	32 outputs					
I/O power supply voltage	20.4 to 26.4 (24 VDC -1	0.4 to 26.4 (24 VDC -15% to +10%)					
Rated output current	0.5 A/point, 4.0 A/commo	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 cons (Not detected at 3 mA or	sumption of 3 mA/point max.			
Output for errors	According to hold/clear s	etting 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	o +10%)				
Input current	24 VDC: 6.0 mA max./point, 1	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	Χ.		

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



Remote I/O

DRT2-OD32SLH



DRT2-MD32SL



DRT2-MD32SLH



DRT2-OD32SLH-1



DRT2-MD32SL-1



DRT2-MD32SLH-1



Dimensions (Unit: mm)



 $M \rightarrow M$

Wiring

DRT2-ID32SL



DRT2-ID32SLH



DRT2-ID32SL-1



DRT2-ID32SLH-1



DRT2-OD32SL



DRT2-OD32SL-1



DRT2-MD32SL



DRT2-MD32SLH



DRT2-OD32SL



DRT2-OD32SLH-1



DRT2-MD32SL-1



DRT2-MD32SLH-1



3-tier Connection Terminals

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

- Easy wiring with no sharing of terminals. Easy-tounderstand 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

Ordering Information

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

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	Supplied from com-	24 VDC	DRT2-ID16TA
	PNP (– common)		block	munications con-		DRT2-ID16TA-1
Outputs	NPN (+ common)			nector.		DRT2-OD16TA
	PNP (– common)					DRT2-OD16TA-1
I/O	NPN (+ common for inputs, – common for outputs)	8 inputs and				DRT2-MD16TA
	PNP (– common for inputs, + common for outputs)	8 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	16 inputs				
ON voltage	15 VDC min. (between in- put and V terminal)	15 VDC min. (between in- put and G terminal)				
OFF voltage	5 VDC max. (between in- put and V terminal)	5 VDC max. (between in- put and G terminal)				
OFF current	1.0 mA max.					
Input current	24 VDC: 6.0 mA max./poin 17 VDC: 3.0 mA max./poin	t t				
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 in- put and V terminals)	15 VDC min. (between in- put and G terminals)	
OFF voltage	5 VDC max. (between in- put and V terminals)	5 VDC max. (between in- put 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.		

Item DRT2-MD16TA DRT2-MD16TA-1 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 ter- minal)	1.2 VDC min. (0.5 A DC between input and V termi- nal)
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 ter- minal)	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-1

DRT2-OD16TA-1



DRT2-OD16TA





3-tier Connection Terminals



Dimensions (Unit: mm)

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





Mounting Hole Dimension





Wiring

DRT2-ID16TA



DRT2-OD16TA



DRT2-MD16TA



DRT2-ID16TA-1



DRT2-OD16TA-1



DRT2-MD16TA-1



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;	8 inputs and				DRT1-MD16
	outputs: - common)	8 outputs				

Specifications

Ratings

Input

ltem [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-OD08-1





Dimensions

Note: All units are in millimeters unless otherwise indicated.



Mounting Holes

Remote I/O

Wiring



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.

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 com- mon	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
Ī	PNP (– common)	4 points			DRT1-ID04CL-1
		8 points			DRT1-ID08CL-1
Output NPN (- common) PNP (+ common)	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-OD04CL	DRT1-ID08CL	DRT1-OD08CL
	DRT1-ID04CL-1	DRT1-OD04CL-1	DRT1-ID08CL-1	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 ici	-10 to 55°C (with no icing)		
Ambient operating humidity	25% to 85% (with no co	25% to 85% (with no condensation)		
Ambient storage temperature	–25 to 65°C	-25 to 65°C		
Ambient storage humidity	25% to 85% (with no co	25% to 85% (with no condensation)		
Connector tightening torque	0.39 to 0.49 Nm	0.39 to 0.49 Nm		
Construction	IEC IP67	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 For input voltage of 17 V	DC: 6 mA max. per point DC: 3 mA min. per point	
Input impedance	4.4 kΩ		
ON delay time	1.5 ms max.	1.5 ms max.	
OFF delay time	1.5 ms max.	1.5 ms max.	
ON voltage	15 V DC min.	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
DCA1-5CNDDW1	Cable with a connector at both ends
DCA1-5CNDF1	Cable with a connector at one end (socket)
DCA1-5CNDDH1	Cable with a connector at one end (plug)
DCN2-1	T-branch connector
DRS2-1	Connector with terminating resistor (plug)

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









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

Dimensions

Note: All units are in millimeters unless otherwise indicated.



