

OMRON

Multi-vendor Network
DeviceNet



DeviceNet™

realizing

New Lineup

Support for Machine Automation Controller NJ-Series!



Support for open network

The MX2 series/ MX2 series V1 type/
RX series V1 type* can be
connected to DeviceNet by mounting
the Communications Unit.

* Supported for the MX2 series Ver.1.1 or higher.
Not Supported for the RX series without V1 type.

Parameter Edit via DeviceNet

Parameters of the inverter can be
edited via DeviceNet communication
by using CX-Drive*,
support tool of inverter/servo drive.
No tool switching required.

* Supported for CX-Drive Ver.2.6 or higher.

8 types of remote I/O higher functions

8 types of remote I/O functions that
exchange I/O data automatically
without program are provided.

All of the following functions of the inverter
can also be used.

- Simple positioning control
- Torque control
- Setting of acceleration/deceleration time etc.



**MX2 series V1 type
DeviceNet
Communication Unit
3G3AX-MX2-DRT-E**

P. 109



**RX series V1 type
DeviceNet
Communication Unit
3G3AX-RX-DRT-E**

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Selecting a Network Is a Strategic Decision. to Evolve.

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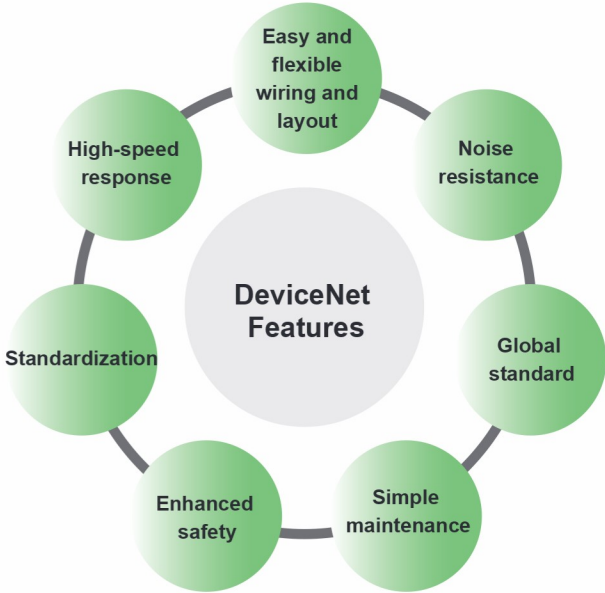
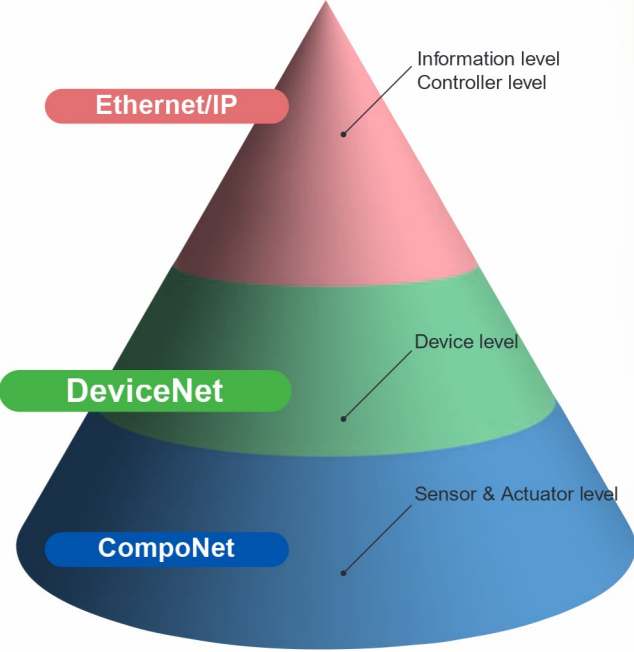
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Linking the World. A Global Open Network Greater Wiring Reduction, Standardization, on a Global Scale.

What Is DeviceNet?

DeviceNet is a field network that easily performs mutual connections between control devices, such as PLCs, computers, and sensors, as well as data devices, such as barcode readers and RFID Systems. DeviceNet is a standardized network that enables intelligent control of field devices and improves system productivity.

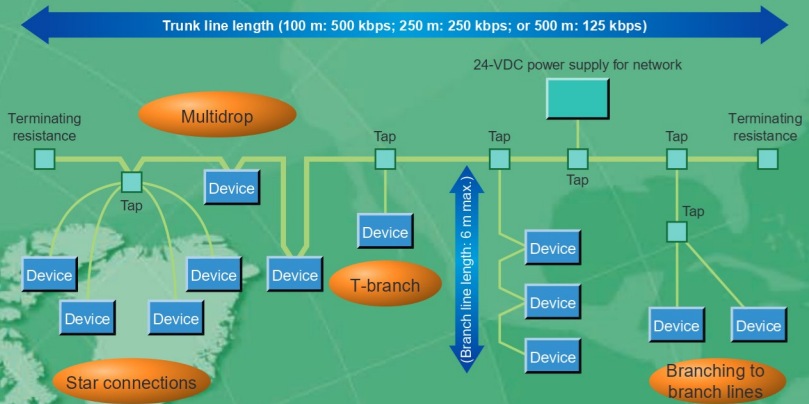


Device

Used Worldwide. and IT Technology at Manufacturing Sites

Superior installation performance enables easy and flexible wiring and layout.

DeviceNet covers a wide array of FA applications, ranging from the sensor or device level to the controller level. With its superior installation performance, DeviceNet easily achieves mutual connections between sensors and other control devices in one network as well as reducing costs and shortening lead time in many aspects of manufacturing, ranging from design and manufacture of equipment and lines to installation, operation, and maintenance.



Accelerating the Global Standardizations Required by Industry in This Age of Global Manufacturing

DeviceNet has been the leader in standardization required for this age of borderless manufacturing as a standard for a variety of countries and industrial organizations, such as with standard sensor bus certification by the SEMI industrial association and compliance with IEC, an international global standard. Equipment and lines at manufacturing sites overseas can be constructed and operated in the same way as at sites in Japan without the need for training on wiring rules or detailed explanations.

IEC
62026-3

SEMI
E54.4-0997

ISO
11898

CENELEC
EN50325-2
GB T18858.2-2002

Support for Creating Maintenance and Safety Systems

Support is provided for creating maintenance systems that provide failure prediction as preventive maintenance to reduce equipment downtime, which is a constant issue at manufacturing sites. [Page F-6](#)
Using DeviceNet lets you create safety control networks and program logic. Monitoring with safety controls makes maintenance easier. [Page F-8](#)


- Overview
- Introducing DeviceNet Products
- Network Specifications
- Master Units
- DR2-series Smart Slaves
- SmartSlice GRT1 Series
- MULTIPLE I/O TERMINAL Series
- Intelligent Slaves
- CIP Safety on DeviceNet System
- Configurator and Software
- Peripheral Devices
- Ordering Information

DRT2-series Smart Slaves are Intelligent for Your Networks from Installation

OMRON DRT2-series Smart Slaves decrease total costs and reduce work when used in a variety of manufacturing site applications, such as maintenance and quality control. The Slave Units monitor the network's power supply voltage and communications errors, which can be easily read using Support Software. In addition, the number of ON/OFF operations and total operating time of the devices wired to the slave are counted at the slave, which enables providing notification when maintenance is required.


Machine Operation Monitored by Slaves

Smart Functions



Smart Measuring

The Slave Unit represents machine operating time and operational changes as data, enabling monitoring without increasing the load between controllers.

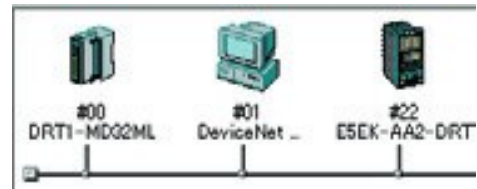


Smart Counting

By counting the number of ON/OFF operations and the total operating time, the Slave Unit can provide notification when maintenance is required.

Easy-to-view Display

DeviceNet Configurator

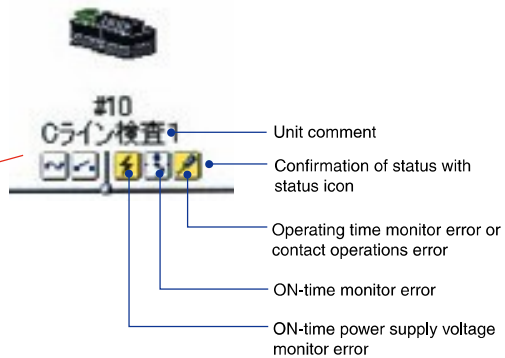
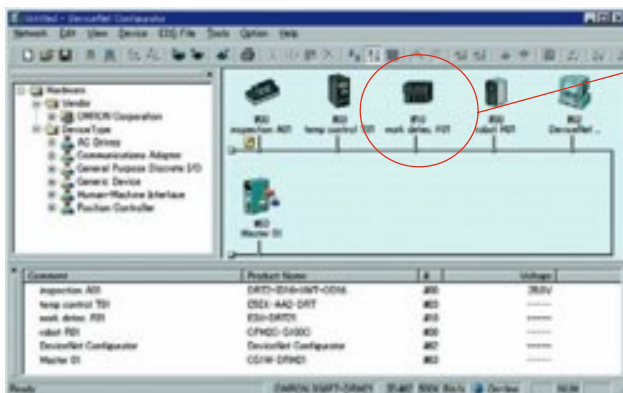


Operating time, contact operation counter

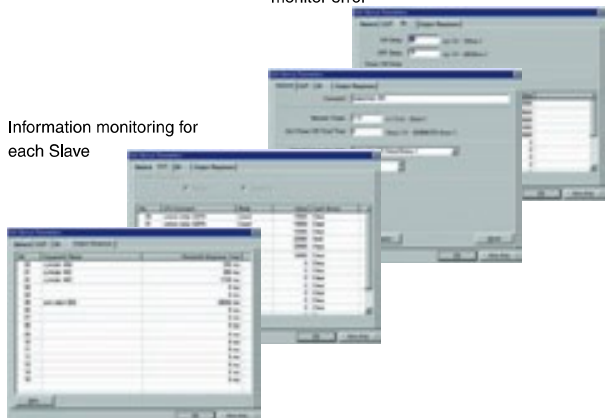


Improve Maintenance Efficiency

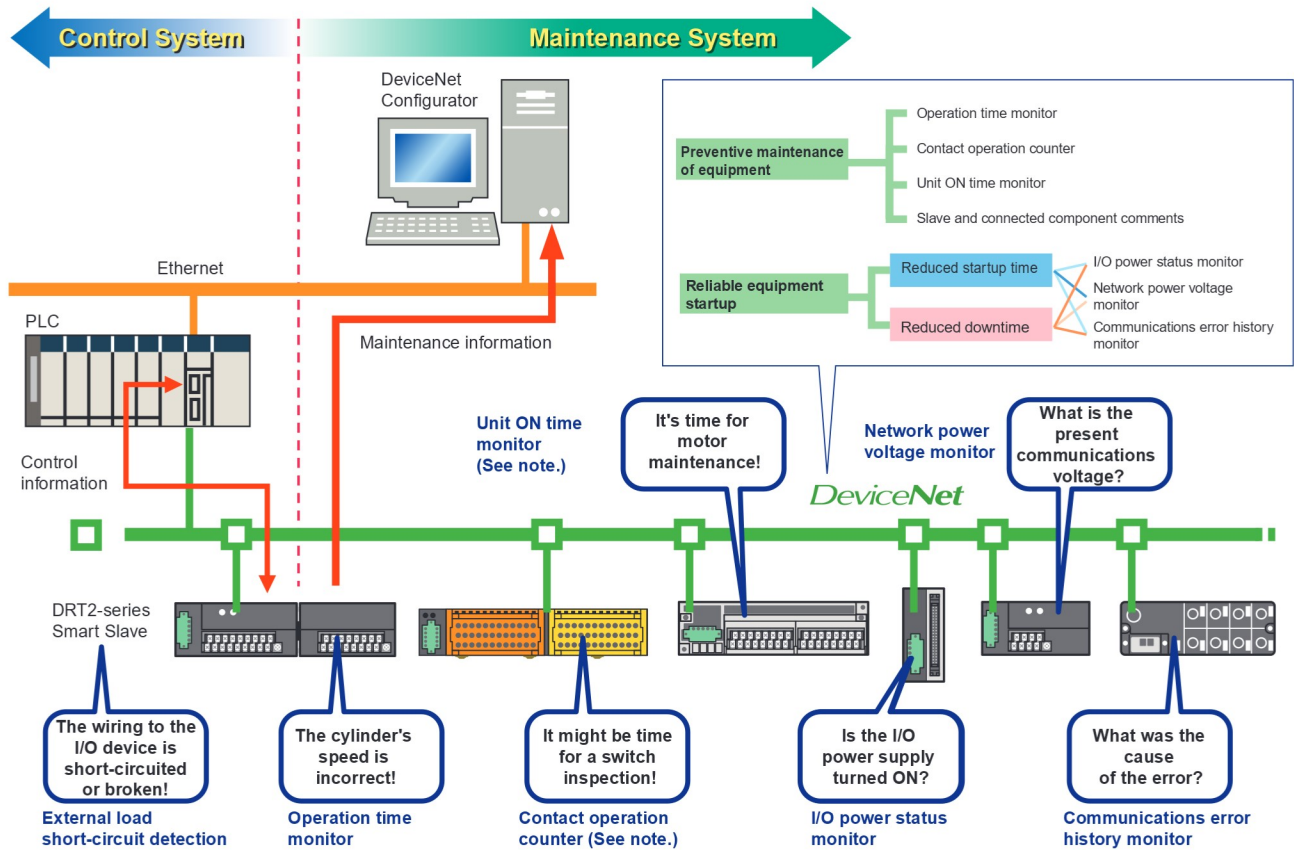
The Slave can hold comments, allowing quick identification of fault locations and faulty devices.



Information monitoring for each Slave



Slaves with Powerful Support to Maintenance



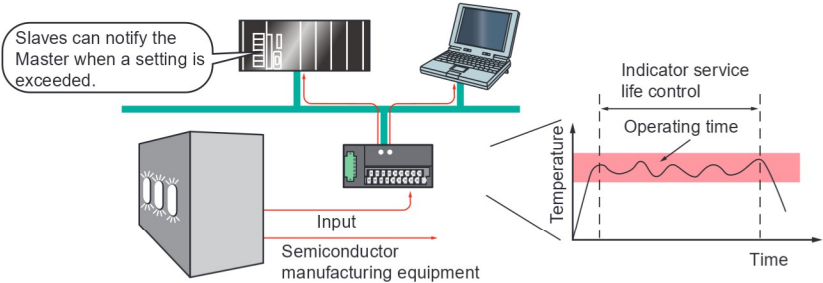
Note: The contact operation counter function and the unit ON time monitor function cannot be used simultaneously.

Using OMRON Temperature Input Terminals for Maintenance

Failure Prediction and Maintenance

If prolonging the time it takes to reach a certain temperature may degrade equipment:

The operating time of a preset temperature range is counted in 1-s units.

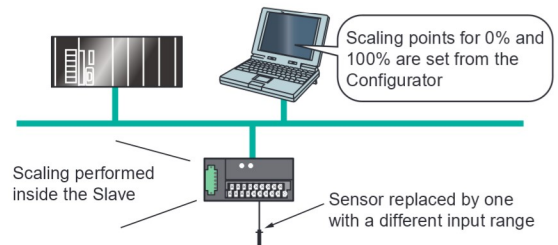


The peaks or valleys of temperature inputs that change in a regular pattern are counted to predict when devices operating with severe temperature swings are due for maintenance.

Short Startup

If it takes too long to modify the ladder program on the Master when a Temperature Sensor is replaced:

Slaves internally convert display values to temperature input values so the Controller program no longer has to be modified to perform this task.



- Overview
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- SmartSlice GRT1 Series
- MULTIPLE I/O TERMINAL Series
- Intelligent Slaves
- CIP Safety on DeviceNet System
- Configurator and Software
- Peripheral Devices
- Ordering Information

Complies with the Highest Safety Standards in th

The CIP Safety on DeviceNet System conforms to IEC 61508 SIL3 for functional safety, and EN 954-1 Safety Category 4 for machine safety, complying with the world's highest level of safety standards.

IEC 61508 SIL 3

Safety circuits must be able to function to provide safety at anytime. Conversely, the degree of lack of safety is used as the indicator. In IEC 61508, safety is defined as the Probability of Failure per Hour, or PFH. Based on this, the SIL (Safety Level) is classified into four levels. SIL 3 indicates a probability of dangerous failure of once in 1,000 years, which is the highest level in machine safety.

EN 954-1 Safety Category 4

EN standards evaluate the level of machine risk and require the incorporation of risk minimization measures. In EN 954-1, five safety categories have been established, with Safety Category 4 indicating designs that require the highest safety design level. This category is demanded for machines with the highest level of danger, wherein "serious injury (severed limbs, death, etc.) will occur frequently, with little chance of escaping danger." This category demands that a single fault (failure) in any part of the machine, or a series of faults, will not lead to loss of the machine's safety functions.

Compatible with
DeviceNet Open Network

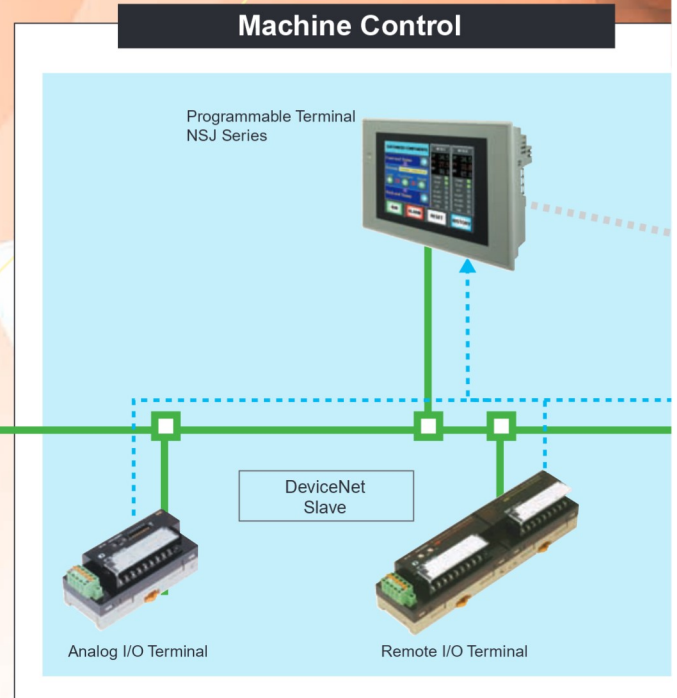


Coordination with
standard controls is
easy through
DeviceNet

Programmable
Safety Circuits



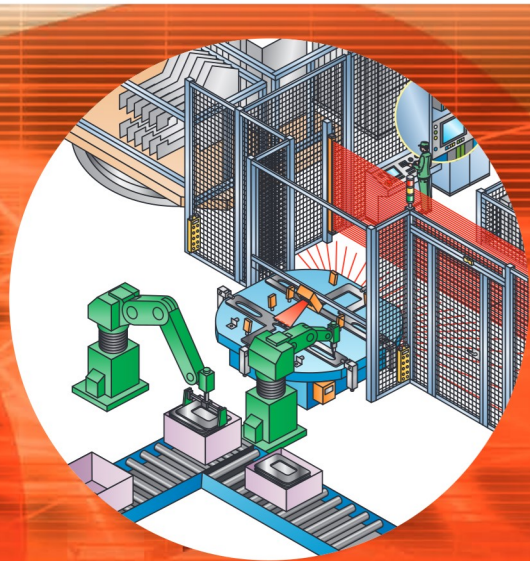
More efficient
designing and
modification



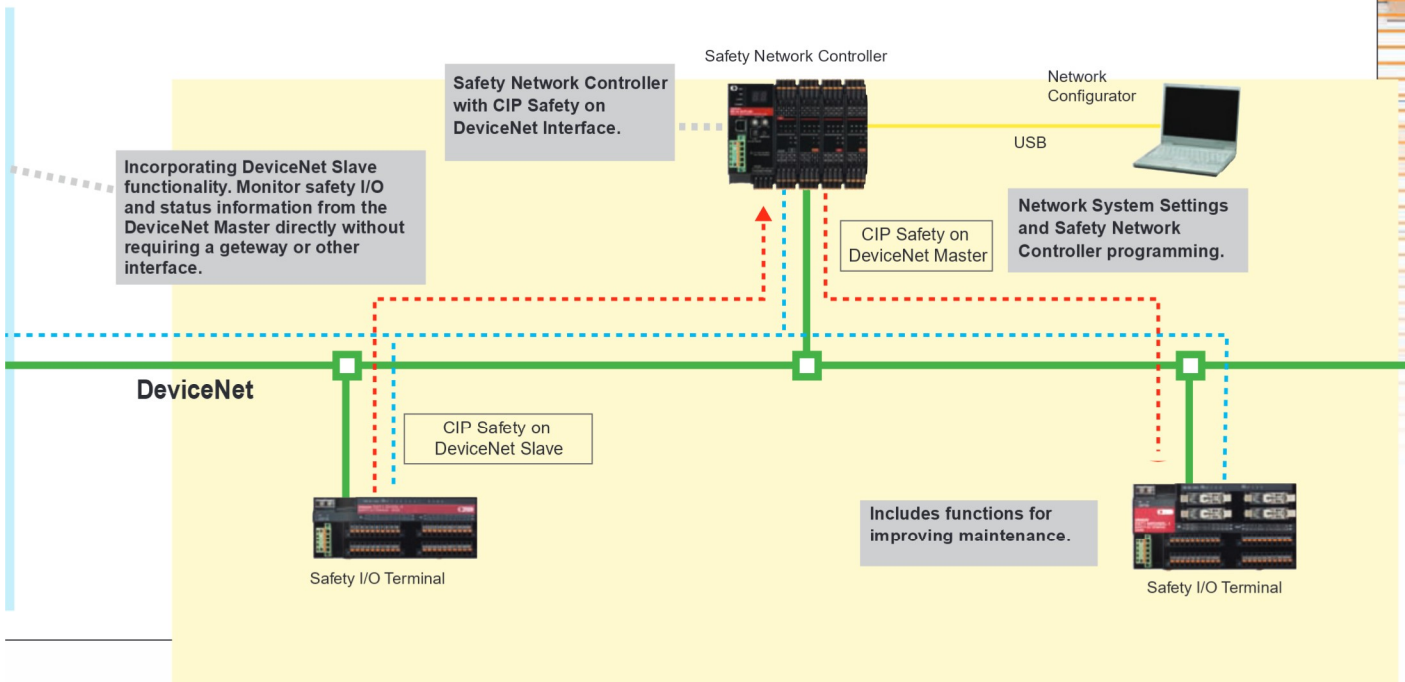
Distributed safety controls.



Safety I/O Can Be Expanded through the Network

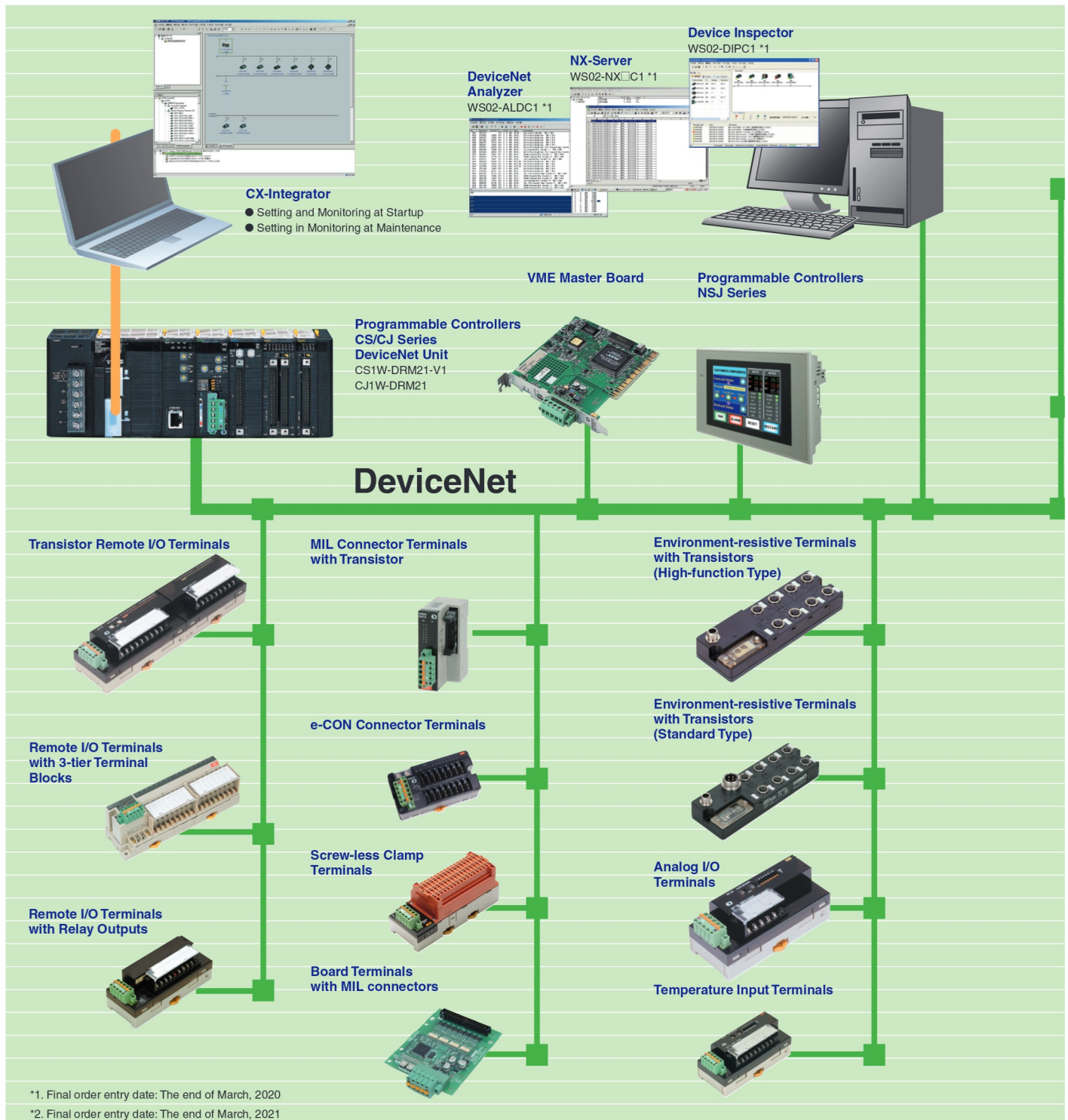


Safety Control

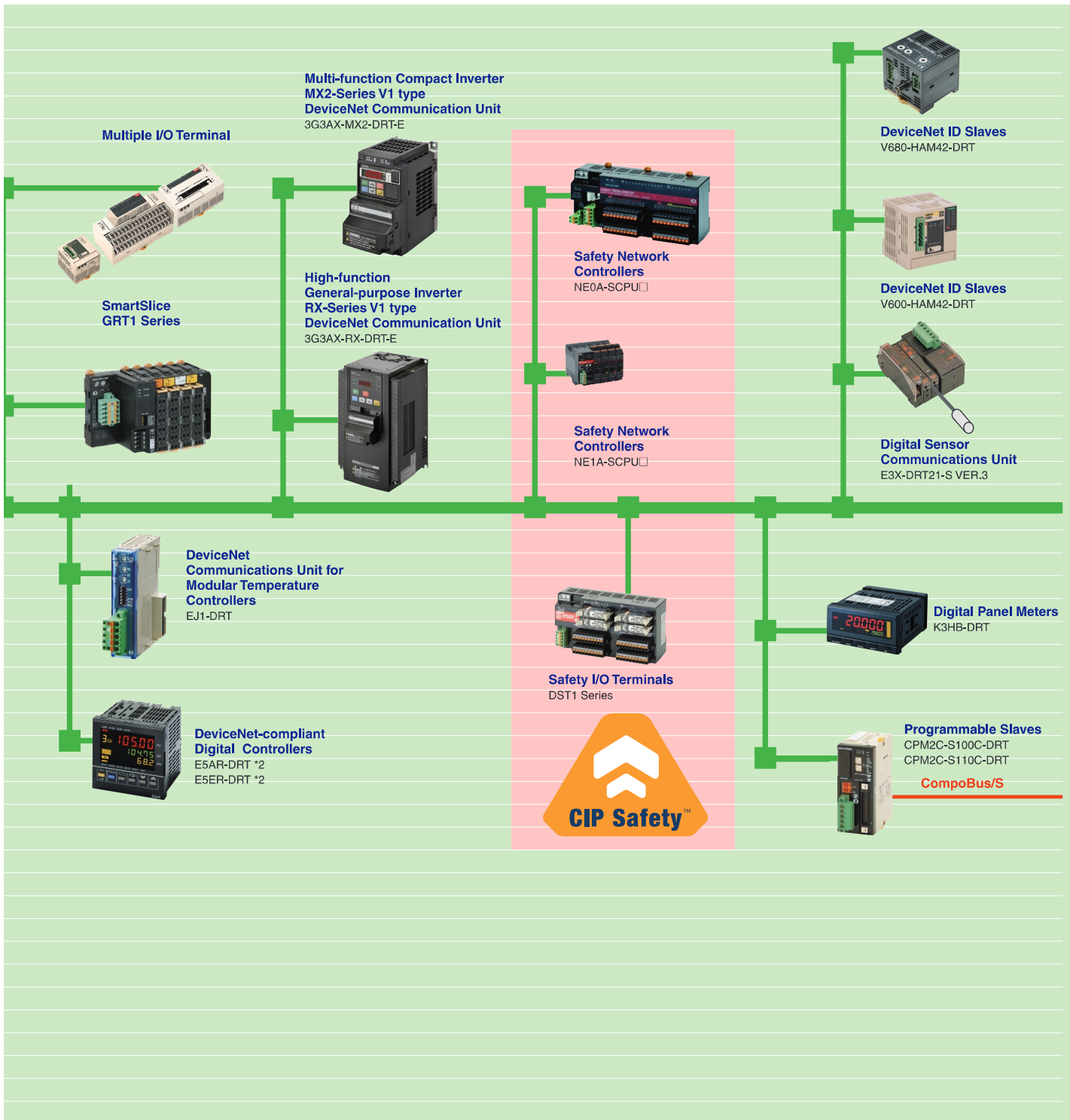


Through Our High Reliability and Application OMRON Provides a Wide Range of DeviceNet Selection for Your Worksite.

DeviceNet is a global open multi-vendor network that is spreading worldwide. A wide variety of DeviceNet devices are provided by many vendors. Having recognized the superior flexibility of DeviceNet for FA and its role as a global standard, OMRON provides a broad lineup of compatible devices. In the future, OMRON will continue to enhance solutions using DeviceNet while further developing information technology and open networks.



