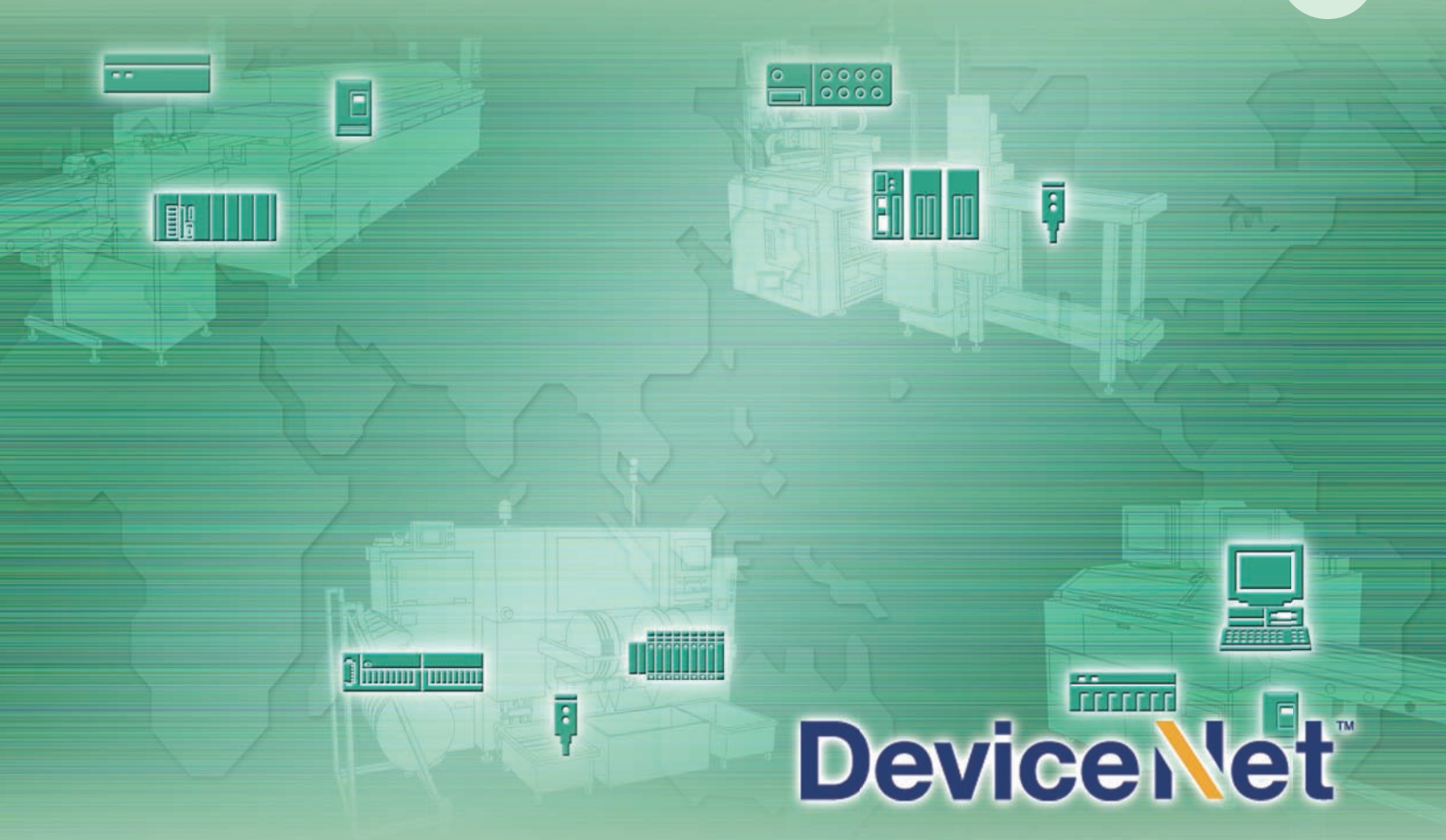


Multi-vendor Network
DeviceNet



DeviceNet™

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

P. 110

Selecting a Network Is a Strategic Decision. to Evolve.

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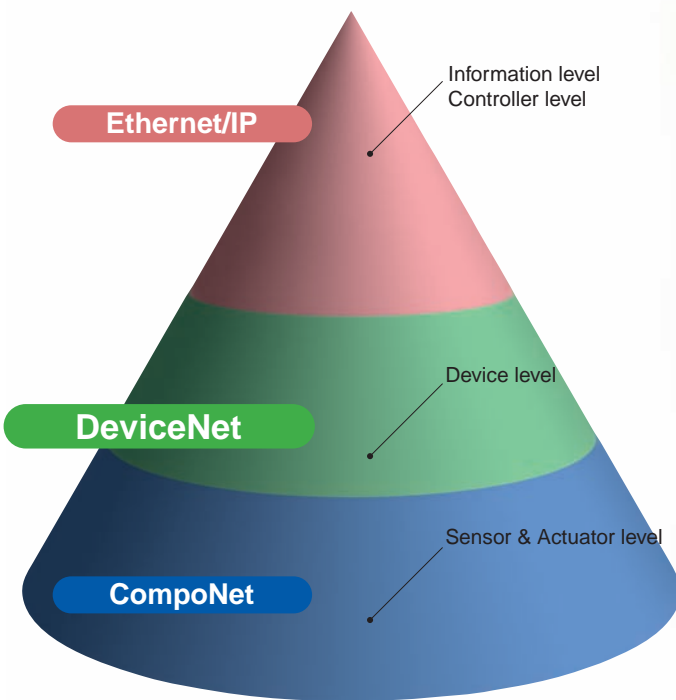
DeviceNet™, EtherNet/IP™, CompoNet™ and CIP Safety™ are the trademarks of ODVA.

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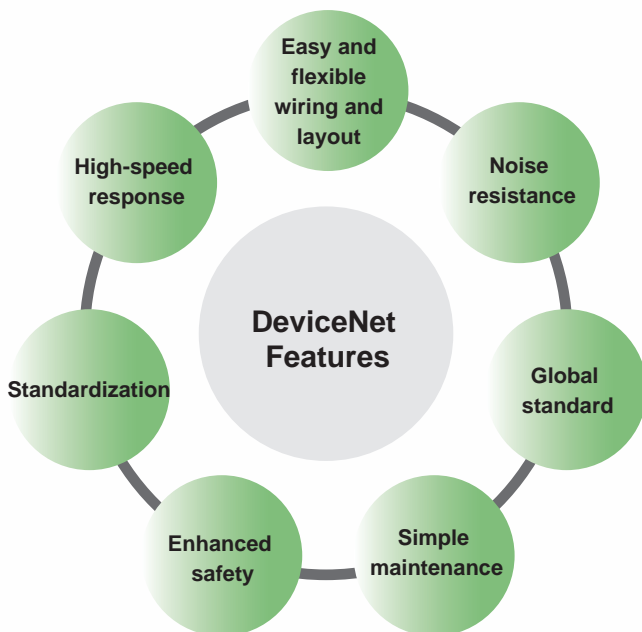
Linking the World. A Global Open Network Greater Wiring Reduction, Standardization, on a Global Scale.

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.



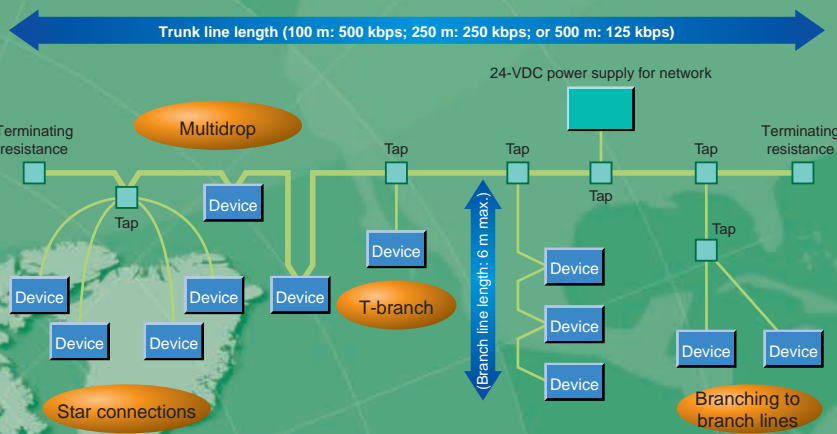
Device



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.

A globe graphic is centered, surrounded by four international standards:

- 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](#)

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

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

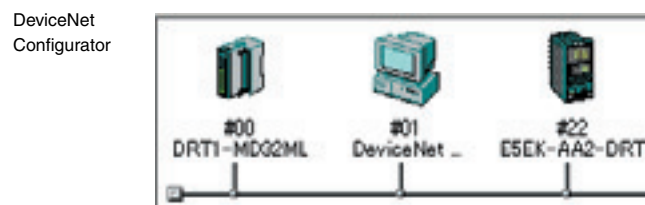
The Slave Unit represents machine operating time and operational changes as data, enabling monitoring without increasing the load between controllers.



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

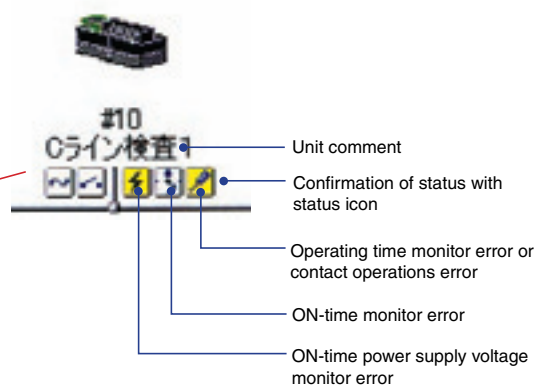
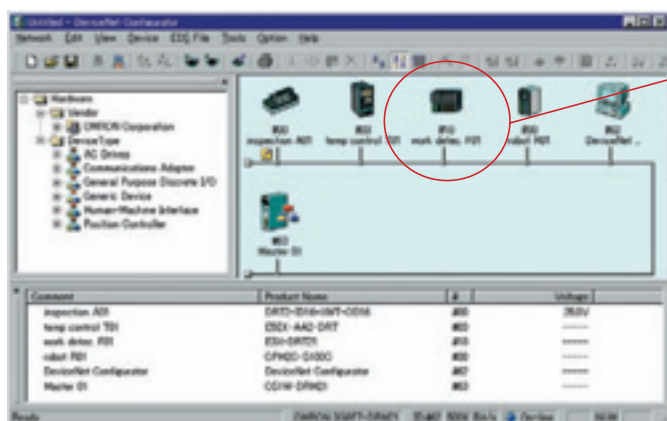


Operating time, contact operation counter

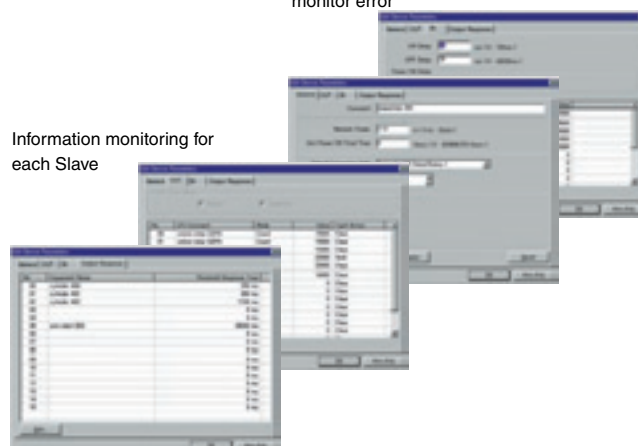


Improve Maintenance Efficiency

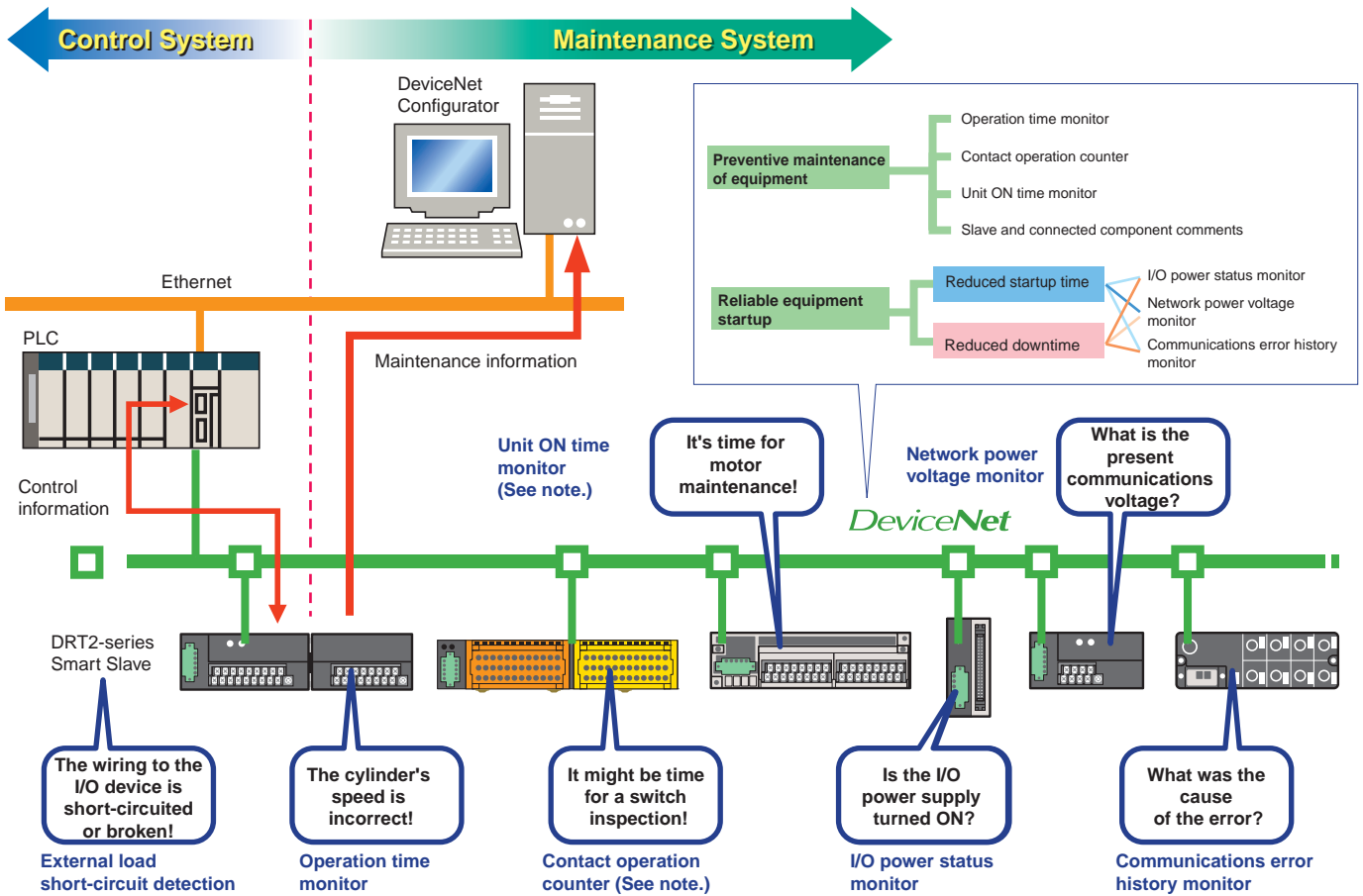
The Slave can hold comments, allowing quick identification of fault locations and faulty devices.



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

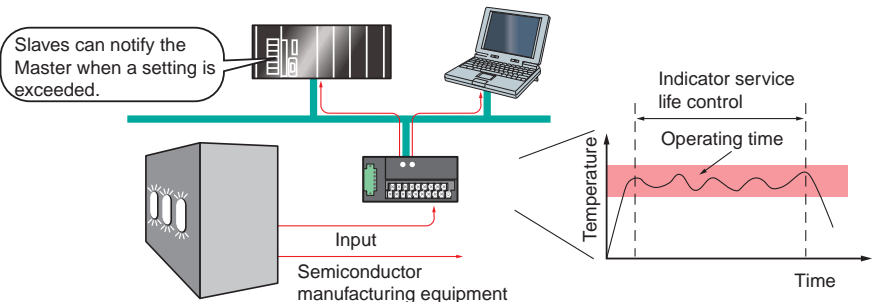
Failure Prediction and Maintenance

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

Short Startup

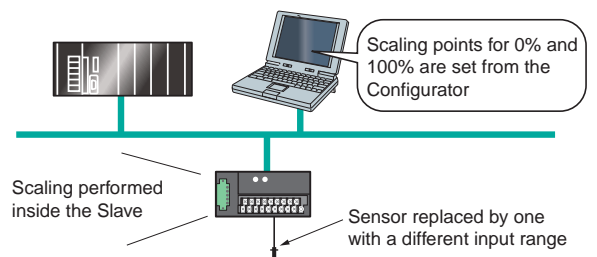
If it takes too long to modify the ladder program on the Master when a Temperature Sensor is replaced:

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.

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



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

Complies with the Highest Safety Standards in the

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

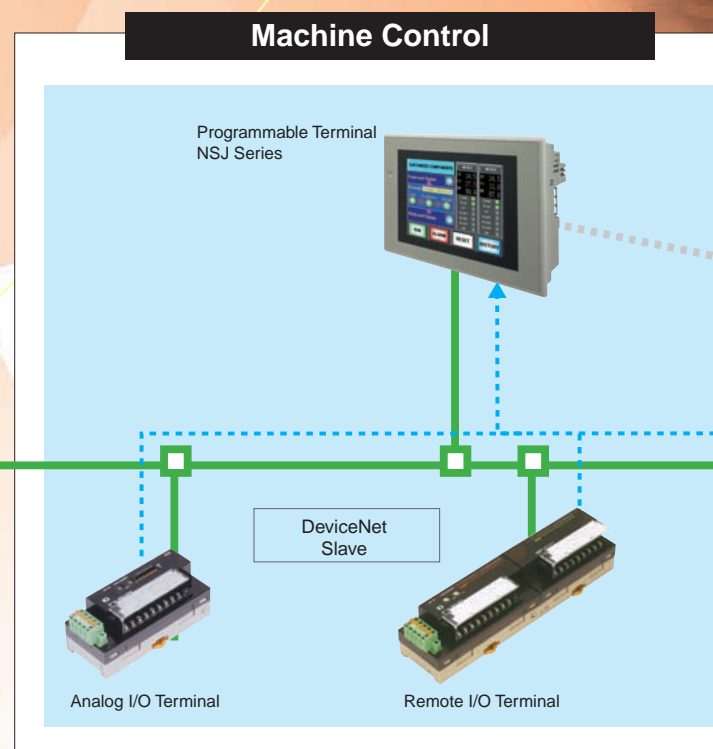


Coordination with
standard controls is
easy through
DeviceNet

Programmable
Safety Circuits



More efficient
designing and
modification



Complies with the Highest Safety Standards in the

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

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Compatible with
DeviceNet Open Network

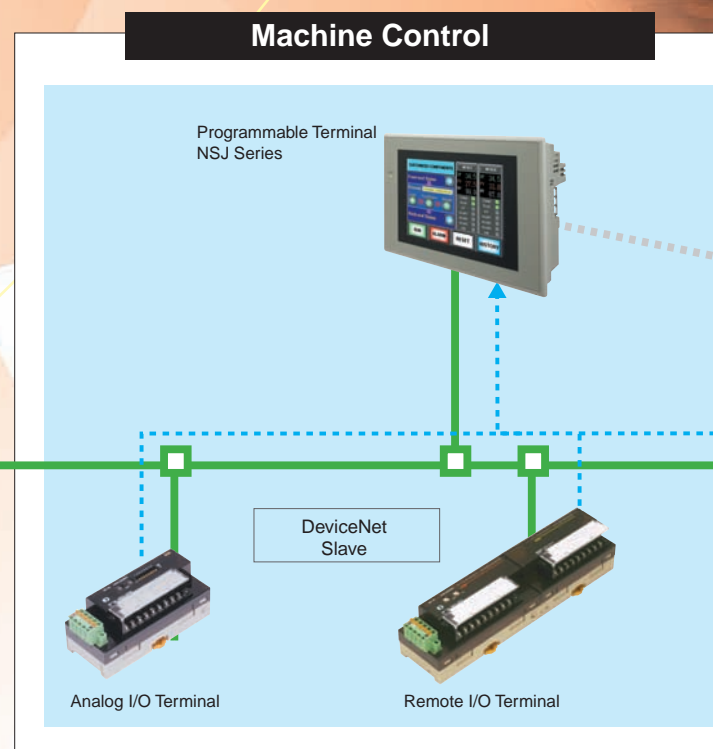


Coordination with
standard controls is
easy through
DeviceNet

Programmable
Safety Circuits



More efficient
designing and
modification



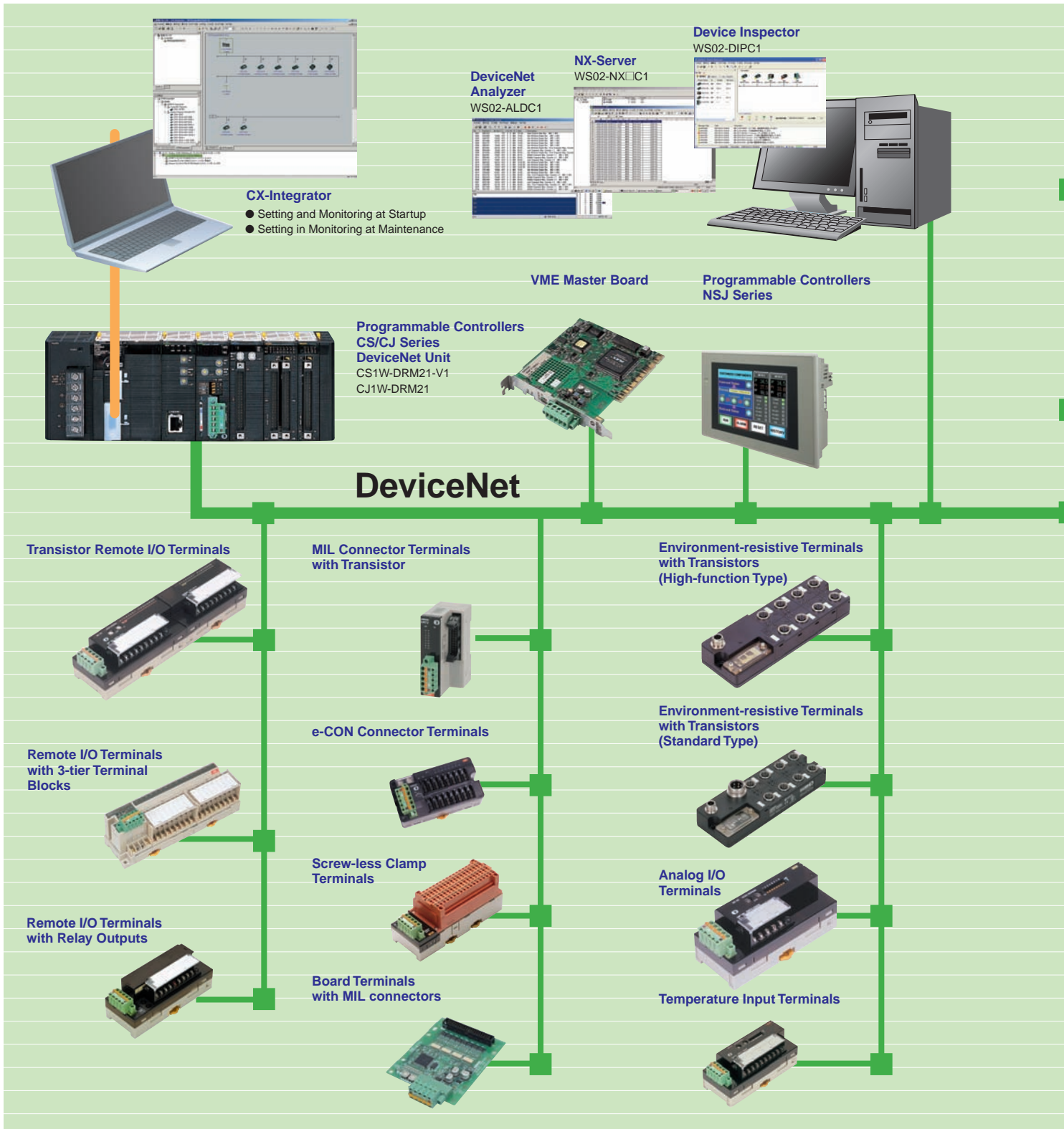
Through Our High Reliability and Application OMRON Provides a Wide Range of DeviceNet Selection for Your Worksite.

DeviceNet is a global open multi-vendor network that is spreading worldwide.

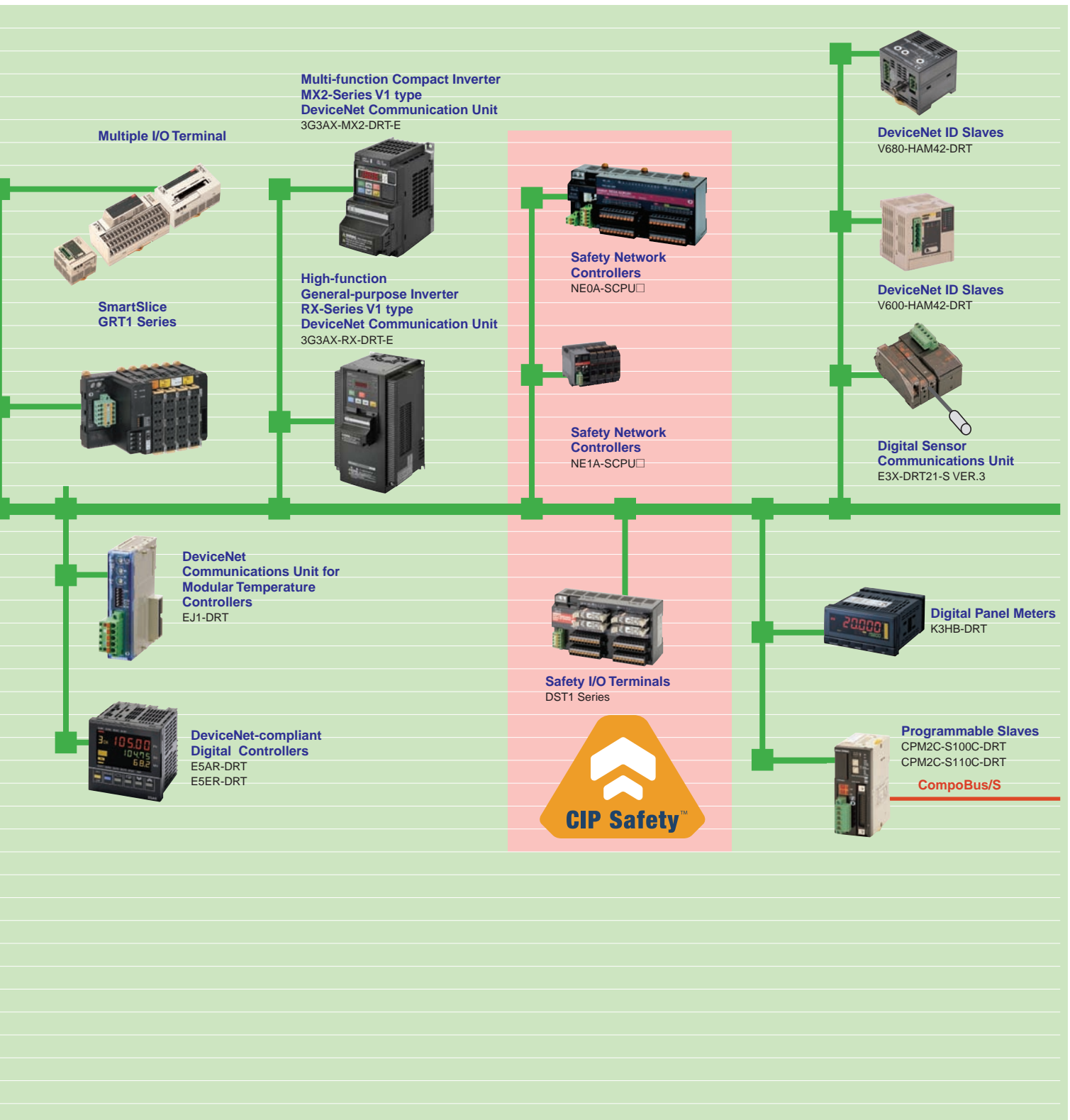
A wide variety of DeviceNet devices are provided by many vendors.

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

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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

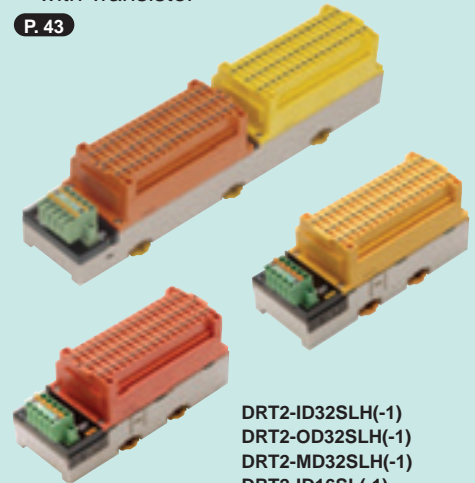
P. 31



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

■ Screw-less Clamp Terminals with Transistor

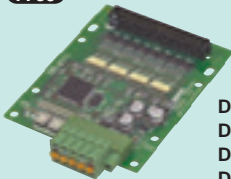
P. 43



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

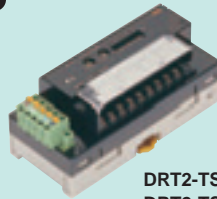
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DRT2-ID32B(-1)
DRT2-OD32B(-1)
DRT2-MD32B(-1)
DRT2-ID32BV(-1)
DRT2-OD32BV(-1)
DRT2-MD32BV(-1)

■ Temperature Input Terminals

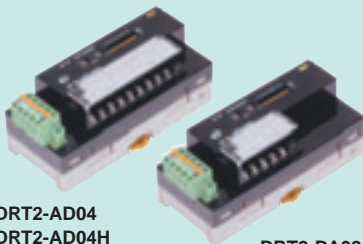
P. 60



DRT2-TS04T
DRT2-TS04P

■ Analog I/O Terminals

P. 57



DRT2-AD04
DRT2-AD04H

DRT2-DA02

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

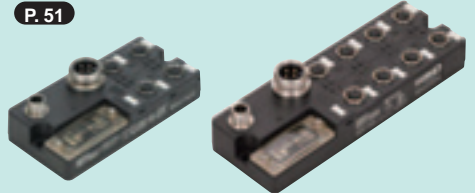
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DRT2-ID08C(-1)
DRT2-OD08C(-1)
DRT2-HD16C(-1)

■ Environment-resistive Terminals with Transistors (Standard Type)

P. 51



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

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- 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

P. 74



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

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GT1-ROP08
GT1-FOP08



GT1-ROS16

■ Analog I/O Units

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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

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CPM2C-S100C-DRT
CPM2C-S110C-DRT

Intelligent Slaves

■ Digital Sensor Communications Unit

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E3X-DRT21-S VER.3

■ DeviceNet ID Slave

P. 94



V600-HAM42-DRT

■ DeviceNet ID Slave

P. 95



V680-HAM42-DRT

■ DeviceNet-compliant Digital Indicator

P. 96



K3HB-DRT

■ DeviceNet Communications Unit for Modular Temperature Controllers

P. 104



EJ1-DRT

■ DeviceNet-compliant Digital Controllers

P. 100



E5AR-DRT

E5ER-DRT

■ 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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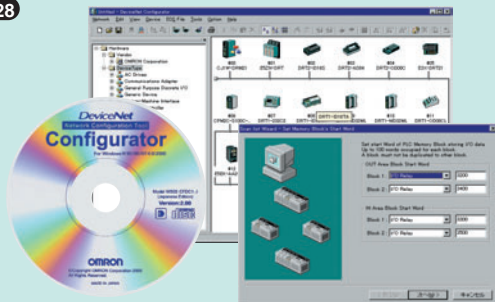
3G3AX-RX-DRT-E

Configurators and Software

Configurators

- DeviceNet Configurator Ver.2.□

P. 128



WS02-CFDC1-E

- PC Card DeviceNet Configurator (with software)

P. 128

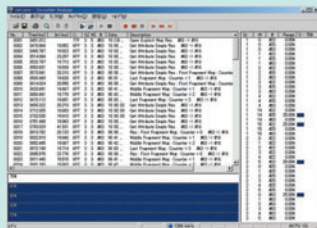


3G8E2-DRM21-V1

Analysis Software

- DeviceNet Analyzer

P. 130

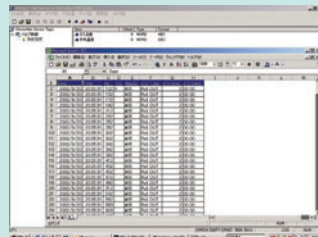


WS02-ALDC1

Monitor Software

- NX-Server

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WS02-NX□C1

Diagnostic Tools

- Device Inspector

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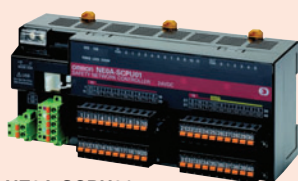


WS02-DIPC1

Safety

- Safety Network Controllers

P. 112



NE0A-SCPU01

P. 117



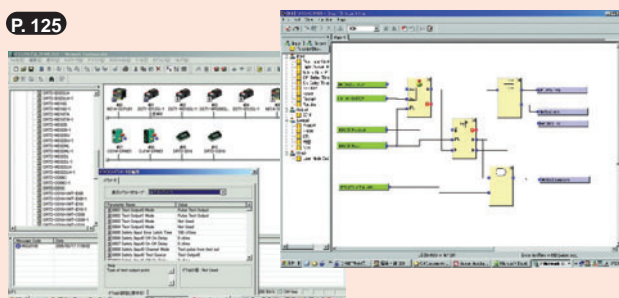
NE1A-SCPU02



NE1A-SCPU01(-V1)

- Safety Network Configurator

P. 125



WS02-CFSC1-E

- Safety I/O Terminals

P. 122



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

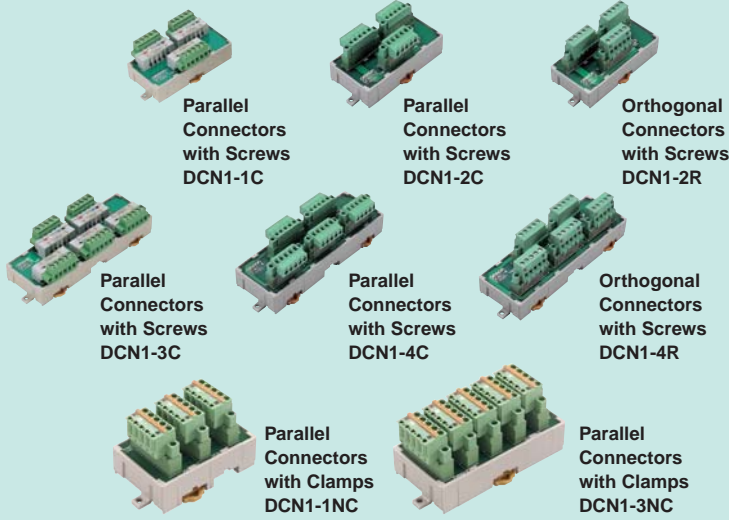


DST1-MRD08SL

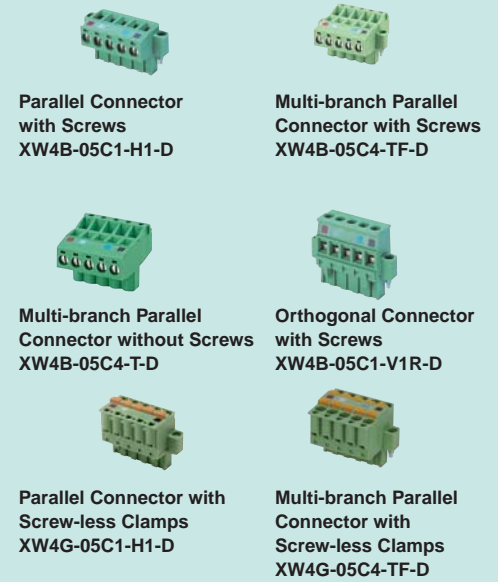


Standard Cables P. 134

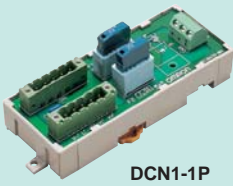
■ T-branch Taps



■ Connectors



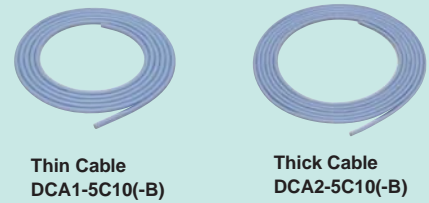
■ Power Supply Tap



■ Terminal-block Terminator



■ 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



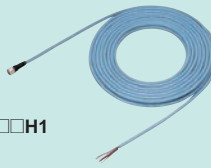
DCN2-1S

- Shielded Connector Cables

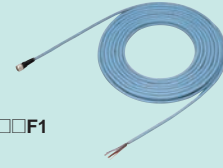
DCA1-5CS□□W1



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

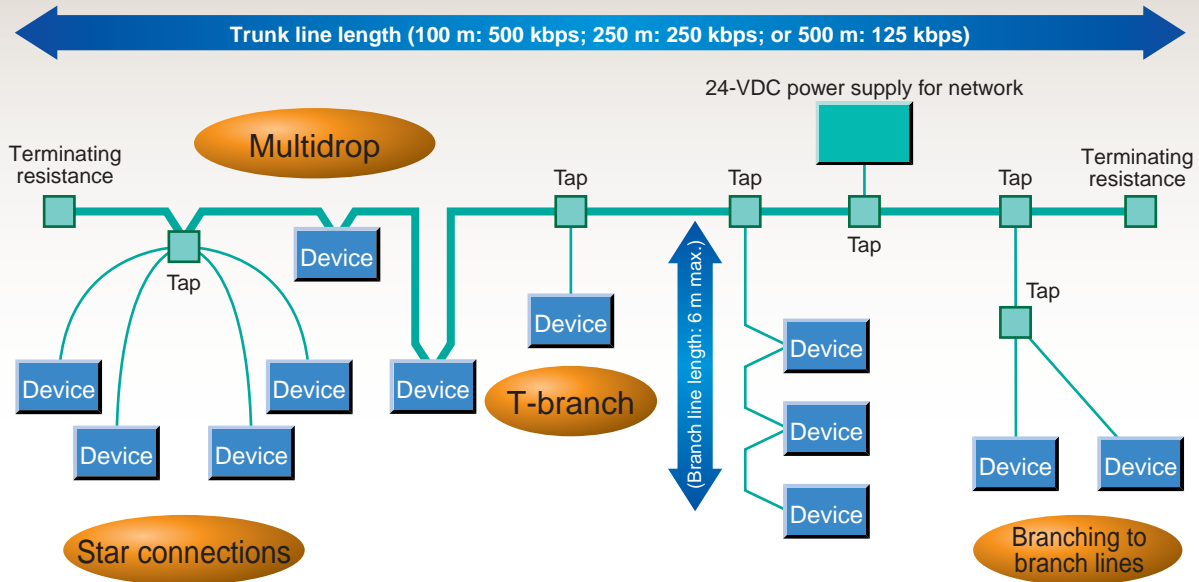


XS4M-D521-1



DRS3-1

DeviceNet Network Specifications



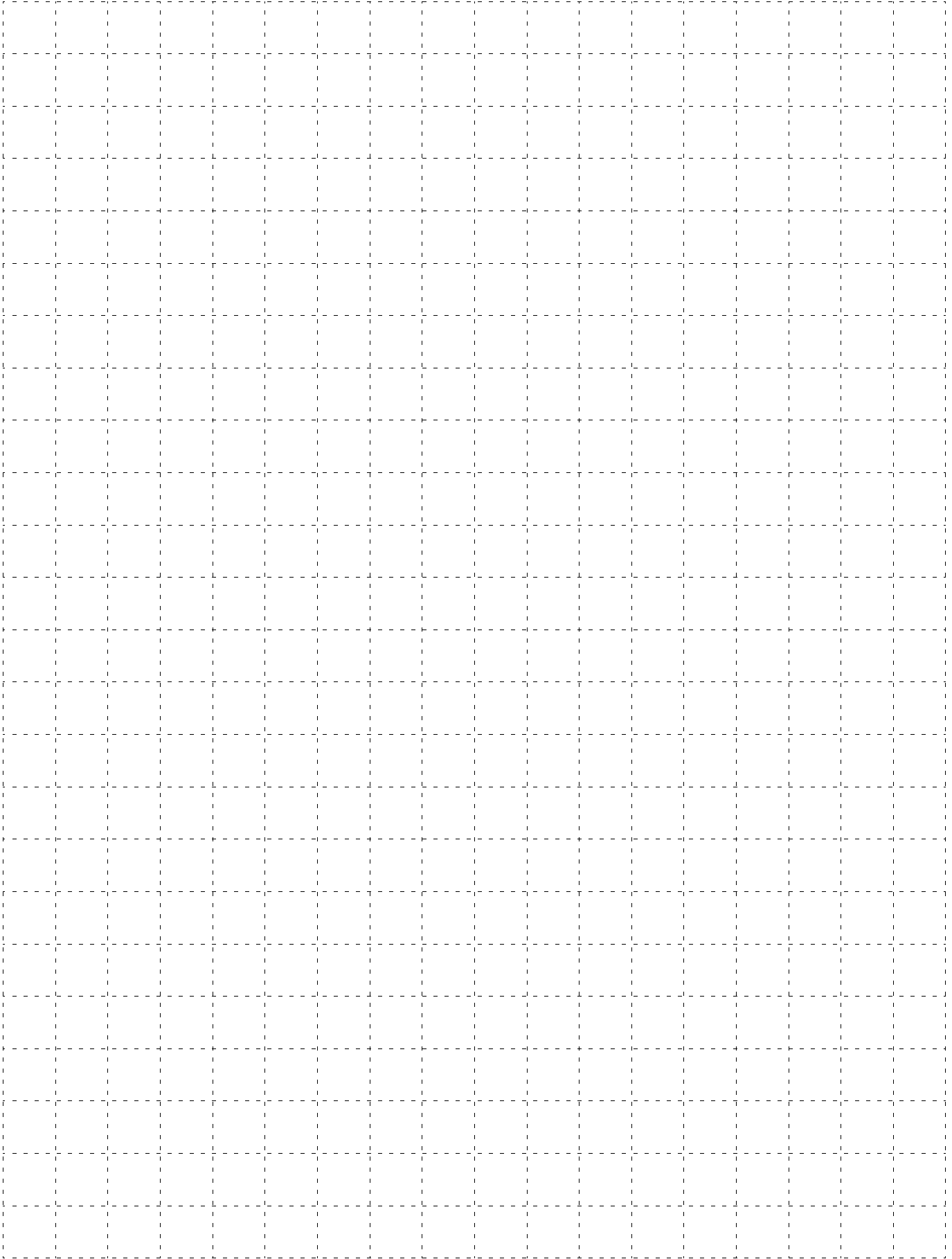
Communications Specifications

| 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.

MEMO



Master Unit

| | |
|--|---|
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| CS-series DeviceNet Unit..... | 3 |
| CS1W-DRM21-V1 | |
| Programmable Controllers NSJ Series..... | 4 |
| NSJ□-T□□1(B)-G5D | |
| DeviceNet Board (PCI Board)..... | 7 |
| 3G8F7-DRM21-E | |

CJ-series DeviceNet Unit

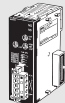
CJ1W-DRM21

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 | |
| 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 | | Model | Standards | |
|---|--|-------------|-------|-----------------------|-----|
| | Number of licenses | Media | | | |
| 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 XP (Service Pack 3 or higher, 32-bit version) / Windows Vista (32-bit/64-bit version) / Windows 7 (32-bit/64-bit version) / Windows 8 (32-bit/64-bit version) / Windows 8.1 (32-bit/64-bit version) Note: Except for Windows XP 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 | | | | | | | 1 port | | | Right/left: ±60°, Top: 35°, Bottom: 65° | | | |
| NSJ8-TV01B-G5D | | | | | | | | | | 1 port | Right/left: ±60°, Top: 45°, Bottom: 75° | | |
| NSJ10-TV01-G5D | | | | | | | | | | | 1 port | | |
| NSJ10-TV01B-G5D | | | | | | | | | | | | 1 port | |
| NSJ12-TS01-G5D | | | | | | | | | | | | | 1 port |
| NSJ12-TS01B-G5D | 1 port | | | | | | | | | | | | |

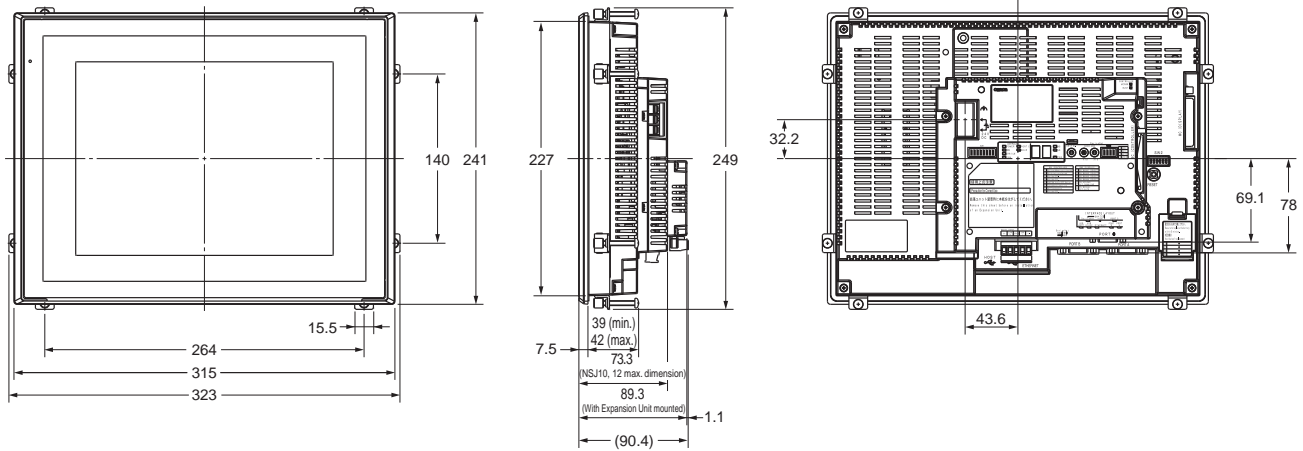
* Japanese, English, Chinese (traditional and simplified), Spanish, Italian, German, and French.

Dimensions

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

With NSJW-CLK21-V1 Mounted

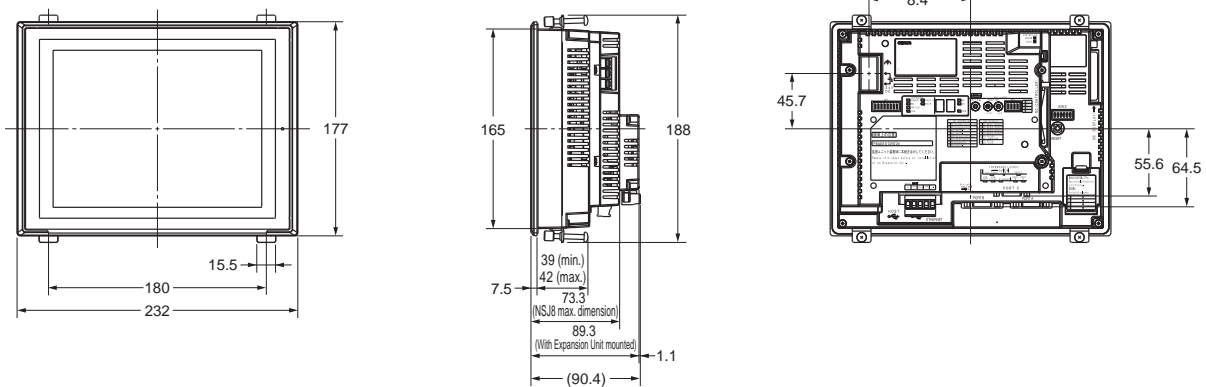
No Expansion Unit



NSJ8-TV01(B)-G5D

With NSJW-CLK21-V1 Mounted

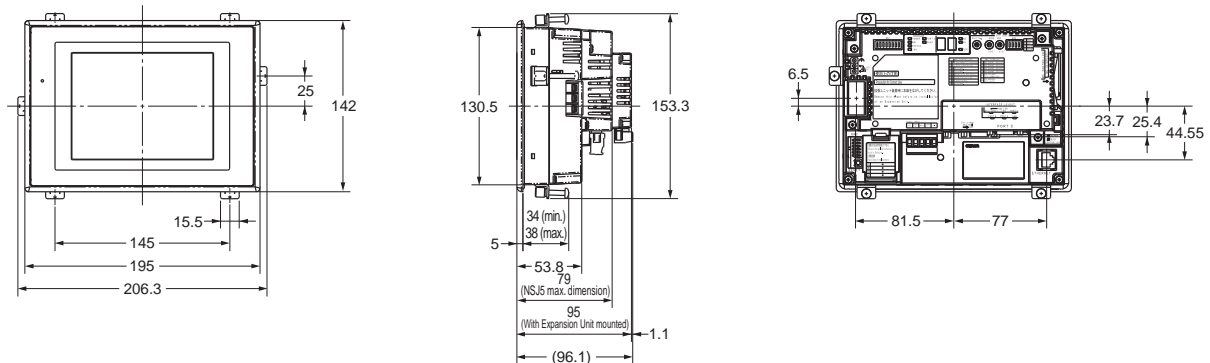
No Expansion Unit



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

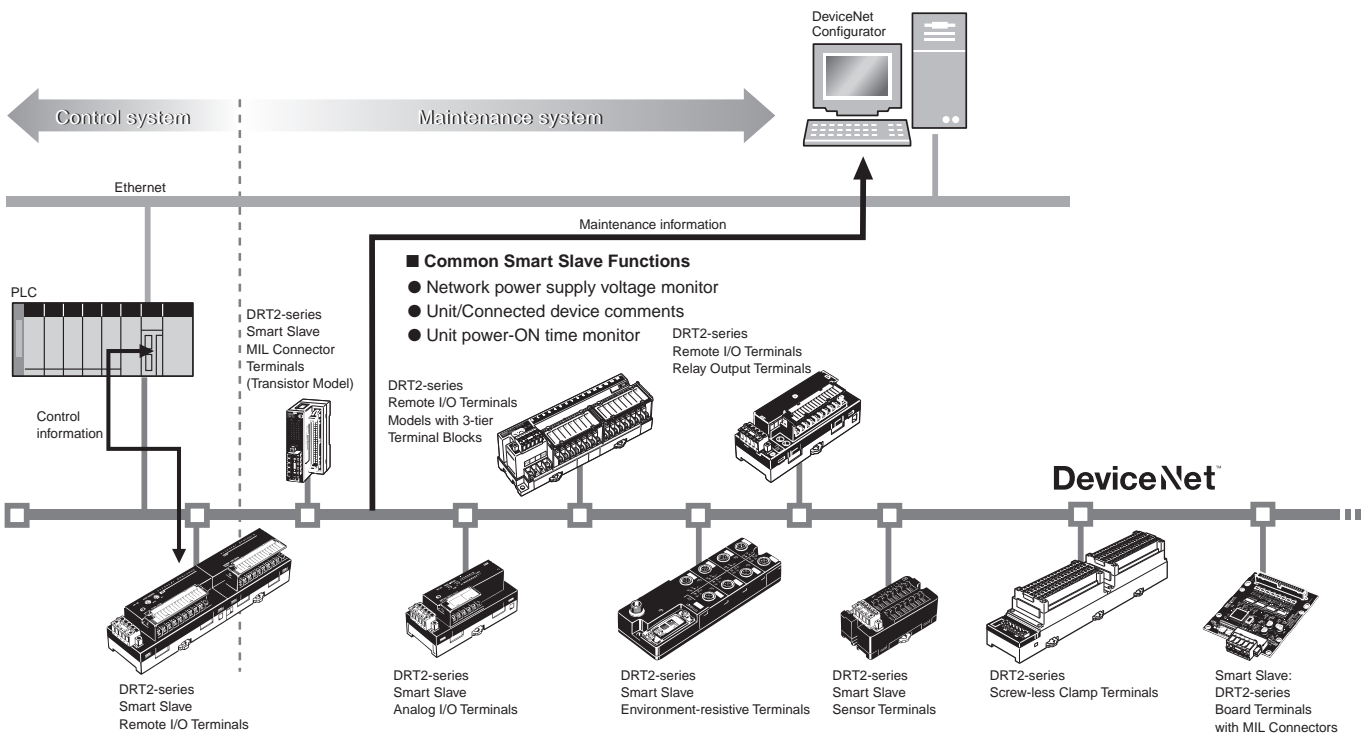
| | |
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| DRT2-□D16SL(H)(-1)/□D32SLH(-1) | |
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| DRT2-□D08C(-1)/□D16C(-1) | |
| Environment-resistive Terminals with Transistors (Standard Type) | 51 |
| DRT2-□D04CL(-1)/□D08CL(-1)/□D16CL(-1) | |
| Analog I/O Terminals | 57 |
| DRT2-AD04(H)/DA02 | |
| Temperature Input Terminals | 60 |
| DRT2-TS04□ | |

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-MQ32ML | DRT1-MQ32ML | #00 | ----- |
| E5X-DRT21 | E5X-DRT21 | #01 | ----- |
| E5EK-AA2-DRT | E5EK-AA2-DRT | #02 | ----- |
| A-line TEST 01 | DRT2-ID16*0WT-0D16-1 | #03 | 24.0V |
| CPM2C-S1000-DRT | CPM2C-S1000-DRT | #07 | ----- |
| R5BA-NCW152-DRT | R5BA-NCW152-DRT | #17 | ----- |
| Press Machine No.1 HIROTECH | DRT2-ND16C-1 | #06 | 23.9V |
| CJ1W-DRM21 | CJ1W-DRM21 | #03 | ----- |

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 wherever the present value exceeds the monitor value, so locations requiring maintenance can be identified immediately.

| S/V Comment | Monitor | Units | Counter |
|----------------|---------|---------|---------|
| 00 ARM11A | 0 | Times | 0 |
| 01 ARM11B | 0 | Times | 0 |
| 02 IEM-000 | 3 | Times | 0 |
| 03 FAFD-S-S | 0 | Times | 0 |
| 04 STPW Green | 0 | Seconds | 0 |
| 05 STPW RED | 0 | Seconds | 0 |
| 06 STPW ORANGE | 0 | Seconds | 0 |
| 07 STPW YELLOW | 0 | Seconds | 0 |
| 08 | 0 | Seconds | 0 |
| 09 | 0 | Seconds | 0 |
| 10 | 0 | Seconds | 0 |
| 11 | 0 | Seconds | 0 |
| 12 | 0 | Seconds | 0 |
| 13 | 0 | Seconds | 0 |
| 14 | 0 | Seconds | 0 |
| 15 | 0 | Seconds | 0 |

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.

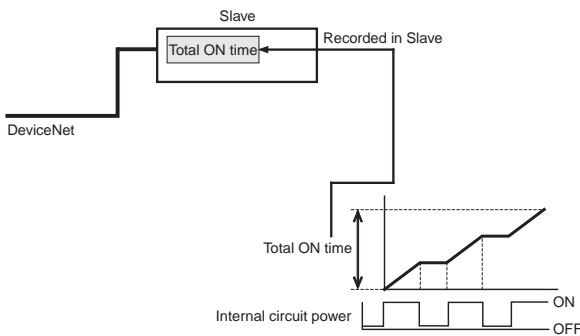
Smart Slave Functions

● 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.

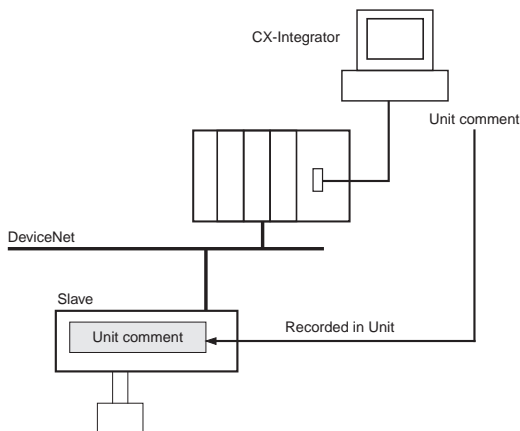
● Unit Conduction Time Monitor

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.



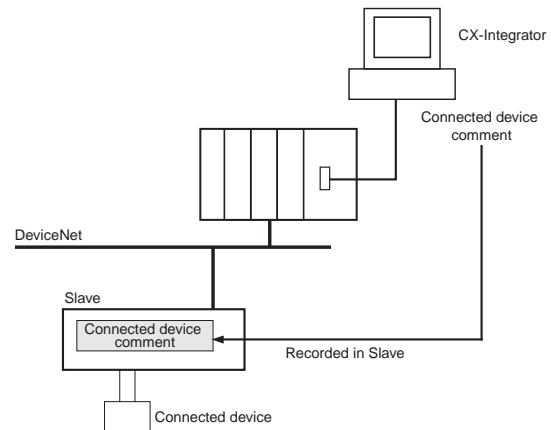
● Unit Comment Function

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



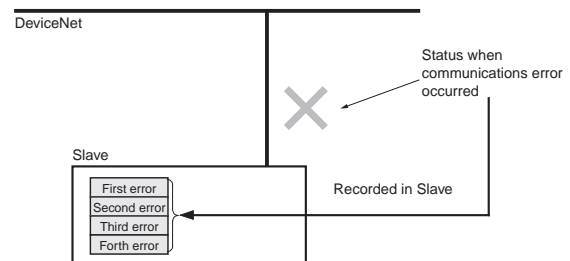
● Connected Device Comment Function

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

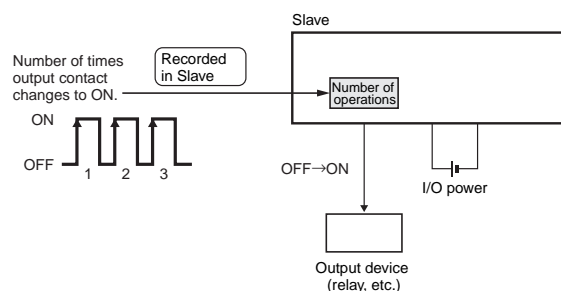
The Contact Operation Counter is used to count the number of times each input or output contact changes from OFF to ON (maximum sampling cycle: 50 Hz) and record the total value calculated in the slave. (The CX-Integrator or explicit messages can be used to read the information.)

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.)

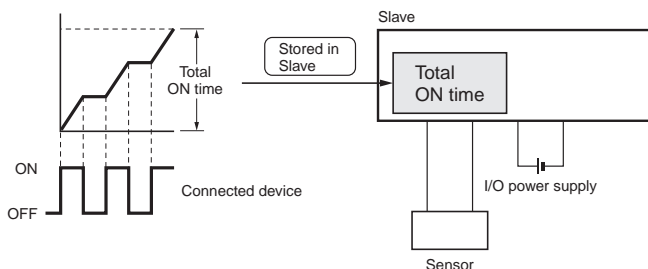
- Counted time: 0 to 4,294,967,295 seconds
(stored data: 0000 0000 to FFFF FFFF hex)
- Counting unit: One second

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.

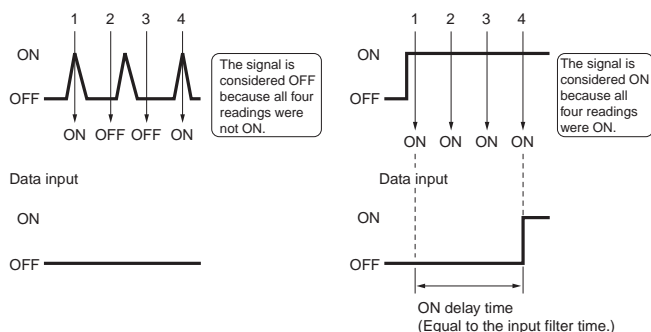
3: The Total ON Time Monitor checks approximately every second whether the connected devices are ON.

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)

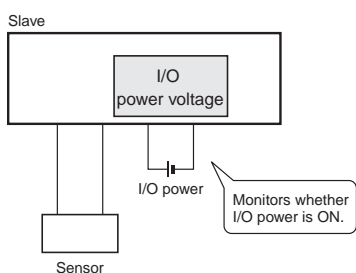
The I/O power supply can be monitored to stop any input when the I/O power is OFF and for 100 ms after it is turned ON. This function reduces incorrect inputs caused by inrush current for 100ms after the I/O power is turned ON.

● 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.

