OMRON

Multi-vendor Network

DeviceNet

New Additions to the Series

Board Terminals with MIL Connector
DRT2-□D32B(-1)/DRT2-□D32BV(-1)

Temperature Input Terminals
Thermocouple Input: DRT2-TS04T
Platinum-resistance Thermometer Input: DRT2-TS04P

High-resolution Analog Input Terminals
DRT2-AD04H

Note: Do not use this document to operate the Unit.

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eco
This ECO label is indicated on products that meet the environmental standards established by OMRON.

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Authorized Distributor:

Note: Specifications subject to change without notice.

Cat. No. Q102-E1-10
Printed in Japan
0605-1M

DeviceNet

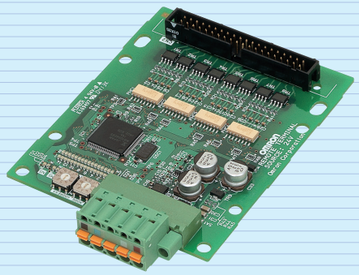
New Additions to the Lineup

First Board-type Terminals for Smart Slaves!

Board Terminals with MIL Connectors

DRT2-□D32B (-1)/
DRT2-□D32BV (-1)

- 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.



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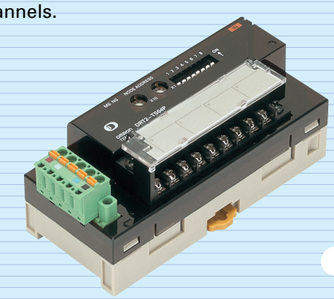
New Smart Temperature Input Terminals Added to the Lineup.

Temperature Input Terminals

Thermocouple Input: DRT2-TS04T
Resistance Thermometer Input: DRT2-TS04P

- New Temperature Input Terminals with Scaling Function
- Provides functions that are only available from Temperature Input Terminals, such as operating time in a preset temperature range and temperature difference detection between input channels.



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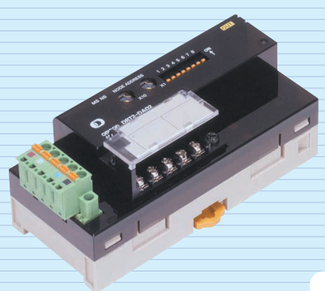
New High-resolution Analog Input Terminals

Analog Input Terminals

DRT2-AD04H

- Provides high resolution at 1/30,000 (full scale).
- Supports a wide variety of functions for data sampling, including a scaling function, peak/bottom hold, top/valley hold, comparator function, cumulativecounter, and derivative calculation function.



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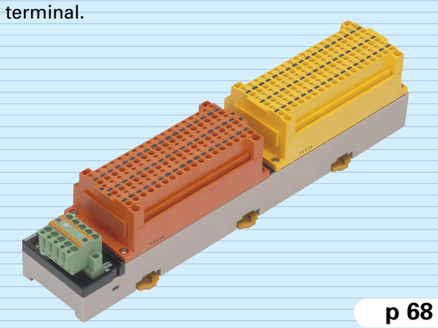
Screw-less terminals accelerate wiring and man-hour reductions in manufacturing plants.

Screw-less Clamp Terminals with Transistors

DRT2-□D32SL(H)(-1)

- Retightening is not needed because there are no M3 screws.
- The detachable terminal block makes maintenance even easier.
- All wiring is done in one step: Just insert the post terminal.



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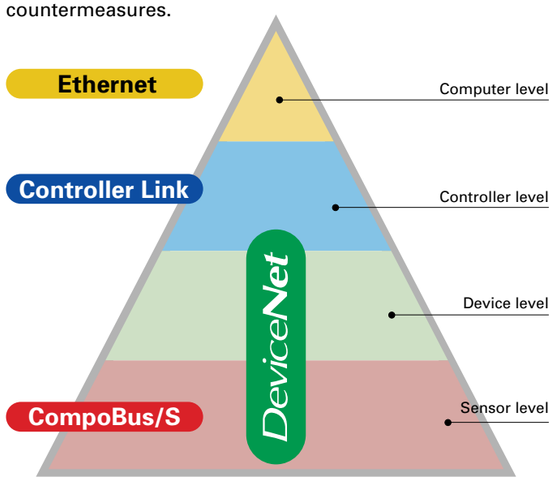
Contents

Global-standard Network for a Borderless A ge
DeviceNet Standardizes FA Wiring on a Glo bal Scale.

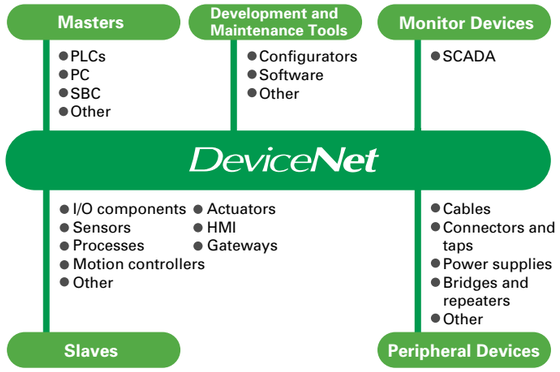
Create Information Applications at the Manufacturing Site

DeviceNet is a field network with superior implementation characteristics covering a wide range of levels, from sensor level to component level, through to controller level. Various control components, such as PLCs, robots, sensors, and actuators, can be easily interconnected on a single network. This reduces costs and shortens lead-time at all stages, from equipment and line design, to manufacturing, installation, operation, and maintenance. With a seamless connection to the host network, DeviceNet can provide further added value to clients for PLP and SCM countermeasures.



Largest Multi-vendor Environment Anywhere

DeviceNet is highly regarded as an open network and multi-vendor environment. DeviceNet is expanding into a variety of industries, such as process automation and distribution. Worldwide, major control component manufacturers are obtaining vendor IDs, and many companies are releasing products for use with DeviceNet. Many PLC manufacturers are releasing DeviceNet masters, creating the largest multi-vendor environment in the world. The increasing application of DeviceNet is expected to continue in the future.



Standardized Production for this Borderless Age

As borders continue to disappear for the manufacturing industry, there is a world-wide need to simplify wiring work, reduce wiring time, and increase wiring accuracy through standardization. DeviceNet has already achieved the standardization required by the manufacturing industry in this borderless age, by complying with the international IEC standards and other local and industrial group standards. For example, when purchasing cables anywhere in the world, all you need to ask for is a cable for DeviceNet. Huge time savings can be made with DeviceNet because special training on specific wiring rules when building equipment or an assembly line at a production site or the creation of a detailed manual is no longer required for effective communications between different countries or different levels of engineers. DeviceNet was also the first multi-vendor network to pass the Chinese National Standard.

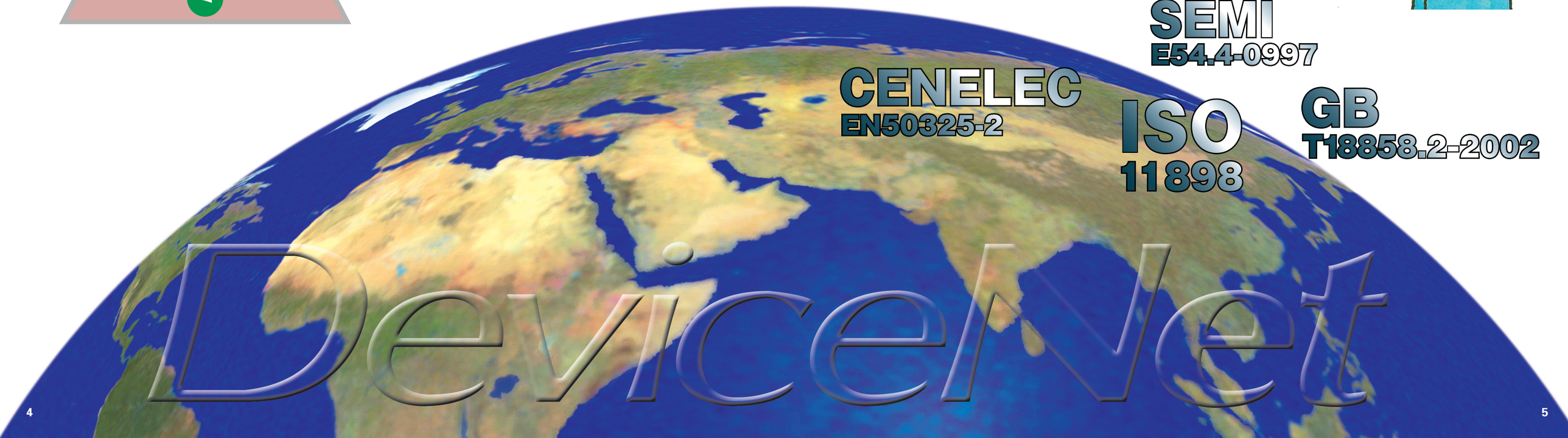
IEC 62026-3

SEMI E54.4-0997

CENELEC EN50325-2

ISO 11898

GB T18858.2-2002



DeviceNet Features Easy Implementation to Create Standardization and Modularization of Equipment while Reducing Wiring Time

The Benefits of Reduced Wiring with DeviceNet

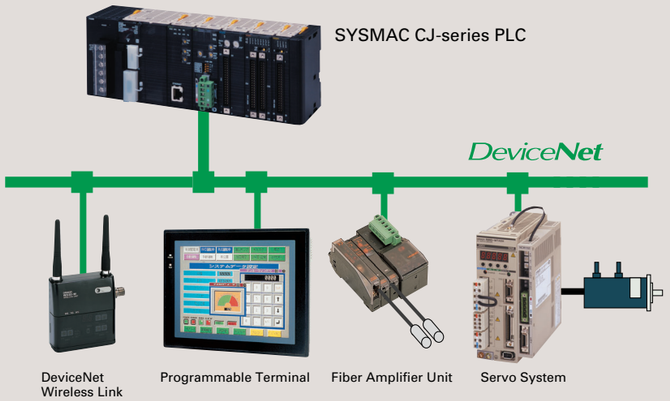
Reduce Wiring Work with Fewer Wire Types and Fewer Communications Lines.