Know-how Refined at FA Sites, Devices to Enable the Ideal **DeviceNet™**



Overview

Introducing DeviceNet Products

Network Specifications

Master Units

DRT2-series Smart Slaves

SmartSlice GRT1 Series

MULTIPLE I/O TERMINAL Series

Intelligent Slaves

CIP Safety on DeviceNet System

Configurator and Software

Peripheral Devices

Ordering Information

Masters

- DeviceNet Unit for CJ Series

P. 2



CJ1W-DRM21

- DeviceNet Unit for CS Series

P. 3



CS1W-DRM21-V1

- Programmable Controllers NSJ Series

P. 4



NSJ-□-T-□□1(B)-G5D

- VME Master Board

P. 7

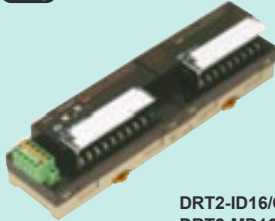


3G8F7-DRM21

DRT2 Smart Slaves

■ Transistor Remote I/O Terminal

P. 18



DRT2-ID16/OD16(-1)
DRT2-MD16(-1)
DRT2-ID08/OD08(-1)
I/O Expansion Unit
XWT-ID16/OD16(-1)
XWT-ID08/OD08(-1)

■ Remote I/O Terminals with 3-tier Terminal Blocks

P. 28



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

■ Remote I/O Terminals with Relay Outputs

P. 26



DRT2-ROS16

■ MIL Connector Terminals with Transistor

P. 34



DRT2-ID32ML(-1)
DRT2-OD32ML(-1)
DRT2-MD32ML(-1)
DRT2-ID16ML(-1)
DRT2-ID16MLX(-1)
DRT2-OD16ML(-1)
DRT2-OD16MLX(-1)

■ e-CON connector Terminals

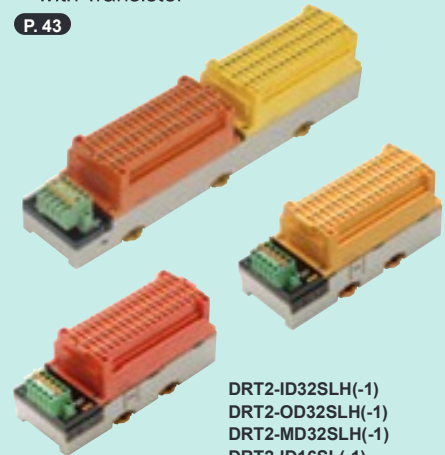
P. 31



DRT2-ID16S(-1)
DRT2-MD16S(-1)

■ Screw-less Clamp Terminals with Transistor

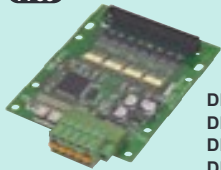
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DRT2-ID32SLH(-1)
DRT2-OD32SLH(-1)
DRT2-MD32SLH(-1)
DRT2-ID16SL(-1)
DRT2-ID16SLH(-1)
DRT2-OD16SL(-1)
DRT2-OD16SLH(-1)

■ Board Terminals with MIL connectors

P. 39



DRT2-ID32B(-1)
DRT2-OD32B(-1)
DRT2-MD32B(-1)
DRT2-ID32BV(-1)
DRT2-OD32BV(-1)
DRT2-MD32BV(-1)

■ Temperature Input Terminals

P. 60



DRT2-TS04T
DRT2-TS04P

■ Analog I/O Terminals

P. 57



DRT2-AD04
DRT2-AD04H

DRT2-DA02

■ Environment-resistive Terminals with Transistors (High-function Type)

P. 48



DRT2-ID08C(-1)
DRT2-OD08C(-1)
DRT2-HD16C(-1)

■ Environment-resistive Terminals with Transistors (Standard Type)

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DRT2-ID04CL(-1)
DRT2-OD04CL(-1)
DRT2-ID08CL(-1)
DRT2-OD08CL(-1)

DRT2-MD16CL(-1)
DRT2-HD16CL(-1)
DRT2-WD16CL(-1)

Slaves

GRT1 Smart Slaves

■ DeviceNet Communications Unit

P. 68



GRT1-DRT

■ SmartSlice I/O Units

P. 70



- GRT1-ID4(-1)
- GRT1-OD4(-1)
- GRT1-ID8(-1)
- GRT1-OD8(-1)
- GRT1-ROS2
- GRT1-AD2
- GRT1-DA2C
- GRT1-DA2V
- GRT1-TS2P
- GRT1-TS2PK
- GRT1-CT1

MULTIPLE I/O TERMINAL Series

■ Communications Unit ■ Digital I/O Units

P. 73



DRT1-COM

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GT1-ID16(-1)
GT1-OD16(-1)



GT1-ID32ML(-1)
GT1-OD32ML(-1)



GT1-ID16MX(-1)
GT1-OD16MX(-1)



GT1-ID16ML(-1)
GT1-ID16DS(-1)
GT1-OD16ML(-1)
GT1-OD16DS(-1)

■ Relay Output Units

P. 81



GT1-ROP08
GT1-FOP08



GT1-ROS16

■ Analog I/O Units

P. 83



GT1-AD08MX
(connector)



GT1-DA04MX
(connector)



GT1-AD04
(terminal
block)



GT1-DA04
(terminal
block)

■ Temperature Input Units

P. 85



GT1-TS04T



GT1-TS04P

PLC Intelligent Slaves

■ Programmable Slaves

P. 88



CPM2C-S100C-DRT
CPM2C-S110C-DRT

Slaves

Intelligent Slaves

- Digital Sensor Communications Unit

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E3X-DRT21-S VER.3

- DeviceNet ID Slave

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V600-HAM42-DRT

- DeviceNet ID Slave

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V680-HAM42-DRT

- DeviceNet-compliant Digital Indicator

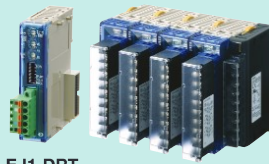
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K3HB-DRT

- DeviceNet Communications Unit for Modular Temperature Controllers

P. 104



EJ1-DRT

- DeviceNet-compliant Digital Controllers

P. 100



E5AR-DRT *1

E5ER-DRT *1

- Multi-function Compact Inverter MX2-Series V1 type DeviceNet Communication Unit

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3G3AX-MX2-DRT-E

- High-function General-purpose Inverter RX-Series V1 type DeviceNet Communication Unit

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3G3AX-RX-DRT-E

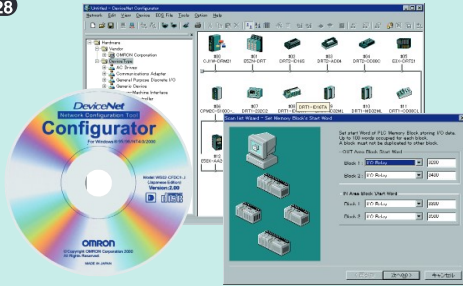
*1. Final order entry date: The end of March, 2021

Configurators and Software

Configurators

■ DeviceNet Configurator Ver.2.□

P. 128



WS02-CFDC1-E

■ PC Card DeviceNet Configurator (with software)

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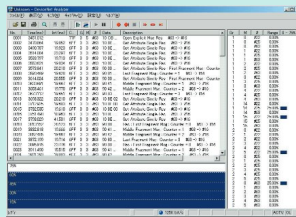


3G8E2-DRM21-V1 *1

Analysis Software

■ DeviceNet Analyzer

P. 130

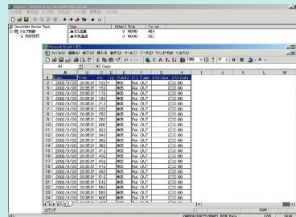


WS02-ALDC1 *1

Monitor Software

■ NX-Server

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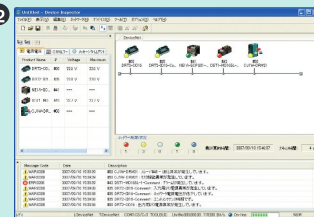


WS02-NX□C1 *1

Diagnostic Tools

■ Device Inspector

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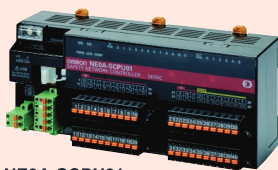
WS02-DIPC1 *1

*1. Final order entry date: The end of March, 2020

Safety

■ Safety Network Controllers

P. 112



NE0A-SCPU01

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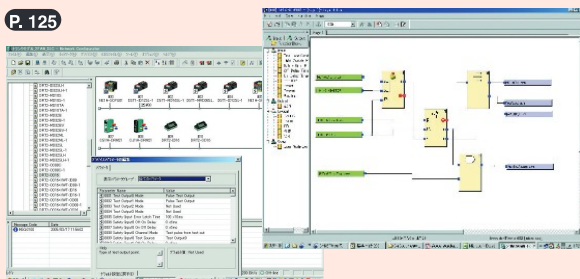


NE1A-SCPU02

NE1A-SCPU01(-V1)

■ Safety Network Configurator

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WS02-CFSC1-E

■ Safety I/O Terminals

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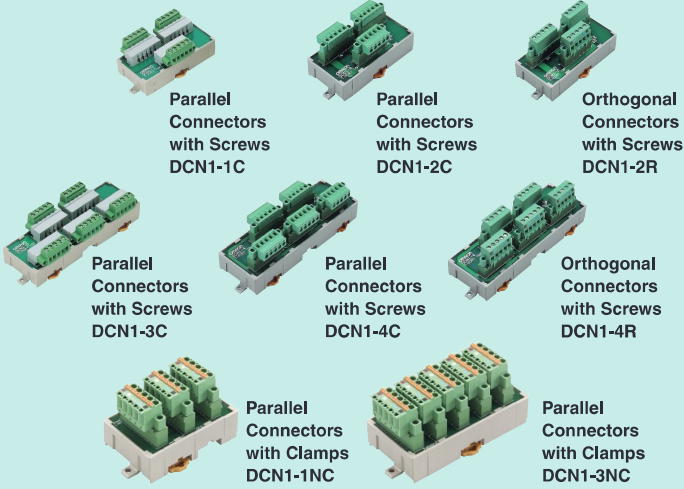
DST1-ID12SL-1
DST1-MD16SL-1
DST1-XD0808SL-1

DST1-MRD08SL

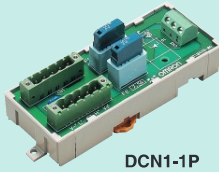


Standard Cables P. 134

■ T-branch Taps



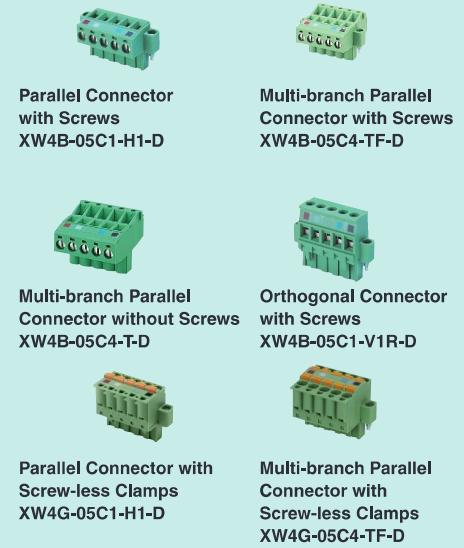
■ Power Supply Tap



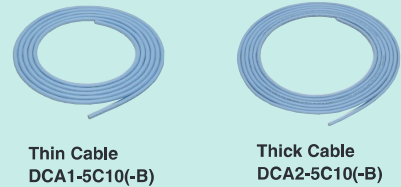
■ Terminal-block Terminator



■ Connectors



■ DeviceNet Standard Cables



Peripheral Devices

Environment-resistive Peripheral Devices (M12 Thin Cable with Micro Connectors) P. 144

- Shielded T-branch Tap Connector



DCN2-1

- Shielded Connector Cables



DCA1-5CN□□W1

DCA1-5CN□□H1

DCA1-5CN□□F1

- Shielded Assembly Connectors



XS2G-D5S7



XS2C-D5S7

- Shielded Terminating Resistor

DRS2-1
DRS2-2



- Shielded Panel-mounting Connectors



XS2P-D522-2



XS2M-D524-4

Environment-resistive Peripheral Devices (Smartclick Thin Cable with Micro Connectors) P. 145



- Shielded T-branch Tap Connector



DCN2-1S

- Shielded Connector Cables



DCA1-5CS□□W1

DCA1-5CS□□H1

DCA1-5CS□□F1

- Shielded Branching Relay Box



DCN2-S4C5H1

DCN2-S8C5H1

- Shielded Terminating Resistor



DRS2-1S
DRS2-2S

Environment-resistive Peripheral Devices (7/8-16 UN Thick Cable with Mini Connectors) P. 146

- Shielded T-branch Tap Connector



DCN3-11



DCN3-12

- Shielded Connector Cables



DCA2-5CN□□W1

DCA2-5CN□□H1

DCA2-5CN□□F1

- Panel-mounting Connectors



DCA2-5CNC5P1

DCA2-5CNC5M1

- Shielded Terminating Resistor



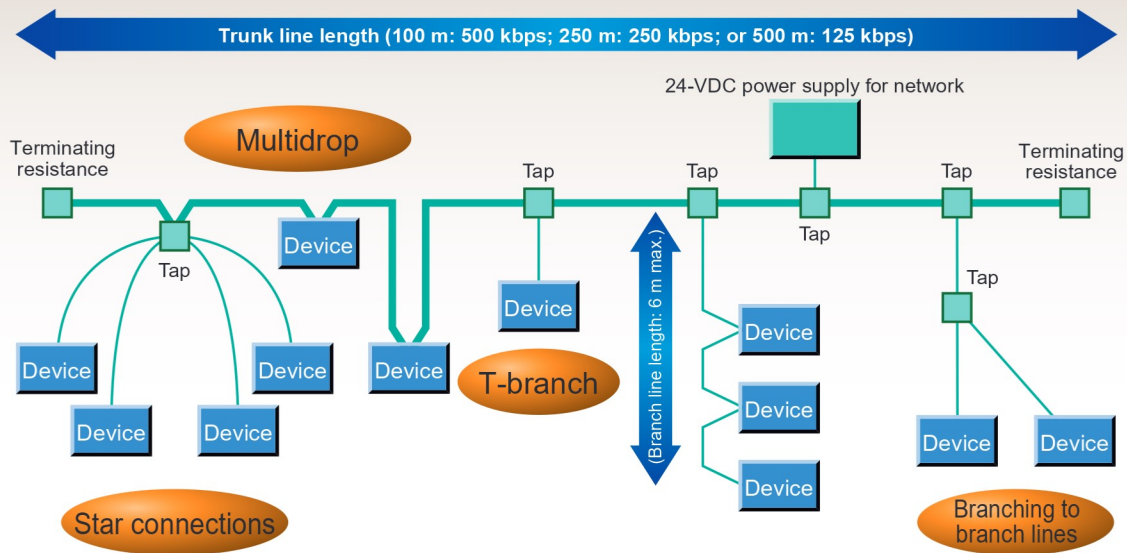
XS4M-D521-1



DRS3-1

DeviceNet™ Network Specifications

DeviceNet Network Specifications



Communications Specifications

Item	Specification																																
Communication protocol	DeviceNet																																
Connection method (See note1.)	Multidrop and T-branch connections can be combined (for trunk lines and branch lines).																																
Baud rate	125, 250, or 500 kbps																																
Communication media	Special cable: 5-conductor cable (2 signal lines, 2 power lines and 1 shield) Special Flat cable: 4-conductor cable (2 signal lines, 2 power lines)																																
Communication distance	<ul style="list-style-type: none"> Using a Special 5-wire Cable <table border="1"> <thead> <tr> <th>Baud rate</th> <th>Max. network length</th> <th>Branch line length</th> <th>Total branch line length</th> </tr> </thead> <tbody> <tr> <td>500 kbps</td> <td>100 m max.</td> <td>6 m max.</td> <td>39 m max.</td> </tr> <tr> <td>250 kbps</td> <td>250 m max. (See note2.)</td> <td>6 m max.</td> <td>78 m max.</td> </tr> <tr> <td>125 kbps</td> <td>500m max. (See note2.)</td> <td>6 m max.</td> <td>156 m max.</td> </tr> </tbody> </table> Using a Special 4-wire Cable <table border="1"> <thead> <tr> <th>Baud rate</th> <th>Max. network length</th> <th>Branch line length</th> <th>Total branch line length</th> </tr> </thead> <tbody> <tr> <td>500 kbps</td> <td>75 m max.</td> <td>6 m max.</td> <td>35 m max.</td> </tr> <tr> <td>250 kbps</td> <td>150 m max.</td> <td>6 m max.</td> <td>48 m max.</td> </tr> <tr> <td>125 kbps</td> <td>265 m max.</td> <td>6 m max.</td> <td>135 m max.</td> </tr> </tbody> </table> 	Baud rate	Max. network length	Branch line length	Total branch line length	500 kbps	100 m max.	6 m max.	39 m max.	250 kbps	250 m max. (See note2.)	6 m max.	78 m max.	125 kbps	500m max. (See note2.)	6 m max.	156 m max.	Baud rate	Max. network length	Branch line length	Total branch line length	500 kbps	75 m max.	6 m max.	35 m max.	250 kbps	150 m max.	6 m max.	48 m max.	125 kbps	265 m max.	6 m max.	135 m max.
Baud rate	Max. network length	Branch line length	Total branch line length																														
500 kbps	100 m max.	6 m max.	39 m max.																														
250 kbps	250 m max. (See note2.)	6 m max.	78 m max.																														
125 kbps	500m max. (See note2.)	6 m max.	156 m max.																														
Baud rate	Max. network length	Branch line length	Total branch line length																														
500 kbps	75 m max.	6 m max.	35 m max.																														
250 kbps	150 m max.	6 m max.	48 m max.																														
125 kbps	265 m max.	6 m max.	135 m max.																														
Communications power supply	24 VDC (external)																																
Max. number of connectable nodes	64 Units (including Master Units, Slave Units and Configurator)																																

Note 1: Terminating resistance required on both ends of the trunk line.

Note 2: These values apply to using Thick Cable on the trunk line. If Thin Cable is used, the value will be 100 m max.

Overview

Introducing DeviceNet Products

Network Specifications

Master Units

DRT2-series Smart Slaves

SmartSlice GRT1 Series

MULTIPLE I/O TERMINAL Series

Intelligent Slaves

CIP Safety on DeviceNet System

Configurator and Software

Peripheral Devices

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CJ-series DeviceNet Unit


CJ1W-DRM21

A DeviceNet Unit for the NJ/CJ Series

- Allows control of up to 32,000 points (2,000 words) per master, and ensures a high degree of simultaneity between data.
- Can be used as both a master and a slave at the same time.
- Equipped with settings and monitor functions aimed at improving both design and startup efficiency. Achieve maximum performance by using in combination with a Configurator.
- Files of master and slave settings can be uploaded and downloaded using memory cards, allowing effective debugging and easier setup.



Ordering Information

Unit classification	Product name	Specifications	Communications	No. of unit numbers allocated	Current consumption (A)		Model
					5 V	24V	
CJ1 CPU Bus Unit	DeviceNet Unit 	Equipped with Master and Slave functionality. Controls for up to 32,000 points per Master.	<ul style="list-style-type: none"> • Remote I/O Communications Master (fixed allocations or user-set allocations) • Remote I/O Communications Slave (fixed allocations or user-set allocations) • Message communications 	1	0.29	-	CJ1W-DRM21

Master/Slave Specifications

Communications power supply voltage			11 to 25 VDC *1
Current consumption			Communications: 18 mA max. Internal circuit: 290 mA max.
Max. number of connectable slaves	Remote I/O, explicit message service		63 *2
Max. number of I/O points	Fixed allocations		When used as a master 2,048 points When used as a slave 32 points
	User-set allocations	Using allocated DM Area words	When used as a master 16,000 points When used as a slave 3,200 points
		Using Configurator	When used as a master 32,000 points When used as a slave 4,800 points
	Number of allocated words	Fixed allocations	
User-set allocations		Using allocated DM Area words	When used as a master 500 input and 500 output words Software switch/status area: 25 words When used as a slave 100 input and 100 output words *3 Software switch/status area: 25 words
		Using Configurator	When used as a master 500 input words x 2 blocks, 500 output words x 2 blocks Software switch/Status area: 25 words When used as a slave 100 input words x 1 blocks, 100 output words x 2 blocks *3 Software switch/Status area: 25 words
Message communications		Max. message length	
Max. number of Units mountable to PLC	Fixed allocations		3
	User-set allocations		16
Weight			118 g

*1. Refer to the *DeviceNet Operation Manual (W267)* for the communications power supply specifications.

*2. The Device Unit uses a node, and so connection is possible to 63 slaves only.

*3. When the DeviceNet is used as a slave, "input" and "output" respectively refer to input from the slave to the master and output from the master to the slave.

*4. The maximum message length includes the command code when using the CMND instruction. (SendCmd instruction with NJ-series controller)

Note: When using with the Machine Automation Controller NJ Series, note the following points:

- Simple backup function cannot be used.
- DeviceNet configurator cannot be used. Use CX-Integrator.

General Specifications

The specifications conform to the CJ Series. Refer to the *CJ Series Catalog (P052)* for details on CJ-series specifications.

CJ2 Series Catalog (P059) for details on CJ2-series specifications.

Dimensions

31 x 90 x 65 mm (W x H x D)

CS-series DeviceNet Unit


CS1W-DRM21-V1

A DeviceNet Unit for the CS Series

- Allows control of up to 32,000 points (2,000 words) per master, and ensures a high degree of simultaneity between data.
- Can be used as both a master and a slave at the same time.
- Equipped with settings and monitor functions aimed at improving both design and startup efficiency. Achieve maximum performance by using in combination with a Configurator.
- Files of master and slave settings can be uploaded and downloaded using memory cards, allowing effective debugging and easier setup.



Ordering Information

Unit classification	Product name	Specifications				No. of unit numbers allocated	Current consumption (A)		Model
		Communications Cable	Communications	Redundant communications	Max. No. of Units mounted to 1 CPU Unit		5V	26V	
CS1 CPU Bus Unit	 DeviceNet Unit	DeviceNet Cable	<ul style="list-style-type: none"> • Remote I/O Communications Master (fixed allocations or user-set allocation) • Remote I/O Communications Slave (fixed allocation or user-set allocation) • Message communications 	Not supported.	16	1	0.29	-	CS1W-DRM21-V1

Master/Slave Specifications

Communications power supply voltage		11 to 25 VDC *1		
Current consumption		Communications: 30 mA max. Internal circuit: 290 mA max.		
Max. number of connectable slaves	Remote I/O, explicit message service		63 *2	
Maximum I/O points	Fixed allocations		When used as a master: 2,048 points When used as a slave: 32 points	
	User-set allocations	Using allocated DM Area words	When used as a master: 16,000 points When used as a slave: 3,200 points	
		Using Configurator	When used as a master: 32,000 points When used as a slave: 4,800 points	
	Number of allocated words	Fixed allocations		When used as a master: 64 input and 64 output words Software switch/status area: 25 words When used as a slave: input word, 1 output word *3
User-set allocations		Using allocated DM Area words	When used as a master: 500 input and 500 output words Software switch/status area: 25 words When used as a slave: 100 input and 100 output words *3 Software switch/status area: 25 words	
		Using Configurator	When used as a master: 500 input words x 2 blocks, 500 output words x 2 blocks Software switch/Status area: 25 words When used as a slave: 100 input words x 1 blocks, 100 output words x 2 blocks Software switch/Status area: 25 words	
Max. message length		542 bytes *4		
Max. number of Units mountable to PLC		Fixed allocations		3
		User-set allocations		16
Weight		169 g		

- *1. Refer to the *DeviceNet Operation Manual (W267)* for the communications power supply specifications.
 *2. The Device Unit uses a node, and so connection is possible to 63 slaves only.
 *3. When the DeviceNet is used as a slave, "input" and "output" respectively refer to input from the slave to the master and output from the master to the slave.
 *4. The maximum message length includes the command code when using the CMND instruction.

General Specifications

The specifications conform to the CS Series. Refer to the *CS Series Catalog (P047)* for details on CS-series specifications.

Dimensions

34.5 X 130 X 111.2 mm (W X H X D)

Programmable Controllers NSJ Series

NSJ□-T□□□1(B)-G5D

The NSJ-series Controller Completely Integrates a PT and Controller into One Package

- A PT, Controller CPU Unit, and DeviceNet Master Unit are completely integrated.
- Super space-saving design.
- Easily transfer screens and ladder programming using a commercially available USB cable.
- No cable connections or complicated communications settings required. Start operation simply by turning ON the power supply.
- Equipped with troubleshooter for the Controller and DeviceNet Master as a standard feature.



Ordering Information

■ Controllers

Name	Controller Section	Display Section		Ethernet port	Model *
		Display device	Resolution		
NSJ Series	No. of I/O points: 1,280 Program capacity: 60K steps Data memory capacity: 128K words (DM: 32K words, EM: 32K words x 3 banks)	5.7-inch color High-luminance TFT LCD	320 X 240 (QVGA)	10/100Base-T	NSJ5-TQ11(B)-G5D
		8.4-inch color TFT LCD	640 X 480 (VGA)		NSJ8-TV01(B)-G5D
		10.4-inch color TFT LCD			NSJ10-TV01(B)-G5D
		12.1-inch color TFT LCD			800 X 600 (SVGA)

* (B) in the model number indicates that the color of the Controller frame is black.

■ Accessories and Expansion Units

Name		Specifications	Model
Expansion Units	NSJ Controller Link Unit	For increasing the number of Controller Link ports Same as the CJ1W-CLK21-V1 Controller Link Unit for the CJ Series.	NSJW-CLK21-V1
	NSJ Ethernet Unit	For increasing the number of Ethernet ports Same as the CJ1W-ETN21 Ethernet Unit for the CJ Series.	NSJW-ETN21
	NSJ I/O Control Unit	For adding CJ-series Expansion Racks. Same as the CJ1W-IC101 I/O Control Unit for the CJ Series.	NSJW-IC101
Options	Memory Cards (for both Controller Section and Display Section)	Flash memory: 128 MB	HMC-EF183
		Flash memory: 256 MB	HMC-EF283
		Flash memory: 512 MB	HMC-EF583
		Memory Card Adapter	HMC-AP001

■ Support Software

Product name	Specifications	Number of licenses	Media	Model	Standards
CX-One FA Integrated Tool Package Ver. 4.□	The CX-One is a package that integrates the Support Software for OMRON PLCs and components. CX-One runs on the following OS. Windows 7 (32-bit/64-bit version) / Windows 8 (32-bit/64-bit version) / Windows 8.1 (32-bit/64-bit version) / Windows 10 (32-bit/64-bit version) CX-One Ver.4.□ includes CX-Designer Ver.3.□ For details, refer to the CX-One catalog (Cat. No. R134).	1 licence *	DVD	CXONE-AL01D-V4	---

* Multi licenses are available for the CX-One (3, 10, 30, or 50 licenses).

Specifications

Model	Built-in ports				Display Section				
	USB port (Slave: For Support Software)	RS-232C port	DeviceNet port	Ethernet port	USB port (Host: For printer)	Display color	Field of view	Language	Standard screen data capacity
NSJ5-TQ11-G5D	1 port	3 ports • Display Section: Serial ports A, B • Controller Section: Serial port	1 port	10/100Base-T	None	256 colors (BMP/JPEG, 32,768 colors for images)	Right/left: ±70°, Top: 70°, Bottom: 50°	Eight languages *	60 MB
NSJ5-TQ11B-G5D					1 port		Right/left: ±65°, Top: 50°, Bottom: 60°		
NSJ8-TV01-G5D							Right/left: ±60°, Top: 35°, Bottom: 65°		
NSJ8-TV01B-G5D					Right/left: ±60°, Top: 45°, Bottom: 75°				
NSJ10-TV01-G5D									
NSJ10-TV01B-G5D									
NSJ12-TS01-G5D									
NSJ12-TS01B-G5D									

* Japanese, English, Chinese (traditional and simplified), Spanish, Italian, German, and French.

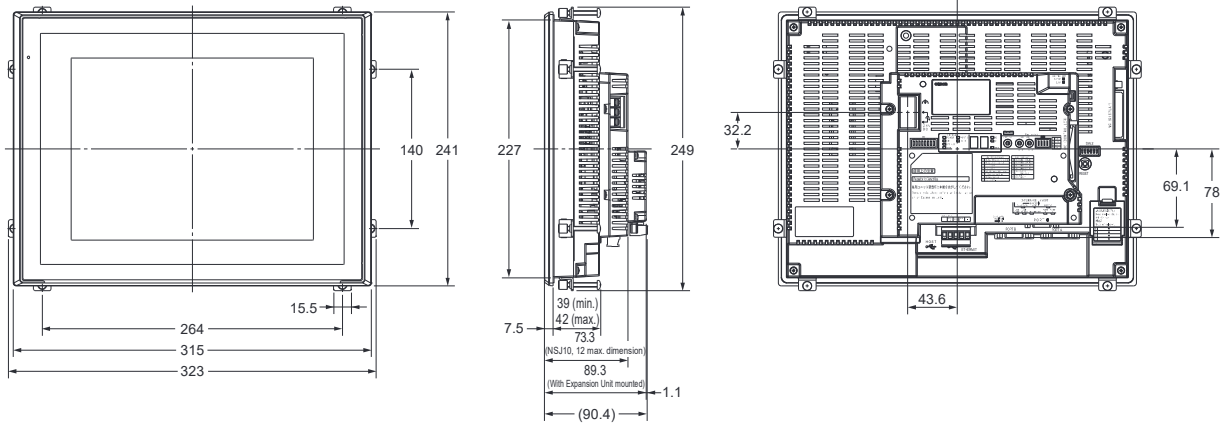
Dimensions

(Unit: mm)

NSJ12-TS01(B)-G5D
NSJ10-TV01(B)-G5D

With NSJW-CLK21-V1 Mounted

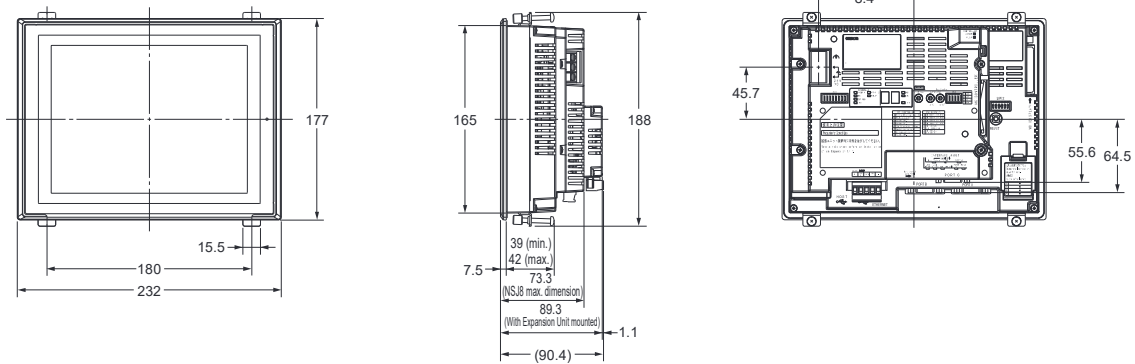
No Expansion Unit



NSJ8-TV01(B)-G5D

With NSJW-CLK21-V1 Mounted

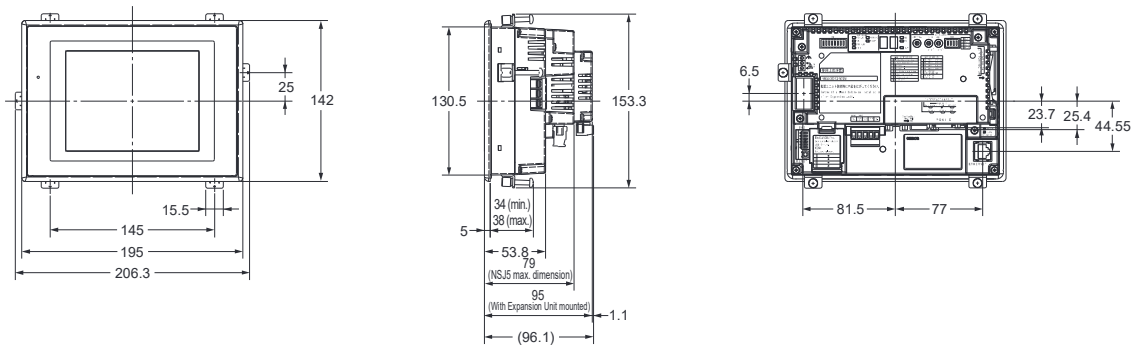
No Expansion Unit



NSJ5-TQ11(B)-G5D

With NSJW-CLK21-V1 Mounted

No Expansion Unit



DeviceNet Board (PCI Board)

3G8F7-DRM21-E

PCI Bus DeviceNet Board

- Perform control using up to 25,200 bytes per master.
Up to 400 bytes of I/O points per slave (Inputs: 200 bytes, Outputs: 200 bytes)
- Master and slave functions are included to enable simultaneous operation.
- DeviceNet Slave Data I/O
I/O can be performed with slaves simply by reading from and writing to the corresponding memory for each slave.
- The Board can be operated in combination with DeviceNet Configurator software and NX-Server Analyzer software.



Ordering Information

Unit	I/O allocation	Model
PCI Board	25,200 bytes	3G8F7-DRM21-E

Master/Slave Specifications

Item		Product
Master Specifications	Max. I/O points	IN : 12,600 bytes (100,800 points) OUT : 12,600 bytes (100,800 points)
	Max. I/O points per Slave	IN : 200 bytes (1,600 points) OUT : 200 bytes (1,600 points)
	I/O connections	Up to two Poll, Bitstrobe, or COS/Cyclic connections can be used.
	Explicit messages	Up to 552 bytes
	Max. No. of connected slaves	63
Slave Specifications	Max. I/O points	IN : 200 bytes (1,600 points) OUT : 200 bytes (1,600 points)
	I/O connections	Up to two Poll, Bitstrobe, or COS/Cyclic connections can be used.