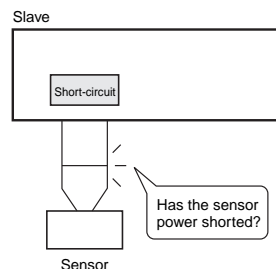
Check whether a sensor power short-circuit has been detected using the indicators on the slave. When a sensor power short-circuit is detected, a bit in the Status Area in the Unit will turn ON. (The CX-Integrator or explicit messages can be used to read the details of the notification.) The sensor will 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) × (=100 mA) × (DeviceNet network voltage)



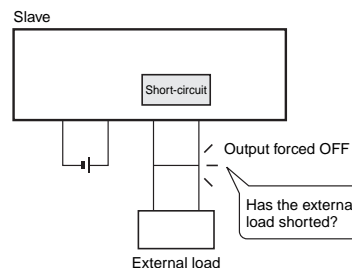
● External Load Short-circuit Detection Function (output only)

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

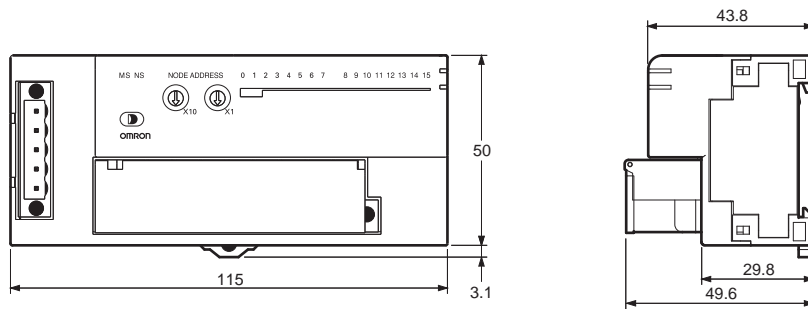
| Item | Model | DRT2-OD16 | DRT2-OD16-1 |
|-----------------------------|-------|--|--|
| Internal I/O common | | NPN | PNP |
| Number of I/O points | | 16 outputs | |
| Rated output current | | 0.5 A per point, 4 A per common | |
| Residual voltage | | 1.2 V max. (0.5 A DC between each output terminal 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 | |

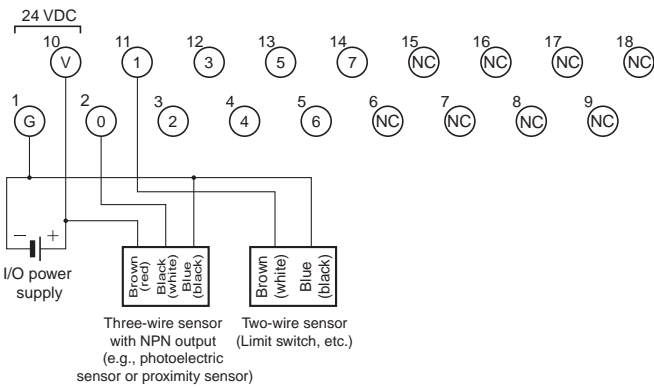
Dimensions

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

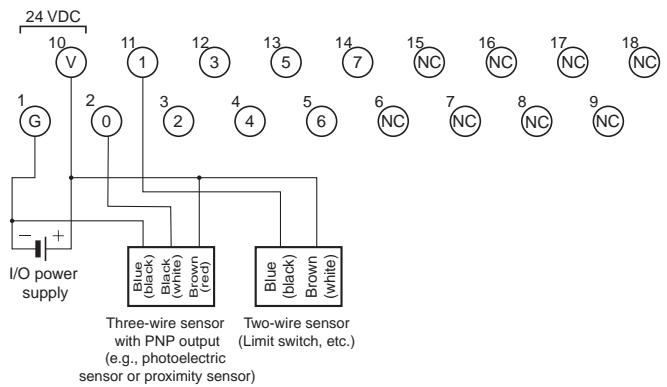


Wiring Diagrams

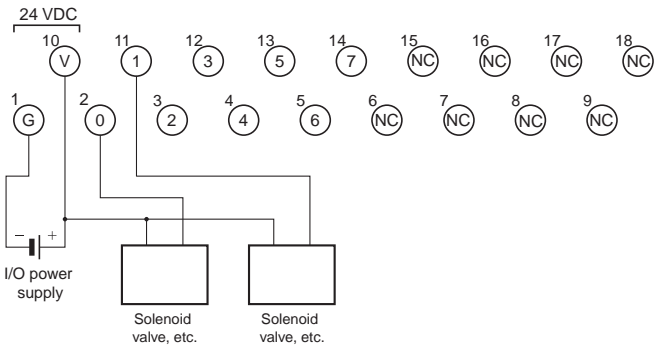
DRT2-ID08 (NPN)



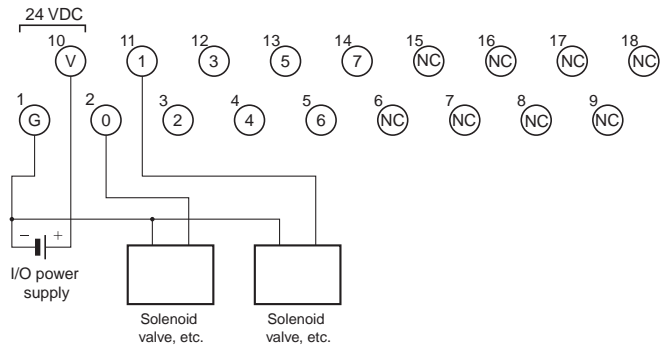
DRT2-ID08-1 (PNP)



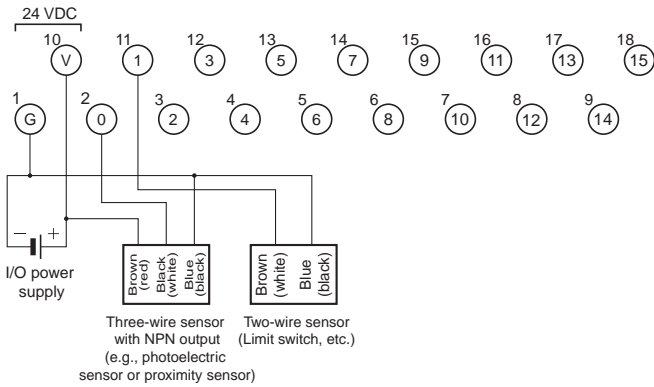
DRT2-OD08 (NPN)



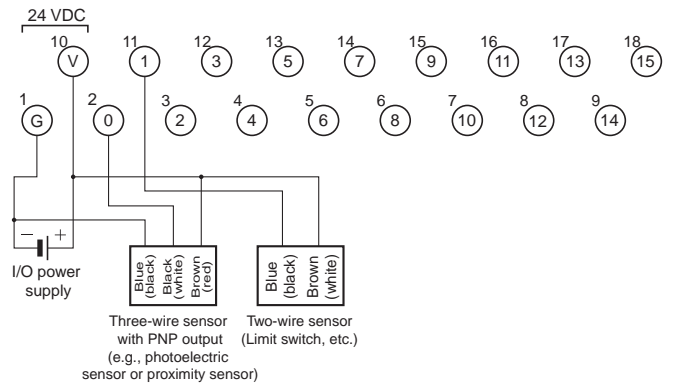
DRT2-OD08-1 (PNP)



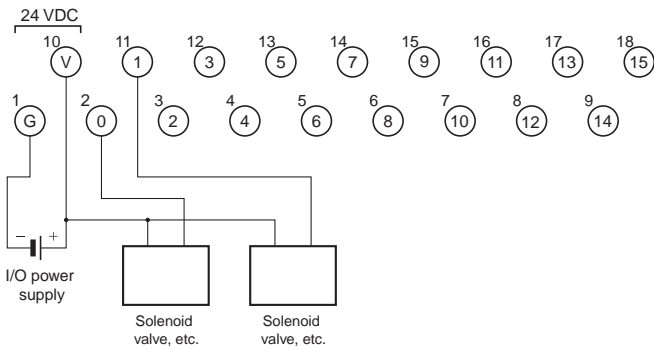
DRT2-ID16 (NPN)



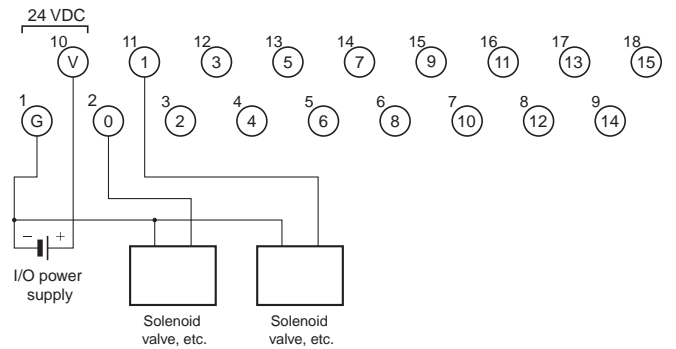
DRT2-ID16-1 (PNP)



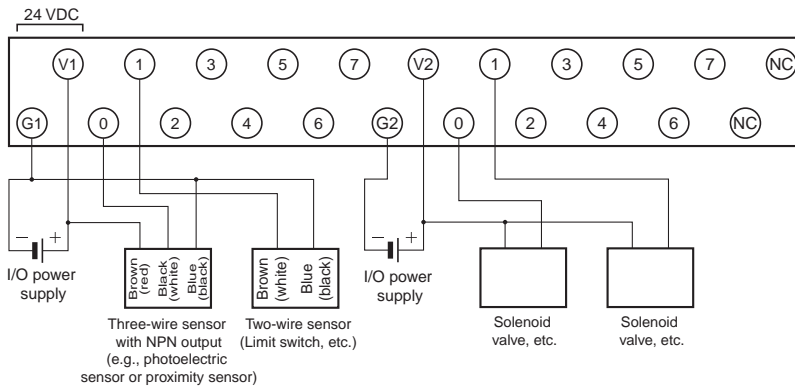
DRT2-OD16 (NPN)



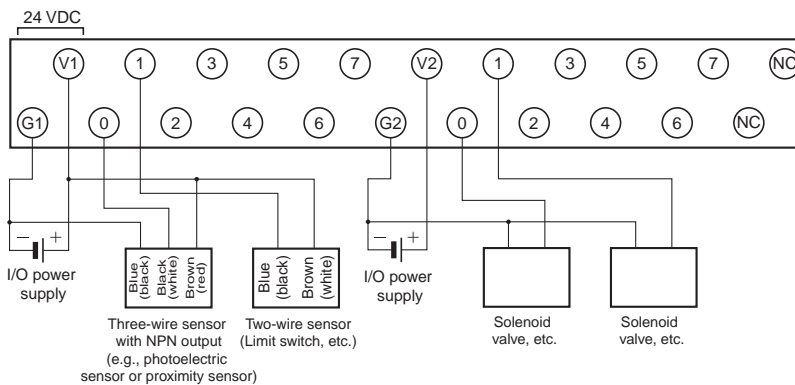
DRT2-OD16-1 (PNP)



DRT2-MD16 (NPN)



DRT2-MD16-1 (PNP)

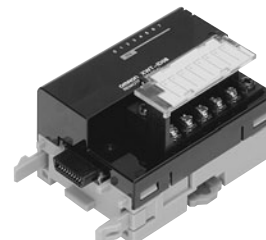


Expansion Units

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

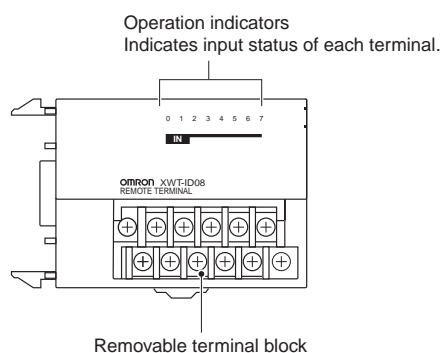
| Item | Model | XWT-ID08 | XWT-ID08-1 | XWT-ID16 | XWT-ID16-1 |
|---|-------|---|---|---|---|
| Internal I/O common | | NPN | PNP | NPN | PNP |
| I/O points | | 8 inputs | | 16 inputs | |
| ON voltage | | 15 VDC min. (between each input terminal and the V terminal) | 15 VDC min. (between each input 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

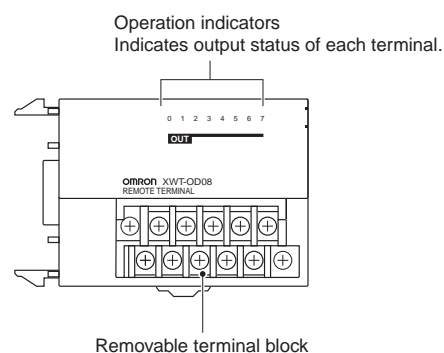
| Item | Model | XWT-OD08 | XWT-OD08-1 | XWT-OD16 | XWT-OD16-1 |
|---|-------|---|---|---|---|
| Internal I/O common | | NPN | PNP | NPN | PNP |
| I/O points | | 8 outputs | | 16 outputs | |
| Rated output current | | 0.5 A/output, 2.0 A/common | | 0.5 A/output, 4.0 A/common | |
| Residual voltage | | 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

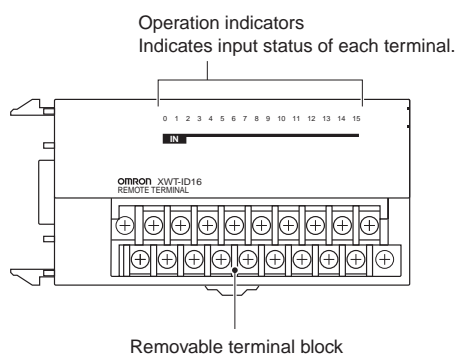
XWT-ID08/XWT-ID08-1



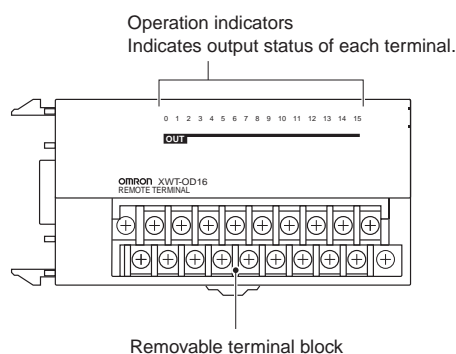
XWT-OD08/XWT-OD08-1



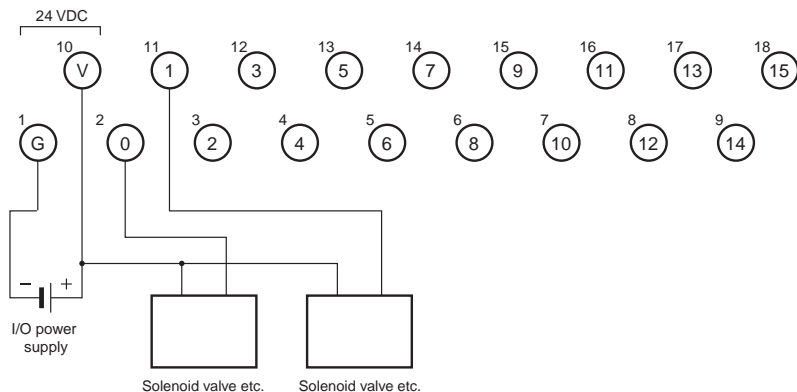
XWT-ID16/XWT-ID16-1



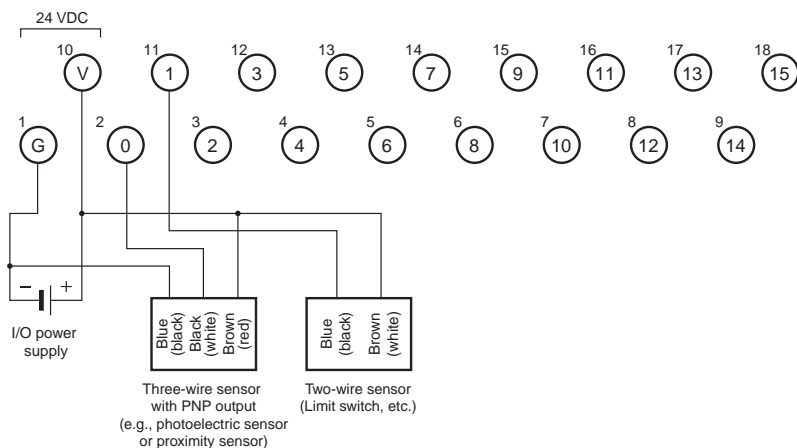
XWT-OD16/XWT-OD16-1



XWT-OD16 (NPN)



XWT-OD16-1 (PNP)

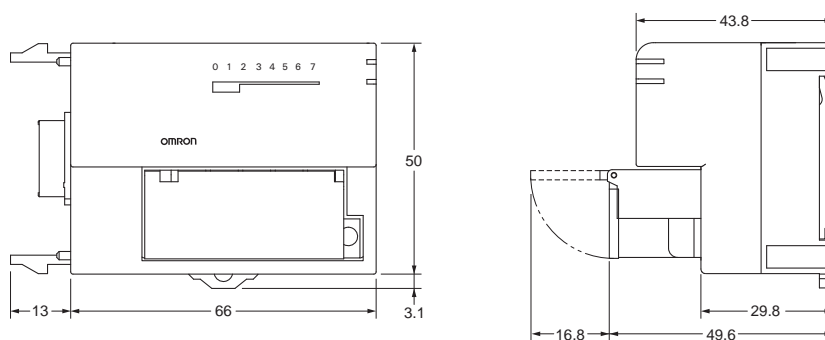


Dimensions

(Unit: mm)

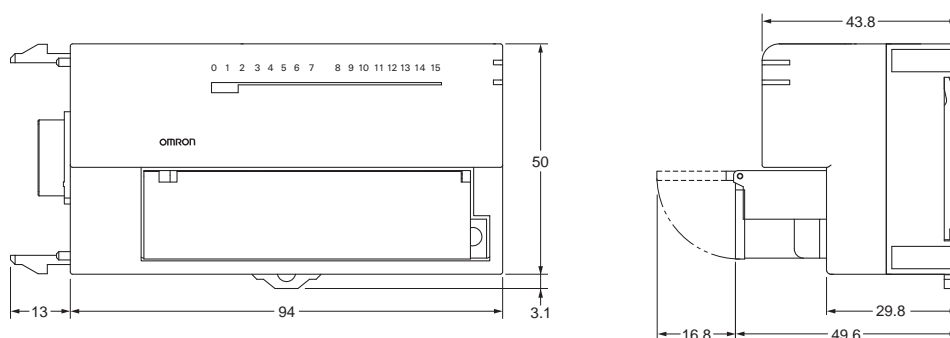
● 8-point Model

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



● 16-point Model

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

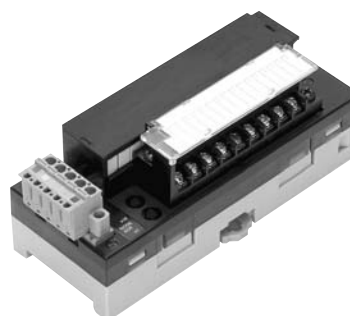
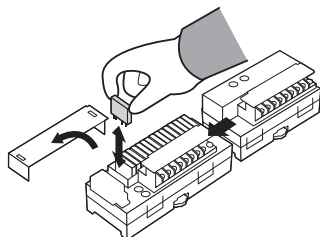


Remote I/O Terminal with Relay Outputs

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 the communications connector | 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

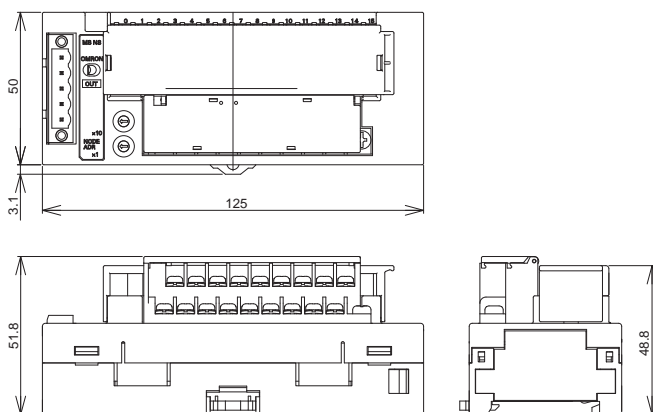
One Expansion Unit can be added to each DRT2-ID16(-1)/-OD16(-1) or DRT2-ROS16 I/O Slave.
 The following Expansion Units are available to enable flexible expansion with combinations for the required number of points.

| 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) |

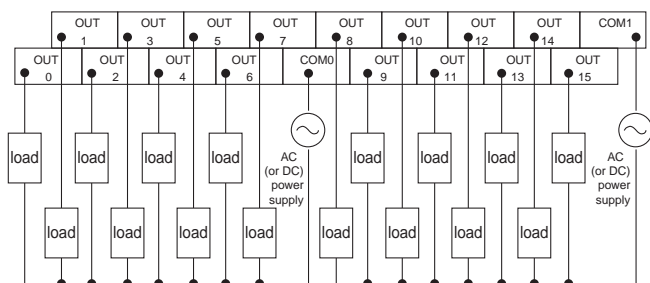
Dimensions

(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 | |

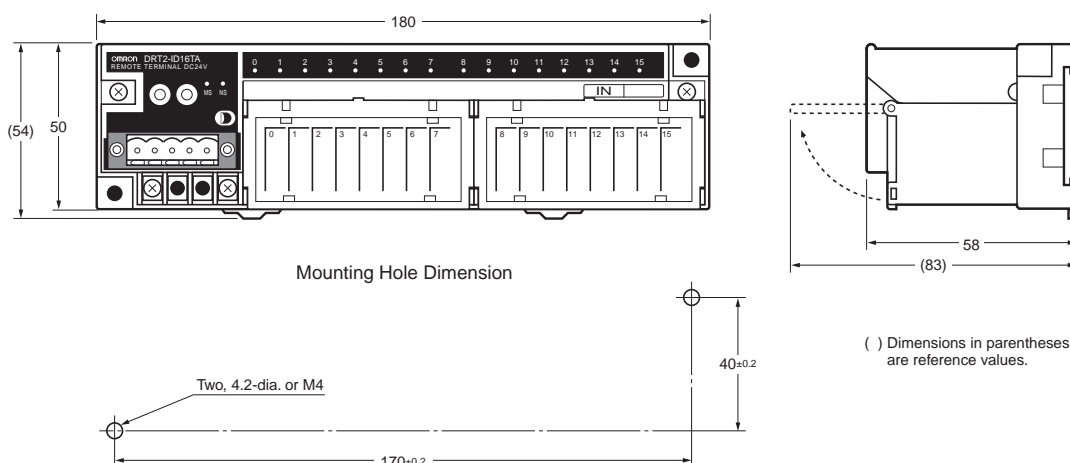
● 8-point Inputs/8-point Outputs Terminals with Transistors

| 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

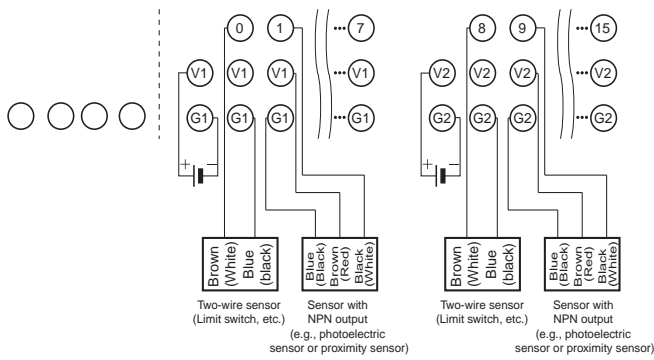
(Unit: mm)

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

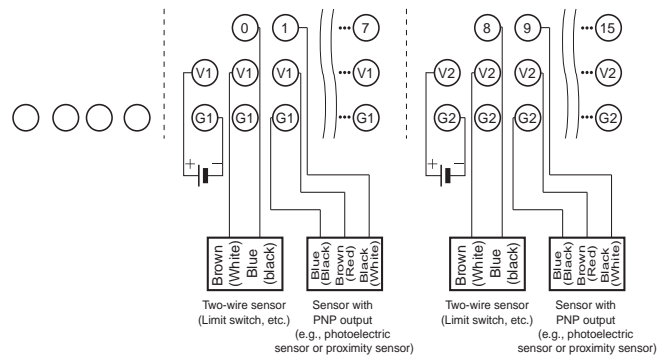


Wiring Diagrams

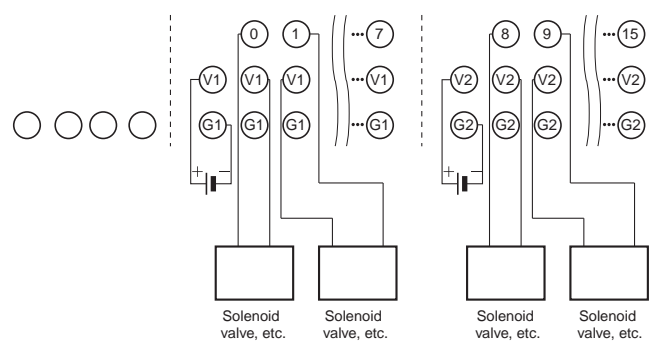
DRT2-ID16TA (NPN)



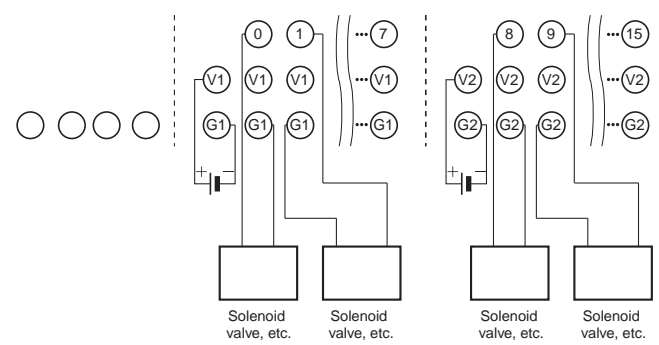
DRT2-ID16TA-1 (PNP)



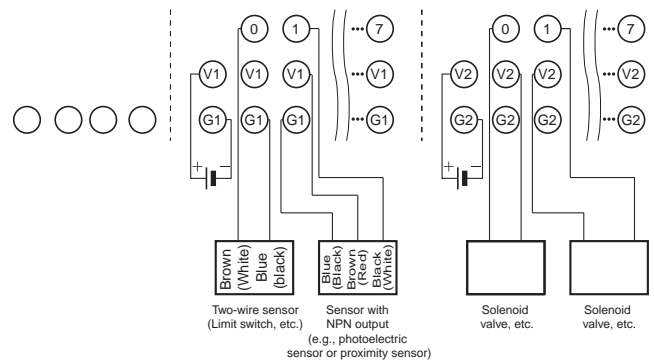
DRT2-OD16TA (NPN)



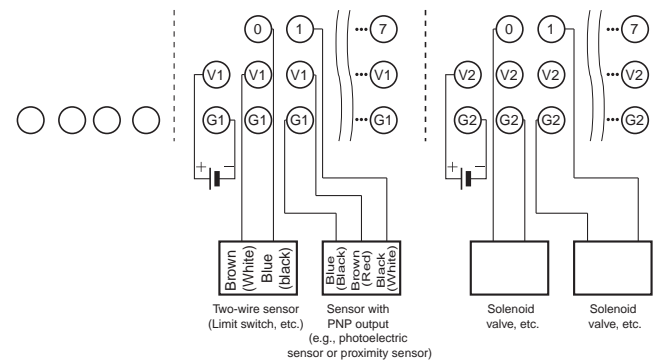
DRT2-OD16TA-1 (PNP)



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

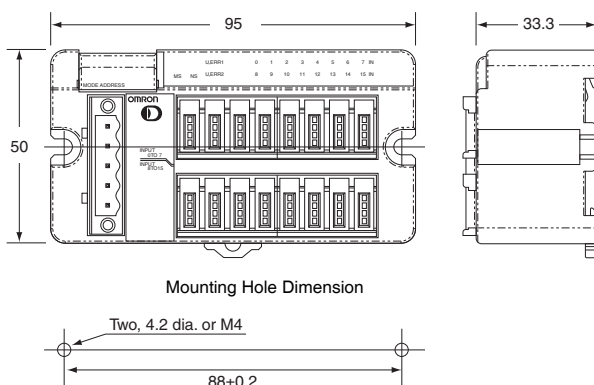
● Sumitomo 3M Connectors

| 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 |

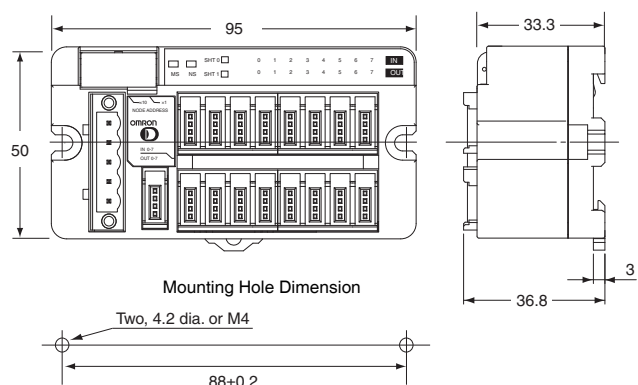
Dimensions

(Unit: mm)

DRT2-ID16S(-1)

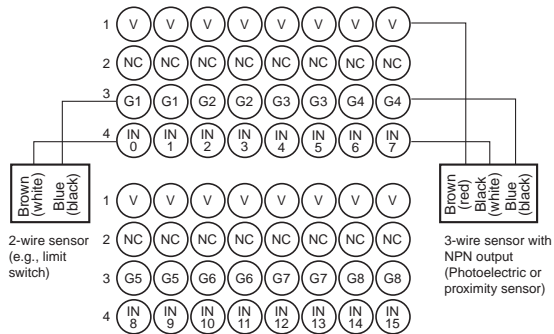


DRT2-MD16S(-1)

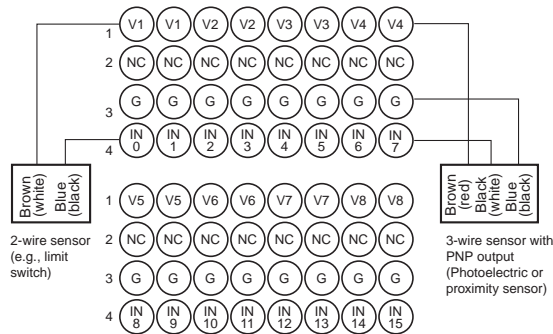


Wiring Diagrams

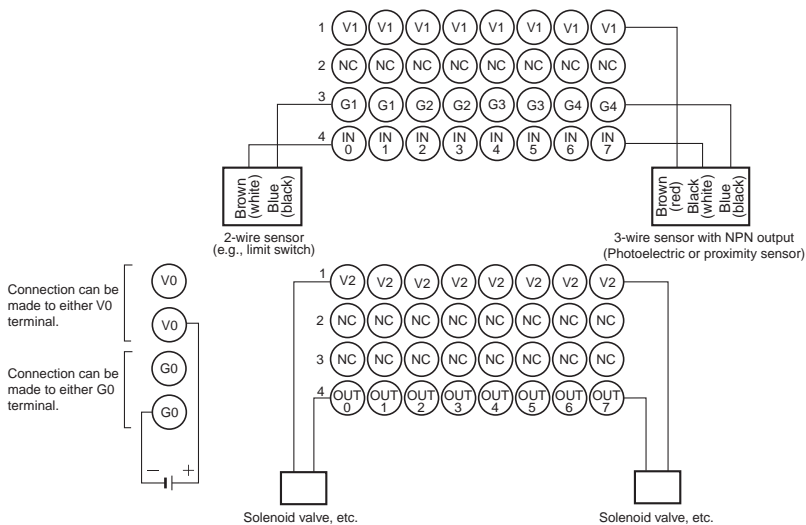
DRT2-ID16S (NPN)



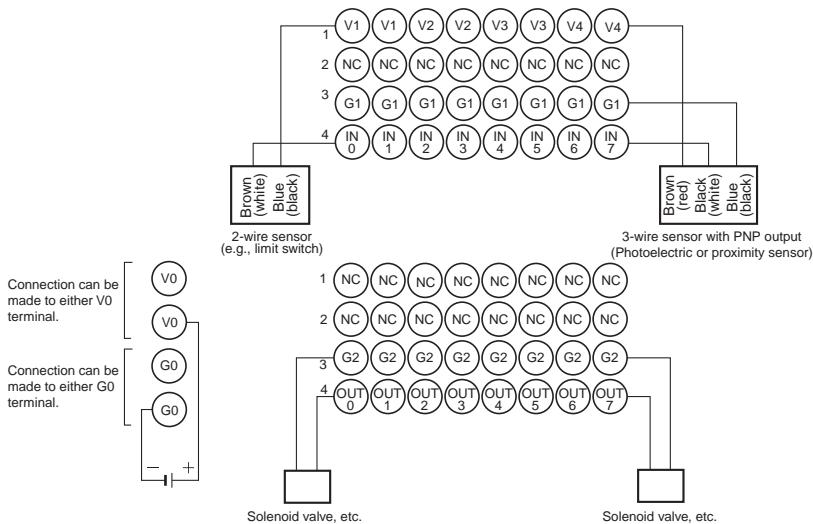
DRT2-ID16S-1 (PNP)



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 | MIL connector | 24 VDC | DRT2-MD32ML |
| | PNP (input: - common, output: + common) | | | | DRT2-MD32ML-1 |
| Inputs | NPN (+ common) | 16 points | MIL connector | | 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 |

● 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 |

● Stranded-wire Cables with Crimp Terminals

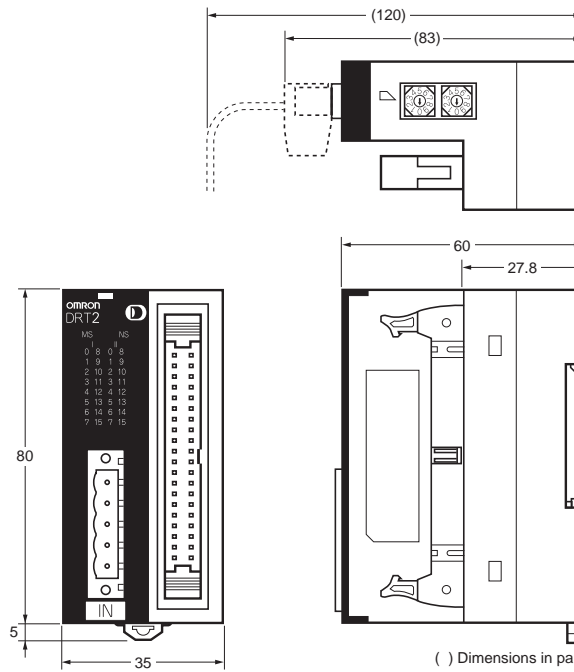
| Model | Applicable cable | Remarks |
|--|------------------|------------------|
| DRT2-ID16ML (-1) DRT2-OD16ML (-1) | XW2Z-RY□□C | 20-pin connector |
| DRT2-ID16ML (-1) DRT2-OD16ML (-1) DRT2-MD16ML (-1) | XW2Z-RY□□C-D1 | 40-pin connector |

● 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 |

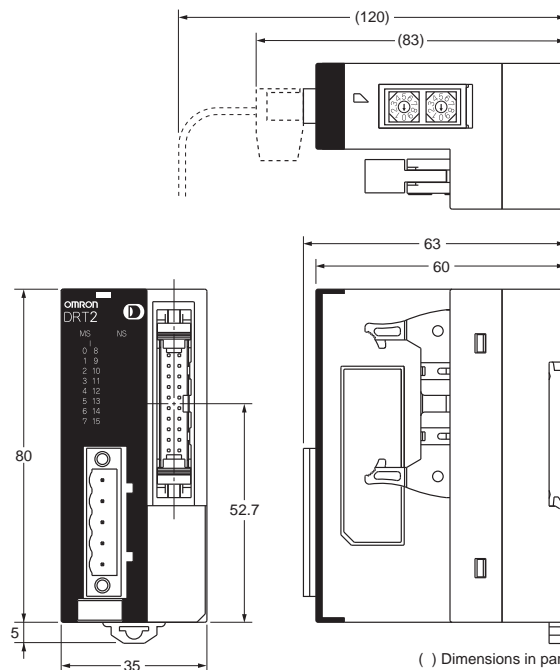
Dimensions

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



() Dimensions in parentheses are reference values.

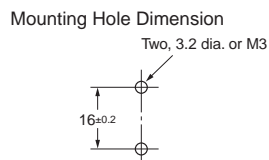
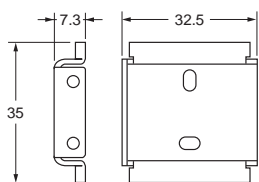
DRT2-ID16ML(-1)
 DRT2-OD16ML(-1)
 DRT2-ID16MLX(-1)
 DRT2-OD16MLX(-1)



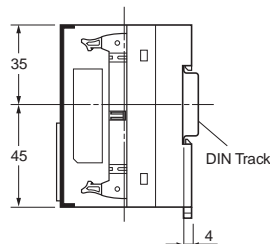
() Dimensions in parentheses are reference values.

● Mounting Bracket B (Accessory)

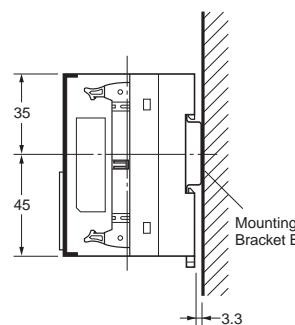
SRT2-ATT02



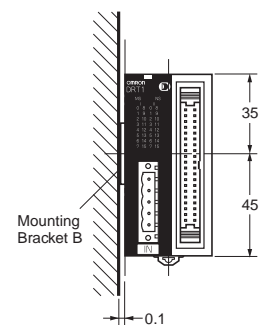
(DIN Track mounting)



(Vertical mounting on wall)

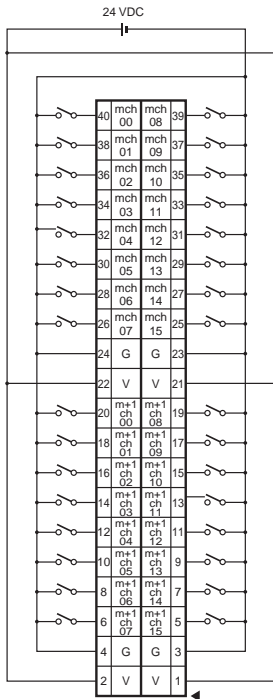


(Horizontal mounting on wall)

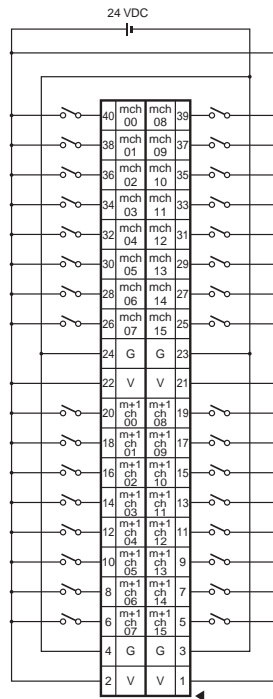


Wiring Diagrams

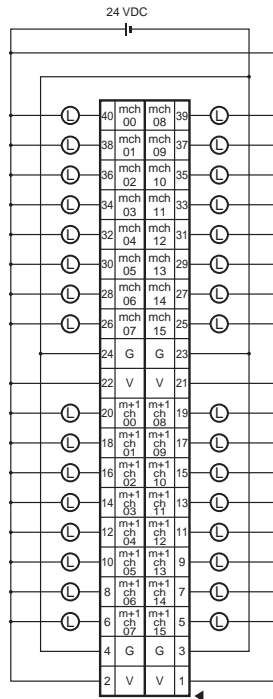
DRT2-ID32ML



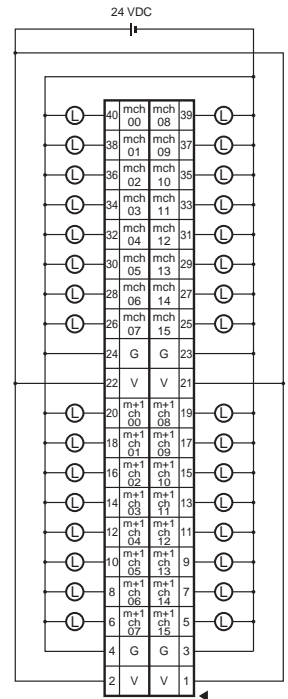
DRT2-ID32ML-1



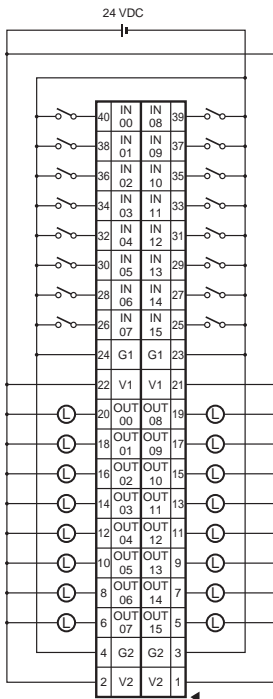
DRT2-OD32ML



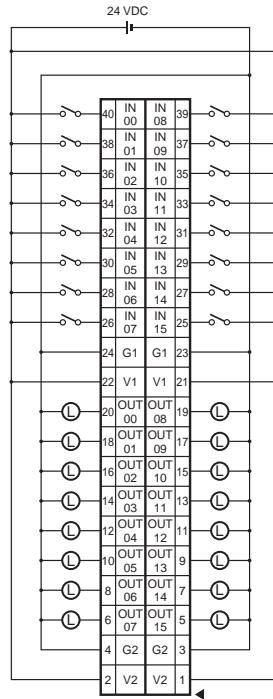
DRT2-OD32ML-1



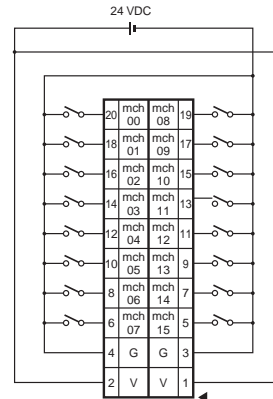
DRT2-MD32ML



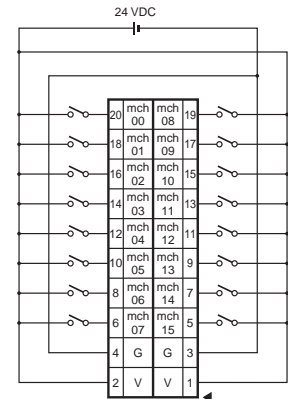
DRT2-MD32ML-1



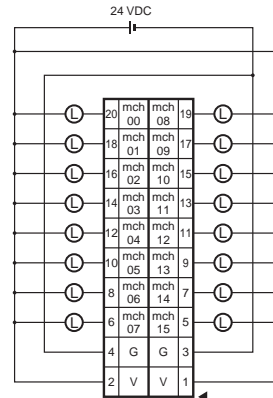
DRT2-ID16ML(X)
(NPN)



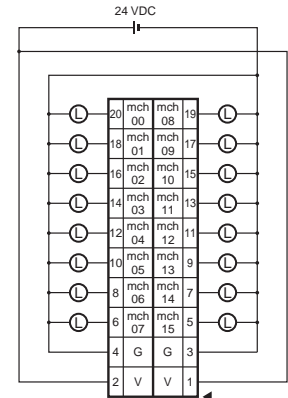
DRT2-ID16ML(X)-1
(PNP)



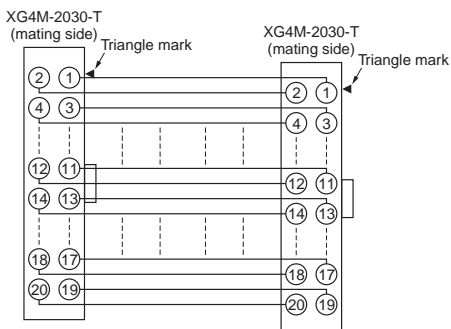
DRT2-OD16ML(X)
(NPN)



DRT2-OD16ML(X)-1
(PNP)



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

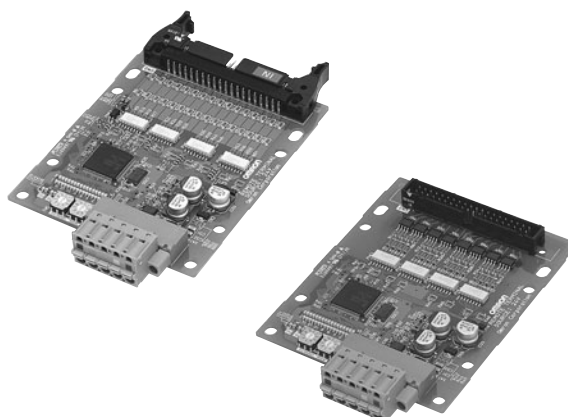


Board Terminals with MIL Connector

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.

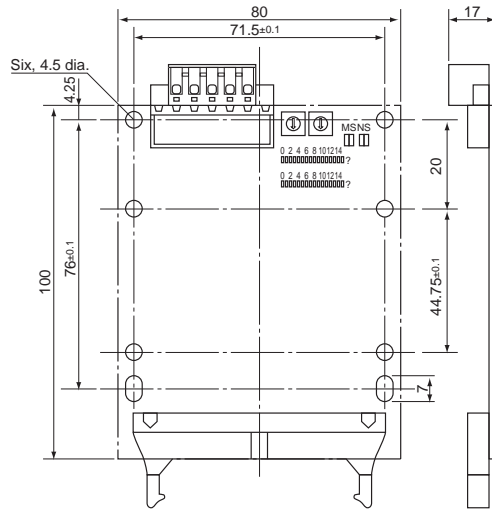
● 16-point Inputs/16-point Outputs Terminals with Connectors

| 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 | |

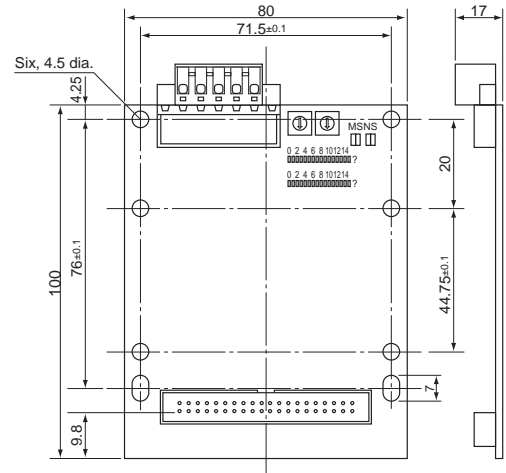
* The maximum total load current is 2 A.
The maximum current for the V and G terminals is 1 A per terminal. Do not exceed these values.

Dimensions

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

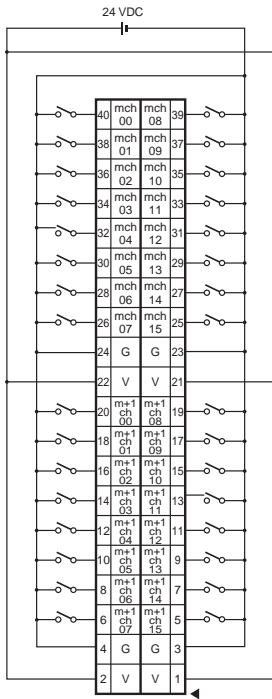


DRT2-ID32BV(-1)
 DRT2-OD32BV(-1)
 DRT2-MD32BV(-1)

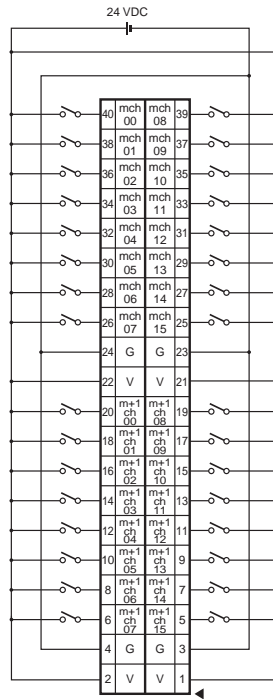


Wiring Diagrams

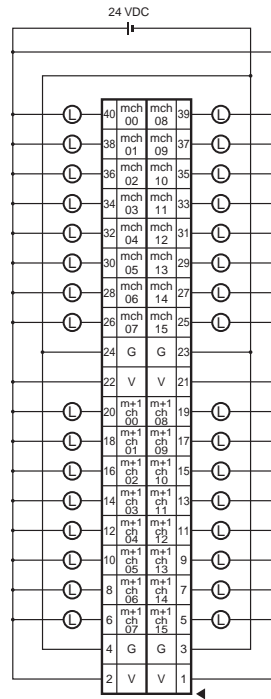
DRT2-ID32B
DRT2-ID32BV
(NPN)



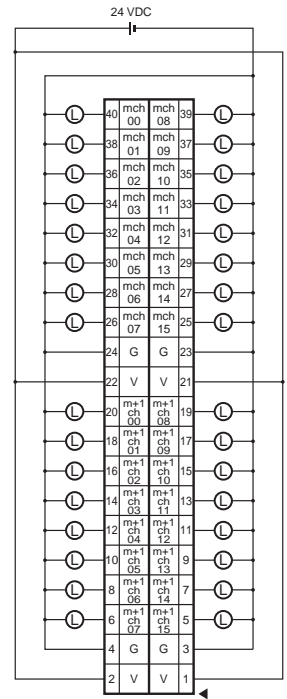
DRT2-ID32B-1
DRT2-ID32BV-1
(PNP)



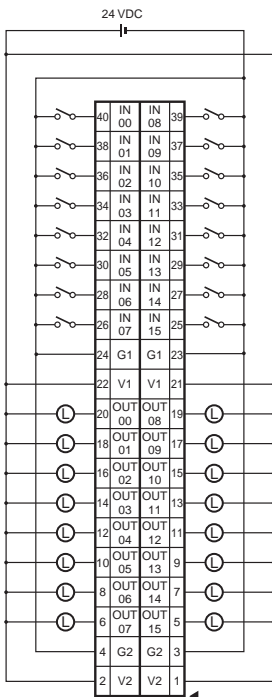
DRT2-OD32B
DRT2-OD32BV
(NPN)



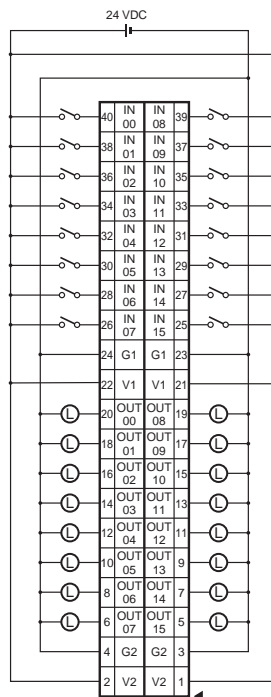
DRT2-OD32B-1
DRT2-OD32BV-1
(PNP)



DRT2-MD32B
DRT2-MD32BV
(NPN)



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

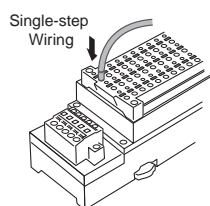


Screw-less Clamp Terminals with Transistors

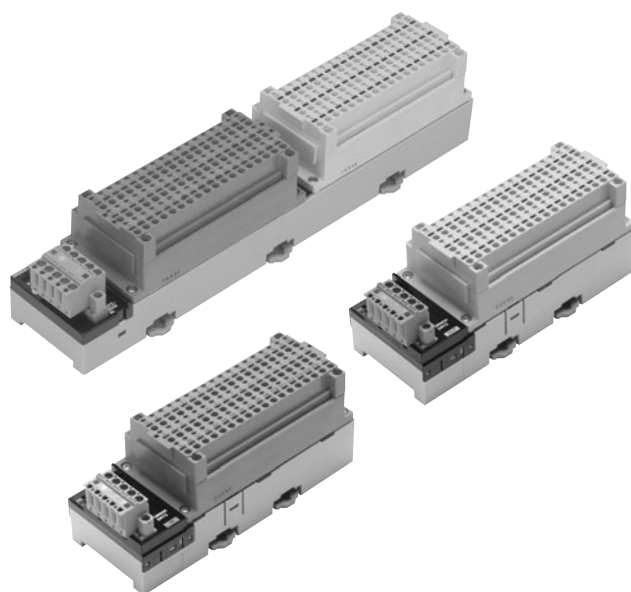
DRT2-□D16SL(H)(-1)/□D32SLH(-1)

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) | 16 inputs/ 16 outputs | 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) | | | | | 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)

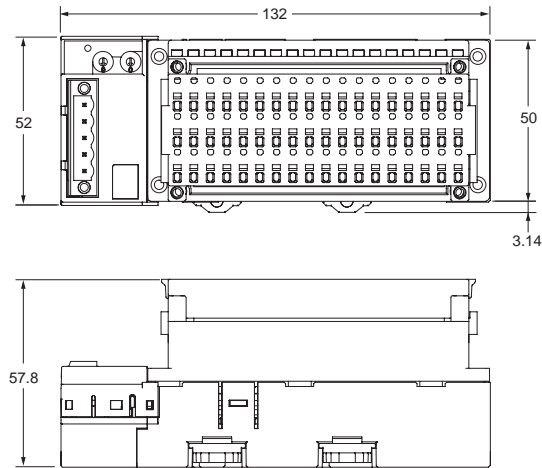
| Item | Model | DRT2-MD32SLH | DRT2-MD32SLH-1 |
|--------------------------|-------|---|----------------|
| Internal I/O common | | NPN | PNP |
| I/O points | | 16 outputs | |
| I/O power supply voltage | | 20.4 to 26.4 VDC (24 VDC -15%/+10%) | |
| Output current | | 0.5 A per point, 4 A per common | |
| 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.

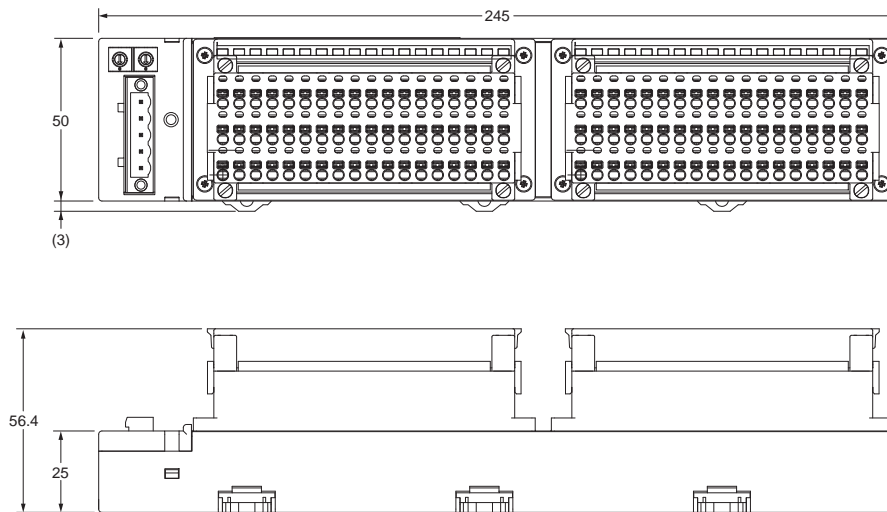
Note 2: Disconnection detection can be used when the load current is 3 mA or higher. If the load current is less than 3 mA, disconnections may be falsely detected.

Dimensions

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

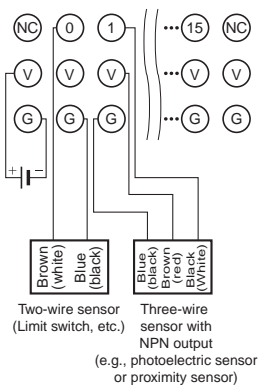


DRT2-ID32SLH(-1)
 DRT2-OD32SLH(-1)
 DRT2-MD32SLH(-1)

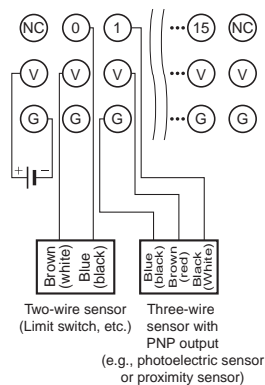


Wiring Diagrams

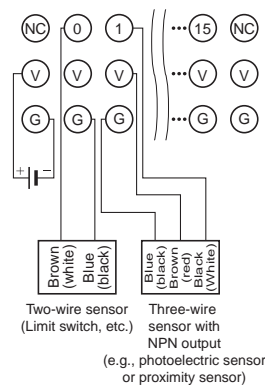
DRT2-ID16SL
 (NPN)



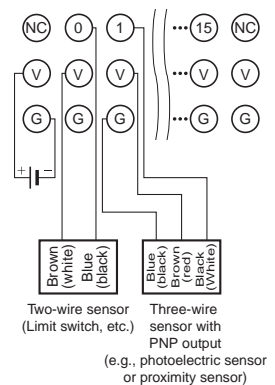
DRT2-ID16SL-1
 (PNP)



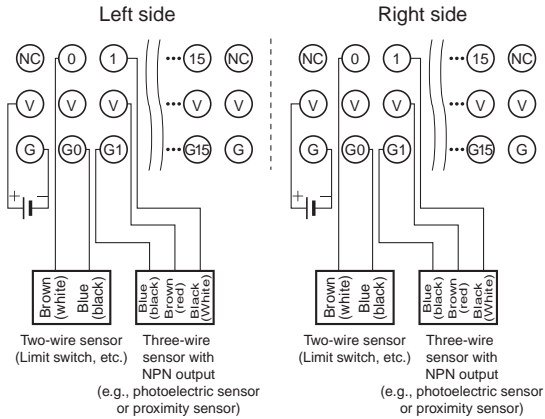
DRT2-ID16SLH
 (NPN)



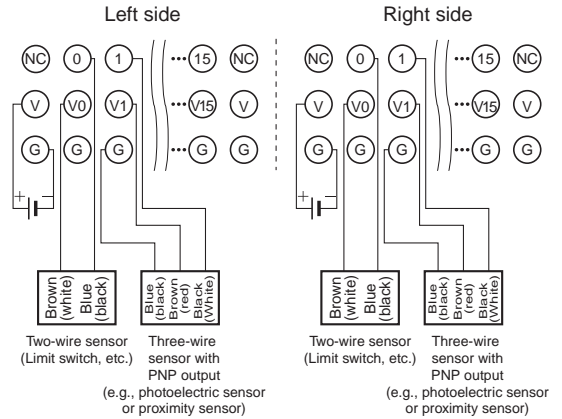
DRT2-ID16SLH-1
 (PNP)



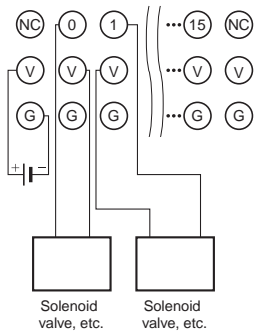
DRT2-ID32SLH (NPN)



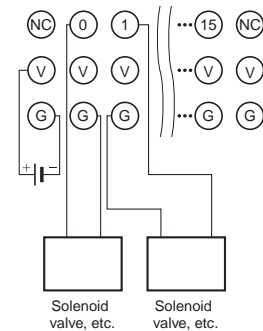
DRT2-ID32SLH-1 (PNP)



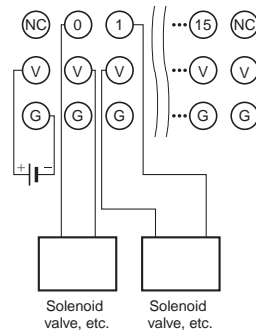
DRT2-OD16SL (NPN)



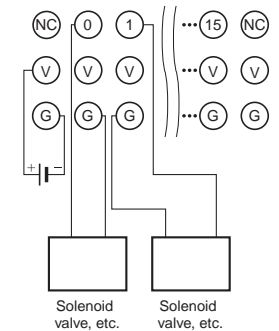
DRT2-OD16SL-1 (PNP)



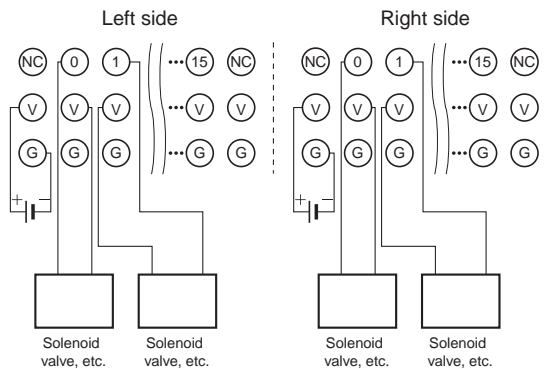
DRT2-OD16SLH (NPN)



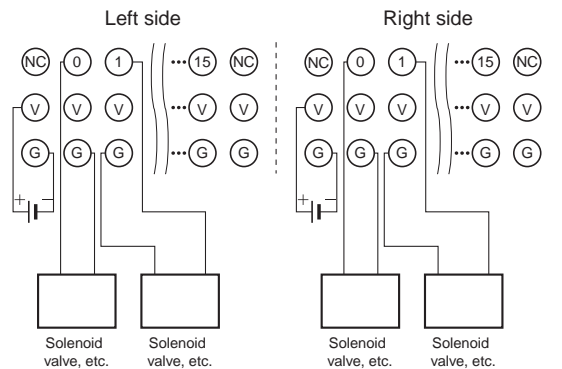
DRT2-OD16SLH-1 (PNP)



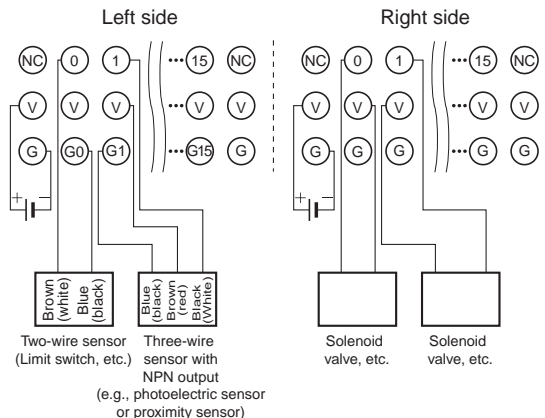
DRT2-OD32SLH (NPN)



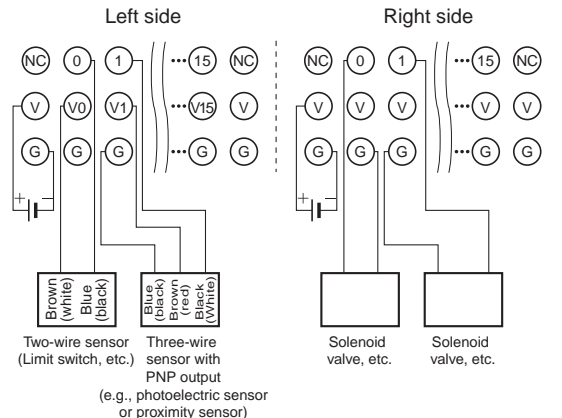
DRT2-OD32SLH-1 (PNP)



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) | | | 16 points | Supplied from the communications connector | 24 VDC | DRT2-OD08C |
| | PNP (+ common) | | | | | DRT2-OD08C-1 | |
| Input | NPN (+ common) | 16 points | Supplied from the communications connector | 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 61000-4-4 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 | |

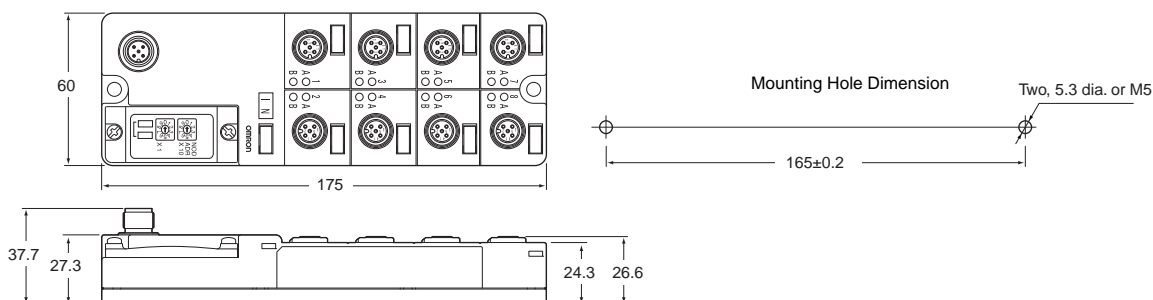
Note: Refer to Peripheral Devices on page 169 for information on applicable connectors.

Dimensions

(Unit: mm)

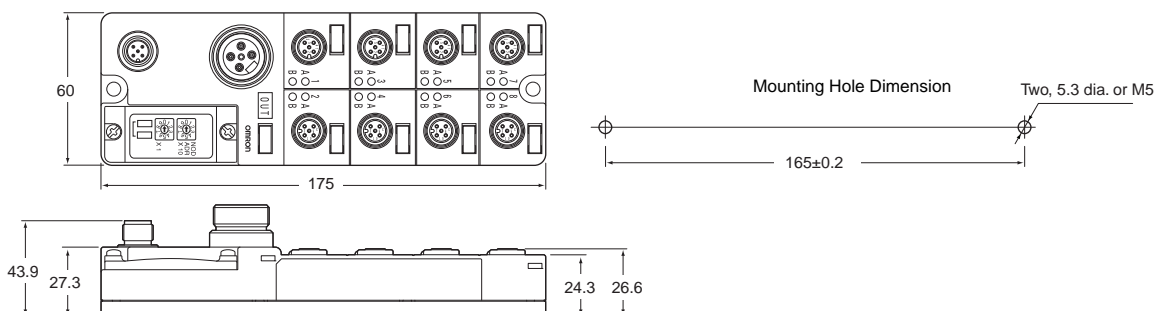
● Environment-resistive Terminals (8 or 16 Inputs)

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



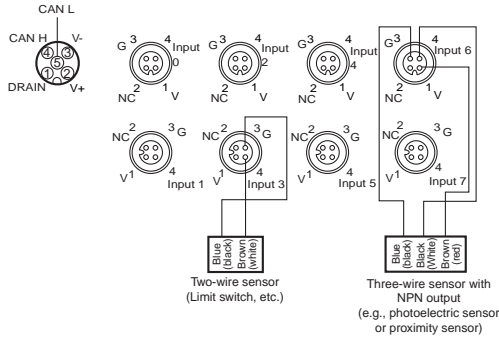
● Environment-resistive Terminals (8 Outputs)

DRT2-OD08C
DRT2-OD08C-1

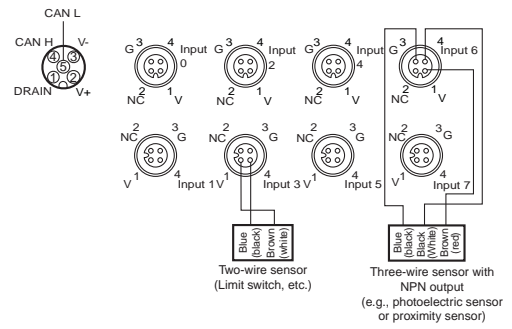


Wiring Diagrams

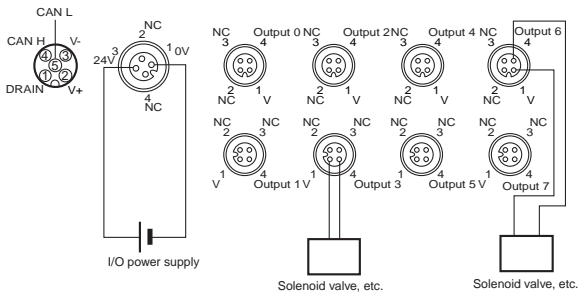
DRT2-ID08C (NPN)



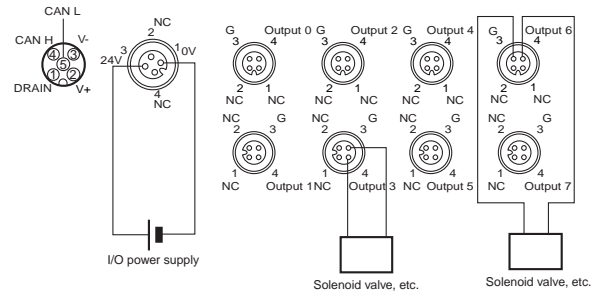
DRT2-ID08C-1 (PNP)



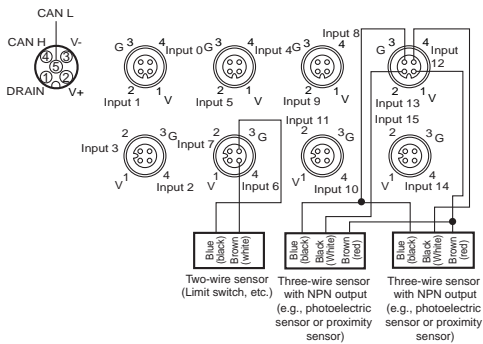
DRT2-OD08C (NPN)



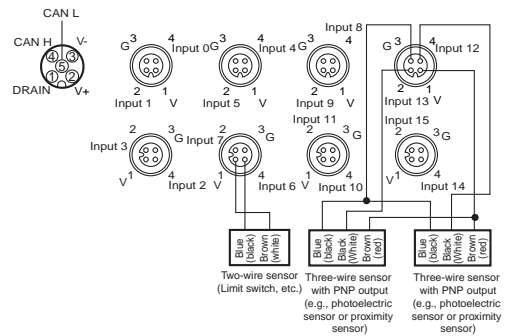
DRT2-OD08C-1 (PNP)



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 | 24 VDC | DRT2-ID04CL | | | |
| | PNP (- common) | | | | | DRT2-ID04CL-1 | | | |
| Outputs | NPN (- common) | | | | | DRT2-OD04CL | | | |
| | PNP (+ common) | | | | | DRT2-OD04CL-1 | | | |
| Inputs | NPN (+ common) | 8 points | | | | Sensor I/O connector | Supplied from the communications connector | 24 VDC | DRT2-ID08CL |
| | PNP (- common) | | | | | | | | DRT2-ID08CL-1 |
| Outputs | NPN (- common) | | | | | | | | DRT2-OD08CL |
| | PNP (+ common) | | | | | | | | DRT2-OD08CL-1 |
| Inputs | NPN (+ common) | 16 points | Sensor I/O connector | Supplied from the communications connector | 24 VDC | | | | 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 | | | | Sensor I/O connector | Supplied from the communications connector | 24 VDC | 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

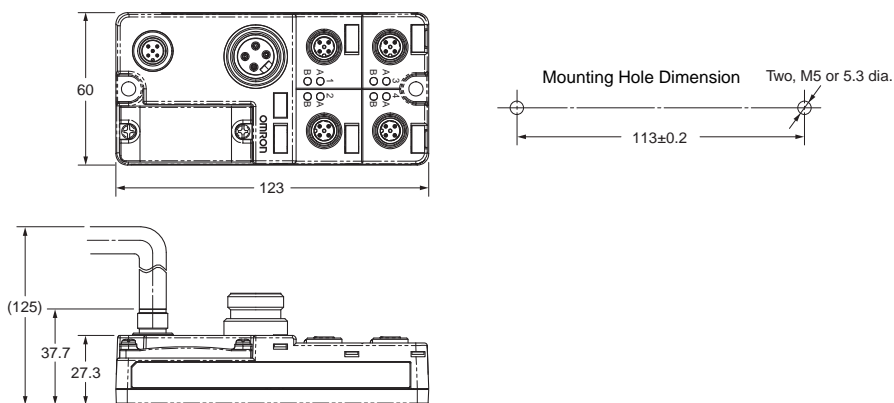
| Item | Model | DRT2-MD16CL | DRT2-MD16CL-1 |
|-------------------------------|-------|--|--|
| Internal I/O common | | NPN | PNP |
| I/O points | | 8 outputs | |
| Rated output current | | 0.5 A per point, 4 A per common | |
| I/O power supply voltage | | 20.4 to 26.4 VDC (24 VDC -15%/+10%) | |
| Residual 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.