DeviceNet connects to a wide range of I/O lines, analog signal lines, compensating leads, and communications lines (e.g., RS-232C and RS-422) to reduce the types of wire and quantity of communications lines that must be wired. DeviceNet simplifies the wiring processes that require a high level of skill to implement noise countermeasures for signal accuracy and quality, and to understand the various communications protocols.

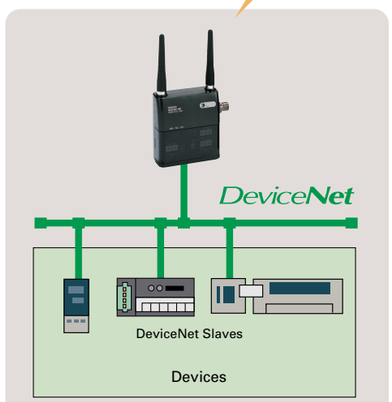
OMRON - The ideal One-stop Shop

OMRON has seamlessly integrated DeviceNet interfaces into all its core products, including PLCs, I/O Units, Programmable Terminals (operator interfaces), DeviceNet Wireless Links, Temperature Controllers, Sensors, and Servo Drives. With such a comprehensive selection of compatible products, OMRON is virtually a "one-stop shop" for any customer.

Simplify development and design. Increase system startup speed.



Flexible configurations for equipment manufacturing and installation.



The Benefits of DeviceNet Standardization

Easy Implementation to Promote Modularization and Standardization.

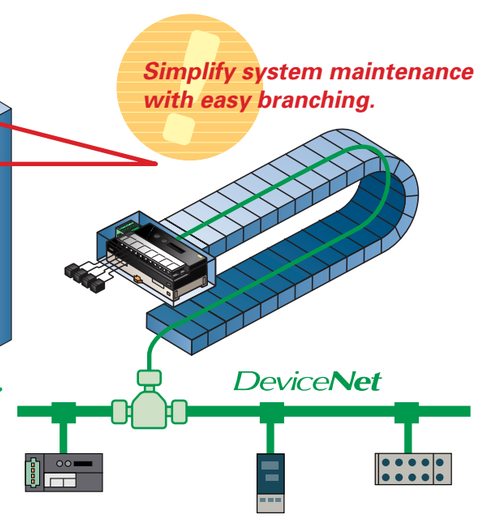
DeviceNet features standard network connections with FA connectors. It's easy to create groups of equipment parts, replace malfunctioning control boxes, or exchange tools when changing processes. And, Devices controlled by Programmable Slaves can also be handled as DeviceNet Slaves to further enable equipment modularization. Modules make design work more efficient and reduce startup time.

Use Wireless Systems to Handle System Expansion for a Variety of Production Styles.

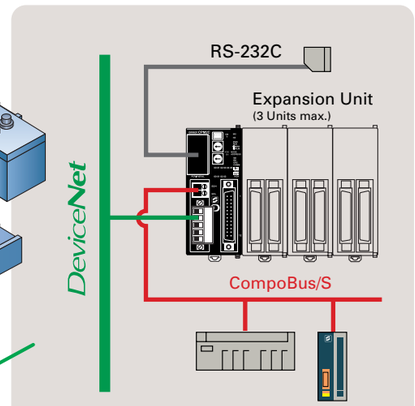
DeviceNet Wireless Links have been added to the DeviceNet lineup to enable even freer layout of production lines. Wireless Systems suit a variety of production styles, such as Andon systems or to control production in individual cells in cell manufacturing. The effect on the network of disconnection is minimized because the wiring is not two-way like multi-drop wiring, simplifying maintenance and implementation in places such as cable conveyors, where disconnection can easily occur.

Note: It may not be possible to handle all cable conveyor systems.

Simplify system maintenance with easy branching.



Simplify process changes with modularization.

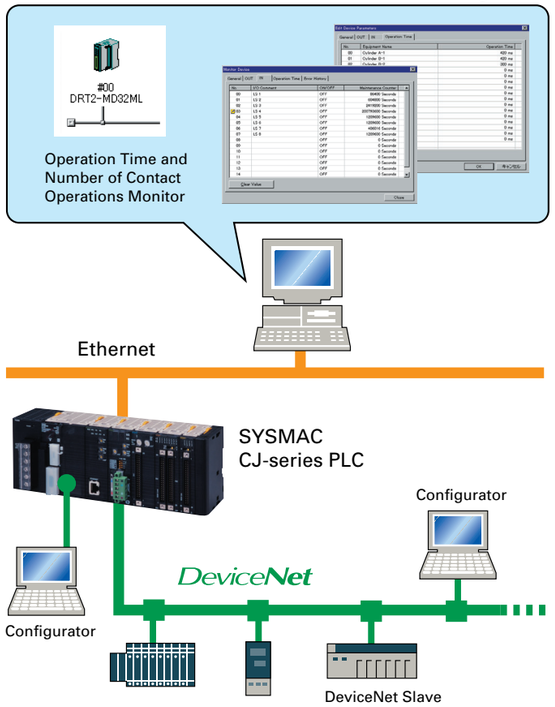


The DeviceNet Supports IT Devices to Acces s Control Device Settings and to Reduce Work Hours.

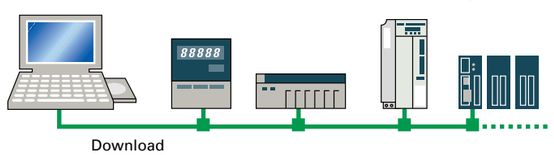
Settings Are Vastly More Efficient with Open Network Environment

Settings take time to make and are prone to mistakes, just like wiring. The Configurator, the setup software designed for multi-vendor and global support, makes settings much more efficient. Even with products from different manufacturers, settings can be made from a personal computer on the DeviceNet network with consistent operating procedures. This allows group downloads and verification of parameters, shortening the time required for equipment startup and troubleshooting.