System Requirements

Item	Specifications
Computer	IBM PC/AT or compatible with PCI bus
OS	Windows 95, 98, NT4.0, 2000, XP, and 7
Available hard disk space	5 MB min.
Memory	32 MB min.
MPU	Pentium 166-MHz processor or better
Language	Microsoft Visual C++ Ver.6.0 (Include Service Pack3)

Note: At least one CD-ROM drive is required to install the drivers and software.

Smart Slaves DRT2 Series

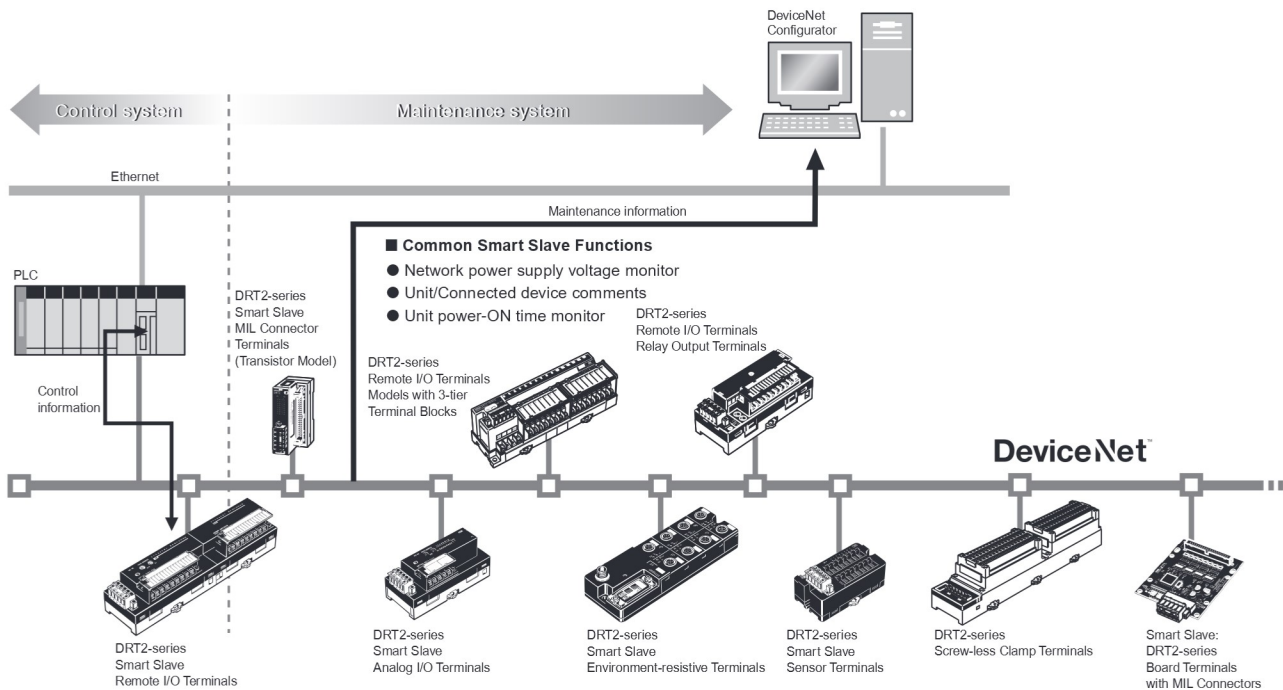
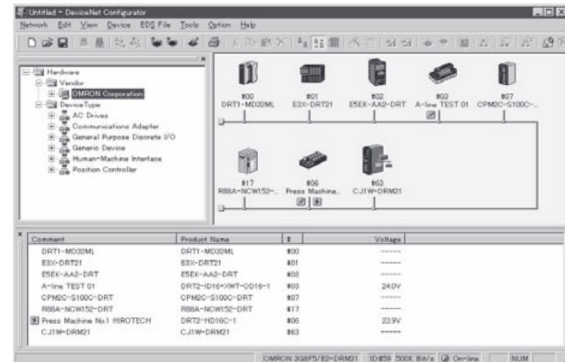
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Smart Slaves DRT2 Series

In addition to the standard control functions, the DRT2-series Smart Slaves can collect a wide variety of manufacturing plant information and serve as key components in maintenance and quality control systems.

DRT2-series Smart Slave Features

The DRT2-series Smart Slaves do not just handle the ON/OFF signals of I/O devices; they can accumulate a variety of information to improve the operating efficiency of the equipment. A maintenance system can be constructed that is separate from the control system. The side-by-side control system/maintenance system configuration allows the existing DeviceNet wiring to be used, reduces the customer's equipment setup time, reduces the downtime in the event of a problem, and provides preventative maintenance capabilities.



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

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

- Improve Maintenance**
- Operation time monitor function
 - Contact operations counter *
 - Unit conduction time monitor function
 - Total ON time monitor function *
 - Network power supply voltage monitor function
 - Communications error log function
 - Last maintenance date
 - Comparator function
 - Selectable output value after error

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

Configurator (Ver. 2.20 or Later) Maintenance Window

Various equipment information can be monitored from the following Configurator window (Ver. 2.20 or later) through DRT2-series Smart Slaves.

● Maintenance Mode Window

Maintenance information refresh icon
Reads the current maintenance information.

Alarm indicator icon

Comment	Product Name	#	Voltage
DRT1-MD32ML	DRT1-MD32ML	800	-----
E30-DRT21	E30-DRT21	801	-----
E5E-KA2-DRT	E5E-KA2-DRT	802	-----
A-line TEST 01	DRT2-ID16-0NT-0016-1	803	24.0V
CPM5C-S1000-DRT	CPM5C-S1000-DRT	807	-----
R85A-NCW12-DRT	R85A-NCW12-DRT	817	-----
Phase Machine No.1 HIROTECH	DRT2-ID16-1	806	23.9V
CJ1W-DRM21	CJ1W-DRM21	803	-----

Maintenance information window

● Individual Slave's Maintenance Information Window

A DRT2-series Smart Slave's maintenance information window can be displayed by double-clicking the Slave's icon if an alarm indicator appears next to the Slave's icon.

Maintenance information
Displays current maintenance information.

Refreshes the current Slave's maintenance information

A Smart Slave's maintenance counters can be stored in flash memory. The "number of contact operations" count is normally stored every 6 minutes, so up to 6 minutes of data may be lost depending on when the power is turned OFF.

Depending on the maintenance information that has been generated, more details can be viewed by clicking the **OUT** tab, **IN** tab, or **Operation Time** tab.

Depending on the maintenance information that has been generated, more details can be viewed by clicking the **OUT** tab, **IN** tab, or **Operation Time** tab.

An alarm indicator will appear whenever the present value exceeds the monitor value, so locations requiring maintenance can be identified immediately.

Functions Supported by Smart Slaves

OK: Function supported, ---: Function not supported.

Function	General Slaves						
	Remote I/O Terminals						
	Transistors			Relays	Transistors with 3-tier terminal block		
	Input	Output	I/O	Output	Input	Output	I/O
Operation time monitor	OK (Input+Output only) *1				OK		
Contact operation counter				OK			
Unit conduction time monitor				OK			
Total ON time monitor				OK			
Unit comments				OK			
Connected device comments				OK			
Network power supply voltage monitor				OK			
I/O power supply monitor		OK		---		OK	
Communications error log monitor				OK			
Input filter	OK	---	OK	---	OK	---	OK
Power-ON inrush current protection	OK	---	OK	---	OK	---	OK
Sensor power supply short-circuit detection				---			
Disconnected sensor detection				---			
External load short-circuit detection				---			
Disconnected sensor detection				---			
Removable terminal block				OK			
Communications speed auto-detect				OK			
No need to wire Unit power supply				OK			
No need to wire input device power supply				---			
Expansion via Expansion I/O Units		OK *2				---	---
Scaling				---			
User compensation				---			
Last maintenance date				OK			
Cumulative counter				---			
Moving average processing				---			
Number of A/D conversion points (conversion cycle) setting				---			
Peak/bottom hold				---			
Top/valley hold				---			
Percentage change calculation				---			
Comparator				---			
Selectable output value after error				---			

*1. The operation time monitor cannot be used with the DRT2-□D08(-1).

*2. Expansion Units cannot be added with the DRT2-□D08(-1) or DRT2-MD16(-1).

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

OK: Function supported, ---: Function not supported.

Function	General Slaves				
	Connector Terminals				
	e-CON Connector		Board Terminals with MIL Connector		
	Input	I/O	Input	Output	I/O
Operation time monitor	---	OK		OK	
Contact operation counter			OK		
Unit conduction time monitor			OK		
Total ON time monitor			OK		
Unit comments			OK		
Connected device comments			OK		
Network power supply voltage monitor			OK		
I/O power supply monitor		---		OK	
Communications error log monitor			OK		
Input filter	OK		OK	---	OK
Power-ON inrush current protection	OK		OK	---	OK
Sensor power supply short-circuit detection	OK			---	
External load disconnection detection			---		
External load short-circuit detection	---	OK		---	
Disconnected sensor detection			---		
Removable terminal block			---		
Communications speed auto-detect			OK		
No need to wire Unit power supply			OK		
No need to wire input device power supply		OK		---	
Expansion via Expansion I/O Units			---		
Scaling			---		
User compensation			---		
Last maintenance date			OK		
Cumulative counter			---		
Moving average processing			---		
Number of A/D conversion points (conversion cycle) setting			---		
Peak/bottom hold			---		
Top/valley hold			---		
Percentage change calculation			---		
Comparator			---		
Selectable output value after error			---		

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

OK: Function supported, ---: Function not supported.

Function	General Slaves						
	Screw-less clamp terminals						
	DRT2-□D16SLH (Detection function)		DRT2-□D16SL (No detection function)		DRT2-□D32SLH (Detection function)		
	Input	Output	Input	Output	Input	Output	I/O
Operation time monitor	OK						
Contact operation counter	OK						
Unit conduction time monitor	OK						
Total ON time monitor	OK						
Unit comments	OK						
Connected device comments	OK						
Network power supply voltage monitor	OK						
I/O power supply monitor	OK						
Communications error log	OK						
Input filter	OK	---	OK	---	OK	---	OK
Power-ON inrush current protection	OK	---	OK	---	OK	---	OK
Sensor power supply short-circuit detection	OK	---	---		OK	---	OK
External load disconnection detection	OK	---	---		OK	---	OK
External load short-circuit detection	---	OK	---		---	OK (See Note.)	OK (See Note.)
Disconnected sensor detection	---	OK	---		---	OK	OK
Removable terminal block	OK						
Communications speed auto-detect	OK						
No need to wire Unit power supply	OK						
No need to wire input device power supply	---						
Expansion via Expansion I/O Units	---						
Scaling	---						
User compensation	---						
Last maintenance date	OK						
Cumulative counter	---						
Moving average processing	---						
Number of A/D conversion points (conversion cycle) setting	---						
Peak/bottom hold	---						
Top/valley hold	---						
Percentage change calculation	---						
Comparator	---						
Selectable output value after error	---						

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

Note: The DRT2-OD32SLH-1/MD32SLH-1 of unit version 2.0 or higher support External load short-circuit detection function.

OK: Function supported, ---: Function not supported.

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

* The operation time monitor can be used with the DRT2-□D04CL(-1).

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

Smart Slave Functions

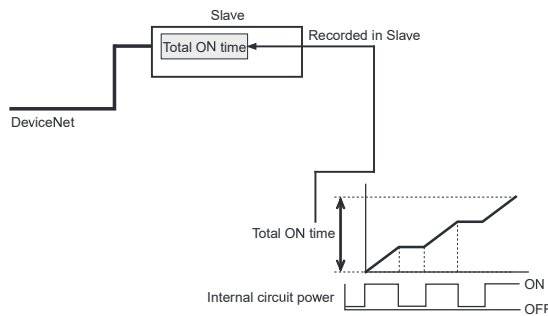
● Network Power Voltage Monitor

The present, bottom, and peak values of the Network power voltage can be recorded in the Slave. Also, the monitor voltage can be set using the CX-Integrator to maintain the monitor voltage in the slave (default setting: 14 V), and a Status Area in the Unit will turn ON if the voltage falls below the monitor voltage.

● Unit Conduction Time Monitor

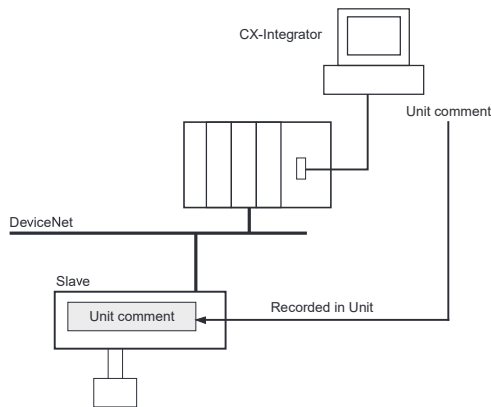
The total ON time of the Slave's internal circuit power can be calculated and recorded. (The CX-Integrator or explicit messages can be used to read the information.)

Also, the monitor value can be maintained in the Slave, and a Status Area will turn ON in the Unit when the total time reaches the set value.



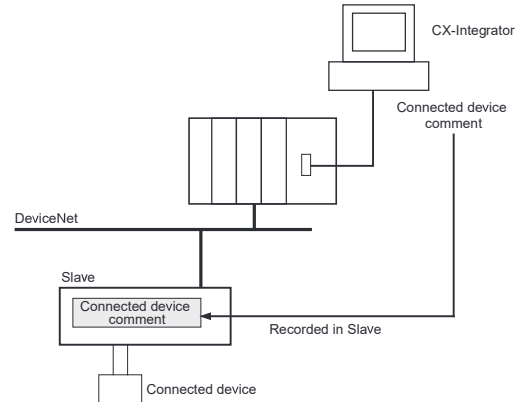
● Unit Comment Function

The user can assign and record a name or comment for every Unit (up to 32 characters).



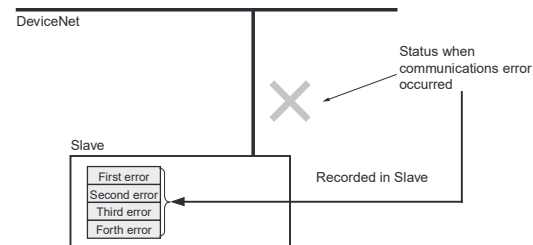
● Connected Device Comment Function

The user can assign a name for each of the Unit's I/O contacts (up to 32 characters) and record it in the Unit. The connected device can be checked for each I/O contact, allowing faulty devices to be identified during remote maintenance.



● Communication Error History Monitor

The error status information (communications error code and communications power voltage when the error occurred) for the last four communications errors that occurred can be recorded in the Slave.



● Last Maintenance Date

This function enables writing to the Unit the date on which maintenance was last performed. This means that the timing for future maintenance can be judged more easily.

● Contact Operation Count Monitor Function

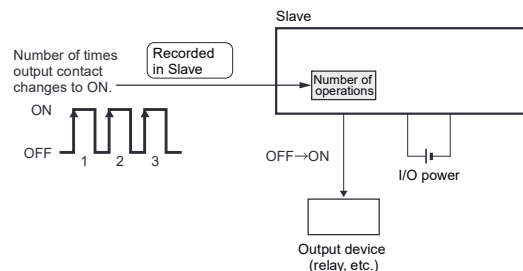
The Contact Operation Counter is used to count the number of times each input or output contact changes from OFF to ON (maximum sampling cycle: 50 Hz) and record the total value calculated in the slave. (The CX-Integrator or explicit messages can be used to read the information.)

The monitor value can be set in the slave, and when the set number of operations is reached, a bit in the Status Area in the Unit will be turned ON. (The CX-Integrator or explicit messages can be used to read the details of the notification.)

- Counted operations: 0 to 4,294,967,295 operations
(Stored data: 0000 0000 to FFFF FFFF hex)
- Counting unit: One operation

Note 1: The Contact Operation Counter and Total ON Time Monitor cannot be used at the same time for the same contact. Select the function to be used under the Detection Mode heading.

Note 2: The Contact Operation Counter will operate only when the I/O power is ON.



● Total ON Time Monitor Function

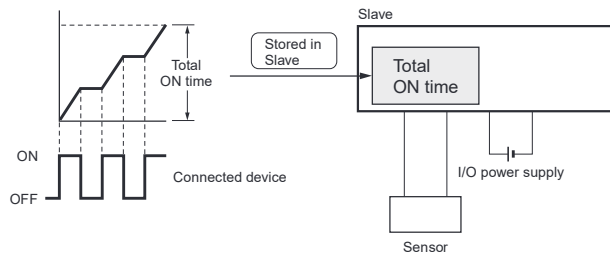
The total ON time for each I/O contact can be calculated (unit: s) and recorded in the Slave. (The CX-Integrator or explicit messages can be used to read the information.)

The monitor value can be set in the Slave, and when the set total time is reached, a bit in the Status Area in the Unit will be turned ON. (The CX-Integrator or explicit messages can be used to read the details of the notification.)

- Counted time: 0 to 4,294,967,295 seconds
(stored data: 0000 0000 to FFFF FFFF hex)
- Counting unit: One second

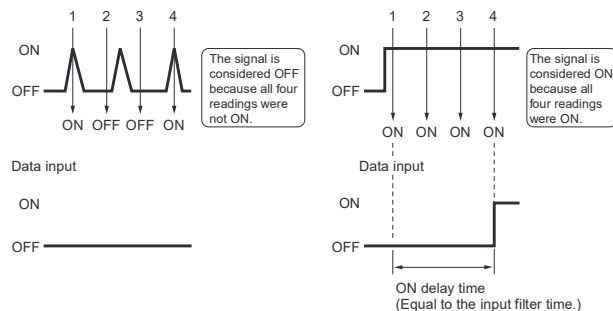
Note 1: The Contact Operation Counter and Total ON Time Monitor cannot be used at the same time for the same contact. Select the function to be used under the Detection Mode heading.

- 2: The Total ON Time Monitor operates only when the I/O power is ON.
- 3: The Total ON Time Monitor checks approximately every second whether the connected devices are ON.
If the total ON time is calculated for ON times of less than a second, the measurement may not be accurate.



● Input Filter Function

This function can read the input value several times within a preset period and reduce the influence of incorrect signals due to switch chattering or data corrupted by noise. The input filter function can also be used for ON delay operation and OFF delay operation.



● Function to Prevent Incorrect Inputs Caused by Inrush Current when Power Is Turned ON (input only)

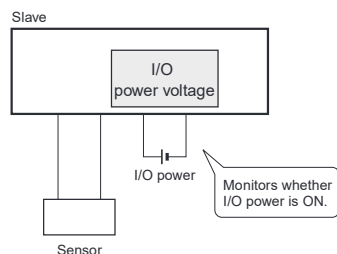
The I/O power supply can be monitored to stop any input when the I/O power is OFF and for 100 ms after it is turned ON. This function reduces incorrect inputs caused by inrush current for 100ms after the I/O power is turned ON.

● I/O Power Status Monitor Function

This function is used to detect whether the I/O power is ON.

When the I/O power supply is turned OFF, a bit in the Status Area in the Unit is turned ON. (The CX-Integrator or explicit messages can be used to read the content of the notification.)

Note: The value for detecting a low voltage for the I/O power cannot be set.

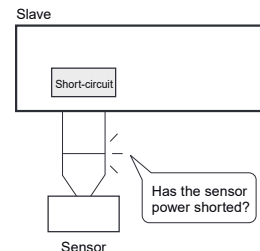


● Sensor Power Short-circuit Detection Function (input only)

The sensor power supply current can be monitored, and when the current reaches or exceeds 100 mA per input contact, a sensor power short-circuit is detected.

Check whether a sensor power short-circuit has been detected using the indicators on the slave. When a sensor power short-circuit is detected, a bit in the Status Area in the Unit will turn ON. (The CX-Integrator or explicit messages can be used to read the details of the notification.) The sensor will automatically recover when the cause of the short-circuit is removed, and the power output to the connector where the short-circuit was detected will turn ON.

- Note:** Use a Power Supply Unit with a rated power supply of 50 W or higher for the communications power supply. A short-circuit is detected when the Unit's sensor power output current reaches or exceeds 100 mA per input connector. When a short-circuit occurs, the communications power supply may be temporarily interrupted. After a short-circuit has been detected, the power will be automatically restored, but during the power interruption use an external circuit in the configuration to make sure the system is operating safely. Use the following equations to calculate the sensor's current consumption.
- Total network current = Total Unit current consumption + Total sensor current consumption
 - Communications power supply capacity ≥ (Total network current + Short-circuit detection current) x (=100 mA) x (DeviceNet network voltage)

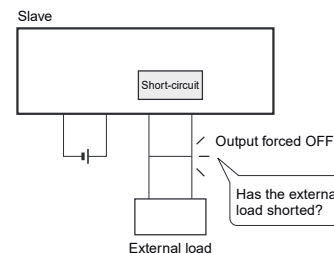


● External Load Short-circuit Detection Function (output only)

The load current of the Output Unit can be monitored, and an external load short-circuit can be detected when the current exceeds a set value per contact (or per common). When an external load short-circuit is detected, the output is turned OFF to prevent damage to the Unit's output circuit. The LED indicators on the Slave Unit can be used to check which contact has been detected as having an external load short-circuit. When an external load short-circuit is detected, a bit in the Status Area in the Unit will turn ON. (The CX-Integrator or explicit messages can be used to read the details of the notification.)

Manual recovery is the only way to remove the cause of the short-circuit.

- Note:** The OMRON S8□□ Power Supply Unit is recommended for the I/O power supply. If a Power Supply Unit with a dropping overcurrent protection characteristic is used, the load short-circuit may not be detected. Always use a Power Supply Unit with a rating of 100 W or higher if it uses a dropping overcurrent protection characteristic.

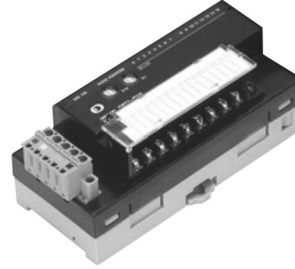


Transistor Remote I/O Terminals

DRT2-□D08(-1)/□D16(-1)

Allows I/O Expansion with Transistor Terminals

- Wide variety of data, such as maintenance system data, can be collected without affecting the productivity of the control system.
- Valuable information can be collected and managed through the network, including information on the communications power supply voltage levels, Unit wear and tear, and equipment operating information.
- Expansion via Expansion I/O Units
- With no communications baud rate settings required and detachable terminal blocks, maintenance is easier.



Smart Slave Functions

Operation time monitor (input and output only) *1	Contact operation counter	Unit conduction time monitor
Total ON time monitor	Unit comments	Connected device comments
Network power supply voltage monitor	I/O power supply monitor function	Communications error log monitor
Input filter (input or I/O only)	Power-ON inrush current protection (input or I/O only)	
Removable terminal block	Communications speed auto-detection	No need to wire Unit power supply
Expansion via Expansion I/O Units *2	Last maintenance date	

*1. The operation time monitor cannot be used with the DRT2-□D08(-1).
 *2. Expansion Units cannot be added with the DRT2-□D08(-1) or DRT2-MD16(-1).

Ordering Information

Specifications			I/O connections	Rated internal circuit power supply voltage	Rated I/O power supply voltage	Model
Inputs	NPN (+ common)	16 points	M3 Screw terminals	Supplied from the communications connector	24 VDC	DRT2-ID16
	PNP (- common)					DRT2-ID16-1
Outputs	NPN (- common)					DRT2-OD16
	PNP (+ common)					DRT2-OD16-1
I/O	NPN (input: + common, output: - common)	Input: 8 points/ Output: 8 points				DRT2-MD16
	PNP (input: - common, output: + common)					DRT2-MD16-1
Inputs	NPN (+ common)	8 points				DRT2-ID08
	PNP (- common)					DRT2-ID08-1
Outputs	NPN (- common)	8 points	DRT2-OD08			
	PNP (+ common)		DRT2-OD08-1			

Expansion Units

One Expansion Unit can be added to each DRT2-ID16(-1)-OD16(-1) or DRT2-ROS16 I/O Slave. The following Expansion Units are available to enable flexible expansion with combinations for the required number of points.

Model	Number of I/O points
XWT-ID08	8-point inputs (NPN)
XWT-ID08-1	8-point inputs (PNP)
XWT-OD08	8-point outputs (NPN)
XWT-OD08-1	8-point outputs (PNP)
XWT-ID16	16-point inputs (NPN)
XWT-ID16-1	16-point inputs (PNP)
XWT-OD16	16-point outputs (NPN)
XWT-OD16-1	16-point outputs (PNP)

General Specifications

Communications power supply voltage	11 to 25 VDC
Unit power supply voltage	Not required (Supplied from the communications connector.)
I/O power supply voltage	20.4 to 26.4 VDC (24 VDC -15%/+10%)
Communications power supply current consumption	DRT2-ID08(-1) : 40 mA max. (24 VDC), 70 mA max. (11 VDC) DRT2-OD08 : 40 mA max. (24 VDC), 60 mA max. (11 VDC) DRT2-OD08-1 : 35 mA max. (24 VDC), 55 mA max. (11 VDC) DRT2-ID16(-1) : 40 mA max. (24 VDC), 65 mA max. (11 VDC) DRT2-OD16(-1) : 35 mA max. (24 VDC), 60 mA max. (11 VDC) DRT2-MD16(-1) : 40 mA max. (24 VDC), 65 mA max. (11 VDC)
Dielectric strength	500 VAC (between isolated circuits)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 60 Hz, 0.7-mm double amplitude, 60 to 150 Hz, 50 m/s ² for 80 min each in the X, Y, and Z directions
Shock resistance	150m/s ² , 6 directions, 3 times each
Mounting method	DIN 35 mm-track mounting
Screw tightening torque	M3 (power, I/O terminal): 0.5 N*m
Ambient operating temperature	-10°C to 55°C
Ambient operating humidity	25 to 85% (with no condensation)
Ambient storage temperature	-25°C to 65°C
Weight	DRT2-ID08(-1)/OD08(-1) : 135 g max. DRT2-MD16(-1) : 145 g max. DRT2-ID16(-1)/OD16(-1) : 140 g max.

Input Specifications

● 8-point Inputs Terminals with Transistors

Item	Model	DRT2-ID08	DRT2-ID08-1
Internal I/O common		NPN	PNP
Number of I/O points		8 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 min. (between each input terminal and G)
OFF current		1.0 mA max.	
Input current		6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
Number of points per common		8 per common	

● 16-point Inputs Terminals with Transistors

Item	Model	DRT2-ID16	DRT2-ID16-1
Internal I/O common		NPN	PNP
Number of I/O points		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 min. (between each input terminal and G)
OFF current		1.0 mA max.	
Input current		6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
Number of points per common		16 per common	

● 8-point Inputs/8-point Outputs Terminals with Transistors

Item	Model	DRT2-MD16	DRT2-MD16-1
Internal I/O common		NPN	PNP
Number of I/O points		8 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 min. (between each input terminal and G)
OFF current		1.0 mA max.	
Input current		6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
Number of points per common		8 per common	

Output Specifications

● 8-point Outputs Terminals with Transistors

Item	Model	DRT2-OD08	DRT2-OD08-1
Internal I/O common		NPN	PNP
Number of I/O points		8 outputs	
Rated output current		0.5 A per point, 4 A per common	
Residual voltage		1.2 V max. (0.5 A DC between each output terminal and G)	1.2 V max. (0.5 A DC between each output terminal and V)
Leakage current		0.1 ms max.	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Number of points per common		8 per common	

● 16-point Outputs Terminals with Transistors

Item	Model	DRT2-OD16	DRT2-OD16-1
Internal I/O common		NPN	PNP
Number of I/O points		16 outputs	
Rated output current		0.5 A per point, 4 A per common	
Residual voltage		1.2 V max. (0.5 A DC between each output terminal and G)	1.2 V max. (0.5 A DC between each output terminal and V)
Leakage current		0.1 ms max.	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Number of points per common		16 per common	

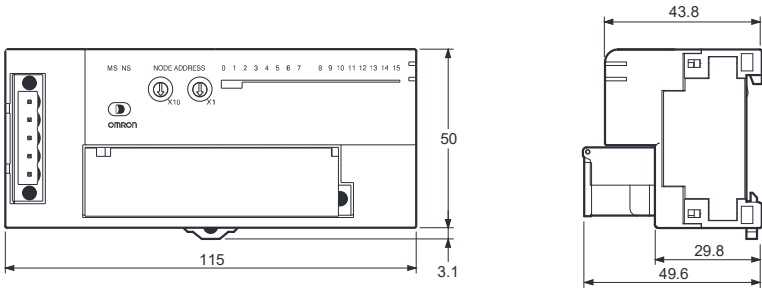
● 8-point Inputs/8-point Outputs Terminals with Transistors

Item	Model	DRT2-MD16	DRT2-MD16-1
Internal I/O common		NPN	PNP
Number of I/O points		8 outputs	
Rated output current		0.5 A per point, 4 A per common	
Residual voltage		1.2 V max. (0.5 A DC between each output terminal and G)	1.2 V max. (0.5 A DC between each output terminal and V)
Leakage current		0.1 ms max.	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Number of points per common		8 per common	

Dimensions

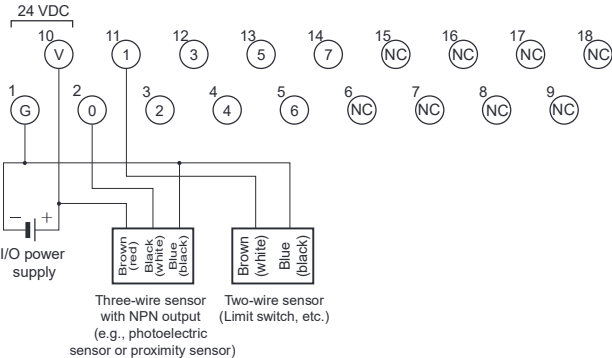
(Unit: mm)

- DRT2-ID16(-1)
- DRT2-OD16(-1)
- DRT2-ID08(-1)
- DRT2-OD08(-1)
- DRT2-MD16(-1)

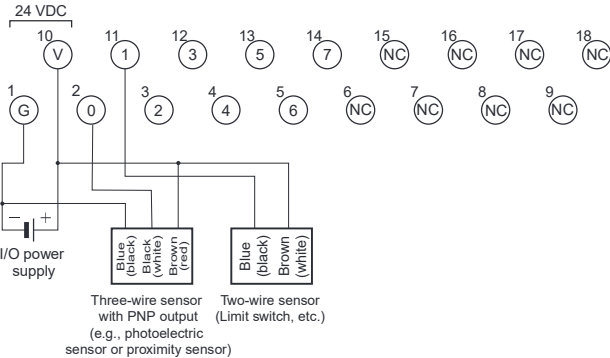


Wiring Diagrams

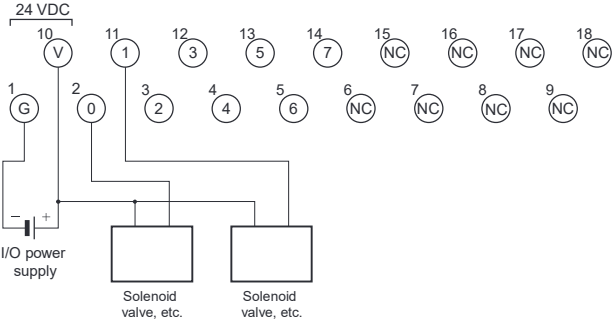
DRT2-ID08 (NPN)



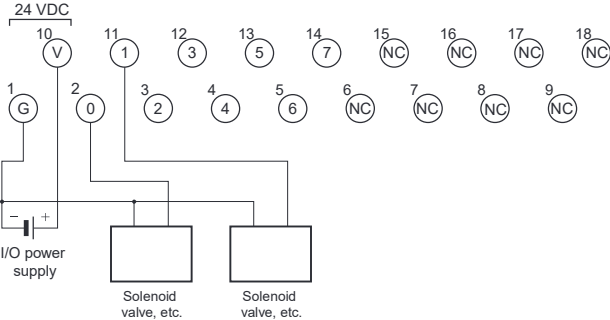
DRT2-ID08-1 (PNP)