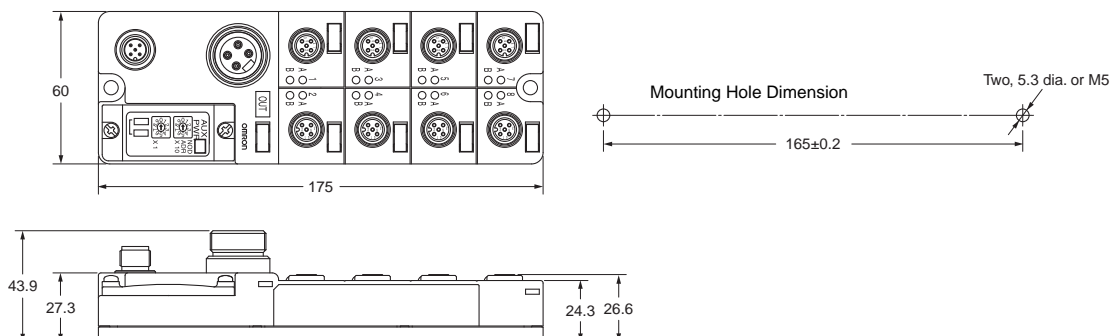
(Unit: mm)

Dimensions

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

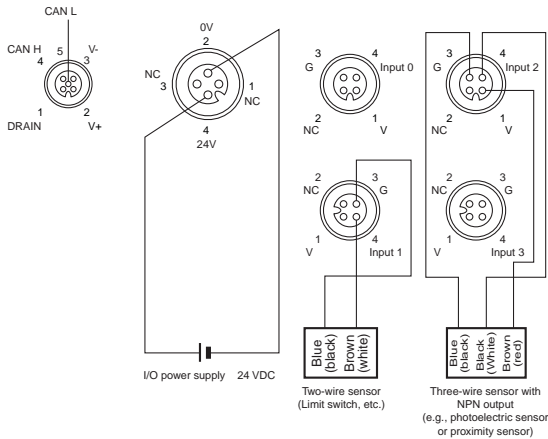


DRT2-ID08CL(-1)
DRT2-OD08CL(-1)
DRT2-HD16CL(-1)
DRT2-WD16CL(-1)
DRT2-MD16CL(-1)

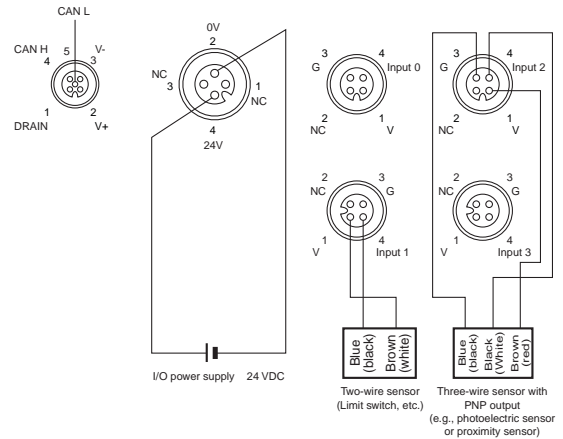


Wiring Diagrams

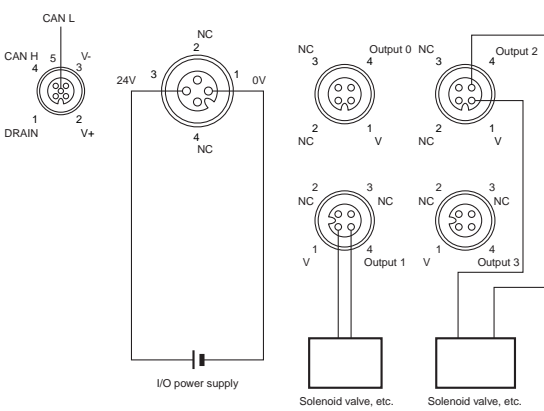
DRT2-ID04CL (NPN)



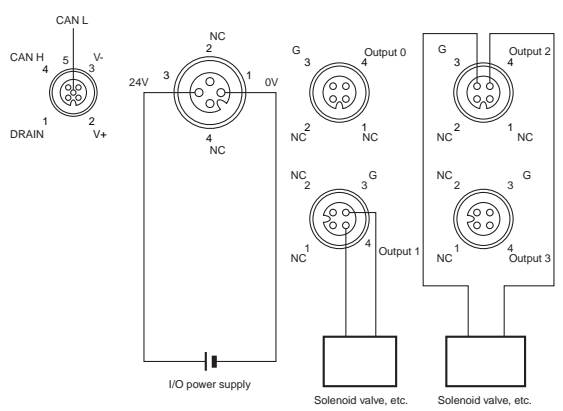
DRT2-ID04CL-1 (PNP)



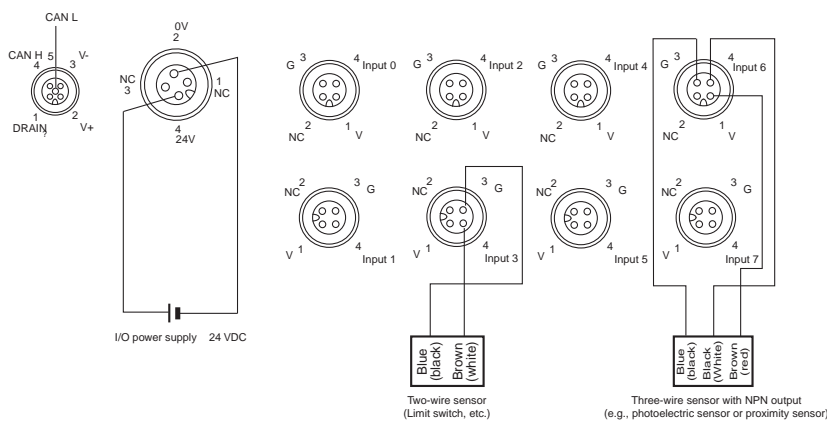
DRT2-OD04CL (NPN)



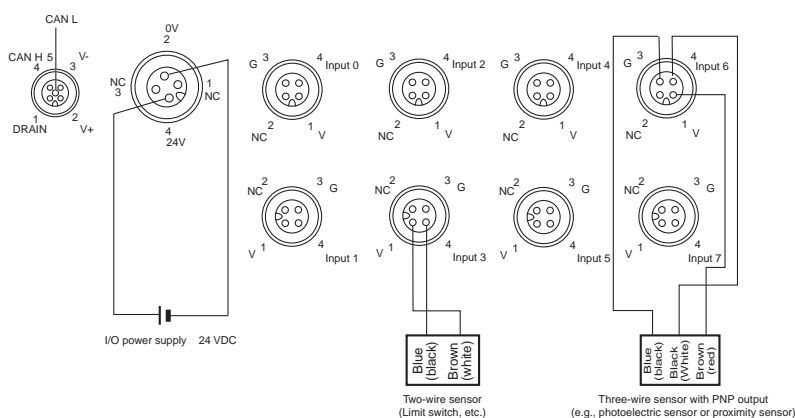
DRT2-OD04CL-1 (PNP)



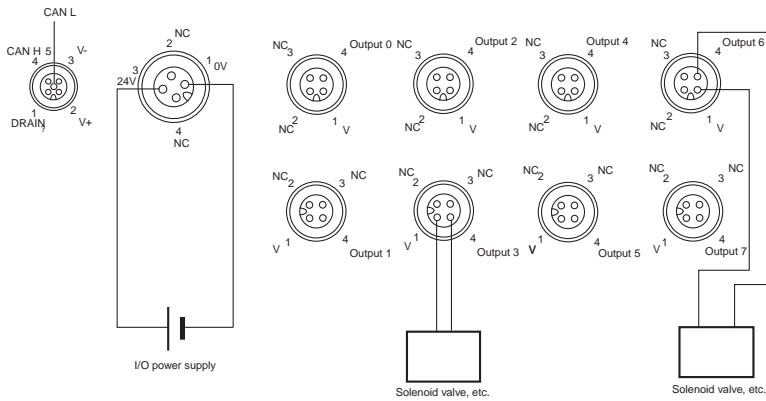
DRT2-ID08CL (NPN)



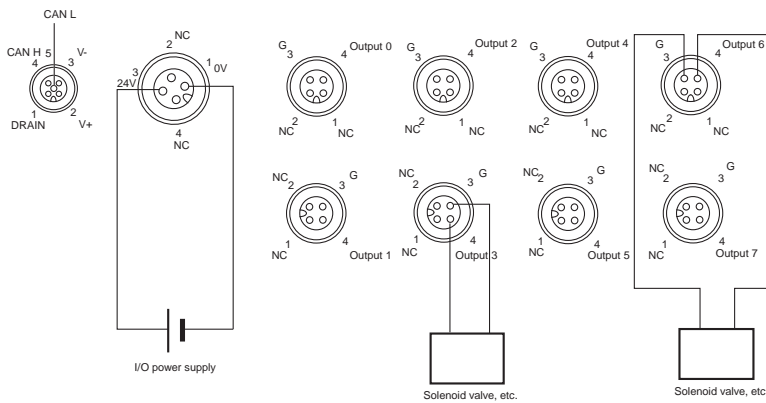
DRT2-ID08CL-1 (PNP)



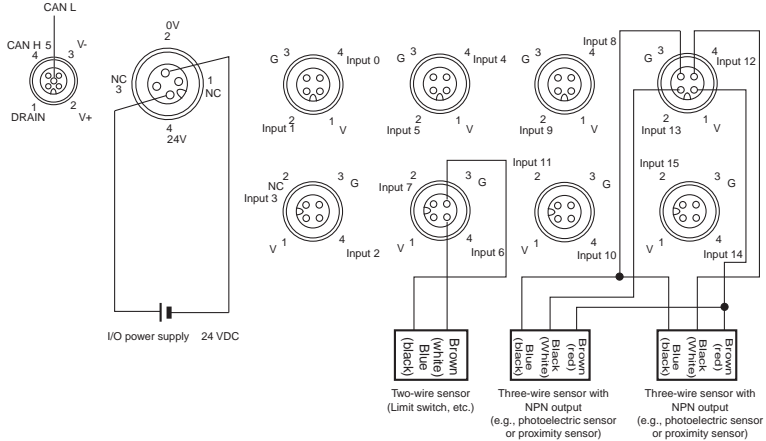
DRT2-OD08CL (NPN)



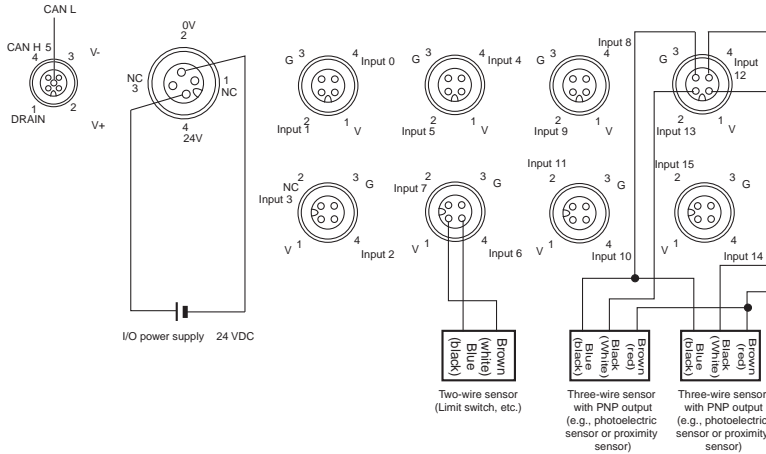
DRT2-OD08CL-1 (PNP)



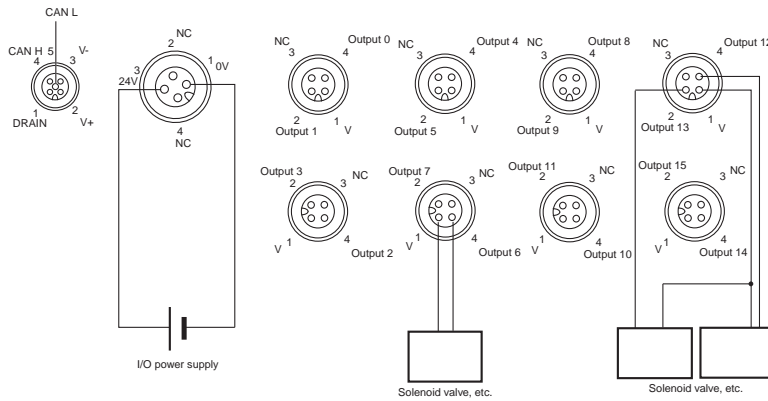
DRT2-HD16CL (NPN)



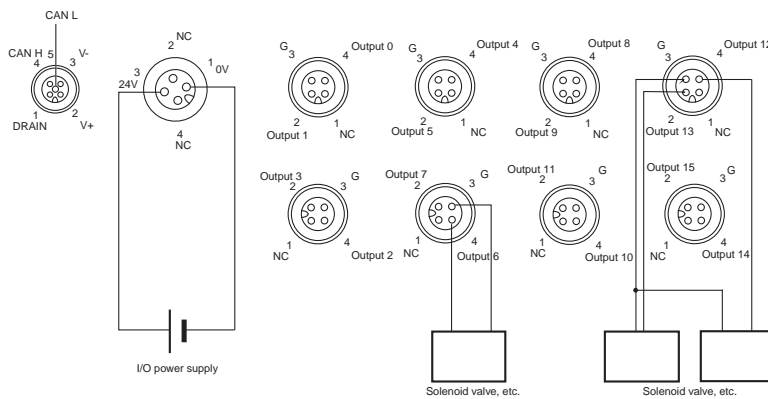
DRT2-HD16CL-1 (PNP)



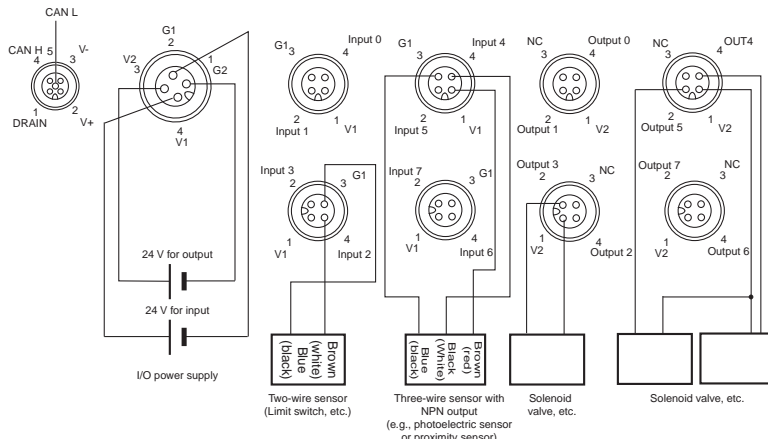
DRT2-WD16CL (NPN)



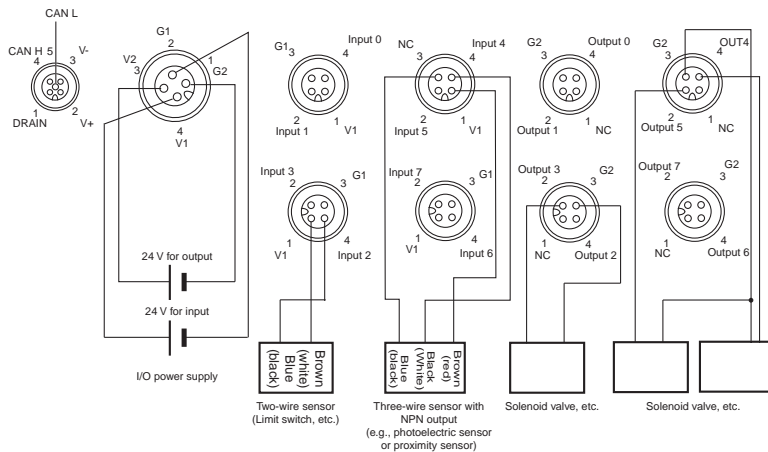
DRT2-WD16CL-1 (PNP)



DRT2-MD16CL (NPN)



DRT2-MD16CL-1 (PNP)

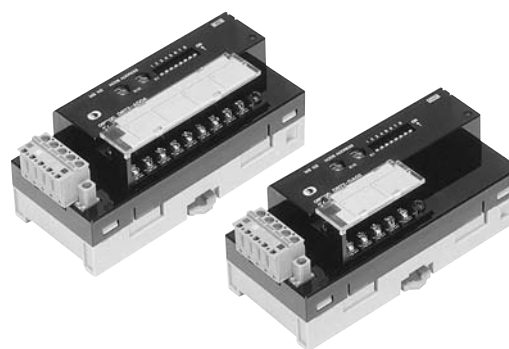


Analog I/O Terminals

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

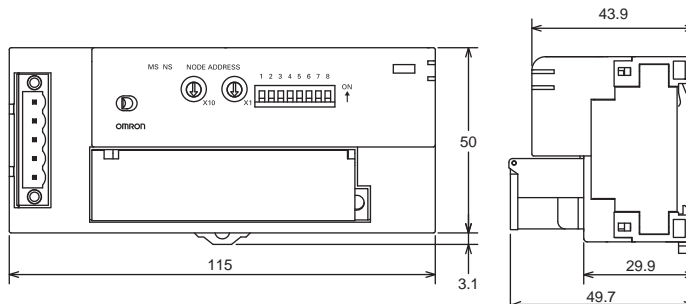
| Item | Model Specifications | DRT2-AD04 | | DRT2-AD04H | |
|----------------------------|---|--------------------------|--|--------------------------|---------------|
| | | Voltage input | Current input | Voltage input | Current input |
| Input points | 4 points (inputs 0 to 3) | | | | |
| Input type | 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

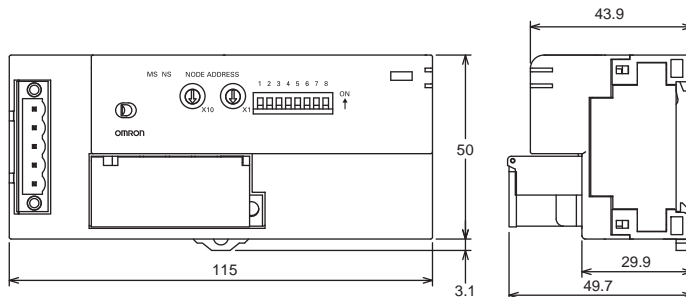
| Item | Model Specifications | DRT2-DA02 | |
|----------------------------------|---|--------------------------|----------------|
| | | Voltage output | Current output |
| Output points | 2 points (output 0 and 1) | | |
| Output type | 0 to 5 V 1 to 5 V 0 to 10 V -10 to 10 V | 0 to 20 mA 4 to 20 mA | |
| 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

DRT2-AD04 DRT2-AD04H

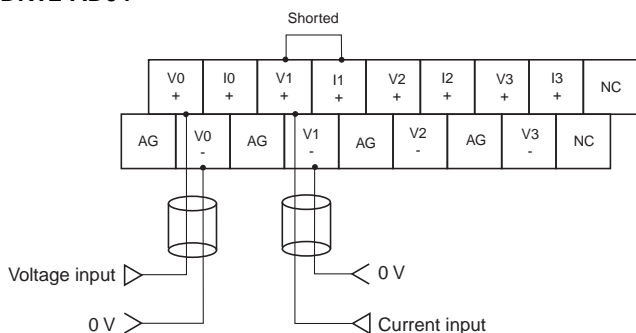


DRT2-DA02



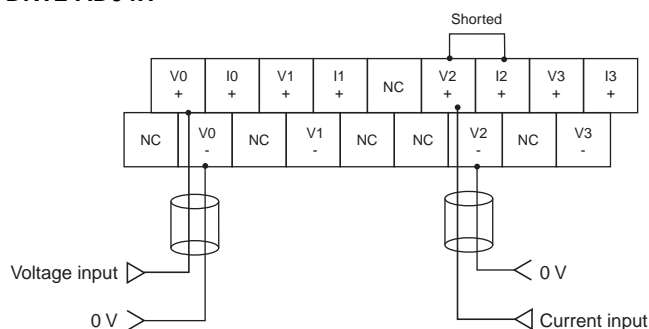
Wiring Diagrams

DRT2-AD04



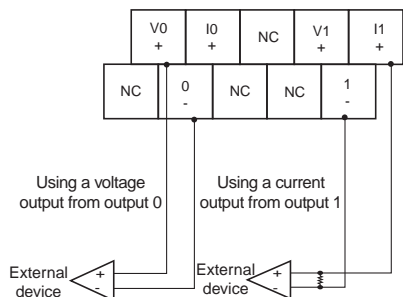
Note: With using a current input, always short the V+ and I+ terminals. (Use the shorting bar provided with the Unit.)

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



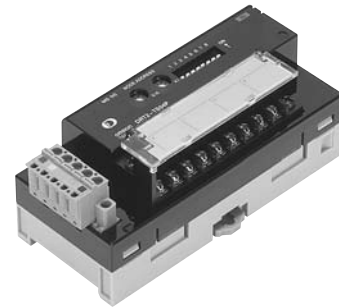
Note: The voltage and current output ranges (signals) are set with either the DIP switch or the Configurator settings.

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 JPT2 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 | |
| | | 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. | -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. |
| | 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.

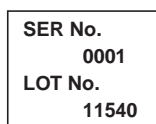
Terminal Unit Label

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



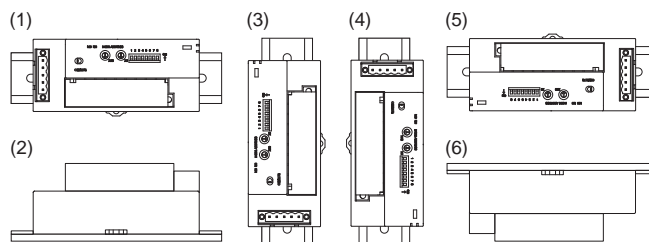
Terminal Block Label

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



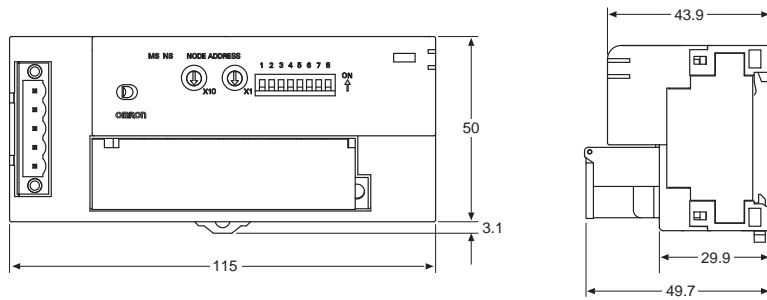
If the Lot No. and serial No. of the terminal block and Unit are the same, basic performance specifications apply regardless of the mounting direction. If the numbers are different, the following indication accuracies apply.

| 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. | |
| | 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 | ±0.3% of indication value or ±3°C (whichever is larger) ±1 digit max. | |



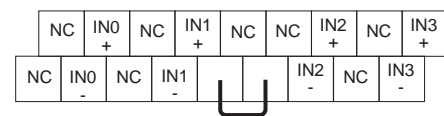
Dimensions

DRT2-TS04T
DRT2-TS04P



Terminal Arrangement

DRT2-TS04T



Cold junction compensator

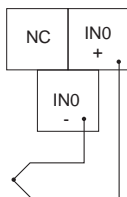
Do not touch or remove the cold junction compensator.
Otherwise temperature data will not display properly.

DRT2-TS04P

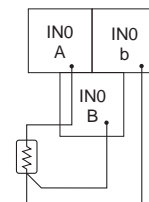


Wiring Diagrams

DRT2-TS04T (Thermocouple input)



DRT2-TS04P (Platinum resistance thermometer input)



SmartSlice GRT1 Series

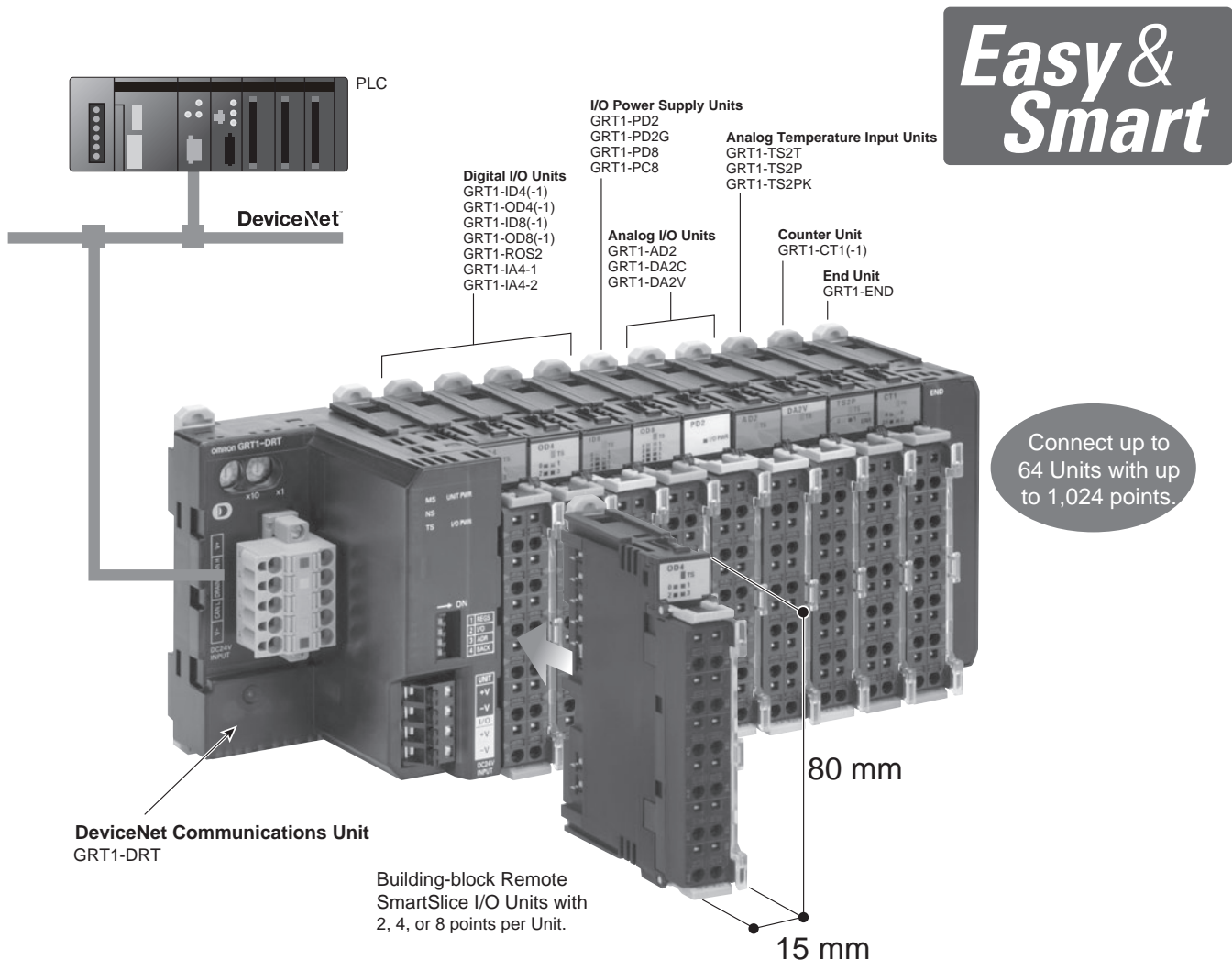
| | |
|--------------------------------------|----|
| SmartSlice GRT1 Series..... | 64 |
| ■ What Is the SmartSlice GRT1 Series | |
| ■ System Configuration | |
| ■ Internal Circuit Configuration | |
| DeviceNet Communications Unit..... | 68 |
| GRT1-DRT | |
| SmartSlice I/O Units | 70 |

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.

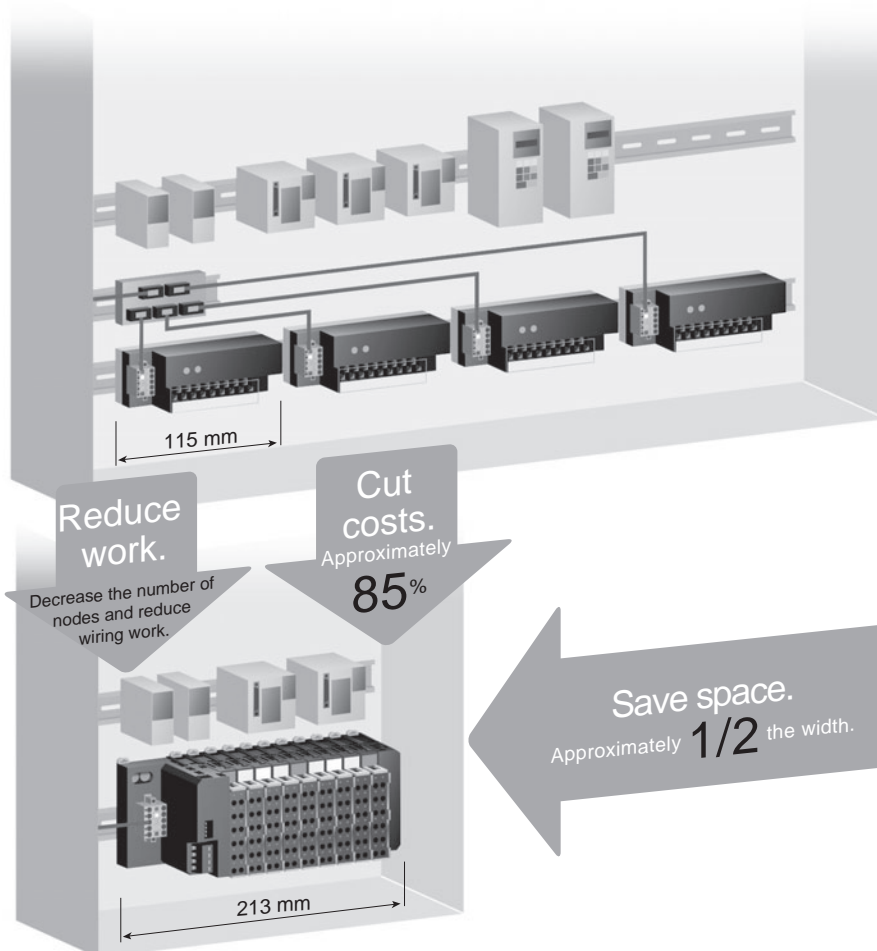


Easy & Smart

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

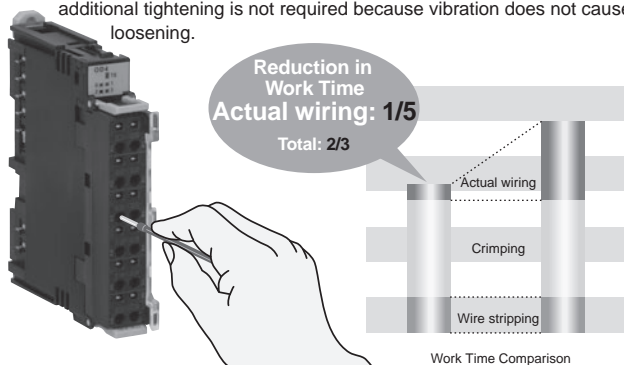
Easily save space and reduce costs.

| Required number of points | | 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 |



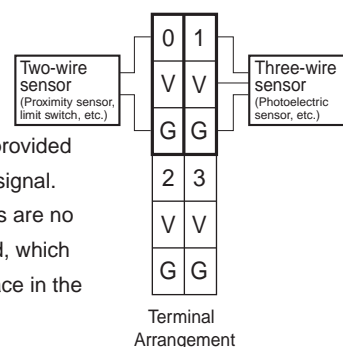
One-touch Wiring

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

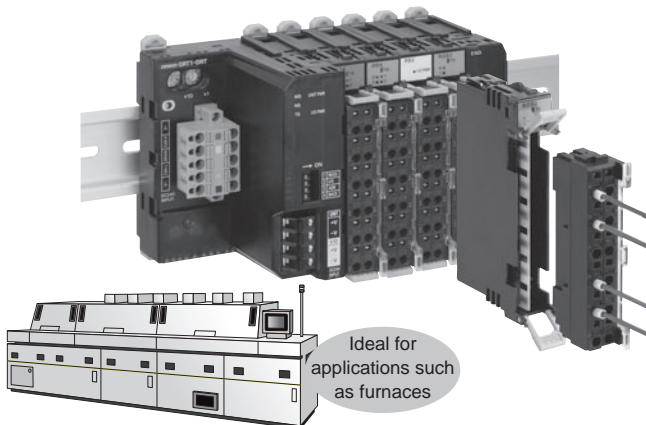
Automatic baud rate detection and automatic I/O allocations enable immediate use with no Support Software.



Online replacement makes maintenance easy

The terminal block, main block, and power supply block of the I/O Unit are detachable.

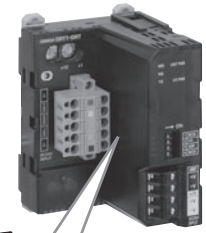
Replacement can be performed online without changing the I/O wiring and while maintaining communications for the remaining Units. This is ideal for applications such as furnaces, where heaters must be remain turned ON as much as possible.



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.

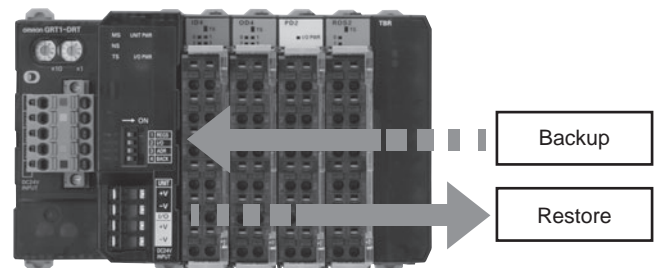


Smart Counting

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.

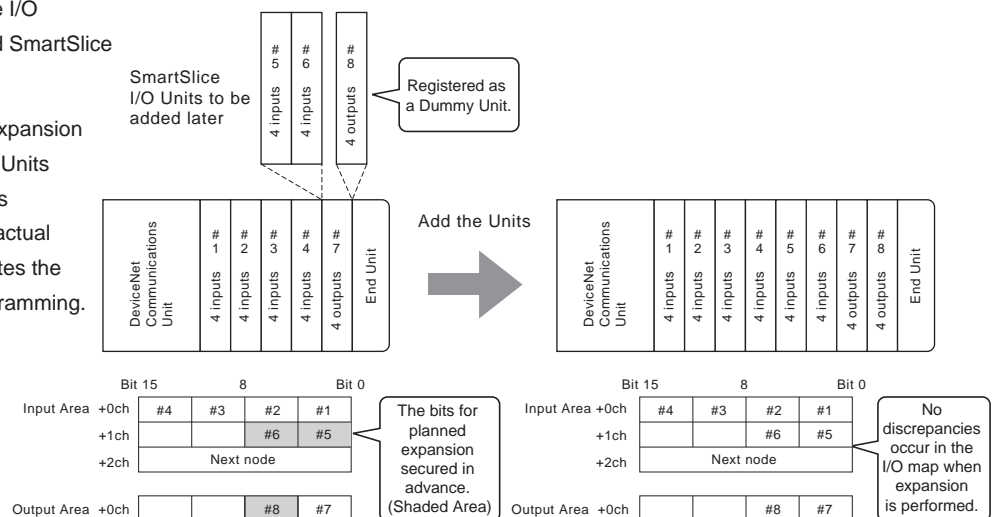
Recover Unit Parameters without Support Software

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



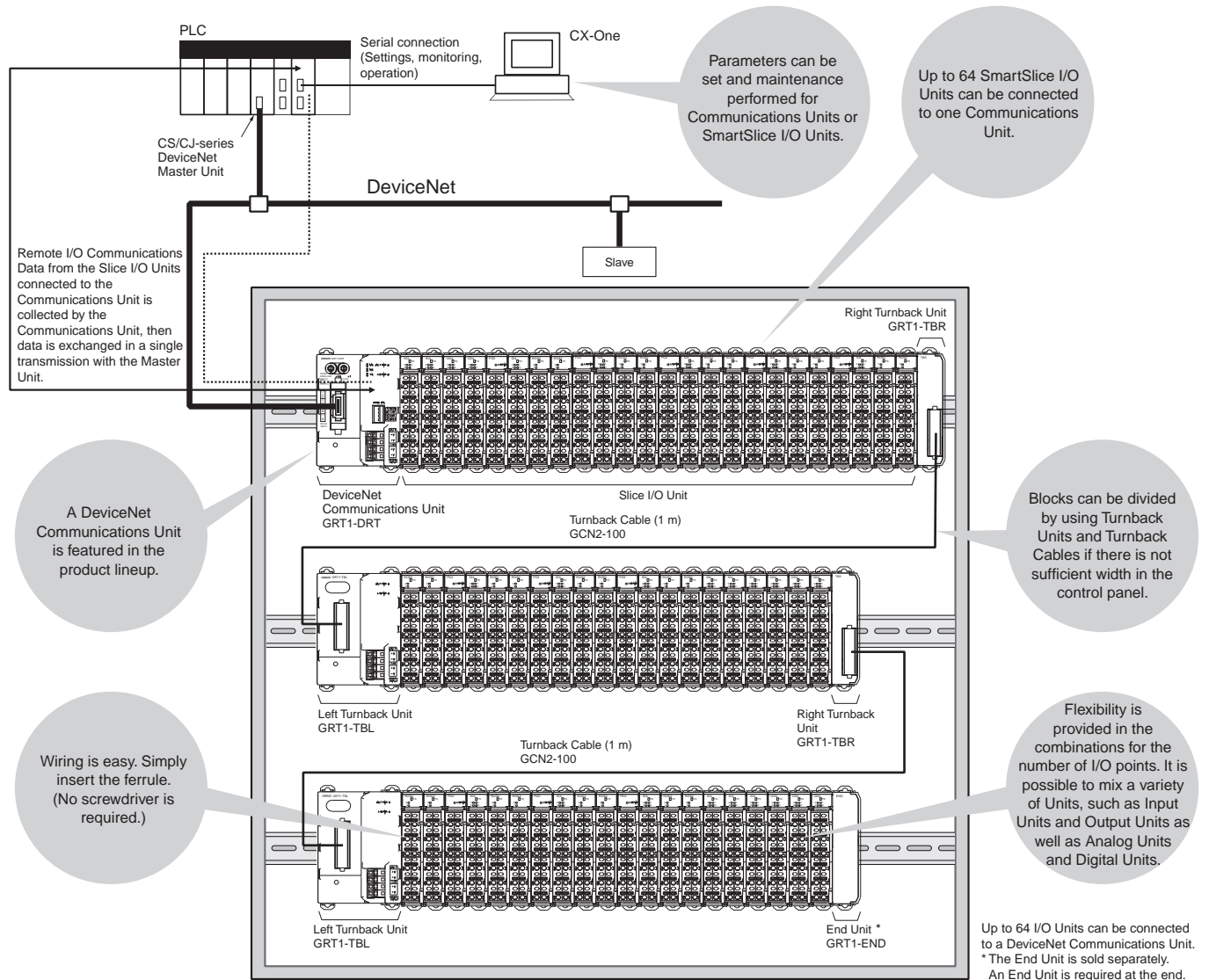
I/O Allocation Software Settings New Function

- 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.

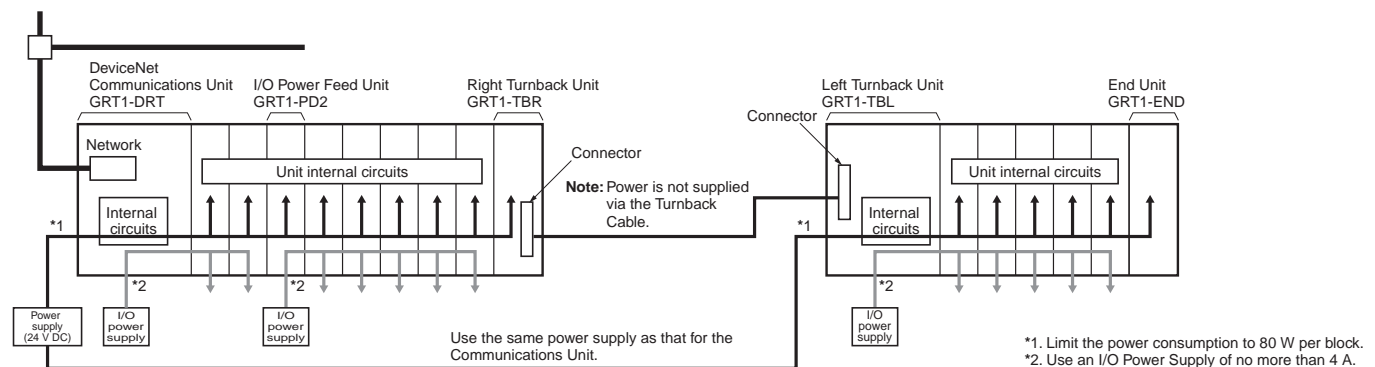


Support for flexible I/O configurations to match the application help downsize the control panel, cut costs, and decrease wiring work.

System Configuration



Internal Circuit Configuration



DeviceNet Communications Unit

GRT1-DRT

DeviceNet-compliant Interface Unit with up to 1,024 I/O Points at One Node

- Connect up to 64 SmartSlice I/O Units.
- Consolidate a large capacity of I/O points into one Slave (up to 1,024 I/O points).
- Save space by configuring different I/O types using one Slave Unit.
- Easily get the system started simply by setting the node addresses.
- Replace SmartSlice I/O Units online while maintaining communications. This helps minimize equipment downtime.
- Smart functions for monitoring equipment operating status. This helps improve preventive maintenance and the utilization rate.
- Registering SmartSlice I/O for planned future expansion decreases design work when changes are made. (Supported for unit version 2.0 or higher.)



Ordering Information

| Name | Specifications | Model |
|-------------------------------|---|----------|
| DeviceNet Communications Unit | Up to 64 Slice I/O Units can be connected. (1,024 I/O points max.) | GRT1-DRT |

General Specifications

| Item | Model | GRT1-DRT |
|-------------------------------|-------|--|
| Network power supply voltage | | 11 to 25 V DC (Supplied from the communications connector) |
| Unit power supply voltage | | 20.4 to 26.4 VDC (24 VDC -15%/+10%) |
| I/O power supply voltage | | 20.4 to 26.4 VDC * (24 V +10%/-15%) |
| Noise immunity | | Conforms to IEC 61000-4-4, 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 | | 150 m/s ² |
| Dielectric strength | | 500 V AC between isolated circuits |
| Insulation resistance | | 20 MΩ min. between isolated circuits |
| 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 (with no icing or condensation) |
| Mounting method | | DIN 35 mm-track mounting |

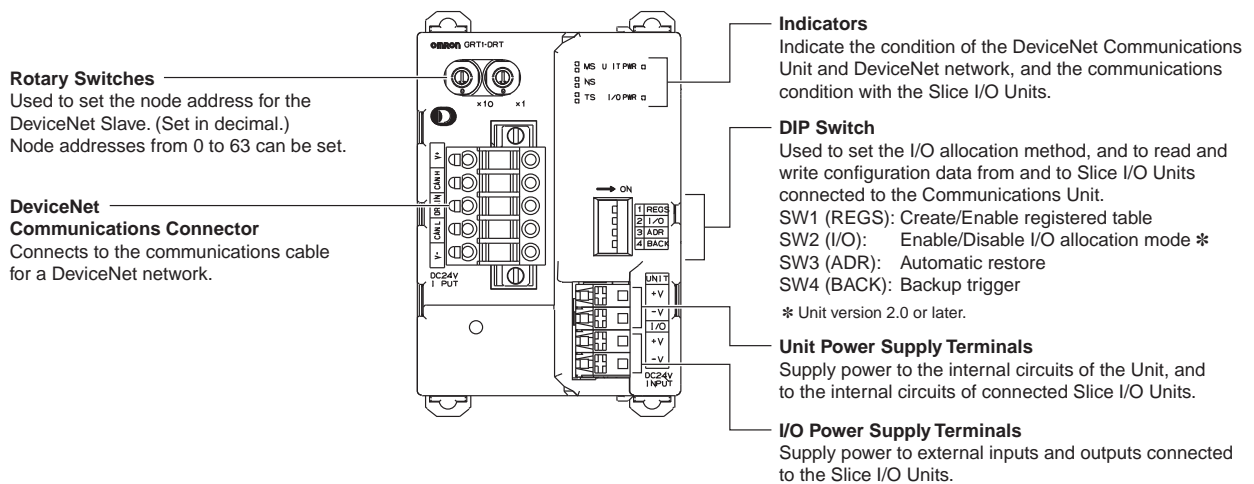
* For power supply input to the Slice I/O Units.

DeviceNet Communications Unit Specifications

| Item | Model | GRT1-DRT |
|---|-------|---|
| I/O points | | 1,024 max. (128 bytes), including inputs and outputs |
| Connectable Slice I/O Units | | 64 max. |
| Communications with Slice I/O Units | | 64 Units max. in a horizontal connection configuration (for an extension of approx. 2 m max.) Power consumption is limited to 80 W per block, and the extension must be done using Turnback Cables (two 1-m cables max., for a distance of 2 m max.) |
| Slice I/O Unit data capacity | | (1) 0, 2, or 4 bits (2) 0 to 16 words (in word increments) |
| Status flags | | One word is allocated (Communications Unit Status Flags) |
| Parameter back-up and restore functions | | 2 KB of data can be backed up and restored per Unit |
| Message communications function | | Supported |
| Automatic baud rate detection | | Supported |
| Connector | | 1 DeviceNet open connector with screws Connectable with multi-drop connector |
| Terminals | | 2 terminals for I/O power supply, 2 terminals for Unit power supply |
| Power supply per 1 block | | 80 W max. (Unit power supply) |
| I/O power supply consumption current | | 4 A max. |
| Weight | | 137 g |

Nomenclature and Functions

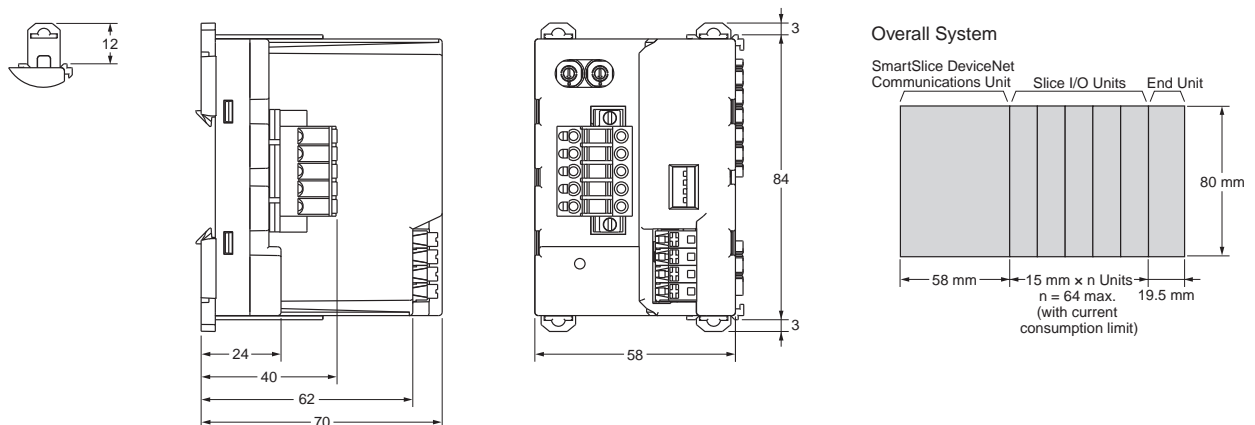
GRT1-DRT



Dimensions

(Unit: mm)

GRT1-DRT



Ordering Information

| Name | | Appearance | Specifications | Model |
|-------------------------------|---|---|--|--|
| DeviceNet Communications Unit | |  | Up to 64 SmartSlice I/O Units can be connected (1,024 I/O points). | GRT1-DRT |
| SmartSlice I/O Units | Digital I/O Units |  | 4 inputs, NPN | GRT1-ID4 |
| | | | 4 inputs, PNP | GRT1-ID4-1 |
| | | | 4 outputs, NPN | GRT1-OD4 |
| | | | 4 outputs, PNP | GRT1-OD4-1 |
| | | | 8 inputs, NPN | GRT1-ID8 |
| | | | 8 inputs, PNP | GRT1-ID8-1 |
| | | | 8 outputs, NPN | GRT1-OD8 |
| | | | 8 outputs, PNP | GRT1-OD8-1 |
| | | | 2 relay outputs | GRT1-ROS2 |
| | | | 4 AC inputs | GRT1-IA4-1 GRT1-IA4-2 |
| | Analog I/O Units |  | 2 inputs (current or voltage) | GRT1-AD2 |
| | | | 2 outputs (current) | GRT1-DA2C |
| | | | 2 outputs (voltage) | GRT1-DA2V |
| | Temperature Input Unit (resistance thermometer) |  | 2 temperature inputs (Pt100 resistance thermometer) | GRT1-TS2P |
| | | | 2 temperature inputs (Pt1000 resistance thermometer) | GRT1-TS2PK |
| 2 thermocouple inputs | | | GRT1-TS2T | |
| Counter Units |  | 1 counter input, 1 external output, NPN | GRT1-CT1 | |
| | | 1 counter input, 1 external output, PNP | GRT1-CT1-1 | |
| System Units | Turnback Units |  | For right-side turnback (Used to divide a SmartSlice I/O Terminal into blocks) | GRT1-TBR |
| | |  | For left-side turnback (Used to divide a SmartSlice I/O Terminal into blocks) | GRT1-TBL |
| | Turnback Cable | -- | Length: 1 m | GCN2-100 |
| | I/O Power Feed Unit |  | Used if the total current consumption of the I/O Power Supply exceeds 4 A or to use a separate I/O power supply. | GRT1-PD2 |
| | | | | GRT1-PD2G |
| | | | Used to add V and G terminals for the I/O power supply. | GRT1-PD8 |
| | | | | GRT1-PD8-1 |
| End Unit *1 |  | Required at the end of SmartSlice I/O Terminals. | GRT1-PC8 | |
| | | | GRT1-PC8-1 | |
| Option | Terminal blocks | -- | Terminal blocks (5 blocks) | GRT1-BT1-5 |

*1. The End Unit is sold separately. (End Units are not included with Communications Units.)

*2. Use the GCN2-100 as a set with the GRT1-TBR and GRT1-TBL.

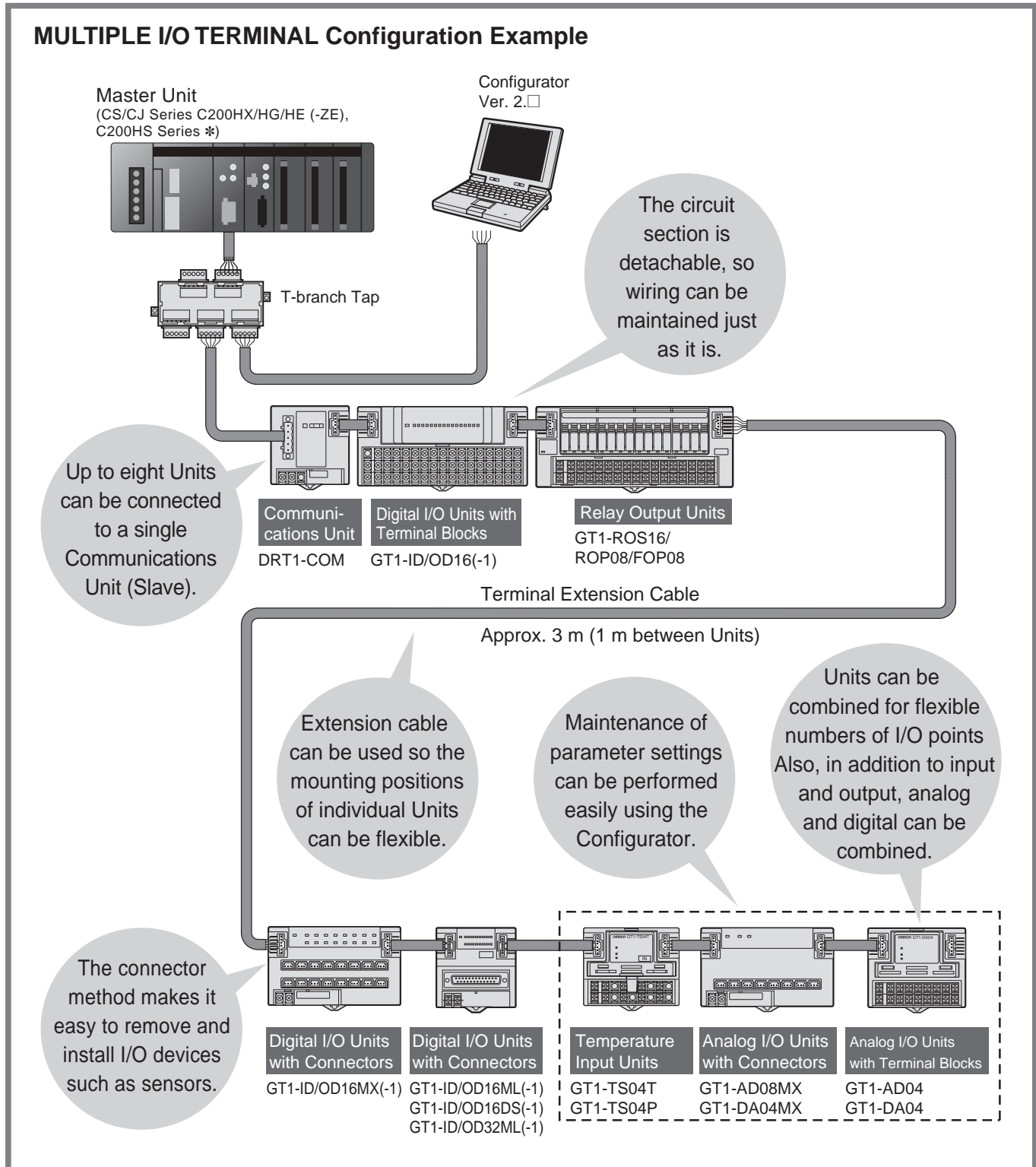
MULTIPLE I/O TERMINAL Series

| | |
|--|----|
| MULTIPLE I/O TERMINAL Series | 72 |
| ■ MULTIPLE I/O TERMINAL Configuration Example | |
| Communications Unit..... | 73 |
| DRT1-COM | |
| Digital I/O Units..... | 74 |
| GT1-□D16(-1)/□D16MX(-1)/□D16ML(-1)/□D32ML(-1)/□D16DS(-1) | |
| Relay Output Units..... | 81 |
| GT1-ROS16/ROP08/FOP08 | |
| Analog I/O Units..... | 83 |
| GT1-AD/DA | |
| Temperature Input Units | 85 |
| GT1-TS04□ | |

MULTIPLE I/O TERMINAL Series

A MULTIPLE I/O TERMINAL with a flexible combination of numerous versatile I/O Units handles digital I/O, analog I/O, counter inputs, or relay outputs and boosts on-site productivity higher than ever. Using a MULTIPLE I/O TERMINAL, one Slave (Communications Unit) can connect to a maximum of eight I/O Units to achieve control of a maximum of 1,024 I/O points. (see Note below.)

MULTIPLE I/O TERMINAL Configuration Example



* By using the DeviceNet Configurator (sold separately), control can be performed for up to 32,000 points for CJ1W-DRM21 and CS1W-DRM21-V1 DeviceNet Units, and 4,800 points for C200HX/HG/HE Master Units.

Note: The number of I/O points under control may be restricted by the application. Refer to the *DeviceNet MULTIPLE I/O TERMINAL Operation Manual (W348)* for details.

Communications Unit DRT1-COM

Connects to a Total Maximum of Eight Digital I/O, Analog I/O, and Relay Output Units Compatible with MULTIPLE I/O TERMINAL.

- Allows flexible combinations of I/O points.
- Covering a total cable length of 3 m.
- DIN track mounting.



Ordering Information

| Power supply voltage | Model |
|----------------------|----------|
| 24 VDC | DRT1-COM |

General Specifications

| | |
|-------------------------------------|---|
| Communications power supply voltage | 11 to 25 VDC (supplied from the communications connector) |
| Internal power supply voltage | 20.4 to 26.4 VDC |
| I/O power supply voltage | (24 VDC +10%/-15%) |
| Current consumption | Communications: 30 mA max. Internal circuit: 0.6 A at 24 VDC (with max. I/O load) |
| Dielectric strength | 500 VAC |
| Noise immunity | Conforms to IEC61000-4-4, 2 kV (Power line) |
| Vibration resistance | 10 to 150 Hz, 1.0-mm double amplitude or 70 m/s ² |
| Shock resistance | 200 m/s ² |
| Mounting strength | No damage when 100 N pull load was applied in all directions (10 N min. in the DIN track direction) |
| Terminal strength | No damage when 100 N pull load was applied |
| Screw tightening torque | 0.3 to 0.5 N•m Phoenix connector: 0.25 to 0.3 N•m |
| Ambient operating temperature | -10°C to 55°C (with no icing or condensation) |
| Ambient operating humidity | 25% to 85% |
| Ambient storage temperature | -25°C to 65°C (with no icing or condensation) |
| Accessories | End connector (one) |

Specifications

| | | |
|--------------------------|---|--|
| Connectable Units | 8 | |
| Unit I/O points | 1,024 max. (including inputs and outputs) | |
| Communications distance | Total extension | 3 m max. |
| | Between Units | 1 m max. (40 mm max. with the standard cable provided with the Unit) * |
| Dielectric strength | 500 VAC for 1 min. | |
| Mounting method | DIN 35 mm-track mounting | |
| Unit output power supply | 0.4 A max. (see Note.) | |

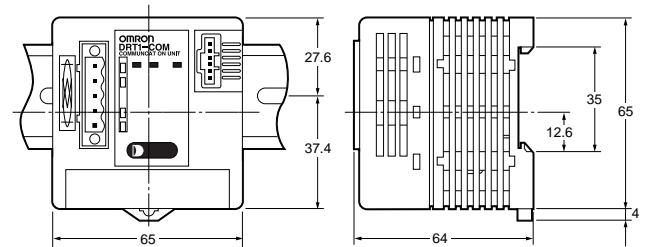
* One cable is provided with each I/O Unit.

Note: The total current consumption for I/O Unit interfaces must not exceed 0.4 A.

Dimensions

(Unit: mm)

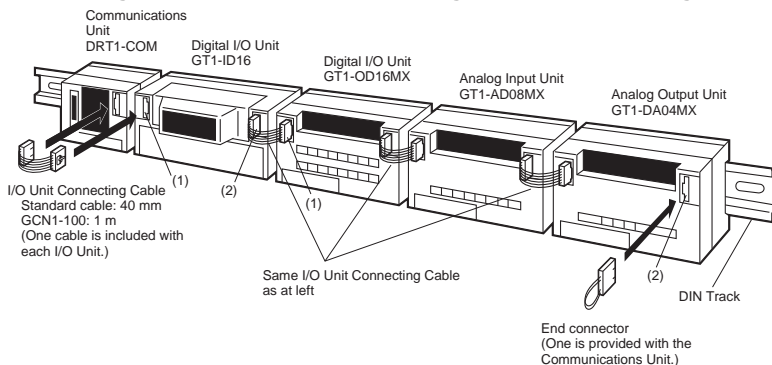
DRT1-COM



Note: The Unit is shown with the end connector mounted in the above diagram.

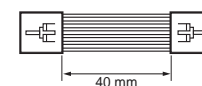
Mounting and Connecting Units

● Mounting to DIN Track and Connecting I/O Unit Connecting Cable

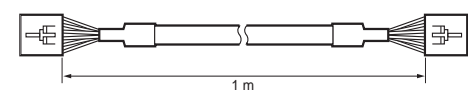


Note: The connecting cable for the I/O Unit is shown below.

Accessory Cable



GCN1-100 (Sold Separately)

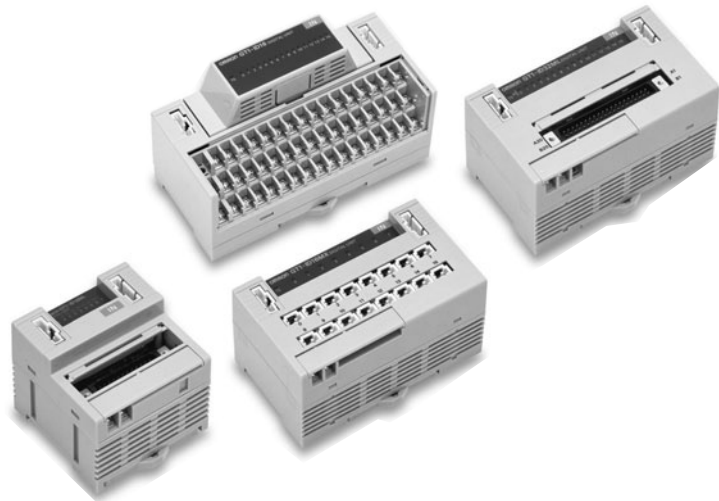


Digital I/O Units

GT1-□D16(-1)/□D16MX(-1)/□D16ML(-1)/□D32ML(-1)/□D16DS(-1)

Digital I/O Units Compatible with MULTIPLE I/O TERMINAL

- Terminal block, connector, and high-density connector models are available.
- The circuit block of the terminal block model can be mounted or dismantled for ease of maintenance without disconnecting the wires.
- DIN track mounting.



Ordering Information

| Unit | I/O classification | Internal I/O common | I/O points | I/O connections | Power supply voltage | I/O specification | Model | | | | |
|----------------------|------------------------------|---------------------|------------------------|-------------------|----------------------|-------------------|---------------|-------------------|--------------|---------------|--------------|
| Terminal block model | Digital input | NPN (+ common) | 16 | M3 terminal board | 24 VDC | DC/transistor | GT1-ID16 | | | | |
| | | PNP (- common) | | | | | GT1-ID16-1 | | | | |
| | Digital output | NPN (- common) | | | | GT1-OD16 | | | | | |
| | | PNP (+ common) | | | | GT1-OD16-1 | | | | | |
| Connector model | Digital input | NPN (+ common) | | Molex connector | | Fujitsu connector | 24 VDC | DC/transistor | GT1-ID16MX | | |
| | | PNP (- common) | | | | | | | GT1-ID16MX-1 | | |
| | Digital output | NPN (- common) | | | | | | GT1-OD16MX | | | |
| | | PNP (+ common) | | | | | | GT1-OD16MX-1 | | | |
| | Digital input | NPN (+ common) | D-sub 25-pin connector | | DC/transistor | | | GT1-ID16ML | | | |
| | | PNP (- common) | | | | | | GT1-ID16ML-1 | | | |
| | Digital output | NPN (- common) | | GT1-OD16ML | | | | | | | |
| | | PNP (+ common) | | GT1-OD16ML-1 | | | | | | | |
| | High-density connector model | Digital input | | NPN (+ common) | 32 | | | Fujitsu connector | 24 VDC | DC/transistor | GT1-ID16DS |
| | | | | PNP (- common) | | | | | | | GT1-ID16DS-1 |
| | | Digital output | NPN (- common) | GT1-OD16DS | | | | | | | |
| | | | PNP (+ common) | GT1-OD16DS-1 | | | | | | | |
| Digital input | | NPN (+ common) | 32 | Fujitsu connector | | 24 VDC | DC/transistor | | | GT1-ID32ML | |
| | | PNP (- common) | | | | | | | | GT1-ID32ML-1 | |
| Digital output | NPN (- common) | GT1-OD32ML | | | | | | | | | |
| | PNP (+ common) | GT1-OD32ML-1 | | | | | | | | | |

General Specifications

| | | | |
|--------------------------------------|---|---------------|------------------|
| I/O power supply voltage | 20.4 to 26.4 VDC (24 VDC -15%/+10%) | | |
| Current consumption * | Model | I/O Interface | Internal circuit |
| | GT1-ID16(-1) | 35 mA max. | -- |
| | GT1-OD16(-1) | 35 mA max. | 9 mA max. |
| | GT1-ID16MX(-1) | 35 mA max. | -- |
| | GT1-OD16MX(-1) | 35 mA max. | 9 mA max. |
| | GT1-ID16ML(-1) | 35 mA max. | -- |
| | GT1-OD16ML(-1) | 35 mA max. | 9 mA max. |
| | GT1-ID16DS(-1) | 35 mA max. | -- |
| | GT1-OD16DS(-1) | 35 mA max. | 9 mA max. |
| | GT1-ID32ML(-1) | 55 mA max. | -- |
| GT1-OD32ML(-1) | 65 mA max. | 11 mA max. | |
| Dielectric strength | 500 VAC | | |
| Noise immunity | Conforms to IEC61000-4-4 2 kV (power line) | | |
| Vibration resistance | 10 to 150 Hz, 1.0-mm double amplitude or 70 m/s ² | | |
| Shock resistance | 200 m/s ² | | |
| Mounting method | DIN 35 mm-track mounting | | |
| Mounting strength | No damage when 100 N pull load was applied in all directions (10 N min. in the DIN track direction) | | |
| Terminal strength | No damage when 100 N pull load was applied | | |
| Screw tightening torque | 0.3 to 0.5 N·m | | |
| Ambient operating temperature | -10°C to 55°C (with no icing or condensation) | | |
| Ambient operating humidity | 25% to 85% (with no icing or condensation) | | |
| Ambient storage temperature | -25°C to 65°C | | |
| Accessories | I/O Unit Connecting Cable (40 mm) | | |

* The above current consumption is a value with all 16 and 32 points turned ON excluding the current consumption of the external sensor connected to the Input Unit and the current consumption of the load connected to the Output Unit.

Applicable Connectors

Note: Refer to page 144 for Peripheral Devices.

Input Specifications

| Item | Model | GT1-ID□□ |
|--------------------------|-------|--|
| ON delay | | 1.5 ms max. |
| OFF delay | | 1.5 ms max. |
| ON voltage | | 15 V min. (between each input terminal and V or G) |
| OFF voltage | | 5 V max. (between each input terminal and V or G) |
| OFF current | | 1 mA max. |
| Insulation method | | Photocoupler |
| Input indicators | | LED (yellow) |

Output Specifications

| Item | Model | GT1-OD□□ |
|-----------------------------|-------|---------------|
| Rated output current | | 0.5 A/point * |
| ON delay | | 0.5 ms max. |
| OFF delay | | 1.0 ms max. |
| Residual voltage | | 1.2 V max. |
| Leakage current | | 0.1 mA max. |
| Insulation method | | Photocoupler |
| Output indicators | | LED (yellow) |

* Ensure that the total external load current does not exceed the values given in the following table.

| Model | Total external load current |
|------------------------|-----------------------------|
| GT1-OD16/16MX/32ML(-1) | 4 A |
| GT1-OD16ML/16DS(-1) | 2.5 A |

Cables for I/O Connector

Cables for Connector Terminal Conversion Units (16 Points)

| I/O classification | Model | Applicable cable | Connectable model | Connector Products (Connector-Terminal Block Conversion Units) Connecting method |
|----------------------------|----------------|------------------|-------------------|--|
| Digital input (16 points) | GT1-ID16ML(-1) | XW2Z-□□□A | XW2R-J20G-T | Phillips screw M3 |
| | | | XW2R-E20G-T | Slotted screw M3 |
| | | | XW2R-P20G-T | Push-in spring |
| | | | XW2E-20G5-IN16 | Phillips screw Common terminal (3-tier input type) M3.5 |
| Digital output (16 points) | GT1-OD16ML(-1) | | XW2R-J20G-T | Phillips screw M3 |
| | | | XW2R-E20G-T | Slotted screw M3 |
| | | XW2R-P20G-T | Push-in spring | |

Cables for Connector Terminal Conversion Units (32 Points)

| I/O classification | Model | Applicable cable | Connectable model | Connector Products (Connector-Terminal Block Conversion Units) Connecting method |
|----------------------------|----------------|------------------|-------------------|--|
| Digital input (32 points) | GT1-ID32ML(-1) | XW2Z-□□□B | XW2R-J40G-T | Phillips screw M3 |
| Digital output (32 points) | GT1-OD32ML(-1) | | XW2R-E40G-T | Slotted screw M3 |
| | | | XW2R-P40G-T | Push-in spring |

Cables for I/O Blocks (16 Points)

| I/O classification | Model | Applicable cable | Connectable model | Remarks |
|-----------------------------------|--------------|------------------|--|----------------------|
| Digital input (16 points) NPN | GT1-ID16ML | XW2Z-R□C | G7TC-ID16 G7TC-IA16 | For I/O Block input |
| Digital input (16 points) PNP | GT1-ID16ML-1 | | G7TC-ID16-1 G7TC-IA16-1 | For I/O Block output |
| Digital output (16 points) NPN | GT1-OD16ML | | G7TC-OC16 G7TC-OC08 G70D-SOC16 G70D-FOM16 G70D-VSOC16 G70D-VFOM16 G70A-ZOC16-3 | For I/O Block output |
| | | | M7E Series | Digital Display Unit |
| Digital output (16 points) PNP | GT1-OD16ML-1 | | G7TC-OC16-1 G70D-SOC16-1 G70A-ZOC16-4 | For I/O Block output |
| | | | M7E-01MB□-□□ | Digital Display Unit |

Cables for I/O Blocks (32 Points)

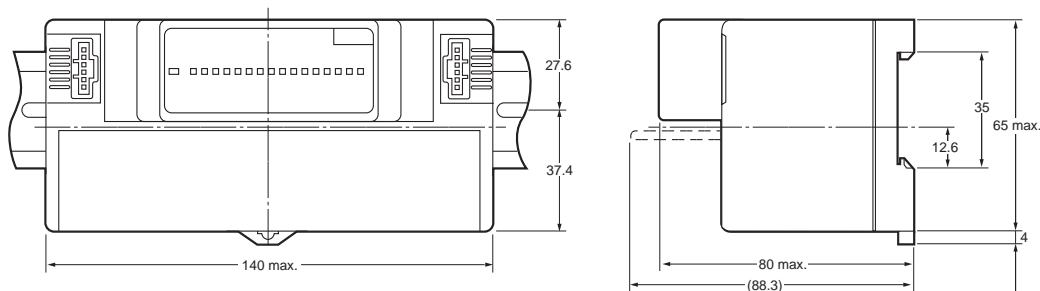
| I/O classification | Model | Applicable cable | Connectable model | Remarks |
|-----------------------------------|--------------|------------------|--|----------------------|
| Digital input (32 points) NPN | GT1-ID32ML | XW2Z-R□C-□ | G7TC-ID16 G7TC-IA16 | For I/O Block input |
| Digital input (32 points) PNP | GT1-ID32ML-1 | | G7TC-ID16-1 G7TC-IA16-1 | For I/O Block input |
| Digital output (32 points) NPN | GT1-OD32ML | XW2Z-RO□C-□ | G7TC-OC16 G7TC-OC08 G70D-SOC16 G70D-FOM16 G70D-VSOC16 G70D-VFOM16 G70A-ZOC16-3 | For I/O Block output |
| | | | G7TC-OC16-1 G70D-SOC16-1 G70D-FOM16-1 G70A-ZOC16-4 | For I/O Block output |

Note: For details of applicable cables and connectors, refer to Peripheral Devices.