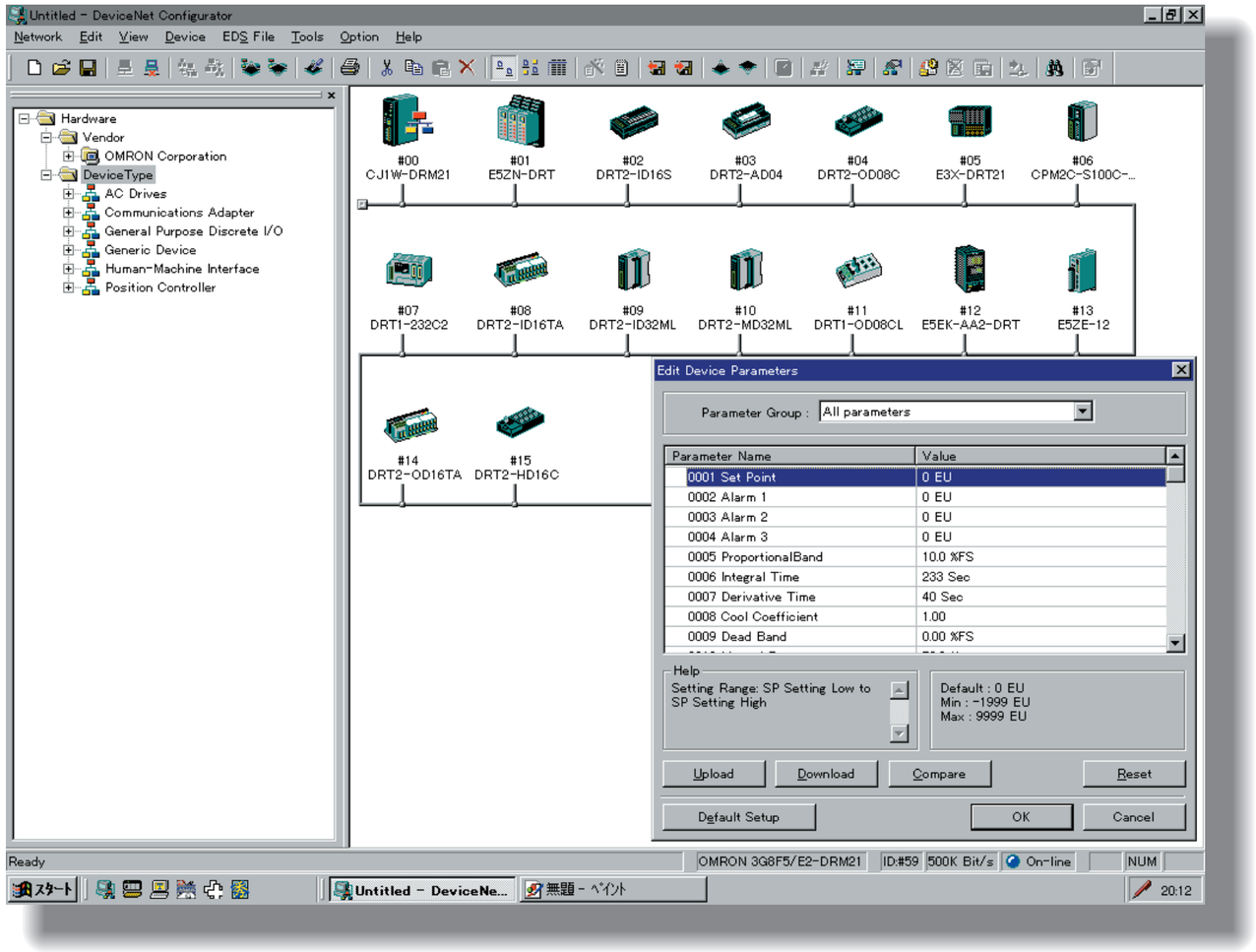
Configurator



● Multiple Devices Set Simply from the Configurator!

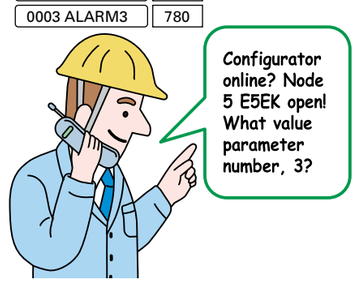


DeviceNet Configurator



● Easy overseas support with the common operating environment!

Parameter	Value
0000 SETPOINT	550
0001 ALARM1	500
0002 ALARM2	750
0003 ALARM3	780

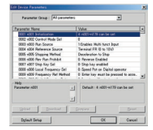


Reduce Work for Repeat Production and Maintenance. Improve Management Efficiency.

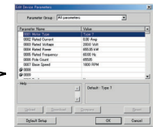
Once parameters have been set, they can be saved, read, and printed for the network or for individual machines. In particular, the time required to make settings can be greatly reduced for repeat production of equipment with the same configuration. Furthermore, the time taken to give instructions and manage the process can also be greatly reduced because little work is required to make settings or to prepare manuals and work request forms. Work procedures can be standardized, which makes for smoother interaction with engineers at overseas sites.

● Easy Settings in a Multi-vendor Environment

Parameter	Value
0000 SETPOINT	550
0001 ALARM1	500
0002 ALARM2	750
0003 ALARM3	780



Company A: Inverter settings screen



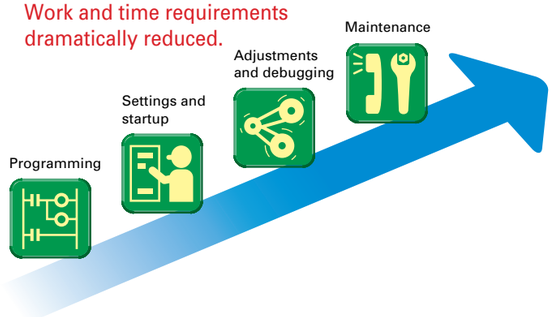
Company B: Inverter settings screen

OMRON: E5EK Temperature Controller settings screen

Remote Maintenance Anywhere.

By using the Configurator, mistakes caused by misunderstandings by overseas operators can be reduced because comments can be appended to parameters. SYSMAC CS-series and CJ-series PLCs support routing, so data settings can be made via Ethernet and other host networks. This means remote maintenance systems can be developed with a view to global support.

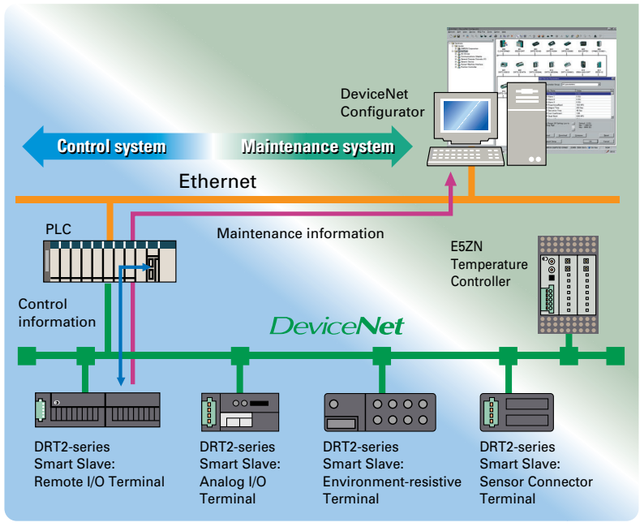
● Simple design procedure. Work and time requirements dramatically reduced.



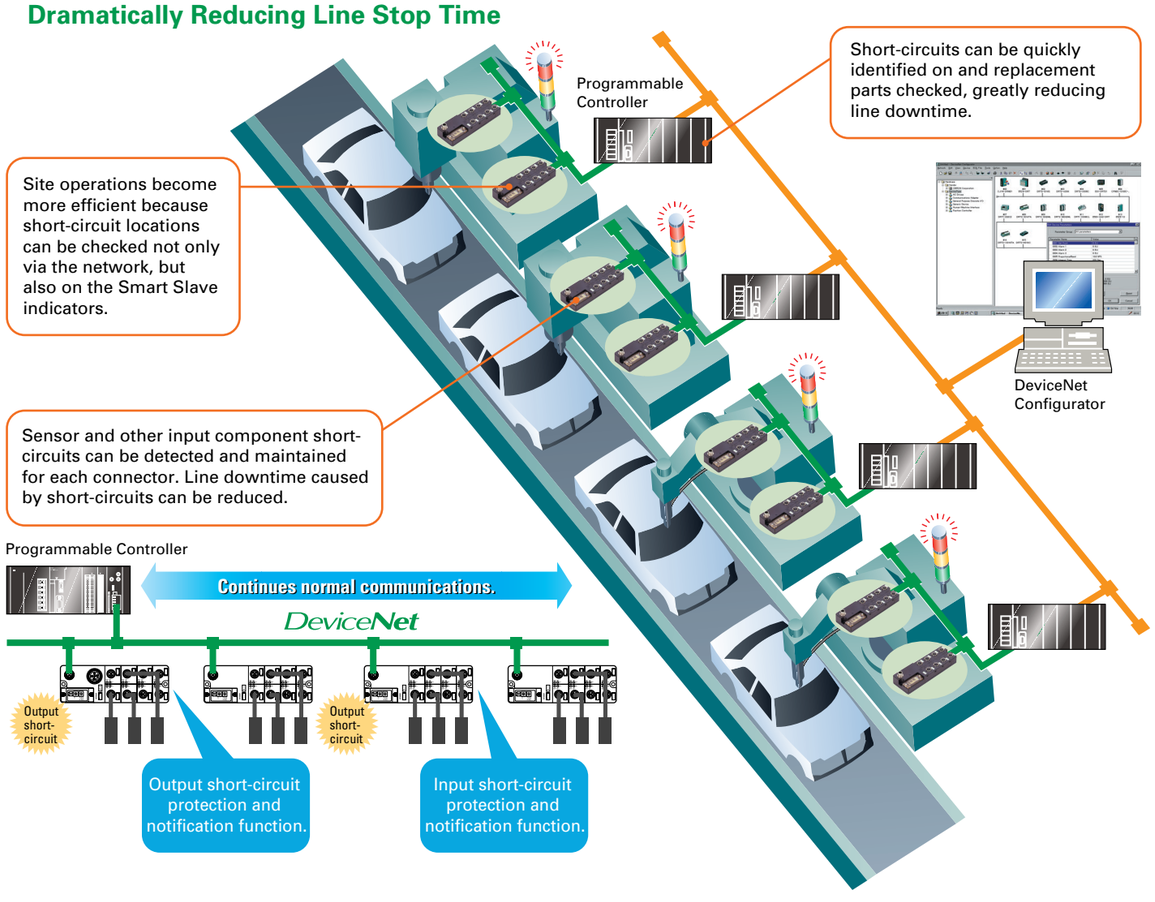
DeviceNet Continues to Develop and Evolve for 21st Century Production.