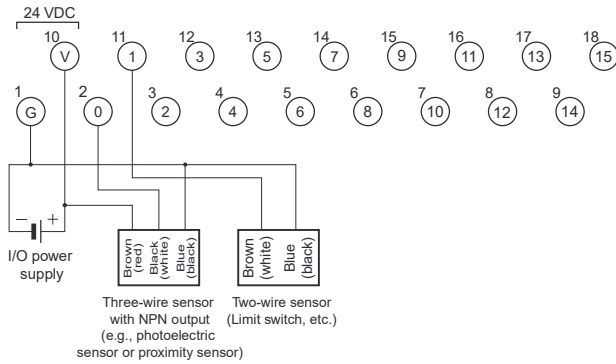
DRT2-OD08 (NPN)



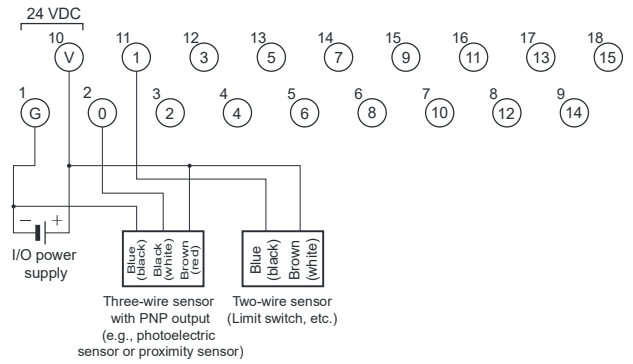
DRT2-OD08-1 (PNP)



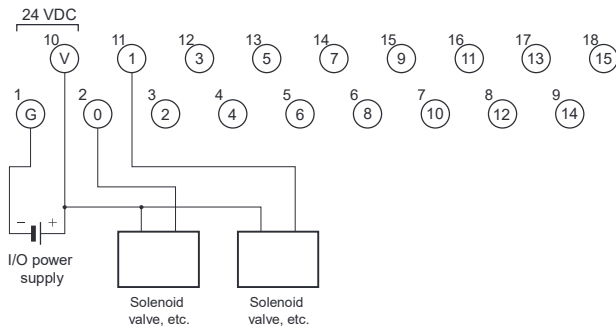
DRT2-ID16 (NPN)



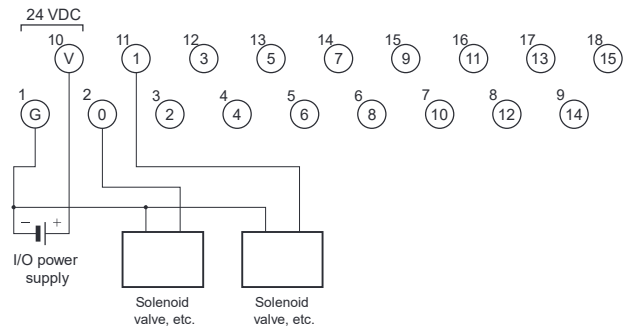
DRT2-ID16-1 (PNP)



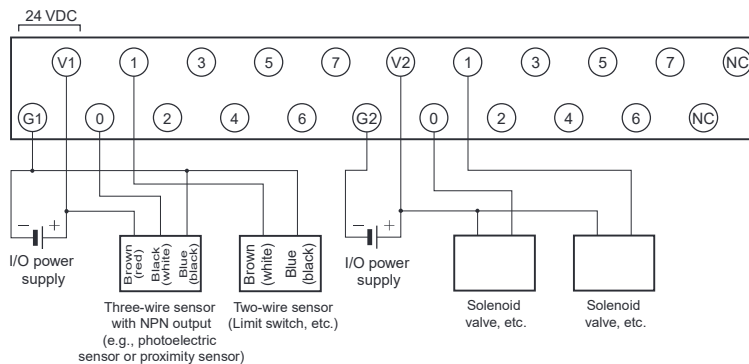
DRT2-OD16 (NPN)



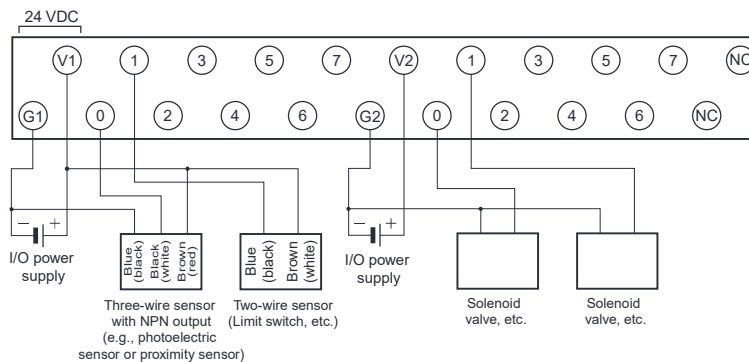
DRT2-OD16-1 (PNP)



DRT2-MD16 (NPN)



DRT2-MD16-1 (PNP)

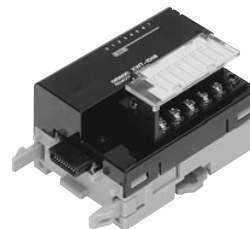


Expansion Units

XWT-ID08(-1)/OD08(-1)/ID16(-1)/OD16(-1)

Expansion I/O Units make expansion easy!

One Expansion Unit can be added to each Digital I/O Slave Unit. This makes a variety of I/O combinations possible, such as 16 inputs + 8 outputs, extending the range of possible system configurations.



- Flexible expansion with many different combinations.
- Detachable I/O terminal block enables faster startup time and improved maintainability.
- Collect various preventive maintenance data required to improve productivity, as information on equipment deterioration due to aging and equipment operating time data.

Ordering Information

Name		Specifications			Model	
Expansion Units	Inputs	8 points	NPN	One Expansion Unit can be mounted per DRT2-ID16(-1)/-OD16(-1) or DRT2-ROS16 Remote I/O Terminal.	XWT-ID08	
			PNP		XWT-ID08-1	
			Outputs		NPN	XWT-OD08
					PNP	XWT-OD08-1
	Inputs	16 points	NPN		XWT-ID16	
			PNP		XWT-ID16-1	
			Outputs		NPN	XWT-OD16
					PNP	XWT-OD16-1

General Specifications

I/O power supply voltage	20.4 to 26.4 VDC (24 VDC -15%/+10%)
Noise immunity	Conforms to IEC 61000-4-4 2 kV (power line).
Vibration resistance	10 to 60 Hz with double-amplitude of 0.7 mm, 60 to 150 Hz and 50 m/s ² in X, Y, and Z directions for 80 min each
Shock resistance	150 m/s ² (3 times each in 6 directions on 3 axes)
Dielectric strength	500 VAC (between isolated circuits)
Insulation resistance	20 MΩ min. (between isolated circuits)
Ambient operating temperature	-10°C to 55°C
Ambient operating humidity	25% to 85% (with no condensation)
Ambient operating atmosphere	No corrosive gases
Storage temperature	-25°C to 65°C
Storage humidity	25% to 85% (with no condensation)
Tightening torque for the terminal block screws	M3 terminal screws: 0.5 N·m M3 mounting screws: 0.5 N·m
Mounting method	Mounted on 35-mm DIN Track

Input Specifications

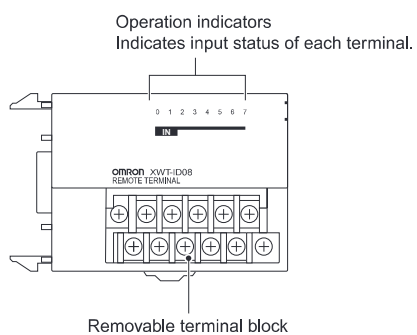
Item	Model	XWT-ID08	XWT-ID08-1	XWT-ID16	XWT-ID16-1
Internal I/O common		NPN	PNP	NPN	PNP
I/O points		8 inputs		16 inputs	
ON voltage		15 VDC min. (between each input terminal and the V terminal)	15 VDC min. (between each input terminal and the G terminal)	15 VDC min. (between each input terminal and the V terminal)	15 VDC min. (between each input terminal and the G terminal)
OFF voltage		5 VDC max. (between each input terminal and the V terminal)	5 VDC max. (between each input terminal and the G terminal)	5 VDC max. (between each input terminal and the V terminal)	5 VDC max. (between each input terminal and the G terminal)
OFF current		1.0 mA max.			
Input current		At 24 VDC: 6.0 mA max./input At 17 VDC: 3.0 mA max./input			
ON delay time		1.5 ms max.			
OFF delay time		1.5 ms max.			
Number of circuits per common		8 per common		16 per common	
Communications power supply current consumption		5 mA max. (24 VDC), 5 mA max. (11 VDC)		10 mA max. (24 VDC), 15 mA max. (11 VDC)	
Weight		80 g max.		120 g max.	

Output Specifications

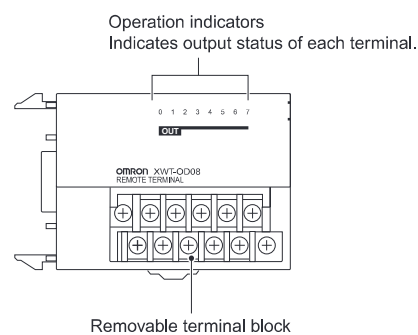
Item	Model	XWT-OD08	XWT-OD08-1	XWT-OD16	XWT-OD16-1
Internal I/O common		NPN	PNP	NPN	PNP
I/O points		8 outputs		16 outputs	
Rated output current		0.5 A/output, 2.0 A/common		0.5 A/output, 4.0 A/common	
Residual voltage		1.2 V max. (0.5 A DC, between each output terminal and the G terminal)	1.2 V max. (0.5 A DC, between each output terminal and the V terminal)	1.2 V max. (0.5 A DC, between each output terminal and the G terminal)	1.2 V max. (0.5 A DC, between each output terminal and the V terminal)
Leakage current		0.1 mA max.			
ON delay time		0.5 ms max.			
OFF delay time		1.5 ms max.			
Number of circuits per common		8 per common		16 per common	
Communications power supply current consumption		5 mA max. (24 VDC), 5 mA max. (11 VDC)		10 mA max. (24 VDC), 15 mA max. (11 VDC)	
Weight		80 g max.		120 g max.	

Nomenclature and Functions

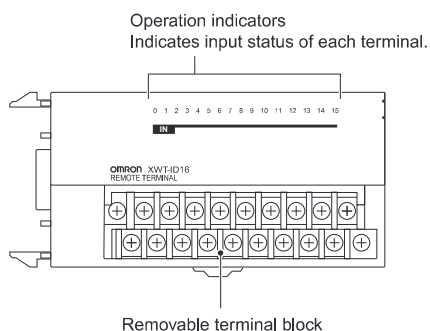
XWT-ID08/XWT-ID08-1



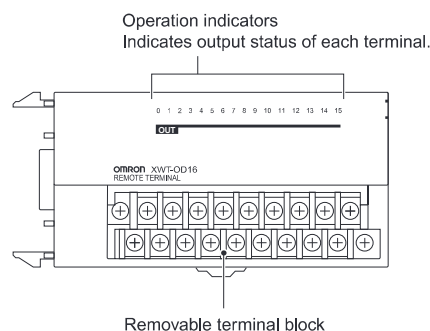
XWT-OD08/XWT-OD08-1



XWT-ID16/XWT-ID16-1

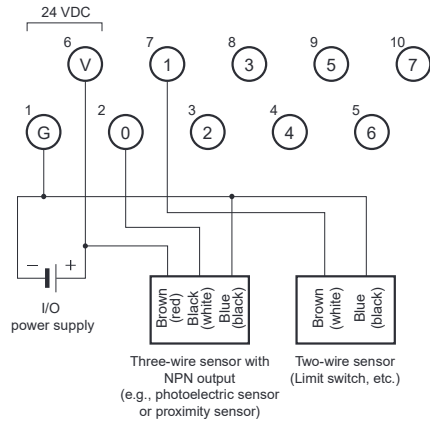


XWT-OD16/XWT-OD16-1

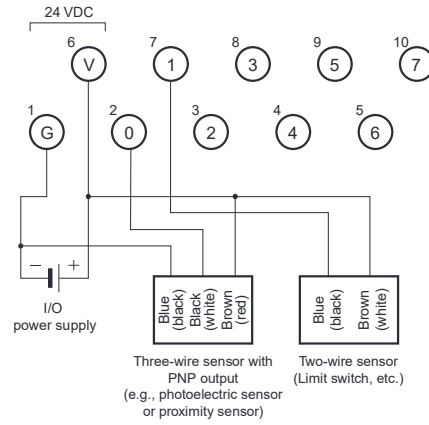


Wiring Diagrams

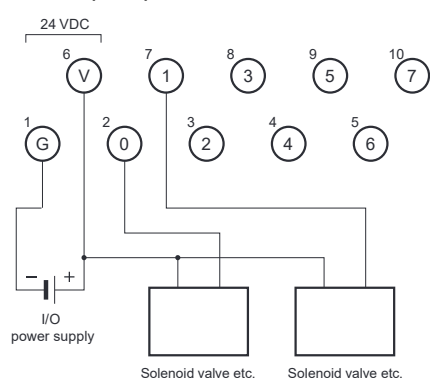
XWT-ID08 (NPN)



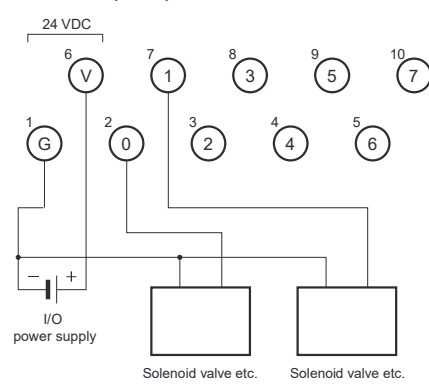
XWT-ID08-1 (PNP)



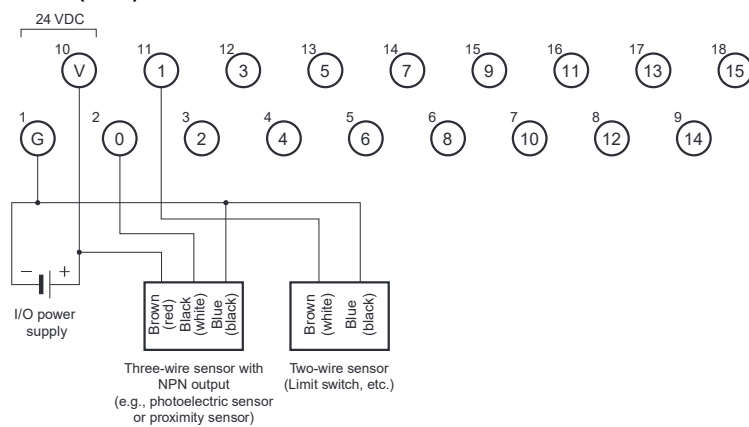
XWT-OD08 (NPN)



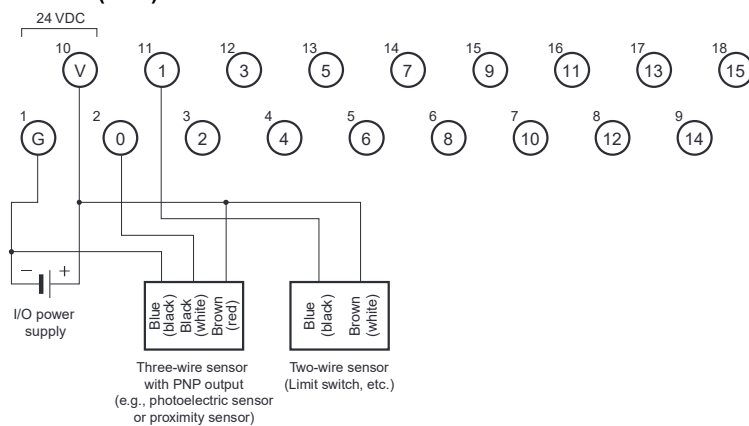
XWT-OD08-1 (PNP)



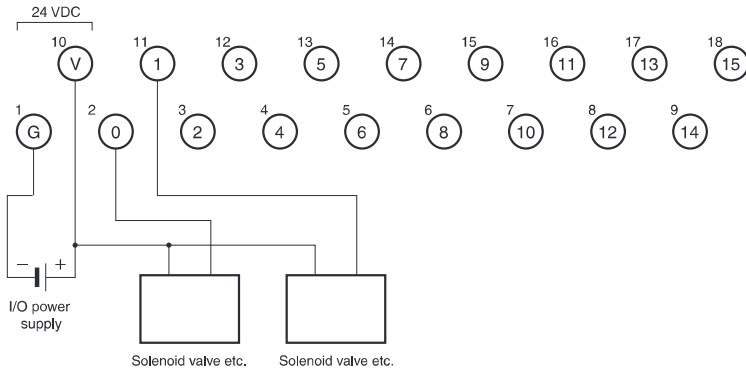
XWT-ID16 (NPN)



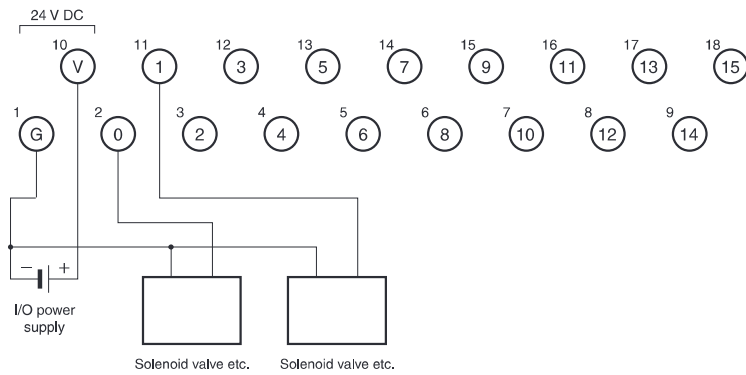
XWT-ID16-1 (PNP)



XWT-OD16 (NPN)



XWT-OD16-1 (PNP)

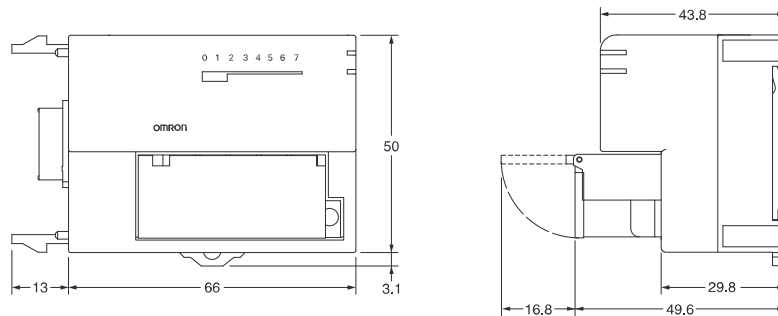


Dimensions

(Unit: mm)

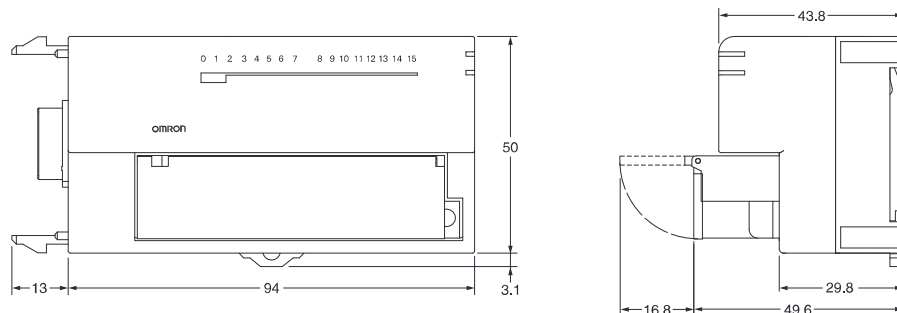
● 8-point Model

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



● 16-point Model

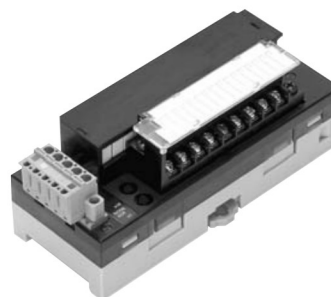
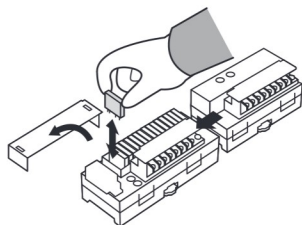
- XWT-ID16
- XWT-ID16-1
- XWT-OD16
- XWT-OD16-1



Remote I/O Terminal with Relay Outputs DRT2-ROS16

A Smart Slave with Relay Outputs and One-step Relay Replacement for Remote Maintenance.

- Capable of handling large-capacity output devices (3 A max.)
- Easy relay replacement.



- I/O expansion possible to transistor I/O devices with terminal blocks (XWT Series).

Smart Slave 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	Communications error log function	Removable terminal block
Communications speed auto-detection	No need to wire Unit power supply	Last maintenance date

* Applicable only when an Expansion Unit (XWT Series) is used.

Ordering Information

Specifications	I/O connections	Rated internal circuit power supply voltage	I/O power supply voltage	Model
Relay output	16 points	M3 terminal block	Supplied from communications connector	DRT2-ROS16

General Specifications

Communications power supply voltage	11 to 25 VDC (Supplied from communications connector)
Communications power supply current consumption	215 mA max. (24 VDC), 395 mA max. (11 VDC)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 55 Hz, 0.7-mm double amplitude, 80 min each in the X, Y, and Z directions
Shock resistance	100 m/s ²
Dielectric strength	500 VAC (between isolated circuits)
Insulation resistance	20 MΩ min.
Ambient operating temperature	-10°C to 55°C
Ambient operating humidity	25% to 85% (with no condensation)
Ambient atmosphere	No corrosive gases
Ambient storage temperature	-25°C to 65°C
Mounting method	35-mm DIN rail mounting
Screw tightening torque	M2 (communications connector screws): 0.2 to 0.3 N*m M3 (screw terminals): 0.5 N*m M3 (mounting screws): 0.5 N*m
Weight	260 g max.

Output Specifications per Relay

Mounted relays	DRTA-NY5W-K *1
Rated load	Resistive load: 2 A at 250 VAC, 8 A per common 2 A at 30 VDC, 8 A per common
Rated current	3A *2
Max. contact voltage	250 VAC, 125 VDC
Max. contact current	3A
Max. switching capacity	750 VA AC, 90 VDC
Min. applicable load (reference value)	1 mA at 5 VDC

*1. Order replacement relays using the following model number.

Model
DRTA-NY5W-K

The maximum number of ON contacts per common is four, and 3 A (10 A per common) will flow at an ambient temperature of 45°C max.

Expansion Units

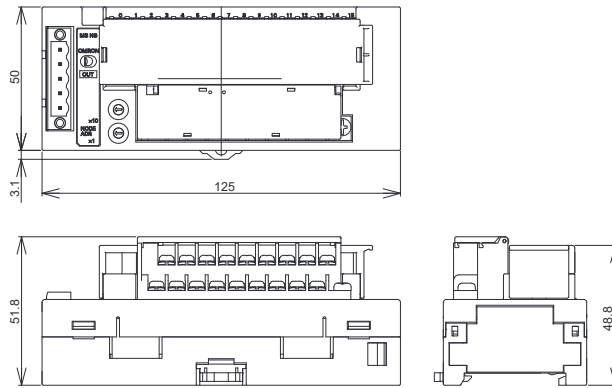
One Expansion Unit can be added to each DRT2-ID16(-1)/-OD16(-1) or DRT2-ROS16 I/O Slave.
 The following Expansion Units are available to enable flexible expansion with combinations for the required number of points.

Model	Number of I/O points
XWT-ID08	8-point inputs (NPN)
XWT-ID08-1	8-point inputs (PNP)
XWT-OD08	8-point outputs (NPN)
XWT-OD08-1	8-point outputs (PNP)
XWT-ID16	16-point inputs (NPN)
XWT-ID16-1	16-point inputs (PNP)
XWT-OD16	16-point outputs (NPN)
XWT-OD16-1	16-point outputs (PNP)

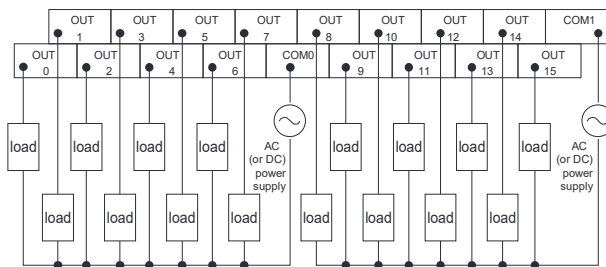
Dimensions

(Unit: mm)

DRT2-ROS16



Wiring Diagrams



Transistor Remote I/O Terminals with 3-tier Terminal Blocks

DRT2-□D16TA(-1)

A Smart Slave with a 3-tier Terminal Block That Means Wiring Locations Are Easy to Understand with No Sharing of Terminals.



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

Smart Slave 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 supply monitor function	Communications error log function
Input filter (input or I/O only)	Power-ON inrush current protection (input or I/O only)	
Removable terminal block	Communications speed auto-detection	No need to wire Unit power supply
Last maintenance date		

Ordering Information

Specifications		I/O connections	Rated internal circuit power supply voltage	I/O power supply voltage	Model	
Inputs	NPN (+ common)	16 points	M3 screw terminals	Supplied from Basic Unit.	24 VDC	DRT2-ID16TA
	PNP (- common)					DRT2-ID16TA-1
Outputs	NPN (- common)					DRT2-OD16TA
	PNP (+ common)					DRT2-OD16TA-1
I/O	NPN (input: + common, output: - common)	Input: 8 points/ Output: 8 points				DRT2-MD16TA
	PNP (input: - common, output: + common)					DRT2-MD16TA-1

General Specifications

Communications power supply voltage	11 to 25 VDC (Supplied from communications connector)
Communications power supply current consumption	45 mA max. (24 VDC), 80 mA max. (11 VDC)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 60 Hz, 0.7-mm double amplitude, 60 to 150 Hz, 50 m/s ² for 80 min each in the X, Y, and Z directions
Shock resistance	150 m/s ² (3 times each in 6 directions on 3 axes)
Dielectric strength	500 VAC (between isolated circuits)
Insulation resistance	20 MΩ min. (between isolated circuits)
Ambient operating temperature	-10°C to 55°C
Ambient operating humidity	25% to 85% (with no condensation)
Ambient atmosphere	No corrosive gases
Ambient storage temperature	-25°C to 65°C
Mounting method	DIN 35 mm-track mounting, M4 screw mounting
Screw tightening torque	M2 (communications connector screws): 0.26 to 0.3 N·m M3 (screw terminals): 0.5 N·m M3 (screw terminals): 0.5 N·m M4 (unit mounting): 0.6 to 0.98 N·m
Weight	300 g max.

Input Specifications

● 16-point Inputs Terminals with Transistors

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

● 8-point Inputs/8-point Outputs Terminals with Transistors

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

Output Specifications

● 16-point Outputs Terminals with Transistors

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

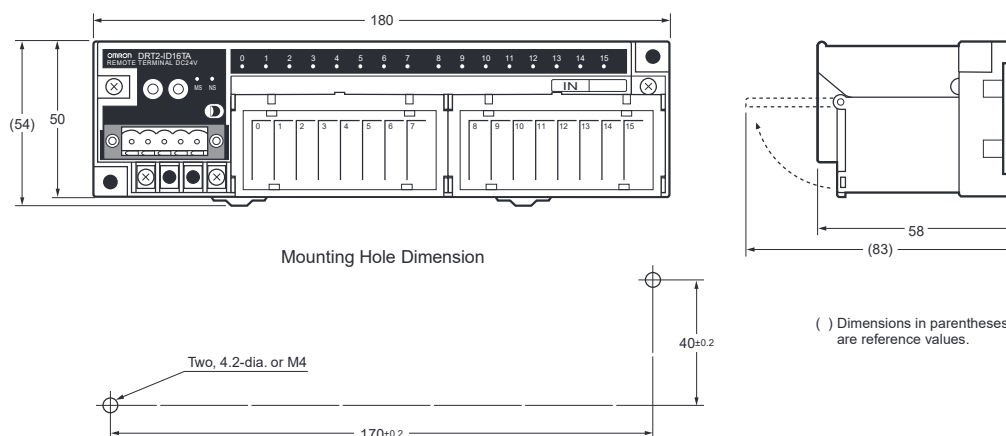
● 8-point Inputs/8-point Outputs Terminals with Transistors

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

Dimensions

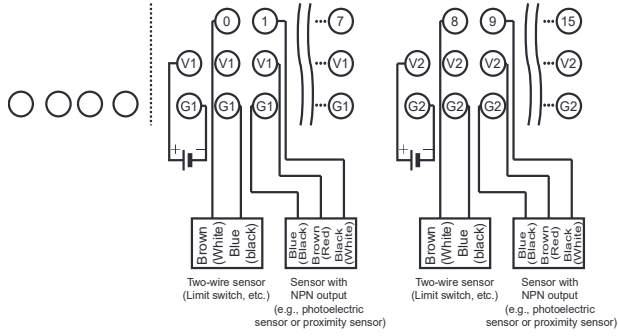
(Unit: mm)

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

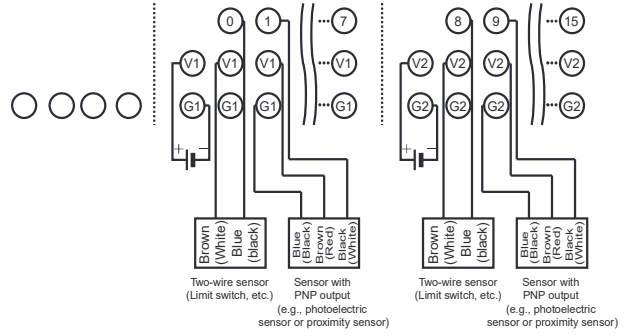


Wiring Diagrams

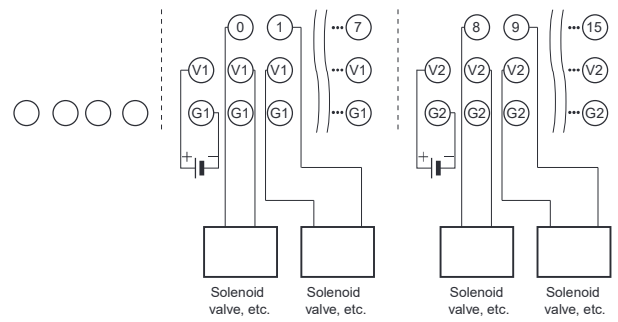
DRT2-ID16TA (NPN)



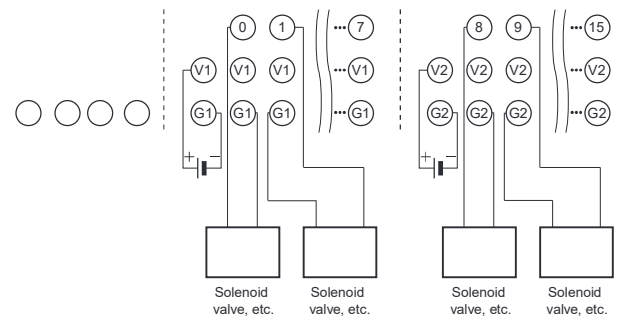
DRT2-ID16TA-1 (PNP)



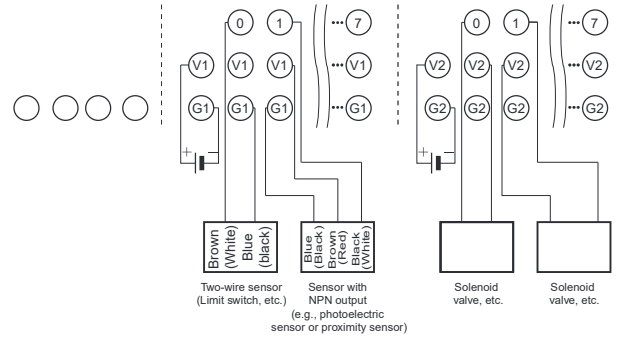
DRT2-OD16TA (NPN)



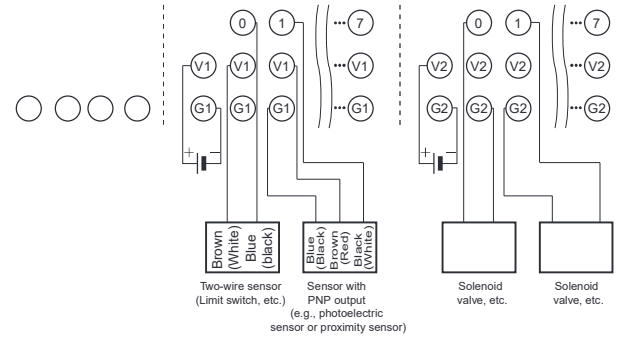
DRT2-OD16TA-1 (PNP)



DRT2-MD16TA (NPN)



DRT2-MD16TA-1 (PNP)



e-CON Connector Terminals

DRT2-□D16S(-1)

Includes Sensor Connector That Conforms to Industry Standards And Can Be Used to Connect Sensors with Pre-wired Cables without Using Special Tools.