Wiring





Remote I/O

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 M Ω 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

Digital I/O Terminals	524
3-tier Connection Terminals	529
Relay output terminals	532
Waterproof Terminals	536
Sensor Terminals	542
Analog Input Terminal	547
Analog Output Terminal	549
Digital I/O Terminals	551

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 com- mon	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.



Installation

Internal Circuit Configuration





Remote I/O



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



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)	1		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.



Remote I/O

Installation

Internal Circuit Configuration





External Connections

Input (NPN Models) SRT2-ID16T SRT2-MD16T



3-tier Connection Terminals

Output (NPN Models) SRT2-OD16T SRT2-MD16T







Output (PNP Models) SRT2-OD16T-1 SRT2-MD16T-1











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 out-	8 points			SRT2-ROF08	G3DZ-2R6PL
put	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



Dimensions

Note: All units are in millimeters unless otherwise indicated.



SRT2-ROC16 SRT2-ROF16


Installation

Internal Circuit Configuration



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

External Connections

Output



Terminal Arrangement and I/O Device Connection Example



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

SRT2-D0CL(-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 com- mon	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	3)
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 dis- tance	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

ltem	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 ex-	Cable pull-out direc- tion	No. of poles	Connection met	Connection method		
	ternal dia.			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	1			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 ex-	Cable pull-out di-	No. of poles	Connection method		
ternal dia.	ternal dia.			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	
	Straight		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
		1	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
Ž		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.



Installation

Internal Circuit Diagrams

SRT2-ID0 CL (NPN)



SRT2-OD0 CL (NPN)



SRT2-ID0 CL-1 (PNP)



SRT2-OD0 CL-1 (PNP)



Connections Diagrams for Connectors

Communications Connector Communications power supply BS-Communications Signal BDL (4) 2 power supply BS+ 10 Signal BDH



3 G

2

£

24V

(4)

oν

OD0□(-1) Power Supply Connector

OD0 Output Connector (NPN) Solenoid and



OD0 Output Connector (PNP)



ID0 Input Connector (NPN)





IN

3



ID0 -1 Input Connector (PNP)

Voltage



Remote I/O

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	14 to 26.4 V DC
voltage (see note 1)	
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













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











bui (UI) Valve, solenoid

SRT2-OD08S

Sensor Terminals

Terminal Arrangement and I/O Device Connection Example



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 accura-	25°C	±0.3% FS	±0.4% FS				
cy -10 to 55°C ±0.6% FS		±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 stre	ngth	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



Installation

Internal Circuit Configuration



Terminal Arrangement

SRT2-AD04

	BD H	B	S F	A	G	V +	0 +	l) H	0	V +	1	 +	1 -	V H	2	I. H	2 +	V H	3	: 	3
BD L	DE	3S _	N	С	A	G	0.	_	N	С	1.	-	N	С	2.	_	Ν	С	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.

(48)

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		5 kΩ min. 600 Ω max.				
resistance						
Output impedance).5 Ω max				
Resolution		1/6,000 (FS)				
Total	25°C	±0.4% FS				
accuracy	–10 to 55°C	±0.8% FS				
Conversion time		2 ms/2 points and 2 ms/1 point				
Dielectric stree	ngth	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



Installation

Internal Circuit Configuration



Terminal Arrangement

SRT2-DA02

	ŀ	4	B H	S F	N	с	N	С	V H	io H	li H	0	V +	'1 -	 -	1
B l	D	B -	S	N	с	N	С	N	С	0.	_	N	С	1.	_	

(48)

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 \pm 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







External Connections





Node Number Settings and Output HOLD/CLEAR Mode



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



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.