Equipment Faults Can Be Immediately Identified and Remedies Quickly Implemented

Equipment managers are under increasing pressure with fewer staff and more sophisticated and complicated equipment. Production sites thus require maintenance systems that reduce equipment downtime with minimum work. With DeviceNet Smart Slaves, equipment faults can be immediately identified and remedies quickly implemented. In addition, data required for identifying faults and their causes can be collected and stored by the Slave for processing on a personal computer, making machine management more efficient.

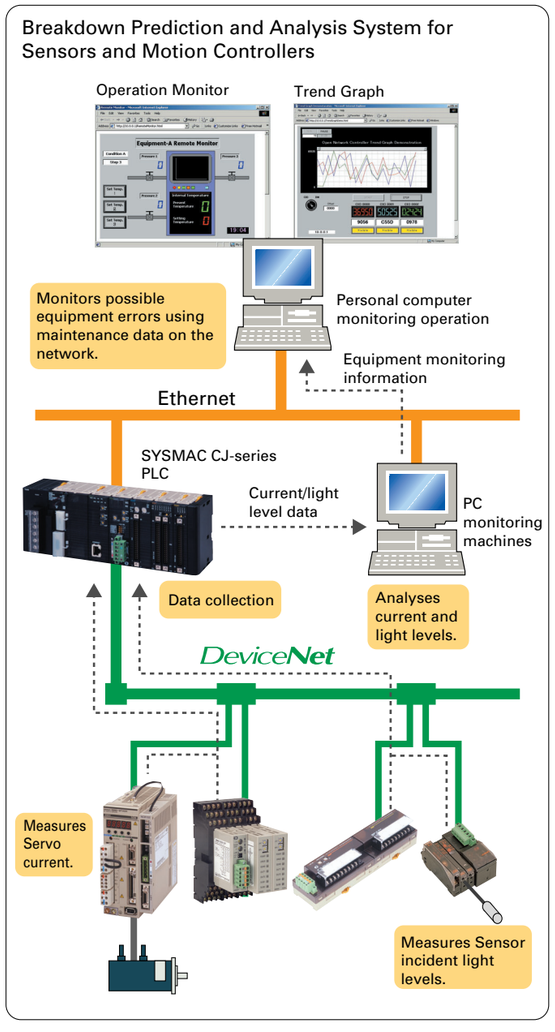


●Application Example Showing Smart Slaves (Environment-resistive Terminals) Dramatically Reducing Line Stop Time



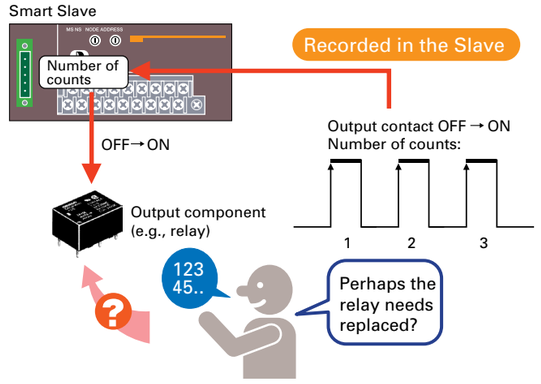
Preventative Maintenance before Problems Occur

Smart Slaves and Intelligent Slaves can detect reduced equipment performance quickly and countermeasures can be implemented for minor malfunctions before production needs to be stopped. For example, cylinder operation time can be monitored to detect pipe problems or oil leakage, or Sensor incident light levels can be monitored to detect various Sensor malfunctions. Malfunctions can also be detected using the internal parameter and feedback data from interconnected control components.



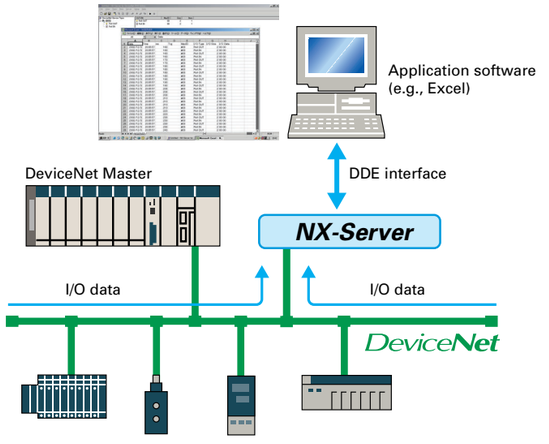
Effective Maintenance System Efficiently Provides Equipment Information

Smart Slaves can hold operation data, such as comments, number of machine operations, and time, so maintenance systems can be built easily using personal computers in the control system. Message communications are also supported, so equipment information can be accessed without affecting the control programs and without being affected by system upgrades or expansions.

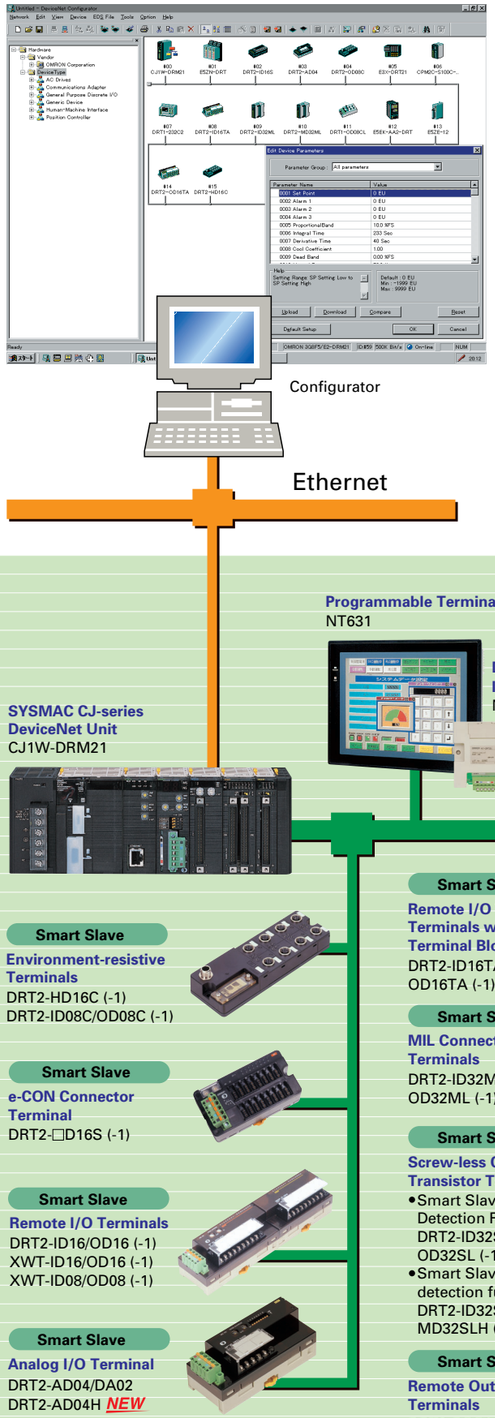


Network Control Information Collected without Affecting Control

The NX-Server can collect network data such as ON/OFF, temperature, and tag data without affecting network traffic. No MAC ID is required for connections so nothing is affected by connections or disconnections. This provides an environment where data required for quality improvements and to maintain performance can be collected without affecting production.



DeviceNet Creates Many Advantages for De velopment and Design, for Production and Startup, and for Operatio n and Maintenance.



Advantages in Development and Design

Hardware Advantages

- Many compatible components for more options and easier system construction.
- No restrictions on Master, enabling equipment modularization at the Slaves.
- Flexibility with branching offers greater freedom in layout design.

Software Advantages

- Simple software standardization with profile specified for each component.
- Open network construction eliminates the need to consider communications protocols, allowing program development using ladder diagrams only.

Advantages in Production and Startup

Production Advantages

- Assembly time shortened by standardization and modularization.
- Number of work hours reduced by less wiring.
- Simple wiring checking process to help prevent wiring mistakes.
- Simple implementation of distributed equipment manufacturing.
- Distributed I/O for more compact control panels and equipment.

Startup Advantages

- Simple re-assembly at delivery site.
- Simple settings and communications work, shortening startup time.
- Establishing communications with components with plug-and-play simplicity.
- Simple identification of faults with complete monitoring tools.

Advantages in Operation and Maintenance

Operation Advantages

- Recipe control quickly improves yields.
- Preventative maintenance to avoid system shutdowns and increase operating rates.
- Simple layout changes.
- Lines can be constructed for modular replacement.

Maintenance Advantages

- Easy identification of fault locations reduces time to restore operation.
- A wide variety of data can be collected from components, aiding preventative maintenance.
- Simple plug-and-play replacement using connectors.
- Online replacement for maintenance without stopping the system.