Dimensions

● Terminal Block Model

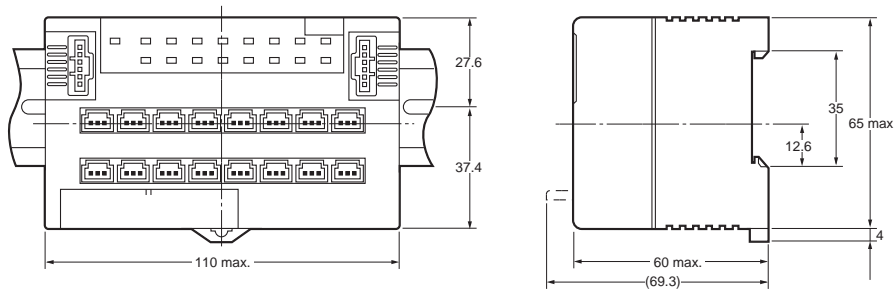
- GT1-ID16
- GT1-ID16-1
- GT1-OD16
- GT1-OD16-1



Note: Accessory cable included.

● Connector Model

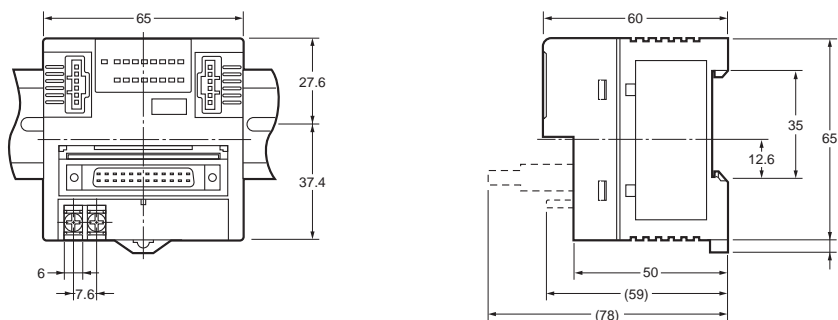
- GT1-ID16MX
- GT1-ID16MX-1
- GT1-OD16MX
- GT1-OD16MX-1



Note: Accessory cable included.

● Connector Model

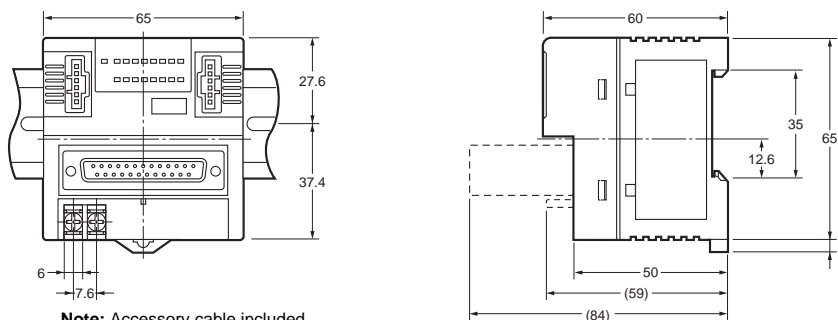
- GT1-ID16ML
- GT1-ID16ML-1
- GT1-OD16ML
- GT1-OD16ML-1



Note: Accessory cable included.

● Connector Model

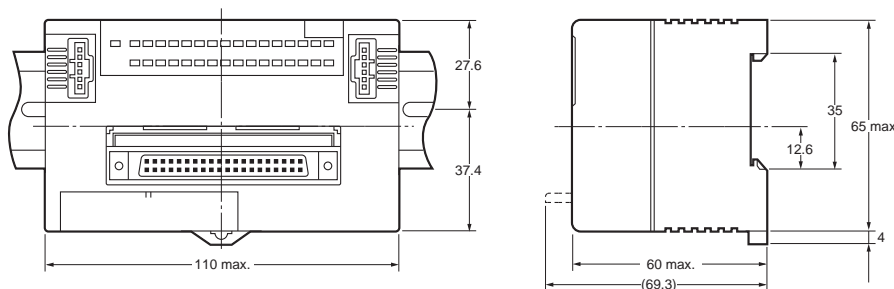
- GT1-ID16DS
- GT1-ID16DS-1
- GT1-OD16DS
- GT1-OD16DS-1



Note: Accessory cable included.

● High-density Connector Model

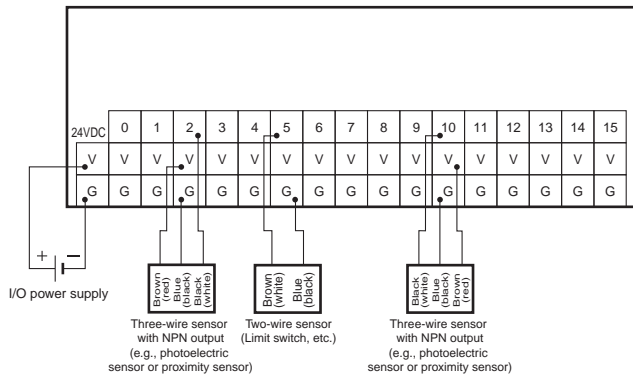
- GT1-ID32ML
- GT1-ID32ML-1
- GT1-OD32ML
- GT1-OD32ML-1



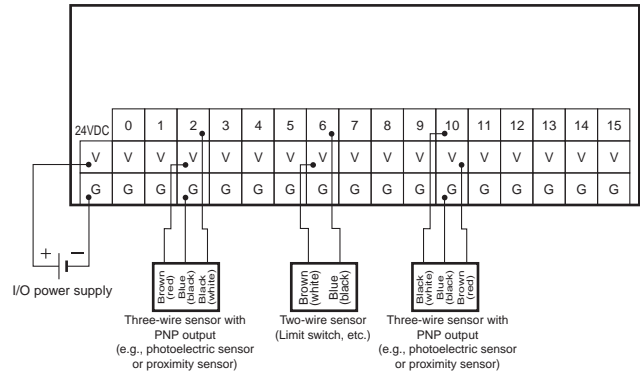
Note: Accessory cable included.

Wiring Diagrams

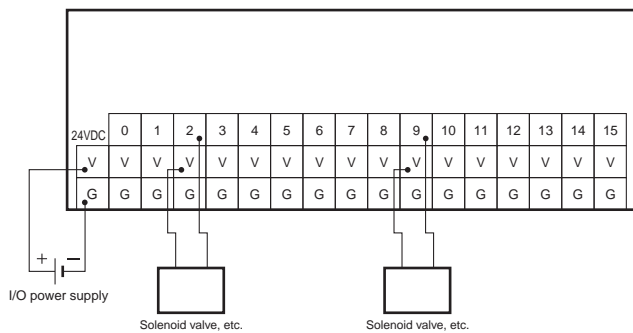
GT1-ID16



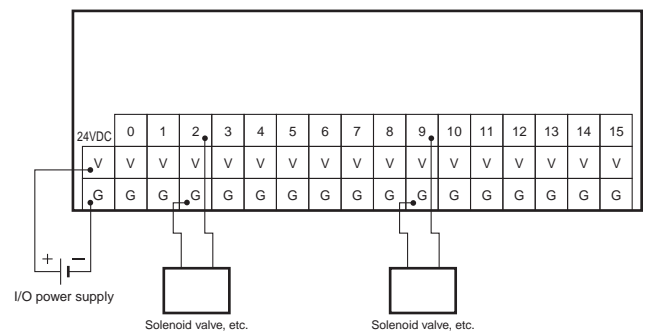
GT1-ID16-1



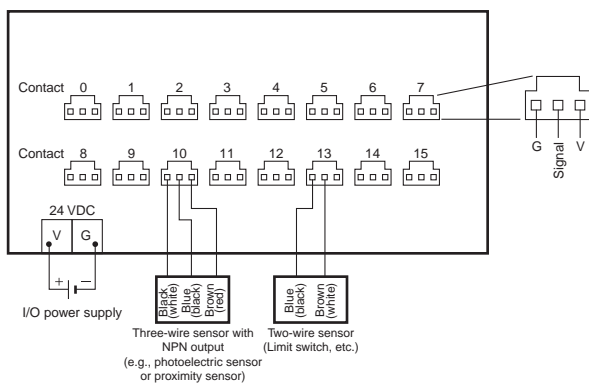
GT1-OD16



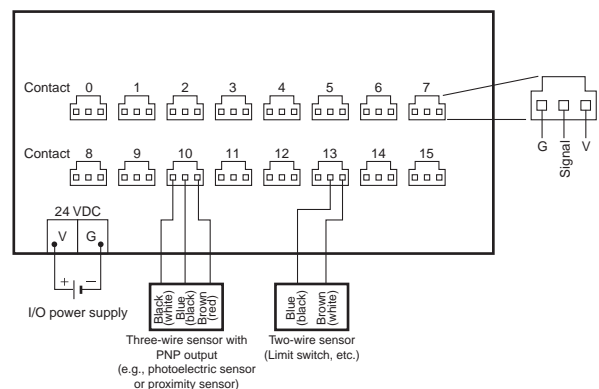
GT1-OD16-1



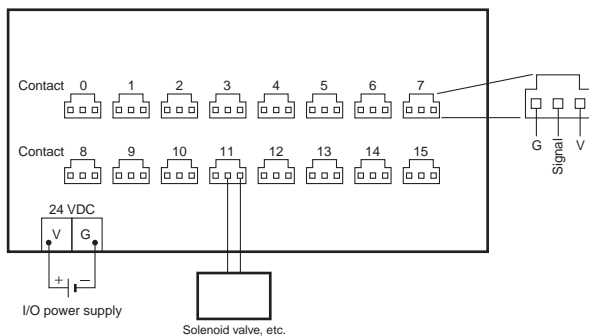
GT1-ID16MX



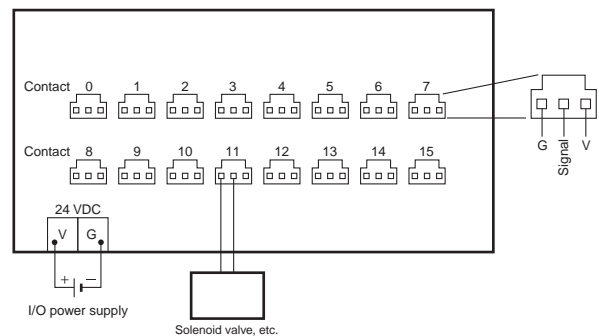
GT1-ID16MX-1



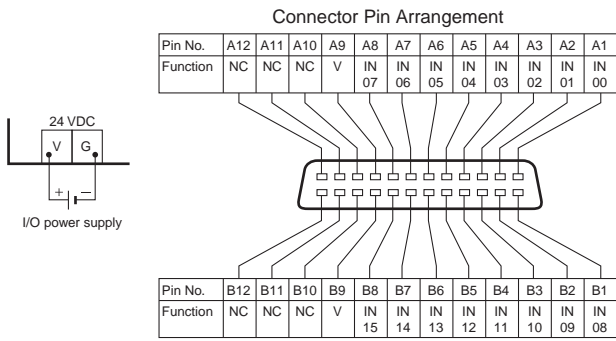
GT1-OD16MX



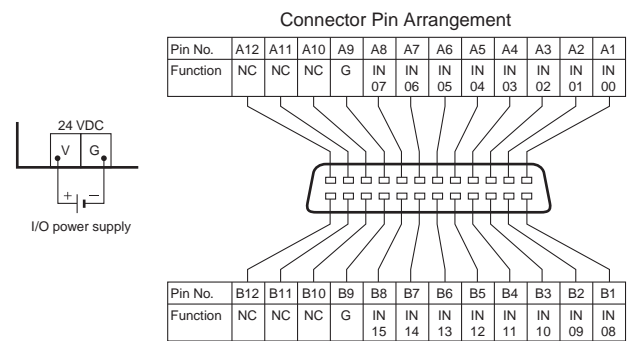
GT1-OD16MX-1



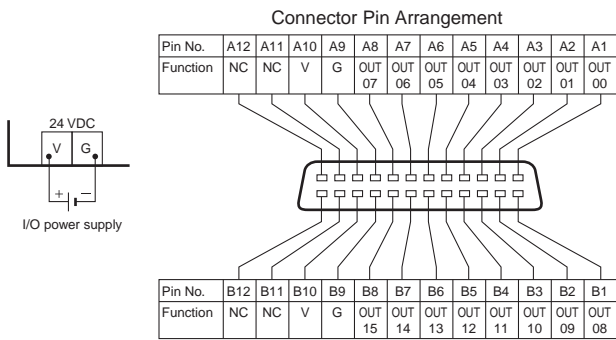
GT1-ID16ML



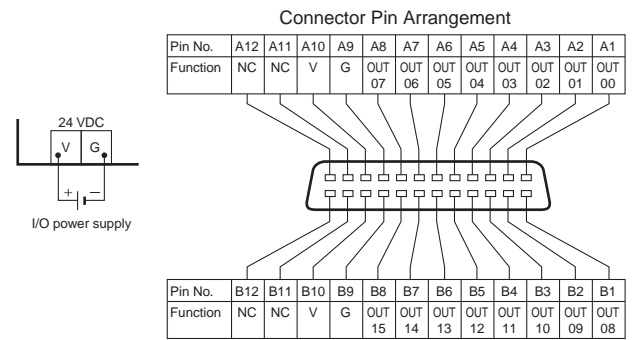
GT1-ID16ML-1



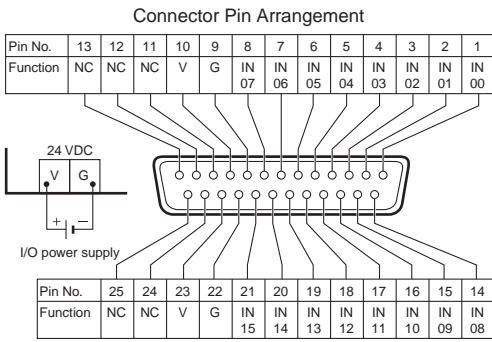
GT1-OD16ML



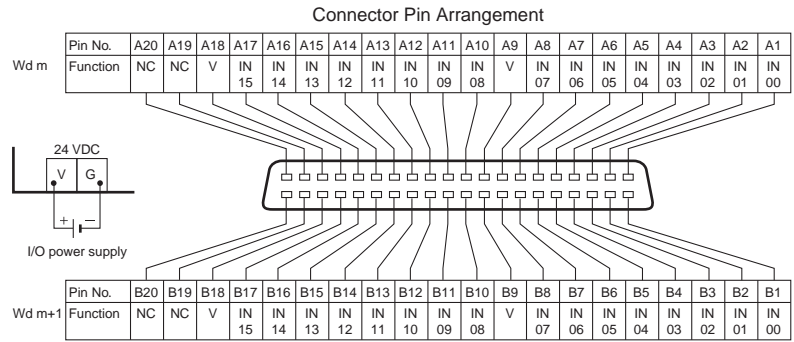
GT1-OD16ML-1



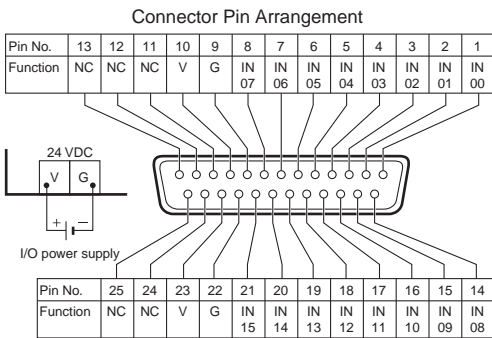
GT1-ID16DS



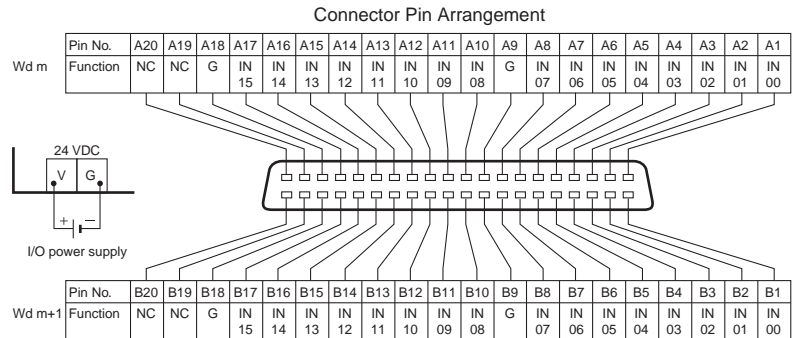
GT1-ID32ML



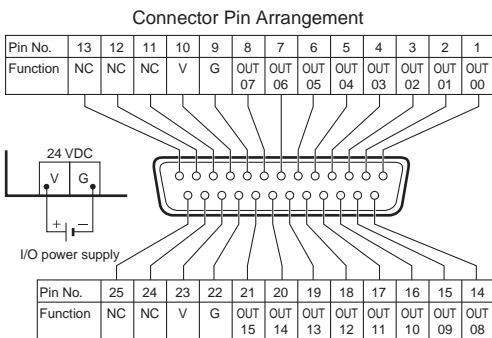
GT1-ID16DS-1



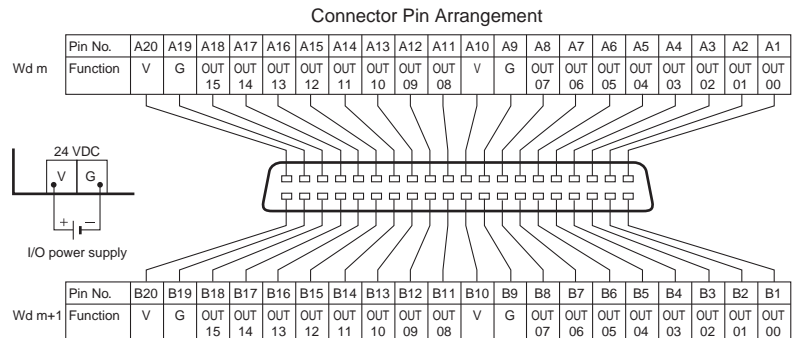
GT1-ID32ML-1



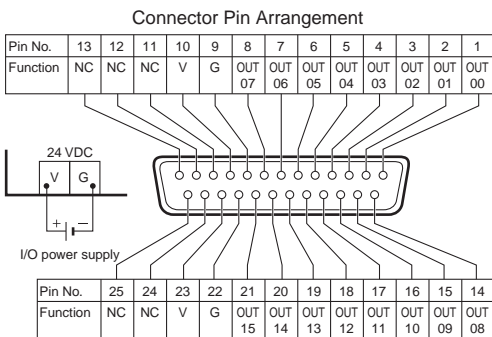
GT1-OD16DS



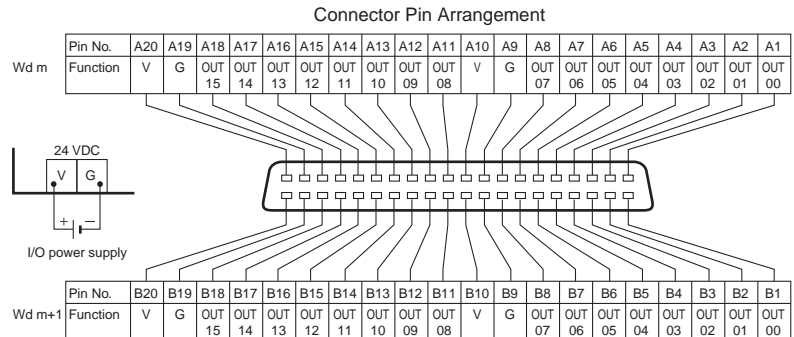
GT1-OD32ML



GT1-OD16DS-1



GT1-OD32ML-1



Relay Output Units

GT1-ROS16/ROP08/FOP08

Relay Output Unit Compatible with MULTIPLE I/O TERMINAL

- 8- and 16-point relay output models are available.
- Equipped with 8-point SSRs.
- DIN track mounting.



Ordering Information

| I/O classification | I/O points | I/O connections | Power supply voltage | I/O specification | Model |
|--------------------|------------|-------------------|----------------------|-------------------|-----------|
| Relay output | 16 | M3 terminal block | 24 VDC | 2 A, SPST-NO | GT1-ROS16 |
| | 8 | | | 5 A, SPST-NO | GT1-ROP08 |
| SSR | 8 | | | -- | GT1-FOP08 |

General Specifications

| | | | | |
|--------------------------------------|--|------------|------------------|-------------|
| I/O power supply voltage | 20.4 to 26.4 VDC (24 VDC -15%/+10%) | | | |
| Current consumption * | I/O Unit interface | | I/O power supply | |
| | GT1-ROP08 | 40 mA max. | GT1-ROP08 | 350 mA max. |
| | GT1-FOP08 | | GT1-FOP08 | |
| | GT1-ROS16 | 50 mA max. | GT1-ROS16 | 250 mA max. |
| Connectable Units | 8 | | | |
| Dielectric strength | 500 VAC (between isolated circuits) | | | |
| Noise immunity | Conforms to IEC 61000-4-4, 2 kV (power line) | | | |
| Vibration resistance | 10 to 55 Hz, 1.0-mm double amplitude or 70 m/s ² | | | |
| Shock resistance | 200 m/s ² | | | |
| Mounting method | DIN 35 mm-track mounting | | | |
| Mounting strength | No damage when 100 N pull load was applied in all directions | | | |
| Terminal strength | No damage when 100 N pull load was applied | | | |
| Screw tightening torque | 0.3 to 0.5 N·m | | | |
| Ambient operating temperature | -10°C to 55°C | | | |
| Ambient operating humidity | 25% to 85% (with no icing or condensation) | | | |
| Ambient storage temperature | -25°C to 65°C | | | |
| Accessories | I/O Unit Connecting Cable (40 mm) | | | |

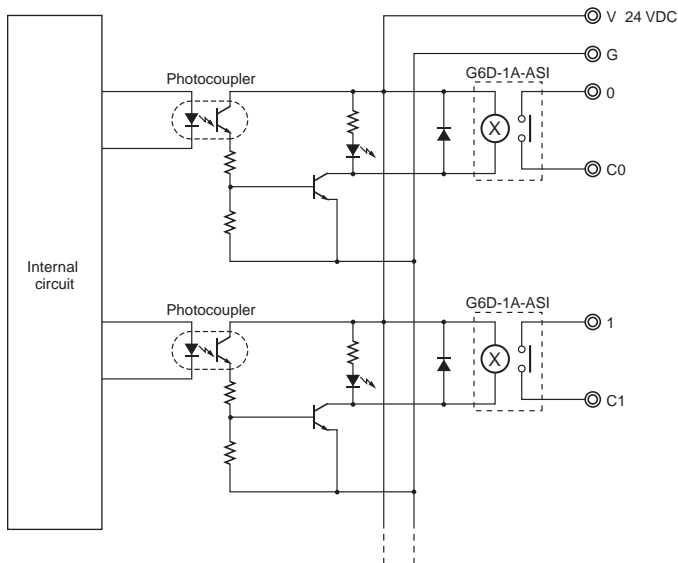
* The above current consumption is a value with all the points turned ON including the current consumption of the relay coils.

Relay Output Specifications

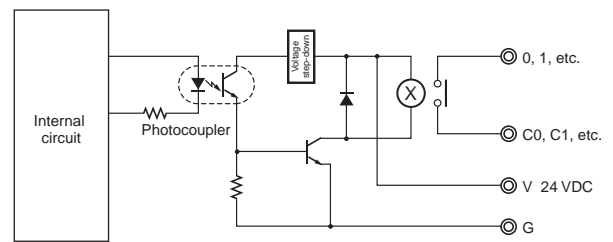
| Item | Model | GT1-ROS16 | GT1-ROP08 | GT1-FOP08 |
|---|-------|--|-------------------|-------------------------------|
| Relay model | | G6D-1A-ASI (24 VDC) | G2R-1-SN (24 VDC) | G3R-ODX02SH-UTU (5 to 24 VDC) |
| Maximum contact current | | 2 A | 5 A | 0.01 to 1.5 A |
| Minimum applicable load (reference values) | | 5 VDC, 10 mA | 5 VDC, 100 mA | 4 to 48 VDC |
| Electrical life expectancy | | 100,000 operations min. with switching frequency of 1,800 operations per hour (at ambient temperature of 23°C with rated load) | | -- |
| Mechanical life expectancy | | 20,000,000 operations min. with switching frequency of 18,000 operations per hour (at ambient temperature of 23°C with rated load) | | -- |

Internal Circuit Configuration

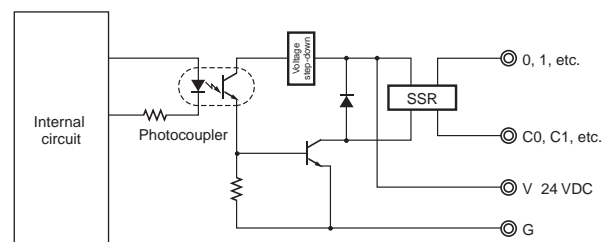
GT1-ROS16



GT1-ROP08



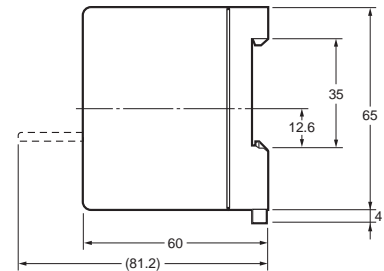
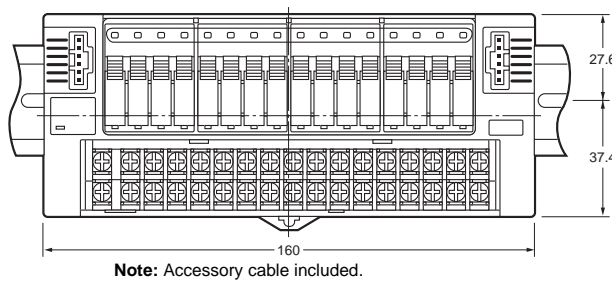
GT1-FOP08



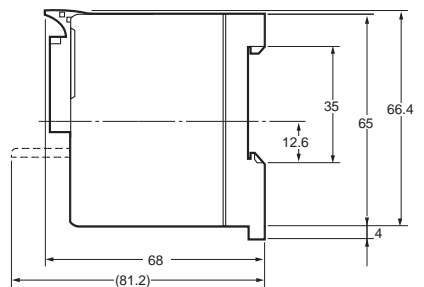
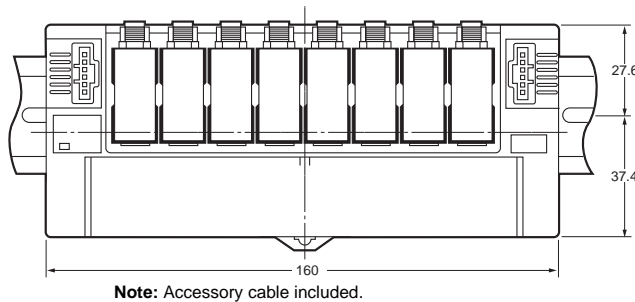
Dimensions

(Unit: mm)

GT1-ROS16

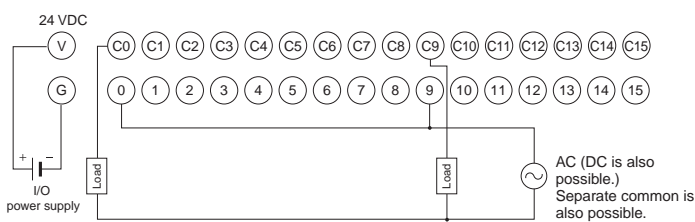


GT1-ROP08
GT1-FOP08

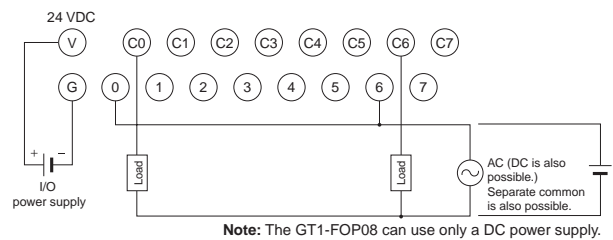


Wiring Diagrams

GT1-ROS16



GT1-ROP08/GT1-FOP08



Analog I/O Units

GT1-AD/DA

Analog Input/Output Units Compatible with MULTIPLE I/O TERMINAL

- Input block incorporates connectors that can be easily mounted or dismounted. (GT1-AD08MX, GT1-DA04MX)
- 8 or 4 inputs.
- 4 outputs.
- High resolution of 1/6,000.
- High conversion speed of 8 ms/8 points or 4 ms/4 points.
- DIN track mounting.

Connector model



Terminal Block Model



Ordering Information

| I/O classification | I/O points | I/O connections | Power supply voltage | I/O specification | Model |
|--------------------|------------|-----------------|----------------------|--|------------|
| Analog input | 8 | Molex connector | 24 VDC | 4 to 20 mA, 0 to 20 mA, 0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V | GT1-AD08MX |
| | 4 | Terminal block | | | GT1-AD04 |
| Analog output | 4 | Molex connector | 24 VDC | 0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V 0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA | GT1-DA04MX |
| | | Terminal block | | | GT1-DA04 |

General Specifications

| | | |
|--------------------------------------|---|--|
| I/O power supply voltage | 20.4 to 26.4 VDC (24 VDC -15%/+10%)* | |
| Current consumption | I/O Unit interface | Internal circuitry power supply |
| | 50 mA max. | GT1-AD08MX: 100 mA max. GT1-AD04: 100 mA max. GT1-DA04MX: 100 mA max. GT1-DA04: 150 mA max. |
| Noise immunity | Conforms to IEC 61000-4-4, 2 kV (power line) | |
| Vibration resistance | 10 to 150 Hz, 1.0-mm double amplitude or 70 m/s ² | |
| Shock resistance | 200 m/s ² | |
| Dielectric strength | 500 VAC | |
| Mounting method | DIN 35 mm-track mounting | |
| Mounting strength | No damage when 100 N pull load was applied in all directions (10 N min. in the DIN track direction) | |
| Terminal strength | No damage when 100 N pull load was applied | |
| 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 | |
| Accessories | I/O Unit Connecting Cable (40 mm) | |

* Power for analog I/O is provided from the internal power supply.

Applicable Connector

Note: Refer to page 144 for Peripheral Devices.

Input Specifications

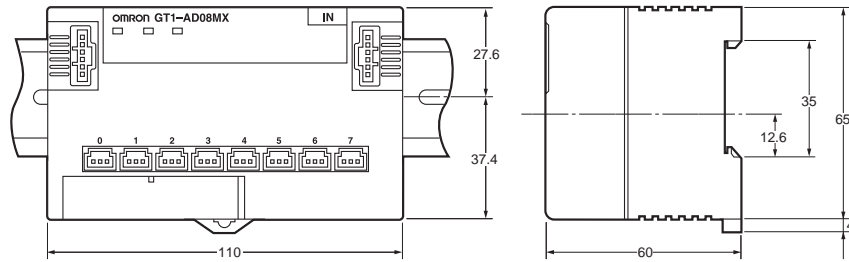
| Item | Specifications | Voltage input | Current input |
|-------------------------------|----------------|---|------------------------|
| Input type | | 0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V | 0 to 20 mA, 4 to 20 mA |
| Maximum signal input | | ± 15V | ± 30 mA |
| Input impedance | | 1MΩ min. | Approx. 250 Ω |
| Resolution | | 1/6,000 (FS) | |
| Overall accuracy | 25°C | ±0.3% FS | ±0.4% FS |
| | -10°C to 55°C | ±0.6% FS | ±0.8% FS |
| Conversion speed | | 8 ms/8 points, 4 ms/4 points | |
| Conversion output data | | Binary data -10 to 10-V range: F448 to 0BB8 full scale Other signal ranges: 0000 to 1770 full scale | |
| Insulation method | | Transistor or photocoupler insulation between inputs and power lines. | |

Output Specifications

| Item | Specifications | Voltage output | Current output |
|---|----------------|---|----------------|
| Output type | | 0 to 5 V, 1 to 5 V, 0 to 10 V, -10 to 10 V | 4 to 20 mA |
| Output permissible load resistance | | 5kΩ min. | 600 Ω max. |
| Output impedance | | 0.5Ω max. | -- |
| Resolution | | 1/6,000 (FS) | |
| Overall accuracy | 25°C | ±0.4% FS | |
| | -10°C to 55°C | ±0.8% FS | |
| Conversion speed | | 4 ms/4 points | |
| DA output data | | Binary data -10 to 10 V range: F448 to 0BB8 full scale Other signal ranges: 0000 to 1770 full scale | |
| Insulation method | | Transistor or photocoupler insulation between outputs and power lines. | |

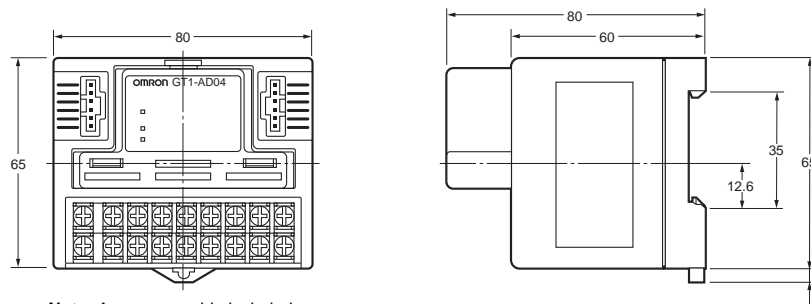
Dimensions

GT1-AD08MX
GT1-DA04MX
(Molex Connector Models)



Note: Accessory cable included.

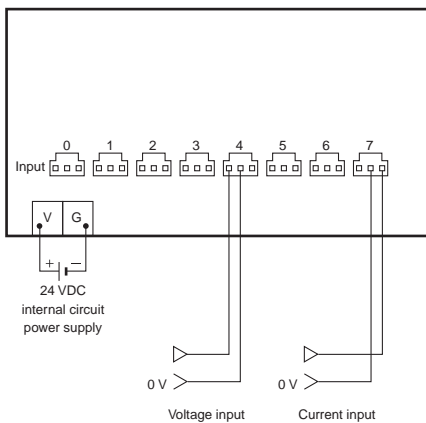
GT1-AD04
GT1-DA04
(Terminal Block Models)



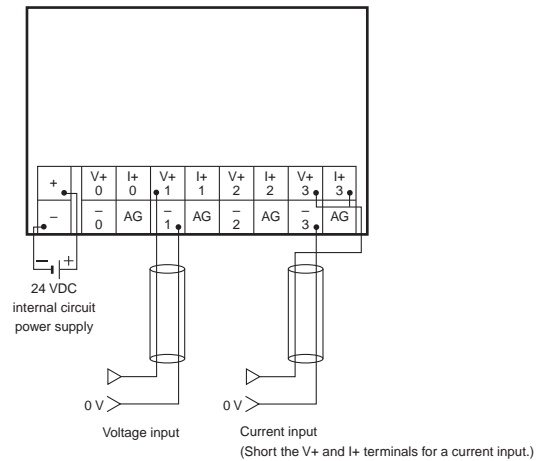
Note: Accessory cable included.

Wiring Diagrams

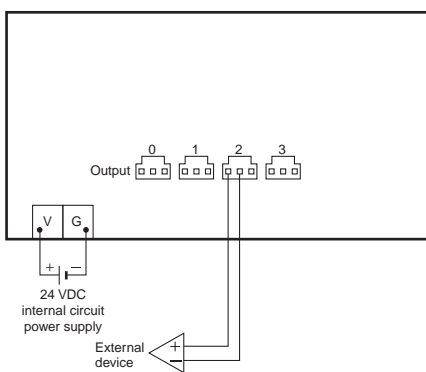
GT1-AD08MX



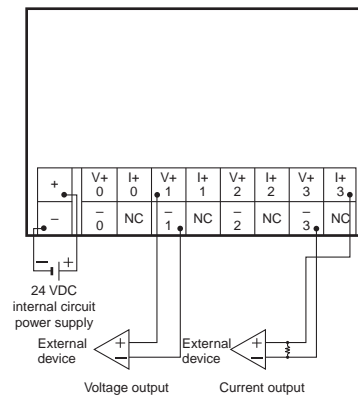
GT1-AD04



GT1-DA04MX



GT1-DA04



Temperature Input Units

GT1-TS04□

Temperature Input Units for use with MULTIPLE I/O TERMINAL

- Four inputs.
- Thermocouples and platinum resistance thermometer models are available.
- Conversion time is only 250 ms for 4 inputs.
- The Configurator can be used to calibrate temperatures.
- The circuit section can be removed, so rewiring isn't required during maintenance.
- DIN track mounting.



Ordering Information

| I/O classification | I/O points | I/O connections | Power supply voltage | Input specification | Model |
|--------------------|------------|-----------------|----------------------|---------------------------------|-----------|
| Temperature inputs | 4 inputs | Terminal Block | 24 VDC | Thermocouple | GT1-TS04T |
| | | | | Platinum resistance thermometer | GT1-TS04P |

General Specifications

| | | |
|-------------------------------|---|-----------------------|
| I/O power supply voltage | 20.4 to 26.4 VDC (24 VDC -15%/+10%) | |
| Current consumption | I/O Unit interface | Internal power supply |
| | 50 mA max. | 80 mA max. |
| Vibration resistance | 10 to 150 Hz, 0.7-mm amplitude or 50 m/s ² | |
| Shock resistance | 150 m/s ² | |
| Dielectric strength | 500 VAC | |
| Mounting method | DIN 35 mm-track mounting | |
| 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 | |
| Accessories | I/O Unit Connecting Cable (40 mm) | |

Input Specifications

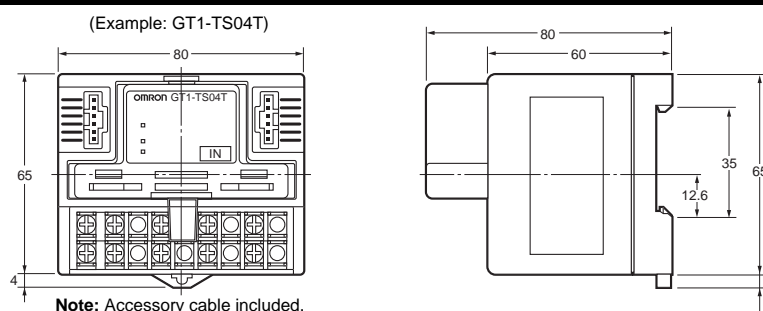
| Item | Model | GT1-TS04T | GT1-TS04P |
|-----------------------------|-------|--|--|
| Input type | | R, S, K, J, T, L, or B selectable | Pt100 or Jpt100 selectable |
| Indicator accuracy | | (±0.3% of indication value or ±1°C, whichever is larger) ±1 digit max. * | -200.0 to 650.0°C input range: (±0.3% 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. |
| Conversion cycle | | 250 ms/4 points | |
| Temperature conversion data | | Binary data | |
| Insulation method | | Between input and communication lines: Photocoupler insulation | Between temperature input signals: Photocoupler insulation |

* K or T below -100°C: +2°C ±1 digit max. L: ±2°C ±1 digit max.
R or S below 200°C: ±3°C ±1 digit max. B below 400°C: No standard set

Dimensions

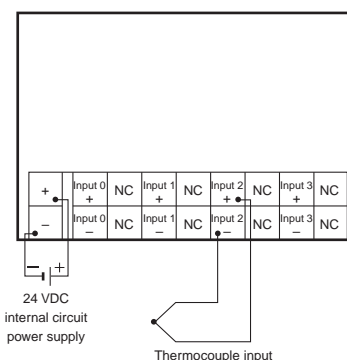
(Unit: mm)

GT1-TS04T
GT1-TS04P

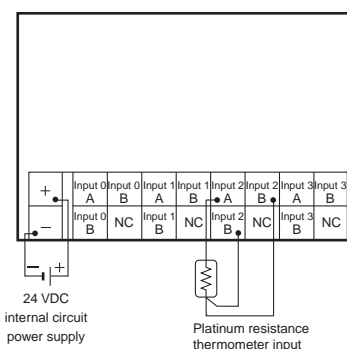


Wiring Diagrams

GT1-TS04T



GT1-TS04P



Intelligent Slaves (PLC Units)

Programmable Slaves 88

CPM2C-S1□0C-DRT

Programmable Slaves

CPM2C-S1□0C-DRT

Slaves with the Complex Functionality Needed for Distributed Blocks

Programmable Slaves combine devices, such as sensors and actuators, into one functional unit that is treated as a DeviceNet slave.

Programmable Slaves greatly facilitate device distribution and functional organization.

They help standardize programming between units and reduce the amount of programming required at the master.

I/O and operational checks can be performed for each functional unit, rather than waiting for final system assembly, as with conventional distributed I/O systems.

- A Programmable Slave can be programmed from a CX-Programmer up to 3 network levels away. (Includes the DeviceNet network itself. Possible only with CX-Programmer Ver. 2.1 or later and a Programmable Slave Ver. 1.04 or later.)
- DeviceNet Slave Functions
Multiword I/O links and explicit messages are used to control slaves from the master. Log data for communications can be sent in one operation whenever necessary using explicit messages.
- CompoBus/S Master Functions
Less wiring is required for terminal block expansions, connections to remote devices (such as signal lights or pushbutton switches), and connections to pneumatic valves and other non-OMRON products. Connect using VCTF cable or Special Flat Cable, which allows easy branching.
- RS-232C Communications
Connected to bar code readers, Programmable Terminals, and other devices, the Programmable Slave processes data locally to reduce the load on the master.
- Expansion Units (3 max.)
Just one Unit is required for each distributed block, reducing the number of interfaces for multipoint communications to, in turn, reduce costs.



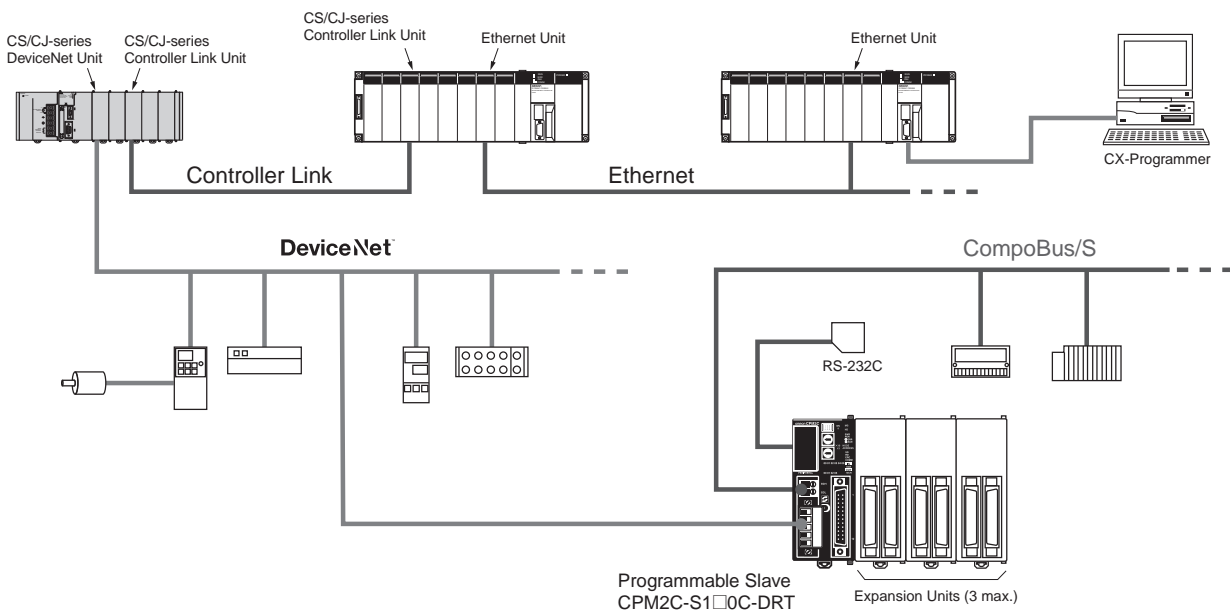
Ordering Information

| Unit type | | Input | Output | Clock | Model |
|--------------------------------------|-----------|------------------|---------------------------------|-------|-----------------|
| 10 I/O points 6 inputs; 4 outputs | Connector | 6 points: 24 VDC | 4 points: transistor (sinking) | Yes | CPM2C-S100C-DRT |
| | | | 4 points: transistor (sourcing) | Yes | CPM2C-S110C-DRT |

Note 1: For details on CPM2C PLCs, refer to the *CPM2A/CPM2C Catalog* (P049).

Note 2: For details on Programmable Slave specifications, refer to the *Programmable Slave Catalog* (R071).

System Configuration



General Specifications and Performance Specifications

| Item | | Specifications |
|--|---------------------------------|---|
| Control method | | Stored program method |
| I/O control method | | Cyclic scan method (Immediate refreshing can be performed with IORF instruction.) |
| Programming language | | Ladder diagram |
| Instruction length | | 1 step per instruction, 1 to 5 words per instruction |
| Instructions | Basic instructions | 14 instructions |
| | Special instructions | 105 instructions, 185 variations |
| Execution time | Basic instructions | 0.64 μs (LD instruction) |
| | Special instructions | 7.8 μs (MOV instruction) |
| Program capacity | | 4,096 words |
| Maximum I/O points | | CPU Unit only: 10 points Expansion I/O: 96 points (32-point Expansion I/O Unit x 3) CompoBus/S: 256 points (362 in total) |
| Input bits | | IR 00000 to IR 00915 (Bits not used for input bits can be used for work bits.) |
| Output bits | | IR 01000 to IR 01915 (Bits not used for output bits can be used for work bits.) |
| CompoBus/S input bits | | 128 bits: IR 02000 to IR 02715 (Words IR 020 to IR 027) |
| CompoBus/S output bits | | 128 bits: IR 03000 to IR 03715 (Words IR 030 to IR 037) |
| Work bits | | 672 bits: IR 02800 to IR 02915 (Words IR 028 to IR 029) IR 03800 to IR 03915 (Words IR 038 to IR 039) IR 04000 to IR 04915 (Words IR 040 to IR 049) IR 20000 to IR 22715 (Words IR 200 to IR 227) |
| Special bits (SR area) | | 440 bits: SR 22800 to SR 25507 (Words IR 228 to IR 225) |
| Temporary bits (TR area) | | 8 bits (TR0 to TR7) |
| Holding bits (HR area) | | 320 bits: HR 0000 to HR 1915 (Words HR 00 to HR19) |
| Auxiliary bits (AR area) | | 384 bits: AR 0000 to AR 2315 (Words AR 00 to AR23) These include the CompoBus/S slave status flags (AR 04 to 07). |
| Link bits (LR area) | | 256 points: LR 0000 to LR 1515 (Words LR 00 to LR 15) |
| Timers/Counters | | 256 timers/counters: TIM/CNT 000 to TIM/CNT 255 1-ms timers: TMHH 10-ms timers: TIMH 100-ms timers: TIM 1-s/10-s timers: TIML Decrementing counters: CNT Reversible counters: CNTR |
| Data memory | Read/Write | 2,048 words (DM 0000 to DM 2047) The Error Log is contained in DM 2000 to DM 2021. |
| | Read-only | 456 words (DM 6144 to DM 6599) |
| | PC Setup | 56 words (DM 6600 to DM 6655) |
| DeviceNet slave functions | | DeviceNet Remote I/O Link • Use up to 1,024 I/O points in the I/O Link. Explicit Message Communications • Any PC data area can be accessed from the master. |
| Basic interrupt functions | Interrupt inputs | 2 interrupts (Used for both counter mode interrupt inputs and quick-response inputs.) |
| | Scheduled interrupts | 1 interrupt |
| High-speed counter functions | High-speed counters | 1 counter (20 kHz single-phase or 5 kHz 2-phase) |
| | Counter interrupts | 1 interrupt (set value comparison or set-value range comparison) |
| | Interrupt inputs (counter mode) | 2 interrupts (Used for both external interrupt inputs and quick-response inputs.) |
| | Count-up interrupts | 2 interrupts (Used for both external interrupt inputs and quick-response inputs.) |
| Quick-response inputs | | 2 inputs (Used for both external interrupt inputs and counter mode interrupt inputs.) Min. input pulse width: 50 s max. |
| Pulse output | | 2 points without acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control; 1 point with trapezoid acceleration/deceleration, 10 Hz to 10 kHz, and direction control; 2 points with variable duty-ratio outputs |
| Synchronized pulse control | | 1 point |
| Input time constant (ON response time = OFF response time) | | Can be set for CPU inputs and Expansion Unit inputs only. (1 ms, 2 ms, 3 ms, 5 ms, 10 ms, 20 ms, 40 ms, or 80 ms) |
| Clock | | Equipped with clock (built-in RTC) |
| Communications functions | | Peripheral port: Supports Host Link, peripheral bus, no-protocol, or Programming Console connections. RS-232C port: Supports Host Link, no-protocol, 1:1 Link, or 1:1 NT Link connections. |
| Memory protection | | HR area, AR area, program contents, DM area contents, and counter values maintained during power interruptions. |
| Memory backup | | Non-volatile (flash) memory: Program, read-only DM area, and PC Setup Memory backup (lithium battery; 2-year lifetime): DM area, HR area, AR area, and counter values |
| Self-diagnostic functions | | CPU errors (watchdog timer), memory errors, communications errors, setting errors, battery errors, and expansion I/O bus errors |
| Program checks | | No END instruction, programming errors (checked when operation is started) |
| Programming Devices | Programming Console | C200H-PRO27 |
| | CX-Programmer | Windows edition |

* A Connecting Cable (CPM2C-CN111, CS1W-CN114, or CS1W-CN118) is required to connect to the communications (peripheral/RS-232C) port.

Communications Specifications

● DeviceNet

| Item | Specifications | | | | | | | | | | | | | | | | |
|--|--|-----------------------|--------------------------|--------------------------|--------------------------|-----------|---------------|-----------|-----------|------------|---------------|-----------|-----------|------------|---------------|------------|------------|
| Communications protocol | Conforms to DeviceNet | | | | | | | | | | | | | | | | |
| Connection form *1 | Combination of multi-drop method and T-branch connections (for trunk and drop lines) | | | | | | | | | | | | | | | | |
| Baud rate | 500, 250, or 125 kbps | | | | | | | | | | | | | | | | |
| Communications media | Special 5-wire cable (2 signal lines, 2 power supply lines, 1 shield line) 4-wire Special Flat Cable (2 signal lines and 2 power lines) | | | | | | | | | | | | | | | | |
| Communications distance | • Using special 5-wire Flat Cable | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Baud rate</th> <th>Network length (max.)</th> <th>Branch line length</th> <th>Total branch line length</th> </tr> </thead> <tbody> <tr> <td>500 kbps</td> <td>100 m max. *2</td> <td>6 m max.</td> <td>39 m max.</td> </tr> <tr> <td>250 kbps</td> <td>250 m max. *2</td> <td>6 m max.</td> <td>78 m max.</td> </tr> <tr> <td>125 kbps</td> <td>500 m max. *2</td> <td>6 m max.</td> <td>156 m max.</td> </tr> </tbody> </table> | Baud rate | Network length (max.) | Branch line length | Total branch line length | 500 kbps | 100 m max. *2 | 6 m max. | 39 m max. | 250 kbps | 250 m max. *2 | 6 m max. | 78 m max. | 125 kbps | 500 m max. *2 | 6 m max. | 156 m max. |
| | Baud rate | Network length (max.) | Branch line length | Total branch line length | | | | | | | | | | | | | |
| | 500 kbps | 100 m max. *2 | 6 m max. | 39 m max. | | | | | | | | | | | | | |
| | 250 kbps | 250 m max. *2 | 6 m max. | 78 m max. | | | | | | | | | | | | | |
| | 125 kbps | 500 m max. *2 | 6 m max. | 156 m max. | | | | | | | | | | | | | |
| • Using special 4-wire Flat Cable | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Baud rate</th> <th>Network length (max.)</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 | Network length (max.) | 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 | Network length (max.) | 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 is supplied externally. | | | | | | | | | | | | | | | | |
| Maximum number of nodes | 64 (including Masters, Slaves, and the Configurator) | | | | | | | | | | | | | | | | |

- *1. Terminating resistance is required at both ends of the trunk line.
*2. This value applies when using Thick Cable for the trunk line. If Thin Cable is used, the value will be 100 m max.

● CompoBus/S

| Item | Specifications | | | | | | | | | | | | |
|--|---|---------------------|--------------------------|--------------------------|-----------------------------------|--------------------------------|------------|-----------|--------------------------------------|--|------------|----------|------------|
| Communications protocol | Special CompoBus/S protocol | | | | | | | | | | | | |
| Coding method | Manchester coding | | | | | | | | | | | | |
| Connection form | Multi-drop method and T-branch connections *1 | | | | | | | | | | | | |
| Baud rate | High-speed Communications Mode: 750 kbps Long-distance Communications Mode: 93.75 kbps *2 | | | | | | | | | | | | |
| Communications cycle time | High-speed Communications Mode 0.5 ms (with 8 input and 8 output slaves connected) 0.8 ms (with 16 input and 16 output slaves connected) | | | | | | | | | | | | |
| | Long-distance Communications Mode 4.0 ms (with 8 input and 8 output slaves connected) 6.0 ms (with 16 input and 16 output slaves connected) | | | | | | | | | | | | |
| Communications media | 2-wire cable (VCTF 0.75 x 2), 4-wire cable (VCTF 0.75 x 4), or Special Flat Cable | | | | | | | | | | | | |
| Communications distance | • 2-wire VCTF cable | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Communications mode</th> <th>Main line length</th> <th>Branch line length</th> <th>Total branch line length</th> </tr> </thead> <tbody> <tr> <td>High-speed Communications Mode</td> <td>100 m max.</td> <td>3 m max.</td> <td>50 m max.</td> </tr> <tr> <td>Long-distance Communications Mode</td> <td>500 m max.</td> <td>6 m max.</td> <td>120 m max.</td> </tr> </tbody> </table> | Communications mode | Main line length | Branch line length | Total branch line length | High-speed Communications Mode | 100 m max. | 3 m max. | 50 m max. | Long-distance Communications Mode | 500 m max. | 6 m max. | 120 m max. |
| | Communications mode | Main line length | Branch line length | Total branch line length | | | | | | | | | |
| | High-speed Communications Mode | 100 m max. | 3 m max. | 50 m max. | | | | | | | | | |
| | Long-distance Communications Mode | 500 m max. | 6 m max. | 120 m max. | | | | | | | | | |
| | • 4-wire VCTF cable or Special Flat Cable | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Communications mode</th> <th>Main line length</th> <th>Branch line length</th> <th>Total branch line length</th> </tr> </thead> <tbody> <tr> <td>High-speed Communications Mode *3</td> <td>30 m max.</td> <td>3 m max.</td> <td>30 m max.</td> </tr> <tr> <td>Long-distance Communications Mode *4</td> <td colspan="3">Free branching (up to a total cable length of 200 m)</td> </tr> </tbody> </table> | Communications mode | Main line length | Branch line length | Total branch line length | High-speed Communications Mode *3 | 30 m max. | 3 m max. | 30 m max. | Long-distance Communications Mode *4 | Free branching (up to a total cable length of 200 m) | | | |
| Communications mode | Main line length | Branch line length | Total branch line length | | | | | | | | | | |
| High-speed Communications Mode *3 | 30 m max. | 3 m max. | 30 m max. | | | | | | | | | | |
| Long-distance Communications Mode *4 | Free branching (up to a total cable length of 200 m) | | | | | | | | | | | | |
| Maximum number of nodes | 32 | | | | | | | | | | | | |
| Error control checks | Manchester code check, frame length check, and parity check | | | | | | | | | | | | |

- *1. Connect external terminating resistance.
*2. Switched using DM area setting. (Default setting: 750 kbps.)
*3. If the number of slaves connected is 16 or less, the maximum main line length will be 100 m max., and the maximum total branch line length will be 50 m max.
*4. There are no restrictions on the branching configuration, main line length, branch line length, or total branch line length. Connect external terminating resistance to the node farthest from the master.

Cables for I/O Connector

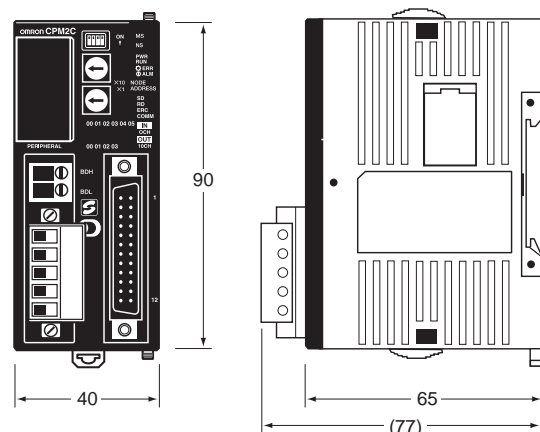
● Cables for Connector - Terminal Conversion Units

| Cable | Connected product | Connector Products (Connector-Terminal Block Conversion Units) Connecting method |
|-----------|-------------------|--|
| XW2Z-□□□A | XW2R-J20G-T | Phillips screw M3 |
| | XW2R-E20G-T | Slotted screw M3 |
| | XW2R-P20G-T | Push-in spring |

Dimensions

(Unit: mm)

CPM2C-S100C-DRT CPM2C-S110C-DRT



Intelligent Slaves

| | |
|---|-----|
| Digital Sensor Communications Unit | 92 |
| E3X-DRT21-S VER.3 | |
| DeviceNet ID Slave..... | 94 |
| V600-HAM42-DRT | |
| DeviceNet ID Slave..... | 95 |
| V680-HAM42-DRT | |
| DeviceNet-compliant Digital Indicators | 96 |
| K3HB-□-DRT | |
| DeviceNet-compliant Digital Controllers | 100 |
| E5AR-DRT/E5ER-DRT | |
| DeviceNet Communications Unit for Modular Temperature Controller..... | 104 |
| EJ1-DRT | |
| Multi-function Compact Inverter MX2-Series V1 type DeviceNet Communication Unit | 107 |
| 3G3AX-MX2-DRT-E | |
| High-function General-purpose Inverters RX-Series V1 type DeviceNet Communication Unit .. | 108 |
| 3G3AX-RX-DRT-E | |

Digital Sensor Communications Unit

E3X-DRT21-S VER.3

The DeviceNet Communication Unit That Simplifies Managing Sensor Settings

- ON/OFF signals and incident light levels can be sent to the host PLC without any need for programming (DeviceNet communications slave functionality).
- Threshold values and function settings can be read, written, or taught (using the Message Communications function).
- Simply connect the communication cables and slide the Amplifiers from the side for wire-saving.
- Up to 16 Sensor Amplifiers can be connected.



Ordering Information

● Digital Sensor Communications Unit

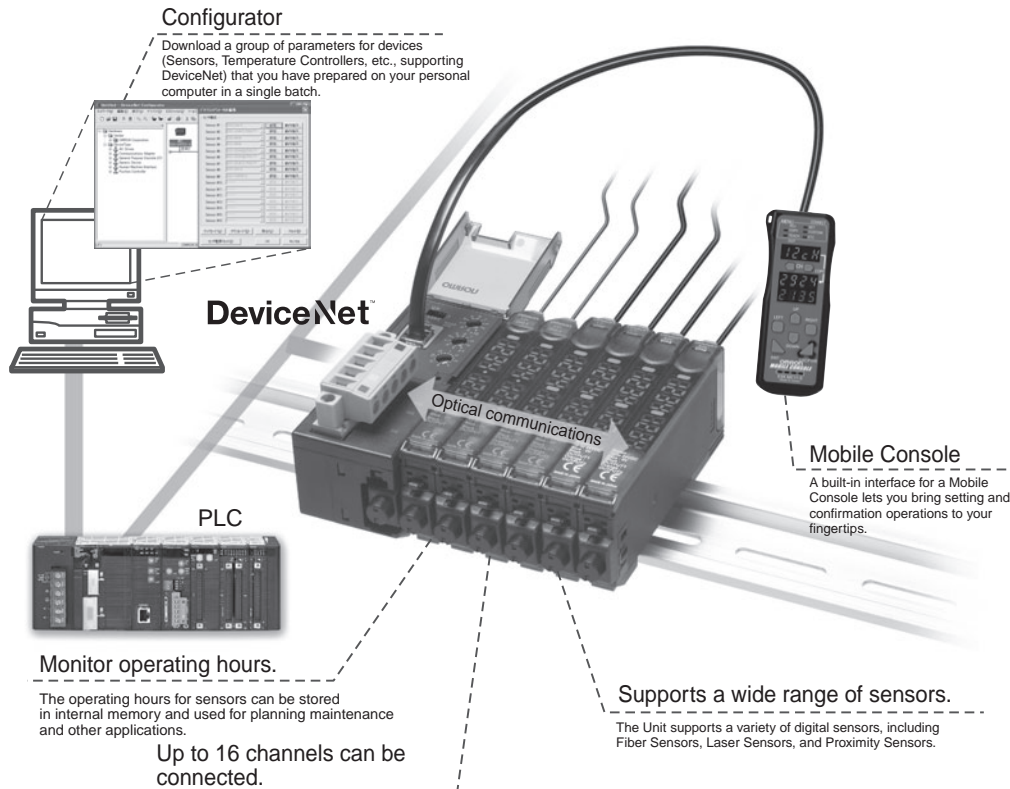
| Name | Model |
|------------------------------------|-------------------|
| Digital Sensor Communications Unit | E3X-DRT21-S VER.3 |

● Wire-saving Connector

| Type | Model |
|--------------------------|----------|
| Cordless Slave Connector | E3X-CN02 |

Note: Order as many Connectors as the number of Sensors.

System Configuration



Ratings and Specifications

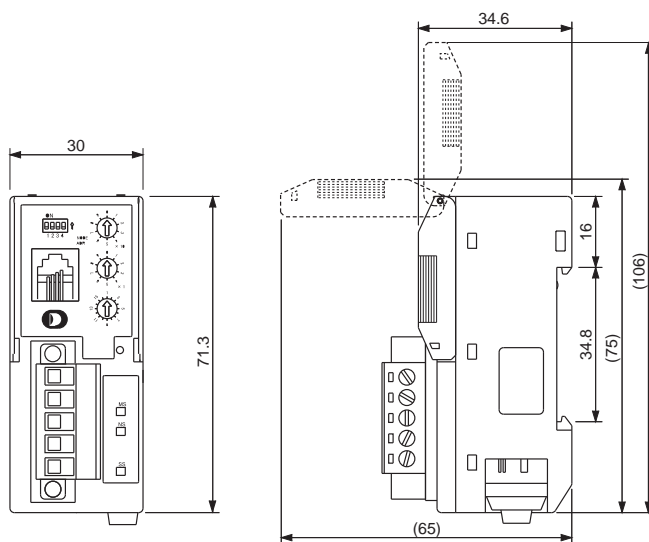
| Item | Description | |
|---|--|---|
| Communications method | DeviceNet communications | |
| Communications functions | Remote I/O Communications Slave function | Monitors ON/OFF output, status, incident light level (digital display data) |
| | Message Communications function | Sets parameters using Explicit messages |
| | Configurator | Edits slave device parameters, enables device monitor functions |
| Mobile Console connection | E3X-MC11-SV2 can be connected | |
| Power supply | Supplied from the DeviceNet communications connector (power is also supplied to all connected Sensors through Wire-reducing Connectors.) | |
| Maximum connectable Sensors (See note 1.) | For remote I/O communications 1-CH mode (See note 2.) : 13 For remote I/O communications 2-CH mode (See note 3.) or for remote I/O communications 2-CH mode + detection level monitoring mode (See note 4.) : 16 | |
| Connectable Sensors (See note 5.) | E3X-DA-S Series or E3X-MDA Series Digital Fiber Sensor E3C-LDA Series Laser Photoelectric Sensor with Separate Digital Amplifier E2C-EDA High-resolution Digital Proximity Sensor with Separate Amplifier (use connector-type Amplifier Units and the E3X-CN02 Cordless Slave Connector) | |
| Power supply voltage | 11 to 25 VDC | |
| Current consumption (See note 6.) | 70 mA max. | |
| Ambient operating temperature | -20°C to 55°C | |
| Ambient operating humidity | 35% to 85% (with no condensation) | |
| Ambient storage temperature | -30°C to 70°C | |
| Dimensions (mm) | 30 x 34.6 x 71.3 (W x H x D) | |
| Weight (packed state) | Approx. 150 g | |

- Note 1:** When any of the following Sensors is connected, two words are allocated per Sensor and each Sensor is counted as two Sensors for the number of connected Sensors. E3X-DA□-S (□: 7/9), E3X-DA□TW-S (□: 6/8), E3X-MDA□ (□: 6/8), E3C-LDA□ (□: 6/8), E2C-EDA□ (□: 6/8)
E3X-DA□-S (□: 7/9), E3X-DA□TW-S (□: 6/8) have been discontinued at the end of March 2017.
- 2:** Communications is possible for the ON/OFF output data from 13 Units. One word is allocated as the input area in the Master.
- 3:** Communications is possible for the ON/OFF output data from 16 Units and the number of connected Sensors. Two words are allocated as the output area in the Master.
- 4:** Communications is possible for the ON/OFF output data from 16 Units, the number of connected Sensors, and the detection levels for the connected Sensors. Two words are allocated as the input area and one word is allocated for the number of connected Sensors in the Master.
- 5:** Connection cannot be performed if the response speed of the Sensor is set to super-high-speed mode.
- 6:** This does not include the current supplied to the Sensor.

Dimensions

(Unit: mm)
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

E3X-DRT21-S VER.3



DeviceNet ID Slave

V600-HAM42-DRT

Electromagnetic-coupling ID System Conforms to DeviceNet and Saves Wiring Effort

- The world's first Intelligent Flag III with support for DeviceNet.
- Responds flexibly to applications with data reading up to 24 bits.
- Switch writing between units of 8 bits and 16 bits.
- Address to access can be set from master.