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
	Contraction of	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
	A start and	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	у Тар	A CONTRACT OF A	DCN1-1P	One-branch tap provided with 2 connectors, standard terminating resistor, and fuse
Connectors		E	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.
		Eccese	XW4B-05C4-T-D	Parallel, screwless, multi-branching connector Connector insertion and wiring performed in same direction.
		essae D	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-bloo Terminator	ck		DRS1-T	Resistance of 121 Ω

Environment-resistive Models for Thin Cable

Product	Appearance		Model	Specifications		
Sealed Assembling-type Connector (male)	60		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			DRS2-1	Plug		
Terminating Resistor	300		DRS2-2	Socket	Socket	
Cables with Sealed			DCA1-5CNC5W1	Length (L): 0.5 m	Cable with connectors	
Connectors			DCA1-5CN01W1	Length (L): 1 m	on both ends	
			DCA1-5CN02W1	Length (L): 2 m		
			DCA1-5CN03W1	Length (L): 3 m		
		1. 6 .1	DCA1-5CN05W1	Length (L): 5 m		
			DCA1-5CN10W1	Length (L): 10 m		
			DCA1-5CNC5F1	Length (L): 0.5 m	Cable with connector	
			DCA1-5CN01F1	Length (L): 1 m	socket on one end	
			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	
			DCA1-5CN01H1	Length (L): 1 m	plug on one end	
			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			DCN3-11	T-branch Connector	
Connector			DCN3-12	T-branch Connector (Branch connector is	M12.)
Sealed Connector with Terminating Resistor			CRS3-1	Plug	
Cables with Sealed			DCA2-5CN01W1	Length (L): 1 m	Cable with connectors
Connectors			DCA2-5CN02W1	Length (L): 2 m	on both ends
			DCA2-5CN05W1	Length (L): 5 m	
	0 m		DCA2-5CN10W1	Length (L): 10 m	
			DCA2-5CN01F1	Length (L): 1 m	Cable with connector
			DCA2-5CN02F1	Length (L): 2 m	socket on one end
		< L> 50 mm	DCA2-5CN05F1	Length (L): 5 m	
			DCA2-5CN10F1	Length (L): 10 m	
		[]D50 ↓Lmm	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
			DCA1-5CN02W5	Length (L): 2 m	on both ends
		← L►	DCA1-5CN05W5	Length (L): 5 m	Thin cable M12 socket
	() II		DCA1-5CN10W5	Length (L): 10 m	WITZ SUCKEL
Panel-mounting Connector (female)			DCA2-5CNC5P1	Connector socket for Cable: 0.5 m	r panel mounting
Panel-mounting Connector (male)			XS4M-D521-1	Connector plug for p DIP terminals	anel mounting

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

ltem	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 m Ω max. (at 20 m V DC max	40 mΩ max. (at 20 m V DC max. and 100 mA max.)			
Insulation resistance	1,000 MΩ min. (at 500 V DC)	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 μ m 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

ltem	DCA2- 5CN 0 1 Con- nectors with Thick Cable	DCA1- 5CN UV5 Con- nectors with Thick Cable	DCN3-11 T-branch Con- nector	DCN3-12 T-branch Con- nector	DRS3-1 Connectors with Terminating Re- sistor	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 m Ω max. (at 20	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	-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 interrue at acceleration 10	otions of more than 0 m/s ² , whichever i	1 μm while perforr s smaller	ning simple vibratio	ons at either 10 to 5	00 Hz with 1.52-m	m full amplitude or

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)





Two, 3.5±0.1 dia. or M3 **Mounting Dimensions** ∱ 14.15±₀.

74.5±0

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)



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)



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.



Environment-resistive Models for thin cable





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
5	Blue	CAN L

L (cable length)-40.7 50 M12

DCN2-1 **T-branch Connector**



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

Wiring 1 2 3

Terminal No. Name DRAIN: NC V+: NC V-: NC 4 CAN-H: _ ≩ 121 Ω 5 CAN-L:

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





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 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)

1





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)



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



Connections Diagram

Pli

Wiring

ıg	CN	10 (IN)		S	ock	et	CN	2 (0	JT)
	1 2 3 4 5							1 2 3 4 5		
	S	C Soc	1 2 ket	2 ; C	3 4 N1	4 (O	5 UT	-)		

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 O					
5	CAN-L:					

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







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

 $M25 \times 2$



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-D421-00-0	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 ca- ble (mm)	Dimensions of applicable ca-	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	7			XS2C-D4S9	
	8 dia. (7 to 8 dia.)					XS2C-D4S7	

Connector Assemblies with Plug (M12 Microconnectors for Power Supply)