Programmable Terminal
NT631

DeviceNet Interface Unit
NT-DRT21

SYSMAC CJ-series DeviceNet Unit
CJ1W-DRM21

OMNUC W Series AC Servo Driver Compatible DeviceNet Option Unit
R88A-NCW152-DRT

3G3RV Series High-function General-purpose Inverters DeviceNet Communications Card
3G3RV-PDRT2

3G3RV Multi-function Compact Inverter DeviceNet Communications Unit
3G3MV-PDRT2

RS-232C Unit
DRT1-232C2

RS-232C

CompoBus/S

Programmable Slaves
CPM2C-S100C-DRT
CPM2C-S110C-DRT

DeviceNet

Smart Slave
Environment-resistive Terminals
DRT2-HD16C (-1)
DRT2-ID08C/OD08C (-1)

Smart Slave
e-CON Connector Terminal
DRT2-□D16S (-1)

Smart Slave
Remote I/O Terminals
DRT2-ID16/OD16 (-1)
XWT-ID16/OD16 (-1)
XWT-ID08/OD08 (-1)

Smart Slave
Analog I/O Terminal
DRT2-AD04/DA02
DRT2-AD04H *NEW*

Smart Slave
Remote I/O Transistor Terminals with 3-tier Terminal Blocks
DRT2-ID16TA (-1)/
OD16TA (-1)/MD16TA (-1)

Smart Slave
MIL Connector Terminals
DRT2-ID32ML (-1)/
OD32ML (-1)/MD32ML (-1)

Smart Slave
Screw-less Clamp Transistor Terminals
- Smart Slaves without Detection Functions
  DRT2-ID32SL (-1)/
  OD32SL (-1)/MD32SL (-1)
- Smart Slaves with detection functions
  DRT2-ID32SLH (-1)/OD32SLH (-1)/
  MD32SLH (-1)

Smart Slave
Remote Output Relay Terminals
DRT2-ROS16

DeviceNet Wireless Link
WD30-ME

FA Wireless SS Terminals
WT30-SID16 *NEW*
WT30-SMD16
WT30-SMD16-1

Intelligent Flag III (for DeviceNet)
(V600-HAM42-DRT)

Smart Slave
Board Terminals with MIL Connectors
DRT2-□D32B(-1)/
DRT2-□D32BV(-1) *NEW*

Smart Slave
Temperature Input Terminals
DRT2-TS04T *NEW*
DRT2-TS04P

DeviceNet Wireless Link
WD30-SE

MULTIPLE I/O TERMINAL

Waterproof Terminals
DRT1-□D□□CL (-1)

DeviceNet Communications Unit for Fiber Amplifiers
E3X-DRT21(-S)

DeviceNet-compatible Digital Temperature Controllers
E5AR-DRT

DeviceNet-compatible Digital Panel Meters
K3HB-DRT

Smart Slave
DeviceNet Communications Unit for Modular Temperature Controllers
E5ZN-DRT

SYSMAC CQM1H DeviceNet I/O Unit
(16 inputs and 16 outputs)
CQM1-DRT21

DeviceNet Introducing DeviceNet Products

Masters

■ DeviceNet Unit for SYSMAC CJ Series

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CJ1W-DRM21

■ DeviceNet Unit for SYSMAC CS Series

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CS1W-DRM21-V1

■ DeviceNet Master Unit for SYSMAC CS and C200H Series

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C200HW-DRM21-V1

■ DeviceNet Master Unit for SYSMAC CVM1 and CV Series

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CVM1-DRM21-V1

■ VME Master Board

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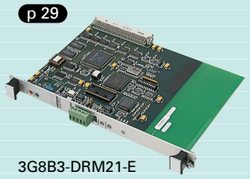

3G8B3-DRM21-E

■ Open Network Controller (with DeviceNet functions)

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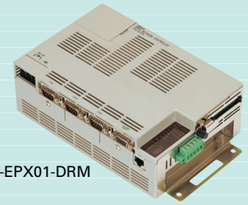
ITNC-EIS01-DRM



ITNC-EPX01-DRM

Configurators and Software

Configurators

■ DeviceNet Configurator Software

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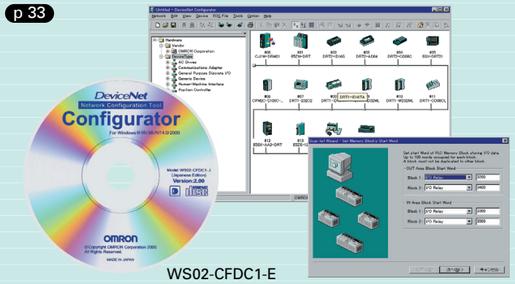

WS02-CFDC1-E

■ PC Card DeviceNet Configurator (with software)

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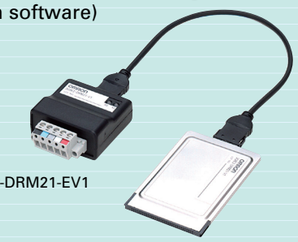

3G8E2-DRM21-EV1

Monitor Software

■ NX-Server

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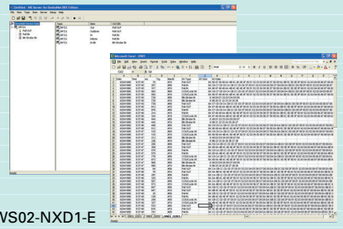

WS02-NXD1-E

Monitor/Setting Software

■ DeviceNet Proxy Server

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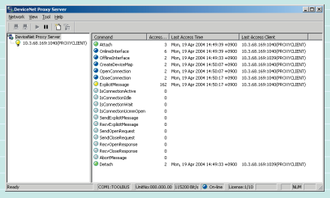


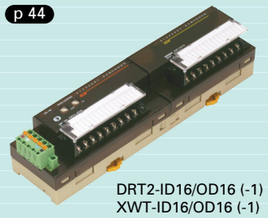
WS02-PEDC1-E

Slaves

DRT2 Smart Slaves

■ Transistor Remote I/O Terminals

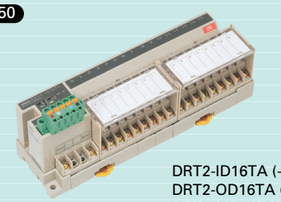
p 44



DRT2-ID16/OD16 (-1)
XWT-ID16/OD16 (-1)
XWT-ID08/OD08 (-1)

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

p 50



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

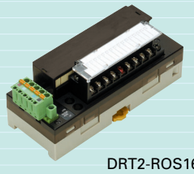
■ MIL Connector Terminals

p 54

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

■ Remote I/O Terminal with Relay Outputs

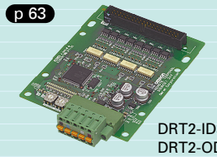
p 60



DRT2-ROS16

■ Board Terminals with MIL Connector NEW

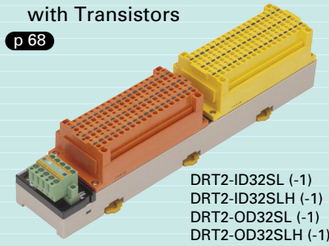
p 63



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

■ Screw-less Clamp Terminals with Transistors

p 68



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

■ Environment-resistive Terminals with Transistors

p 76

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

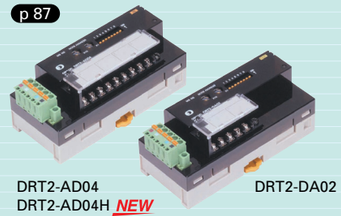
■ e-CON Connector Terminals

p 83

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

■ Analog I/O Terminals

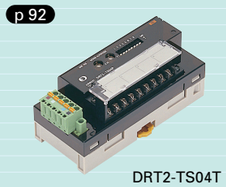
p 87



DRT2-AD04
DRT2-AD04H NEW
DRT2-DA02

■ Temperature Input Terminals NEW

p 92



DRT2-TS04T
DRT2-TS04P

DeviceNet Introducing DeviceNet Products

Slaves

DRT1 General-purpose Slaves

■ Transistor Remote I/O Terminals

p 123

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

DRT1-ID16 (-1)
DRT1-OD16 (-1)
DRT1-MD16

■ Remote Adapters

p 129

DRT1-ID16X (-1)

DRT1-OD16X (-1)

■ Waterproof Terminals

p 133

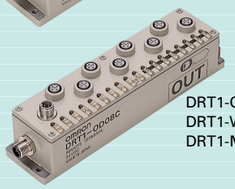
DRT1-ID04CL (-1)
DRT1-OD04CL (-1)

DRT1-ID08CL (-1)
DRT1-OD08CL (-1)

■ Environment-resistive Terminals

p 138

DRT1-ID08C
DRT1-HD16C (-1)



DRT1-OD08C
DRT1-WD16C (-1)
DRT1-MD16C (-1)