Ordering Information

| Name | Model |
|----------------------|----------------|
| Intelligent Flag III | V600-HAM42-DRT |

General Specifications

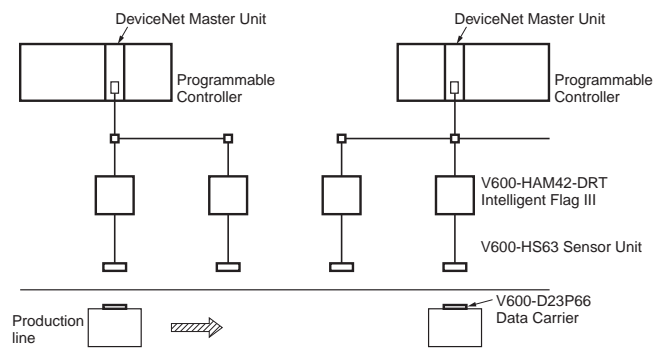
| Item | Model | V600-HAM42-DRT |
|---------------------------------------|-------|---|
| Communications power supply voltage | | 11 to 25 VDC |
| Internal circuit power supply voltage | | 18 to 26.4 VDC (24 VDC -25%/+10%) |
| Internal current consumption current | | Communications power supply: 40 mA max. Internal circuitry power supply: 150 mA max. |
| Number of words allocated to Master | | Inputs: 2 words, Outputs: 2 words |
| Noise immunity | | Internal circuitry power supply normal: ±600 V Internal circuitry power supply common: ±1.5 kV |
| Vibration resistance | | 10 to 55 Hz, 1.5-mm double amplitude |
| Shock resistance | | Malfunction: 200 m/s ² Destruction: 300 m/s ² |
| Dielectric strength | | 500 VAC for 1 min between insulated circuits |
| Ambient operating temperature | | 0°C to 55°C |
| Ambient operating humidity | | 35% to 85% (with no condensation) |
| Ambient operating atmosphere | | With no corrosive gas |
| Ambient storage temperature | | -25°C to 65°C |
| Dimensions | | 65 x 65 x 60 mm |
| Construction | | Panel-mounting |

| Item | Model | V600-HAM42-DRT |
|-----------------|-------|---|
| Mounting method | | DIN track mounting or M4 screw mounting with provided brackets. |
| Weight | | 150 g max. |

Performance Specifications

| Item | Specifications |
|-----------------------------------|---|
| Number of sensor connections | One channel |
| Applicable sensors | V600-HS51, V600-HS61, V600-HS53, V600-HS67 |
| Data Carrier communications range | Read: 24 bits of data from the set address Write: 16 bits of data from the set address |

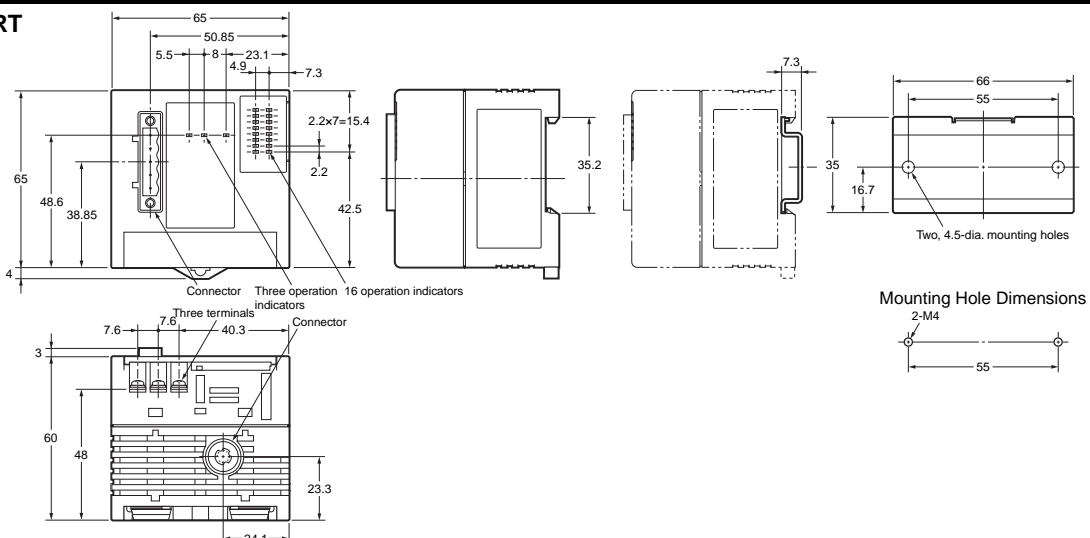
System Configuration



Dimensions

(Unit: mm)

V600-HAM42-DRT



DeviceNet ID Slave

V680-HAM42-DRT

DeviceNet-compliant ID System for Reduced Wiring

- Read and write up to 58 bytes.
- Addresses to access can be set from the Master.



Ordering Information

| Name | Model |
|--------------------|----------------|
| DeviceNet ID Slave | V680-HAM42-DRT |

General Specifications

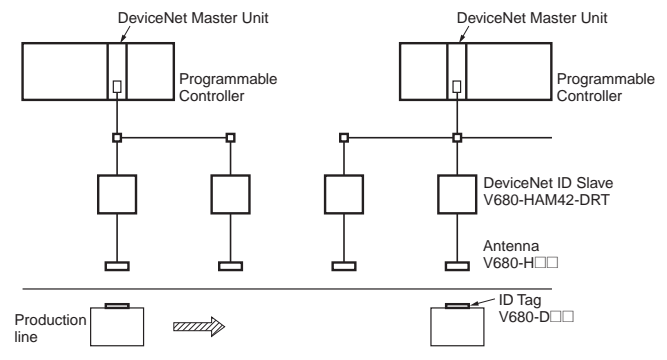
| Item | Model | V680-HAM42-DRT |
|-------------------------------|-------|--|
| Power supply voltage | | 24 VDC (-15% to 10%) including 10% ripple (p-p) |
| Power consumption | | 4 W max. (Current consumption of 200 mA max. at power supply voltage of 24 VDC) |
| Ambient operating temperature | | -10°C to 55°C (with no icing) |
| Ambient storage temperature | | 25°C to 65°C (with no icing) |
| Ambient operating humidity | | 25% to 85% (with no condensation; ambient operating temperature is 40°C max. at humidity of 85%) |
| Insulation resistance | | 20 MΩ min. (at 500 VDC) between all terminals excluding the ground terminal and the case |
| Dielectric strength | | 1,000 VAC (50/60 Hz) for 1 minute between all terminals excluding the ground terminal and the case |
| Vibration resistance | | 10 to 150 Hz, 0.2-mm double amplitude at 15 m/s ² acceleration with 10 sweeps in X, Y and Z directions for 8 minutes each |
| Shock resistance | | 150 m/s ² in X, Y, and Z directions 3 times each (18 times in total) |
| Dimensions | | 65 x 65 x 65 mm (excluding protrusions) |
| Degree of protection | | IP20 (IEC 60529) |

| Item | Model | V680-HAM42-DRT |
|-----------------|-------|-------------------------------------|
| Materials | | Polycarbonate (PC) resin, ABS resin |
| Weight | | Approx. 150 g |
| Mounting method | | DIN track mounting |

Performance Specifications

| Item | Specifications |
|-----------------------------|--|
| No. of connectable antennas | One channel |
| Connectable Antennas | V680-HS51, V680-HS52, V680-HS63, V680-HS65 |

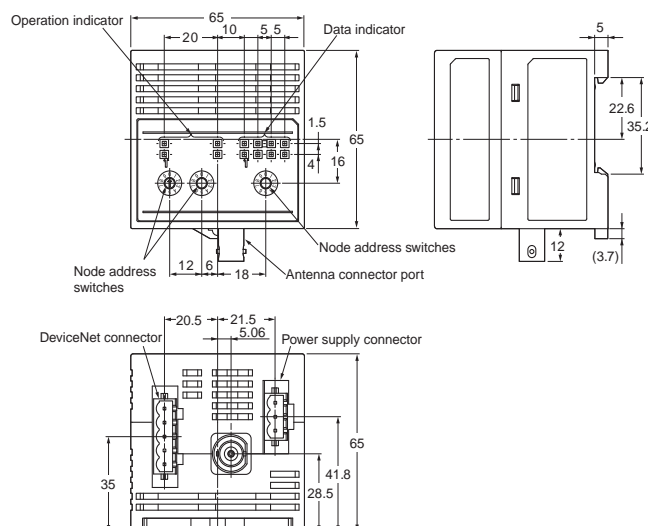
System Configuration



Dimensions

(Unit: mm)

V680-HAM42-DRT



DeviceNet-compliant Digital Indicators

K3HB-□-DRT

Digital Indicators Ideal for Measurement Displays and Judgment of Analog Levels, Such as Voltage Signals, Current Signals, and Temperatures



- High-precision, high-speed sampling.
- Measurement resolution of 0.01°C and sampling of 50 times per second.
- High-visibility negative-transmissive LCD with bright backlight.
- Present values and deviations are displayed using a bar graph.
- Compliant with CE and UL standards as well as RoHS.

Ordering Information

| Name | Appearance | Specifications | Model |
|--|-----------------|--------------------------|-----------------|
| DeviceNet-compliant Digital Indicators | | Process Indicator | K3HB-XVD-A-DRT1 |
| | | | K3HB-XAD-A-DRT1 |
| | | | K3HB-XVA-DRT1 |
| | | | K3HB-XAA-DRT1 |
| | | Weighing Indicator | K3HB-VLC-B-DRT1 |
| | | | K3HB-VLC-E-DRT1 |
| | | Temperature Indicator | K3HB-HTA-DRT1 |
| | | Linear Sensor Indicators | K3HB-SSD-A-DRT1 |
| | | Rotary Pulse Indicator | K3HB-RNB-A-DRT1 |
| Timer Interval Indicator | K3HB-PNB-A-DRT1 | | |
| Up/Down Counting Pulse Indicator | K3HB-CNB-A-DRT1 | | |

Ratings

● K3HB-X/V/H/S

| | | | |
|---|--|---|---|
| Power supply voltage | | 100 to 240 VAC Models 100 to 240 VAC (50/60 Hz) DeviceNet power supply: 24 VDC | |
| Allowable power supply voltage range | | 85% to 110% of the rated power supply voltage | |
| Power consumption | | 100 to 240 VAC Models: 18 VA max., 24 VAC/VDC Models: 11 VA, 7 W max. | |
| Absolute maximum rated input | S Model | 0 to 5V | ±10V |
| | | 1 to 5V | ±10V |
| | | ±5 V | ±10V |
| | | ±10 V | ±14.5V |
| | | 0 to 20 mA | 31 mA |
| | | 4 to 20 mA | 31 mA |
| | XVD Model | ±199.99 V | Allowable instantaneous overload (30 s): ±400 V |
| | | ±19.999 V | Allowable instantaneous overload (30 s): ±200 V |
| | | ±1.9999 V | Allowable instantaneous overload (30 s): ±200 V |
| | | 1.0000 to 5.0000V | Allowable instantaneous overload (30 s): ±200 V |
| | XVA Model | 0.0 to 400.0 V | Allowable instantaneous overload (30 s): 700 V |
| | | 0.00 to 199.99 V | Allowable instantaneous overload (30 s): 700 V |
| | | 0.000 to 19.999 V | Allowable instantaneous overload (30 s): 400 V |
| | XAD Model | 0.0000 to 1.9999 V | Allowable instantaneous overload (30 s): 400 V |
| | | ±199.99 mA | Allowable instantaneous overload (30 s): ±400 V |
| | | ±19.999 mA | Allowable instantaneous overload (30 s): ±200 V |
| | | ±1.9999 mA | Allowable instantaneous overload (30 s): ±200 V |
| | XAA Model | 4.000 to 20.000 mA | Allowable instantaneous overload (30 s): ±200 V |
| | | 0.000 to 10.000 A | Allowable instantaneous overload (30 s): 20 A |
| | | 0.0000 to 1.9999 A | Allowable instantaneous overload (30 s): 20 A |
| 0.00 to 199.99 mA | | Allowable instantaneous overload (30 s): 2 A | |
| V Model | 0.000 to 19.999 mA | Allowable instantaneous overload (30 s): 2 A | |
| | 0.00 to 199.99 mV | Allowable instantaneous overload (30 s): ±200 V | |
| | 0.000 to 19.999 mV | Allowable instantaneous overload (30 s): ±200 V | |
| | ±100.00 mV | Allowable instantaneous overload (30 s): ±200 V | |
| External power supply | | 12 VDC ±10%, 80 mA (only for models with external power supplies) 10 VDC ±5%, 100 mA (only for models with external power supplies) 5 VDC ±5%, 100 mA (only for models with external power supplies) | |
| Input range (measurement range) | S Model | DC voltages or currents (0 to 20 mA, 4 to 20 mA, 0 to 5 V, 1 to 5 V, ±5 V, ±10 V), 2 channels | |
| | X Model (measurement category II) | DC voltage: ±199.99 V, ±19.999 V, ±1.999 V, 1.000 to 5.000 V DC current: ±199.99 mA, ±19.999 mA, ±1.999 mA, 4.000 to 20.000 mA AC voltage: 0.0 to 400.0 V, 0.00 to 199.99 V, 0.000 to 19.999 V, 0.000 to 1.9999 V AC current: 0.000 to 10.000 A, 0.0000 to 1.9999 A, 0.00 to 199.99 mA, 0.000 to 19.999 mA | |
| | V Model | Load cell: 0.00 to 199.99 mV, 0.000 to 19.999 mV, ±100.00 mV, ±199.99 mV | |
| Input impedance | S Model | Current range: 120 Ω max., Voltage range: 1 MΩ max. | |
| | X Model | DC voltage (±199.99 V): 10 MΩ min./DC voltage (other ranges): 1 MΩ min. DC current (±199.99 mA): 1 Ω max./±19.999 mA and 4 to 20 mA): 10 Ω max./±1.9999 mA): 33 Ω max. AC voltage: 1 MΩ min., DC current (0 to 10 A and 0 to 1.9999 A): 0.5 VAC/(0 to 199.99 mA): 1 Ω max./0 to 19.999 mA): 10 Ω max. | |
| | V Model | Load cell: 1 MΩ min. | |
| Event inputs | Timing input | NPN open collector or no-voltage contact signal ON residual voltage: 3 V max. ON current at 0 Ω: 17 mA max. Max. applied voltage: 30 VDC max. OFF leakage current: 1.5 mA max. | |
| | Startup compensation timer input | NPN open collector or no-voltage contact signal | |
| | Hold input | ON residual voltage: 2 V max. ON current at 0 Ω: 4 mA max. | |
| | Reset input | Max. applied voltage: 30 VDC max. OFF leakage current: 0.1 mA max. | |
| | Forced-zero input | OFF leakage current: 0.1 mA max. | |
| A/D conversion method | S Model | Sequential comparison system | |
| | H/X/V Model | Digital-sigma method | |
| Output ratings | Relay output | 250 VAC, 30 VDC, 5 A (resistive load) Mechanical life expectancy: 5,000,000 operations, Electrical life expectancy: 100,000 operations | |
| | Transistor output | Maximum load voltage: 24 VDC, Maximum load current: 50 mA, Leakage current: 100 μA max. | |
| | Linear output | Linear output 0 to 20 mA DC, 4 to 20 mA: Load: 500 Ω max, Resolution: Approx. 10,000, Output error: ±0.5% FS Linear output 0 to 5 VDC, 1 to 5 VDC, 0 to 10 VDC: Load: 5 kΩ max, Resolution: Approx. 10,000, Output error: ±0.5% FS (1 V or less: ±0.15 V; not output for 0 V or less) | |
| Display method | | Negative LCD (backlit LED) display, 7-segment digital display (character heights: PV: 14.2 mm (switches between green and red), SV: 4.9 mm (green)) | |
| Ambient operating temperature | | -10°C to 55°C (with no icing or condensation) | |
| Ambient operating humidity | | 25% to 85% | |
| Storage temperature | | -25°C to 65°C (with no icing or condensation) | |
| Altitude | | 2,000 m max. | |
| Accessories | | 2 fixtures, unit stickers, instruction manual, watertight packing, terminal cover, DeviceNet connector * and crimp terminals (Hirose HR31-SC-121) * | |

* DeviceNet only.

● K3HB-R/P/C

| | | |
|--|---|---|
| Power supply voltage | | 100 to 240 VAC Models 24 VAC/VDC Models DeviceNet power supply: 24 VDC |
| Allowable power supply voltage range | | 85% to 110% of the rated power supply voltage, DeviceNet power supply: 11 to 25 VDC |
| Power consumption (under maximum load) *1 | | 100 to 240 VAC: 18 VA max., 24 VAC/VDC: 11 VA/7 W max. |
| Current consumption | | DeviceNet power supply: 50 mA max. (24 VDC) |
| Inputs | | No-voltage contact, voltage pulse, and open collector |
| External power supply | | 12 VDC ±10%, 80 mA (only for models with external power supplies) 10 VDC ±5%, 100 mA (only for models with external power supplies) |
| Event inputs *2, *4 | Startup compensation timer input | NPN open collector or no-voltage contact signal ON residual voltage: 2 V max. ON current at 0 Ω: 4 mA max. Max. applied voltage: 30 VDC max. OFF leakage current: 0.15 mA max. |
| | Hold input | |
| | Reset input | |
| | Compensation input | |
| | Bank input | |
| Outputs *4 | Relay output | 250 VAC, 30 VDC, 5 A (resistive load) Mechanical life expectancy: 5,000,000 operations, Electrical life expectancy: 100,000 operations |
| | Transistor output | Maximum load voltage: 24 VDC, Maximum load current: 50 mA, Leakage current: 100 μA max. |
| | Linear output | Linear output 0 to 20 mA DC, 4 to 20 mA: Load: 500 Ω max, Resolution: Approx. 10,000, Output error: ±0.5% FS Linear output 0 to 5 VDC, 1 to 5 VDC, 0 to 10 VDC: Load: 5 kΩ max, Resolution: Approx. 10,000, Output error: ±0.5% FS (1 V or less: ±0.15 V; not output for 0 V or less) |
| Display method | | Negative LCD (backlit LED) display, 7-segment digital display (character heights: PV: 14.2 mm (switches between green and red), SV: 4.9 mm (green)) |
| Main functions *4 | | Scaling, measurement operation selection, averaging, previous average value comparison, output hysteresis, output ON delay, output test, teaching, display selection, display color switching, key protection, bank selection, display refresh period, maximum/minimum hold, and reset |
| Ambient operating temperature | | -10°C to 55°C (with no icing or condensation) |
| Ambient operating humidity | | 25% to 85% |
| Storage temperature | | -25°C to 65°C (with no icing or condensation) |
| Altitude | | 2,000 m max. |
| Accessories | | Watertight packing, 2 fixtures, terminal cover, unit stickers, instruction manual. DeviceNet models also include a DeviceNet connector (Hirose HR31-5.08P-5SC(01)) and crimp terminals (Hirose HR31-SC-121) *3 |

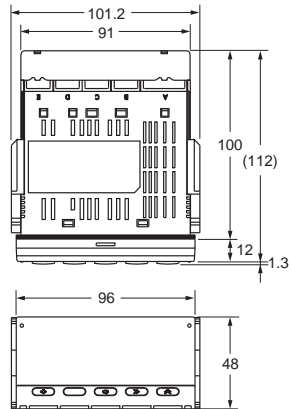
- *1. DC power supply models require a control power supply capacity of approximately 1 A per Unit when power is turned ON. Particular attention is required when using two or more DC power supply models. The OMRON S8VS-series DC Power Supply Unit is recommended.
- *2. PNP input types are also available.
- *3. For K3HB-series DeviceNet models, use only the DeviceNet Connector included with the product. The crimp terminals provided are for Thin Cables.
- *4. Depends on the model.

DeviceNet Communications Specifications

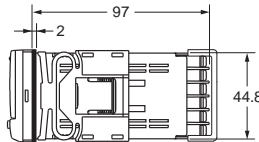
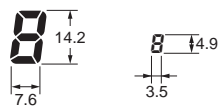
| | | | | | |
|---|----------------------------------|--|------------------------------|---------------------------|---------------------------------|
| Communications protocol | | Conforms to DeviceNet | | | |
| Supported communications | Remote I/O communications | <ul style="list-style-type: none"> • Master-Slave connection (polling, bit-strobe, COS, cyclic) • Conforms to DeviceNet communications standards. | | | |
| | I/O allocations | <ul style="list-style-type: none"> • Allocate any I/O data using the Configurator. • Allocate any data, such as DeviceNet-specific parameters and variable area for Digital Indicators. • Input area: 2 blocks, 100 words max. • Output area: 1 block, 100 words max. (The first word in the area is always allocated for the Output Execution Enabled Flags.) | | | |
| | Message communications | <ul style="list-style-type: none"> • Explicit message communications • CompoWay/F communications commands can be executed (using explicit message communications) | | | |
| Connection form | | Combination of multi-drop method and T-branch connections (for trunk and drop lines) | | | |
| Baud rate | | DeviceNet: 500, 250, or 125 kbps (automatic follow-up) | | | |
| Communications media | | Special 5-wire cable (2 signal lines, 2 power supply lines, 1 shield line) | | | |
| Communications distance | Baud rate | | Network length (max.) | Branch line length | Total branch line length |
| | 500 kbps | | 100 m max. (100 m max.) | 6 m max. | 39 m max. |
| | 250 kbps | | 250 m max. (100 m max.) | 6 m max. | 78 m max. |
| | 125 kbps | | 500 m max. (100 m max.) | 6 m max. | 156 m max. |
| The values in parentheses are for Thin Cable. | | | | | |
| Power supply voltage | | 24-VDC DeviceNet power supply | | | |
| Allowable power supply voltage range | | 11 to 25-VDC DeviceNet power supply | | | |
| Current consumption | | 50 mA max. (24 VDC) | | | |
| Maximum number of nodes | | 64 (DeviceNet Configurator is counted as one node when connected) | | | |
| Maximum number of slaves | | 63 | | | |
| Error control checks | | CRC errors | | | |
| DeviceNet power supply | | Supplied from DeviceNet communications connector | | | |
| Current consumption | | 50 mA max. (24 VDC) | | | |
| Maximum I/O points | | Maximum number of slaves: 63 | | | |

Dimensions

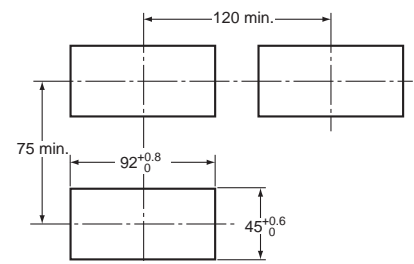
K3HB



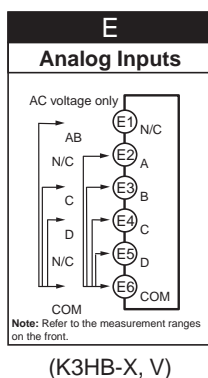
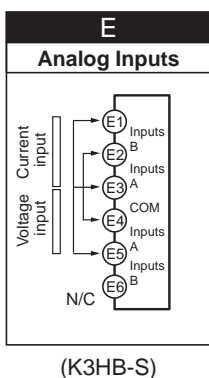
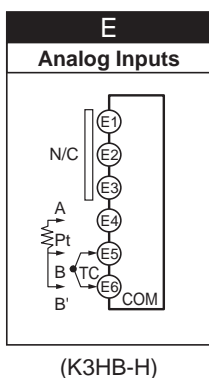
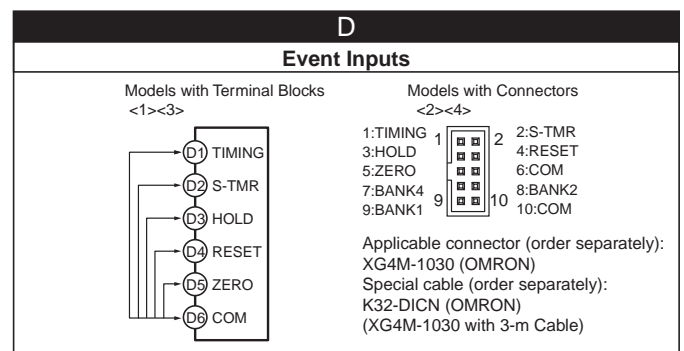
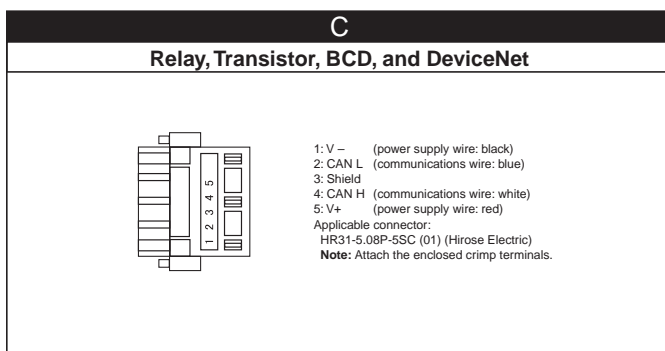
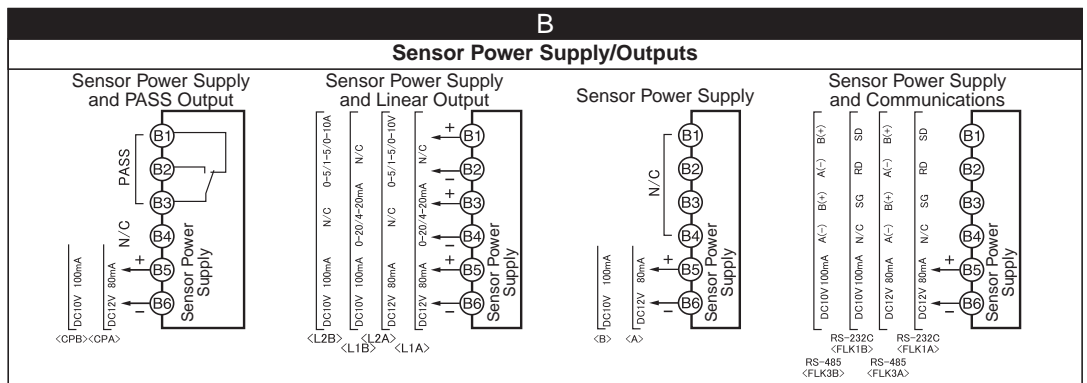
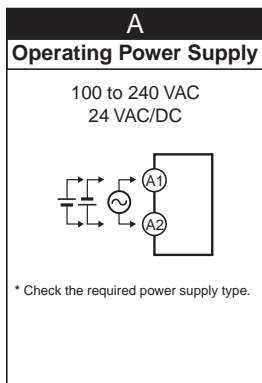
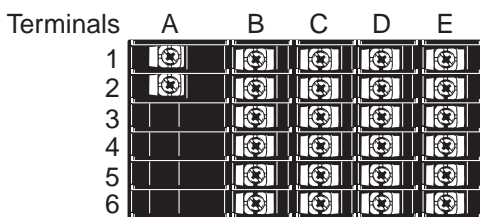
Character Size for Main Display
PV display SV display



Panel Cutout Dimensions



Terminal Arrangement



DeviceNet-compliant Digital Controllers

E5AR-DRT/E5ER-DRT

General-purpose Digital Controllers with High Speed and High Accuracy. Three, 5-digit Easy-to-read Tall LCD Displays.



- High-speed sampling cycle (50 ms) for applications requiring high-speed response.
- Three backlit, negative LCD displays for simultaneous display of PV, SV, and MV.
- Multipoint control, cascade control, and proportional control all possible with a single Controller.
- Data processing functions provided as standard features: Square root extraction, linear approximation, and more.
- DeviceNet communications for data setting and monitoring without special programming.

Ordering Information

■ Digital Controllers

● E5AR DeviceNet-compliant Models

| Size | Type | Control modes | No. of outputs (control/transfer) | Optional features | | | Model |
|--|--------------------------------------|---|---|--------------------------------|---------------------|----------------|----------------|
| | | | | No. of auxiliary outputs (SUB) | No. of event inputs | Communications | |
| 96 x 96 mm | Basic Type (1 input) | Standard control Heating/cooling control | 2 (pulse voltage + pulse voltage/ current outputs) | 4 | 2 | DeviceNet | E5AR-Q4B-DRT |
| | | | 2 (2 current outputs) | | | | E5AR-C4B-DRT |
| | | | 4 (1 pulse voltage + 1 pulse voltage/current + 2 current outputs) | | | | E5AR-QC4B-DRT |
| | 2-input Type | 2-channel standard control 2-channel heating/cooling control 1-channel cascade control 1-channel control with remote SP 1-channel ratio control | 4 (2 pulse voltage + 2 pulse voltage/current) | 4 | None | DeviceNet | E5AR-QQ4W-DRT |
| | 4-input Type | 4-channel standard control 2-channel heating/cooling control | 4 (4 current outputs) | 4 | None | DeviceNet | E5AR-CC4WW-DRT |
| | Control Valve Control Type (1 input) | 1-channel position proportional control * | Relay outputs (1 open and 1 closed) | 4 | None | DeviceNet | E5AR-PR4F-DRT |
| Relay outputs (1 open and 1 closed) + 1 current (transfer) | E5AR-PRQ4F-DRT | | | | | | |

Note: When ordering, specify the power supply. Different models are used for 100 to 240 VAC and 24 VDC/AC.

* Control can be switched between closed control and floating control.

● E5ER DeviceNet-compliant Models

| Size | Type | Control modes | No. of outputs (control/transfer) | Optional features | | | Model |
|------------|--------------------------------------|---|--|--------------------------------|---------------------|----------------|---------------|
| | | | | No. of auxiliary outputs (SUB) | No. of event inputs | Communications | |
| 48 x 96 mm | Basic Type (1 input) | Standard control Heating/cooling control | 2 (pulse voltage + pulse voltage/ current outputs) | 2 *1 | 2 | DeviceNet | E5ER-QTB-DRT |
| | | | 2 (2 current outputs) | | | | E5ER-CTB-DRT |
| | 2-input Type | 2-channel standard control 1-channel heating/cooling control 1-channel cascade control 1-channel control with remote SP 1-channel ratio control | 2 (pulse voltage + pulse voltage/ current outputs) | 2 *1 | None | DeviceNet | E5ER-QTW-DRT |
| | | | 2 (2 current outputs) | | | | E5ER-CTW-DRT |
| | Control Valve Control Type (1 input) | 1-channel position proportional control *2 | Relay outputs (1 open and 1 closed) | 2 *1 | None | DeviceNet | E5ER-PRTF-DRT |

Note: When ordering, specify the power supply. Different models are used for 100 to 240 VAC and 24 VDC/AC.

*1. Transistor outputs.

*2. Control can be switched between closed control and floating control.

Inspection Results

Order using the following model number together with the model number of the Digital Controller to obtain inspection results.

Inspection Results (Sold Separately)

| Model |
|--------|
| E5AR-K |
| E5ER-K |

■ **Optional Accessories (Sold separately)**

● **Terminal Cover**

| Digital Controller | Model |
|--------------------|-----------|
| E5AR | E53-COV14 |
| E5ER | E53-COV15 |

Specifications

● **E5AR**

| Item | *1 Power supply voltage | 100 to 240 VAC, 50/60 Hz | 24 VAC, 50/60 Hz or 24 VDC |
|--------------------------------|-------------------------|---|--------------------------------------|
| Allowed voltage variance range | | 85% to 110% of power supply voltage | |
| Power consumption | | 22 VA max. (under maximum load) | 15 VA/10 W max. (under maximum load) |
| Sensor input *2 | | Thermocouples: K, J, T, E, L, U, N, R, S, B, W Platinum resistance temperature input sensors: Pt100 Current inputs: 4 to 20 mA DC, 0 to 20 mA DC (including remote SP input) Voltage inputs: 1 to 5 VDC, 0 to 5 VDC, 0 to 10 VDC (including remote SP input) (Input impedance: 150 Ω using current input, approx. 1 MΩ using voltage input) | |
| Control output | Voltage (pulse) output | 12 V DC, 40 mA max., with short-circuit protection circuit | |
| | Current output | 0 to 20 mA DC/4 to 20 mA DC, 500 Ω load max. (including transfer output) (Resolution: Approx. 54,000 at 0 to 20 mA DC, approx. 43,000 at 4 to 20 mA DC) | |
| | Relay output | Position proportional control type (open, closed) NO-SPST 250 VAC 1 A (including inrush current) | |
| Auxiliary output | | NO-SPST 250 V AC 1 A (resistive load) | |
| Potentiometer input | | 100 Ω to 2.5 kΩ | |
| Event input | Contact | Input ON: 1 kΩ max., OFF: 100 kΩ max. | |
| | Non-contact | Input ON: Residual voltage 1.5 V max., OFF: Leakage current 0.1 mA max. | |
| | | Short-circuit current: Approx. 4 mA | |
| Remote SP input | | See <i>Sensor inputs</i> . | |
| Transfer output | | See <i>Control outputs</i> . | |
| Control method | | Advanced PID or ON/OFF | |
| Setting method | | Digital setting by front panel keys, setting by serial communications | |
| Indication method | | 7-segment digital display and LED indicators Character heights: PV 12.8 mm, SV 7.7 mm, MV 7.7 mm | |
| Other functions | | Varies by model | |
| Ambient operating temperature | | -10°C to 55°C (no condensation or icing), 3 year warranty: -10°C to 55°C (no condensation or icing) | |
| Ambient operating humidity | | 25% to 85% | |
| Storage temperature | | -25°C to 65°C (no condensation or icing) | |

Note: Do not use the output from an Inverter for the power supply.

*1. When ordering, specify the power supply. Different models are used for 100 to 240 VAC and 24 VDC/AC.

*2. Multi-input. Switch between temperature and analog input using the input type switch.

Basic insulation is provided between the power supply and input terminals and between the power supply and output terminals.

● E5ER

| Item | *1 Power supply voltage | 100 to 240 VAC, 50/60 Hz | 24 VAC, 50/60 Hz or 24 VDC |
|--------------------------------|---|--|-------------------------------------|
| Allowed voltage variance range | 85% to 110% of power supply voltage | | |
| Power consumption | 17 VA max. (under maximum load) | | 11 VA/7 W max. (under maximum load) |
| Sensor input *2 | Thermocouples: K, J, T, E, L, U, N, R, S, B, W Platinum resistance temperature input sensors: Pt100 Current inputs: 4 to 20 mA DC, 0 to 20 mA DC (including remote SP input) Voltage inputs: 1 to 5 VDC, 0 to 5 VDC, 0 to 10 VDC (including remote SP input) (Input impedance: 150 Ω using current input, approx. 1 MΩ using voltage input) | | |
| Control output | Voltage (pulse) output | 12 V DC, 40 mA max., with short-circuit protection circuit | |
| | Current output | 0 to 20 mA DC/4 to 20 mA DC, 500 Ω load max. (including transfer output) (Resolution: Approx. 54,000 at 0 to 20 mA DC, approx. 43,000 at 4 to 20 mA DC) | |
| | Relay output | Position proportional control type (open, closed) NO-SPST 250 VAC 1 A (including inrush current) | |
| Auxiliary output | Transistor outputs, Maximum load voltage: 30 VDC, maximum load current: 50 mA Residual voltage: 1.5 V max., leakage current: 0.4 mA max. | | |
| Potentiometer input | 100 Ω to 2.5 kΩ | | |
| Event input | Contact | Input ON: 1 kΩ max., OFF: 100 kΩ max. | |
| | Non-contact | Input ON: Residual voltage 1.5 V max., OFF: Leakage current 0.1 mA max. | |
| | Short-circuit current: Approx. 4 mA | | |
| Remote SP input | See <i>Sensor inputs</i> . | | |
| Transfer output | See <i>Control outputs</i> . | | |
| Control method | Control method Advanced PID or ON/OFF | | |
| Setting method | Digital setting by front panel keys, setting by communications | | |
| Indication method | 7-segment digital display and LED indicators Character heights: PV 9.5 mm, SV 7.2 mm, MV 7.2 mm | | |
| Other functions | Varies by model | | |
| Ambient operating temperature | -10°C to 55°C (no condensation or icing), 3 year warranty: -10°C to 50°C (no condensation or icing) | | |
| Ambient operating humidity | 25% to 85% | | |
| Storage temperature | -25°C to 65°C (no condensation or icing) | | |

Note: Do not use the output from an Inverter for the power supply.

*1. When ordering, specify the power supply. Different models are used for 100 to 240 VAC and 24 VDC/AC.

*2. Multi-input. Switch between temperature and analog input using the input type switch.

Basic insulation is provided between the power supply and input terminals and between the power supply and output terminals.

DeviceNet Communications Specifications

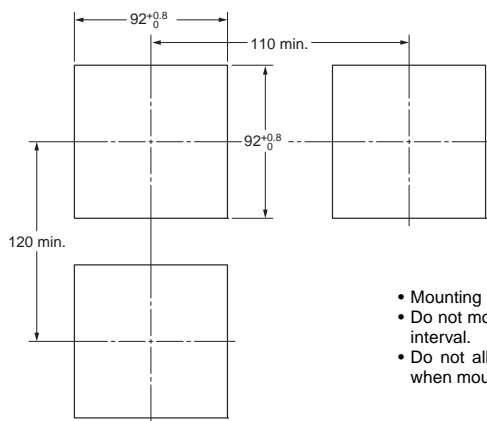
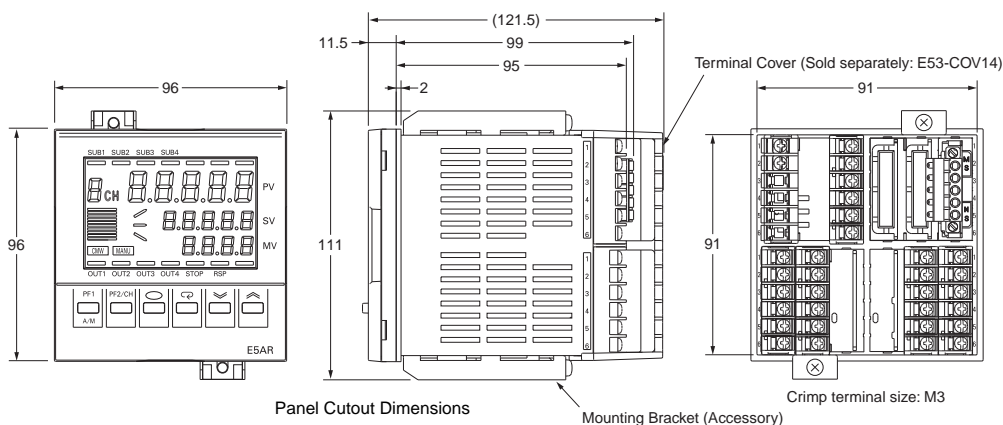
| Communications protocol | Conforms to DeviceNet | |
|--------------------------|--|---|
| Communications functions | Remote I/O communications | <ul style="list-style-type: none"> Master-Slave connection (polling, bit-strobe, COS, cyclic) Conforms to DeviceNet communications standards. |
| | I/O allocations | <ul style="list-style-type: none"> Allocate any I/O data using the Configurator. Allocate any data, such parameters specific to the DeviceNet and the Digital Indicator variable area. Input area: 2 blocks, 100 words max. Output area: 1 block, 100 words max. (The first word in the area is always allocated for the Output Execution Enabled Flags.) |
| | Message Communications function | <ul style="list-style-type: none"> Explicit message communications CompoWay/F communications commands can be sent (commands are sent as explicit messages). |
| Connection form | Combination of multi-drop method and T-branch connections (for trunk and drop lines) | |
| Baud rate | DeviceNet: 500, 250, or 125 kbps (automatic follow-up) | |
| Communications media | Special 5-wire cable (2 signal lines, 2 power supply lines, 1 shield line) | |

| Communications distance | Baud rate | Network length (max.) | Branch line length | Total branch line length |
|---|---|-------------------------|--------------------|--------------------------|
| | 500 kbps | 100 m max. (100 m max.) | 6 m max. | 39 m max. |
| | 250 kbps | 250 m max. (100 m max.) | 6 m max. | 78 m max. |
| | 125 kbps | 500 m max. (100 m max.) | 6 m max. | 156 m max. |
| The values in parentheses are for Thin Cable. | | | | |
| Power supply voltage | DeviceNet power supply: 24 VDC (internal circuit) | | | |
| Allowable power supply voltage range | DeviceNet power supply: 11 to 25 VDC | | | |
| Current consumption | 50 mA max. (24 VDC) | | | |
| Maximum number of nodes | 64 (DeviceNet Configurator is counted as one node when connected) | | | |
| Maximum number of slaves | 63 | | | |
| Error control checks | CRC errors | | | |
| DeviceNet power supply | Supplied from DeviceNet communications connector | | | |

Dimensions

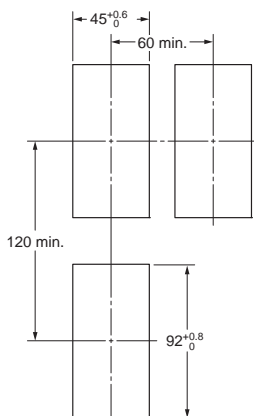
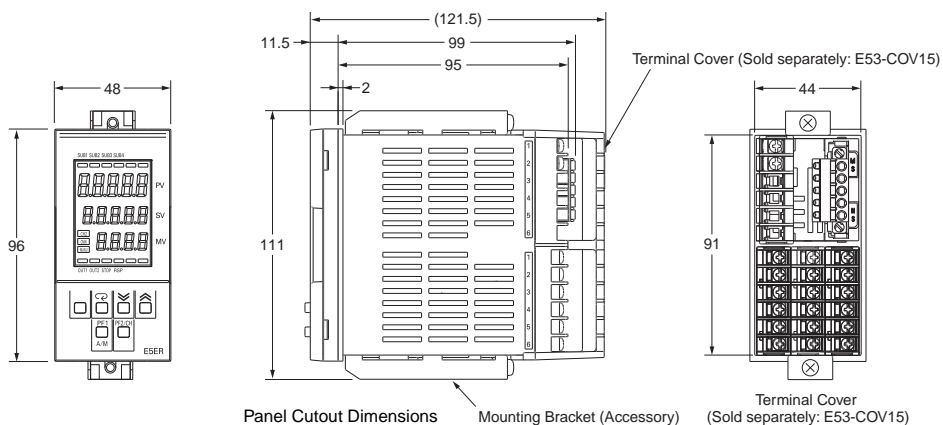
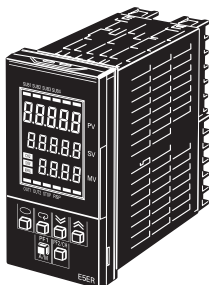
■ Digital Controllers

E5AR



- Mounting panel thickness: 1 to 8 mm
- Do not mount Controllers side-to-side. Maintain the installation interval.
- Do not allow the rated ambient temperature to be exceeded when mounting more than one Controller.

E5ER



- Mounting panel thickness: 1 to 8 mm
- Do not mount Controllers side-to-side. Maintain the installation interval.
- Do not allow the rated ambient temperature to be exceeded when mounting more than one Controller.

DeviceNet Communications Unit for Modular Temperature Controller EJ1-DRT

Easily Perform Temperature Control for Multiple Channels.

- Up to 16 Temperature Controllers can be connected to a single DeviceNet Communications Unit.
- Sharing target values and present values using remote I/O communications without special programming reduces development work for communications.
- Flexibly allocate I/O memory using either fixed allocation addresses for simple allocations or user-set allocations from the Configurator.
- The EJ1 parameters can be backed up for easy resetting of parameters when the EJ1 is replaced.
- Explicit messages be sent from the PLC to easily read or write any parameter.



Ordering Information

● DeviceNet Communications Unit

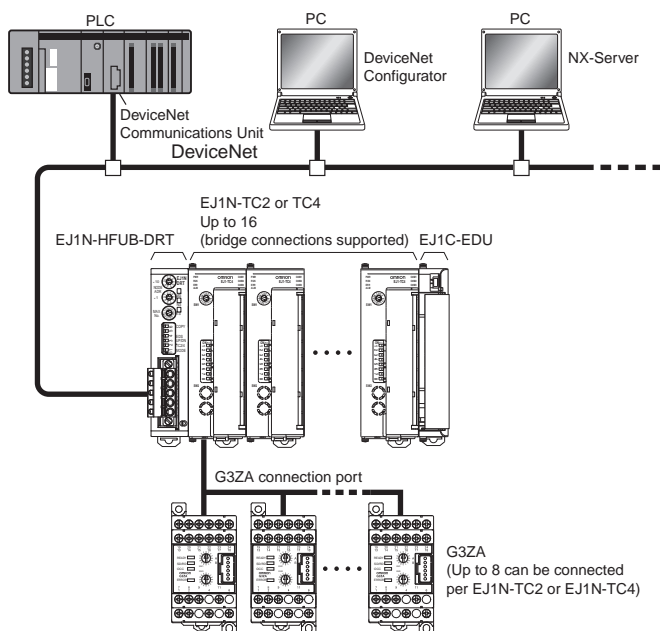
| Name | Specifications | Model | Safety standards |
|-----------------------------------|---|---------------|------------------|
| HFU (DeviceNet communications) *1 | External input power supply voltage: 24 VDC | EJ1N-HFUB-DRT | UC, CE |

● Modular Temperature Controller

| Unit Name | Power supply voltage | No. of control points | Control outputs 1 and 2 | Control outputs 3 and 4 | Auxiliary output | Functions | | Communications functions | Input type | Terminal | Model | |
|--|-----------------------------------|---------------------------------------|---|---------------------------------------|---------------------------------------|----------------------|--------------|---|--|----------------------|------------------|----------------|
| | | | | | | Heater burnout alarm | Event inputs | | | | | |
| Basic Unit (temperature control) *1 | 24 VDC supplied from the End Unit | 2 | Voltage output: 2 points (for SSR drive) *2 | Transistor output: 2 points (sinking) | None | 2 *3 | 2 | G3ZA connection port: RS-485 From End Unit: Port A or port B: RS-485 | Thermocouple, platinum resistance thermometer, analog voltage, and analog current selectable for each channel. | M3 terminal | EJ1N-TC2A-QNHB | |
| | | | | Screw-less clamp | | | | | | EJ1N-TC2B-QNHB | | |
| | | 4 | Voltage output: 2 points (for SSR drive) *2 | Screw-less clamp | | | | | | EJ1N-TC4A-QQ | | |
| | | | | M3 terminal | | | | | | EJ1N-TC4B-QQ | | |
| 2 | Current output: 2 points | Transistor output: 2 points (sinking) | Screw-less clamp | EJ1N-TC2A-CNB | | | | | | | | |
| | | | M3 terminal | EJ1N-TC2B-CNB | | | | | | | | |
| HFU with Programless Communications *1 | None | None | None | None | Transistor output: 4 points (sinking) | None | 4 | Port C: RS-485 or RS-232C selectable. From End Unit: Port A: RS-485 | No input | M3 terminal | EJ1N-HFUA-NFLK | |
| | | | | | | | | | | Screw-less clamp | EJ1N-HFUB-NFLK | |
| | | | | | | | | | | M3 terminal | Screw-less clamp | EJ1N-HFUA-NFL2 |
| | | | | | | | | | | | | EJ1N-HFUB-NFL2 |
| End Unit *1 | 24 VDC | None | None | None | Transistor output: 2 points (sinking) | None | None | Port A or B: RS-485 Connector: Port A | M3 terminal | EJ1C-EDUA-NFLK | | |
| | | | | | | | | | | Detachable connector | EJ1C-EDUC-NFLK | |

- *1. An End Unit is always required for connection to a Basic Unit or an HFU. An HFU cannot operate without a Basic Unit. External communications cannot be performed when using a Basic Unit only.
- *2. For heating/cooling control applications, control outputs 3 and 4 on the 2-point models are used for the cooling or heating control outputs. On the 4-point models, heating/cooling control is performed for the two input points.
- *3. When using the heater burnout alarm, purchase a Current Transformer (E54-CT1 or E54-CT3) separately.

System Configuration



Specifications

| | | |
|--|------------------------|---|
| Power supply voltage | DeviceNet power supply | 24 VDC (for internal circuits) |
| | EDU power supply | 24 VDC (for RS-485 communications circuits and Temperature Controllers) |
| Allowable voltage range | DeviceNet power supply | 11 to 25 VDC |
| | EDU power supply | 20.4 to 26.4 VDC |
| Power consumption (under maximum load) | | 1 W max. |
| Insulation resistance | | 20 MΩ min. (at 500 VDC) |
| Dielectric strength | | 600 VAC, 50/60 Hz for 1 min |
| Vibration resistance | | 10 to 55 Hz, 10 m/s ² for 2 hours each in X, Y, and Z directions |
| Shock resistance | | 150m/s ² max., 6 directions, 3 times each |
| Weight | | 70 g max. |
| Degree of protection | | IP20 |
| Main functions | | Remote I/O communications, explicit message communications, CompoWay/F command feed-through function, parameter backup function, and configuration registration |
| Ambient operating temperature | | Operating: -10°C to 55°C Storage: -25°C to 65°C (with no icing or condensation) 3 year warranty: -10°C to 50°C (with no icing or condensation) |
| Ambient operating humidity | | Operating: 25% to 85% (with no condensation) |
| Memory protection | | EEPROM, 100,000 write operations (backup data) |
| Dimensions | | 20 x 90 x 65 mm (W x H x D) |

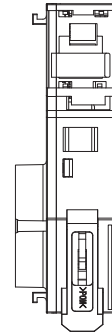
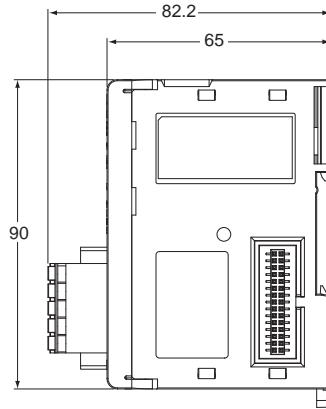
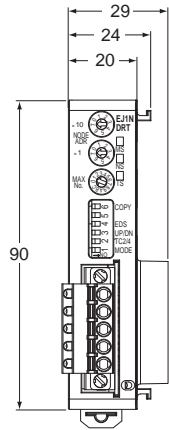
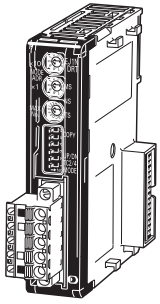
DeviceNet Communications Specifications

| Item | Specifications | | | | | | | | | | | | | | | | | |
|--|---|--|-----------------------|--------------------------|--------------------------|----------|-------------------------|----------|-----------|----------|-------------------------|----------|-----------|----------|-------------------------|----------|------------|--|
| Communications protocol | Conforms to DeviceNet | | | | | | | | | | | | | | | | | |
| Communications functions | Remote I/O communications | <ul style="list-style-type: none"> Master-Slave connection (polling, bit-strobe, COS, cyclic) Conforms to DeviceNet communications standards. | | | | | | | | | | | | | | | | |
| | Simple I/O allocations | <ul style="list-style-type: none"> Allocation of input and output data using only switch settings and not the Configurator. Allocation of only basic data, such as Temperature Controller status, present values, target values, and alarm output status. Input area: 1 block, 86 words max. (up to the highest Communications Unit number) Output area: 1 block, 74 words max. (up to the highest Communications Unit number) | | | | | | | | | | | | | | | | |
| | I/O allocations using the Configurator | <ul style="list-style-type: none"> Allocate any I/O data using the Configurator. Allocation of user-set data, parameters specific to DeviceNet Communications Units, and Temperature Controller variable area data. Input area: 2 blocks, 100 words max. *1 Output area: 1 block, 100 words max. (The first word is always the Output Execution Enabled Flags.) *2 | | | | | | | | | | | | | | | | |
| | Message Communications function | <ul style="list-style-type: none"> Explicit message communications CompoWay/F communications commands can be sent (commands are sent in explicit message format). | | | | | | | | | | | | | | | | |
| Setting, monitoring, and manipulating from the Configurator | <p>Functions Supported by the DeviceNet Configurator: (Using parameter editing or device monitoring for DeviceNet Communications Units and Temperature Controllers)</p> <ul style="list-style-type: none"> Setting and monitoring DeviceNet Communications Units. Registering connection configurations, making initial settings *3, changing settings, and monitoring for Temperature Controllers. Making allocations to the Master. Allocating data in input areas and output areas. Executing operation commands for Temperature Controllers. | | | | | | | | | | | | | | | | | |
| Connection form | Combination of multi-drop method and T-branch connections (for trunk and drop lines) | | | | | | | | | | | | | | | | | |
| Baud rate | DeviceNet: 500, 250, or 125 kbps (automatic follow-up) | | | | | | | | | | | | | | | | | |
| Communications media | Special 5-wire cable (2 signal lines, 2 power supply lines, 1 shield line) | | | | | | | | | | | | | | | | | |
| Communications distance | <table border="1"> <thead> <tr> <th>Baud rate</th> <th>Network length (max.)</th> <th>Branch line length</th> <th>Total branch line length</th> </tr> </thead> <tbody> <tr> <td>500 kbps</td> <td>100 m max. (100 m max.)</td> <td>6 m max.</td> <td>39 m max.</td> </tr> <tr> <td>250 kbps</td> <td>250 m max. (100 m max.)</td> <td>6 m max.</td> <td>78 m max.</td> </tr> <tr> <td>125 kbps</td> <td>500 m max. (100 m max.)</td> <td>6 m max.</td> <td>156 m max.</td> </tr> </tbody> </table> | Baud rate | Network length (max.) | Branch line length | Total branch line length | 500 kbps | 100 m max. (100 m max.) | 6 m max. | 39 m max. | 250 kbps | 250 m max. (100 m max.) | 6 m max. | 78 m max. | 125 kbps | 500 m max. (100 m max.) | 6 m max. | 156 m max. | |
| | Baud rate | Network length (max.) | Branch line length | Total branch line length | | | | | | | | | | | | | | |
| | 500 kbps | 100 m max. (100 m max.) | 6 m max. | 39 m max. | | | | | | | | | | | | | | |
| | 250 kbps | 250 m max. (100 m max.) | 6 m max. | 78 m max. | | | | | | | | | | | | | | |
| 125 kbps | 500 m max. (100 m max.) | 6 m max. | 156 m max. | | | | | | | | | | | | | | | |
| | The values in parentheses are for Thin Cable. | | | | | | | | | | | | | | | | | |
| Communications power supply | 11 to 25 VDC | | | | | | | | | | | | | | | | | |
| Maximum number of nodes | 64 (DeviceNet Configurator is counted as one node when connected) | | | | | | | | | | | | | | | | | |
| Maximum number of slaves | 63 | | | | | | | | | | | | | | | | | |
| Error control checks | CRC errors | | | | | | | | | | | | | | | | | |
| DeviceNet power supply | Supplied from DeviceNet communications connector (DeviceNet communications power and internal circuit power for DeviceNet Communications Unit) | | | | | | | | | | | | | | | | | |
| Applicable Temperature Controllers | EJ1 Series TC4: EJ1N-TC4A-QQ and EJ1N-TC4B-QQ TC2: EJ1N-TC2A-QNHB, EJ1N-TC2B-QNHB, EJ1N-TC2A-CNB, and EJ1N-TC2B-CNB | | | | | | | | | | | | | | | | | |
| Maximum number of Temperature Controllers that can be connected | 16 (The maximum is 15, however, for side-by-side connections. The 16th Unit is an End Unit for distributed placement.) | | | | | | | | | | | | | | | | | |

- *1. Two blocks can be used (i.e., connections can be set) only when a CS/CJ-series DeviceNet Unit is used as a Master. When a C200HX/HG/HE DeviceNet Master Unit is used, the input area will be one block with up to 100 words (200 bytes) (poll connections only).
- *2. When a C200HX/HG/HE DeviceNet Master Unit is used, a maximum of 32 words can be allocated per node.
- *3. Batch settings can be made for target values, alarm set values, PID constants, and other parameters for Temperature Controllers.

Dimensions

EJ1N-HFUB-DRT



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

3G3AX-MX2-DRT-E

Support for open network with DeviceNet Communications Unit

- Reduced wiring of Multi-function compact inverter MX2 series *1
- 8 types of remote I/O functions
The Explicit Message functions in addition to remote I/O functions
- Parameter edit via DeviceNet by using support tool CX-Drive *2



*1 DeviceNet communication unit can be used with the inverter 3G3MX2 of unit version 1.1 or higher.

*2 CX-Drive can be used with version 2.6 or higher.

Ordering Information

| Name | Mountable Inverter | Model |
|------------------------------|--------------------|-----------------|
| DeviceNet communication unit | MX2-series V1 type | 3G3AX-MX2-DRT-E |

Performance Specifications

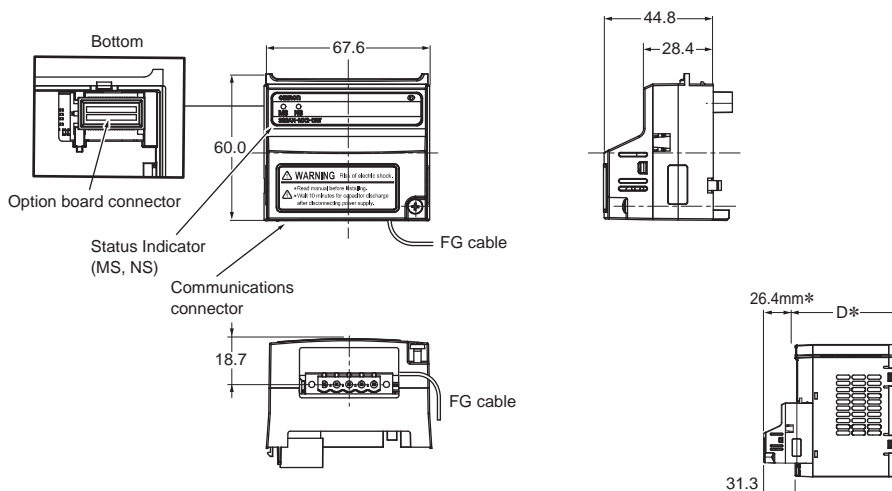
| | |
|-------------------------------|---|
| Power supply | Supplied from the inverter |
| Protective structure | IP20 |
| Ambient Operating Temperature | -10 to 55°C (with no condensation) |
| Ambient Storage Temperature | -20 to 65°C (with no condensation) |
| Ambient Operating Humidity | 20 to 90%RH |
| Vibration Resistance | 5.9m/s ² (0.6G) , 10 to 55Hz |
| Application Environment | At a maximum altitude of 1,000 m; indoors (without corrosive gases or dust) |
| Insulation Resistance | 500VAC (between isolated circuits) |
| Weight | Approx. 170g |
| Number of Words allocated | Initial setting IN:2CH/OUT:2CH (At maximum setting IN:10CH/OUT:10CH) |

Note. For detail, refer to the MX2-series V1 type Catalog (Cat. No.I920).

Dimensions

(Unit: mm)

3G3AX-MX2-DRT-E



* After the DeviceNet Communication Unit is installed, dimension D of the inverter increases by 26.4 mm.
(Dimension D of the inverter varies depending on the capacity. Refer to the MX2-series USER'S MANUAL (Cat.No.I585))

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

3G3AX-RX-DRT-E

Support for open network with DeviceNet Communications Unit

- Reduced wiring of Multi-function compact inverter RX series *1
- 8 types of remote I/O functions
The Explicit Message functions in addition to remote I/O functions
- Parameter edit via DeviceNet by using support tool CX-Drive *2

*1 DeviceNet communication unit can be used with the inverter 3G3MX2 of unit version 1.1 or higher.

*2 CX-Drive can be used with version 2.6 or higher.



Ordering Information

| Name | Mountable Inverter | Model |
|------------------------------|--------------------|----------------|
| DeviceNet communication unit | RX-series V1 type | 3G3AX-RX-DRT-E |

Performance Specifications

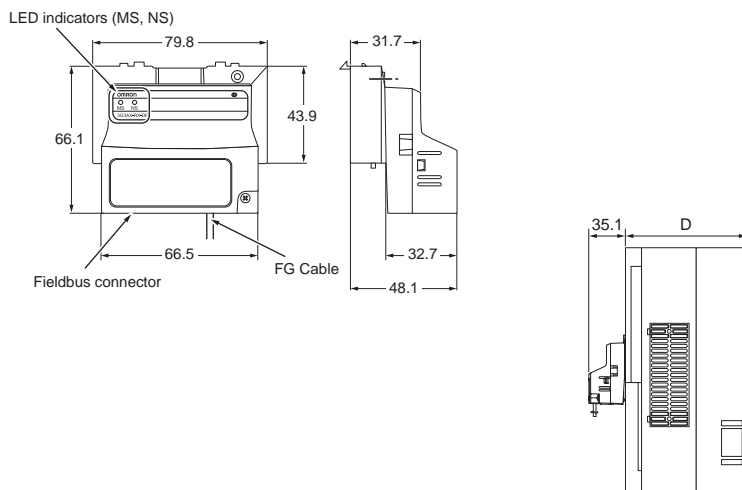
| | |
|-------------------------------|---|
| Power supply | Supplied from the inverter |
| Protective structure | IP20 |
| Ambient Operating Temperature | -10 to 55°C (with no condensation) |
| Ambient Storage Temperature | -20 to 65°C (with no condensation) |
| Ambient Operating Humidity | 20 to 90%RH |
| Vibration Resistance | 5.9m/s ² (0.6G) , 10 to 55Hz |
| Application Environment | At a maximum altitude of 1,000 m; indoors (without corrosive gases or dust) |
| Insulation Resistance | 500VAC (between isolated circuits) |
| Weight | Approx.170g |
| Number of Words allocated | Initial setting IN:2CH/OUT:2CH (At maximum setting IN:10CH/OUT:10CH) |

Note. For detail, refer to the RX-Series V1 type Catalog (Cat. No.I919).

Dimensions

(Unit: mm)

3G3AX-RX-DRT-E



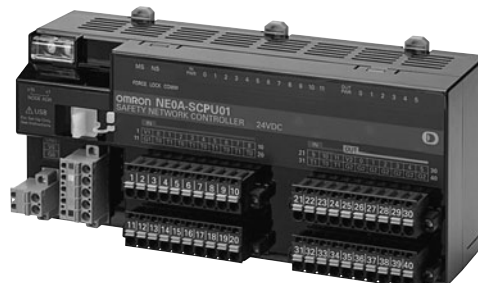
Note: After the DeviceNet™ Communication Unit is installed, dimension D of the inverter increases by 35.1 mm. (Dimension D of the inverter varies depending on the capacity. Refer to the RX-series V1 type USER'S MANUAL (Cat.No.I578))

CIP Safety on DeviceNet System

| | |
|--------------------------------|-----|
| Safety Network Controller..... | 112 |
| NE0A-SCPU01 | |
| Safety Network Controller..... | 117 |
| NE1A-SCPU Series | |
| Safety I/O Terminals..... | 122 |
| DST1 Series | |
| Network Configurator..... | 125 |
| WS02-CFSC1-E | |

Safety Network Controller NE0A-SCPU01

New Lineup for Safety Applications with Up to 12 Inputs



- Circuits for the required safety category are easy to build.
- The safety circuits you create can be registered as templates and reused, for easy standardization.
- TÜV-certified templates is also available.
- The NE0A operating conditions can be monitored from a standard DeviceNet Master.
- Network distribution is possible by combining with an NE1A Safety Controller.

Ordering Information

| Name | I/O points | | | Model | Unit version |
|----------------------------|---------------|--------------|----------------|-------------|--------------|
| | Safety inputs | Test outputs | Safety outputs | | |
| Safety Network Controllers | 12 * | 2 | 6 | NE0A-SCPU01 | Ver. 1.0 |

* When using the NE0A-SCPU01 as a standalone Controller, one input each is required for the feedback input and manual restart.
Note: Network Configurator version 2.1□ or higher must be used when using a NE0A-SCPU01 Safety Network Controller.

Specifications

Certified Standards

| Certification body | Standard |
|--------------------|--|
| TÜV Rheinland | NFPA 79-2007 ISO13849-1:1999 IEC61508 part1-7/12.98-05.00 IEC61131-2:2007 EN ISO13849-1:2006 EN ISO13849-2:2003 EN ISO 13850:2006 (EN418:1992) EN61000-6-4:2007 EN61000-6-2:2005 EN60204-1:2006 ANSI RIA15.06-1999 ANSI B11.19-2003 |
| UL | UL508 UL1604 UL1998 NFPA79 IEC61508 CSA22.2 No.142 CSA22.2 No.213 |

General Specifications

| | | |
|--|--------------------------------------|--|
| DeviceNet Communications power supply voltage | | 11 to 25 VDC (supplied from the communications connector) |
| Internal circuit power supply voltage (V0) *1 | | 20.4 to 26.4 VDC (24 VDC -15%/+10%) |
| I/O power supply voltage (V1, V2) *1 | | |
| Current consumption | Communications power supply | 24 VDC, 15 mA |
| | Internal circuit power supply | 24 VDC, 110 mA |
| | I/O power supply *2 | 24VDC, 80mA(Input) 80mA(Output) |
| Overvoltage category | | II |
| Noise immunity | | Conforms to IEC61131-2. |
| Vibration resistance | | 10 to 57 Hz: 0.35 mm, 57 to 150 Hz: 50 m/s ² |
| Shock resistance | | 150 m/s ² : 11 ms |
| Mounting method | | DIN track mounting (IEC 60715 TH35-7.5/TH35-15) |
| Ambient operating temperature | | -10°C to 55°C |
| Ambient operating humidity | | 10% to 95% (with no condensation) |
| Ambient storage temperature | | -40°C to 70°C |
| Degree of protection | | IP20 |
| Serial interface | | USB version 1.1 |
| Weight | | 440 g max. |

*1. V0-G0: Internal control circuit
V1-G1 (G): For external input device, test output
V2-G2 (G): For external output device

*2. Not including power consumption for external devices.