- 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.

Smart Slave Functions

Operation time monitor (I/O only)	Contact operation counter	Unit conduction time monitor
Total ON time monitor	Unit comments	Connected device comments
Network power supply voltage monitor	Communications error log function	Input filter
Power-ON inrush current protection	Sensor power supply short-circuit detection	External load short-circuit detection function
Communications speed auto-detection	No need to wire Unit power supply	No need to wire input device power supply
Last maintenance date		

Ordering Information

Specifications			I/O connections	Rated internal circuit power supply voltage	Rated I/O power supply voltage	Model
Inputs	NPN (+ common)	16 inputs	Sensor connector	Supplied from the communications connector	Supplied from the communications connector	DRT2-ID16S
	PNP (- common)					DRT2-ID16S-1
I/O	NPN (input: + common, output: - common)	8 inputs/ 8 outputs			Supplied from external source for outputs	DRT2-MD16S
	PNP (input: - common, output: + common)					DRT2-MD16S-1

General Specifications

Item	Model	DRT2-ID16S(-1)	DRT2-MD16S(-1)
Communications power supply voltage		11 to 25 VDC	
Communications power supply current consumption		45 mA max. (24 VDC), 80 mA max. (11 VDC)	
Unit power supply voltage		Not required (Supplied from the communications connector.)	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
Current consumption		Communications power supply: 230 mA max.	Communications power supply: 135 mA max.
Dielectric strength		500 VAC between isolated circuits	
Noise immunity		Conforms to IEC61000-4-4, 2 kV (power line)	
Vibration resistance		10 to 60 Hz, 0.7-mm double amplitude, 60 to 150 Hz, 50 m/s ² for 80 min each in the X, Y, and Z directions	
Shock resistance		150m/s ² , 6 directions, 3 times each	
Mounting method		DIN 35 mm-track mounting or M4 screw mounting	
Screw tightening torque		M2 (communications connector screws): 0.26 to 0.3 N·m M4 (unit mounting): 0.6 to 0.98 N·m	
Ambient operating temperature		-10°C to 55°C	

Item	Model	DRT2-ID16S(-1)	DRT2-MD16S(-1)
Ambient operating humidity		25 to 85% (with no condensation)	
Ambient storage temperature		-25°C to 65°C	
Weight		90 g max.	95 g max.

Output Specifications

● Terminals with 8 Inputs and 8 Outputs

Item	Model	DRT2-MD16S	DRT2-MD16S-1
Internal I/O common		NPN	PNP
I/O points		8 outputs	
Rated output current		0.3 A/point, 2.4 A/common	0.3 A/point, 1.6 A/common
Residual voltage		1.2 VDC max. (0.3 A DC between output and G terminal)	1.2 VDC max. (0.3 A DC between output 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 per common		8 per common	
Load short-circuit detection current		2.4 A min./common	1.6 A min./common

Input Specifications

● Terminals with 16 Inputs

Item	Model	DRT2-ID16S	DRT2-ID16S-1
Internal I/O common		NPN	PNP
I/O points		16 inputs	
ON voltage		9 VDC min. (between each input terminal and V)	9 VDC min. (between each input terminal and G)
OFF voltage		5 VDC max. (between each input terminal and V)	5 VDC max. (between each input terminal and G)
OFF current		1 mA max.	
Input current		11 mA max./point (at 24 VDC) 3.0 mA min./point (at 11 VDC)	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		16 per common	
Sensor short-circuit detection current		The total current for all of the following input points is monitored to detect sensor short-circuits. IN0/IN1, IN2/IN3, IN4/IN5, IN6/IN7, IN8/IN9, IN10/IN11, IN12/IN13, IN14/IN15	

● Terminal with 8 Inputs/8 Outputs

Item	Model	DRT2-MD16S	DRT2-MD16S-1
Internal I/O common		NPN	PNP
I/O points		8 inputs	
ON voltage		9 VDC min. (between each input terminal and V)	9 VDC min. (between each input terminal and G)
OFF voltage		5 VDC max. (between each input terminal and V)	5 VDC max. (between each input terminal and G)
OFF current		1 mA max.	
Input current		11 mA max./point (at 24 VDC) 3.0 mA min./point (at 11 VDC)	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		8 per common	
Sensor short-circuit detection current		The total current for all of the following input points is monitored to detect sensor short-circuits. IN0/IN1, IN2/IN3, IN4/IN5, IN6/IN7	

Applicable Connectors (sold separately)

● OMRON Connectors

Model	Specifications	Compatible wire size
XN2A-1470	Spring-clamp style	Stranded wire 28 to 20 AWG (0.08 to 0.5 mm ²) wire, 1.5 mm max. outer diameter including insulation

● Tyco Electronics Connectors

Model	Color of housing	Compatible wire size
3-1473562-4	Orange	0.6 to 0.9 mm max. outer diameter including insulation
1-1473562-4	Red	0.9 to 1.0 mm max. outer diameter including insulation
1473562-4	Yellow	1.0 to 1.15 mm max. outer diameter including insulation
2-1473562-4	Blue	1.15 to 1.35 mm max. outer diameter including insulation
4-1473562-4	Green	1.35 to 1.60 mm max. outer diameter including insulation

Wire size: 0.08 to 0.5 mm²

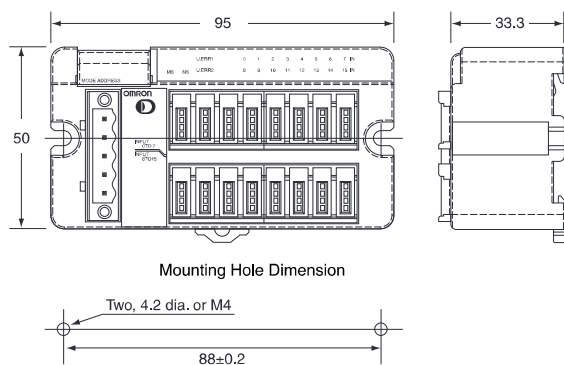
● Sumitomo 3M Connectors

Model	Specifications/color of housing	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

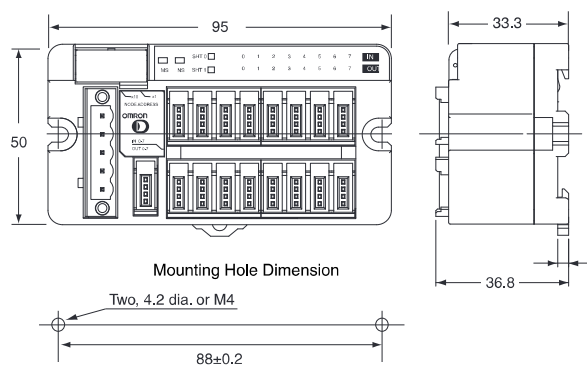
Dimensions

(Unit: mm)

DRT2-ID16S(-1)

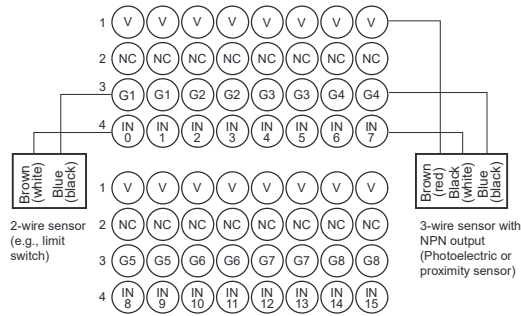


DRT2-MD16S(-1)

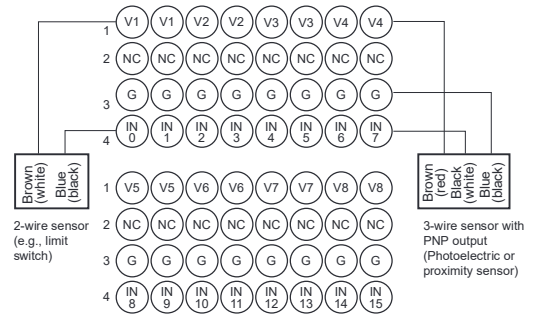


Wiring Diagrams

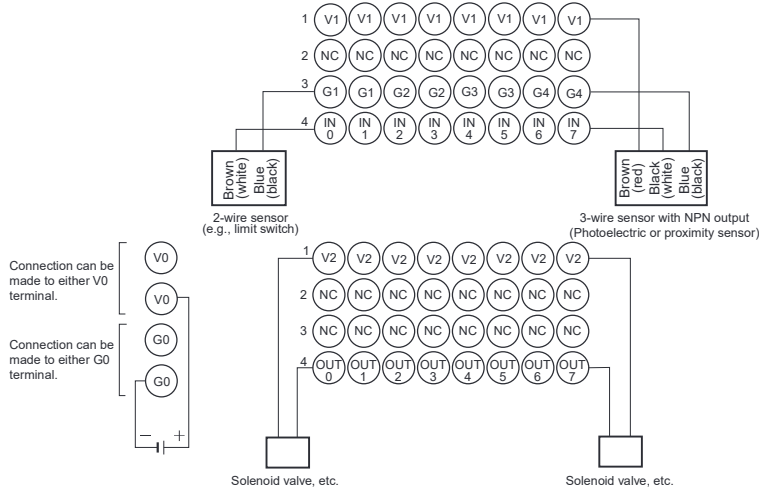
DRT2-ID16S (NPN)



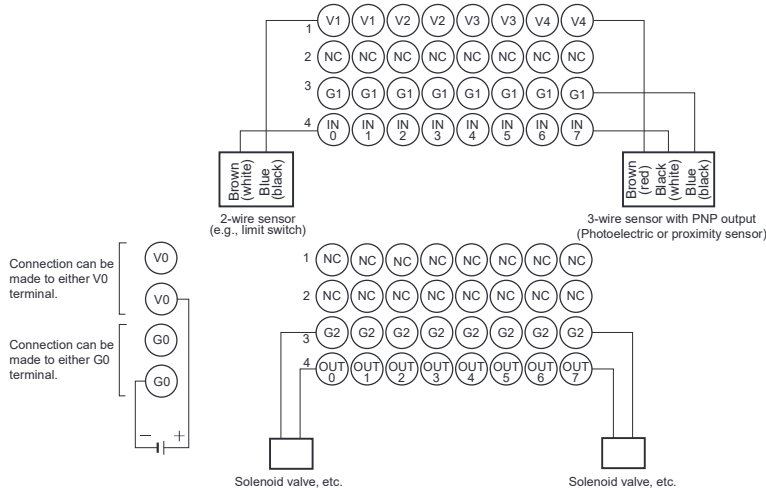
DRT2-ID16S-1 (PNP)



DRT2-MD16S (NPN)



DRT2-MD16S-1 (PNP)



MIL Connector Terminals with Transistors

DRT2-□D32ML(-1)/□D16ML(-1)

Very Compact 16-/32-point Remote Terminals

- Used in combination with Interface Conversion Boards (e.g., D-Sub) to connect to a wide range of interfaces.
- 35 x 60 x 80 mm (W x D x H)



Smart Slave 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 supply monitor function	Communications error log function
Input filter (input or I/O only)	Power-ON inrush current protection (input or I/O only)	
Communications speed auto-detection	No need to wire Unit power supply	Last maintenance date

Ordering Information

Specifications		I/O connections	Rated internal circuit power supply voltage	Rated I/O power supply voltage	Model		
Inputs	NPN (+ common)	32 points	MIL connector	Supplied from the communications connector	DRT2-ID32ML		
	PNP (- common)				DRT2-ID32ML-1		
Outputs	NPN (- common)				DRT2-OD32ML		
	PNP (+ common)				DRT2-OD32ML-1		
I/O	NPN (input: + common, output: - common)	16 inputs/ 16 outputs			DRT2-MD32ML		
	PNP (input: - common, output: + common)				DRT2-MD32ML-1		
Inputs	NPN (+ common)	16 points			MIL connector	24 VDC	DRT2-ID16ML
	PNP (- common)						DRT2-ID16ML-1
Outputs	NPN (- common)		DRT2-OD16ML				
	PNP (+ common)		DRT2-OD16ML-1				
Inputs	NPN (+ common)		MIL connector (Connector with 10-cm cable)	DRT2-ID16MLX			
	PNP (- common)			DRT2-ID16MLX-1			
Outputs	NPN (- common)			DRT2-OD16MLX			
	PNP (+ common)			DRT2-OD16MLX-1			
Mounting Bracket					SRT2-ATT02		

General Specifications

Communications power supply voltage	11 to 25 VDC (Supplied from the communications connector.)
Communications power supply current consumption	DRT2-ID16ML(-1) : 40 mA max. (24 VDC), 60 mA max. (11 VDC) DRT2-ID16MLX(-1) : 40 mA max. (24 VDC), 60 mA max. (11 VDC) DRT2-OD16ML(-1) : 45 mA max. (24 VDC), 75 mA max. (11 VDC) DRT2-OD16MLX(-1) : 45 mA max. (24 VDC), 75 mA max. (11 VDC) DRT2-ID32ML(-1) : 55 mA max. (24 VDC), 100 mA max. (11 VDC) DRT2-OD32ML(-1) : 70 mA max. (24 VDC), 120 mA max. (11 VDC) DRT2-MD32ML(-1) : 60 mA max. (24 VDC), 110 mA max. (11 VDC)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 60 Hz, 0.7-mm double amplitude, 60 to 150 Hz, 50 m/s ²
Shock resistance	150m/s ²
Dielectric strength	500 VAC (between isolated circuits)
Insulation resistance	20 MΩ min.
Ambient operating temperature	-10°C to 55°C
Ambient operating humidity	25% to 85% (with no condensation)
Ambient operating atmosphere	No corrosive gases
Ambient storage temperature	-25°C to 65°C
Mounting method	DIN 35 mm-track mounting
Weight	120 g max. *

* The Connector Cable provided with the DRT2-ID16MLX(-1) and DRT2-OD16MLX(-1) is 10 g max.

Input Specifications

● 32-point Inputs Terminals with Connectors

Item	Model	DRT2-ID32ML	DRT2-ID32ML-1
Internal I/O common		NPN	PNP
I/O points		32 inputs	
ON voltage		17 VDC min. (between each input terminal and V)	17 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		1.0 mA max.	
Input current		24 VDC: 6.0 mA max./point 17 VDC: 3.0 mA max./point	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		32 per common	

● 16-point Inputs/16-point Outputs Terminals with Connectors

● 16-point Inputs Terminals with Connectors

Item	Model	DRT2-MD32ML DRT2-ID16ML DRT2-ID16MLX	DRT2-MD32ML-1 DRT2-ID16ML-1 DRT2-ID16MLX-1
Internal I/O common		NPN	PNP
I/O points		16 inputs	
ON voltage		17 VDC min. (between each input terminal and V)	17 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		1.0 mA max.	
Input current		24 VDC: 6.0 mA max./point 17 VDC: 3.0 mA max./point	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
Number of simultaneously inputs		16	
Number of circuits per common		16 per common	

Output Specifications

● 32-point Outputs Terminals with Connectors

Item	Model	DRT2-OD32ML	DRT2-OD32ML-1
Internal I/O common		NPN	PNP
I/O points		32 outputs	
Rated output current		0.3 A/point, 4 A/common *	
Residual voltage		1.2 VDC max. (0.3 A DC between output and G terminal)	1.2 VDC max. (0.3 A DC between output and V terminal)
Leakage current		0.1 mA max.	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		32 per common	

* The maximum total load current is 4 A.
The maximum current for the V and G terminals is 1 A per terminal.

● 16-point Inputs/16-point Outputs Terminals with Connectors

● 16-point Outputs Terminals with Connectors

Item	Model	DRT2-MD32ML DRT2-OD16ML DRT2-OD16MLX	DRT2-MD32ML-1 DRT2-OD16ML-1 DRT2-OD16MLX-1
Internal I/O common		NPN	PNP
I/O points		16 outputs	
Rated output current		0.3 A/point, 4 A/common *	
Residual voltage		1.2 VDC max. (0.3 A DC between output and G terminal)	1.2 VDC max. (0.3 A DC between output and V terminal)
Leakage current		0.1 mA max.	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		16 per common	

* The maximum total load current is 2 A.
The maximum current for the V and G terminals is 1 A per terminal.

Applicable Connectors

● 32-point Models

Product		Model	Remarks
Flat Cable, crimp terminals		XG4M-4030-T	
Stranded-wire cable, crimp terminals	Socket	XG5M-4032-N	For AWG24 wire
		XG5M-4035-N	For AWG26 to AWG28 wire
	Partial Cover	XG5S-2001	
	Hood Cover *	XG5S-4022	

* DeviceNet connectors for multi-drop wiring cannot be used with the Hood Cover.

● 16-point Models

Product		Model	Remarks
Flat Cable, crimp terminals		XG4M-2030-T	
Stranded-wire cable, crimp terminals	Socket	XG5M-2032-N	For AWG24 wire
		XG5M-2035-N	For AWG26 to AWG28 wire
	Partial Cover	XG5S-1001	
	Hood Cover *	XG5S-2012	

Applicable Cables

● Cables for Connector Terminal Conversion Units (16 Points)

Cables with Connectors (1-to-1 Connection)

Model	Applicable cable	Connectable model	Remarks
DRT2-ID16ML DRT2-ID16ML-1 DRT2-OD16ML DRT2-OD16ML-1	XW2Z-RO□C	XW2R-J20G-T XW2R-E20G-T XW2R-P20G-T XW2C-20G6-IO16	Connector Terminal Conversion Unit

● Cables for I/O Relay Terminals (16 Points)

Cables with Connectors (1-to-1 Connection)

Model	Applicable cable	Connectable model	Remarks
DRT2-ID16ML	XW2Z-RI□C	G7TC-ID16 G7TC-IA16	For I/O Relay Terminal inputs
DRT2-ID16ML-1	--	--	(No applicable model)
DRT2-OD16ML	XW2Z-RO□C	G7TC-OC16/OC08 G70D-SOC16/VSOC16 G70D-FOM16/VFOM16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08 *	For I/O Relay Terminal outputs
DRT2-OD16ML-1	XW2Z-RI□C	G7TC-OC16-1	For I/O Relay Terminal outputs
	XW2Z-RO□C	G70D-SOC16-1 G70D-FOM16-1 * G70A-ZOC16-4	For I/O Relay Terminal outputs

* Product no longer available to order.

● Cables for Connector Terminal Conversion Units (32 Points)

Cables with Connectors (1-to-2 Connection)

Model	Applicable cable	Connectable model	Remarks
DRT2-ID32ML DRT2-ID32ML-1 DRT2-OD32ML DRT2-OD32ML-1 DRT2-MD32ML DRT2-MD32ML-1	XW2Z-□□□N	XW2R-J20G-T (two units) XW2R-E20G-T (two units) XW2R-P20G-T (two units) XW2C-20G6-IO16 (two units)	Connector Terminal Conversion Unit (20 pins)

Cables with Connectors (1-to-1 Connection)

Model	Applicable cable	Connectable model	Remarks
DRT2-ID32ML DRT2-ID32ML-1 DRT2-OD32ML DRT2-OD32ML-1 DRT2-MD32ML DRT2-MD32ML-1	XW2Z-□□□K	XW2R-J40G-T XW2R-E40G-T XW2R-P40G-T	Connector Terminal Conversion Unit (40 pins)

● Cables for I/O Relay Terminals (32 Points) Cables with Connectors (1-to-2 Connection)

Model	Applicable cable	Connectable model	Remarks
DRT2-ID32ML	XW2Z-RI□□D1	G7TC-ID16 G7TC-IA16	For I/O Relay Terminal inputs
DRT2-ID32ML-1	--	--	(No applicable model)
DRT2-OD32ML	XW2Z-RO□□D1	G7TC-OC16/OC08 G70D-SOC16/VSOC16 G70D-FOM16/VFOM16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08 *	For I/O Relay Terminal outputs
DRT2-OD32ML-1	XW2Z-RI□□D1	G7TC-OC16-1	For I/O Relay Terminal outputs
	XW2Z-RO□□D1	G70D-SOC16-1 G70D-FOM16-1 * G70A-ZOC16-4	
DRT2-MD32ML	XW2Z-RM□□D1	[For input] G7TC-ID16 G7TC-IA16 [For output] G7TC-OC16/OC08 G70D-SOC16/VSOC16 G70D-FOM16/VFOM16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08 *	For I/O Relay Terminal inputs For I/O Relay Terminal outputs
DRT2-MD32ML-1	XW2Z-RM□□D1	[For input] -- [For output] G70D-SOC16-1 G70D-FOM16-1 * G70A-ZOC16-4	For I/O Relay Terminal inputs For I/O Relay Terminal outputs

* Product no longer available to order.

● Stranded-wire Cables with Crimp Terminals

Model	Applicable cable	Remarks
DRT2-ID16ML (-1) DRT2-OD16ML (-1)	XW2Z-RY□C	20-pin connector
DRT2-ID16ML (-1) DRT2-OD16ML (-1) DRT2-MD16ML (-1)	XW2Z-RY□C-D1	40-pin connector

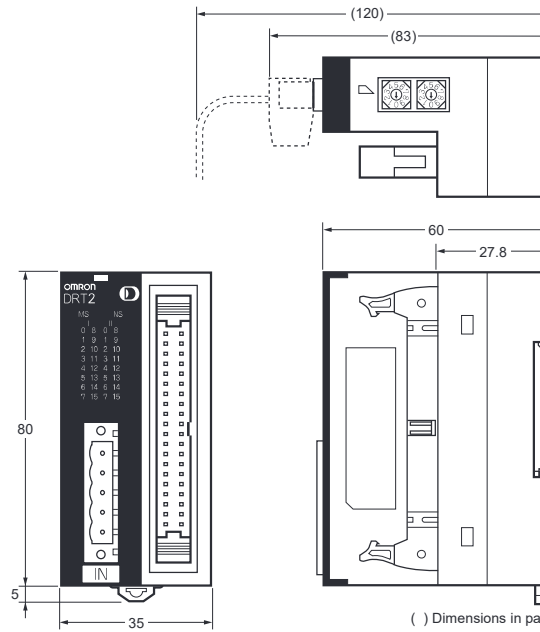
● Stranded-wire Cables

Model	Applicable cable	Remarks
DRT2-ID16ML (-1) DRT2-OD16ML (-1)	XW2Z-RA□C	20-pin connector
DRT2-ID16ML (-1) DRT2-OD16ML (-1) DRT2-MD16ML (-1)	XW2Z-RA□C-D1	40-pin connector

Dimensions

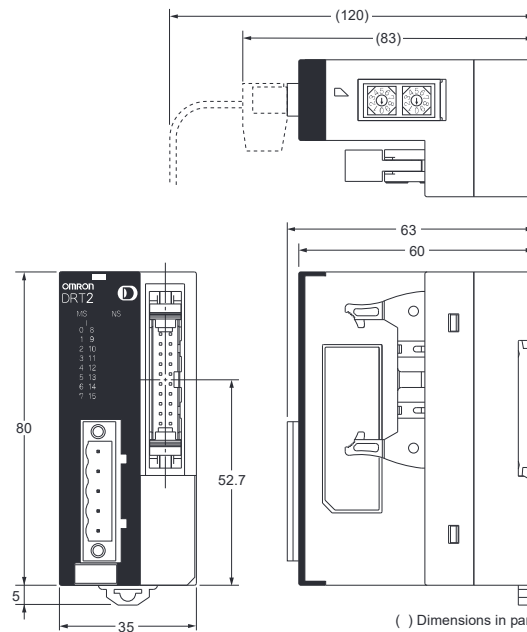
(Unit: mm)

DRT2-ID32ML(-1)
DRT2-OD32ML(-1)
DRT2-MD32ML(-1)



() Dimensions in parentheses are reference values.

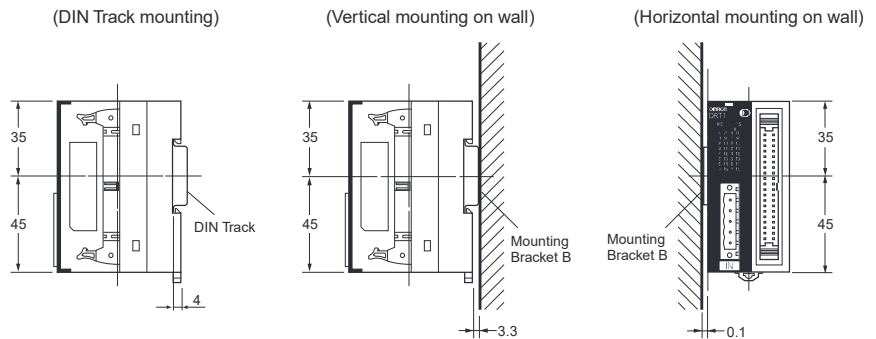
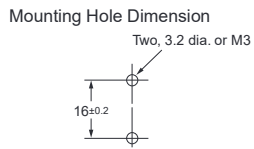
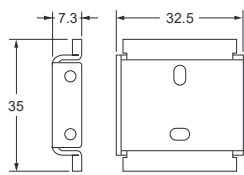
DRT2-ID16ML(-1)
DRT2-OD16ML(-1)
DRT2-ID16MLX(-1)
DRT2-OD16MLX(-1)



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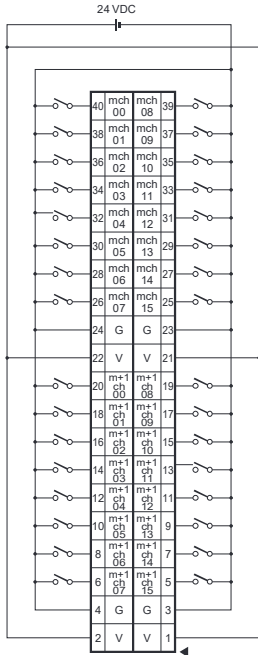
● Mounting Bracket B (Accessory)

SRT2-ATT02

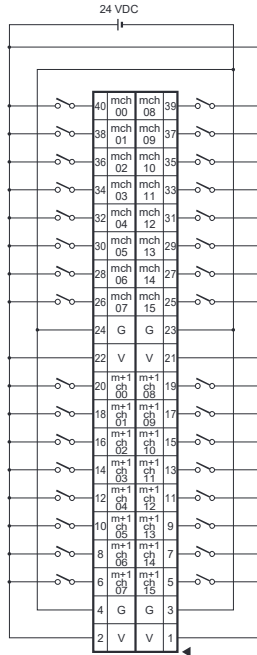


Wiring Diagrams

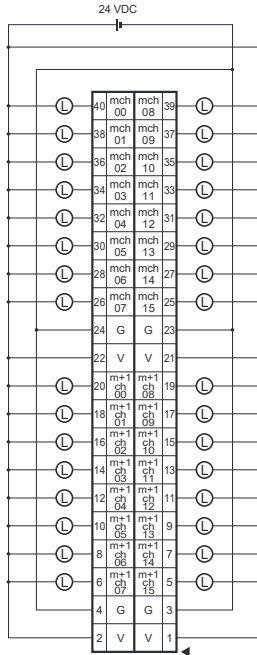
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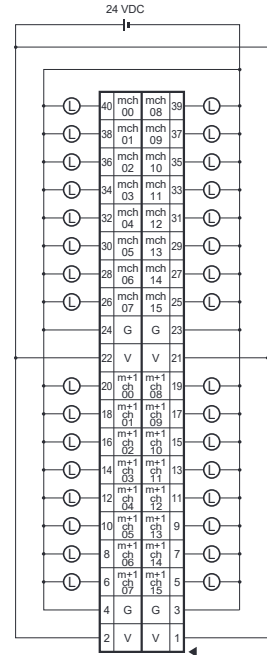
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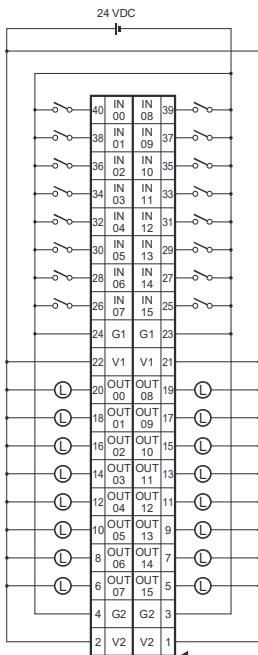
DRT2-OD32ML



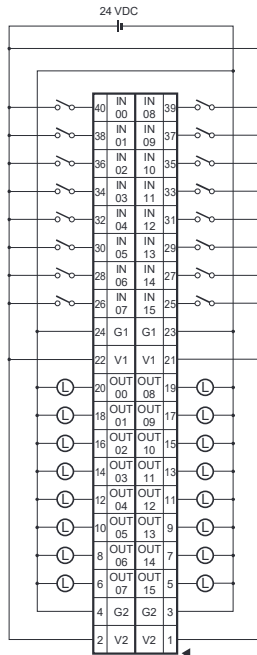
DRT2-OD32ML-1



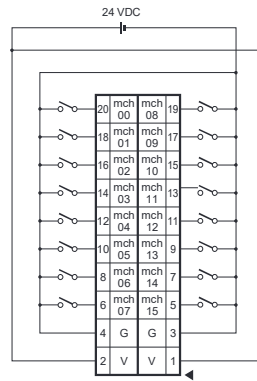
DRT2-MD32ML



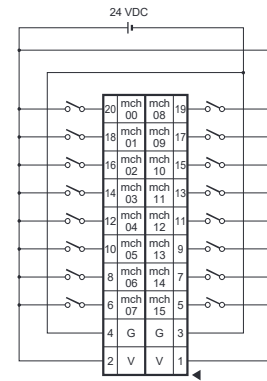
DRT2-MD32ML-1



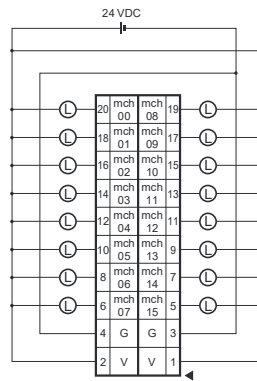
DRT2-ID16ML(X)
(NPN)



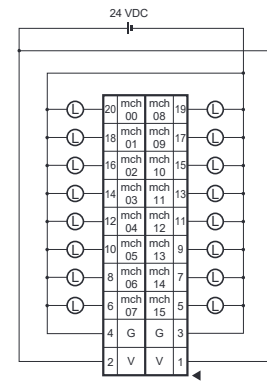
DRT2-ID16ML(X)-1
(PNP)



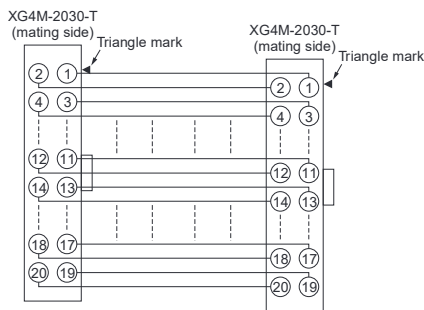
DRT2-OD16ML(X)
(NPN)



DRT2-OD16ML(X)-1
(PNP)



Wiring Diagram of Connector Cable Provided with the DRT2-ID16MLX(-1) and DRT2-OD16MLX(-1)

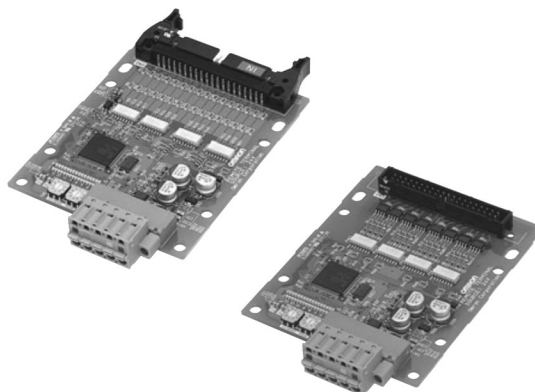


Board Terminals with MIL Connector

DRT2-□D32B(-1)/□D32BV(-1)

First Board-type Terminals for Smart Slaves!