■ B7AC Interface Unit

p 147

DRT1-B7AC

Slaves

PLC Intelligent Slaves

■ Programmable Slaves

p 150

CPM2C-S100C-DRT
CPM2C-S110C-DRT

■ SYSMAC CS-series and C200H I/O Link Unit

p 155

C200HW-DRT21

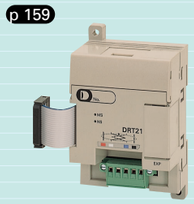
■ SYSMAC CQM1H I/O Link Unit

p 157

CQM1-DRT21

■ SYSMAC CPM1A I/O Link Unit

p 159



CPM1A-DRT21

Intelligent Slaves

■ RS-232C Unit

p 161

DRT1-232C2

■ DeviceNet Communications Unit for Fiber Amplifiers

p 163

E3X-DRT21

■ DeviceNet Intelligent Flag III

p 168

V600-HAM42-DRT

■ DeviceNet-compliant Digital Indicators

p 170

K3HB-DRT

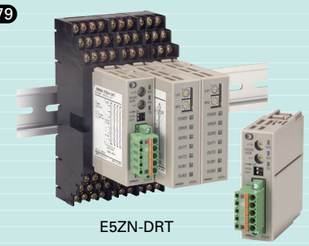
■ DeviceNet-compliant Digital Controllers

p 174

E5AR-DRT E5ER-DRT

■ DeviceNet Communications Unit for Digital Temperature Controllers (E5ZN DeviceNet Communications Unit)

p 179



E5ZN-DRT

■ DeviceNet Digital Controller

p 183

E5EK-AA2-DRT

DeviceNet Introducing DeviceNet Products

Slaves

Intelligent Slaves

■ DeviceNet Option Unit (for W-series AC Servo Drives)

p 188

R88A-NCW152-DRT

■ Multi-function Compact Inverter with DeviceNet Communications Unit

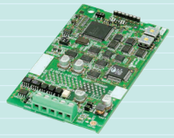
p 196

3G3MV-PDRT2

3G3MV-PDRT2

■ High-function General-purpose Inverter with DeviceNet Communications Card

p 199



DeviceNet Oputions Card 3G3RV-PDRT2

3G3FV

3G3RV

■ Programmable Terminal DeviceNet Interface Units

p 202

NT-DRT21

NT631/31

■ DeviceNet Wireless Links

p 204

WD30-ME WD30-SE01

■ FA Wireless SS Terminals

p 208

NEW

WT30-SMD16
WT30-SMD16-1

Slaves

MULTIPLE I/O TERMINAL Series

■ Communications Unit

p 98

DRT1-COM

■ Digital I/O Units

p 100

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

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

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

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

■ Relay Output Units

p 111

GT1-ROP08
GT1-FOP08

GT1-ROS16

■ Analog I/O Units

p 114

GT1-AD08MX
(connector)

GT1-DA04MX
(connector)

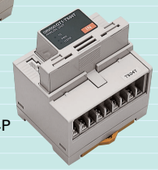
GT1-AD04
(terminal block)

GT1-DA04
(terminal block)

■ Temperature Input Units

p 118

GT1-TS04T



GT1-TS04P

■ Counter Unit

p 120

GT1-CT01

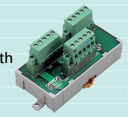
Peripheral Devices

General-purpose Devices p 210

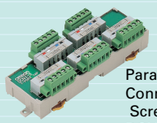
■ T-branch Taps

Parallel Connectors with Screws
DCN1-1C

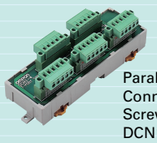
Parallel Connectors with Screws
DCN1-2C



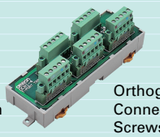
Orthogonal Connectors with Screws
DCN1-2R



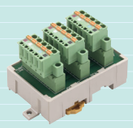
Parallel Connectors with Screws
DCN1-3C



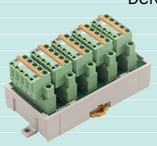
Parallel Connectors with Screws
DCN1-4C



Orthogonal Connectors with Screws
DCN1-4R



Parallel Connectors with Clamps
DCN1-1NC



Parallel Connectors with Clamps
DCN1-3NC

■ Connectors

Parallel Connector with Screws
XW4B-05C1-H1-D

Multi-branch Parallel Connector with Screws
XW4B-05C4-TF-D

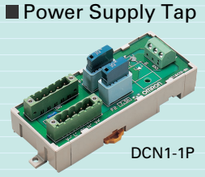
Multi-branch Parallel Connector without Screws
XW4B-05C4-T-D

Orthogonal Connector with Screws
XW4B-05C1-VIR-D

Parallel Connector with Screw-less Clamps
XW4G-05C1-H1-D

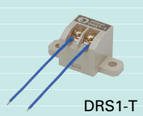
Multi-branch Parallel Connector with Screw-less Clamps
XW4G-05C4-TF-D

■ Power Supply Tap



DCN1-1P

■ Terminal-block Terminator



DRS1-T

■ DeviceNet Standard Cables

Thin Cable
DCA1-5C10-B

Thick Cable
DCA2-5C10-B

DeviceNet Introducing DeviceNet Products

Peripheral Devices

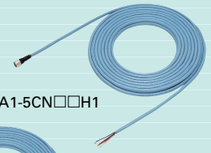
Environment-resistive Peripheral Devices (M12 Thin Cable with Micro Connectors) p 227

■ 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 (7/8-16 UN Thick Cable with Mini Connectors) p 227

■ Shielded T-branch Tap Connector

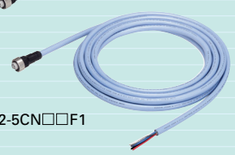
DCN3-11

DCN3-12

■ Shielded Connector Cables

DCA2-5CN□□W1

DCA2-5CN□□H1



DCA2-5CN□□F1

■ Shielded Terminating Resistor

DRS3-1

■ Panel-mounting Connectors

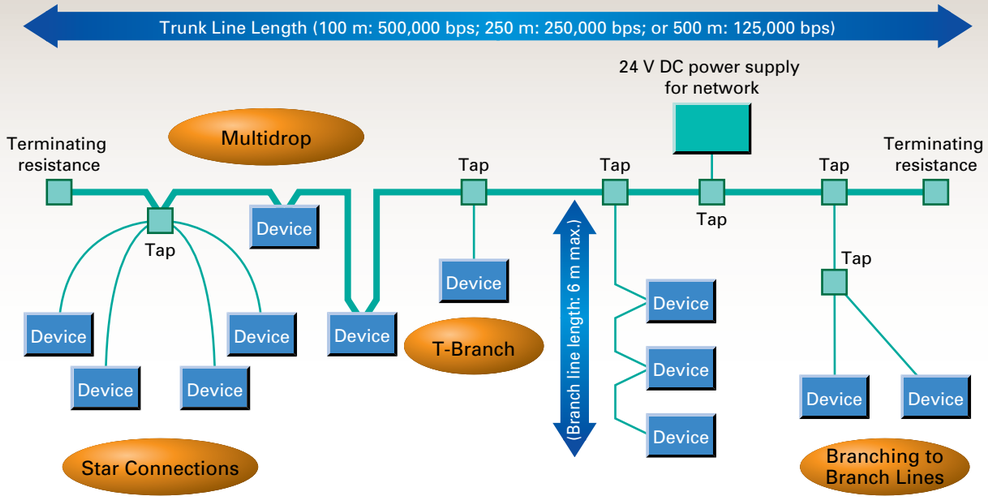
DCA2-5CNC5P1

DCA2-5CNC5M1

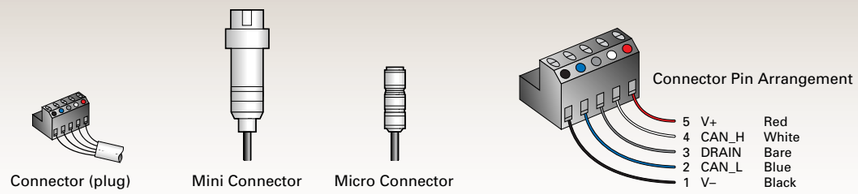
XS4M-D521-1

DeviceNet Network Specifications

DeviceNet Network Specifications



Connector Types



■ Communications Specifications

Communications protocol	DeviceNet
Connection method	Multidrop and T-branch methods (See note 1.)
Baud rate	125, 250, or 500 kbps (switchable) (See note 2.)
Communications Media	Special cable: 5-conductor cable (2 signal lines, 2 power lines, and 1 shield)
Communications distance	See table below
Max. number of connectable nodes	64 (This figure includes the Master. The maximum number of connectable Slaves is 63.)
Error control checks	CRC, node address duplication check, and scan list verification

Baud rate	Max. network length (See note 3.)	Branch line length	Total branch line length
500 kbps	100 m max. (See note 4.)	6 m max.	39 m max.
250 kbps	250 m max. (See note 4.)	6 m max.	78 m max.
125 kbps	500 m max. (See note 4.)	6 m max.	156 m max.

Note 1. External terminating resistance is required.
2. The DRT2 Smart Slaves are not switchable.
3. The maximum network length is the distance between the two nodes that are farthest from each other.
4. The maximum network length is 100 m if the trunk line uses a Thin Cable.