Safety Input Specifications

| | |
|----------------------|--|
| Input type | Sinking inputs (PNP) |
| ON voltage | 11 VDC min. between each terminal and G1 |
| OFF voltage | 5 VDC min. between each terminal and G1 |
| OFF current | 1 mA max. |
| Input current | 4.5 mA |

Test Output Specifications

| | |
|-----------------------------|--|
| Output type | Sourcing outputs (PNP) |
| Rated output current | 60 mA |
| ON residual voltage | 1.2 V max. between each output terminal and V1 |
| Leakage current | 0.1 mA max. |

Safety Output Specifications

| | |
|-----------------------------|--|
| Output type | Sourcing outputs (PNP) |
| Rated output current | 0.5 A max./output |
| ON residual voltage | 1.2 V max. between each output terminal and V2 |
| Leakage current | 0.1 mA max. |

DeviceNet Communications Specifications

| | | | |
|---|--|------------------------------|---------------------------|
| Communications protocol | Conforms to DeviceNet | | |
| Connection form | Multi-drop system and T-branch system can be combined (for trunk line and branch lines) | | |
| Baud rate | 500/250/125 kbps | | |
| Communications media | Special cable, 5 conductors (2 for communications, 2 for power supply, 1 for shielding) | | |
| Communications distance | Baud rate | Network length (max.) | Branch line length |
| | 500 kbps | 100 m max. (100 m max.) | 6 m max. |
| | 250 kbps | 250 m max. (100 m max.) | |
| | 125 kbps | 500 m max. (100 m max.) | |
| Total branch line length | | | |
| 39 m max. | | | |
| 78 m max. | | | |
| 156 m max. | | | |
| The values in parentheses are for Thin Cable. | | | |
| Communications power supply | 11 to 25 VDC | | |
| Maximum number of nodes | 63 | | |
| Safety I/O communications | Safety Master function • Max. no. of connections: 2 (one each for inputs and outputs) Multi-cast inputs can be used to enable communications with up to 15 Safety Masters. • Connection type: Single-cast, multi-cast | | |
| Standard I/O communications | Standard Slave function • Max. no. of connections: 2 • Connection type: Poll, bit-strobe, COS, cyclic | | |
| Message communications | Max. message length: 502 bytes | | |

Functions

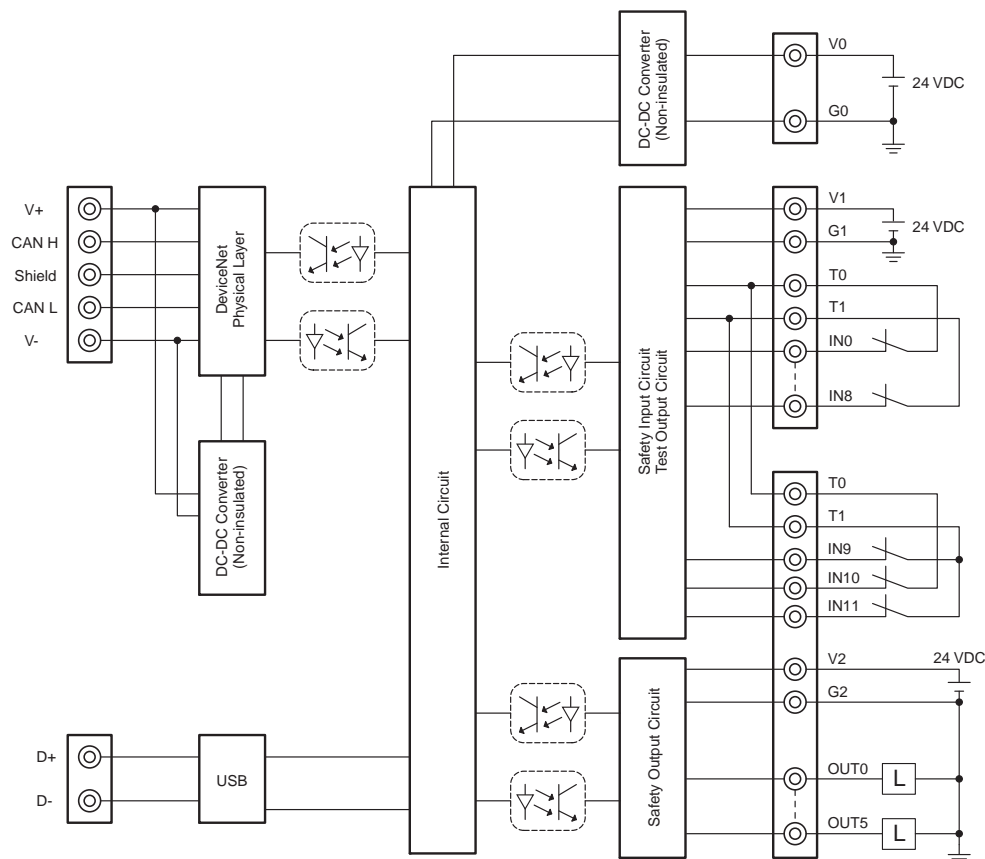
The following function blocks are available for designing safety circuits with the NE0A-SCPU01. These function blocks can be selected and assembled using the interactive wizard format to efficiently design safety applications.

| Classification of function block for safety circuit designs | Application | | | | | | |
|---|--|-------------------------|---|----------------|---|-------------------|-------------------|
| Function blocks for safety input devices and setting input filter times | <p>The following six parts can be selected for use as safety input devices. For Category 3 or 4 compliance, the filter monitoring time between signals can also be adjusted with redundant wiring for the necessary safety devices.</p> <table border="1" data-bbox="472 389 1457 580"> <tr><td>Emergency Stop Switches</td></tr> <tr><td>Safety Door Switches</td></tr> <tr><td>Limit Switches</td></tr> <tr><td>Safety Light Curtains</td></tr> <tr><td>Enabling Switches</td></tr> <tr><td>Mode Selectors</td></tr> </table> | Emergency Stop Switches | Safety Door Switches | Limit Switches | Safety Light Curtains | Enabling Switches | Mode Selectors |
| Emergency Stop Switches | | | | | | | |
| Safety Door Switches | | | | | | | |
| Limit Switches | | | | | | | |
| Safety Light Curtains | | | | | | | |
| Enabling Switches | | | | | | | |
| Mode Selectors | | | | | | | |
| Logic function blocks for input conditions | <p>Select a Safety Light Curtain as the safety input device, and select a muting function when required.</p> <table border="1" data-bbox="472 613 1457 772"> <tr> <td>No setting</td> <td rowspan="5"> <ul style="list-style-type: none"> • For switching maintenance areas with a Mode Selector. • For applications such as a Safety Light Curtain muting function. </td> </tr> <tr><td>OR operation</td></tr> <tr><td>AND/OR operations</td></tr> <tr><td>AND operation</td></tr> <tr><td>OR/AND operations</td></tr> </table> | No setting | <ul style="list-style-type: none"> • For switching maintenance areas with a Mode Selector. • For applications such as a Safety Light Curtain muting function. | OR operation | AND/OR operations | AND operation | OR/AND operations |
| No setting | <ul style="list-style-type: none"> • For switching maintenance areas with a Mode Selector. • For applications such as a Safety Light Curtain muting function. | | | | | | |
| OR operation | | | | | | | |
| AND/OR operations | | | | | | | |
| AND operation | | | | | | | |
| OR/AND operations | | | | | | | |
| Function blocks for resets | <p>Selects manual or auto reset.</p> | | | | | | |
| Logic function blocks for output conditions | <p>For applications such as stopping all outputs for multiple safety devices.</p> <table border="1" data-bbox="472 837 1457 931"> <tr> <td>No setting</td> <td>Uses the ON/OFF status of the safety signal exactly as it is.</td> </tr> <tr> <td>AND operation</td> <td rowspan="2">Selects the interlock conditions for the safety signal.</td> </tr> <tr> <td>OR/AND operations</td> </tr> </table> | No setting | Uses the ON/OFF status of the safety signal exactly as it is. | AND operation | Selects the interlock conditions for the safety signal. | OR/AND operations | |
| No setting | Uses the ON/OFF status of the safety signal exactly as it is. | | | | | | |
| AND operation | Selects the interlock conditions for the safety signal. | | | | | | |
| OR/AND operations | | | | | | | |
| Function blocks for setting the welded contact check | <p>Used to check the safety condition of an output device.</p> <table border="1" data-bbox="472 965 1457 1048"> <tr> <td>No setting</td> <td>No checking of the output device (used for Category 2 or lower).</td> </tr> <tr> <td>EDM</td> <td>Used to check for contact welding in a Relay or Contactor. Also used to change the setting for monitoring time.</td> </tr> </table> | No setting | No checking of the output device (used for Category 2 or lower). | EDM | Used to check for contact welding in a Relay or Contactor. Also used to change the setting for monitoring time. | | |
| No setting | No checking of the output device (used for Category 2 or lower). | | | | | | |
| EDM | Used to check for contact welding in a Relay or Contactor. Also used to change the setting for monitoring time. | | | | | | |
| Function blocks for safety output devices and setting output delay times | <p>For setting an auxiliary output (to output an error condition) and for setting the output delay.</p> | | | | | | |

Note: There is a possibility that safety cannot be maintained when an OR part or an AND/OR part is selected for input logic, or an OR/AND part is selected for output logic. Sufficiently confirm safety prior to use.

Internal Circuit Diagrams

NE0A-SCPU01

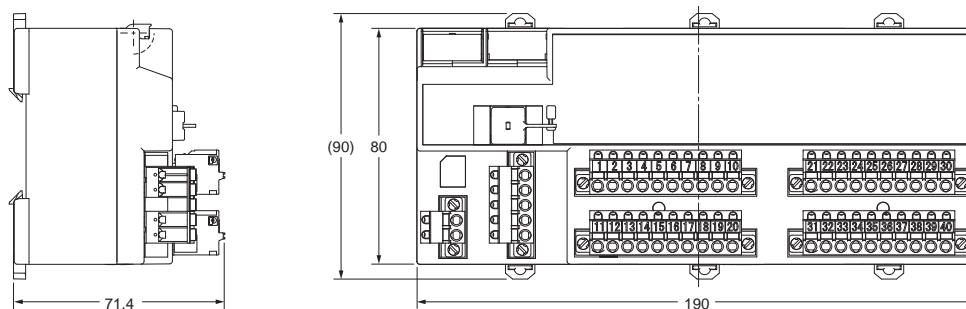


| Terminal No. | Terminal name | Description |
|----------------------|---------------|--|
| -- | V0 | Power supply terminal for internal circuit (24 VDC) |
| -- | G0 | |
| 1 | V1 | Power supply terminal for external input device and test output (24 VDC) |
| 11 | G1 | |
| 24 | V2 | Power supply terminal for external output device (24 VDC) |
| 34 | G2 | |
| 2 to 10 | IN0 to IN8 | Safety input terminal |
| 21 to 23 | IN9 to IN11 | Terminals IN10 and IN11 are used only for connecting a reset switch or EDM feedback. |
| 12 to 20 31 to 33 | T0 to T1 | Test output terminal Connected to IN0 to IN11 safety inputs. T0 and T1 output test pulses with different patterns. The T0 terminals are internally connected and the T1 terminals are internally connected. |
| 25 to 30 | OUT0 to OUT5 | Safety output terminals |
| 35 to 40 | G2 | Common terminal Terminals 34 to 40 are internally connected. |

Dimensions

(Unit: mm)

NE0A-SCPU01



Safety Precautions

- Be sure to read the following operation manual for precautions and other details required for correct use of the Safety Network Controller. *CIP Safety on DeviceNet Safety Network Controller NE0A Series Operation Manual (Cat. No. Z916)*

Safety Network Controller

NE1A-SCPU Series



Achieve Safety Control through Programming.

- Compact Safety Controller.
- The NE1A-SCPU01-V1 provides 16 built-in safety inputs and 8 built-in safety outputs.
The NE1A-SCPU02 provides 40 built-in safety inputs and 8 built-in safety outputs.
- Reduced wiring with safety networks. Connect up to 32 Safety Terminals.
- Monitor the safety system from Standard Controllers across the network.
- ISO13849-1 (PLe) and IEC 61508 SIL3 certification.



Ordering Information

| Name | I/O points | | | Model | Unit version |
|----------------------------|---------------|--------------|----------------|----------------|--------------|
| | Safety inputs | Test outputs | Safety outputs | | |
| Safety Network Controllers | 16 | 4 | 8 | NE1A-SCPU01-V1 | Ver. 2.0 |
| | 40 | 8 | 8 | NE1A-SCPU02 | Ver. 2.0 |

Note: The standard NE1A Controllers are equipped with spring-cage terminal blocks, but other screw terminal blocks are available if desired, e.g., to replace previous terminals. Refer to *Accessories*.

Specifications

Certified Standards

| Certification body | Standard |
|--------------------|---|
| TÜV Rheinland | NFPA 79-2012, EN ISO13849-1: 2008, IEC61508 part 1-7: 2010, IEC61131-2: 2007, EN ISO13849-2: 2012, EN61000-6-4: 2007, EN61000-6-2: 2005, EN60204-1: 2006, EN ISO13850: 2006(EN418: 1992), ANSI RIA15.06-1999 ANSI B11.19-2010 |
| UL | UL508, ANSI/ISA 12.12.01, UL1998, NFPA79, IEC61508 CSA22.2 No.142, CSA22.2 No.213 |

General Specifications

| Item | Model | NE1A-SCPU01-V1 | NE1A-SCPU02 |
|---|-------------------------------|--|--|
| DeviceNet Communications power supply voltage | | 11 to 25 VDC (supplied from the communications connector) | |
| Internal circuit power supply voltage (V0) *1 | | 20.4 to 26.4 VDC | |
| I/O power supply voltage (V1, V2) *1 | | (24 VDC -15%/+10%) | |
| Current consumption | Communications power supply | 24 VDC, 15 mA | |
| | Internal circuit power supply | 24 VDC, 230 mA | 24 VDC, 280 mA |
| | I/O power supply *2 | 24 VDC, 40 mA (Input) 120 mA (Output) | 24 VDC, 80 mA (Input) 150 mA (Output) |
| Overvoltage category | | II | |
| Noise immunity | | Conforms to IEC61131-2. | |
| Vibration resistance | | 10 to 57 Hz: 0.35 mm, 57 to 150 Hz: 50 m/s ² | |
| Shock resistance | | 150 m/s ² ; 11ms | |
| Mounting method | | DIN Track (IEC 60715 TH35-7.5/TH35-15) | |
| Ambient operating temperature | | -10°C to 55°C | |
| Ambient operating humidity | | 10% to 95% (with no condensation) | |
| Ambient storage temperature | | -40°C to 70°C | |
| Degree of protection | | IP20 | |
| Serial interface | | USB Ver1.1 | |
| Weight | | 460 g max. | 690 g max. |

- *1. V0-G0: Internal control circuit
V1-G1 (G): For external input device, test output
V2-G2 (G): For external output device
The two ground terminals on the NE1A-SCPU02 are internally connected.
- *2. Not including power consumption for external devices.

Safety Input Specifications

| | |
|---------------|--|
| Input type | Sinking inputs (PNP) |
| ON voltage | 11 VDC min. between each terminal and ground |
| OFF voltage | 5 VDC min. between each terminal and ground |
| OFF current | 1 mA max. |
| Input current | 4.5 mA |

Safety Output Specifications

| | |
|----------------------|--|
| Output type | Sourcing outputs (PNP) |
| Rated output current | 0.5 A max./output |
| ON residual voltage | 1.2 V max. between each output terminal and V2 |
| Leakage current | 0.1 mA max. |

Test Output Specifications

| | |
|----------------------|--|
| Output type | Sourcing outputs (PNP) |
| Rated output current | 0.7 A max./output * |
| ON residual voltage | 1.2 V max. between each output terminal and V1 |
| Leakage current | 0.1 mA max. |

- * The maximum current for simultaneously ON outputs is 1.4 A.
(T0 to T3: NE1A-SCPU01-V1, T0 to T7: NE1A-SCPU02)
A 15 to 400-mA, 24-VDC external indicator can be connected to T3 and T7.

DeviceNet Communications Specifications

| | | | | |
|--|---|------------------------------|---------------------------|---------------------------------|
| Communications protocol | Conforms to DeviceNet | | | |
| Connection form | Multi-drop system and T-branch system can be combined (for trunk line and branch lines) | | | |
| Baud rate | 500/250/125 kbps | | | |
| Communications media | Special 5-wire cable (2 signal lines, 2 power supply lines, 1 shield line) | | | |
| Communications distance | Baud rate | Network length (max.) | Branch line length | Total branch line length |
| | 500 kbps | 100 m max. (100 m max.) | 6 m max. | 39 m max. |
| | 250 kbps | 250 m max. (100 m max.) | | 78 m max. |
| | 125 kbps | 500 m max. (100 m max.) | | 156 m max. |
| The values in parentheses are for Thin Cable. | | | | |
| Communications power supply | 11 to 25 VDC | | | |
| Maximum number of nodes | 63 | | | |
| Safety I/O communications (Pre-Ver. 1.0) | Safety Master function | | | |
| | <ul style="list-style-type: none"> • Max. no. of connections: 16 • Max. data size: Input 16 bytes or output 16 bytes (per connection) • Connection type: Single-cast, multi-cast | | | |
| Safety I/O communications (unit version 1.0 or later) | Safety Slave function | | | |
| | <ul style="list-style-type: none"> • Max. no. of connections: 4 • Max. data size: Input 16 bytes or output 16 bytes (per connection) • Connection type: Single-cast, multi-cast | | | |
| Standard I/O communications (all unit versions) | Safety Master function | | | |
| | <ul style="list-style-type: none"> • Max. no. of connections: 32 • Max. data size: Input 16 bytes or output 16 bytes (per connection) • Connection type: Single-cast, multi-cast | | | |
| Standard I/O communications (all unit versions) | Safety Slave function | | | |
| | <ul style="list-style-type: none"> • Max. no. of connections: 4 • Max. data size: Input 16 bytes or output 16 bytes (per connection) • Connection type: Single-cast, multi-cast | | | |
| Message communications | Max. message length: 552 bytes | | | |

Functions

Function Blocks

NE1A-SCPU-series Controller support the following logic functions and function blocks. Support depends on the unit version.

● Logic Functions

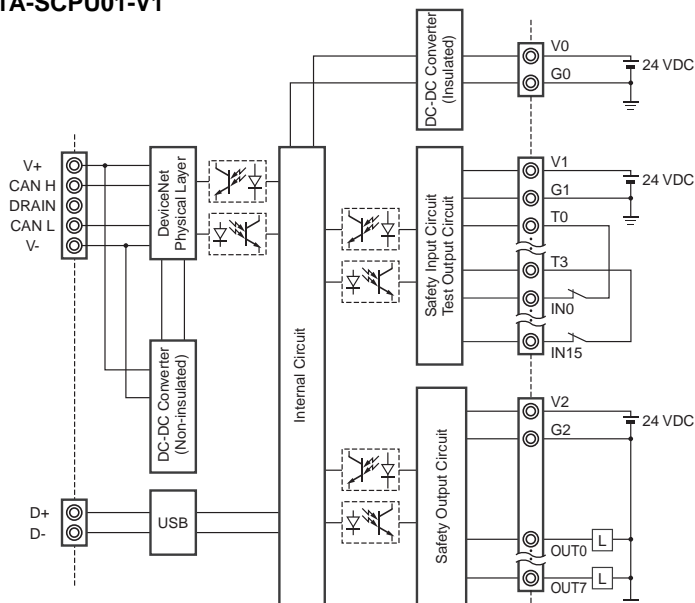
| Name | Function list entry | Supporting unit versions |
|---------------|---------------------|--------------------------|
| NOT | NOT | All |
| AND | AND | |
| OR | OR | |
| Exclusive OR | EXOR | |
| Exclusive NOR | EXNOR | |
| RS Flip-flop | RS-FF | 1.0 or later |
| Comparator | Comparator | |

● Function Blocks

| Name | Function list entry | Supporting unit versions |
|-----------------------------|--------------------------|--------------------------|
| Reset | Reset | All |
| Restart | Restart | |
| Emergency Stop Monitoring | E-STOP | |
| Light Curtain Monitoring | Light Curtain Monitoring | |
| Safety Gate Monitoring | Safety Gate Monitoring | |
| Two-hand Controller | Two Hand Controller | |
| Off-Delay Timer | Off-Delay Timer | |
| On-Delay Timer | On-Delay Timer | |
| User Mode Switch Monitoring | User Mode Switch | |
| External Device Monitoring | EDM | |
| Routing | Routing | |
| Muting | Muting | |
| Enable Switch Monitoring | Enable Switch | |
| Pulse Generator | Pulse Generator | |
| Counter | Counter | |
| Multiconnector | Multi Connector | |

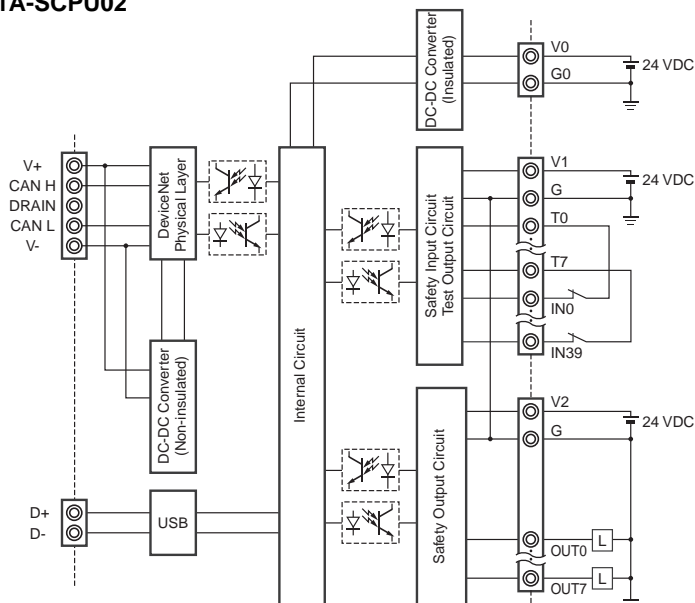
Internal Circuit Diagrams

NE1A-SCPU01-V1



| Terminal name | Description |
|---------------|--|
| V0 | Power supply terminal for internal circuit The two V0 terminals are internally connected. |
| G0 | Power supply terminal for internal circuit The two G0 terminals are internally connected. |
| V1 | Power supply terminal for external input device and test output |
| G1 | Power supply terminal for external input device and test output |
| V2 | Power supply terminal for external output device |
| G2 | Power supply terminal for external output device |
| IN0 to IN15 | Safety input terminal |
| T0 to T3 | Test output terminal Connected to IN0 to IN15 safety inputs. Each test output terminal outputs a different test pulse pattern. Terminal T3 also supports a current monitoring function for the output signal. Example: Muting lamp |
| OUT0 to OUT7 | Safety output terminals |

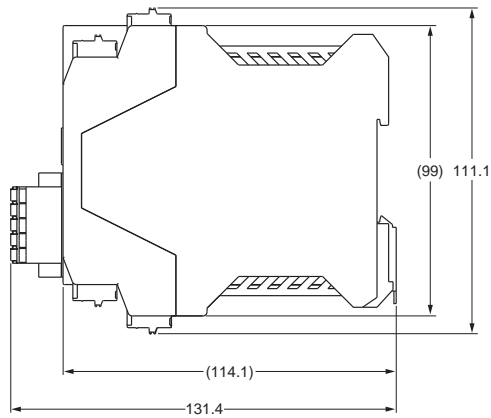
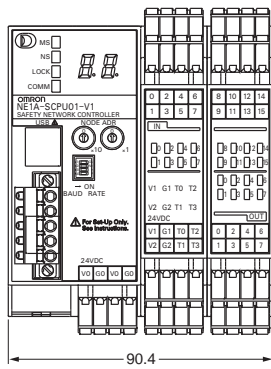
NE1A-SCPU02



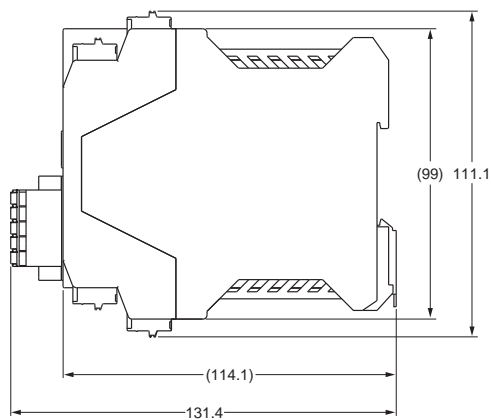
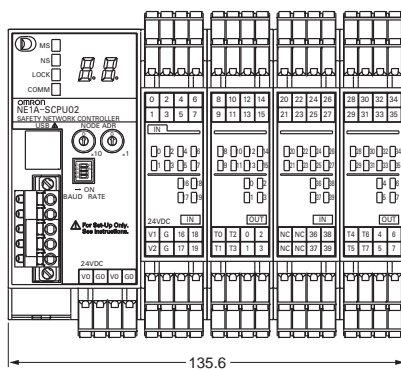
| Terminal name | Description |
|---------------|---|
| V0 | Power supply terminal for internal circuit The two V0 terminals are internally connected. |
| G0 | Power supply terminal for internal circuit The two G0 terminals are internally connected. |
| V1 | Power supply terminal for external input device and test output |
| G | Power supply terminal for external input device and test output |
| V2 | Power supply terminal for external output device |
| G | Power supply terminal for external output device |
| IN0 to IN39 | Safety input terminal |
| T0 to T3 | Connected to IN0 to IN19 safety inputs. Each test output terminal outputs a different test pulse pattern. Terminal T3 also supports a current monitoring function for the output signal. Example: Muting lamp |
| T4 to T7 | Test output terminal Connected to IN20 to IN39 safety inputs. Each test output terminal outputs a different test pulse pattern. Terminal T7 also supports a current monitoring function for the output signal. Example: Muting lamp |
| OUT0 to OUT7 | Safety output terminals |

Dimensions

NE1A-SCPU01-V1



NE1A-SCPU02



Safety Precautions

- Be sure to read the following operation manual for precautions and other details required for correct use of the Safety Network Controller. *CIP Safety on DeviceNet Safety Network Controller Operation Manual (Cat. No. Z906)*

Functions Supported According to Unit Version

○ : Supported, ---: Not supported

| Function | | Model | NE1A-SCPU01 | NE1A-SCPU01-V1 | NE1A-SCPU02 |
|---|--|--------------|--------------|-----------------------------------|-----------------------------------|
| | | Unit version | Pre-Ver. 1.0 | Unit version 1.0/2.0 | Unit version 1.0/2.0 |
| Logic processing functions | Maximum program size (total number of function blocks) | | 128 | 254 | 254 |
| | New Function Blocks <ul style="list-style-type: none"> • RS flip-flop • Multiconnector • Muting • Enable Switch Monitoring • Pulse Generator • Counter • Comparator | | --- | ○ | ○ |
| | Selecting a rising edge as the reset condition for Reset and Restart function blocks | | --- | ○ | ○ |
| | Using local I/O status in logic programming | | --- | ○ | ○ |
| | Using overall Unit status in logic programming | | --- | ○ | ○ |
| | Program execution wait functions | | --- | ○ (Unit version 2.0 or higher) | ○ (Unit version 2.0 or higher) |
| I/O control functions | Monitoring contact operation counter | | --- | ○ | ○ |
| | Mounting total ON time monitor | | --- | ○ | ○ |
| DeviceNet communications functions | Number of safety I/O connections for Safety Master | | 16 | 32 | 32 |
| | Selecting operating mode for safety I/O communications when communications errors occur | | --- | ○ | ○ |
| | Attaching local output data to send data during slave operation | | --- | ○ | ○ |
| | Attaching local I/O monitor data to send data during slave operation | | --- | ○ | ○ |
| | Functions to communicate with devices existing on other networks (Off-Link connection) | | --- | ○ (Unit version 2.0 or higher) | ○ (Unit version 2.0 or higher) |
| System startup and error recovery functions | Storing log of nonfatal errors in nonvolatile memory | | --- | ○ | ○ |
| | Adding function block errors to error log | | --- | ○ | ○ |
| EtherNet/IP communications functions | I/O communications | | --- | --- | --- |
| | Message communications | | --- | --- | --- |
| | Read/write of target I/O area | | --- | --- | --- |
| Routing between DeviceNet and EtherNet/IP | I/O routing | | --- | --- | --- |
| | Message routing | | --- | --- | --- |
| UDP/IP message communications functions | Message communications by UDP/IP | | --- | --- | --- |

● Unit Versions and Network Configurator Versions

Network Configurator version 2.0□ or higher must be used when using a NE1A-SCPU01-V1 or NE1A-SCPU02 Safety Logic Controller with unit version 2.0.

○ : Supported, ---: Not supported

| Model | Network Configurator | | | | | |
|------------------------------------|----------------------|-----------|-----------|----------------|----------|----------|
| | Ver. 1.3□ | Ver. 1.5□ | Ver. 1.6□ | Ver. 2.0□/2.1□ | Ver.2.2□ | Ver.3.3□ |
| NE1A-SCPU01 Pre-Ver. 1.0 | ○ | ○ | ○ | ○ | ○ | ○ |
| NE1A-SCPU01-V1 Unit version 1.0 | × | × | ○ | ○ | ○ | ○ |
| NE1A-SCPU02 Unit version 1.0 | × | × | ○ | ○ | ○ | ○ |
| NE1A-SCPU01-V1 Unit version 2.0 | × | × | ○(*1) | ○ | ○ | ○ |
| NE1A-SCPU02 Unit version 2.0 | × | × | ○(*1) | ○ | ○ | ○ |

*1. It can be used as unit version 1.0.

Note 1: Users who use Network Configurator version 1.5□ or earlier can upgrade to version 1.6□ at no charge.

Note 2: When using Network Configurator version 1.6□, there are no operational differences in the NE1A-SCPU01-V1 and NE1A-SCPU02.

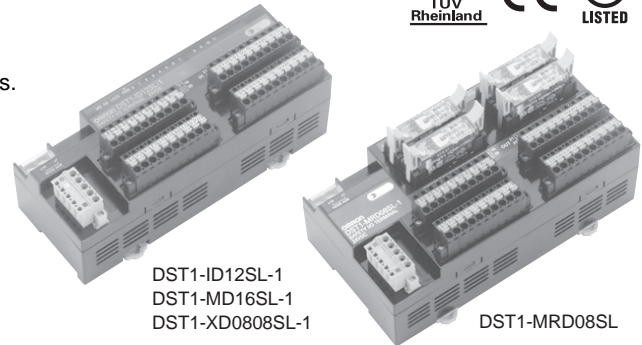
● Version Upgrade

If you have purchased Ver.1.□□, you will need to buy the upgrade CD-ROM. (Refer to page 127.)

Safety I/O Terminals DST1 Series

Distributed Safety Terminals That Reduce Wiring.

- Four models are available to match the I/O type and number of points.
- Monitor operation from the DeviceNet Master using the DeviceNet Slave functionality.
- Support for logic processing by the DST1-XD0808SL-1.
- IEC 61508 SIL3 and EN 954-1/ISO13849-1 CAT4 certification.



Ordering Information

| Name | I/O points | Model |
|----------------------|--|--------------------------|
| Safety I/O Terminals | Safety inputs: 12, test outputs: 4 | DST1-ID12SL-1 |
| | Safety inputs: 8, safety outputs (semiconductor): 8, test outputs: 4 | DST1-MD16SL-1 |
| | Safety inputs: 8, safety outputs (semiconductor): 8, test outputs: 4 | DST1-XD0808SL-1 * |
| | Safety inputs: 4, safety outputs (relay): 4, test outputs: 4 | DST1-MRD08SL-1 |

Note: The standard DS1T Safety I/O Terminals are equipped with spring-cage terminal blocks, but screw terminal blocks are available if desired, e.g., to replace previous terminals. Refer to CIP Safety on DeviceNet Accessories.

* Use the Safety Network Configurator Ver. 2.0 or later to make DST1-XD0808SL-1 settings.

Specifications

Certified Standards

| Certification body | Standard |
|--------------------|---|
| TÜV Rheinland | NFPA 79-2007, IEC61508 part1-7/12.98-05.00, IEC61131-2:2007, EN ISO13849-1:2003, EN954-1:1996 (ISO13849-1:1999), EN61000-6-4:2007, EN61000-6-2:2005, EN60204-1:2006, EN419:1992, ANSI RIA15.06-1999, ANSI B11.19-2003 |
| UL | UL508, UL1604 (excluding the DST1-MRD08SL-1), UL1998, NFPA79, IEC61508, CSA22.2 No.142, CSA22.2 No.213 (excluding DST1-MRD08SL-1) |

General Specifications

| Item | Model | DST1-ID12SL-1 | DST1-MD16SL-1 | DST1-MRD08SL-1 | DST1-XD0808SL-1 |
|---|-----------------------------|--|--------------------------------------|--------------------------------------|--------------------------------------|
| DeviceNet 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%) | | | |
| Current consumption | Communications power supply | 24 VDC, 100 mA | 24 VDC, 110 mA | 24 VDC, 100 mA | 24 VDC, 110 mA |
| | I/O power supply * | 24 VDC 70 mA | 24 VDC 50 mA (Input) 130 mA (Output) | 24 VDC 80 mA (Input) 130 mA (Output) | 24 VDC 50 mA (Input) 130 mA (Output) |
| Overvoltage category | | II | | | |
| Noise immunity | | Conforms to IEC61131-2 | | | |
| Vibration resistance | | 10 to 57 Hz: 0.35-mm single amplitude, 57 to 150 Hz: 50 m/s ² | | | |
| Shock resistance | | 150m/s ² 11ms | 100m/s ² 11ms | 150m/s ² 11ms | |
| Mounting method | | DIN track mounting (DIN 35 mm) | | | |
| Ambient operating temperature | | -10°C to 55°C | | | |
| Ambient operating humidity | | 10% to 95% (with no condensation) | 10% to 85% (with no condensation) | 10% to 95% (with no condensation) | |
| Ambient storage temperature | | -40°C to 70°C | | | |
| Degree of protection | | IP20 | | | |
| Weight | | 420 g | 600 g | 420 g | |

* Not including power consumption for external devices.

Safety Input Specifications

(Common with the DST1 Series)

| | |
|---------------|----------------------|
| Input type | Sinking inputs (PNP) |
| ON voltage | 11 VDC min. |
| OFF voltage | 5 VDC max. |
| OFF current | 1 mA max. |
| Input current | 6 mA |

Safety Output Specifications (Semiconductor output)

(Common with the DST1-MD16SL-1/XD0808SL-1)

| | |
|----------------------|------------------------|
| Output type | Sourcing outputs (PNP) |
| Rated output current | 0.5 A max./output |
| ON residual voltage | 1.2 V max. |
| Leakage current | 0.1 mA max. |

Test Output Specifications

(Common with the DST1 Series)

| | |
|----------------------|------------------------|
| Output type | Sourcing outputs (PNP) |
| Rated output current | 0.7 A max./output |
| ON residual voltage | 1.2 V max. |
| Leakage current | 0.1 mA max. |

Safety Output Specifications (Relay Output)

(DST1-MRD08SL-1)

| | | |
|--|-------------------------------|---|
| Applicable relays | G7SA-2A2B, EN50205 Class A | |
| Failure rate P level * (Reference value) | 5 VDC, 1 mA | |
| Rated load (resistive) | 2 A at 240 VAC, 2 A at 30 VDC | |
| Durability | Mechanical | 5,000,000 operations min. (at 7,200 operations/h) |
| | Electrical | 100,000 operations min. (at 1,800 operations/h with a resistive load) |

* This value is equivalent to 300 operations/minute.

CIP Safety on DeviceNet Communications

| | |
|-----------------------------|---|
| Safety Slave communications | Max. 4 connections (Max. 2 connections for the DST1-XD0808SL-1) |
|-----------------------------|---|

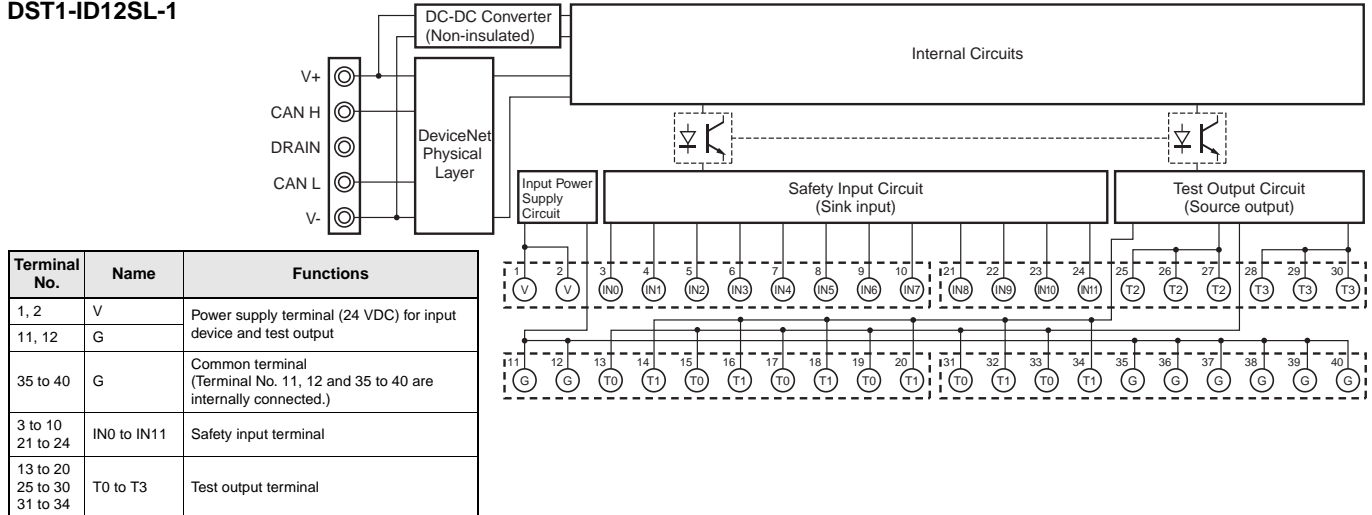
DeviceNet Slave Communications

(Common with the DST1 Series)

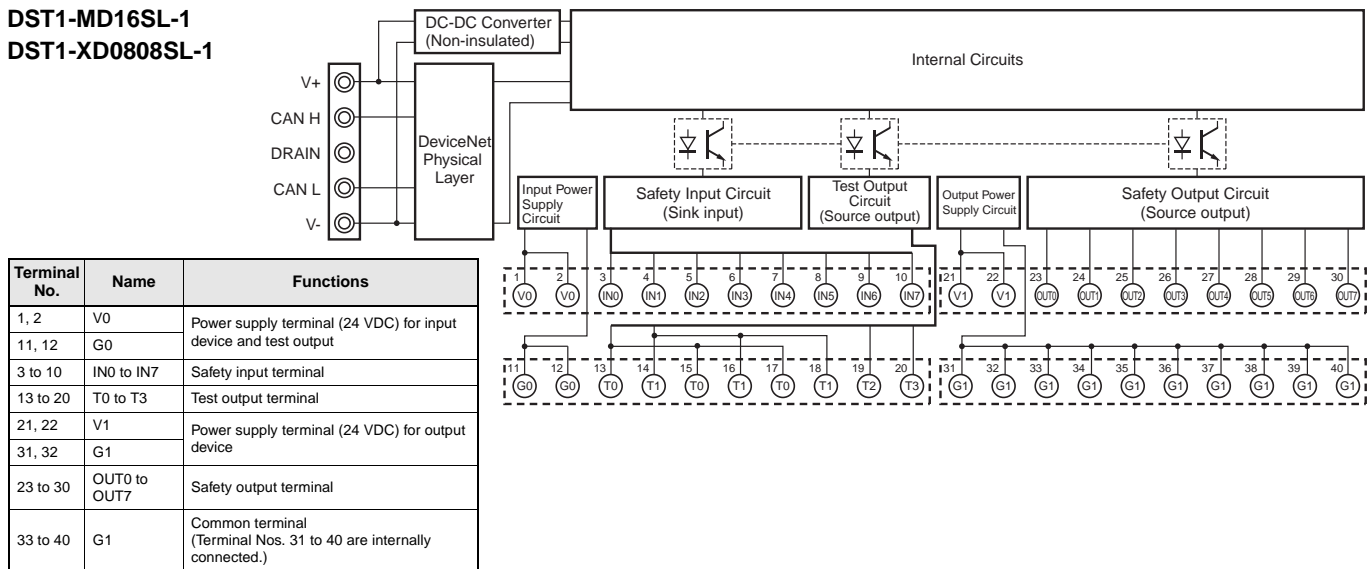
| | |
|-------------------------------|--------------------|
| Standard Slave communications | Max. 2 connections |
|-------------------------------|--------------------|

Internal Circuit Diagrams

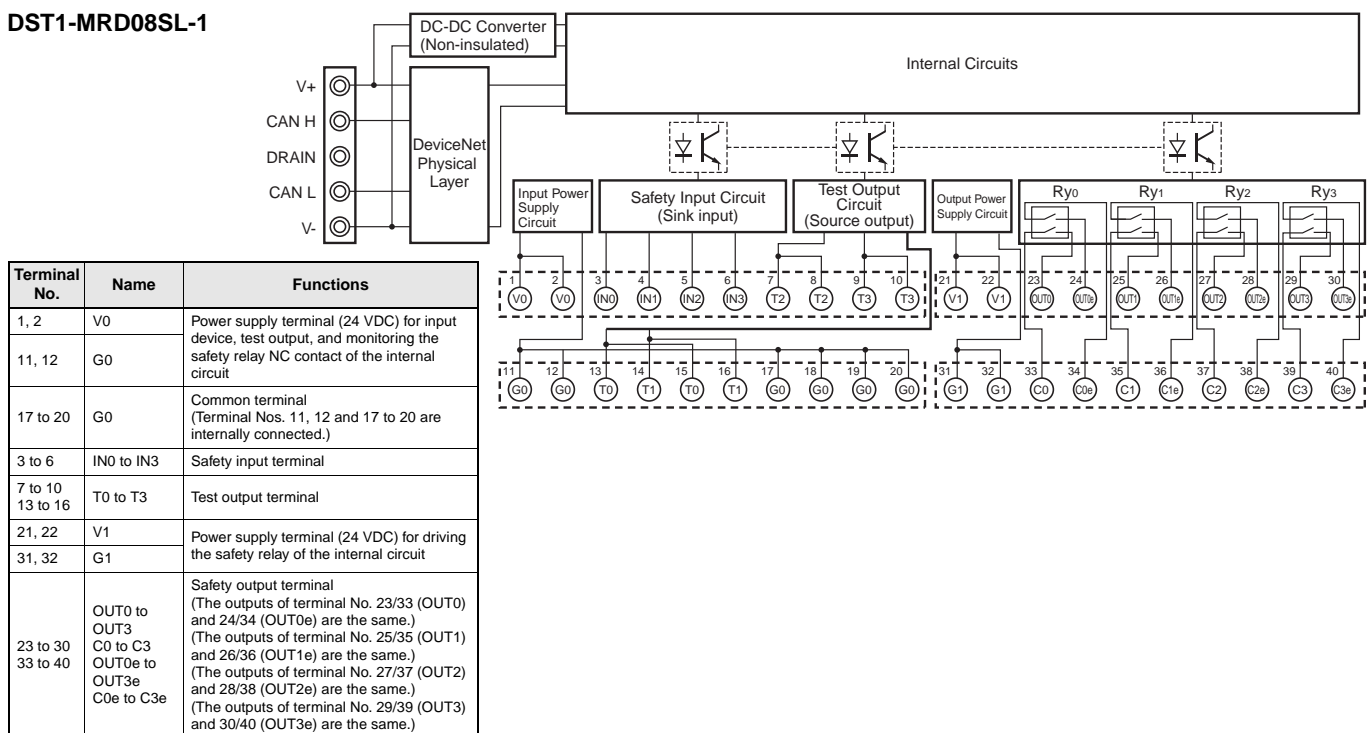
DST1-ID12SL-1



DST1-MD16SL-1 DST1-XD0808SL-1

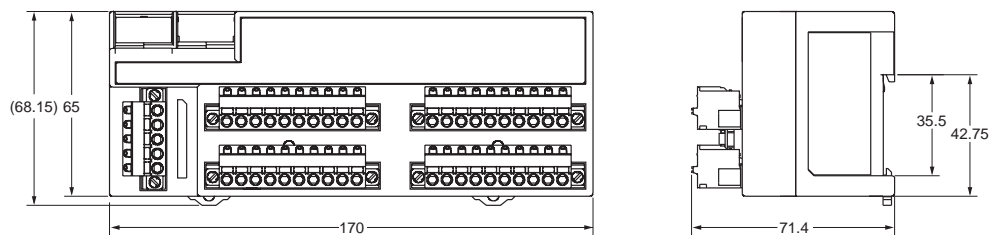


DST1-MRD08SL-1

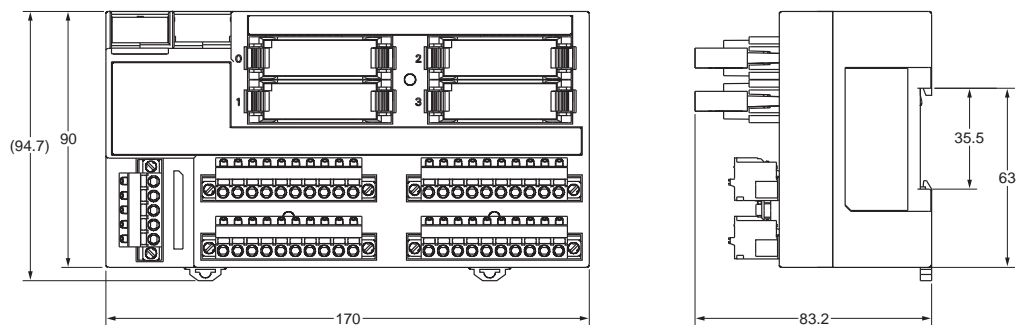


Dimensions

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



DST1-MRD08SL-1



Safety Precautions

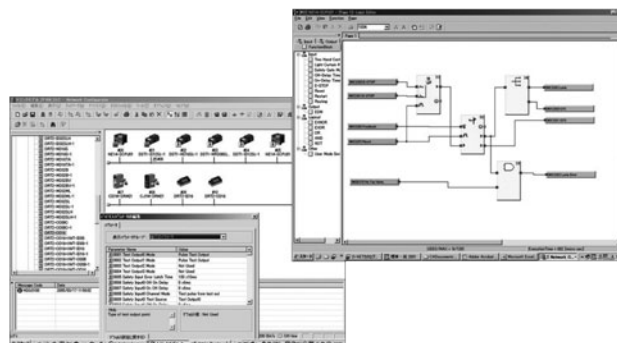
- Be sure to read the following operation manual for precautions and other details required for correct use of the Safety Network Controller. *CIP Safety on DeviceNet Safety I/O Terminals Operation Manual (Cat. No. Z904)*

Network Configurator

WS02-CFSC1-E

Programming Software for Creating Safety Circuits.

- Performs settings for the Safety Network Controllers and Safety I/O Terminals.
- Provides safety circuit programming functions.
- Provides monitoring functions for safety circuits.
- Includes DeviceNet Configurator functions.

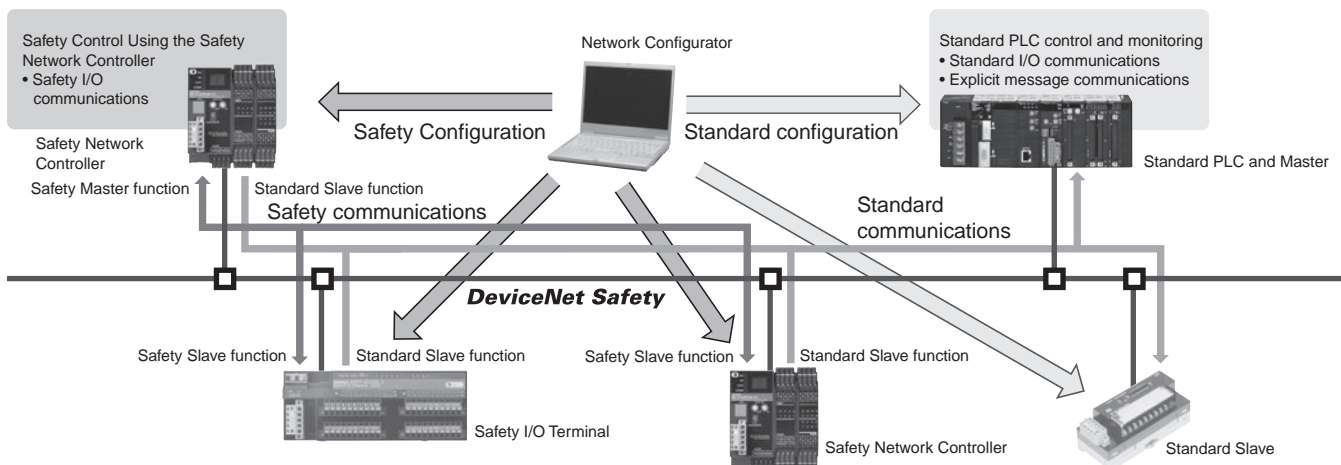


Ordering Information

| Name | Components | Applicable computer | Applicable OS * | Model |
|----------------------|---------------------------------------|-------------------------|--|--------------------------|
| Network Configurator | Installation disc (CD-ROM: 1 license) | IBM PC/AT or compatible | Windows XP Service Pack 3 (32-bit edition) Windows Vista Service Pack 2 (32-bit edition, 64-bit edition) Windows 7 (32-bit edition, 64-bit edition) Windows 8 (32-bit edition, 64-bit edition) Windows 8.1 (32-bit edition, 64-bit edition) Windows 10 (32-bit edition, 64-bit edition) | WS02-CFSC1-EV3 |
| | Upgrade disc (CD-ROM: 1 license) | | | WS02-CFSC1-EV3-UP |

Note: Consult your OMRON representative for the license not listed above.
* The applicable OS depends on the version. Refer to general specifications for details.

System Configuration



General Specifications

| Item | Overview |
|-----------------------------------|---|
| OS Japanese or English version | <ul style="list-style-type: none"> ■ Ver. 2.2□ or earlier Windows 2000 Professional (Service Pack 4 or later) Windows XP (Service Pack 2 or later, except for 64-bit version) Windows Vista (Service Pack 1 or later, except for 64-bit version) ■ Ver. 3.30 or later Windows XP (Service Pack 3 or later, except for 64-bit version) Windows Vista (Service Pack 2 or later) Windows 7 ■ Ver. 3.4 or later Windows XP Service Pack 3 (32-bit edition) Windows Vista Service Pack 2 (32-bit edition, 64-bit edition) Windows 7 (32-bit edition, 64-bit edition) Windows 8 (32-bit edition, 64-bit edition) Windows 8.1 (32-bit edition, 64-bit edition) Windows 10 (32-bit edition, 64-bit edition) Note: Administrator rights are required for installation. |
| Main unit | Personal computer with processor recommended by Microsoft |
| Memory | Memory capacity recommended by Microsoft |
| Hard disk drive | At least 200 MB of hard disk space |
| Monitor | SVGA (800 x 600 resolution) or higher with 256 colors minimum |
| Disk device | CD-ROM drive |
| Mouse | Windows-supported mouse or other pointing devices |
| Communications port (Note) | One of the following communications port is required: <ul style="list-style-type: none"> • USB port: When using a USB port (USB 1.1) of NE1A-SCPU series or NE0A series to connect online • Ethernet port: When using Ethernet to connect online • DeviceNet interface card (3G8F7-DRM21 or 3G8E2-DRM21-V1): When using DeviceNet to connect online |

- Note 1:** PC cannot be put into a standby state with the NE1A series connected via USB cable.
Note 2: DeviceNet interface card does not conform to 64-bit operating system.
Note 3: One or more USB port is required on a communications port of the maintenance tool.
Note 4: Windows is a registered trademark of Microsoft.

Safety Precautions

- Be sure to read the following operation manual for precautions and other details required for correct use of the Safety Network Controller.

CIP Safety on DeviceNet Safety Network Configurator Operation Manual (Cat. No. Z905)

Unit Versions and Network Configurator Versions

Network Configurator version 2.0□ or higher must be used when using a NE1A-SCPU01-V1 or NE1A-SCPU02 Safety Logic Controller with unit version 2.0.
 The following table shows the relationship between unit versions and Network Configurator versions.

○ : Applicable, X: Not applicable

| Model | Network Configurator | | | | | |
|------------------------------------|----------------------|-----------|-----------|----------------|----------|----------|
| | Ver. 1.3□ | Ver. 1.5□ | Ver. 1.6□ | Ver. 2.0□/2.1□ | Ver.2.2□ | Ver.3.3□ |
| NE1A-SCPU01 Pre-Ver. 1.0 | ○ | ○ | ○ | ○ | ○ | ○ |
| NE1A-SCPU01-V1 Unit version 1.0 | X | X | ○ | ○ | ○ | ○ |
| NE1A-SCPU02 Unit version 1.0 | X | X | ○ | ○ | ○ | ○ |
| NE1A-SCPU01-V1 Unit version 2.0 | X | X | ○ (*1) | ○ | ○ | ○ |
| NE1A-SCPU02 Unit version 2.0 | X | X | ○ (*1) | ○ | ○ | ○ |

*1. It can be used as unit version 1.0.

Note 1: Users who use Network Configurator version 1.5□ or earlier can upgrade to version 1.6□ at no charge.

Note 2: When using Network Configurator version 1.6□, there are no operational differences in the NE1A-SCPU01-V1 and NE1A-SCPU02 Safety Logic Controllers that derive from the unit version.

Configurator/Software

| | |
|--|-----|
| DeviceNet Configurator Software Version 2.□ | 128 |
| WS02-CFDC1 | |
| DeviceNet Configurator PC Card (Software Included) | 128 |
| 3G8E2-DRM21-V1 | |
| DeviceNet Analyzer | 130 |
| WS02-ALDC1 | |
| NX-Server | 131 |
| WS02-NX□C1 | |
| Device Inspector | 132 |
| WS02-DIPC1 | |

DeviceNet Configurator Software Version 2.□

WS02-CFDC1

DeviceNet Configurator PC Card (Software Included)

3G8E2-DRM21-V1

Easily Build and Maintain Multi-vendor DeviceNet Networks.

- Easily build networks using graphical screen operations.
- Make connections from a DeviceNet Card for personal computers or from a serial port.
- Monitor devices while connected online.
- Build maintenance systems with Smart Slaves.



Ordering Information

| Name | Applicable OS | Model |
|-----------------------------------|--|-----------------|
| DeviceNet Configurator Software | Windows 2000 (Service Pack2 or higher)/XP/Vista/7 (32bit) *1 | WS02-CFDC1-E |
| DeviceNet Configurator PC Card *2 | Windows 2000 (Service Pack2 or higher)/XP | 3G8E2-DRM21-EV1 |

*1. To use the software on Windows Vista or Windows 7, download the version upgrade program from the following OMRON website and apply it: www.fa.omron.co.jp/
 *2. The DeviceNet Configurator Software is included with the 3G8E2-DRM21-V1.

Specifications

| | |
|--|--|
| Basic Functions | Virtual network management, device settings (I/O allocations, connection settings), device monitoring, device (EDS file) management, and online connections to DeviceNet devices |
| Created Files | Configurator network configuration files (*.npf) Configurator device parameter files (*.pvf) |
| Files created by exporting data | I/O comments: CSV-format files (*.csv) NetXServer DDE settings file (*.nxd) NetXServer ONC settings files (*.ini) ONC DRM Unit settings files (*.ini) |

System Requirements

| | |
|------------|--|
| CPU | Processor recommended by Microsoft. |
| OS | Windows 2000 (ServicePack2 or higher)/XP/Vista/7 (32bit) * |

* To use the software on Windows Vista or Windows 7, download the version upgrade program from the following OMRON website and apply it: www.fa.omron.co.jp/

Hardware for Network Connection

Either of the following software applications is required to connect online to DeviceNet devices.

OMRON DeviceNet Board

- Special PCI Board: 3G8F7-DRM21
- Special PC Card: 3G8E2-DRM21-V1

Molex DeviceNet Network Interface Cards

- USB Interface Module Part Number: 1120760001 (Old Part Number: SST-DN4-USB)

OMRON CS/CJ-series PLC equipped with DeviceNet Unit

- Peripheral port *1
- Serial communications port or Serial Communications Unit *1
- Ethernet Unit *2

*1: An RS-232C COM port is required on the computer.
 *2: An Ethernet port is required on the computer.

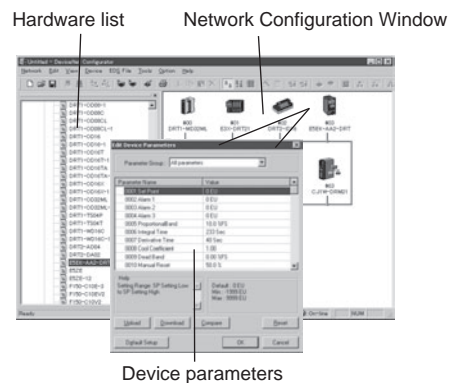
Building and Setting Networks

Easy to Build Networks Using Graphical Screen Operations

You can build a network and make device settings on a computer by dragging and dropping devices selected from the hardware list for virtual networks (equivalent to network configuration files) in the Configurator. Also, configurations can be downloaded to devices online and saved in files.

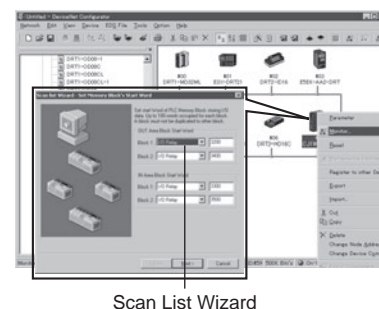
● Setting Device Parameters

You can configure a network and edit device parameters by dragging and dropping device files in the virtual network in the Configurator when it is offline. This improves design efficiency.



● Creating a Scan List with the Wizard (Conversational Settings)

You can use the wizard to easily allocate I/O and register Slaves to the Master to create a scan list. And, you can easily check allocations to registered Slaves.



Supported OS

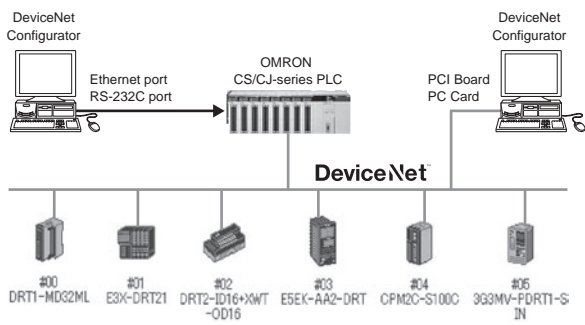
| Name | | OS | |
|---|-----------|-----------|-------------------|
| | | 2000/XP | Vista/7 |
| DeviceNet Configurator Software | | Supported | Supported |
| OMRON DeviceNet Board | PCI Board | Supported | Supported (32bit) |
| | PC Card | Supported | Not Supported |
| Molex DeviceNet Network Interface Cards | | Supported | Supported (32bit) |
| USB Interface Module | | Supported | Supported (32bit) |

Online Connections

Connection from a DeviceNet Board for PC or Serial Port

Connections can be made online using a DeviceNet Board, DeviceNet Card, or OMRON CS/CJ-series PLC from the computer.

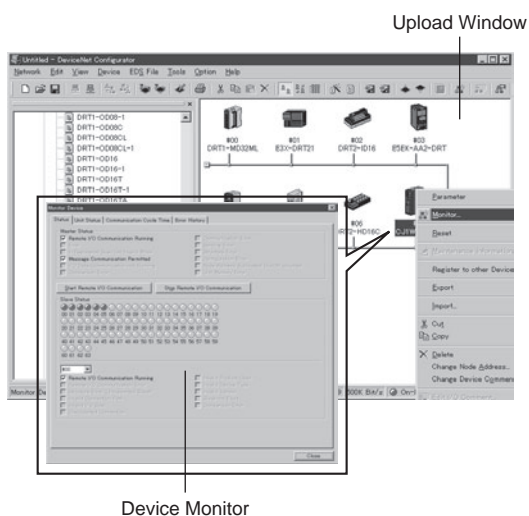
- You can directly connect to DeviceNet devices by using an OMRON PCI Board or PC Card through a DeviceNet Board or DeviceNet Card. (Nodes are allocated to the Board/Card.)
- Computer RS-232C COM Port Connection
Connections can be made using a peripheral port or a serial port on a Serial Communications Board/Unit of an OMRON CS/CJ-series PLC that has a DeviceNet Unit connected to the COM port on a computer.
- Computer Ethernet Port Connection
Connections can be made using an Ethernet Unit of an OMRON CS/CJ-series PLC that has a DeviceNet Unit connected to the Ethernet port on a computer.



Device Management and Monitoring

Monitor Devices While Connected Online

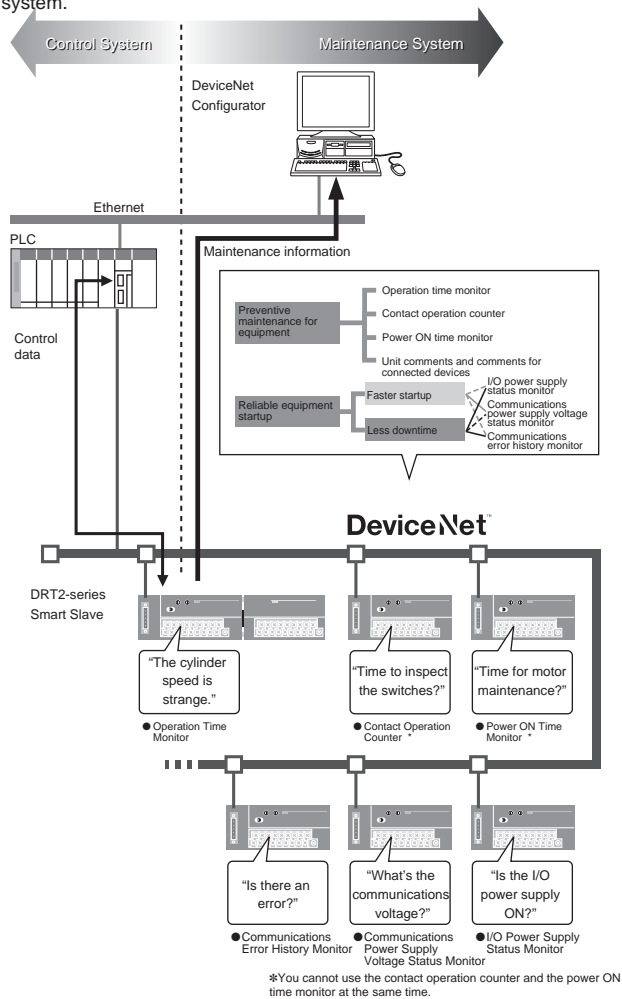
- Support for Network Downloading and Monitoring for Devices*
The following items can be monitored using an OMRON CS/CJ-series PLC.
- Overall communications status of network
- Status of Masters and Slaves
- Unit status
- Communications cycle time
- Error history
- * This applies only to devices with the monitor function.



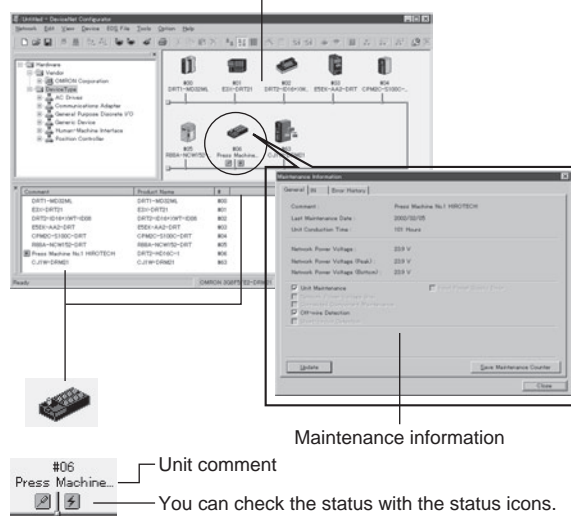
Building Maintenance Systems

Maintenance Systems Built with Smart Slaves

- Smart Slave Maintenance Information
Maintenance information stored in Smart Slaves can be read and use to build a maintenance system that functions separately from the control system.



Maintenance Mode Window



Configurator List

- Software only: WS02-CFDC1-E
- PC Card with software included: 3G8E2-DRM21-V1
(Applicable OS: Windows 2000 (ServicePack2 or higher)/XP)

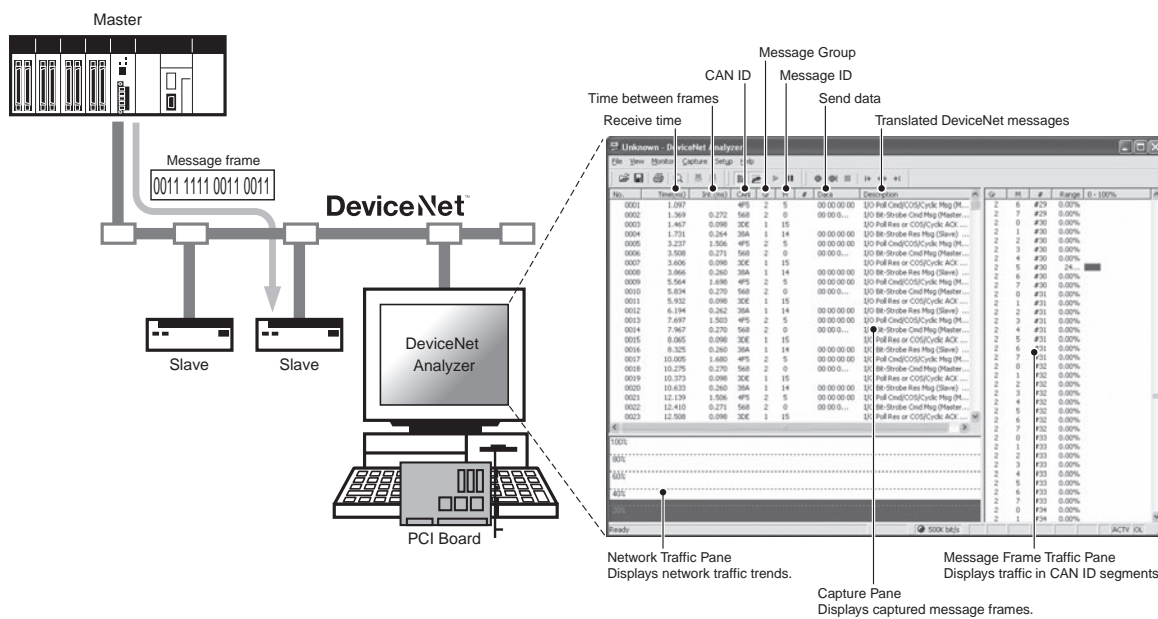
DeviceNet Analyzer

WS02-ALDC1

Perform Diagnosis and Analysis for Networks by Directly Connecting to an OMRON DeviceNet PCI Board. Helps Improve Efficiency of Device Development and System Startup.

- Capture messages frames flowing on DeviceNet.
- Translate and display the captured message frames to easily perform diagnosis and analysis.
- Functionality is provided in the capture filter to display only messages that match the specified conditions.
- Set the trigger conditions for starting and stopping capture.
- Combine multiple conditions (e.g., AND, OR, THEN) for the trigger conditions.
- Display the traffic (load percentage) in a trend graph for each time interval (100 ms) to determine changes in the communications cycle time and to help determine system distribution.
- Display the percentage of a specified message frame relative to all message frames.

System Configuration



Ordering Information

| Name | Applicable OS | Description | Model |
|--------------------|---|--|--------------|
| DeviceNet Analyzer | Windows 2000 (Service Pack2 or higher)/XP | This software captures the required messages that flow on DeviceNet to diagnose and analyze the network. | WS02-ALDC1-E |

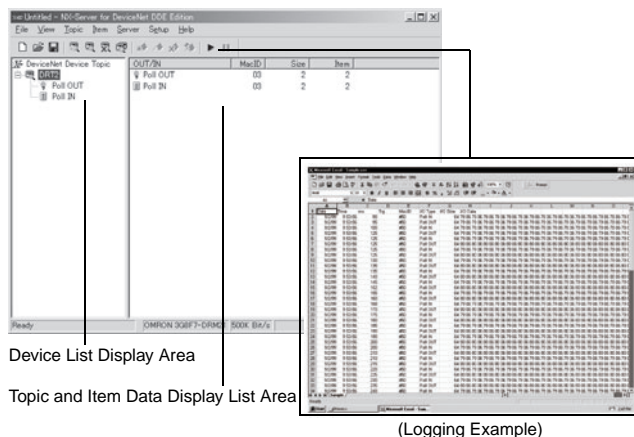
| Specifications | System Requirements |
|--|---|
| Basic Functions Translation, capture buffer size settings, capture filter, capture trigger, capture export, frame time measurement, network traffic monitor, message frame traffic monitor Created files NetInspector capture files (*.alz) Contents: Capture data files (saved or loaded), CSV-format of text (.txt) files, capture data export files | CPU Processor recommended by Microsoft. OS Windows 2000 (ServicePack2 or higher)/XP Compatible Hardware OMRON DeviceNet Board Special PCI Board: 3G8F7-DRM21 |

NX-Server

WS02-NX□C1

Easily Perform Monitoring and Logging for Various Types of I/O Data on DeviceNet.

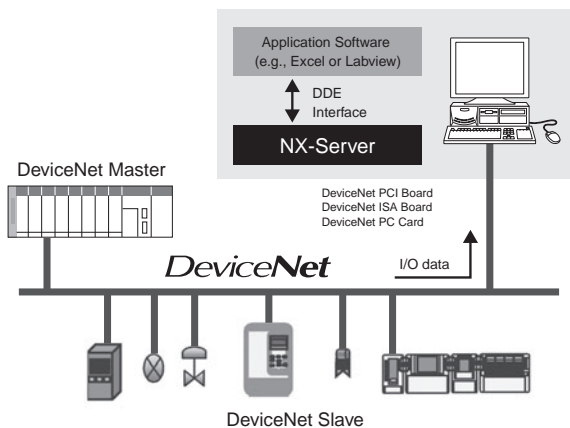
- Monitor I/O data flowing on DeviceNet.
- Log data of specified devices using advanced triggering.
- The NX-Server is equipped with a unique frame analysis engine, and so a node is not allocated to it.
- Collect data without increasing network traffic.
- The product lineup includes a development kit for developing a DDE server and applications as well as software for operating existing user applications.



(Logging Example)

Ordering Information

| Name | | Applicable OS | Description | Model |
|-----------|---------------------------|---|--|--------------|
| NX-Server | For DeviceNet DDE Edition | Windows 2000 (Service Pack2 or higher)/XP | This software monitors and logs I/O data on DeviceNet lines. | WS02-NXDC1-E |
| | For DeviceNet SDK Edition | | | |
| | For DeviceNet RT Edition | | | |



Logging

Logging can be performed by directly obtaining from the line the commands communicated between the specified Slaves and Master.

The logging data can be saved in an CSV-format file and analyzed in Excel.

- Set triggers to start logging or other processes simply by selecting device topics.
- You can set whether to perform logging for each device and also set the trigger conditions.



Monitor

Using the NX-Server, you can display in realtime the data of nodes specified in application software on a DDE interface, such as Excel.

- Display the data of all Slaves participating in a DeviceNet network.
- One optional function provided by the NX-Server lets you open a specific file (in this case, a set Excel file) at the same time that the NX-Server starts.
- Also, the NX-Server can be incorporated into monitoring software, such as Labview, in addition Excel.

NetXServer Functions

- Topic names and item names for data can be flexibly set for individual devices to monitor or log.
- Server name of DDE interface for user-disclosed interface: NETXDNET.
- The size and format (bit, byte, or word) of data can be specified.
- Whether to log data for each device and setting the trigger conditions can be performed for each device.
- Logging data can be checked in standard CSV format.
- The NX-Server is equipped with a unique frame analysis engine, and so a MAC ID is not allocated.
- Data can be collected without increasing network traffic.