- Easily modified to handle an array of I/O interfaces and eliminates much on-site wiring.
- User boards attach easily to the DRT2-□D32BV(-1) using screws.



Smart Slave 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 supply monitor function	Communications error log function
Input filter (input or I/O only)	Power-ON inrush current protection (input or I/O only)	
Communications speed auto-detection	No need to wire Unit power supply	Last maintenance date

Ordering Information

● Parallel Mounting MIL Connector

Specifications			I/O connections	Rated internal circuit power supply voltage	Rated I/O power supply voltage	Model
Inputs	NPN (+ common)	32 inputs	MIL connector	Supplied from communications connector.	24 VDC	DRT2-ID32B
	PNP (- common)					DRT2-ID32B-1
Outputs	NPN (- common)	32 outputs				DRT2-OD32B
	PNP (+ common)					DRT2-OD32B-1
I/O	NPN (input: + common, output: - common)	16 inputs/ 16 outputs				DRT2-MD32B
	PNP (input: - common, output: + common)					DRT2-MD32B-1

● Perpendicular Mounting MIL Connector

Specifications			I/O connections	Rated internal circuit power supply voltage	Rated I/O power supply voltage	Model
Inputs	NPN (+ common)	32 inputs	MIL connector	Supplied from communications connector.	24 VDC	DRT2-ID32BV
	PNP (- common)					DRT2-ID32BV-1
Outputs	NPN (- common)	32 outputs				DRT2-OD32BV
	PNP (+ common)					DRT2-OD32BV-1
I/O	NPN (input: + common, output: - common)	16 inputs/ 16 outputs				DRT2-MD32BV
	PNP (input: - common, output: + common)					DRT2-MD32BV-1

General Specifications

Communications power supply voltage	11 to 25 VDC (Supplied from the communications connector.)
Communications power supply current consumption	DRT2-ID32B(-1) : 45 mA max. (24 VDC), 100 mA max. (11 VDC) DRT2-OD32B(-1) : 55 mA max. (24 VDC), 120 mA max. (11 VDC) DRT2-MD32B(-1) : 50 mA max. (24 VDC), 110 mA max. (11 VDC) DRT2-ID32BV(-1) : 45 mA max. (24 VDC), 100 mA max. (11 VDC) DRT2-OD32BV(-1) : 55 mA max. (24 VDC), 120 mA max. (11 VDC) DRT2-MD32BV(-1) : 50 mA max. (24 VDC), 110 mA max. (11 VDC)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 60 Hz, 0.7-mm double amplitude, 60 to 150 Hz, 50 m/s ² for 80 min each in the X, Y, and Z directions
Shock resistance	150m/s ² , 6 directions, 3 times each
Dielectric strength	500 VAC (between isolated circuits)
Insulation resistance	20 MΩ min. (between isolated circuits)
Ambient operating temperature	-10°C to 55°C
Ambient operating humidity	25% to 85% (with no condensation)
Ambient operating atmosphere	No corrosive gases
Ambient storage temperature	-25°C to 65°C
Mounting method	M4 screw mounting
Weight	50 g max.

Input Specifications

● 32-point Inputs Terminals with Connectors

Item	Model	DRT2-ID32B DRT2-ID32BV	DRT2-ID32B-1 DRT2-ID32BV-1
Internal I/O common	NPN		PNP
I/O points	32 inputs		
ON voltage	17 VDC min. (between each input terminal and V)	17 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	1.0 mA max.		
Input current	24 VDC: 6.0 mA max./point 17 VDC: 3.0 mA max./point		
ON delay time	1.5 ms max.		
OFF delay time	1.5 ms max.		
Number of circuits per common	32 per common		

● 16-point Inputs/16-point Outputs Terminals with Connectors

Item	Model	DRT2-MD32B DRT2-MD32BV	DRT2-MD32B-1 DRT2-MD32BV-1
Internal I/O common	NPN		PNP
I/O points	16 inputs		
ON voltage	17 VDC min. (between each input terminal and V)	17 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	1.0 mA max.		
Input current	24 VDC: 6.0 mA max./point 17 VDC: 3.0 mA max./point		
ON delay time	1.5 ms max.		
OFF delay time	1.5 ms max.		
Number of simultaneously inputs	16		
Number of circuits per common	16 per common		

Output Specifications

● 32-point Outputs Terminals with Connectors

Item	Model	DRT2-OD32B DRT2-OD32BV	DRT2-OD32B-1 DRT2-OD32BV-1
Internal I/O common	NPN		PNP
I/O points	32 outputs		
Rated output current	0.3 A/point, 4 A/common *		
Residual voltage	1.2 VDC max. (0.3 A DC between output and G terminal)	1.2 VDC max. (0.3 A DC between output and V terminal)	
Leakage current	0.1 mA max.		
ON delay time	0.5 ms max.		
OFF delay time	1.5 ms max.		
Number of circuits per common	32 per common		

* The maximum total load current is 4 A.
The maximum current for the V and G terminals is 1 A per terminal. Do not exceed these values.

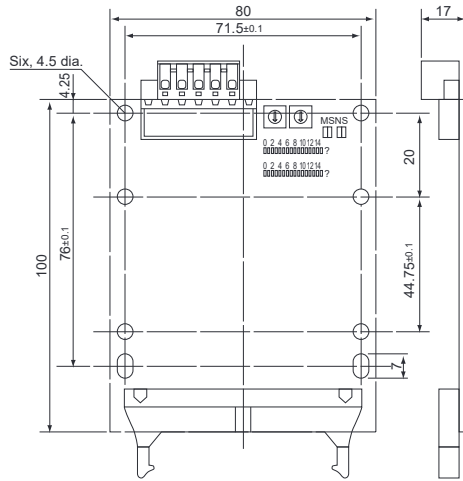
● 16-point Inputs/16-point Outputs Terminals with Connectors

Item	Model	DRT2-MD32B DRT2-MD32BV	DRT2-MD32B-1 DRT2-MD32BV-1
Internal I/O common	NPN		PNP
I/O points	16 outputs		
Rated output current	0.3 A/point, 2 A/common *		
Residual voltage	1.2 VDC max. (0.3 A DC between output and G terminal)	1.2 VDC max. (0.3 A DC between output and V terminal)	
Leakage current	0.1 mA max.		
ON delay time	0.5 ms max.		
OFF delay time	1.5 ms max.		
Number of circuits per common	16 per common		

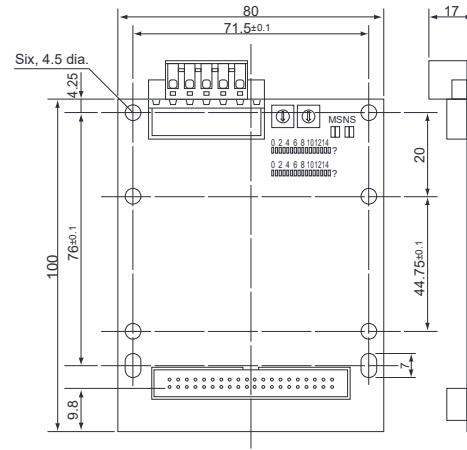
* The maximum total load current is 2 A.
The maximum current for the V and G terminals is 1 A per terminal. Do not exceed these values.

Dimensions

DRT2-ID32B(-1)
 DRT2-OD32B(-1)
 DRT2-MD32B(-1)

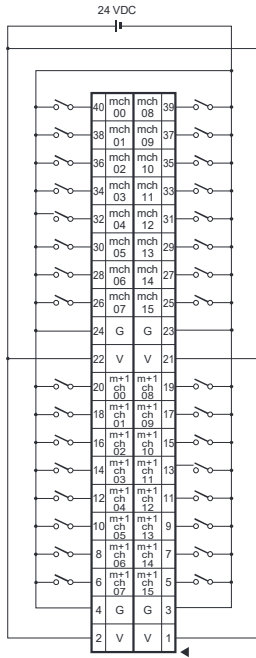


DRT2-ID32BV(-1)
 DRT2-OD32BV(-1)
 DRT2-MD32BV(-1)

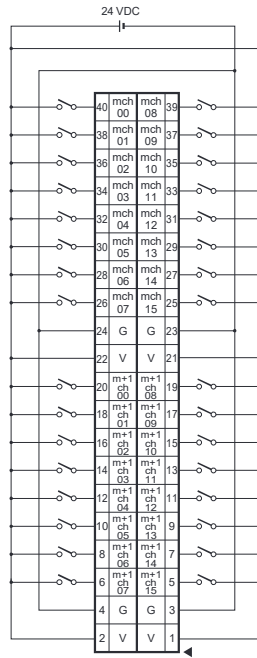


Wiring Diagrams

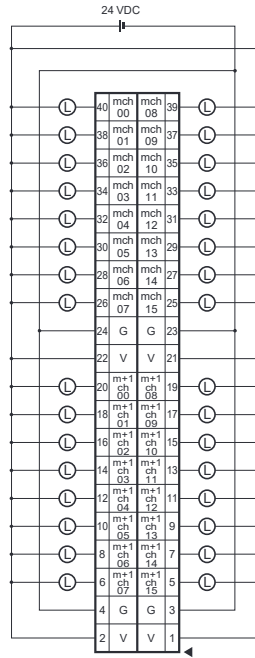
DRT2-ID32B
DRT2-ID32BV
(NPN)



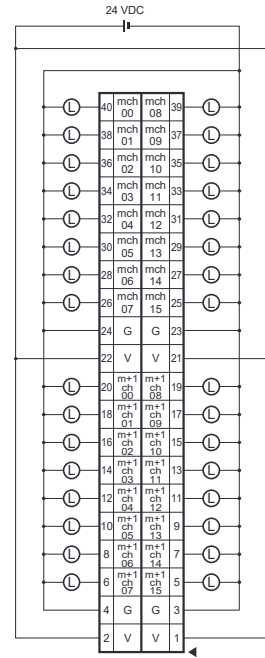
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DRT2-ID32BV-1
(PNP)



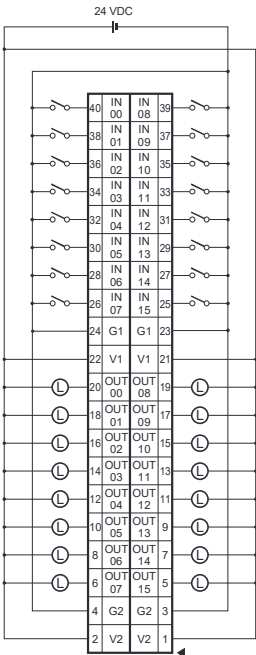
DRT2-OD32B
DRT2-OD32BV
(NPN)



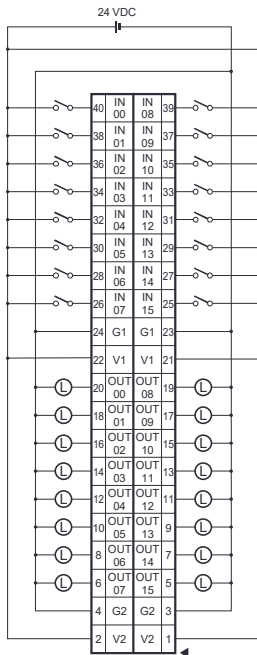
DRT2-OD32B-1
DRT2-OD32BV-1
(PNP)



DRT2-MD32B
DRT2-MD32BV
(NPN)



DRT2-MD32B-1
DRT2-MD32BV-1
(PNP)

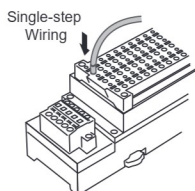


Screw-less Clamp Terminals with Transistors

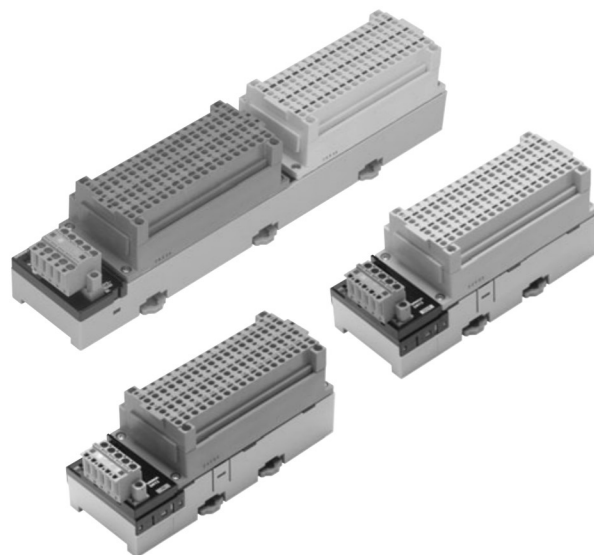
DRT2-□D16SL(H)(-1)/□D32SLH(-1)

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

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



- Applicable wire sizes range from AWG24 to AWG16 (0.2 to 1.25 mm² dia.)



Smart Slave 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 supply monitor function |
| Communications error log function | Input filter (input or I/O only) | Power-ON inrush current protection (input or I/O only) | |
| Sensor power supply short-circuit detection (input or I/O only) | Disconnected sensor detection (input or I/O only) | External load short-circuit detection (output only) | Disconnection detection (output or I/O only) |
| Removable terminal block | Communications speed auto-detection | No need to wire Unit power supply | Last maintenance date |

Ordering Information

Short/disconnection detection	Specifications			I/O connections	Rated internal circuit power supply voltage	Rated I/O power supply voltage	Model				
Supported	Inputs	NPN (+ common)	16 points	Clamp terminals	Supplied from communications connector.	24 VDC	DRT2-ID16SLH				
		PNP (- common)					DRT2-ID16SLH-1				
	Outputs	NPN (- common)					DRT2-OD16SLH				
		PNP (+ common)					DRT2-OD16SLH-1				
Not supported	Inputs	NPN (+ common)					32 points	Clamp terminals	Supplied from communications connector.	24 VDC	DRT2-ID16SL
		PNP (- common)									DRT2-ID16SL-1
	Outputs	NPN (- common)									DRT2-OD16SL
		PNP (+ common)									DRT2-OD16SL-1
Supported	Inputs	NPN (+ common)	32 points	Clamp terminals	Supplied from communications connector.	24 VDC	DRT2-ID32SLH				
		PNP (- common)					DRT2-ID32SLH-1				
		Outputs					NPN (- common)	DRT2-OD32SLH			
							PNP (+ common)	DRT2-OD32SLH-1			
	I/O	NPN (input: + common, output: - common)	16 inputs/ 16 outputs	DRT2-MD32SLH							
		PNP (input: - common, output: + common)		DRT2-MD32SLH-1							

General Specifications

Communications power supply voltage	11 to 25 VDC (Supplied from the communications connector.)
Communications power supply current consumption	DRT2-ID16SL(-1) : 30 mA max. (24 VDC), 55 mA max. (11 VDC) DRT2-OD16SL(-1) : 35 mA max. (24 VDC), 65 mA max. (11 VDC) DRT2-ID16SLH(-1) : 35 mA max. (24 VDC), 65 mA max. (11 VDC) DRT2-OD16SLH(-1) : 35 mA max. (24 VDC), 70 mA max. (11 VDC) DRT2-ID32SL : 55 mA max. (24 VDC), 100 mA max. (11 VDC) DRT2-ID32SL-1 : 55 mA max. (24 VDC), 90 mA max. (11 VDC) DRT2-OD32SL : 50 mA max. (24 VDC), 80 mA max. (11 VDC) DRT2-OD32SL-1 : 50 mA max. (24 VDC), 75 mA max. (11 VDC) DRT2-MD32SL(-1) : 50 mA max. (24 VDC), 80 mA max. (11 VDC) DRT2-ID32SLH : 65 mA max. (24 VDC), 100 mA max. (11 VDC) DRT2-ID32SLH-1 : 65 mA max. (24 VDC), 105 mA max. (11 VDC) DRT2-OD32SLH : 55 mA max. (24 VDC), 80 mA max. (11 VDC) DRT2-OD32SLH-1 : 55 mA max. (24 VDC), 85 mA max. (11 VDC) DRT2-MD32SLH(-1) : 60 mA max. (24 VDC), 90 mA max. (11 VDC)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 60 Hz, 0.7-mm double amplitude, 60 to 150 Hz, 50 m/s ² for 80 min each in the X, Y, and Z directions
Shock resistance	150m/s ² , 6 directions, 3 times each
Dielectric strength	500 VAC (between isolated circuits)
Insulation resistance	20 MΩ min. (between isolated circuits)
Ambient operating temperature	-10°C to 55°C
Ambient operating humidity	25% to 85% (with no condensation)
Ambient operating atmosphere	No corrosive gases
Ambient storage temperature	-20°C to 65°C
Mounting method	DIN 35 mm-track mounting
Weight	480 g max.

I/O Specifications

● 16-point Inputs Terminals with Transistors (Input Specifications)

Item	Model	DRT2-ID16SL	DRT2-ID16SL-1	DRT2-ID16SLH	DRT2-ID16SLH-1
Internal I/O common		NPN	PNP	NPN	PNP
Input points		16 inputs			
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)			
Input current		24 VDC: 6.0 mA max./point 17 VDC: 3.0 mA max./point			
Input resistance		4 kΩ			
ON delay time		1.5 ms max.			
OFF delay time		1.5 ms max.			
ON voltage		15 VDC min. (between each input terminal and V)	15 VDC min. (between each input terminal and G)	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)	5 VDC max. (between each input terminal and V)	5 VDC max. (between each input terminal and G)
ON current		3.0 mA max.			
OFF current		1.0 mA max.			
Number of circuits per common		16 per common			
Power short-circuit protection		--		Operates at 50 mA/point min.	
Disconnection detection		--		Operates at 0.3 mA/point max.	
Input power supply current		100 mA per point		50 mA per point	

● 32-point Inputs Terminals with Transistors (Input Specifications)

Item	Model	DRT2-ID32SLH	DRT2-ID32SLH-1
Internal I/O common		NPN	PNP
Input points		32 inputs	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
Input current		6.0 mA/6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC	
Input resistance		4 kΩ	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
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)
ON current		3 mA min.	
OFF current		1.0 mA max.	
Number of circuits per common		16 per common	
Power short-circuit protection		Operates at 50 mA/point min.	
Disconnection detection		Operates at 0.3 mA/point max.	

● 16-point Outputs Terminals with Transistors (Output Specifications)

Item	Model	DRT2-OD16SL	DRT2-OD16SL-1	DRT2-OD16SLH	DRT2-OD16SLH-1
Internal I/O common		NPN	PNP	NPN	PNP
I/O points		16 outputs			
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)			
Output current		0.5 A per point, 4 A per common			
Residual voltage		1.2 V max.			
Leakage current		0.1 mA max.		0.1 mA max. (See Note: 1.)	
ON delay time		0.5 ms max.			
OFF delay time		1.5 ms max.			
Disconnection detection		--		(See Note: 2.)	
Output power supply current		100 mA per point			
Output for errors		According to hold/clear setting for errors (default: clear)			

Note 1: To enable detection of external load disconnections, a current of 0.1 mA or less is output to the load even when the output is OFF. Make sure that the load will not operate for this current.

Note 2: Disconnection detection can be used when the load current is 3 mA or higher. If the load current is less than 3 mA, disconnections may be falsely detected.

● 32-point Outputs Terminals with Transistors (Output Specifications)

Item	Model	DRT2-OD32SLH	DRT2-OD32SLH-1
Internal I/O common		NPN	PNP
I/O points		32 outputs	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
Output current		0.5 A per point, 4 A per common	
Residual voltage		1.2 V max.	
Leakage current		0.1 mA max. (See Note: 1.)	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Disconnection detection		(See Note: 2.)	
Output for errors		According to hold/clear setting for errors (default: clear)	

Note 1: To enable detection of external load disconnections, a current of 0.1 mA or less is output to the load even when the output is OFF. Make sure that the load will not operate for this current.

Note 2: Disconnection detection can be used when the load current is 3 mA or higher. If the load current is less than 3 mA, disconnections may be falsely detected.

● 16-point Inputs/16-point Outputs Terminals with Transistors (Input Specifications)

Item	Model	DRT2-MD32SLH	DRT2-MD32SLH-1
Internal I/O common		NPN	PNP
Input points		16 inputs	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
Input current		6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC	
Input resistance		4 kΩ	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
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)
ON current		3 mA min.	
OFF current		1.0 mA max.	
Number of circuits per common		16 per common	
Power short-circuit protection		Operates at 50 mA/point min.	
Disconnection detection		Operates at 0.3 mA/point max	

● 16-point Inputs/16-point Outputs Terminals with Transistors (Output Specifications)

Item	Model	DRT2-MD32SLH	DRT2-MD32SLH-1
Internal I/O common		NPN	PNP
I/O points		16 outputs	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
Output current		0.5 A per point, 4 A per common	
Residual voltage		1.2 V max.	
Leakage current		0.1 mA max. (See Note: 1.)	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Disconnection detection		(See Note: 2.)	
Output for errors		According to hold/clear setting for errors (default: clear)	

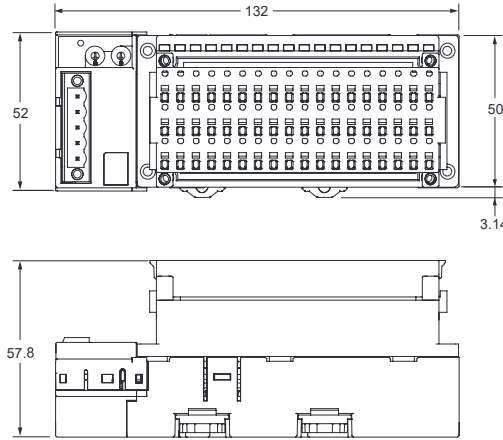
Note 1: To enable detection of external load disconnections, a current of 0.1 mA or less is output to the load even when the output is OFF. Make sure that the load will not operate for this current.

Note 2: Disconnection detection can be used when the load current is 3 mA or higher. If the load current is less than 3 mA, disconnections may be falsely detected.

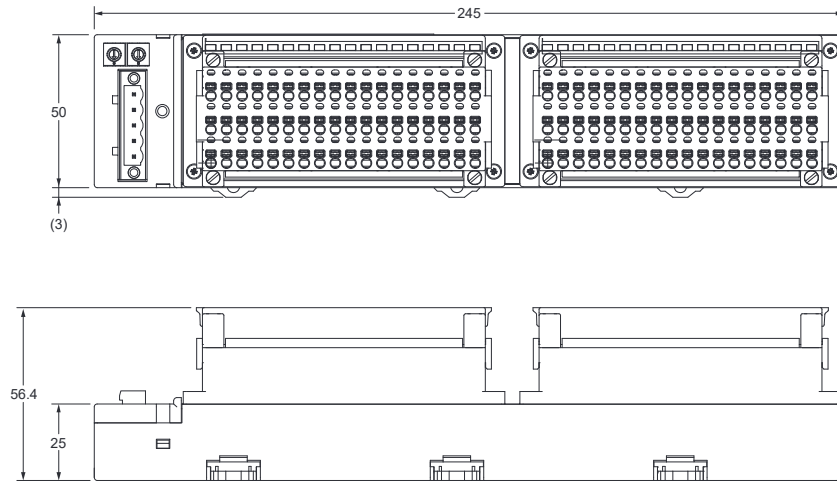
Dimensions

(Unit: mm)

DRT2-ID16SLH(-1)
 DRT2-OD16SLH(-1)
 DRT2-ID16SL(-1)
 DRT2-OD16SL(-1)

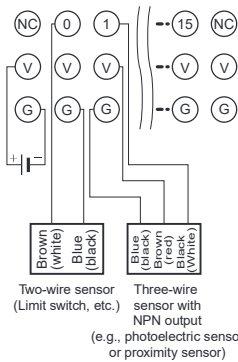


DRT2-ID32SLH(-1)
 DRT2-OD32SLH(-1)
 DRT2-MD32SLH(-1)

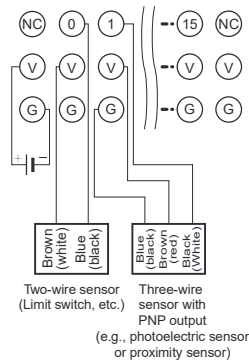


Wiring Diagrams

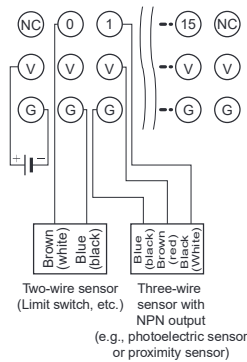
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 (NPN)



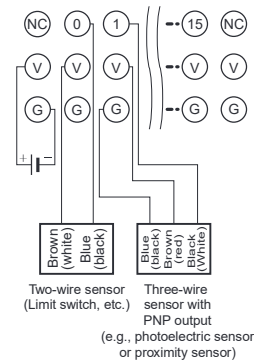
DRT2-ID16SL-1
 (PNP)



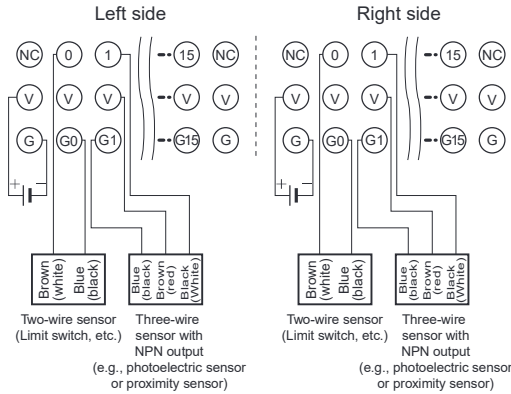
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 (NPN)



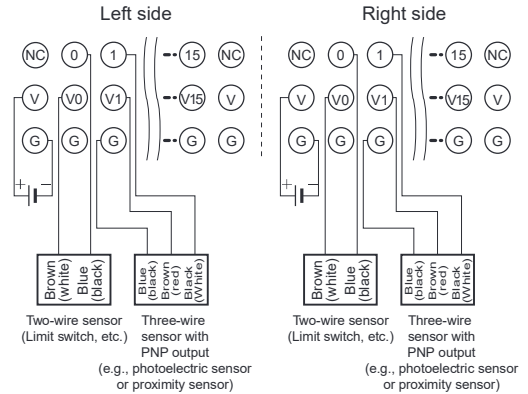
DRT2-ID16SLH-1
 (PNP)



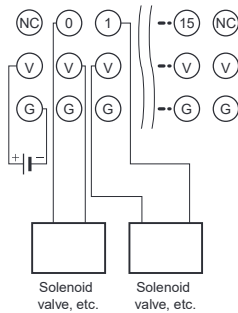
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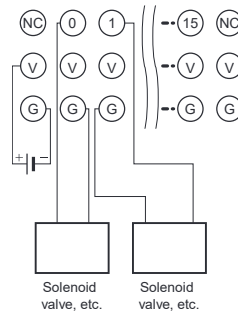
DRT2-ID32SLH-1 (PNP)



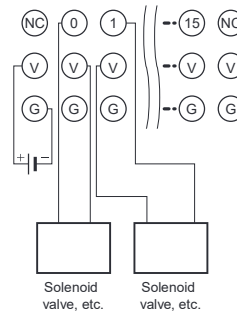
DRT2-OD16SL (NPN)



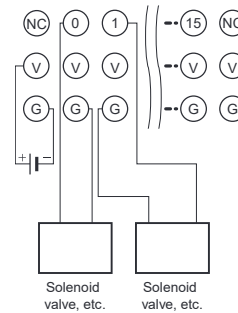
DRT2-OD16SL-1 (PNP)



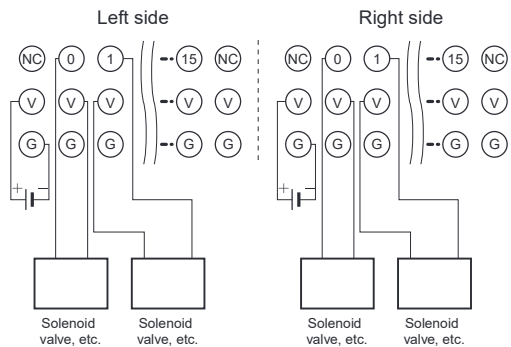
DRT2-OD16SLH (NPN)



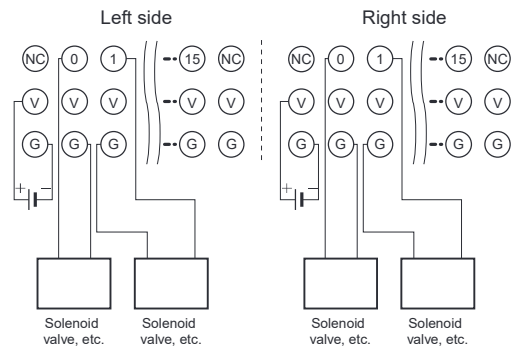
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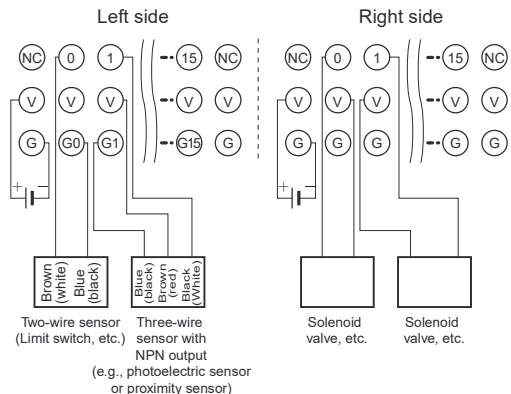
DRT2-OD32SLH (NPN)



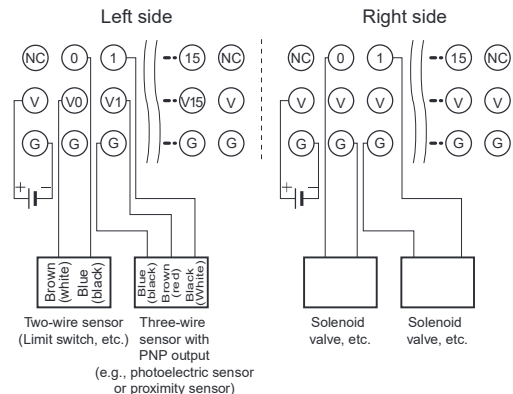
DRT2-OD32SLH-1 (PNP)



DRT2-MD32SLH (NPN)



DRT2-MD32SLH-1 (PNP)



Environment-resistive Terminals with Transistors (High-function Type)

DRT2-□D08C(-1)/□D16C(-1)

Environment-resistive (IP67) I/O Terminals with Troubleshooting Functions such as Sensor Power Supply Short-circuit Detection



- Equipped with the standard Smart Slave functions that provide powerful preventative maintenance and troubleshooting capabilities.
- High degree of environmental resistance with dust-proof and drip-proof construction.
- Power supply wiring is not required for input devices.
- Connect heavy-load devices (up to 1.5 A).
- Power supply wiring is not required for input devices such as sensors. (Power supply wiring is required for output devices.)
- Detects ground faults or disconnects and notifies the Master.