Unit Descriptions

CJ-series DeviceNet Unit
CJ1W-DRM21

Smallest in the Industry! A DeviceNet Unit for the CJ Series That Boasts Industry-leading Performance and Functions

- 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

Compatible PLCs		Maximum number of I/O points			Model
		Fixed allocations	User-set allocations		
			Using allocated DM Area words	Using Configurator	
CJ Series	When used as a master	Input: 1,024 points Output: 1,024 points Total: 2,048 points (128 words)	Input: 8,000 points Output: 8,000 points Total: 16,000 points (1,000 words)	Input: 8,000 points x 2 blocks Output: 8,000 points x 2 blocks Total: 32,000 points (2,000 words)	CJ1W-DRM21
	When used as a slave	Input: 16 points Output: 16 points Total: 32 points (2 words)	Input: 1,600 points Output: 1,600 points Total: 3,200 points (200 words)	Input: 1,600 points x 1 block Output: 1,600 points x 2 blocks Total: 4,800 points (300 words)	

Specifications

■ Master/Slave Specifications

Communications power supply voltage				11 to 25 VDC (See note 1.)
Current consumption				Communications: 18 mA max. Internal circuit: 290 mA max.
Max. number of connectable slaves	**Remote I/O, explicit message service**			63 (See note 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**		**When used as a master**	64 input and 64 output words Software switch/status area: 25 words
			When used as a slave	1 input word, 1 output word (See note 3.)
	User-set allocations	**Using allocated DM Area words**	**When used as a master**	500 input and 500 output words Software switch/status area: 25 words
			When used as a slave	100 input and 100 output words (See note 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 (See note 3.) Software switch/Status area: 25 words
Message communications	**Max. message length**			542 bytes (See note 4.)
Max. number of Units mountable to PLC	**Fixed allocations**			3
	User-set allocations			16
Weight				118 g max.

Note: 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.

Ratings

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

Dimensions

31 × 90 × 65 mm (W × H × D)

Precautions

Refer to the *SYSMAC CS/CJ Series DeviceNet Units Operation Manual* (W380) for details on the CJ-series DeviceNet Unit.

CS-series DeviceNet Unit
CS1W-DRM21-V1

A DeviceNet Unit for the CS Series That Boasts Industry-leading Performance and Functions

- 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

Compatible PLCs		Maximum number of I/O points			Model
		Fixed allocations	User-set allocations		
			Using allocated DM Area words	Using Configurator	
CS Series	When used as a master	Input: 1,024 points Output: 1,024 points Total: 2,048 points (128 words)	Input: 8,000 points Output: 8,000 points Total: 16,000 points (1,000 words)	Input: 8,000 points x 2 blocks Output: 8,000 points x 2 blocks Total: 32,000 points (2,000 words)	CS1W-DRM21-V1
	When used as a slave	Input: 16 points Output: 16 points Total: 32 points (2 words)	Input: 1,600 points Output: 1,600 points Total: 3,200 points (200 words)	Input: 1,600 points x 1 block Output: 1,600 points x 2 blocks Total: 4,800 points (300 words)	

Specifications

■ Master/Slave Specifications

Communications power supply voltage				11 to 25 VDC (See note 1.)
Current consumption				Communications: 30 mA max. Internal circuit: 290 mA max.
Max. number of connectable slaves	**Remote I/O, explicit message service**			63 (See note 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**		**When used as a master**	64 input and 64 output words Software switch/status area: 25 words
			When used as a slave	1 input word, 1 output word (See note 3.)
	User-set allocations	**Using allocated DM Area words**	**When used as a master**	500 input and 500 output words Software switch/status area: 25 words
			When used as a slave	100 input and 100 output words (See note 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 (See note 4.)
Max. number of Units mountable to PLC	**Fixed allocations**			3
	User-set allocations			16
Weight				172 g max.

Note: 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.

Ratings

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

Dimensions

34.5 × 130 × 111.2 mm (W × H × D)

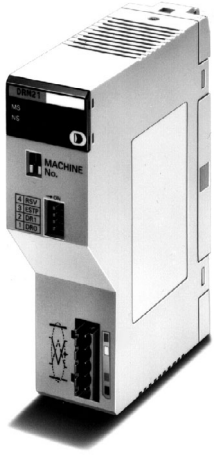
Precautions

Refer to the *SYSMAC CS/CJ Series DeviceNet Units Operation Manual* (W380) for details on the CS-series DeviceNet Unit.

DeviceNet Master Unit
C200HW-DRM21-V1

Master Unit for CS1, C200HX, C200HG, C200HE, and C200HS

- The control of a maximum of 4,800 points (300 words) per Master is possible over remote I/O with the CS1, C200HX, C200HG, or C200HE.
- The Configurator is available for easy remote I/O allocation.
- The Configurator makes it possible for a single Programmable Controller to connect to up to 16 Master Units.
- Incorporating a remote I/O and message communications functions.



Ordering Information

Compatible PLCs	Max. number of I/O points			Model
	Configurator not in use	Configurator in use		
		No message communications	Message communications	
CS1H/G, C200HX, C200HG, C200HE	1,600 points (800 inputs/ 800 outputs) (100 words)	Two-block inputs and two-block outputs (with a maximum of 1,600 points or 100 words per block) and a total of 4,800 points or 300 words.	Two-block inputs and two-block outputs (with a maximum of 1,600 points or 100 words per block) and a total of 1,600 points or 100 words.	C200HW-DRM21-V1
C200HS	1,024 points (512 inputs/ 512 outputs) (64 words)	Two-block inputs and two-block outputs (with a maximum of 1,280 points or 80 words per block) and a total of 1,280 points or 80 words.	---	

Note: The DeviceNet Configurator is required for the Master Unit to be in configuration control. (Refer to page 33.)

Specifications

■ Unit Specifications

Communications power supply voltage			11 to 25 VDC (See note 1.)
Current consumption			Communications: 45 mA max. Internal circuit: 250 mA max. at 5 VDC
Max. number of connectable Slaves	**Remote I/O (explicit message service)**	**Configurator not in use**	CS1/C200HX/C200HG/C200HE: 50 C200HS: 32
		Configurator in use	63 (See note 2.)
	FINS message service		8 (See note 3.)
Number of I/O points	**Configurator not in use**		CS1/C200HX/C200HG/C200HE: 1,600 points (800 input and 800 output points) C200HS: 1,024 points (512 input and 512 output points)
	Configurator in use		CS1/C200HX/C200HG/C200HE: 4,800 remote I/O points only, and 1,600 points with messages used C200HS: 1,280 points
Number of allocated words	**Configurator not in use (fixed allocation)**		CS1/C200HX/C200HG/C200HE: 50 input and 50 output words and 10 words for software switch/status area C200HS: 32 input and 32 output words with 10 words for software switch/status area
	Configurator in use (free allocation)		Input x 2 blocks, output x 2 blocks (with a maximum of 100 words per block) (See note 4.) Software switch/Status area: 10 words
	Max. message length (for FINS or explicit message)		160 bytes
Max. number of Units mountable to PLC	**Configurator not in use**		1
	Configurator in use		10 (any C200HS CPU Unit or CS1, or C200HX, C200HG, or C200HE CPU Unit with a maximum of 880 I/O Points)
			16 (any SYSMAC CS1 or C200HX, C200HG, or C200HE CPU Unit with 880 I/O points or more)
Weight			250 g max.

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

2. The Master Unit uses one node. Therefore 63 Slave Units can be connected.

3. C200HS Series are not connected.

4. A maximum of 80 words per block can be used if the Master Unit is mounted to the C200HS Series.

■ Limitations on Master Unit Installation

With CS1H/G PLCs, make sure that the output area allocated to slaves and the area used for actual I/O (e.g., for Basic I/O Units) do not overlap.

The Master Units for the CS1H/G, C200HX, C200HG, C200HE, and C200HS overlap with the SYSMAC BUS Master Unit in allocated area. Therefore, it will not possible to mount the DeviceNet Master Unit and SYSMAC BUS Master Unit together to the same PLC unless the Configurator is used. The Configurator cannot, however, be used with the C200H Series.

■ Ratings

The ratings of the Unit are the same as those of the CS1H/G, C200HX, C200HG, C200HE, and C200HS. For specifications of CS1-series and C200HX/HG/HE PCs, refer to the respective catalogs (CS1 Series: P047; C200HX/HG/HE: P036).

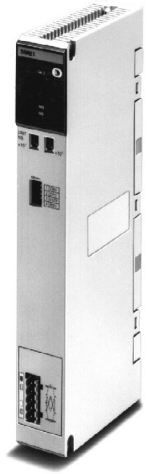
Dimensions

35 × 130 × 101 mm (W × H × D)

DeviceNet Master Unit
CVM1-DRM21-V1

Master Unit for SYSMAC CVM1/CV-series PLCs

- The Configurator allows control of a maximum of 6,400 points (400 words) per Master (i.e., 100 words x 4 blocks).
- The Configurator is available for easy remote I/O allocation.
- The Configurator makes it possible for a single Programmable Controller to connect to up to 16 Master Units.
- Incorporates a remote I/O and message communications functions.