Product Introduction

- The NX-Server for DeviceNet DDE Edition is a dynamic data exchange (DDE) server that provides software to collect I/O data and perform host monitoring of the collected I/O data.
- The NX-Server for DeviceNet SDK Edition is a development kit for developing applications that use core modules of NetXServer for DeviceNet.
- The NX-Server for DeviceNet RT Edition is platform software to operate user applications developed using the SDK Edition.
- The 3G8F7-DRM21 PCI Board or 3G8E2-DRM21-V1 PC Card can be used for the hardware.

System Requirements for NX-Server for DeviceNet DDE Edition

| | |
|----------------------|---|
| CPU | Pentium 166 MHz or better |
| OS | Windows 2000 (ServicePack2 or higher)/XP |
| Created Files | NetXServer settings files (*.nxd) Logging data: CSV-format files (*.csv) |

Compatible Hardware

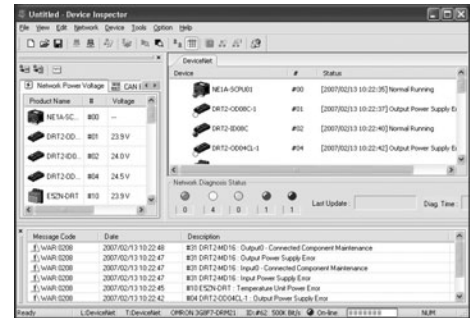
OMRON DeviceNet Board or Card
Special PCI Board: 3G8F7-DRM21
Special PC Card: 3G8E2-DRM21-V1 *

* The hardware is included with the Configurator.
The applicable OS depends on the hardware. Check the requirements before operation.

Device Inspector WS02-DIPC1

Software for Monitoring the Status of Devices on DeviceNet and Detecting Errors.

- Easily access the status of devices and present error details.
- View all CAN errors held by devices.
- Monitor device participation and withdrawal.
- Display error detection data with a time stamp and save the data to a file.
- Use a graph display of the network power supply voltage to monitor changes.



Ordering Information

| Name | Applicable OS | | Description | Model |
|------------------|--|----------------------------------|--|------------------------|
| Device Inspector | Windows 2000 (ServicePack2 or higher)/XP | One-license version Media: CD | Software for monitoring the status of devices on a network and detecting errors. | WS02-DIPC1-E |
| | | Site license | | WS02-DIPC1-ELXX |

Device Inspector Functions

| Function | Description |
|--------------------------------------|---|
| Network diagnosis | Reads the status of network devices and monitors errors. |
| Device monitor | Enables monitoring the status of devices. |
| Maintenance | Enables displaying maintenance information for DeviceNet. |
| CAN error monitor | Monitors device CAN error data for DeviceNet. |
| Network power supply voltage monitor | Monitors device network power supply voltage for DeviceNet. |
| Message timeout monitor | Records the number of message timeouts for devices. |
| Error history | Leaves a record of error occurrence and recovery in a log. |

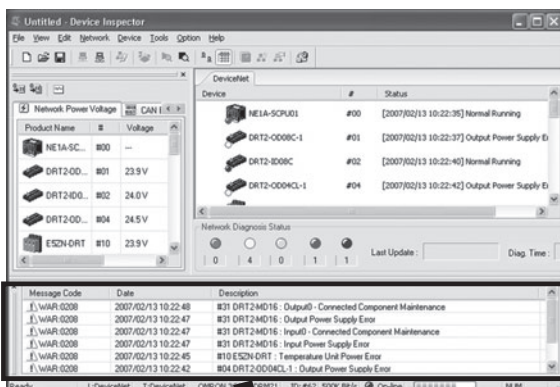
System Requirements

| | |
|----------------------------------|--|
| CPU | Processor recommended by Microsoft. |
| OS | Windows 2000 (ServicePack2 or higher)/XP |
| Available hard disk space | 50 MB min. |
| Memory | 256 MB min. |
| Disk device | One CD-ROM drive |
| Display | SVGA or higher display |

Communications Port

| | |
|--|--|
| Online connection using serial port | RS-232C port |
| Online connection using USB port | USB port |
| Online connection using Ethernet | Ethernet port |
| Online connection using DeviceNet | DeviceNet Interface Card (3G8F7-DRM21 or 3G8E2-DRM21-V1 *) |

* The hardware is included with the Configurator. The applicable OS depends on the hardware. Check the requirements before operation.



| Message Code | Date | Description |
|--------------|---------------------|---|
| WAR-0208 | 2007/02/13 10:22:48 | #31 DRT2-MD16 : Output0 - Connected Component Maintenance |
| WAR-0208 | 2007/02/13 10:22:47 | #31 DRT2-MD16 : Output Power Supply Error |
| WAR-0208 | 2007/02/13 10:22:47 | #31 DRT2-MD16 : Input0 - Connected Component Maintenance |
| WAR-0208 | 2007/02/13 10:22:47 | #31 DRT2-MD16 : Input Power Supply Error |
| WAR-0208 | 2007/02/13 10:22:45 | #10 E52N-DRT : Temperature Unit Power Error |
| WAR-0208 | 2007/02/13 10:22:42 | #04 DRT2-OD04CL-1 : Output Power Supply Error |

Error History Window

Peripheral Devices

General-purpose Peripheral Devices..... 134

Peripheral Devices for DeviceNet Communications

- General-purpose Models
- Peripheral Devices for Flat Cables

I/O Peripheral Devices

- I/O Connectors for Connector Terminals
 - MIL Connectors
- I/O Connectors for MULTIPLE I/O TERMINALS
- I/O Connector for Programmable Slaves

Peripheral Devices for Environment-resistive Slaves..... 144

Peripheral Devices for DeviceNet Communications

- Environment-resistive Connection Products
(for Thin Cable, M12 Micro Connectors)
- Environment-resistive Models (for Thin Wires and M12 Micro Connectors)
- Environment-resistive Models for Thick Wires with 7/8-16UN Mini Connectors

I/O Peripheral Devices

- Assembly Connector Plugs for M12 Microconnectors
- Cables with Connector (Socket/Plug) on Both Ends
(M12 Microconnectors for Power Supply and I/O)
- Cables with connector plug on One End (M12 Microconnectors for I/O)
- Plugs and Sockets on Y-shaped Joints (M12 Microconnectors for I/O)
- Connector Cover for M12 Microconnectors

Power Supply Peripheral Devices

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


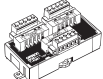
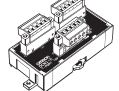
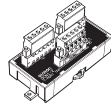
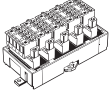
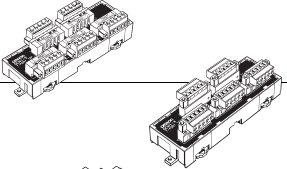
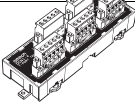
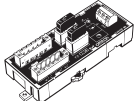
Peripheral Devices



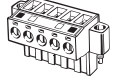






General-purpose Peripheral Devices

Peripheral Devices for DeviceNet Communications



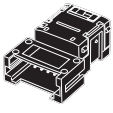




Ordering Information

● General-purpose Models

| Product | Appearance | Model | Specifications | |
|---------------------------------|---|-----------------|--|--|
| T-branch Tap for 1 branch line |  | DCN1-1NC | Cable wiring direction: Toward top Cable lock direction: From top Connector screw direction: From top | Provided with 3 parallel connectors with clamps (XW4G-05C1-H1-D), standard terminating resistor |
| |  | DCN1-1C | Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From side | Provided with 3 parallel connectors with screws (XW4B-05C1-H1-D), standard terminating resistor |
| |  | DCN1-2C | Cable wiring direction: Toward top Cable screw direction: From side Connector screw direction: From top | |
| |  | DCN1-2R | Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From top | Provided with 3 orthogonal connectors with screws (XW4B-05C1-V1R-D), standard terminating resistor |
| T-branch Tap for 3 branch lines |  | DCN1-3NC | Cable wiring direction: Toward top Cable lock direction: From top Connector screw direction: From top | Provided with 5 parallel clamp connectors with screws (XW4G-05C1-H1-D), standard terminating resistor |
| |  | DCN1-3C | Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From side | Provided with 5 parallel connectors with screws (XW4B-05C1-H1-D), standard terminating resistor |
| | | DCN1-4C | Cable wiring direction: Toward top Cable screw direction: From side Connector screw direction: From top | |
| |  | DCN1-4R | Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From top | Provided with 5 orthogonal clamp connectors with screws (XW4B-05C1-V1R-D), standard terminating resistor |
| Power Supply Tap |  | DCN1-1P | Tap provided with 2 connectors, standard terminating resistor, and fuse | |

| Product | | Appearance | Model | Specifications |
|---------------------------|--------------|---|-----------------|---|
| Connectors | |  | XW4G-05C1-H1-D | Parallel clamp connector with screws Connector insertion and wiring both performed horizontally. |
| | |  | XW4G-05C4-TF-D | Parallel multi-branching clamp connector with screws Connector insertion and wiring performed in same direction. |
| | |  | XW4B-05C1-H1-D | Parallel connector with screws Connector insertion and wiring performed in same direction. |
| | |  | XW4B-05C4-T-D | Parallel, screw-less, multi-branching connector Connector insertion and wiring performed in same direction. |
| | |  | XW4B-05C4-TF-D | Parallel, multi-branching connector with screws Connector insertion and wiring performed in same direction. |
| | |  | XW4B-05C1-V1R-D | Orthogonal connector with screws Connector insertion and wiring performed at a right angle. |
| DeviceNet Standard Cables | Thin Cables |  | DCA1-5C10(-B) | Outer diameter: 7.00 mm Length: 100 m DCA1-5C10-B: Cable color: Blue DCA1-5C10: Cable color: Gray |
| | Thick Cables |  | DCA2-5C10(-B) | Outer diameter: 11.6 mm Length: 100 m DCA2-5C10-B: Cable color: Blue DCA2-5C10: Cable color: Gray |
| Terminal-block Terminator | |  | DRS1-T | Resistance of 121 Ω |

● Peripheral Devices for Flat Cables

| Product | Appearance | Model | Specifications |
|--|--|-----------|---|
| Conversion Connector for Standard Thin Cable and Flat Cable |  | DCN4-BR4D | Used as a set with a DCN4-TR4 when Thin Cable is branched on a branch line. |
| Power Supply Terminal Block with Terminating Resistance for Flat Cable |  | DCN4-TP4D | Can be used to supply communications power from terminals when Flat Cable is used. |
| Flat Connector Socket |  | DCN4-TR4 | Used as a set with a DCN4-BR4 Flat Connector Plug in the following applications. <ul style="list-style-type: none"> • Extending the trunk line • T-branching the trunk line into branch lines |
| | | | Used alone in the following applications. <ul style="list-style-type: none"> • Connecting a DCN4-TM4 Terminating Resistor to the trunk line |
| Flat Connector Plug |  | DCN4-BR4 | Used as a set with a DCN4-TR4 Flat Connector Socket in the following applications. <ul style="list-style-type: none"> • Extending the trunk line • T-branching the trunk line into branch lines |
| Terminating Resistor |  | DCN4-TM4 | Connector terminating resistor for flat cable. Attached to the DCN4-TR4 Flat Connector Socket at the end of the trunk line. |
| Flat Cable |  | DCA4-4F10 | Four-core flat cable (UL 2555) Length: 100 m Conductor diameters: 0.75 mm ² x 2, 0.5 mm ² x 2 |
| Simple Manual Crimp Tool |  | DWT-A01 | This is the crimping tool for the following connectors: <ul style="list-style-type: none"> • DCN4-TR4(-1) Flat Connector Socket • DCN4-BR4 Flat Connector Plug • DCN4-BR4D Conversion Connector for Standard Thin Cable and Flat Cable |

Specifications

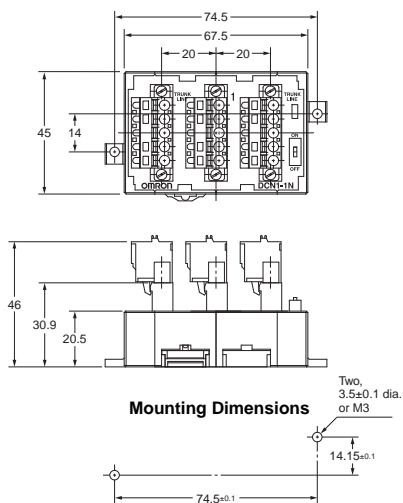
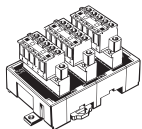
● General-purpose Models (T-branch Taps)

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

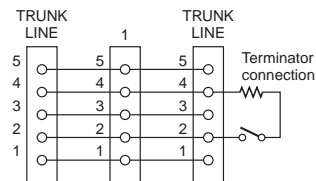
Dimensions

● General-purpose Models

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

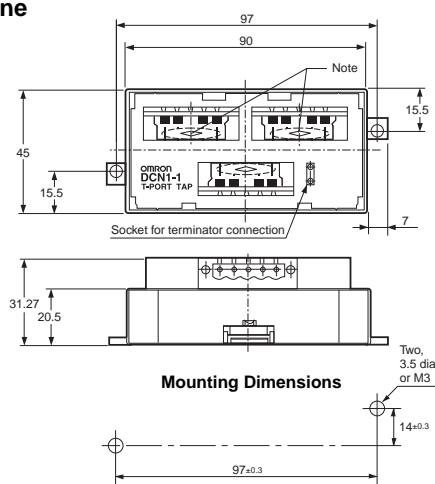
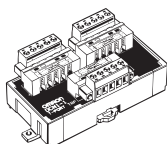


Internal Circuit

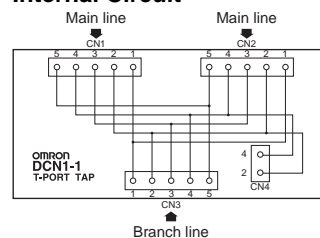


| Terminal No. | Name |
|--------------|-------|
| 1 | V- |
| 2 | CAN L |
| 3 | DRAIN |
| 4 | CAN H |
| 5 | V+ |

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



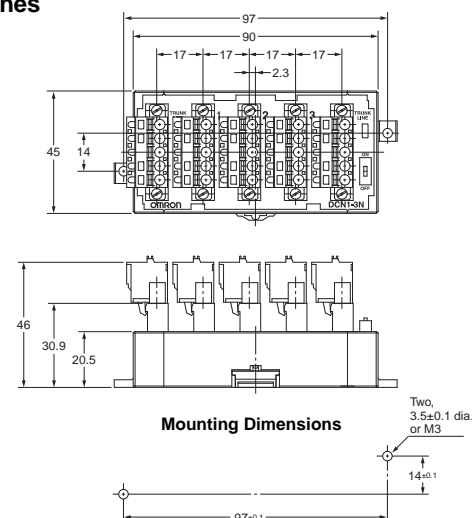
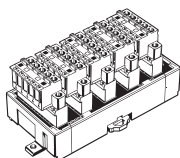
Internal Circuit



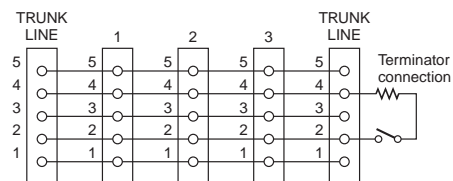
| Terminal No. | Name |
|--------------|-------|
| 1 | V- |
| 2 | CAN L |
| 3 | DRAIN |
| 4 | CAN H |
| 5 | V+ |

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

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

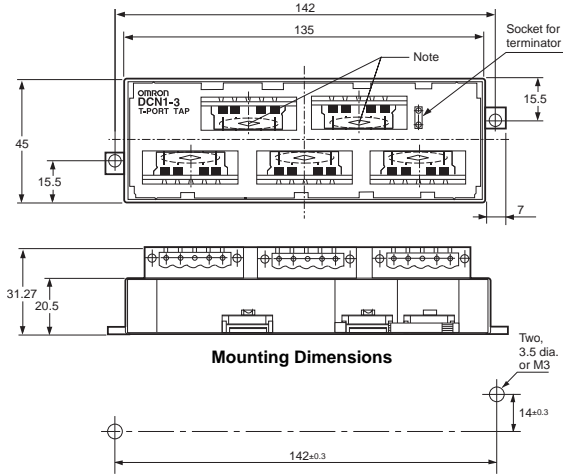
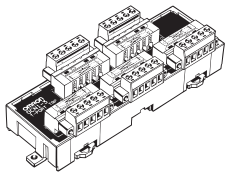


Internal Circuit



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

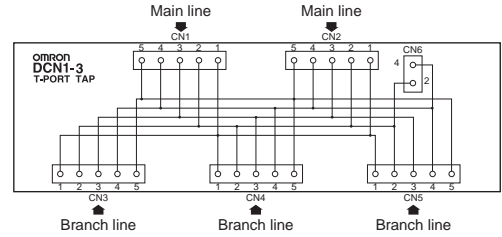
**T-branch Tap for 3 branch lines
DCN1-3C
(With Five Branching
Connectors)**



Mounting Dimensions

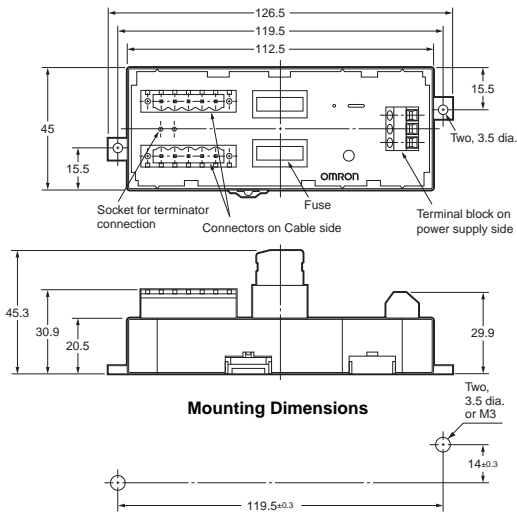
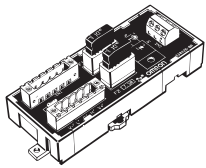
Note: When connecting a branch line to the main line, connect the main line to the connector marked with an asterisk because the resistance between the asterisked portion is minimal.

Internal Circuit



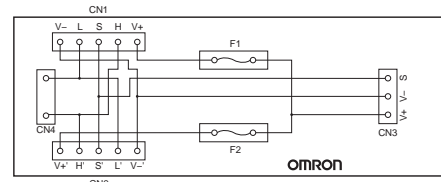
| Terminal No. | Name |
|--------------|-------|
| 1 | V- |
| 2 | CAN L |
| 3 | DRAIN |
| 4 | CAN H |
| 5 | V+ |

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



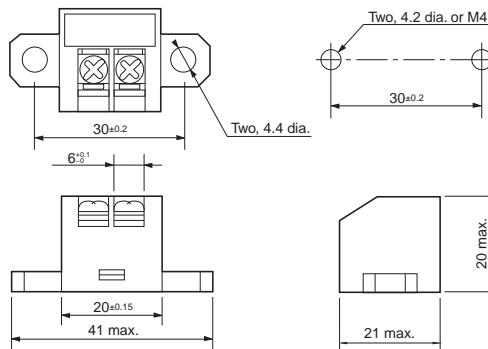
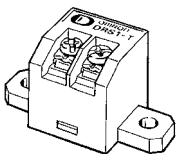
Mounting Dimensions

Internal Circuit



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

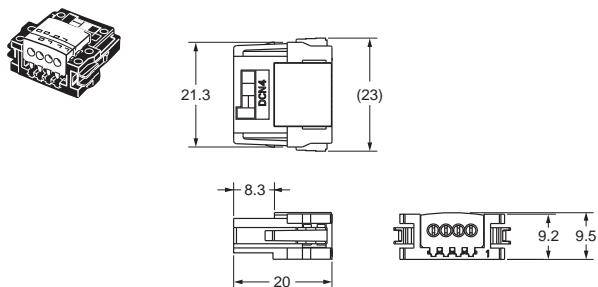
**DRS1-T
(Terminal-block Terminator)**



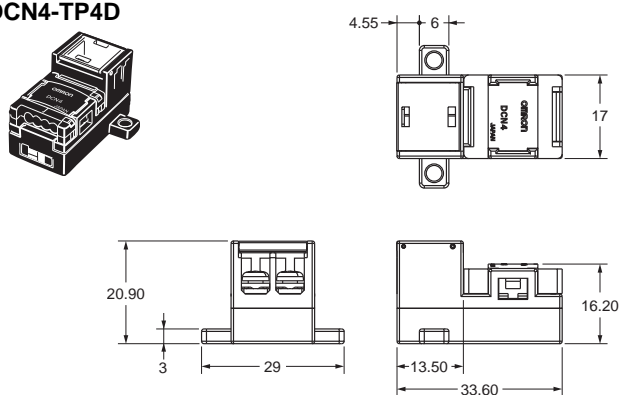
Mounting Dimensions

● Flat Cable

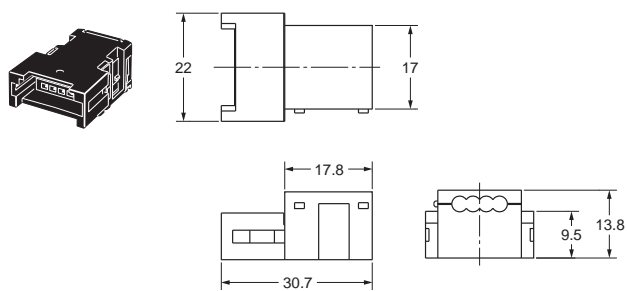
Conversion Connector for Standard Thin Cable and Flat Cable
DCN4-BR4D



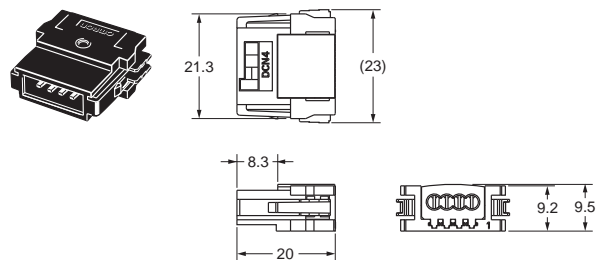
Power Supply Terminal Block with Terminating Resistance for Flat Cable
DCN4-TP4D



Flat Connector Socket
DCN4-TR4



Flat Connector Plug
DCN4-BR4



I/O Peripheral Devices

■ I/O Connectors for Connector Terminals

● MIL Connectors

Applicable Connectors

| Type | Model | Remarks |
|---|--------------------|--------------------|
| Flat Cable Pressure-welded Connectors | XG4M-4030-T | |
| Pressure-welded Connectors with Loose Wires | Socket | XG5M-4032-N |
| | | XG5M-4035-N |
| | Semicover | XG5S-2001 |
| | Hood Cover * | XG5S-4022 |

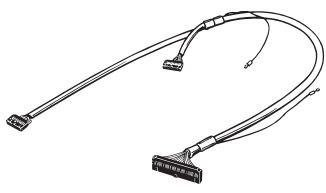
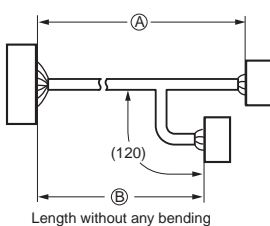
* DeviceNet connectors for multi-drop wiring cannot be used with the Hood Cover.

Cable Models

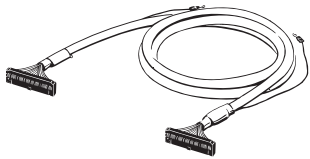
| Type | Model | Connected device | Applicable models |
|---|------------------------|------------------|---------------------------|
| Cable with Connectors (1:2) | XW2Z-RI□□-□□-D1 | G7TC/G70D/G70A | DRT2-ID32ML |
| | XW2Z-RM□□-□□-D1 | | DRT2-MD32ML |
| | XW2Z-RO□□-□□-D1 | | DRT2-OD32ML/DRT1-OD32ML-1 |
| | XW2Z-RI□□-□□-D2 | | DRT2-ID32ML-1 |
| | XW2Z-RM□□-□□-D2 | | DRT2-MD32ML-1 |
| Cable with Connector (1:1) | XW2Z-C□□K | | |
| Cable with Loose Wires with Crimp Terminals | XW2Z-RY□□C-D1 | -- | All models |
| Cable with Loose Wires | XW2Z-RA□□C-D1 | | |

Applicable Cables with Connectors

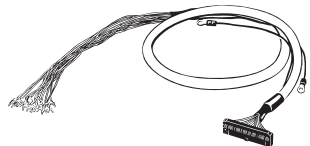
● Cables with Connectors (1-to-2 Connection)/XW2Z-R□□-□□-D□

| Appearance | Cable length (mm) | Cable length (mm) | | Model |
|---|---|-------------------|-----|------------------------|
| | | (A) | (B) | |
|  |  <p>Length without any bending</p> | 500 | 250 | XW2Z-RI50-25-D1 |
| | | 750 | 500 | XW2Z-RI75-50-D1 |
| | | 500 | 250 | XW2Z-RO50-25-D1 |
| | | 750 | 500 | XW2Z-RO75-50-D1 |
| | | 500 | 250 | XW2Z-RM50-25-D1 |
| | | 750 | 500 | XW2Z-RM75-50-D1 |
| | | 500 | 250 | XW2Z-RI50-25-D2 |
| | | 750 | 500 | XW2Z-RI75-50-D2 |
| | | 500 | 250 | XW2Z-RM50-25-D2 |
| | | 750 | 500 | XW2Z-RM75-50-D2 |

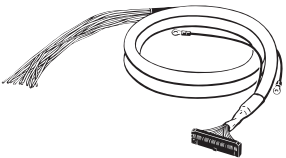
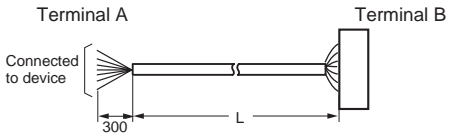
● Cables with Connectors (1-to-1 Connection)/XW2Z-C□□K

| Appearance | Cable length (mm) | Model |
|---|-------------------|------------------|
|  | 250 | XW2Z-C25K |
| | 500 | XW2Z-C50K |

● Cables with Crimp Terminals (at the End of Loose Wires)/XW2Z-RY□□C-D1

| Appearance | Cable length (mm) | Model | | |
|---|-----------------------------------|------------|-------|-----------------------|
|  | Terminal A Connected to device | Terminal B | 1,000 | XW2Z-RY100C-D1 |
| | | | 2,000 | XW2Z-RY200C-D1 |
| | | | 5,000 | XW2Z-RY500C-D1 |

● Cables with Loose Wires/XW2Z-RA□C

| Appearance | Cable length (mm) | Model |
|---|---|--------------------------------|
|  |  | 2,000 XW2Z-RA200C-D1 |
| | | 5,000 XW2Z-RA500C-D1 |

■ I/O Connectors for MULTIPLE I/O TERMINALS

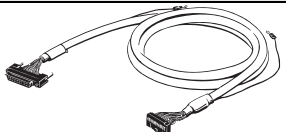
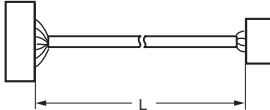
Applicable Connectors

| Type | | Model | Remark | Connectable model | |
|----------------------------------|---------------------------|-----------------|-------------------------------|---|-------------------------------|
| Molex connector | Crimped terminals | Housing | 50-57-9403 | Digital I/O Units GT1-ID16MX(-1)/GT1-OD16MX(-1) Analog I/O Units GT1-AD08MX/GT1-DA04MX | |
| | | Chain terminal | 16-02-0069 | | Corresponding to 24 to 30 AWG |
| | | | 16-02-0086 | | Corresponding to 22 to 24 AWG |
| | | Loose terminal | 16-02-0096 | | Corresponding to 24 to 30 AWG |
| | | | 16-02-0102 | | Corresponding to 22 to 24 AWG |
| | Press-fit tool | 57036-5000 | Corresponding to 22 to 26 AWG | | |
| | | 57037-5000 | Corresponding to 24to 30 AWG | | |
| Fujitsu connector (16 points) | Soldered terminals | FCN361J024-AU | | | |
| | Pressure-welded terminals | FCN367J024-AU/F | | | |
| | Crimped terminals | FCN363J024-AU | | | |
| Fujitsu connector (32 points) | Soldered terminals | FCN361J040-AU | | Digital I/O Units GT1-ID32ML(-1)/GT1-OD32ML(-1) | |
| | Pressure-welded terminals | FCN367J040-AU/F | | | |
| | Crimped terminals | FCN363J040-AU | | | |
| OMRON D-sub connector | Pulg | XM3A-2521 | | Digital I/O Units GT1-ID16DS(-1)/GT1-OD16DS(-1) | |
| | Hood | XM2S-2513 | #4-40UNC inch screws | | |

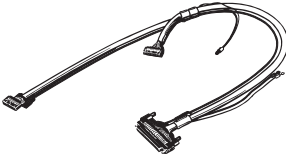
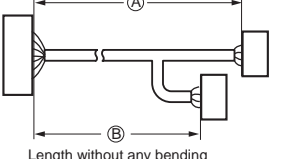
Applicable Cables with Connectors (Fujitsu Connectors)

| I/O classification | Model | Connectable model |
|---------------------------|-----------|-------------------------------------|
| Digital input, 16 points | XW2Z-□□□A | Digital I/O Units GT1-ID16ML(-1) |
| | XW2Z-R□C | |
| Digital output, 16 points | XW2Z-□□□A | Digital I/O Units GT1-OD16ML(-1) |
| | XW2Z-R□C | |
| Digital input, 32 points | XW2Z-□□□B | Digital I/O Units GT1-ID32ML(-1) |
| | XW2Z-R□C□ | |
| Digital output, 32 points | XW2Z-□□□B | Digital I/O Units GT1-OD32ML(-1) |
| | XW2Z-R□C□ | |

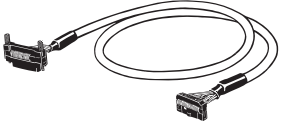
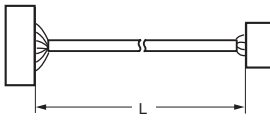
● Cables with Connectors (1-to1 Connection)/XW2Z-R□C For Digital Input/Output (16 Points)

| Appearance | Cable length (mm) | Model |
|---|---|------------|
|  |  | 1,000 |
| | | 1,500 |
| | | 2,000 |
| | | 3,000 |
| | | 5,000 |
| | | XW2Z-R100C |
| | | XW2Z-R150C |
| | | XW2Z-R200C |
| | | XW2Z-R300C |
| | | XW2Z-R500C |

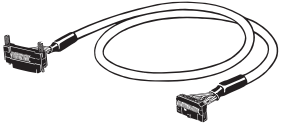
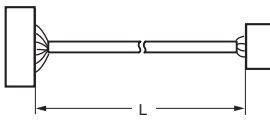
● Cables with Connectors (1-to-2 Connection)/XW2Z-RO□C-□, XW2Z-R□C-□ For Digital Input/Output (32 Points)

| Appearance | Cable length (mm) | | Model | | |
|---|---|-------|-------|-----------------|-----------------|
| | (A) | (B) | Input | Output | |
|  |  | 1,000 | 750 | XW2Z-R1100C-75 | XW2Z-RO100C-75 |
| | | 1,500 | 1,250 | XW2Z-R1150C-125 | XW2Z-RO150C-125 |
| | | 2,000 | 1,750 | XW2Z-R1200C-175 | XW2Z-RO200C-175 |
| | | 3,000 | 2,750 | XW2Z-R1300C-275 | XW2Z-RO300C-275 |
| | | 5,000 | 4,750 | XW2Z-R1500C-475 | XW2Z-RO500C-475 |
| | Length without any bending | | | | |

For Digital Input/Output (16 Points)

| Appearance | Cable length (mm) | Model |
|---|---|-----------|
|  |  | 500 |
| | | 1,000 |
| | | 1,500 |
| | | 2,000 |
| | | 3,000 |
| | | 5,000 |
| | | XW2Z-050A |
| | | XW2Z-100A |
| | | XW2Z-150A |
| | | XW2Z-200A |
| | | XW2Z-300A |
| | | XW2Z-500A |

For Digital Input/Output (32 Points)

| Appearance | Cable length (mm) | Model |
|---|---|-----------|
|  |  | 500 |
| | | 1,000 |
| | | 1,500 |
| | | 2,000 |
| | | 3,000 |
| | | 5,000 |
| | | XW2Z-050B |
| | | XW2Z-100B |
| | | XW2Z-150B |
| | | XW2Z-200B |
| | | XW2Z-300B |
| | | XW2Z-500B |

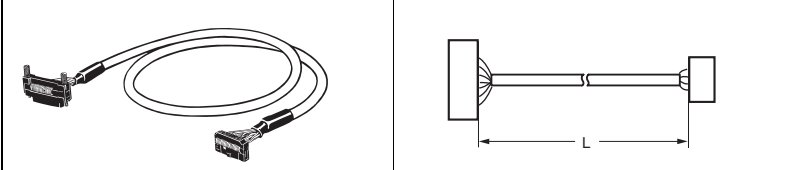
■ I/O Connector for Programmable Slaves

Applicable Connector Terminal Conversion Units

| Applicable cable | Connected product | Connector Products (Connector-Terminal Block Conversion Units) Connecting method |
|------------------|-------------------|--|
| XW2Z-□□□A | XW2R-J20G-T | Phillips screw M3 |
| | XW2R-E20G-T | Slotted screw M3 |
| | XW2R-P20G-T | Push-in spring |

Applicable Cables with Connectors

● Cables with Connectors/XW2Z
For Digital Input/Output (16 Points)

| Appearance | Cable length (mm) | Model |
|---|-------------------|-----------|
|  | 500 | XW2Z-050A |
| | 1,000 | XW2Z-100A |
| | 1,500 | XW2Z-150A |
| | 2,000 | XW2Z-200A |
| | 3,000 | XW2Z-300A |
| | 5,000 | XW2Z-500A |

Peripheral Devices for Environment-resistive Slaves

Peripheral Devices for DeviceNet Communications

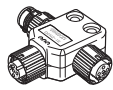
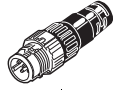
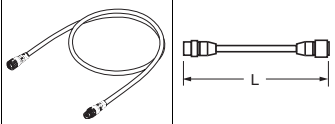
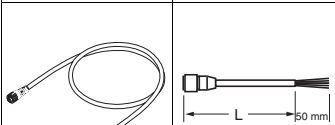
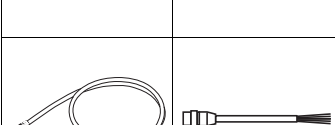


Ordering Information

● Environment-resistive Connection Products (for Thin Cable, M12 Micro Connectors)

| Product | Appearance | Model | Specifications |
|---|------------|--------------|---|
| Sealed Assembling-type Connector (male) | | XS2G-D5S7 | For communications (plug) |
| Sealed Assembling-type Connector (female) | | XS2C-D5S7 | For communications (socket) |
| Sealed T-branch Connector | | DCN2-1 | For 1 branch line |
| Sealed Connector with Terminating Resistor | | DRS2-1 | Plug |
| | | DRS2-2 | Socket |
| Cables with Sealed Connectors * | | DCA1-5CNC5W1 | Length (L): 0.5 m |
| | | DCA1-5CN01W1 | Length (L): 1 m |
| | | DCA1-5CN02W1 | Length (L): 2 m |
| | | DCA1-5CN03W1 | Length (L): 3 m |
| | | DCA1-5CN05W1 | Length (L): 5 m |
| | | DCA1-5CN10W1 | Length (L): 10 m |
| | | DCA1-5CNC5F1 | Length (L): 0.5 m |
| | | DCA1-5CN01F1 | Length (L): 1 m |
| | | DCA1-5CN02F1 | Length (L): 2 m |
| | | DCA1-5CN03F1 | Length (L): 3 m |
| | | DCA1-5CN05F1 | Length (L): 5 m |
| | | DCA1-5CN10F1 | Length (L): 10 m |
| | | DCA1-5CNC5H1 | Length (L): 0.5 m |
| | | DCA1-5CN01H1 | Length (L): 1 m |
| | | DCA1-5CN02H1 | Length (L): 2 m |
| Shielded Panel-mounting Connectors (female) | | DCA1-5CNC5P1 | Panel-mounting connector (socket) with 0.5-m cable |
| | | XS2P-D522-2 | Panel-mounting connector socket |
| | | | |
| Shielded Panel-mounting Connectors (male) | | DCA1-5CNC5M1 | Panel-mounting connector (plug) with 0.5-m cable |
| | | XS2M-D524-4 | Panel-mounting connector (plug) with solder-cup terminals |
| Waterproof cover (for socket) | | XS2Z-22 | Used to cover an unused connector section |
| Dust cover (for socket) | | XS2Z-15 | |

* Robot cable type connectors with shielded cables (DCA1-5CN□□□1-R) are also available. Contact your OMRON sales representative for details.

● Environment-resistive Models (for Thin Wires and M12 Micro Connectors) 

| Product | Appearance | Model | Specifications |
|---|---|--------------|----------------------|
| Sealed T-branch Connector |  | DCN2-1S | For 1 branch line |
| Sealed Assembling type Connector (female) |  | DRS2-1S | Plug |
| | | DRS2-2S | Socket |
| Connectors with Shielded Cables * |  | DCA1-5CSC5W1 | Length (L): 0.5 m |
| | | DCA1-5CS01W1 | Length (L): 1 m |
| | | DCA1-5CS02W1 | Length (L): 2 m |
| | | DCA1-5CS03W1 | Length (L): 3 m |
| | | DCA1-5CS05W1 | Length (L): 5 m |
| | | DCA1-5CS10W1 | Length (L): 10 m |
| |  | DCA1-5CSC5F1 | Length (L): 0.5 m |
| | | DCA1-5CS01F1 | Length (L): 1 m |
| | | DCA1-5CS02F1 | Length (L): 2 m |
| | | DCA1-5CS03F1 | Length (L): 3 m |
| | | DCA1-5CS05F1 | Length (L): 5 m |
| | | DCA1-5CS10F1 | Length (L): 10 m |
| |  | DCA1-5CSC5H1 | Length (L): 0.5 m |
| | | DCA1-5CS01H1 | Length (L): 1 m |
| | | DCA1-5CS02H1 | Length (L): 2 m |
| | | DCA1-5CS03H1 | Length (L): 3 m |
| | | DCA1-5CS05H1 | Length (L): 5 m |
| | | DCA1-5CS10H1 | Length (L): 10 m |
| Shielded Branch Relay Box |  | DCN2-S4C5H1 | 4 ports, 0.5-m cable |
| |  | DCN2-S8C5H1 | 8 ports, 0.5-m cable |

* Robot cable type connectors with shielded cables (DCA1-5CN□□□1-R) are also available. Contact your OMRON sales representative for details.

● Environment-resistive Models for Thick Wires with 7/8-16UN Mini Connectors

| Product | Appearance | Model | Specifications |
|--|------------|--------------|--|
| Sealed T-branch Connector | | DCN3-11 | T-branch Connector |
| | | DCN3-12 | T-branch Connector (Branch connector is M12.) |
| Sealed Connector with Terminating Resistor | | DRS3-1 | Plug |
| Cables with Sealed Connectors | | DCA2-5CN01W1 | Length (L): 1 m |
| | | DCA2-5CN02W1 | Length (L): 2 m |
| | | DCA2-5CN05W1 | Length (L): 5 m |
| | | DCA2-5CN10W1 | Length (L): 10 m |
| | | DCA2-5CN01F1 | Length (L): 1 m |
| | | DCA2-5CN02F1 | Length (L): 2 m |
| | | DCA2-5CN05F1 | Length (L): 5 m |
| | | DCA2-5CN10F1 | Length (L): 10 m |
| | | DCA2-5CN01H1 | Length (L): 1 m |
| | | DCA2-5CN02H1 | Length (L): 2 m |
| | | DCA2-5CN05H1 | Length (L): 5 m |
| | | DCA2-5CN10H1 | Length (L): 10 m |
| | | DCA1-5CN01W5 | Length (L): 1 m |
| | | DCA1-5CN02W5 | Length (L): 2 m |
| | | DCA1-5CN05W5 | Length (L): 5 m |
| | | DCA1-5CN10W5 | Length (L): 10 m |
| Panel-mounting Connector (female) | | DCA2-5CNC5P1 | Panel-mounting connector (socket) with 0.5-m cable |
| Panel-mounting Connector (male) | | DCA2-5CNC5M1 | Panel-mounting connector (plug) with 0.5-m cable |
| Panel-mounting Connector (male) | | XS4M-D521-1 | Panel-mounting connector (plug) DIP terminals |
| Waterproof Cap (for Plug) | - | XS4Z-11 | Used to cover an unused connector section. |
| Waterproof Cap (for Socket) | - | XS4Z-12 | |

Specifications

● Environment-resistive Connection Products (for Thin Cable, M12 Micro Connectors)

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

* Use the robot cable within a temperature range between 0°C and 65°C to prevent the wires inside the cable from being broken when bending it.

● Environment-resistive Models (for Thin Wires and M12 Micro Connectors)

| Type | Connectors with Cables DCA1-5CS□□□1 | T-branch Connector DCN2-1S | Connectors with Terminating Resistor DRS2-□S | Branch Relay Box DCN2-S□C5H |
|---------------------------------|---|-------------------------------|---|--------------------------------|
| Rated current | 3 A | | | |
| Rated voltage | 125 VDC | | | |
| Contact resistance (connector) | 40 mΩ max. (at 20 mVDC max. and 100 mA max.) | | | |
| Insulation resistance | 1,000 MΩ min. (at 500 VDC) | | | |
| Dielectric strength (connector) | 1,500 VAC for 60 seconds (leakage current: 1 mA max.) | | | 1,000 VAC for 60 seconds |
| Ambient operating temperature | -20°C to 65°C * | | | |
| Storage temperature range | -25°C to 70°C | | | |
| Degree of protection | IEC IP67 | | | |
| Insertion durability | 200 times | | | |
| Cable strength | 98 N for 15 s | -- | | |
| Vibration resistance | No current interruptions of more than 1 μs while performing simple vibrations at either 10 to 500 Hz with 1.52-mm full amplitude or at acceleration 100 m/s ² , whichever is smaller | | | |
| Lock strength | Pulling: 100 N/15 s, Rotating: 1 N-m/15 s | | | |
| Lock force | 0.1 to 0.25 N-m | | | |

* Use the robot cable within a temperature range between 0°C and 65°C to prevent the wires inside the cable from being broken when bending it.

● Environment-resistive Models for Thick Wires with 7/8-16UN Mini Connectors

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

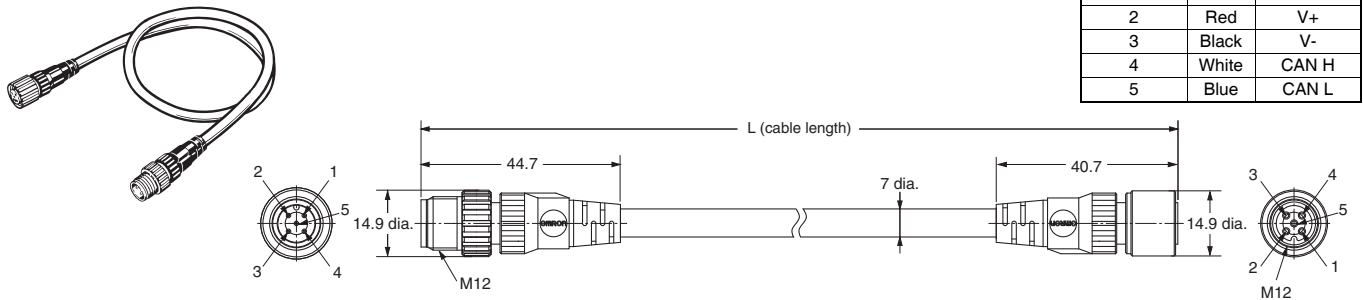
*1. The rated current between thick wires is 8 A.

*2. Use the robot cable within a temperature range between 0 °C and 65 °C to prevent the wires inside the cable from being broken when bending it.

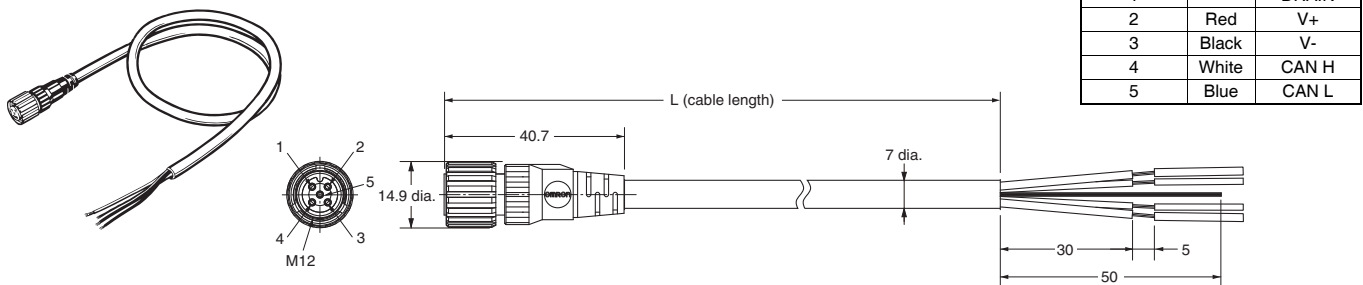
Dimensions

● Environment-resistive Connection Products (for Thin Cable, M12 Micro Connectors)

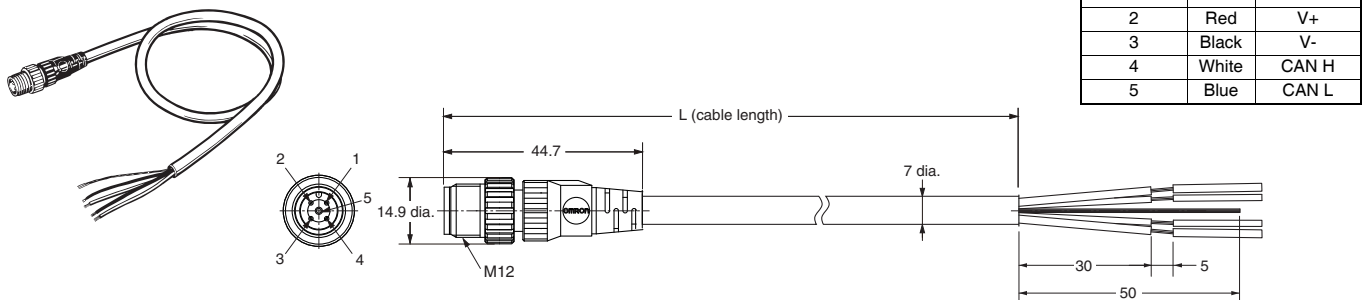
Cables with Connectors on Both Ends DCA1-5CN□□W1



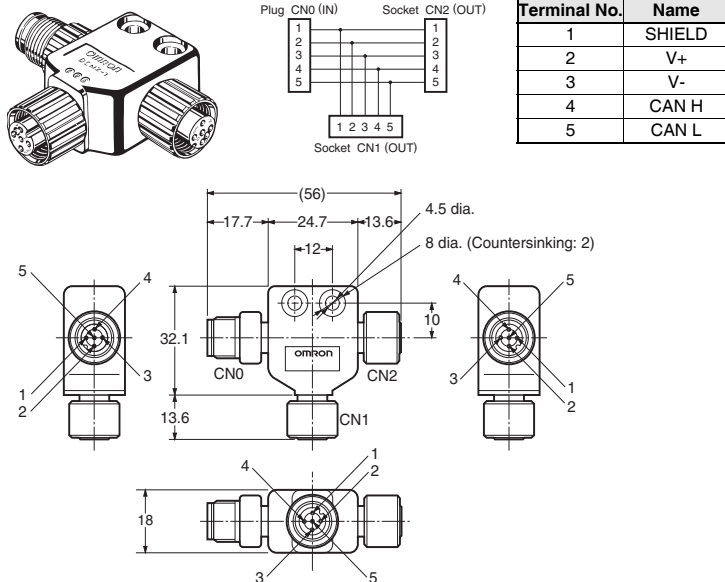
Cables with Connector on Single End (Socket) DCA1-5CN□□F1



Cables with Connector on Single End (Plug) DCA1-5CN□□H1



T-branch Connector DCN2-1



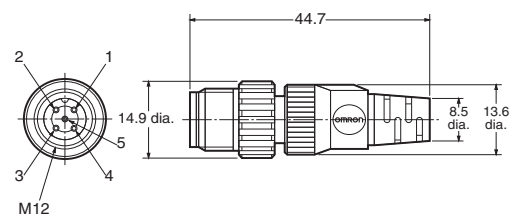
Connectors with Terminating Resistance

DRS2-1 (Plug) DRS2-2 (Socket)



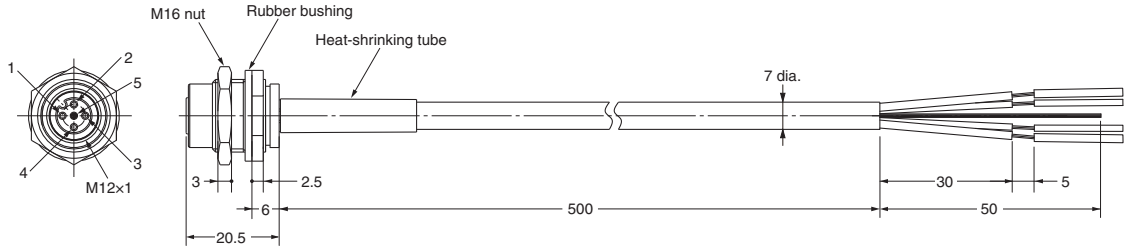
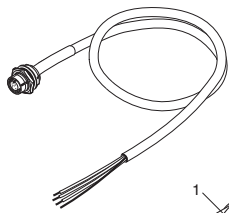
| Terminal No. | Name |
|--------------|-----------------------------|
| 1 | DRAIN : NC |
| 2 | V+ : NC |
| 3 | V- : NC |
| 4 | CAN H : \sim 121 Ω |
| 5 | CAN L : \sim 121 Ω |

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



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

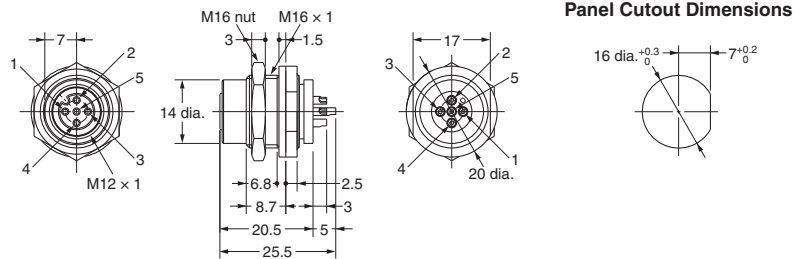
Panel-mounting Connector (Socket) with 0.5 m Cable
DCA1-5CNC5P1



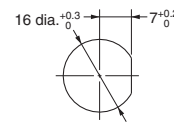
Wiring

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

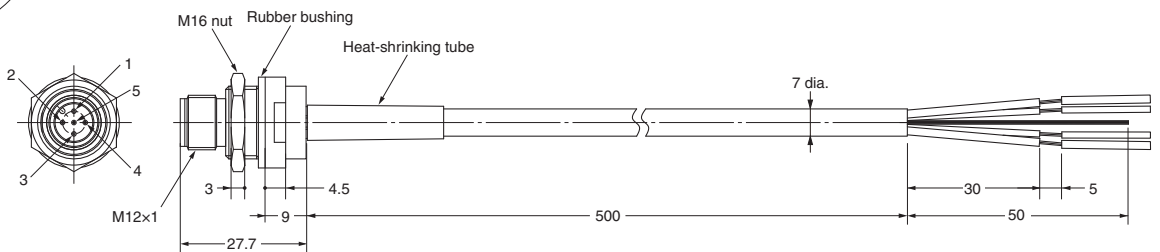
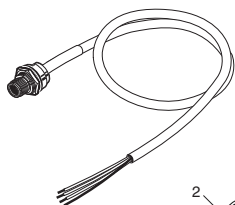
Panel-mounting Connector (Socket), Solder-cup Terminals
XS2P-D522-2



Panel Cutout Dimensions



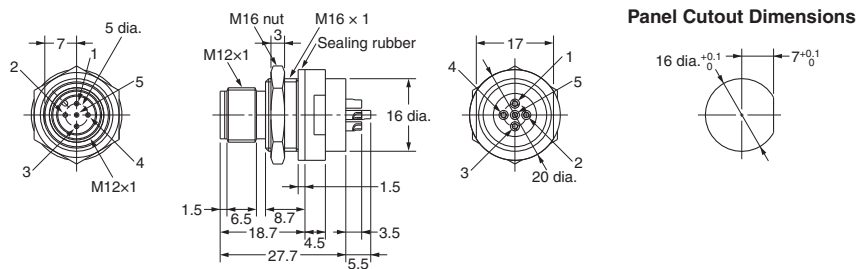
Panel-mounting Connector (Plug) with 0.5 m Cable
DCA1-5CNC5M1



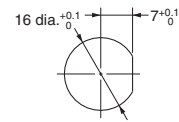
Wiring

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

Panel-mounting Connector (Socket), Solder-cup Terminals
XS2M-D524-4

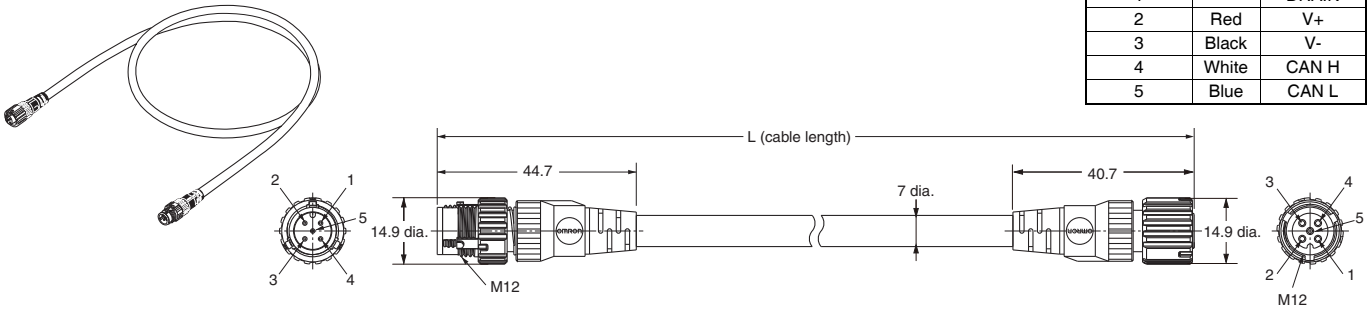


Panel Cutout Dimensions



● Environment-resistive Models (for Thin Wires and M12 Micro Connectors)

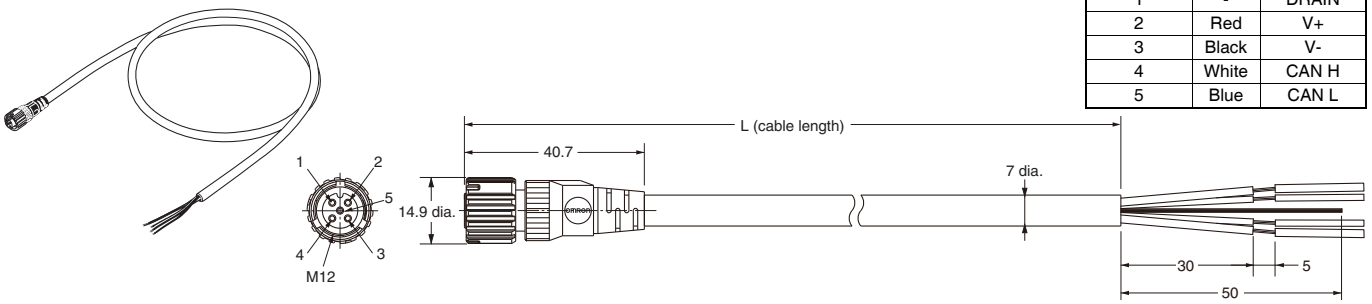
Cables with Connectors on Both Ends
DCA1-5CS□□W1



Wiring

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

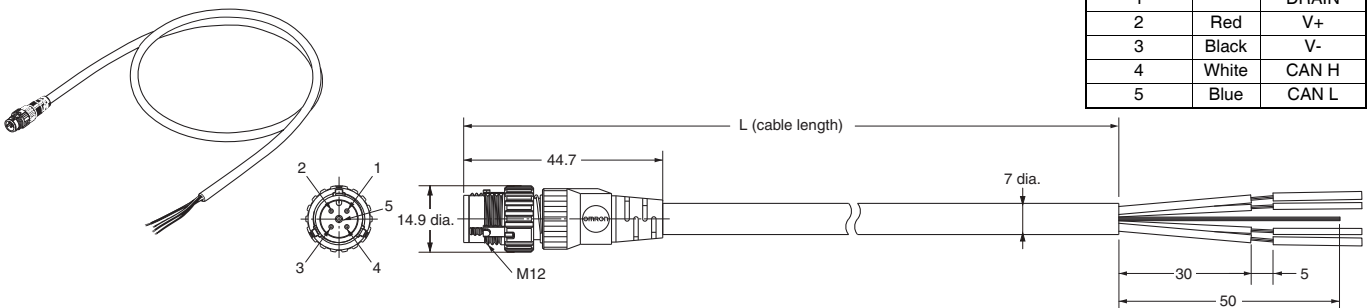
Cables with Connector on Single End (Socket)
DCA1-5CS□□F1



Wiring

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

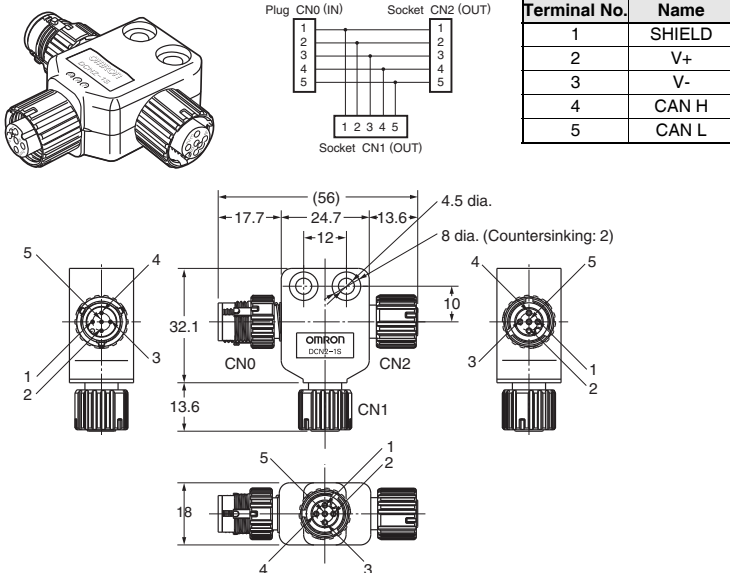
Cables with Connector on Single End (Plug)
DCA1-5CS□□H1



Wiring

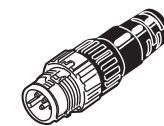
| Terminal No. | Color | Name |
|--------------|-------|-------|
| 1 | - | DRAIN |
| 2 | Red | V+ |
| 3 | Black | V- |
| 4 | White | CAN H |
| 5 | Blue | CAN L |

T-branch Connector
DCN2-1S



Connectors with Terminating Resistance

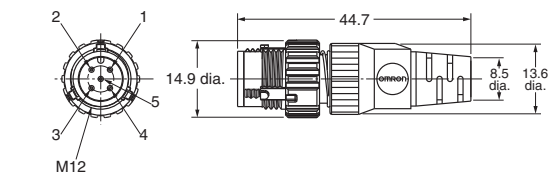
DRS2-1S (Plug)
DRS2-2S (Socket)



Wiring

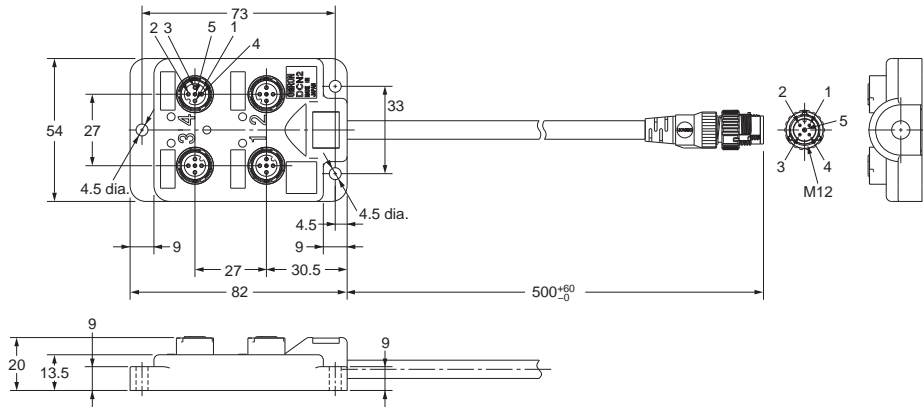
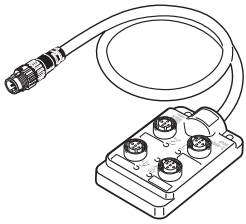
| Terminal No. | Name |
|--------------|-----------------------------|
| 1 | DRAIN : NC |
| 2 | V+ : NC |
| 3 | V- : NC |
| 4 | CAN H : \sim 121 Ω |
| 5 | CAN L : \sim 121 Ω |

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

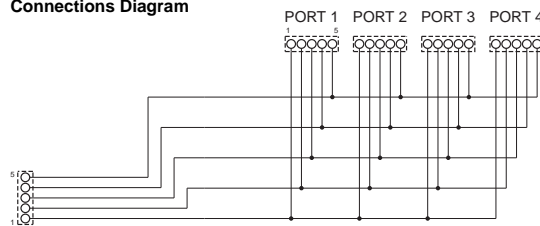


Note: The diagram shows the DRS2-1 (plug).