Appearance	Dimensions of applicable ca-	Cable direction	Number of pins	Connection method			
	ble (mm)			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
	Olidigin		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	0.5	XS2R-D426-B11-F
		ends	1	XS2R-D426-C11-F
			2	XS2R-D426-D11-F
			3	XS2R-D426-E11-F
		Connector on one	2	XS2R-D426-D10-F
	end	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	Туре	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
0 Jun	I → L →	10 m	XS4W-D421-110-A
		1 m	XS4F-D421-101-A
		2 m	XS4F-D421-102-A
	50	5 m	XS4F-D421-105-A
		10 m	XS4F-D421-110-A
		1 m	XS4H-D421-101-A
		2 m	XS4H-D421-102-A
	L 50	5 m	XS4H-D421-105-A
		10 m	XS4H-D421-110-A
	T-branch Connector		XS4R-D424-5
00-00	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)

Туре	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 conduc- tor. twisted. 22 AWG

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

CompoBus/S Wiring

Cables and Connectors for CompoBus/S



Ordering Information

VCTF Cable Products

Product	Appearance	Model	Specification
Terminal-block Terminator	a little a	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	A CONTRACT OF	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-con- ductor 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.



SRS1-T Terminal-block Terminator





SCN1-TH4T Connector Terminator





Mounting Holes





Remote I/O

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 flatblade screwdriver. Two kinds of connectors are available to suit different applications.

Ordering Information

Connector type	Appearance	Model	Application
Branching connector	Consistent of the second	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)	WD30-ME	Pencil antenna
1,6	1,600 outputs max. (100 words)	WD30-ME01	Magnetic base antenna
eviceNet Wireless Slave 512 inputs max. (32 words)		WD30-SE	Pencil antenna
512 outputs max. (32 wo	512 outputs max. (32 words)	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	DCA1-5CNOW1	Cables with connectors on both ends
	DCA1-5CNDF1	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 Ī A CS1W-DRM21 DeviceNet Unit 3G8E2-DRM21-EV1 PC Card (included with Configurator Software) ם 6 Main line DeviceNet network Main line DCN1-3C T-branch Tap ۲ DRT2 S82K Network WS02-CFDC1-E Configurator Software (Ver. 2.2 or higher) DRT2 Power Supply Master DRS2-1 Terminator Master DRS2-1 Terminator DCN2-1 T-branch Connector ∎₀₀∎ DCN2-1 T-branch DCN1-3C T-branch Tap with PLC I/O Link Unit Connecto Slave Terminator ר ר ╘┛ Dr DRT2 Slave DRT2 S82K Network DRS1-T [] ----Power Supply Terminating Resistor Terminal Block ••• DRT2 S82K Network Power Supply E5EK-DRT Digital S82K Network Power Supply Process Controller DRS2-1 Terminator Repeater DCN2-1 T-branch DRT2 Connector ▣ DRS1-T Terminating Resistor Terminal Block Slave

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.)

S82K Network Power Supply

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 <i>WD30 DeviceNet Wireless Units Operation Manual</i> 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

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	Туре	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	Туре
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	

Model	Length	Application
XW2Z-0500U-3	5 m	
XW2Z-0200U-5	2 m	Cross cable for PLC
XW2Z-0500U-5	5 m	

Other

Туре
DIN Rail Mounting Bracket (for TH35-7.5)
DIN Rail Mounting Bracket (for TH35-15)
Surface Mounting Bracket (screw-mounting)
Flat Diversity Antenna Mounting Brackets
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 communi- cations power sup- ply)	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	Rated voltage		24 V DC
power supply (for output circuits)	Allowable voltage range		20.4 to 26.4 V DC
Insulation resistance		$20\text{M}\Omega$ min. (at 100 V DC) between the power supply and chassis	$20M\Omega$ min. (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>I</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/s ² , whichever is smaller (DIN Rail mounting: single amplitude of 0.1 mm or acceleration of 15 m/s ²) 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 Ter- minal 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 h	umidity	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 construc-	Power supply and I/O	Screwless terminal block (Phoenix Contact FFKDS/V1-5.08 or equivalent)	
tion	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 ٠ (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



Version Wired Serial Communication Unit **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. Thermotools) 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)
Туре	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

Туре			Device	Description
Ļ	mm.	Basic	E5⊡N E5ZN E5⊡R	1 word I/O per loop
/ay	ပိ္ဖ	Extended	E5⊡N	6 word in / 2 word out
Š	s s s		E5ZN	11 word in / 3 word out
du	щщ		E5⊡R	21 word in / 5 word out
õ	÷	READ	See note	5 word in / 4 word out
Ŭ	a n	WRITE		2 word in / 7 word out
	щS	OPERATE		2 word in / 3 word out
Host Link			MCW151-E	5, 10, 15 word I/O

Dimensions

- **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.



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

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