Smart Slave Functions

Contact operation counter	Unit conduction time monitor	Total ON time monitor	Unit comments
Connected device comments	Network power supply voltage monitor	I/O power supply monitor function (output only)	Communications error log function (output only)
Input filter (input only)	Power-ON inrush current protection (input only)	Sensor power supply short-circuit detection (input only)	
Disconnected sensor detection (input only)	External load short-circuit detection (output only)	Communications speed auto-detection	No need to wire Unit power supply
No need to wire input device power supply (input only)	Last maintenance date		

Ordering Information

Specifications		I/O connections	Rated internal circuit power supply voltage	Rated I/O power supply voltage	Model	
Input	NPN (+ common)	8 points	Sensor I/O connector	Supplied from the communications connector	DRT2-ID08C	
	PNP (- common)				DRT2-ID08C-1	
Output	NPN (- common)			Supplied from the communications connector	24 VDC	DRT2-OD08C
	PNP (+ common)					DRT2-OD08C-1
Input	NPN (+ common)	16 points		Supplied from the communications connector	DRT2-HD16C	
	PNP (- common)				DRT2-HD16C-1	

General Specifications

Item	Model	DRT2-ID08C(-1)	DRT2-HD16C(-1)	DRT2-OD08C(-1)
Communications power supply voltage		11 to 25 VDC (Supplied from the communications connector)		
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)		
Noise immunity		Conforms to IEC 61000-4-2 kV (power line)		
Communications power supply current consumption		115mA max. (24 VDC) 90mA max. (11 VDC)	200mA max. (24 VDC) 130mA max. (11 VDC)	35mA max. (24 VDC) 60mA max. (11 VDC)
Vibration resistance		10 to 60 Hz, 0.7-mm double amplitude, 60 to 150 Hz, 50 m/s ² for 80 min each in the X, Y, and Z directions		
Shock resistance		150 m/s ² , 6 directions, 3 times each		
Dielectric strength		500 VAC between isolated circuits		
Insulation resistance		20 MΩ min. (between isolated circuits)		
Ambient operating temperature		-10°C to 55°C		
Ambient operating humidity		25% to 85% (with no condensation)		
Ambient operating atmosphere		No corrosive gases		
Ambient storage temperature		-20°C to 65°C		
Degree of protection		IP67		
Mounting method		M5 screw mounting (front and back)		
Mounting strength		100 N		
Connector strength		30 N		
Screw tightening torque		Round connectors (communications, supply voltage, and I/O): 0.39 to 0.49 N·m M5 (Unit mounting from front): 1.47 to 1.96 N·m		
Weight		340 g max.		390 g max.
I/O power supply connector		--		7/8-16UN
Communications connector		M12		

Input Specifications

● 8-point Inputs Terminals with Transistors

Item	Model	DRT2-ID08C	DRT2-ID08C-1
Internal I/O common		NPN	PNP
I/O points		8 inputs	
ON voltage		9 VDC min. (between input and V terminal)	9 VDC min. (between input and G terminal)
OFF voltage		5 VDC max. (between input and V terminal)	5 VDC max. (between input and G terminal)
OFF current		1.0 mA max.	
Input current		3.0 mA min./point (at 11 VDC) 11.0 mA max./point (at 24 VDC)	
Power supply voltage for sensor		Communications power supply voltage +0 V max. Communications power supply voltage -1.5 V min.	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		8 per common	

● 16-point Inputs Terminals with Transistors

Item	Model	DRT2-HD16C	DRT2-HD16C-1
Internal I/O common		NPN	PNP
I/O points		16 inputs	
ON voltage		9 VDC min. (between input and V terminal)	9 VDC min. (between input and G terminal)
OFF voltage		5 VDC max. (between input and V terminal)	5 VDC max. (between input and G terminal)
OFF current		1.0 mA max.	
Input current		3.0 mA min./point (at 17 VDC) 11.0 mA max./point (at 24 VDC)	
Power supply voltage for sensor		Communications power supply voltage +0 V max. Communications power supply voltage -1.5 V min.	
ON delay time		1.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		16 per common	

Output Specifications

● 8-point Outputs Terminals with Transistors

Item	Model	DRT2-OD08C	DRT2-OD08C-1
Internal I/O common		NPN	PNP
I/O points		8 inputs	
Rated output current		1.5 A per point, 8.0 A per common	
Residual voltage		1.2 V max. (1.5 A DC between each output terminal and G)	1.2 V max. (1.5 A DC between each output terminal and V)
Leakage current		0.1 mA max.	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		8 per common	

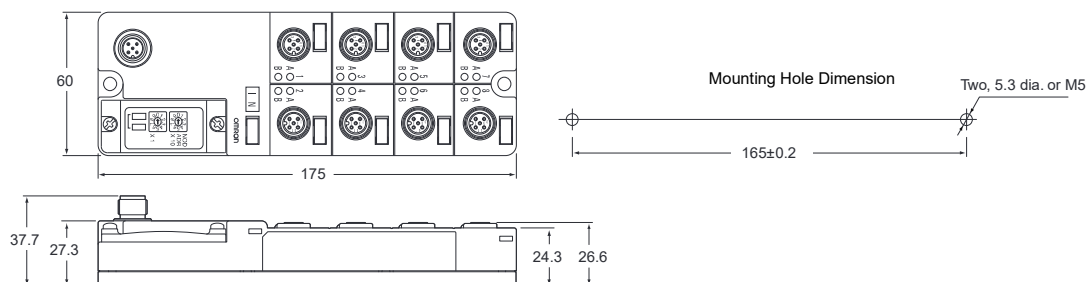
Note: Refer to Peripheral Devices on page 169 for information on applicable connectors.

Dimensions

(Unit: mm)

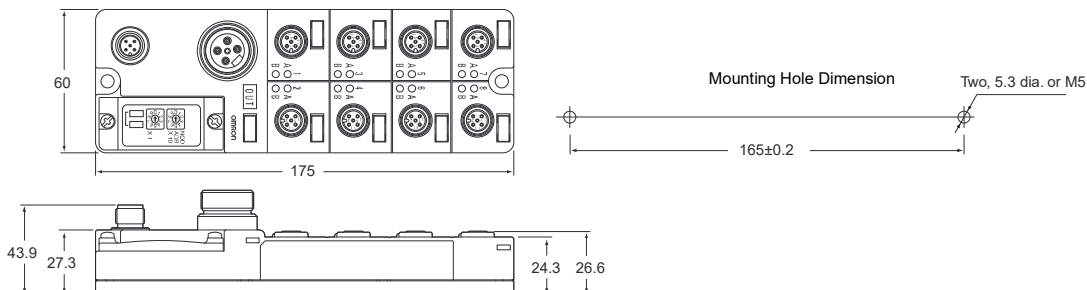
● Environment-resistant Terminals (8 or 16 Inputs)

DRT2-ID08C
DRT2-ID08C-1
DRT2-HD16C
DRT2-HD16C-1



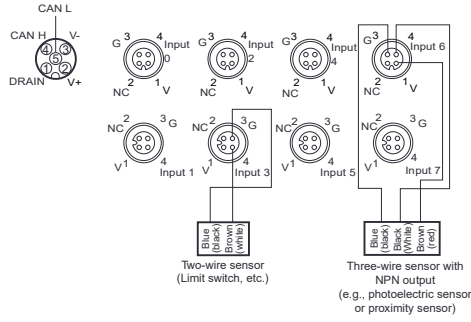
● Environment-resistant Terminals (8 Outputs)

DRT2-OD08C
DRT2-OD08C-1

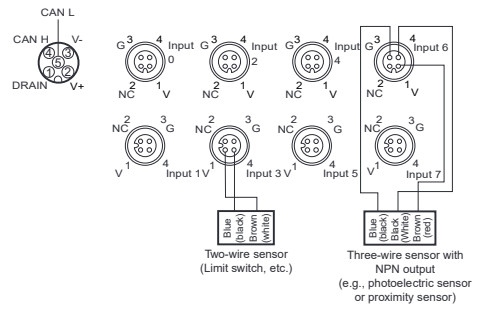


Wiring Diagrams

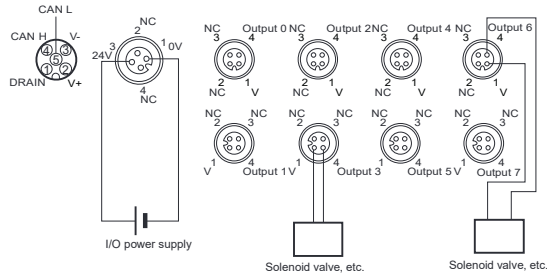
DRT2-ID08C (NPN)



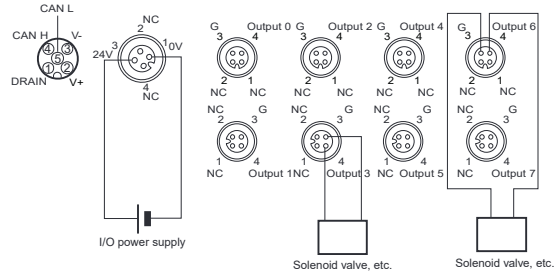
DRT2-ID08C-1 (PNP)



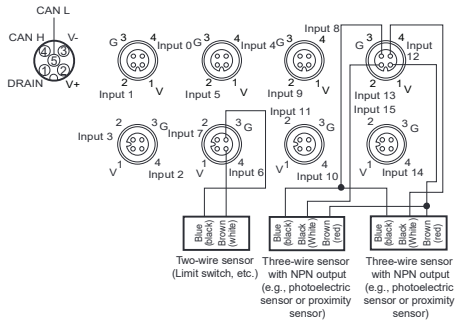
DRT2-OD08C (NPN)



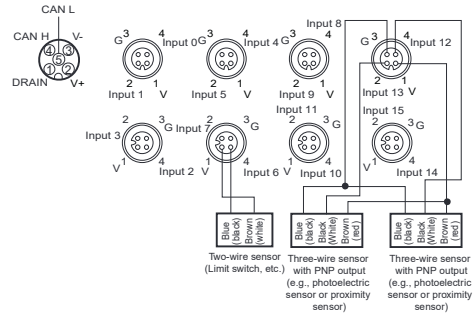
DRT2-OD08C-1 (PNP)



DRT2-HD16C (NPN)



DRT2-HD16C-1 (PNP)



Environment-resistive Terminals with Transistors (Standard Type)

DRT2-□D04CL(-1)/□D08CL(-1)/□D16CL(-1)

Remote I/O Terminals with High Degree of Environmental Resistance (IP67) in Product Lineup Including Economical Input, Output, and Mixed I/O Models

- Common Smart Slave functionality provides strong support for equipment operation status monitoring and effective maintenance.
- High degree of environmental resistance with dust-proof and drip-proof construction. (IP67)
- Models with one connector for two outputs are available to make easier connection with hydraulic valve devices. (Models with 16 outputs and models with 16 mixed I/O)



Smart Slave Functions

Operation time monitor (I/O only) *	Contact operation counter	Unit conduction time monitor
Total ON time monitor	Unit comments	Connected device comments
Network power supply voltage monitor	I/O power supply monitor function	Communications error log function
Input filter (input or I/O only)	Power-ON inrush current protection (input or I/O only)	
Communications speed auto-detection	No need to wire Unit power supply	Last maintenance date

* The operation time monitor can be used with the DRT2-□D04CL(-1).

Ordering Information

Specifications		I/O connections	Rated internal circuit power supply voltage	Rated I/O power supply voltage	Model
Inputs	NPN (+ common)	4 points	Sensor I/O connector	Supplied from the communications connector	DRT2-ID04CL
	PNP (- common)				DRT2-ID04CL-1
Outputs	NPN (- common)				DRT2-OD04CL
	PNP (+ common)				DRT2-OD04CL-1
Inputs	NPN (+ common)	8 points			DRT2-ID08CL
	PNP (- common)				DRT2-ID08CL-1
Outputs	NPN (- common)				DRT2-OD08CL
	PNP (+ common)				DRT2-OD08CL-1
Inputs	NPN (+ common)	16 points	DRT2-HD16CL		
	PNP (- common)		DRT2-HD16CL-1		
Outputs	NPN (- common)		DRT2-WD16CL		
	PNP (+ common)		DRT2-WD16CL-1		
I/O	NPN (input: + common, output: - common)	8 inputs/ 8 outputs	DRT2-MD16CL		
	PNP (input: - common, output: + common)		DRT2-MD16CL-1		

General Specifications

Item	Model	DRT2-ID04CL(-1)	DRT2-OD04CL(-1)	DRT2-ID08CL(-1)	DRT2-OD08CL(-1)	DRT2-HD16CL(-1)	DRT2-WD16CL(-1)	DRT2-MD16CL(-1)
Communications power supply voltage	11 to 25 VDC (Supplied from the communications connector)							
I/O power supply voltage	20.4 to 26.4 VDC (24 VDC -15%/+10%)							
Noise immunity	Conforms to IEC 61000-4-4 2 kV (power line)							
Communications power supply current consumption	35mA max. (24 VDC) 55mA max. (11 VDC)		35mA max. (24 VDC) 50mA max. (11 VDC)		40mA max. (24 VDC) 55mA max. (11 VDC)	35mA max. (24 VDC) 55mA max. (11 VDC)	40mA max. (24 VDC) 55mA max. (11 VDC)	
Vibration resistance	10 to 60 Hz with double-amplitude of 0.7 mm, 60 to 150 Hz and 50 m/s ² in X, Y, and Z directions for 80 min each							
Shock resistance	150m/s ² , 6 directions, 3 times each							
Dielectric strength	500 VAC between isolated circuits							
Insulation resistance	20 MΩ min. (between isolated circuits)							
Ambient operating temperature	-10°C to 55°C							
Ambient operating humidity	25% to 85% (with no condensation)							
Ambient operating atmosphere	No corrosive gases							
Ambient storage temperature	-20°C to 65°C							
Degree of protection	IP67							
Mounting method	M5 screw mounting (front and back)							
Mounting strength	100 N							
Connector strength	30 N							
Screw tightening torque	Round connectors (communications, supply voltage, and I/O): 0.39 to 0.49 N*m M5 (Unit mounting from front): 1.47 to 1.96 N*m							
Weight	275 g max.		390 g max.					
I/O power supply connector	7/8-16UN							
Communications connector	M12							

Input Specifications

● 4-input Models

Item	Model	DRT2-ID04CL	DRT2-ID04CL-1
Internal I/O common		NPN	PNP
I/O points	4 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	1.0 mA max.		
Input current	6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC		
I/O power supply voltage	20.4 to 26.4 VDC (24 VDC -15%/+10%)		
ON delay time	1.5 ms max.		
OFF delay time	1.5 ms max.		
Number of circuits per common	4 per common		

● 16-input Models

Item	Model	DRT2-HD16CL	DRT2-HD16CL-1
Internal I/O common		NPN	PNP
I/O points	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	1.0 mA max.		
Input current	6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC		
I/O power supply voltage	20.4 to 26.4 VDC (24 VDC -15%/+10%)		
ON delay time	1.5 ms max.		
OFF delay time	1.5 ms max.		
Number of circuits per common	16 per common		

● 8-input Models

Item	Model	DRT2-ID08CL	DRT2-ID08CL-1
Internal I/O common		NPN	PNP
I/O points	8 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	1.0 mA max.		
Input current	6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC		
I/O power supply voltage	20.4 to 26.4 VDC (24 VDC -15%/+10%)		
ON delay time	1.5 ms max.		
OFF delay time	1.5 ms max.		
Number of circuits per common	8 per common		

● 8-input/8-output Models

Item	Model	DRT2-MD16CL	DRT2-MD16CL-1
Internal I/O common		NPN	PNP
I/O points	8 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	1.0 mA max.		
Input current	6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC		
I/O power supply voltage	20.4 to 26.4 VDC (24 VDC -15%/+10%)		
ON delay time	1.5 ms max.		
OFF delay time	1.5 ms max.		
Number of circuits per common	8 per common		

Output Specifications

● 4-output Models

Item	Model	DRT2-OD04CL	DRT2-OD04CL-1
Internal I/O common		NPN	PNP
I/O points		4 outputs	
Rated output current		0.5 A per point, 2.0 A per common	
Residual voltage		1.2 V max. (0.5 A DC between each output terminal and G)	1.2 V max. (0.5 A DC between each output terminal and V)
Leakage current		0.1 mA max.	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		4 per common	

● 8-output Models

Item	Model	DRT2-OD08CL	DRT2-OD08CL-1
Internal I/O common		NPN	PNP
I/O points		8 outputs	
Rated output current		0.5 A per point, 4 A per common	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
Residual voltage		1.2 V max. (0.5 A DC between each output terminal and G)	1.2 V max. (0.5 A DC between each output terminal and V)
Leakage current		0.1 mA max.	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		8 per common	

● 16-output Models

Item	Model	DRT2-WD16CL	DRT2-WD16CL-1
Internal I/O common		NPN	PNP
I/O points		16 outputs	
Rated output current		0.5 A per point, 4 A per common	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
Residual voltage		1.2 V max. (0.5 A DC between each output terminal and G)	1.2 V max. (0.5 A DC between each output terminal and V)
Leakage current		0.1 mA max.	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		16 per common	

● 8-input/8-output Models

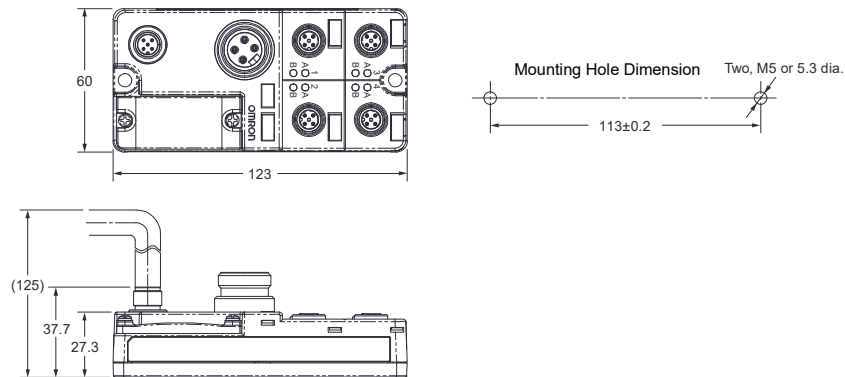
Item	Model	DRT2-MD16CL	DRT2-MD16CL-1
Internal I/O common		NPN	PNP
I/O points		8 outputs	
Rated output current		0.5 A per point, 4 A per common	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
Residual voltage		1.2 V max. (0.5 A DC between each output terminal and G)	1.2 V max. (0.5 A DC between each output terminal and V)
Leakage current		0.1 mA max.	
I/O power supply voltage		20.4 to 26.4 VDC (24 VDC -15%/+10%)	
ON delay time		0.5 ms max.	
OFF delay time		1.5 ms max.	
Number of circuits per common		8 per common	

Note: Refer to Peripheral Devices on page 169 for information on applicable connectors.

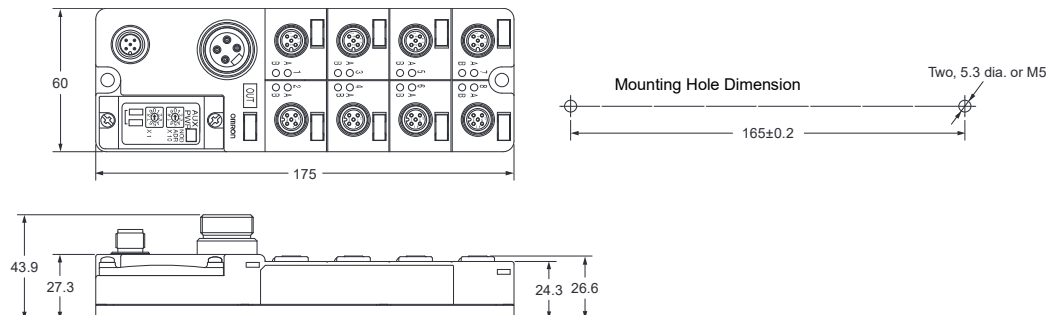
(Unit: mm)

Dimensions

DRT2-ID04CL(-1)
DRT2-OD04CL(-1)

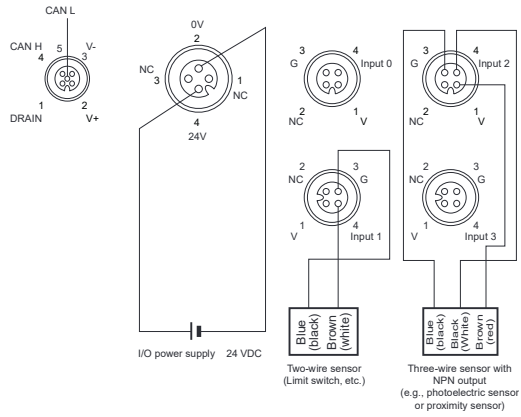


DRT2-ID08CL(-1)
DRT2-OD08CL(-1)
DRT2-HD16CL(-1)
DRT2-WD16CL(-1)
DRT2-MD16CL(-1)

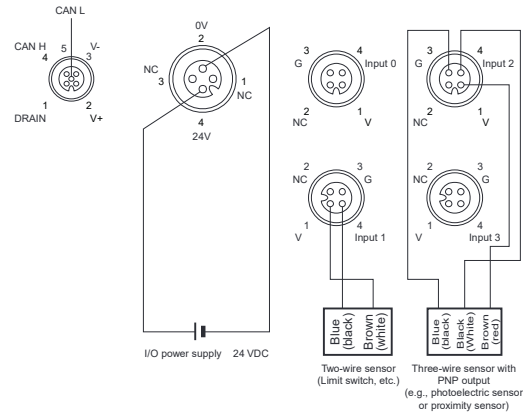


Wiring Diagrams

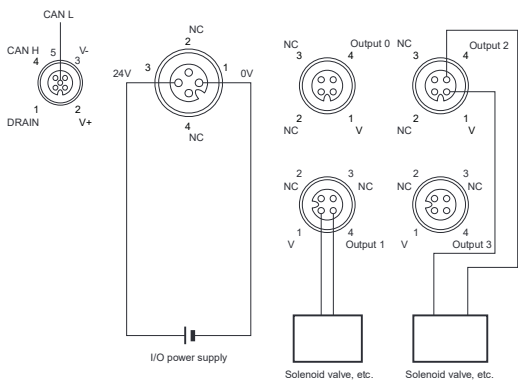
DRT2-ID04CL (NPN)



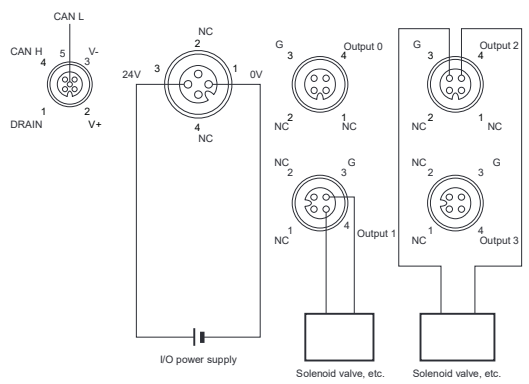
DRT2-ID04CL-1 (PNP)



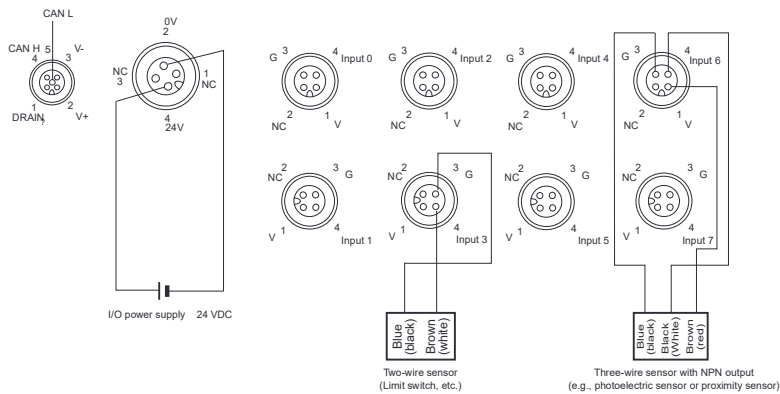
DRT2-OD04CL (NPN)



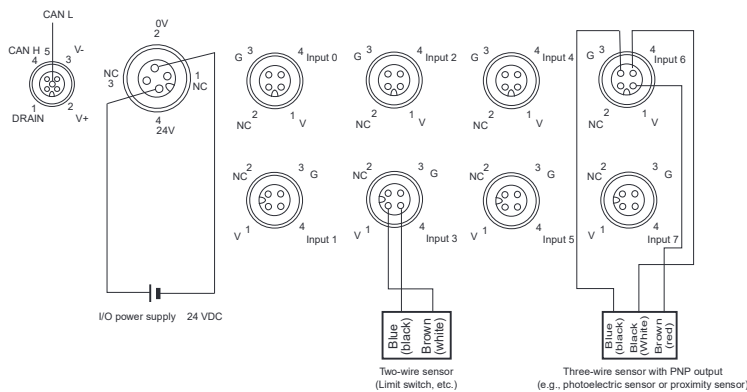
DRT2-OD04CL-1 (PNP)



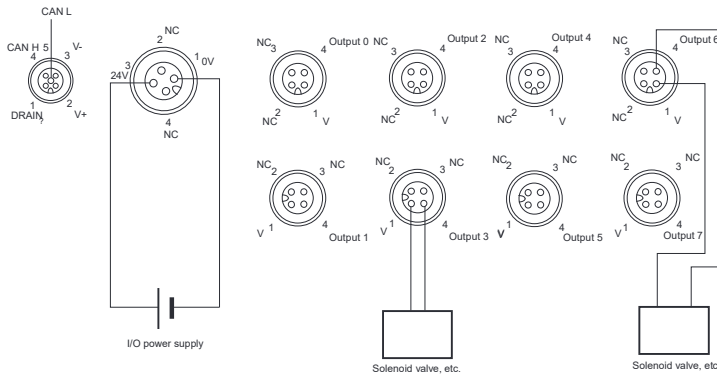
DRT2-ID08CL (NPN)



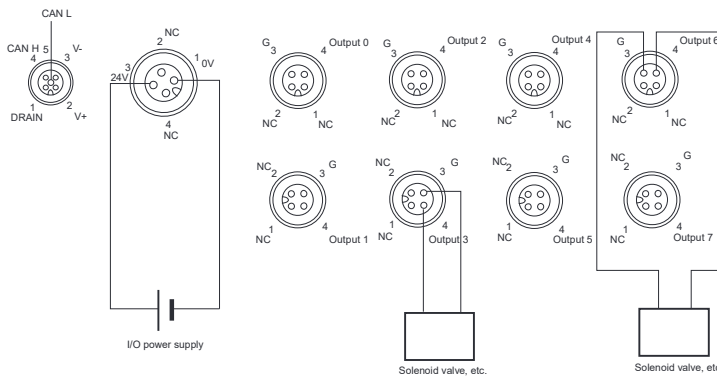
DRT2-ID08CL-1 (PNP)



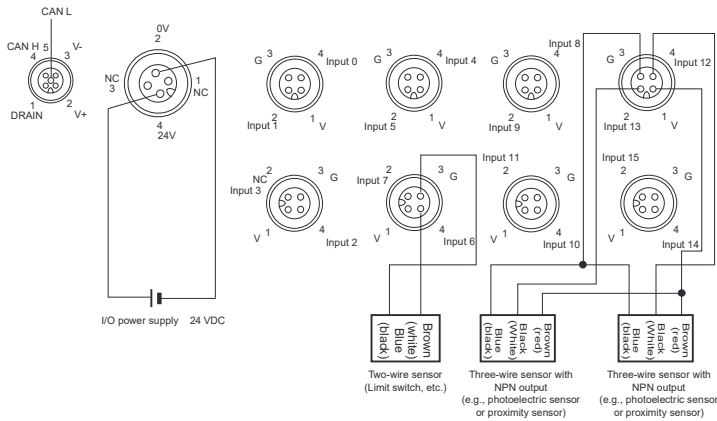
DRT2-OD08CL (NPN)



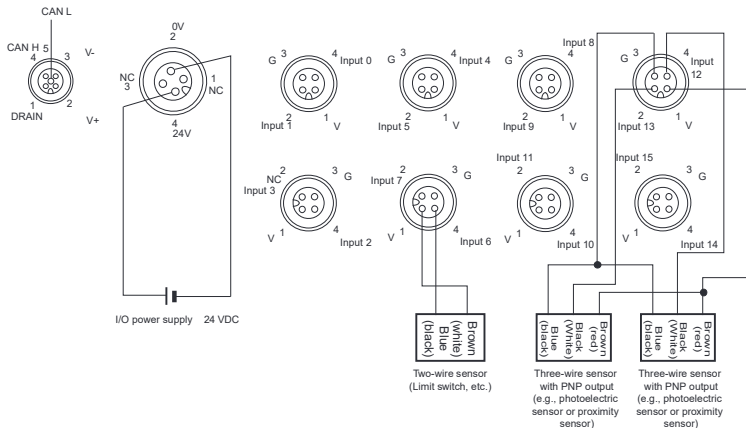
DRT2-OD08CL-1 (PNP)



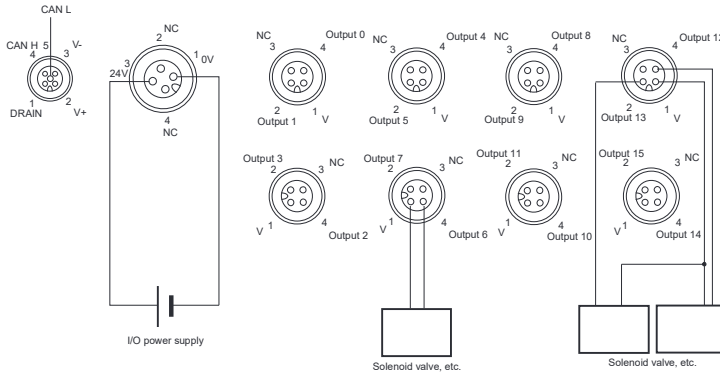
DRT2-HD16CL (NPN)



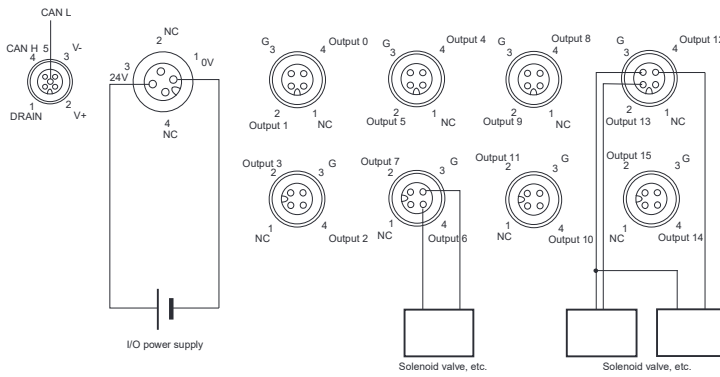
DRT2-HD16CL-1 (PNP)



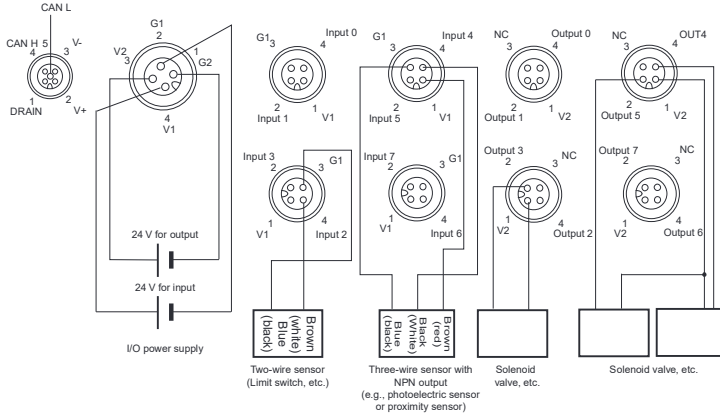
DRT2-WD16CL (NPN)



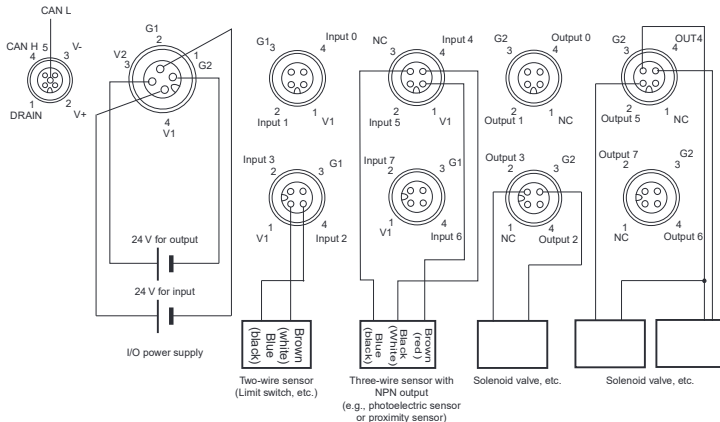
DRT2-WD16CL-1 (PNP)



DRT2-MD16CL (NPN)



DRT2-MD16CL-1 (PNP)



Analog I/O Terminals

DRT2-AD04(H)/DA02

Performs Calculations on Analog Values within the Slave Itself. Also Provides High Resolution at 1/30,000 (Full Scale) and Support for a Wide Variety of Data Sampling.