Shielded Branch Relay Box with Four Ports
DCN2-S4C5H1



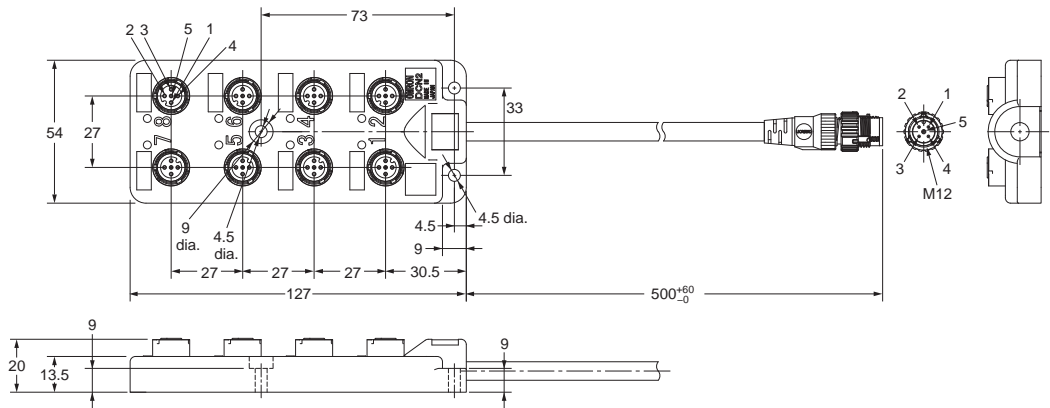
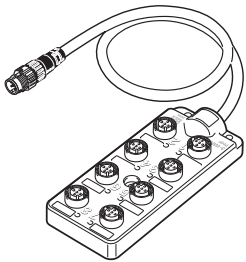
Connections Diagram



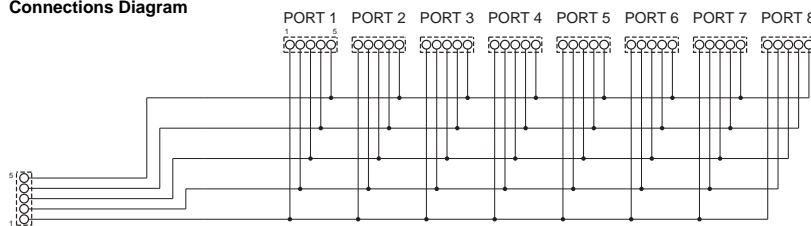
Wiring

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

Shielded Branch Relay Box with Eight Ports
DCN2-S8C5H1



Connections Diagram

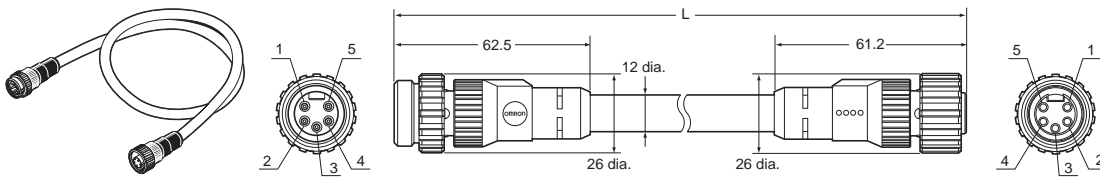


Wiring

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

● Environment-resistive Models for Thick Wires with 7/8-16UN Mini Connectors

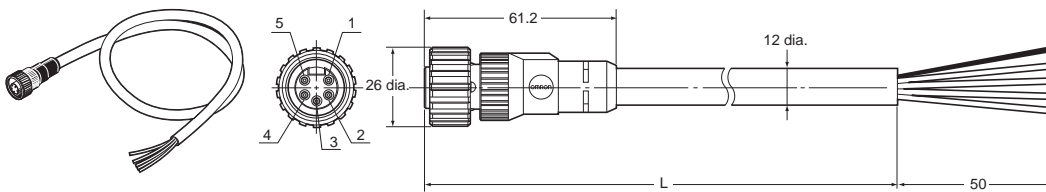
Thick Cable with Connectors on Both Ends (5 Conductors for Communications)
DCA2-5CN□□W1



Wiring

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

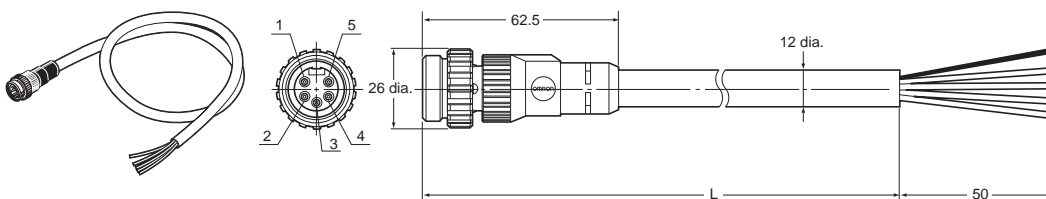
Thick Cable with Connector Socket on One End (5 Conductors for Communications)
DCA2-5CN□□F1



Wiring

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

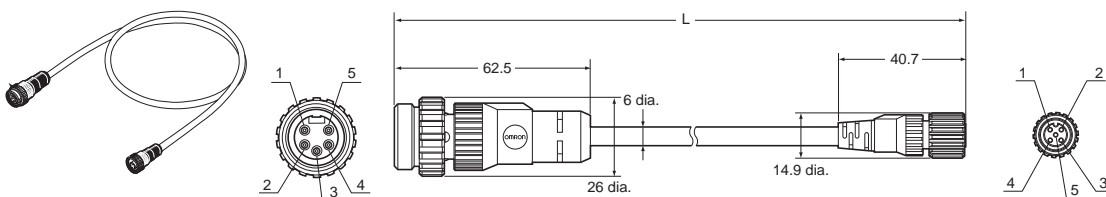
Thick Cable with Connector Plug on One End (5 Conductors for Communications)
DCA2-5CN□□H1



Wiring

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

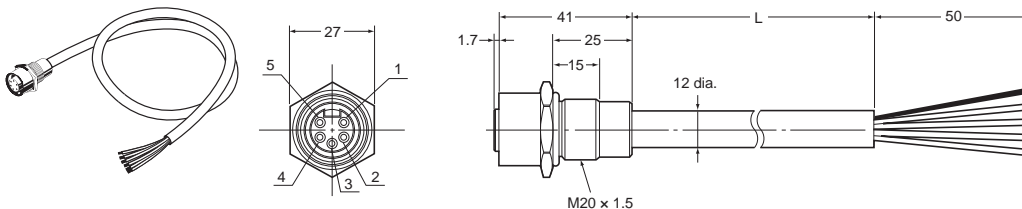
Thin Cable with Connectors on Both Ends (5 Conductors for Communications)
DCA1-5CN□□W5



Wiring

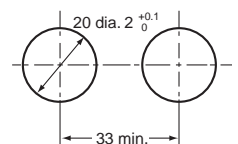
| Terminal No. | Color | Name |
|--------------|-------|-------|
| 1 | - | DRAIN |
| 2 | Red | V+ |
| 3 | Black | V- |
| 4 | White | CAN H |
| 5 | Blue | CAN L |

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



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

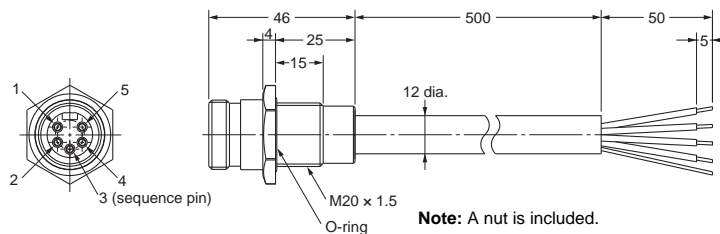
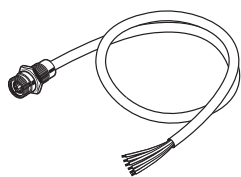
Panel Cutout Dimensions



Wiring

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

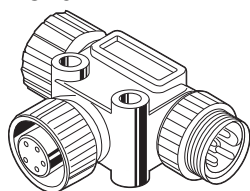
**Panel-mounting Connector (Plug) with 0.5 m Cable
DCA2-5CNC5M1**



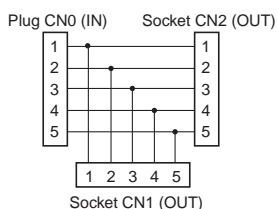
Wiring

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

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

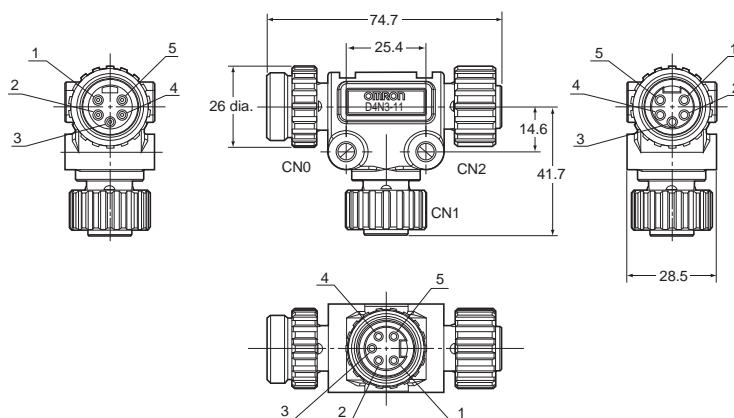


Connections Diagram

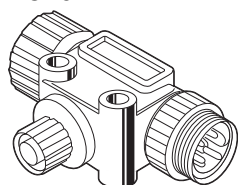


Wiring

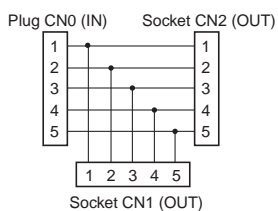
| Terminal No. | Name |
|--------------|-------|
| 1 | DRAIN |
| 2 | V+ |
| 3 | V- |
| 4 | CAN H |
| 5 | CAN L |



**T-branch Connector (5 Conductors for Communications,
Thin Wire Branch Line)
DCN3-12**

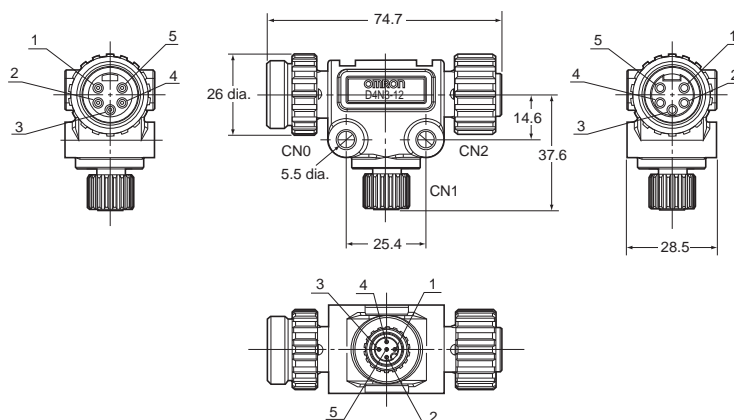


Connections Diagram

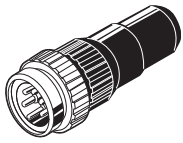


Wiring

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



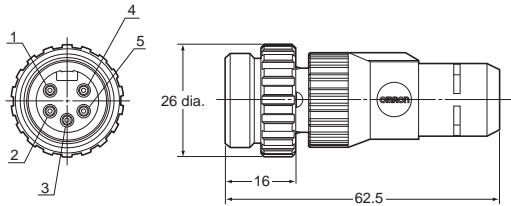
**Connector (Plug) with Terminating Resistance
DRS3-1**



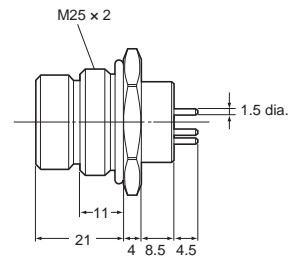
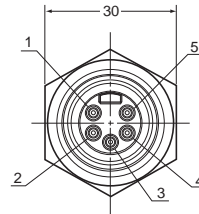
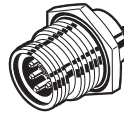
Wiring

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

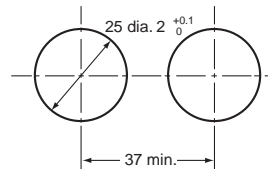
Note: Terminating resistance (121 Ω) is connected between terminals 4 and 5.



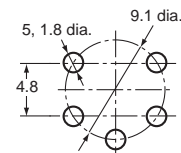
**Panel-mounting Connector (5 Pins for Communications)
XS4M-D521-1**



Panel Cutout Dimensions



PCB Processing Dimensions

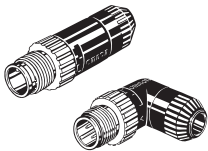


Note: A rubber seal and nut for panel mounting are included.

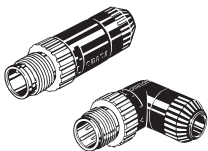
I/O Peripheral Devices

Applicable Connectors

● Assembly Connector Plugs for M12 Microconnectors


| Appearance | Applicable cable diameter (mm) | Cable direction | Number of poles | Connection method | | |
|---|--------------------------------|-----------------|-----------------|-------------------|-----------|-----------|
| | | | | Crimping | Soldering | Screws |
|  | For 6 dia. (5 to 6 dia.) | Straight | 4 | XS2G-D4C1 | XS2G-D421 | XS2G-D4S1 |
| | | L-shaped | | -- | XS2G-D422 | XS2G-D4S2 |
| | For 4 dia. (4 to 5 dia.) | Straight | | XS2G-D4C3 | XS2G-D423 | XS2G-D4S3 |
| | | L-shaped | | -- | XS2G-D424 | XS2G-D4S4 |
| | For 3 dia. (3 to 4 dia.) | Straight | | XS2G-D4C5 | XS2G-D425 | XS2G-D4S5 |
| | | L-shaped | | -- | XS2G-D426 | XS2G-D4S6 |
| | For 7 dia. (6 to 7 dia.) | Straight | | -- | -- | XS2G-D4S9 |
| | For 8 dia. (7 to 8 dia.) | | | -- | -- | XS2G-D4S7 |

● Smart click Assembly Connector Plugs for M12 Microconnectors

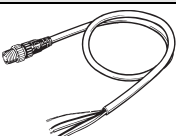
| Appearance | Applicable cable diameter (mm) | Cable direction | Number of poles | Connection method | | |
|--|--------------------------------|-----------------|-----------------|-------------------|-----------|-----------|
| | | | | Crimping | Soldering | Screws |
|  | For 6 dia. (5 to 6 dia.) | Straight | 4 | XS5G-D4C1 | XS5G-D421 | XS5G-D4S1 |
| | | L-shaped | | -- | XS5G-D422 | XS5G-D4S2 |
| | For 4 dia. (4 to 5 dia.) | Straight | | XS5G-D4C3 | XS5G-D423 | XS5G-D4S3 |
| | | L-shaped | | -- | XS5G-D424 | XS5G-D4S4 |
| | For 3 dia. (3 to 4 dia.) | Straight | | XS5G-D4C5 | XS5G-D425 | XS5G-D4S5 |
| | | L-shaped | | -- | XS5G-D426 | XS5G-D4S6 |
| | For 7 dia. (6 to 7 dia.) | Straight | | -- | -- | XS5G-D4S9 |
| | For 8 dia. (7 to 8 dia.) | | | -- | -- | XS5G-D4S7 |

Applicable Cables with Connectors


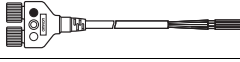

● Cables with Connector (Socket/Plug) on Both Ends (M12 Microconnectors for Power Supply and I/O)

| Appearance | Cable direction | Number of core wires | Cable length (m) | Screw-type Connectors | Smart click Connectors |
|---|-------------------|----------------------|------------------|-----------------------|------------------------|
|  | Straight/Straight | 4 | 1 | XS2W-D421-C81-F | XS5W-D421-C81-F |
| | | | 2 | XS2W-D421-D81-F | XS5W-D421-D81-F |
| | | | 5 | XS2W-D421-G81-F | XS5W-D421-G81-F |
| | L-shaped/L-shaped | | 2 | XS2W-D422-D81-F | XS5W-D422-D81-F |
| | | | 5 | XS2W-D422-G81-F | XS5W-D422-G81-F |
| | | | 2 | XS2W-D423-D81-F | XS5W-D423-D81-F |
| | Straight/L-shaped | | 5 | XS2W-D423-G81-F | XS5W-D423-G81-F |
| | | | 2 | XS2W-D424-D81-F | XS5W-D424-D81-F |
| | L-shaped/Straight | | 5 | XS2W-D424-G81-F | XS5W-D424-G81-F |

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

| Appearance | Cable direction | Number of core wires | Cable length (m) | Screw-type Connectors | Smart click Connectors |
|---|-----------------|----------------------|------------------|-----------------------|------------------------|
|  | Straight | 3 | 0.3 | XS2H-D421-AC0-F | XS5H-D421-AC0-F |
| | | 4 | | XS2H-D421-A80-F | XS5H-D421-A80-F |
| | | 3 | 1 | XS2H-D421-CC0-F | XS5H-D421-CC0-F |
| | | 4 | | XS2H-D421-C80-F | XS5H-D421-C80-F |


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

| Appearance | Cable | Connector | DC models | | |
|---|---------------|-------------------------|------------------|-----------------------|------------------------|
| | | | Cable length (m) | Screw-type Connectors | Smart click Connectors |
|  | With cable | Connectors on both ends | 0.5 | XS2R-D426-B11-F | XS5R-D426-B11-F |
| | | | 1 | XS2R-D426-C11-F | XS5R-D426-C11-F |
| | | | 2 | XS2R-D426-D11-F | XS5R-D426-D11-F |
| | | | 3 | XS2R-D426-E11-F | XS5R-D426-E11-F |
|  | With cable | Connector on one end | 2 | XS2R-D426-D10-F | XS5R-D426-D10-F |
| | | | 5 | XS2R-D426-G10-F | XS5R-D426-G10-F |
|  | Without cable | Connectors on both ends | -- | XS2R-D426-1 | XS5R-D426-1 |

Note 1: Use is supported only for Environment-resistive Terminals (DRT2-□D16C(L)(-1)).

Note 2: Connecting two XS2G assembly connectors (screw-type) side by side to the Y-branch connectors (CN1 and CN2) of a Y-shaped joint is not possible. Use crimped terminals or soldered terminals.


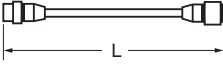

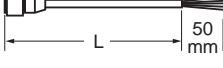

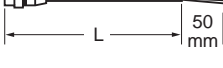
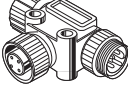


● Connector Cover for M12 Microconnectors

| Appearance | Product | Model | Application |
|---|---------------------------|---------|------------------------------------|
|  | Waterproof cover (socket) | XS2Z-22 | For covering unused I/O connectors |

Power Supply Peripheral Devices

Applicable Cables with Connectors

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

| Appearance | Product | Cable length L (mm) | Model |
|--|---|---------------------|-----------------|
|  |  | 1 | XS4W-D421-101-A |
| | | 2 | XS4W-D421-102-A |
| | | 5 | XS4W-D421-105-A |
| | | 10 | XS4W-D421-110-A |
|  |  | 1 | XS4F-D421-101-A |
| | | 2 | XS4F-D421-102-A |
| | | 5 | XS4F-D421-105-A |
| | | 10 | XS4F-D421-110-A |
|  |  | 1 | XS4H-D421-101-A |
| | | 2 | XS4H-D421-102-A |
| | | 5 | XS4H-D421-105-A |
| | | 10 | XS4H-D421-110-A |
|  | T-branch Connector | -- | XS4R-D424-5 |
|  | Panel mounting connector socket Cable: 50 cm | -- | XS4P-D421-1C5-A |
|  | Panel mounting connector plug DIP terminals | -- | XS4M-D421-1 |
| - | Waterproofing Cap for Plug | -- | XS4Z-11 |
| - | Waterproofing Cap for Socket | -- | XS4Z-12 |

Ordering Information

| | |
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Ordering Information

● International Standards

- The standards indicated in the "Standard" column are those current for UL, CSA, cULus, cUL, NK, and Lloyd standards and EC Directives as of the end of March 2009. (U: The standards are abbreviated as follows: U: UL, U1: UL Class I Division 2 Products for Hazardous Locations, C: CSA, UC: cULus, UC1: cULus Class I division 2 Products for Hazardous Locations, CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Ask your OMRON representative for the conditions under which the standards were met.

● EC Directives

The EC Directives applicable to PLCs include the EMC Directives and the Low Voltage Directive. OMRON complies with these directives as described below

● EMC Directives

Applicable Standards EMI: EN61000-6-4
EMS: EN61131-2 and
EN61000-6-2 (See note.)

manufacturing installations. OMRON PLCs conform to the related EMC standards so that the devices and machines into which they are built can more easily conform to EMC standards. The actual PLCs have been checked for conformity to EMC standards. Whether these standards are satisfied for the actual system, however, must be checked by the customer.

EMC-related performance will vary depending on the configuration, wiring, and other conditions of the equipment or control panel in which the PLC is installed. The customer must, therefore, perform final checks to confirm that the overall machine or device conforms to EMC standards.

Note: The applicable EMS standard depends on the product



● Low Voltage Directive

Applicable Standard: EN61131-2


Devices that operate at voltages from 50 to 1,000 VAC or 75 to 150 VDC must satisfy the appropriate safety requirements. With PLCs, this applies to Power Supply Units and I/O Units that operate in these voltage ranges. These Units have been designed to conform to EN61131-2, which is the applicable standard for PLCs.

List of Models


Masters

| Product | Appearance | Specifications | Model | Standards |
|----------------|---|--|----------------------|---------------|
| DeviceNet Unit |  | Model for CJ Series. Equipped with Master and Slave functionality. Control for up to 32,000 points per Master. | CJ1W-DRM21 | UC1, N, L, CE |
| |  | Model for CS Series. Equipped with Master and Slave functionality. Control for up to 32,000 points per Master. | CS1W-DRM21-V1 | |

Note: Refer to the CJ1 Catalog (Cat. No. P052) for details on the CJ1.
Refer to the CS1 Catalog (Cat. No. P047) for details on the CS1.

| Product | Appearance | Controller specifications | Display specifications | | Ethernet port | Model # | Standards |
|------------------------------------|--|--|---------------------------------------|------------------|---------------|--------------------------|-------------------|
| | | | Display device | Resolution | | | |
| NSJ-series Programmable Controller |  | I/O capacity: 1280 points 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 | UC1, CE, UL Type4 |
| | | | 8.4-inch color TFT LCD | 640 x 480 (VGA) | 10/100Base-T | NSJ8-TV01(B)-G5D | UC1, CE |
| | | | 10.4-inch color TFT LCD | | 10/100Base-T | NSJ10-TV01(B)-G5D | UC1, CE, UL Type4 |
| | | | 12.1-inch color TFT LCD | 800 x 600 (SVGA) | 10/100Base-T | NSJ12-TS01(B)-G5D | |

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

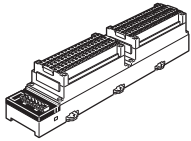
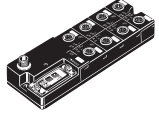




| Product | Appearance | Specifications | Model | Standards |
|-----------------|---|---|---|-----------|
| DeviceNet Board |  | PCI Board I/O allocation space: 25,200 bytes Equipped with Master and Slave functionality | 3G8F7-DRM21 3G8F7-DRM21-E1 | U, C, CE |

Note: For information on the CJ1, refer to the *CJ1 PLC Catalog* (Cat. No. P052) and *CJ2 PLC Catalog* (Cat. No. P059).
Refer to the CS1 Catalog (Cat. No. P047) for details on the CS1.
Refer to the C200HX/HG/HE Catalog (Cat. No. P036) for details on the C200HX/HG/HE.





Slaves

● Smart Slaves DRT2 Series

| Product | Appearance | Specifications | Model | Standards | | | |
|---|---|---|---|--------------------------|--------------------------|----------------|---------|
| Remote I/O Terminals with Transistors |  | 16 inputs NPN (+ common) | DRT2-ID16 | UC1, N, CE | | | |
| | | 16 inputs PNP (- common) | DRT2-ID16-1 | | | | |
| | | 16 outputs NPN (- common) | DRT2-OD16 | | | | |
| | | 16 outputs PNP (+ common) | DRT2-OD16-1 | | | | |
| | | Remote I/O Terminal Expansion Units with Transistors |  | 8 inputs NPN (+ common) | XWT-ID08 | UC, UC1, N, CE | |
| | | | | 8 inputs PNP (- common) | XWT-ID08-1 | | |
| | | | | 8 outputs NPN (- common) | XWT-OD08 | | |
| | | | | 8 outputs PNP (+ common) | XWT-OD08-1 | | |
| | | | | 16 inputs NPN (+ common) | XWT-ID16 | | |
| | | | | 16 inputs PNP (- common) | XWT-ID16-1 | | |
| 16 outputs NPN (- common) | XWT-OD16 | | | | | | |
| 16 outputs PNP (+ common) | XWT-OD16-1 | | | | | | |
| Remote I/O Terminal with Relays |  | 16 outputs | DRT2-ROS16 | UC1, N, CE | | | |
| Remote I/O Terminals with 3-tier Terminal Blocks and Transistors |  | 16 inputs NPN (+ common) | DRT2-ID16TA | UC1, CE | | | |
| | | 16 inputs PNP (- common) | DRT2-ID16TA-1 | | | | |
| | | 16 outputs NPN (- common) | DRT2-OD16TA | | | | |
| | | 16 outputs PNP (+ common) | DRT2-OD16TA-1 | | | | |
| | | 8 inputs/8 outputs NPN (+ common for inputs and - common for outputs) | DRT2-MD16TA | | | | |
| | | 8 inputs/8 outputs PNP (- common for inputs and + common for outputs) | DRT2-MD16TA-1 | | | | |
| e-CON Connector Terminals |  | 16 inputs NPN (+ common) | DRT2-ID16S | UC1, CE | | | |
| | | 16 inputs PNP (- common) | DRT2-ID16S-1 | CE | | | |
| | | 8 inputs/8 outputs NPN (+ common for inputs and - common for outputs) | DRT2-MD16S | | | | |
| MIL Connector Terminals (MIL Connector Terminals with Transistors) |  | 32 inputs NPN (+ common) | DRT2-ID32ML | UC1, N, CE | | | |
| | | 32 inputs PNP (- common) | DRT2-ID32ML-1 | | | | |
| | | 32 outputs NPN (- common) | DRT2-OD32ML | | | | |
| | | 32 outputs PNP (+ common) | DRT2-OD32ML-1 | | | | |
| | | 16 inputs/16 outputs NPN (+ common for inputs and - common for outputs) | DRT2-MD32ML | UC1, CE | | | |
| | | 16 inputs/16 outputs PNP (- common for inputs and + common for outputs) | DRT2-MD32ML-1 | | | | |
| | | 16 inputs NPN (+ common) | DRT2-ID16ML | | | | |
| | | 16 inputs PNP (- common) | DRT2-ID16ML-1 | | | | |
| | | 16 outputs NPN (- common) | DRT2-OD16ML | | | | |
| | | 16 outputs PNP (+ common) | DRT2-OD16ML-1 | | | | |
| | | 16 inputs NPN (+ common) | DRT2-ID16MLX | | | | |
| | | 16 inputs PNP (- common) | DRT2-ID16MLX-1 | | | | |
| | | 16 outputs NPN (- common) | DRT2-OD16MLX | | | | |
| | | 16 outputs PNP (+ common) | DRT2-OD16MLX-1 | | | | |
| | | Board Terminals with MIL Connectors (Parallel Mounting) |  | | 32 inputs NPN (+ common) | DRT2-ID32B | UC1, CE |
| | | | | | 32 inputs PNP (- common) | DRT2-ID32B-1 | |
| 32 outputs NPN (- common) | DRT2-OD32B | | | | | | |
| 32 outputs PNP (+ common) | DRT2-OD32B-1 | | | | | | |
| 16 inputs/16 outputs NPN (+ common for inputs and - common for outputs) | DRT2-MD32B | | | | | | |
| 16 inputs/16 outputs PNP (- common for inputs and + common for outputs) | DRT2-MD32B-1 | | | | | | |
| Board Terminals with MIL Connector (Perpendicular Mounting) |  | 32 inputs NPN (+ common) | DRT2-ID32BV | UC1, CE | | | |
| | | 32 inputs PNP (- common) | DRT2-ID32BV-1 | | | | |
| | | 32 outputs NPN (- common) | DRT2-OD32BV | | | | |
| | | 32 outputs PNP (+ common) | DRT2-OD32BV-1 | | | | |
| | | 16 inputs/16 outputs NPN (+ common for inputs and - common for outputs) | DRT2-MD32BV | | | | |
| | | 16 inputs/16 outputs PNP (- common for inputs and + common for outputs) | DRT2-MD32BV-1 | | | | |








| Product | Appearance | Specifications | Model | Standards | |
|---|---|---|------------------------|----------------|------------|
| Screw-less Clamp Terminals with Transistors |  | 16 inputs NPN (+ common) | Detection functions | DRT2-ID16SLH | U, UC1, CE |
| | | 16 inputs PNP (- common) | Detection functions | DRT2-ID16SLH-1 | |
| | | 16 outputs NPN (- common) | Detection functions | DRT2-OD16SLH | |
| | | 16 outputs PNP (+ common) | Detection functions | DRT2-OD16SLH-1 | |
| | | 16 inputs NPN (+ common) | No Detection functions | DRT2-ID16SL | |
| | | 16 inputs PNP (- common) | No Detection functions | DRT2-ID16SL-1 | |
| | | 16 outputs NPN (- common) | No Detection functions | DRT2-OD16SL | UC1, CE |
| | | 16 outputs PNP (+ common) | No Detection functions | DRT2-OD16SL-1 | |
| | | 32 inputs NPN (+ common) | Detection functions | DRT2-ID32SLH | |
| | | 32 inputs PNP (- common) | Detection functions | DRT2-ID32SLH-1 | |
| | | 32 outputs NPN (- common) | Detection functions | DRT2-OD32SLH | |
| | | 32 outputs PNP (+ common) | Detection functions | DRT2-OD32SLH-1 | |
| | | 16 inputs/16 outputs NPN (+ common for inputs and - common for outputs) Detection functions | | DRT2-MD32SLH | UC1, CE |
| | | 16 inputs/16 outputs PNP (- common for inputs and + common for outputs) Detection functions | | DRT2-MD32SLH-1 | |
| Advanced Environment-resistant Terminals with Transistors |  | 8 inputs NPN (+ common) | | DRT2-ID08C | UC, N, CE |
| | | 8 inputs PNP (- common) | | DRT2-ID08C-1 | UC1, N, CE |
| | | 8 outputs NPN (- common) | | DRT2-OD08C | UC, N, CE |
| | | 8 outputs PNP (+ common) | | DRT2-OD08C-1 | UC1, N, CE |
| | | 16 inputs NPN (+ common) | | DRT2-HD16C | UC, N, CE |
| | | 16 inputs PNP (- common) | | DRT2-HD16C-1 | |
| Standard Environment-resistant Terminals with Transistors |  | 4 inputs NPN (+ common) | | DRT2-ID04CL | UC1, CE |
| | | 4 inputs PNP (- common) | | DRT2-ID04CL-1 | |
| | | 4 outputs NPN (- common) | | DRT2-OD04CL | |
| | | 4 outputs PNP (+ common) | | DRT2-OD04CL-1 | |
| |  | 8 inputs NPN (+ common) | | DRT2-ID08CL | |
| | | 8 inputs PNP (- common) | | DRT2-ID08CL-1 | |
| | | 8 outputs NPN (- common) | | DRT2-OD08CL | |
| | | 8 outputs PNP (+ common) | | DRT2-OD08CL-1 | |
| | | 16 inputs NPN (+ common) | | DRT2-HD16CL | |
| | | 16 inputs PNP (- common) | | DRT2-HD16CL-1 | |
| | | 16 outputs NPN (- common) | | DRT2-WD16CL | |
| | | 16 outputs PNP (+ common) | | DRT2-WD16CL-1 | |
| | | 8 inputs/8 outputs NPN (+ common for inputs and - common for outputs) | | DRT2-MD16CL | |
| | | 8 inputs/8 outputs PNP (- common for inputs and + common for outputs) | | DRT2-MD16CL-1 | |
| Analog Input Terminals |  | 4 inputs (resolution: 6,000) | | DRT2-AD04 | UC1, CE |
| | | 4 inputs (resolution: 30,000) | | DRT2-AD04H | |
| Analog Output Terminal | | 2 outputs | | DRT2-DA02 | |
| Temperature Input Terminals with Thermocouple Inputs |  | 4 inputs | | DRT2-TS04T | UC1, CE |
| Temperature Input Terminals with Platinum-resistance Thermometer Inputs | | 4 inputs | | DRT2-TS04P | |

● SmartSlice GRT1 Series


| Product | | Appearance | Specifications | Model | Standards | |
|--|---|---|---|---|------------------|-----------|
| DeviceNet Communications Unit | |  | Up to 64 SmartSlice I/O Units can be connected (1,024 I/O points). | GRT1-DRT | UC1, CE, L | |
| SmartSlice I/O Units | Digital I/O Units |  | 4 inputs, NPN | GRT1-ID4 | UC1, CE, L | |
| | | | 4 inputs, PNP | GRT1-ID4-1 | | |
| | | | 4 outputs, NPN | GRT1-OD4 | | |
| | | | 4 outputs, PNP | GRT1-OD4-1 | | |
| | | | 8 inputs, NPN | GRT1-ID8 | UC, CE, L | |
| | | | 8 inputs, PNP | GRT1-ID8-1 | | |
| | | | 8 outputs, NPN | GRT1-OD8 | | |
| | | | 8 outputs, PNP | GRT1-OD8-1 | | |
| | | | 2 relay outputs | GRT1-ROS2 | UC1, CE, L | |
| | | | 4 AC inputs | GRT1-IA4-1 | UC1, CE, L | |
| | | GRT1-IA4-2 | | | | |
| | Analog I/O Units |  | 2 inputs (current/voltage) | GRT1-AD2 | UC1, CE, L | |
| | | | 2 outputs (current) | GRT1-DA2C | | |
| | | | 2 outputs (voltage) | GRT1-DA2V | | |
| Temperature input (resistance thermometer) |  | 2 temperature inputs (PT100 resistance thermometer) | GRT1-TS2P | UC1, CE, L | | |
| | | 2 temperature inputs (PT1000 resistance thermometer) | GRT1-TS2PK | | | |
| | | 2 thermocouple inputs | GRT1-TS2T | UC, CE, L | | |
| Counter Units |  | 1 counter input, 1 external output, NPN | GRT1-CT1 | UC, CE, L | | |
| | | 1 counter input, 1 external output, PNP | GRT1-CT1-1 | | | |
| System Units | Turnback Units |  | Right Turnback (Used to divide a SmartSlice I/O Terminal into blocks.) | GRT1-TBR | UC1, CE, L | |
| | |  | Left Turnback (Used to divide a SmartSlice I/O Terminal into blocks.) | GRT1-TBL | | |
| | Turnback Cable | -- | Length: 1 m | GCN2-100 | UC1 *2, CE, L | |
| | I/O Power Supply Units |  | | Used if the total current consumption of the I/O power supply exceeds 4 A or to provide an I/O power supply on a separate system. | GRT1-PD2 | UC, CE, L |
| | | | | | GRT1-PD2G | |
| | | | | | GRT1-PD8 | |
| GRT1-PD8-1 | | | | | | |
| GRT1-PC8 | | | | | | |
| GRT1-PC8-1 | Used to add the V and G terminals for the I/O power supply. | | | | | |
| End Unit *1 |  | | Required at the end of SmartSlice I/O Terminals. | GRT1-END | UC1, CE, L | |
| Options | Terminal Block | -- | Terminal block (5 blocks) | GRT1-BT1-5 | -- | |

*1. The End Unit is sold separately. (End Units are not included with Communications Units.)
 *2. Use the GCN2-100 as a set with the GRT1-TBR and GRT1-TBL.


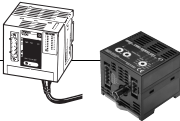



● MULTIPLE I/O TERMINALS

| Product | Appearance | I/O points | Specifications | Model | Standards |
|---------------------------------------|---|----------------|---|---------------------|-----------|
| Communications Unit |  | -- | Slave I/O points 1,024 max. (inputs and outputs) | DRT1-COM | U, C, CE |
| Digital I/O Units | Terminal block models | 16 inputs | NPN (+ common) | GT1-ID16 | U, C, CE |
| | | 16 inputs | PNP (- common) | GT1-ID16-1 | |
| | | 16 outputs | NPN (- common) | GT1-OD16 | |
| | | 16 outputs | PNP (+ common) | GT1-OD16-1 | |
| | Molex connector models | 16 inputs | NPN (+ common) | GT1-ID16MX | |
| | | 16 inputs | PNP (- common) | GT1-ID16MX-1 | |
| | | 16 outputs | NPN (- common) | GT1-OD16MX | |
| | | 16 outputs | PNP (+ common) | GT1-OD16MX-1 | |
| | Fujitsu connector models | 16 inputs | NPN (+ common) | GT1-ID16ML | |
| | | 16 inputs | PNP (- common) | GT1-ID16ML-1 | |
| | | 16 outputs | NPN (- common) | GT1-OD16ML | |
| | | 16 outputs | PNP (+ common) | GT1-OD16ML-1 | |
| | D-sub, 25-pin connector models | 16 inputs | NPN (+ common) | GT1-ID16DS | |
| | | 16 inputs | PNP (- common) | GT1-ID16DS-1 | |
| | | 16 outputs | NPN (- common) | GT1-OD16DS | |
| | | 16 outputs | PNP (+ common) | GT1-OD16DS-1 | |
| Fujitsu high-density connector models | 32 inputs | NPN (+ common) | GT1-ID32ML | | |
| | 32 inputs | PNP (- common) | GT1-ID32ML-1 | | |
| | 32 outputs | NPN (- common) | GT1-OD32ML | | |
| | 32 outputs | PNP (+ common) | GT1-OD32ML-1 | | |
| Relay Output Unit |  | 16 outputs | Relay Output Unit with 16 points, 2 A, SPST-NO terminal block | GT1-ROS16 | U, C, CE |
| | | 8 outputs | Relay Output Unit with 8 points, 5 A, SPST-NO terminal block | GT1-ROP08 | -- |
| |  | 8 outputs | SSR Output Unit with 8 points, 1.5 A, SPSTNO terminal block | GT1-FOP08 | |
| Analog Input Units |  | 8 inputs | Molex connector | GT1-AD08MX | U, C, CE |
| | | 4 inputs | Terminal block | GT1-AD04 | |
| Analog Output Units |  | 4 outputs | Molex connector | GT1-DA04MX | U, C, CE |
| | | 4 outputs | Terminal block | GT1-DA04 | |
| Temperature Input Units |  | 4 inputs | Thermocouple input | GT1-TS04T | U, C, CE |
| | | 4 inputs | Platinum-resistance thermometer input | GT1-TS04P | |
| I/O Unit Connecting Cable |  | -- | 1 m | GCN1-100 | -- |
| | | -- | 30 cm | GCN1-030 | |
| | | -- | 60 cm | GCN1-060 | |

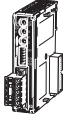


● Intelligent Slaves (PLC Units)

| Product | Appearance | Specifications | Model | Standards | |
|---------------------|---|---|--------------------------------|------------------------|----------|
| Programmable Slaves |  | Slave equipped with CPM2C CPU Unit functions 1,024 points max. for Remote I/O Links Includes CompoBus/s Master. | 4 transistor outputs (sinking) | CPM2C-S100C-DRT | U, C, CE |
| | | | 4 transistor | CPM2C-S110C-DRT | |





● Intelligent Slaves

| Product | Appearance | Specifications | Model | Standards | | |
|--|---|--|--------------------------------------|--------------------------|----|-----------------------|
| Digital Sensor Communications Unit |  | Up to 16 E3X-DA-S, E3X-MDA, E3X-LDA, and E2C-EDA Fiber Amplifiers can be connected. | | E3X-DRT21-S VER.3 | CE | |
| | | Fiber Amplifier Unit | Advanced models | NPN | | E3X-DA7-S *1 |
| | | | | PNP | | E3X-DA9-S *1 |
| | | | Standard models | NPN | | E3X-DA6-S *1 |
| | | | | PNP | | E3X-DA8-S *1 |
| | | | Mark-detecting models (Blue LED) | NPN | | E3X-DAB6-S |
| | | | | PNP | | E3X-DAB8-S |
| | | | Mark-detecting models (Green LED) | NPN | | E3X-DAG6-S |
| | | | | PNP | | E3X-DAG8-S |
| | | | Mark-detecting models (Infrared LED) | NPN | | E3X-DAH6-S |
| | | | | PNP | | E3X-DAH8-S |
| | | | Advanced Twin-output models | NPN | | E3X-DA6TW-S *1 |
| | | | | PNP | | E3X-DA8TW-S *1 |
| | | | Advanced External input models | NPN | | E3X-DA6RM-S *1 |
| | | | | PNP | | E3X-DA8RM-S *1 |
| | | 2-channel models | NPN | E3X-MDA6 | | |
| | | | PNP | E3X-MDA8 | | |
| | | Laser Photoelectric Sensor with Separate Amplifier | Twin-output models | NPN | | E3C-LDA6 |
| | | | | PNP | | E3C-LDA8 |
| | | | External input models | NPN | | E3C-LDA7 |
| PNP | E3C-LDA9 | | | | | |
| Proximity Sensor with Separate Amplifier | Twin-output models | NPN | E2C-EDA6 | | | |
| | | PNP | E2C-EDA8 | | | |
| | External input models | NPN | E2C-EDA7 | | | |
| PNP | | E2C-EDA9 | | | | |
| Wire-Saving Connector | | | E3X-CN02 *2 | | | |
| Intelligent Flag III |  | ID system for DeviceNet For the information on the status of certification for radio wave regulations in various countries, visit the OMRON website at www.ia.omron.com . | V600-HAM42-DRT | CE | | |
| DeviceNet ID Slave | | | V680-HAM42-DRT | UC, CE, RCM | | |
| DeviceNet-compliant Indicators |  | DeviceNet-compliant Process Indicator | K3HB-XVD-A-DRT1 | UC, CE | | |
| | | DeviceNet-compliant Weighing Indicator | K3HB-VLC-B-DRT1 | | | |
| | | DeviceNet-compliant Temperature Indicator | K3HB-HTA-DRT1 | | | |
| | | DeviceNet-compliant Linear Sensor Indicators | K3HB-SSD-A-DRT1 | | | |
| | | DeviceNet-compliant Rotary Pulse Indicator | K3HB-RNB-A-DRT1 | | | |
| | | DeviceNet-compliant Time Interval Indicator | K3HB-PNB-A-DRT1 | | | |
| DeviceNet-compliant Up/Down Counting Pulse Indicator | K3HB-CNB-A-DRT1 | | | | | |
| DeviceNet-compliant Digital Controllers |  | Basic Type (1 input) | E5AR-Q4B-DRT | UC, CE | | |
| | | | E5AR-C4B-DRT | | | |
| | | | E5AR-QC4B-DRT | | | |
| | | 2-input Type | E5AR-QQ4W-DRT | | | |
| | | 4-input Type | E5AR-CC4WW-DRT | | | |
| | | Control Valve Control Type (1 input) | E5AR-PR4F-DRT | | | |
| | E5AR-PRQ4F-DRT | | | | | |
| |  | Basic Type (1 input) | E5ER-QTB-DRT | | | |
| | | | E5ER-CTB-DRT | | | |
| | | | E5ER-QTW-DRT | | | |
| | | 2-input Type | E5ER-CTW-DRT | | | |
| | | Control Valve Control Type (1 input) | E5ER-PRTF-DRT | | | |
| | | | | | | |

*1. E3X-DA7-S, E3X-DA9-S, E3X-DA6-S, E3X-DA8-S, E3X-DA6TW-S, E3X-DA8TW-S, E3X-DA6RM-S, E3X-DA8RM-S have been discontinued at the end of March 2017.
 *2. Order as many Connectors as the number of Sensors.

| Product | | Appearance | Specifications | | | Model | Standards |
|--|--|---|--|---|----------------------------|----------------|-----------|
| Modular Temperature Controller | CPU Bus Unit with DeviceNet Communications |  | External input power supply voltage: 24 VDC Applicable model: EJ1 | | | EJ1N-HFUB-DRT | UC, CE |
| | Basic Units for Temperature Control | -- | 24 VDC supplied from the End Unit. | No. of control outputs: 2 Control outputs 1 and 2: 2 voltage outputs (for SSR drive) Control outputs 3 and 4: 2 transistor outputs (sinking) | M3 terminals | EJ1N-TC2A-QNHB | |
| | | | | | Screw-less clamp terminals | EJ1N-TC2B-QNHB | |
| | | | | No. of control outputs: 4 Control outputs 1 and 2: 2 voltage outputs (for SSR drive) Control outputs 3 and 4: 2 voltage outputs (for SSR drive) | M3 terminals | EJ1N-TC4A-QQ | |
| | | | | | Screw-less clamp terminals | EJ1N-TC4B-QQ | |
| | | | | No. of control outputs: 2 Control outputs 1 and 2: 2 current outputs Control outputs 3 and 4: 2 transistor outputs (sinking) | M3 terminals | EJ1N-TC2A-CNB | |
| | | | | | Screw-less clamp terminals | EJ1N-TC2B-CNB | |
| | CPU Bus Units with Programless Connection | -- | 24 VDC supplied from the End Unit. | Auxiliary outputs: 4 transistor outputs (sinking) | M3 terminals | EJ1N-HFUA-NFLK | |
| | | | | | Screw-less clamp terminals | EJ1N-HFUB-NFLK | |
| | | | | Auxiliary outputs: 4 transistor outputs (sinking) | M3 terminals | EJ1N-HFUA-NFL2 | |
| Screw-less clamp terminals | | | | | EJ1N-HFUB-NFL2 | | |
| End Units | -- | 24 VDC | Auxiliary outputs: 2 transistor outputs (sinking) | M3 terminals | EJ1C-EDUA-NFLK | | |
| | | | | Connector terminals | EJ1C-EDUC-NFLK | | |
| Multi-function Compact Inverter |  | MX2-Series V1 type DeviceNet Communication Unit | | | 3G3AX-MX2-DRT-E | CU, CE | |
| High-function General-purpose Inverter |  | RX-Series V1 type DeviceNet Communication Unit | | | 3G3AX-RX-DRT-E | CU, CE | |



CIP Safety on DeviceNet System

| Product | Appearance | Specifications | Model | Standards |
|----------------------------|---|--|--------------------------|-----------|
| Safety Network Controllers |  | Safety inputs: 12, Test outputs: 12, Safety outputs: 6 Unit version: 1.0 | NE0A-SCPU01 | CE, UC |
| |  | Safety inputs: 16, Test outputs: 4, Safety outputs: 8 Unit version: 2.0 | NE1A-SCPU01-V1 | CE, UC |
| | | Safety inputs: 40, Test outputs: 8, Safety outputs: 8 Unit version: 2.0 | NE1A-SCPU02 | |
| Safety I/O Terminals |  | Safety inputs: 12, Test outputs: 4 | DST1-ID12SL-1 | CE, UC |
| | | Safety inputs: 8, Safety outputs (semiconductor): 8, Test outputs: 4 | DST1-MD16SL-1 | |
| | | Safety inputs: 8, Safety outputs (semiconductor): 8, Test outputs: 4 | DST1-XD0808SL-1 * | |
| | | Safety inputs: 4, Safety outputs (relay): 4, Test outputs: 4 | DST1-MRD08SL-1 | |
| Network Configurator |  | Components: Installation Disk (CD-ROM: 1 license) Computer: IBM PC/AT or compatible Applicable OS: Windows XP Service Pack 3 (32-bit edition) Windows Vista Service Pack 2 (32-bit edition, 64-bit edition) Windows 7 (32-bit edition, 64-bit edition) Windows 8 (32-bit edition, 64-bit edition) Windows 8.1 (32-bit edition, 64-bit edition) Windows 10 (32-bit edition, 64-bit edition) | WS02-CFSC1-E | -- |
| | | Components: Upgrade Disk (CD-ROM: 1 license) Computer: IBM PC/AT or compatible Applicable OS: Windows XP Service Pack 3 (32-bit edition) Windows Vista Service Pack 2 (32-bit edition, 64-bit edition) Windows 7 (32-bit edition, 64-bit edition) Windows 8 (32-bit edition, 64-bit edition) Windows 8.1 (32-bit edition, 64-bit edition) Windows 10 (32-bit edition, 64-bit edition) | WS02-CFSC1-E-UP | |

Note: Spring terminal blocks are mounted on the Unit as a standard feature. Separate terminals are available as required, such as for replacement.
For details, refer to the *CIP Safety on DeviceNet System Catalog* (Cat. No. Z907).

* To make setting for the DST1-XD0808SL-1, use Network Configurator version 2.0 or higher.

Configurator

| Product | Appearance | Specifications | Model | Standards |
|------------------------|---|--|------------------------|-----------|
| DeviceNet Configurator |  | DeviceNet Configurator Software OS: Windows 2000 (Service Pack2 or higher)/XP/Vista/7 (32bit) * | WS02-CFDC1-E | -- |
| |  | PC Card OS: Windows 2000 (Service Pack2 or higher)/XP | 3G8E2-DRM21-EV1 | |

* To use the software on Windows Vista or Windows 7, download the version upgrade program from the following OMRON website and apply it: www.fa.omron.co.jp/

Software

How to Select Required Support Software for Your Controller

The required Support Software depends on the Controller to connect. Please check the following table when purchasing the Support Software.

| Item | Omron PLC System | Omron Machine Automation Controller System |
|------------|-----------------------------------|--|
| Controller | CS, CJ, CP, and other series | NJ-series |
| Software | FA Integrated Tool Package CX-One | Automation Software Sysmac Studio |

FA Integrated Tool Package CX-One

| Product name | Specifications | Number of licenses | Media | Model | Standards |
|--|---|--------------------|-----------|-----------------------|-----------|
| | | | | | |
| FA Integrated Tool Package CX-One Ver.4.□ | <p>The CX-One is a comprehensive software package that integrates Support Software for OMRON PLCs and components.</p> <p>CX-One runs on the following OS. OS: Windows XP (Service Pack 3 or higher, 32-bit version) / Windows Vista (32-bit/64-bit version) / 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)</p> <p>CX-One Version 4.□ includes CX-Integrator Ver.3.□. For details, refer to the CX-One catalog (Cat. No. R134)</p> | 1 license *1 | DVD *2 | CXONE-AL01D-V4 | -- |

*1. Multi licenses (3, 10, 30, or 50 licenses) and DVD media without licenses are also available for the CX-One.




*2. The CX-One is also available on CD (CXONE-AL□□C-V4).

Automation Software Sysmac Studio

Please purchase a DVD and required number of licenses the first time you purchase the Sysmac Studio. DVDs and licenses are available individually. Each model of licenses does not include any DVD.


















| Product name | Specifications | Number of licenses | Media | Model | Standards |
|--|--|--------------------|-------|----------------------|-----------|
| | | | | | |
| Sysmac Studio Standard Edition Ver.1.□□ | <p>The Sysmac Studio is the software that provides an integrated environment for setting, programming, debugging and maintenance of machine automation controllers including the NJ/NX-series CPU Units, NY-series Industrial PC, EtherCAT Slave, and the HMI.</p> <p>Sysmac Studio runs on the following OS. 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)</p> <p>The Sysmac Studio Standard Edition DVD includes Support Software to set up EtherNet/IP Units, DeviceNet slaves, Serial Communications Units, and Support Software for creating screens on HMIs (CX-Designer). Refer to your OMRON website for details.</p> | -- (Media only) | DVD | SYSMAC-SE200D | -- |
| | | 1 license * | -- | SYSMAC-SE201L | -- |

* Multi licenses are available for the Sysmac Studio (3, 10, 30, or 50 licenses).



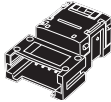
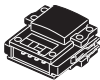
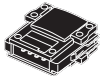


| Product | Appearance | Specifications | Model | Standards |
|--------------------|---|--|-----------------------------------|------------------------|
| DeviceNet Analyzer |  | Software OS: Windows 2000 (Service Pack2 or higher)/XP | WS02-ALDC1-E | -- |
| NX-Server |  | DDE Edition OS: Windows 2000 (Service Pack2 or higher)/XP | WS02-NXDC1-E | -- |
| Device Inspector |  | Software OS: Windows 2000 (ServicePack2 or higher)/XP | One-license version Media: DVD | WS02-DIPC1-E |
| | | | Site license | WS02-DIPC1-ELXX |

Peripheral Devices

● Models for Standard Cables

| Product | Appearance | Specifications | | Model |
|---------------------------------|---|--|---|-----------------|
| T-branch Tap for 1 branch line |  | Cable wiring direction: Toward top Cable lock direction: From top Connector screw direction: From top | Provided with 3 parallel clamp connectors with screws (XW4G-05C1-H1-D), standard terminating resistor | DCN1-1NC |
| |  | Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From side | 3 parallel connectors with screws (XW4B-05C1-H1-D), standard terminating resistor | DCN1-1C |
| |  | Cable wiring direction: Toward top Cable screw direction: From side Connector screw direction: From top | | DCN1-2C |
| |  | Cable wiring direction: From side Cable screw direction: From top Connector screw direction: From top | 3 vertical-type connectors with screws (XW4B-05C1-V1R-D), standard terminating resistor | DCN1-2R |
| T-branch Tap for 3 branch lines |  | Cable wiring direction: Toward top Cable lock direction: From top Connector screw direction: From top | Provided with 5 parallel clamp connectors with screws (XW4G-05C1-H1-D), standard terminating resistor | DCN1-3NC |
| |  | Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From side | 5 parallel connectors with screws (XW4B-05C1-H1-D), standard terminating resistor | DCN1-3C |
| |  | Cable wiring direction: Toward top Cable screw direction: From side Connector screw direction: From top | | DCN1-4C |
| |  | Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From top | 5 vertical-type connectors with screws (XW4B-05C1-V1R-D), standard terminating resistor | DCN1-4R |
| Power Supply Tap |  | 2 connectors, standard terminating resistor, fuse | | DCN1-1P |
| Connector |  | Parallel clamp connector with screws (Connector insertion and wiring performed in the same direction) | | XW4G-05C1-H1-D |
| |  | Parallel multi-branching clamp connector with screws (Connector insertion and wiring performed in same direction) | | XW4G-05C4-TF-D |
| |  | Parallel connector with screws (Connector insertion and wiring performed in the same direction) | | XW4B-05C1-H1-D |
| |  | Parallel connector with screws (Connector insertion and wiring performed in the same direction) | | XW4B-05C4-T-D |
| |  | Parallel, multi-branching connector with screws (Connector insertion and wiring performed in the same direction) | | XW4B-05C4-TF-D |
| |  | Orthogonal connector with screws (Connector insertion and wiring performed at a right angle) | | XW4B-05C1-V1R-D |
| Special Cables |  | Thin cable Length: 100 m DCA1-5C10-B: Cable color: Blue DCA1-5C10: Cable color: Grey | | DCA1-5C10(-B) |
| | | Thick cable Length: 100 m DCA2-5C10-B: Cable color: Blue DCA2-5C10: Cable color: Grey | | DCA2-5C10(-B) |
| Terminal-block Terminator |  | Resistance of 121 Ω | | DRS1-T |

● Models for Flat Cables

| Product | Appearance | Specifications | Model | Standards |
|--|---|---|------------------|------------|
| Conversion Connector for Standard Thin Cable and Flat Cable |  | Used as a set with the DCN4-TR4 when Thin Cable is branched on a branch line. | DCN4-BR4D | UC pending |
| Power Supply Terminal Block with Terminating Resistor for Flat Cable |  | Can be used to supply communications power from terminals when flat cable is used. | DCN4-TP4D | UC pending |
| Flat Connector Socket |  | Used as a set with a DCN4-BR4 Flat Connector Plug in the following applications. <ul style="list-style-type: none"> • Extending the trunk line • T-branching the trunk line into branch lines Used alone in the following applications. <ul style="list-style-type: none"> • Connecting a DCN4-TM4 Terminating Resistor to the trunk line | DCN4-TR4 | UC pending |
| Flat Connector Plug |  | Used as a set with a DCN4-TR4 Flat Connector Socket in the following applications. <ul style="list-style-type: none"> • Extending the trunk line • T-branching the trunk line into branch lines Used alone in the following applications. <ul style="list-style-type: none"> • Connecting the communications cable to the Unit • Connecting the communications cable to a DCN4-MD4 Multi-drop Connector | DCN4-BR4 | UC |
| Terminating Resistor |  | Connector terminating resistor for flat cable. Attached to the DCN4-TR4 Flat Connector Socket at the ends of the trunk line. | DCN4-TM4 | UC |
| Flat Cable |  | Four-core flat cable (UL 2555) Length: 100 m Conductor diameters: 0.75 mm ² x 2, 0.5 mm ² x 2 | DCA4-4F10 | UC |
| Special Crimping Tool |  | This is the crimping tool for the following connectors: <ul style="list-style-type: none"> • DCN4-TR4(-1) Flat Connector Socket • DCN4-BR4 Flat Connector Plug • DCN4-BR4D Conversion Connector for Standard Thin Cable and Flat Cable | DWT-A01 | -- |

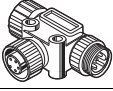
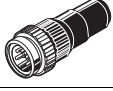





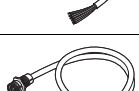

* Delivered in units of ten. Order in a multiple of ten.

● Environment-resistive Models for Thin Wires with M12 Microconnectors

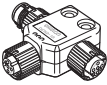
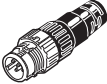





| Product | Appearance | Specifications | Model | |
|---|------------|--|----------------------|--------------|
| Sealed Assembling-type Connector (male) | | For communications (plug) | XS2G-D5S7 | |
| Sealed Assembling-type Connector (female) | | For communications (socket) | XS2C-D5S7 | |
| Sealed T-branch Connector | | For 1 branch line | DCN2-1 | |
| Sealed Connector with Terminating Resistor | | Plug | DRS2-1 | |
| | | Socket | DRS2-2 | |
| Cables with Sealed Connectors * | | Cable with connectors on both ends | Length: 0.5 m | DCA1-5CNC5W1 |
| | | | Length: 1 m | DCA1-5CN01W1 |
| | | | Length: 2 m | DCA1-5CN02W1 |
| | | | Length: 3 m | DCA1-5CN03W1 |
| | | | Length: 5 m | DCA1-5CN05W1 |
| | | Cable with connector on one end (socket) | Length: 0.5 m | DCA1-5CNC5F1 |
| | | | Length: 1 m | DCA1-5CN01F1 |
| | | | Length: 2 m | DCA1-5CN02F1 |
| | | | Length: 3 m | DCA1-5CN03F1 |
| | | | Length: 5 m | DCA1-5CN05F1 |
| | | Cable with connector on one end (plug) | Length: 0.5 m | DCA1-5CNC5H1 |
| | | | Length: 1 m | DCA1-5CN01H1 |
| | | | Length: 2 m | DCA1-5CN02H1 |
| | | | Length: 3 m | DCA1-5CN03H1 |
| | | | Length: 5 m | DCA1-5CN05H1 |
| Shielded Panel-mounting Connectors (female) | | Panel-mounting connector (socket) | Length: 0.5 m | DCA1-5CNC5P1 |
| | | Panel-mounting connector (socket) | Solder-cup terminals | XS2P-D522-2 |
| Shielded Panel-mounting Connectors (male) | | Panel-mounting connector (plug) | Length: 0.5 m | DCA1-5CNC5M1 |
| | | Panel-mounting connector (plug) | Solder-cup terminals | XS2M-D524-4 |

* Robot cable type connectors with shielded cables (DCA1-5CN□□□1-R) are also available. Contact your OMRON sales representative for details.

● Environment-resistive Models for Thick Wires with 7/8-16UN Miniconnectors

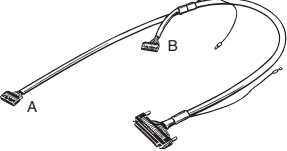
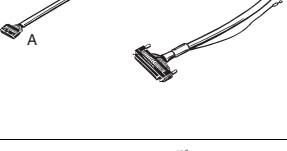

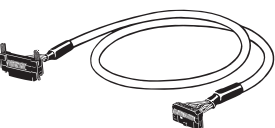
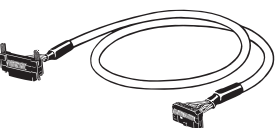
| Product | Appearance | Specification | Model | |
|------------------------------------|---|---|---------------------|---------------------|
| Shielded T-branch Connector |  | T-branch Connector | DCN3-11 | |
| | | T-branch Connector (Branch connector is M12) | DCN3-12 | |
| Shielded Terminating Resistor |  | Plug Connector | DRS3-1 | |
| Connectors with Shielded Cables |  | Cables with connectors at both ends | Length: 1 m | DCA2-5CN01W1 |
| | | | Length: 2 m | DCA2-5CN02W1 |
| | | | Length: 5 m | DCA2-5CN05W1 |
| | | | Length: 10 m | DCA2-5CN10W1 |
| |  | Cables with connector socket at one end | Length: 1 m | DCA2-5CN01F1 |
| | | | Length: 2 m | DCA2-5CN02F1 |
| | | | Length: 5 m | DCA2-5CN05F1 |
| | | | Length: 10 m | DCA2-5CN10F1 |
| |  | Cables with connector plug at one end | Length: 1 m | DCA2-5CN01H1 |
| | | | Length: 2 m | DCA2-5CN02H1 |
| | | | Length: 5 m | DCA2-5CN05H1 |
| | | | Length: 10 m | DCA2-5CN10H1 |
| |  | Cables with connectors at both ends Thin cable M12 socket | Length: 1 m | DCA1-5CN01W5 |
| | | | Length: 2 m | DCA1-5CN02W5 |
| | | | Length: 5 m | DCA1-5CN05W5 |
| | | | Length: 10 m | DCA1-5CN10W5 |
| Panel-mounting Connectors (Female) |  | Panel-mounting Connector Sockets with 0.5-m cable | DCA2-5CNC5P1 | |
| Panel-mounting Connectors (Male) |  | Panel-mounting Connector Plugs with 0.5-m cable | DCA2-5CNC5M1 | |
| Panel-mounting Connectors (Male) |  | Panel-mounting Connector Plugs DIP terminals | XS4M-D521-1 | |

● Environment-resistive Models for Thin Wires with M12 Smart Click Microconnectors 

| Product | Appearance | Specifications | Model | |
|--|---|---|---------------|--------------|
| Sealed T-branch Connector |  | For 1 branch line | DCN2-1S | |
| Sealed Connector with Terminating Resistor |  | Plug | DRS2-1S | |
| | | Socket | DRS2-2S | |
| Cables with Sealed Connectors * |  | Cable with connectors on both ends | Length: 0.5 m | DCA1-5CSC5W1 |
| | | | Length: 1 m | DCA1-5CS01W1 |
| | | | Length: 2 m | DCA1-5CS02W1 |
| | | | Length: 3 m | DCA1-5CS03W1 |
| | | | Length: 5 m | DCA1-5CS05W1 |
| |  | Cable with connector socket on one end (socket) | Length: 0.5 m | DCA1-5CSC5F1 |
| | | | Length: 1 m | DCA1-5CS01F1 |
| | | | Length: 2 m | DCA1-5CS02F1 |
| | | | Length: 3 m | DCA1-5CS03F1 |
| | | | Length: 5 m | DCA1-5CS05F1 |
| |  | Cable with connector socket on one end (plug) | Length: 0.5 m | DCA1-5CSC5H |
| | | | Length: 1 m | DCA1-5CS01H1 |
| | | | Length: 2 m | DCA1-5CS02H1 |
| | | | Length: 3 m | DCA1-5CS03H1 |
| | | | Length: 5 m | DCA1-5CS05H1 |
| Shielded Branch Relay Box |  | 4 ports | 0.5-m cable | DCN2-S4C5H1 |
| |  | 8 ports | 0.5-m cable | DCN2-S8C5H1 |

* Robot cable type connectors with shielded cables (DCA1-5CN□□□1-R) are also available. Contact your OMRON sales representative for details.

● Cables with Connectors Compatible with MULTIPLE I/O TERMINAL Connectors
Models with Fujitsu Connectors

| Product | Appearance | Cable length L (mm) | Model |
|--------------------------------|---|---------------------|-----------------|
| Cable with Connectors XW2Z-R□C |  | A: 1,000, B: 750 | XW2Z-RI100C-75 |
| | | A: 1,500, B: 1,250 | XW2Z-RI150C-125 |
| | | A: 2,000, B: 1,750 | XW2Z-RI200C-175 |
| | | A: 3,000, B: 2,750 | XW2Z-RI300C-275 |
| | | A: 5,000, B: 4,750 | XW2Z-RI500C-475 |
| |  | A: 1,000, B: 750 | XW2Z-RO100C-75 |
| | | A: 1,500, B: 1,250 | XW2Z-RO150C-125 |
| | | A: 2,000, B: 1,750 | XW2Z-RO200C-175 |
| | | A: 3,000, B: 2,750 | XW2Z-RO300C-275 |
| | | A: 5,000, B: 4,750 | XW2Z-RO500C-475 |
| Cable with Connectors XW2Z |  | 1,000 | XW2Z-R100C |
| | | 1,500 | XW2Z-R150C |
| | | 2,000 | XW2Z-R200C |
| | | 3,000 | XW2Z-R300C |
| | | 5,000 | XW2Z-R500C |
| Cable with Connectors XW2Z |  | 500 | XW2Z-050A |
| | | 1,000 | XW2Z-100A |
| | | 1,500 | XW2Z-150A |
| | | 2,000 | XW2Z-200A |
| | | 3,000 | XW2Z-300A |
| |  | 500 | XW2Z-050B |
| | | 1,000 | XW2Z-100B |
| | | 1,500 | XW2Z-150B |
| | | 2,000 | XW2Z-200B |
| | | 3,000 | XW2Z-300B |
| | 5,000 | XW2Z-500B | |

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Related Manuals

Manuals

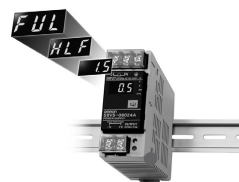
| Cat.No. | Product Group | Models | Name | Type |
|---------|--------------------------------|--|---|----------------------|
| W267 | - | - | DeviceNet | Operation Manual |
| W497 | Master | CJ1W-DRM21 | DeviceNet Units for NJ-Series CPU Units | Operation Manual |
| W380 | Master | CS1W-DRM21(-V1),CJ1W-DRM21 | DeviceNet Units | Operation Manual |
| W452 | Master | NSJ | NSJ Controllers | Operation Manual |
| W381 | Master | 3G8F7-DRM21-E | DeviceNet PCI Board | Operation Manual |
| W404 | Smart Slaves | DRT2 Series | DRT2 Series DeviceNet Slaves | Operation Manual |
| W454 | SmartSlice | GRT1-DRT | DeviceNet Communications Unit | Operation Manual |
| W455 | SmartSlice | GRT1 | Slice I/O Units | Operation Manual |
| W348 | Multiple I/O Terminals | DRT1-COM GT1 Series | DeviceNet Multiple I/O Terminal | Operation Manual |
| W353 | Intelligent Slaves (PLC Units) | CPM2C-S1□0C-DRT | CPM1/CPM1A/CPM2A/CPM2C/SRM1(-V2) Programmable Controllers | Programming Manual |
| Z129 | Intelligent Slaves | V680-HAM42-DRT | V600-HAM42-DRT Intelligent Flag III | Operation Manual |
| Z249 | Intelligent Slaves | V680 | ID Controller | User's Manual |
| N136 | Intelligent Slaves | K3HB-R/-P/-C | Digital Indicators | User's Manual |
| N129 | Intelligent Slaves | K3HB-DRT | Digital Indicators Communications | User's Manual |
| Z182 | Intelligent Slaves | E5AR/E5ER | Digital Controller | User's Manual |
| H124 | Intelligent Slaves | E5AR/E5ER | Digital Controller DeviceNet Communications | User's Manual |
| H142 | Intelligent Slaves | EJ1 | Modular Temperature Controller | User's Manual |
| H155 | Intelligent Slaves | EJ1 | DeviceNet Communications Unit for EJ1 Temperature Controllers | Operation Manual |
| I581 | Intelligent Slaves | 3G3AX-MX2-DRT-E 3G3AX-RX-DRT-E | MX2 series/RX series V1 type DeviceNet Communication Unit | User's Manual |
| Z905 | CIP Safety on DeviceNet | WS02-CFSC1-E | CIP Safety on DeviceNet System | Configuration Manual |
| Z906 | CIP Safety on DeviceNet | NE1A Series | CIP Safety on DeviceNet Safety Network Controller | Operation Manual |
| Z916 | CIP Safety on DeviceNet | NE0A Series | CIP Safety on DeviceNet Safety Network Controller NE0A Series | Operation Manual |
| Z904 | CIP Safety on DeviceNet | DST1 Series | CIP Safety on DeviceNet Safety I/O Terminals | Operation Manual |
| W382 | Configurator | WS02-CFDC1-E,3G8F5-DRM21-E,3G8E2-DRM21-EV1 | DeviceNet Configurator | Operation Manual |
| W504 | Software | SYSMAC-SE2□□□ | Sysmac Studio | Operation Manual |

Introduction of the Switch Mode Power Supply

OMRON Switch Mode Power Supplies support a wide range of applications.



This power supply shows status, maintenance time, and other information

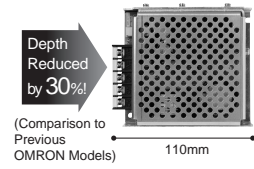


- Notifies you when the power supply needs maintenance, allowing maintenance at the optimum time. Helps reduce maintenance costs.
- Display monitor function makes it easy to check equipment startup.

* Only on types with an indication monitor



Simple power supply with a short body and easy installation: the ultimate in ease-of-use



- One of the shortest bodies in the industry makes it easy to design smaller and slimmer panels and devices.
- Front, top, DIN rail, and other installation types match the application and reduce installation man-hours.
- Fan-less up to 300 W, maintenance not necessary

| Model | Model S8VS | | | Model S8JX-G | Model S8JX-P | |
|--|--|--|--|--|---|------------------------------------|
| Appearance | | | | | | |
| Features | <ul style="list-style-type: none"> • Compact power supply for installation on a DIN rail • Indication monitor and maintenance forecast monitor models also available • Economy type series added to indication monitors | | | <ul style="list-style-type: none"> • Power supply with short depth for convenient installation • Installation fittings included (front-mounted model) • Simple and low cost • DC input model available | <ul style="list-style-type: none"> • With harmonic current suppression function • Slim, low noise | |
| Lineup Power rating, output voltage (DC) | Standard model | With indication monitor | With indication monitor but without alarm output | | | |
| | 1500W | | | | | |
| | 600W | | | | | |
| | 480W | 480W ● 24V | 480W ● 24V | 600W ● 5V, 12V, 24V, 48V | 600W ● 5V, 12V, 24V, 48V | |
| | 300W | 240W ● 24V | 240W ● 24V | 300W ● 5V, 12V, 24V, 48V | 300W ● 5V, 12V, 24V, 48V | |
| | 240W | 180W ● 24V | 180W ● 24V | | | |
| | 180W | 120W ● 24V | 120W ● 24V | 150W ● 5V, 12V, 24V, 48V | 150W ● 5V, 12V, 24V, 48V | |
| | 150W | 90W ● 24V | 90W ● 24V | 100W ● 5V, 12V, 24V, 48V | 100W ● 5V, 12V, 24V, 48V | |
| | 120W | 60W ● 24V | 60W ● 24V | | | |
| | 100W | | | 50W ● 5V, 12V, 24V, 48V | 50W ● 5V, 12V, 24V, 48V | |
| | 90W | | | 35W ● 5V, 12V, 15V, 24V, 48V | | |
| | 75W | | | 15W ● 5V, 12V, 15V, 24V, 48V | | |
| | 60W | | | | | |
| | 50W | | | | | |
| 30W | | | | | | |
| 25W | | | | | | |
| 15W | | | | | | |
| 10W | | | | | | |
| 7.5W | | | | | | |
| 3W | | | | | | |
| Input voltage | AC 100 - 240 V (DC 80 - 370 V) *3 | | | 15 W - 150 W model : AC 100 - 240 V (DC 80 - 370 V) *2, *3 300 W, 600 W model : AC 100 - 120 V / AC 200 - 240 V switching | AC 100 - 240 V (DC 80 - 370 V) *3 | |
| Installation | DIN rail | Yes | | | Yes (DIN rail mounting model only) * Excluding 600 W model | Yes (DIN rail mounting model only) |
| | Direct connection | Yes (Optional installation fitting required) * The 480 W type cannot be connected directly. | | | Yes | Yes |
| Harmonic current suppression function | | Yes | | | No | Yes |
| Added functions | Parallel operation | No | | | Yes (300 W and 600 W models only) | Yes (300 W and 600 W models only) |
| | Serial operation | Yes (24V type only External diode required.) | | | Yes (External diode required.) | Yes (External diode required.) |
| Approvals *1 | | UL, CE | | | UL, CE | UL, CE |
| Catalogue number | | T026-E1 | | | T041-E1 | T041-E1 |

*1. For details on approvals, visit our Web site (www.ia.omron.com/).

*2. Model S8JX-G15005□□ only, AC 100 - 120 V / AC 200 - 240 V marked number (DC input not available).

*3. The scope of application of EC directives and various safety standards (UL, EN, etc.) is AC 100 V to 240 V (AC 85 to 264 V).

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