- Equipped with the standard Smart Slave functions that provide powerful preventative maintenance and troubleshooting capabilities.
- Sampling data can be analyzed internally to provide a low-cost scheduler function.
- Equipped with functions such as the scaling function, peak/bottom hold; top/valley hold; comparator function, cumulative counter, and derivative calculation function.
- Two I/O points 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

- | | | | |
|-----------------------------------|---|--|--------------------------------------|
| Unit conduction time monitor | Unit comments | Connected device comments | Network power supply voltage monitor |
| Communications error log function | Removable terminal block | Automatic baud rate detection. No wiring required. | No need to wire Unit power supply |
| Scaling | User calibration | Last maintenance date | Integration |
| Moving averaging (inputs only) | Peak/bottom hold | Top/valley hold | Rate of change calculation |
| Comparator | AD conversion points (conversion cycle) setting (inputs only) | Error output value setting (outputs only) | |

Ordering Information

Classification	I/O points	Model
Analog input	4 inputs (Resolution: 6, 000)	DRT2-AD04
	4 inputs (Resolution: 30, 000)	DRT2-AD04H
Analog output	2 outputs	DRT2-DA02

General Specifications

Item	Model	DRT2-AD04	DRT2-AD04H	DRT2-DA02
Communications power supply voltage		11 to 25 VDC (Supplied from the communications connector)		
Current consumption		90 mA max. (24 VDC) 150 mA max. (11V DC)	70 mA max. (24 VDC) 110 mA max. (11 VDC)	120 mA max. (24 VDC) 220 mA max. (11 VDC)
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		
Dielectric strength		500 VAC for 1 min between the communications circuit and analog circuit (1 mA sensing current)		
Ambient operating temperature		-10°C to 55°C (with no icing or condensation)		
Ambient operating humidity		25% to 85%		
Ambient operating atmosphere		No corrosive gases		
Ambient storage temperature		-20°C to 65°C		
Mounting method		DIN 35 mm-track mounting		
Mounting strength		50 N 10 N (in the DIN Track direction)		
Screw tightening torque		M3 (power, I/O terminal): 0.5 N·m		
Weight		170 g max.	160 g max.	150 g max.

Input Specifications

Model		DRT2-AD04		DRT2-AD04H	
Item	Specifications	Voltage input	Current input	Voltage input	Current input
Input points	4 points (inputs 0 to 3)				
Input type	0 to 5 V 1 to 5 V 0 to 10 V -10 to +10 V	0 to 20 mA 4 to 20 mA		0 to 5 V 1 to 5 V 0 to 10 V	0 to 20 mA 4 to 20 mA
Input range setting method	<ul style="list-style-type: none"> Set using DIP switches: Shared by inputs 0 and 1, shared by inputs 2 and 3 Set using the Configurator: Possible to set inputs 0 to 3 independently 				
Maximum signal input	±15 V	±30 mA		±15 V	±30 mA
Input impedance	1 MΩ min.	Approx. 250 Ω		1 MΩ min.	Approx. 250 Ω
Resolution	1/6,000 (FS)			1/30,000 FS (full scale)	
Overall accuracy	25°C	±0.3% FS	±0.4% FS	±0.3% FS	±0.4% FS
	-10°C to 55°C	±0.6% FS	±0.8% FS	±0.6% FS	±0.8% FS
Conversion time	4 ms max. for 4 inputs Note: When calculation functions are not used and the DeviceNet communications cycle is 4 ms.			250 ms max. for 4 inputs	
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			Full scale is 0000 to 7530 hexadecimal A/D conversion range: ±5% FS	
Insulation method	Photocoupler isolation between inputs and communications lines (There is no isolation between input signals)			Photocoupler isolation (between inputs and communications lines and between temperature input signals)	
I/O connections	Terminal block				
Accessories	Four shorting bars for use with current inputs.				

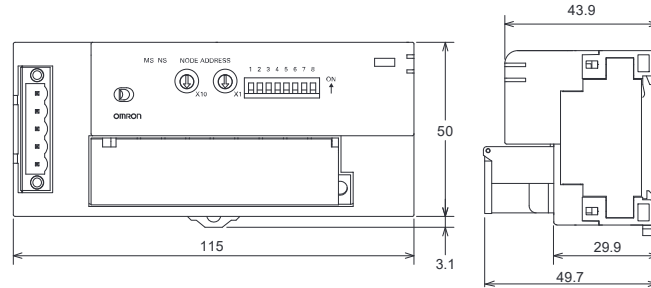
Output Specifications

Model		DRT2-DA02	
Item	Specifications	Voltage output	Current output
Output points	2 points (output 0 and 1)		
Output type	0 to 5 V 1 to 5 V 0 to 10 V -10 to 10 V		0 to 20 mA 4 to 20 mA
Input range setting method	<ul style="list-style-type: none"> Set using DIP switches: Independent for outputs 0 and 1 Set using the Configurator: Independent for outputs 0 and 1 		
Allowable output load resistance	1 KΩ min.		600 Ω max.
Resolution	1/6,000 (FS)		
Overall 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		
Insulation method	Photocoupler isolation between outputs and communications lines (There is no isolation between output signals)		
I/O connections	Terminal block		
Accessories	None		

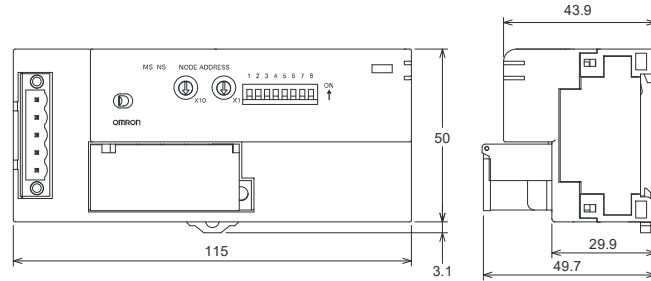
Dimensions

(Unit: mm)

DRT2-AD04
DRT2-AD04H

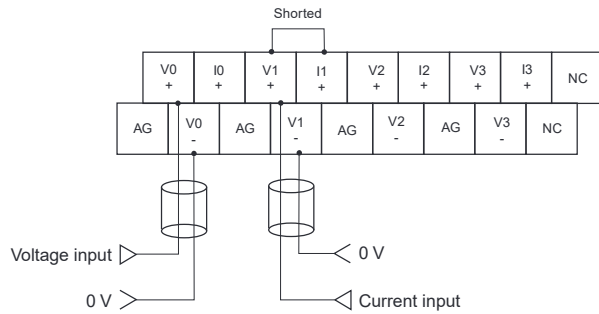


DRT2-DA02



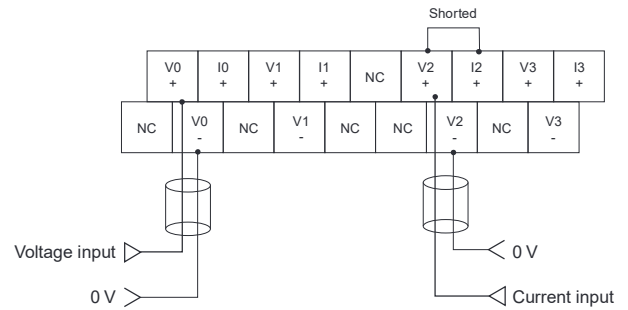
Wiring Diagrams

DRT2-AD04



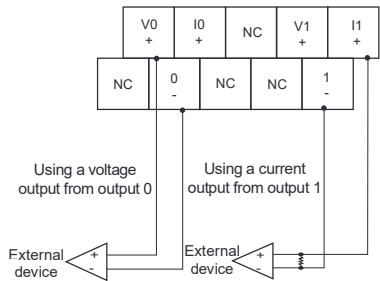
Note: With using a current input, always short the V+ and I+ terminals. (Use the shorting bar provided with the Unit.)

DRT2-AD04H



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

DRT2-DA02



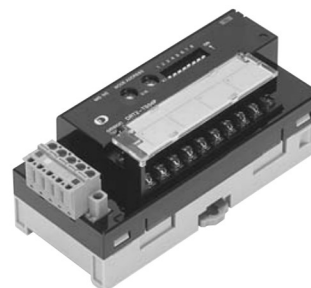
Note: The voltage and current output ranges (signals) are set with either the DIP switch or the Configurator settings.

Temperature Input Terminals

DRT2-TS04□

Temperature Input Terminal with Smart Functionality

- The Temperature Input Terminal can be used with almost the same functionality as a Analog Input Terminal, such as with scaling and comparator functions.
- Enhanced performance is provided with functionality specific to the Temperature Input Terminal, such as the recording the operating time in a preset temperature range and temperature difference detection between input channels.



Smart Slave Functions

Unit conduction time monitor	Unit comments	Connected device comments	Network power supply voltage monitor
Communications error log function	Removable terminal block	Communications speed auto-detection	No need to wire Unit power supply
Scaling	User calibration	Last maintenance date	Integration
Moving averaging	Peak/bottom hold	Top/valley hold	Rate of change calculation
Comparator	Top/valley count	Operating time in preset temperature range	Temperature difference detection between input channels

Ordering Information

Input type	I/O points	Model
Thermocouple input	4 inputs allocated 4 input words at the Master Unit (8 input words allocated when 1/100 display mode is selected).	DRT2-TS04T
Platinum-resistance thermometer input		DRT2-TS04P

General Specifications

Item	Model	DRT2-TS04T	DRT2-TS04P
Input type		Thermocouple input	Platinum-resistance thermometer input
I/O points		4 inputs allocated 4 input words at the Master Unit (8 input words allocated when 1/100 display mode is selected)	
Communications power supply voltage		11 to 25 VDC (Supplied from the communications connector)	
Current consumption		70 mA max. (24 VDC), 110 mA max. (11 VDC)	
Noise immunity		Conforms to IEC61000-4-4, 2.0 kV	
Vibration resistance		10 to 150 Hz, 0.7-mm single amplitude	
Shock resistance		150 m/s ²	
Dielectric strength		500 VAC (between isolated circuits)	
Insulation resistance		20 MΩ min. (initial value) at 100 VDC	
Ambient operating temperature		-10°C to 55°C (with no icing or condensation)	
Ambient operating humidity		25% to 85%	
Ambient operating atmosphere		No corrosive gases	
Ambient storage temperature		-25°C to 65°C	
Mounting method		DIN 35 mm-track mounting	
Mounting strength		50 N 10 N (in the DIN Track direction)	
Screw tightening torque		M3: 0.5 N·m	
Terminal strength		No damage when 50 N pull load was applied.	
Weight		160 g max.	

Performance Specifications

Item	Model	DRT2-TS04T	DRT2-TS04P #1														
Input types		Switchable between R, S, K1, K2, J1, J2, T, B, L1, L2, E, U, N, W, and PLII When set with Configurator: Input types can be set individually for each input. When set with DIP switch: The same input type setting applies to all 4 inputs.	Switchable between PT, JPT, PT2, and JP2T When set with Configurator: Input types can be set individually for each input. When set with DIP switch: The same input type setting applies to all 4 inputs.														
Indicator accuracy		(±0.3% of indication value or ±1°C, whichever is larger) ±1 digit max. *2 <table border="1"> <thead> <tr> <th>Input type</th> <th>Input accuracy</th> </tr> </thead> <tbody> <tr> <td>K1, K2, T, and N below -100°C</td> <td>±2°C ±1 digit max.</td> </tr> <tr> <td>U, L1, and L2</td> <td>±2°C ±1 digit max.</td> </tr> <tr> <td>R and S below 200°C</td> <td>±3°C ±1 digit max.</td> </tr> <tr> <td>B below 400°C</td> <td>Not specified.</td> </tr> <tr> <td>W</td> <td>±0.3% of indication value or ±3°C (whichever is larger) ±1 digit max.</td> </tr> <tr> <td>PLII</td> <td>±0.3% of indication value or ±2°C (whichever is larger) ±1 digit max.</td> </tr> </tbody> </table>	Input type	Input accuracy	K1, K2, T, and N below -100°C	±2°C ±1 digit max.	U, L1, and L2	±2°C ±1 digit max.	R and S below 200°C	±3°C ±1 digit max.	B below 400°C	Not specified.	W	±0.3% of indication value or ±3°C (whichever is larger) ±1 digit max.	PLII	±0.3% of indication value or ±2°C (whichever is larger) ±1 digit max.	-200 to 850°C input range: (±0.3% of indication value or ±0.8°C, whichever is larger) ±1 digit max. -200 to 200°C input range: (±0.3% of indication value or ±0.5°C, whichever is larger) ±1 digit max.
Input type	Input accuracy																
K1, K2, T, and N below -100°C	±2°C ±1 digit max.																
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W	±0.3% of indication value or ±3°C (whichever is larger) ±1 digit max.																
PLII	±0.3% of indication value or ±2°C (whichever is larger) ±1 digit max.																
Conversion cycle		250 ms/4 points															
Temperature conversion data		Binary data (4-digit hexadecimal when normal display mode is selected or 8-digit hexadecimal when 1/100 display mode is selected.)															
Insulation method		Between input and communication lines: Photocoupler insulation Between temperature input signals: Photocoupler insulation															

*1. A current of 0.35 mA flows to sensors connected to the DRT2-TS04P.

*2. The indicator accuracy specifications differ depending on the mounting direction. Refer to the above table for details.

● Indicator accuracy when only the Unit or the Terminal Block is replaced

In the DRT2-TS04T, a cold junction compensator is included in the Terminal Block. The indicator accuracy will be reduced depending on the mounting direction if only the Terminal Unit is replaced and the Lot No. and serial No. of the Terminal Block and Terminal Unit do not match. The Lot No. and serial No. of the Terminal Block and Terminal Unit can be found on the labels affixed to the products as shown below.

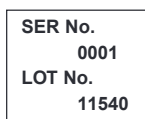
Terminal Unit Label

Remove the terminal block. The label is affixed to the top of the unit.



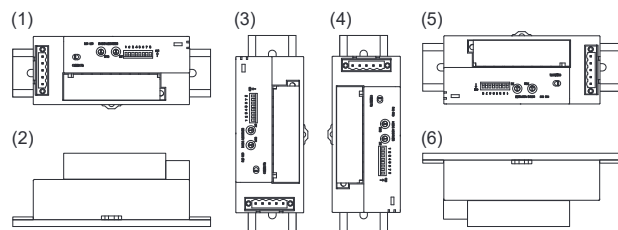
Terminal Block Label

The label is affixed to the left side of the terminal block.



If the Lot No. and serial No. of the terminal block and Unit are the same, basic performance specifications apply regardless of the mounting direction. If the numbers are different, the following indication accuracies apply.

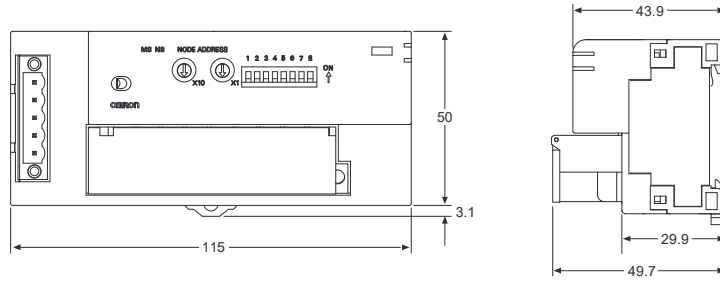
Mounting direction	Indication accuracies													
Mounted normally (1)	As specified in the Performance Specifications.													
Mounted in any other direction other than (1)	(±0.3% of indication value or ±2°C, whichever is greater) ±1 digit max.													
	<table border="1"> <thead> <tr> <th>Input type</th> <th>Indication accuracies</th> </tr> </thead> <tbody> <tr> <td>K1, K2, T, and N below -100°C</td> <td>±3°C ±1 digit max.</td> </tr> <tr> <td>U, L1, and L2</td> <td>±3°C ±1 digit max.</td> </tr> <tr> <td>R and S below 200°C</td> <td>±4°C ±1 digit max.</td> </tr> <tr> <td>B below 400°C</td> <td>Not specified.</td> </tr> <tr> <td>W</td> <td>±0.3% of indication value or ±4°C (whichever is larger) ±1 digit max.</td> </tr> <tr> <td>PLII</td> <td>±0.3% of indication value or ±3°C (whichever is larger) ±1 digit max.</td> </tr> </tbody> </table>	Input type	Indication accuracies	K1, K2, T, and N below -100°C	±3°C ±1 digit max.	U, L1, and L2	±3°C ±1 digit max.	R and S below 200°C	±4°C ±1 digit max.	B below 400°C	Not specified.	W	±0.3% of indication value or ±4°C (whichever is larger) ±1 digit max.	PLII
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Dimensions

(Unit: mm)

DRT2-TS04T
DRT2-TS04P



Terminal Arrangement

DRT2-TS04T



Cold junction compensator

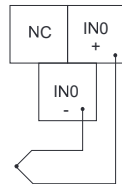
Do not touch or remove the cold junction compensator.
Otherwise temperature data will not display properly.

DRT2-TS04P

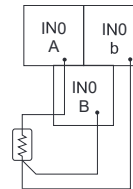


Wiring Diagrams

DRT2-TS04T (Thermocouple input)



DRT2-TS04P (Platinum resistance thermometer input)



SmartSlice GRT1 Series

SmartSlice GRT1 Series.....	64
■ What Is the SmartSlice GRT1 Series	
■ System Configuration	
■ Internal Circuit Configuration	
DeviceNet Communications Unit.....	68
GRT1-DRT	
SmartSlice I/O Units	70

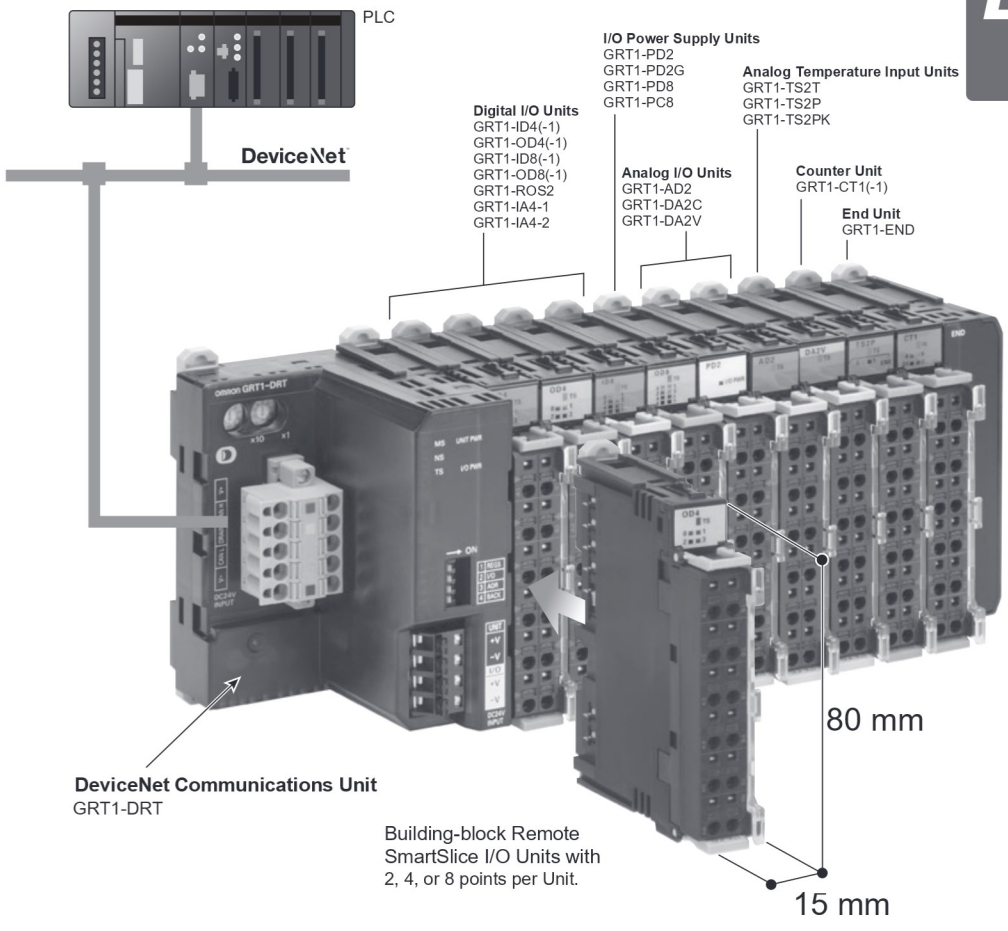
SmartSlice GRT1 Series

DeviceNet-compliant Building-block I/O Terminals to Save Space, Cut Costs, and Reduce Work.

What Is the SmartSlice GRT1 Series?

This SmartSlice GRT1 Series consists of building-block I/O Terminals that enable building flexible systems to match the customer's applications with features such as I/O expansion using small numbers of points.

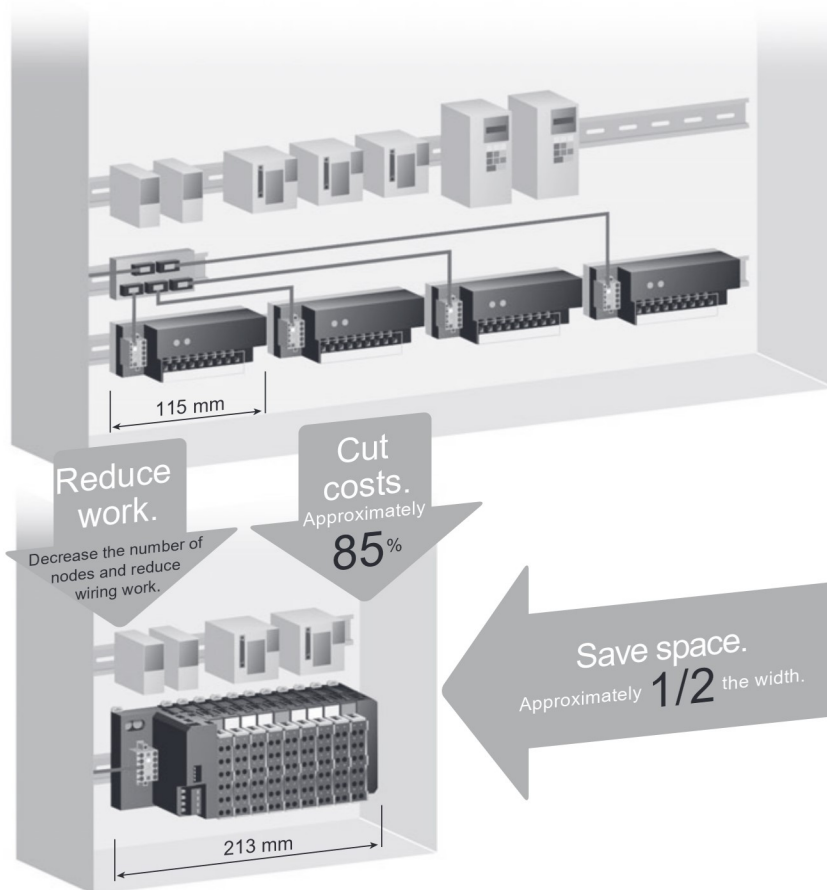
Easy & Smart



Connect up to 64 Units with up to 1,024 points.

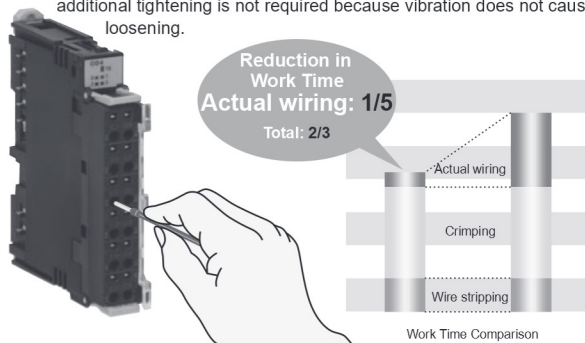
Easily save space and reduce costs.

		Number of redundant points	
		Previous slaves	SmartSlice
Inputs	20	12	0
Outputs	10	6	2
Analog inputs	2	2	0
Number of nodes		4	1



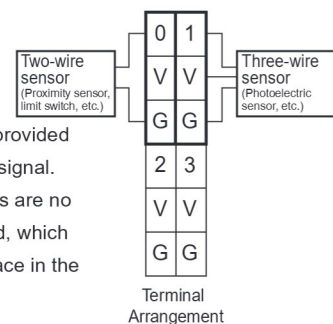
One-touch Wiring

The terminal block with screwless clamp terminals greatly reduces work. Also, additional tightening is not required because vibration does not cause loosening.



Also Save Space in the Control Panel

V and G terminals are provided for each input signal. Relay terminals are no longer required, which helps save space in the control panel.



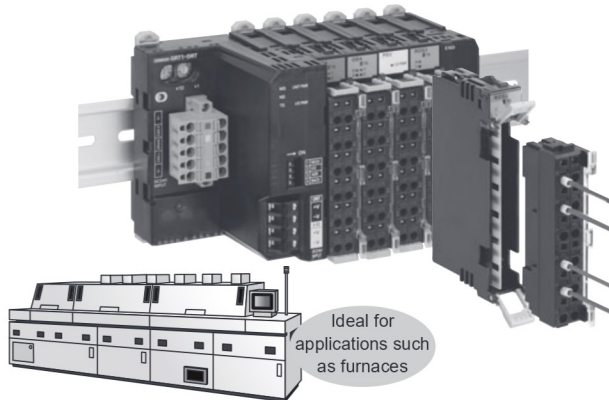
Set Only the Node Addresses

Automatic baud rate detection and automatic I/O allocations enable immediate use with no Support Software.



Online replacement makes maintenance easy

The terminal block, main block, and power supply block of the I/O Unit are detachable. Replacement can be performed online without changing the I/O wiring and while maintaining communications for the remaining Units. This is ideal for applications such as furnaces, where heaters must be remain turned ON as much as possible.



Ideal for applications such as furnaces

Equipped with Smart Functions

The highly acclaimed Smart Functions of the DRT2 Series are used. This helps monitor the operation status of the equipment and improves capacity utilization.



Smart Timing

The Slave Unit stores the equipment operating time and amount of change in operation as data to enable monitoring without increasing the load between Controllers.

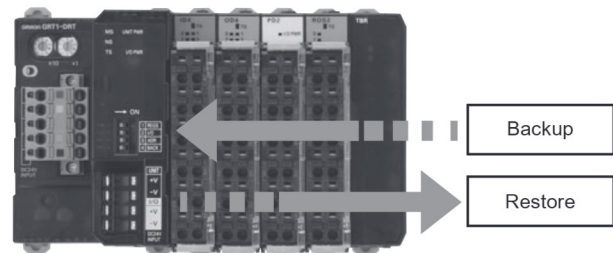


Smart Counting

The number of ON/OFF operations of the equipment and the total operating time are counted by the Slave Unit to provide notification when maintenance is required.

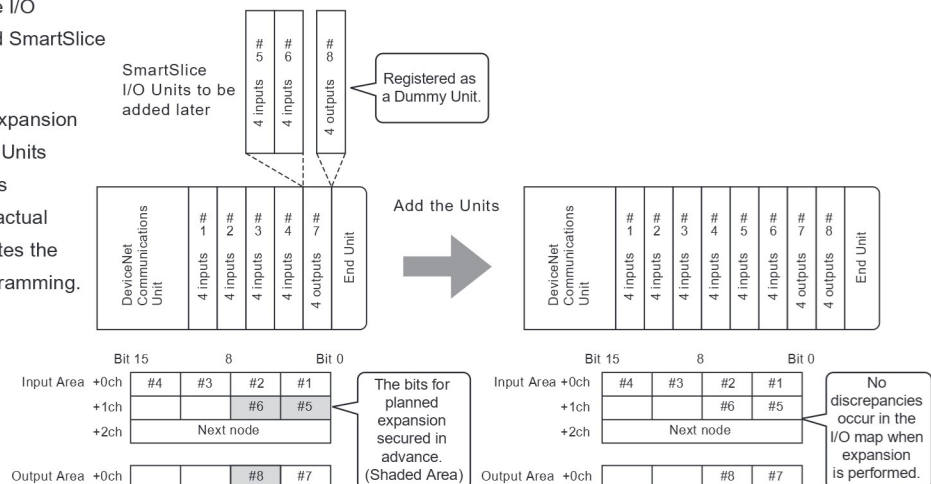
Recover Unit Parameters without Support Software

Unit data can be backed up by manipulating a DIP switch. Automatically restoring data after Unit replacement improves maintenance efficiency.



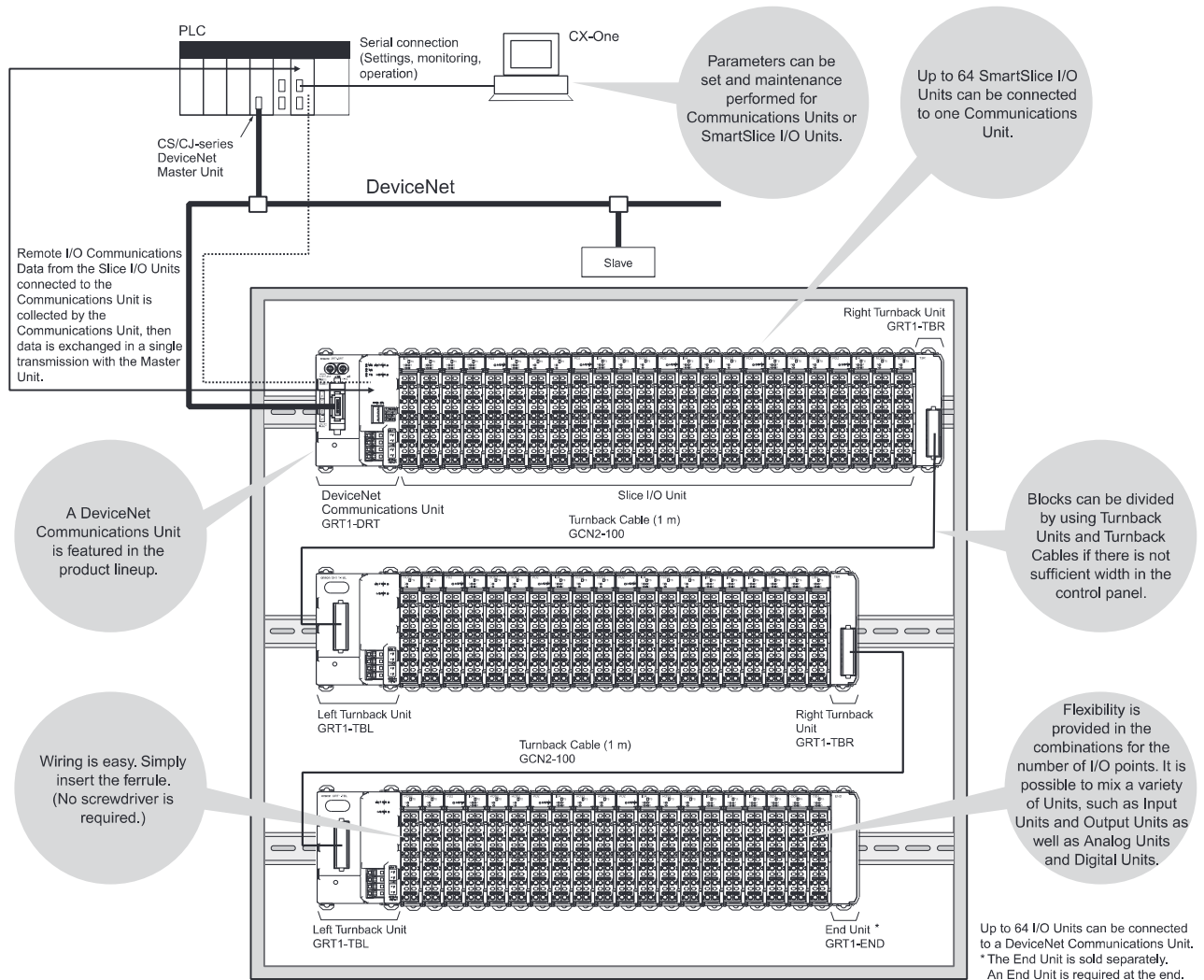
I/O Allocation Software Settings New Function

- This function enables registering the I/O configuration data of a non-mounted SmartSlice I/O Unit as a dummy.
- Securing the required capacity for expansion in the I/O map in advance when I/O Units must be added in the future prevents discrepancies in the I/O map when actual expansion is performed and eliminates the need for significant changes in programming.



Support for flexible I/O configurations to match the application help downsize the control panel, cut costs, and decrease wiring work.

System Configuration



Internal Circuit Configuration