Ordering Information

Compatible PLCs	Max. number of I/O points		Model
	Configurator not in use	Configurator in use	
CVM1/CV-series PLC	2,048 points (1,024 inputs/1,024 outputs)	1,600 inputs x 2 blocks 1,600 outputs x 2 blocks A total of 6,400 points (400 words)	CVM1-DRM21-V1

Note: The DeviceNet Configurator is required for the Master Unit to be in configuration control. (Refer to page 33.)

Specifications

■ Unit Specifications

Communications power supply voltage		11 to 25 VDC (See note 1.)
Current consumption		Communications: 45 mA max. Internal circuit: 250 mA max. at 5 VDC
Max. number of connectable Slaves	**Remote I/O, explicit message service**	63 (See note 2.)
	FINS message service	8
I/O points	**Configurator not in use**	2,048 points
	Configurator in use	6,400 points
Number of allocated words	**Configurator not in use (fixed allocation)**	64 input and 64 output words Software switch/status area: 25 words
	Configurator in use (free allocation)	100 input words x 2 blocks, 100 output words x 2 blocks Software switch/status area: 25 words
	Max. message length (FINS or explicit message)	160 bytes
Max. number of Units mountable to PLC	**Configurator not in use**	1
	Configurator in use	16
Weight		360 g max.

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

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

■ Ratings

The ratings of the Unit are the same as those of the CVM1/CV Series.
Refer to the *SYSMAC CVM1 Catalog* (Cat. No. P033) for CVM1 specifications.

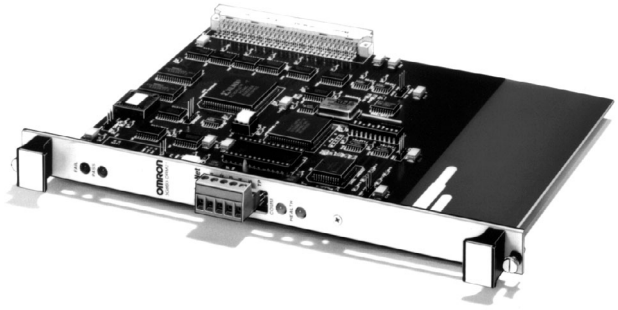
Dimensions

34.5 × 250 × 95 mm (W × H × D)

VME Master Board
3G8B3-DRM21-E

VME Bus Interface Board Incorporates DeviceNet Master Functions

- The control of a maximum of 12,288 points bytes per Master is possible.
- I/O data for the DeviceNet Slave is automatically available to Master's data area.
- Double-height (6U-size), single slot



Ordering Information

Unit	I/O allocation	Model
VME Master Board	12,288 bytes	3G8B3-DRM21-E

Specifications

■ Master Unit Specifications

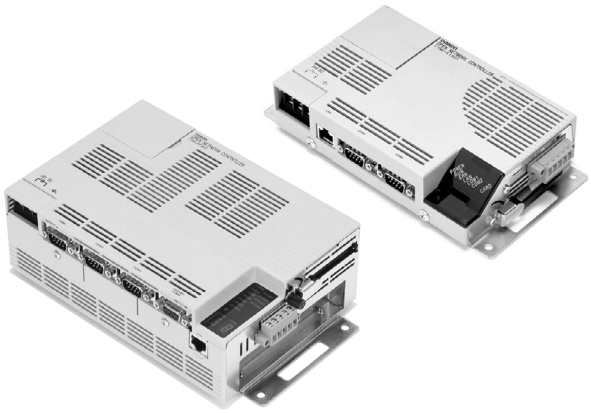
Board size	Double-height (6U-size), single slot
Allocated address	Eight bytes for short I/O address area and 128 kilobytes for standard address area.
Data bus	8/16 bit
VME Bus Master function	None
Interrupt	Not used or set with the DIP switch for IRQ 1 through IRQ 7 (for RCAK model).

Note: Parameter settings for the VME Master Board cannot be performed using the Configurator.

Open Network Controllers
ITNC-EIS01-DRM/EPX01-DRM

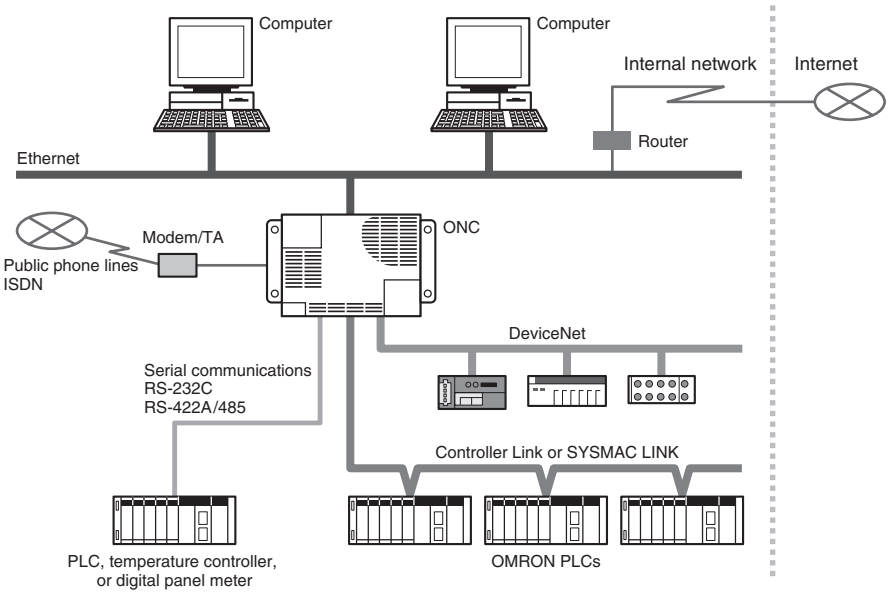
Information Station for Production Lines

OMRON Open Network Controllers (ONCs) are popular as information stations for manufacturing devices and production lines. These are version 2 ONCs that provide high speed, high capacity, and models compatible with a PCI bus.



Basic Function

An ONC collects various types of onsite information on manufacturing devices or production lines from PLCs, DeviceNet-compliant devices, temperature controllers, digital panel meters, and other FA components and provides it to the information system using the required protocol on Ethernet, an internal network, or the Internet. This enables implementing an information system for equipment or production facilities without altering the PLC system.

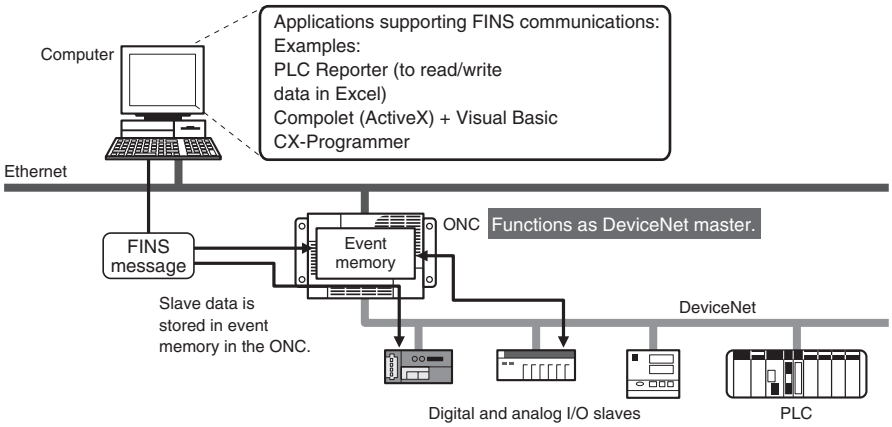


Refer to the *Open Network Controller Catalog* (Cat. No. V204) for details.

Using an ONC as an Information Gateway

Ethernet and DeviceNet Remote I/O Communications

- Data from DeviceNet slaves is stored in event memory in the ONC. The ONC's event memory is read and written from the computer to effectively read and write slave I/O data.
- DeviceNet slave data can be read and written without going through the PLCs.
- Explicit messages can be sent from the computer though the ONC to DeviceNet slaves.
- The ladder program in the PLCs can be maintained from the CX-Programmer through the DeviceNet.



Ordering Information

Product	Specifications	Model
Standard Model with DeviceNet	No expansion slot, two RS-232C ports, and DeviceNet capability	ITNC-EIS01-DRM
Expansion Model with DeviceNet	Expansion slot (See note 1.), three RS-232C ports and one RS-422 or RS-485 port, and DeviceNet capability	ITNC-EPX01-DRM
NX-Server for DeviceNet ONC Edition Ver. 1.00	---	ITNC-NS1Q-EF

Note: 1. The expansion slot is an ISA bus slot into which either a Controller Link Board or a SYSMAC Board can be mounted. Only one slot is provided.

2. Refer to the *Open Network Controller Catalog* (V204) for details on the Open Network Controller.

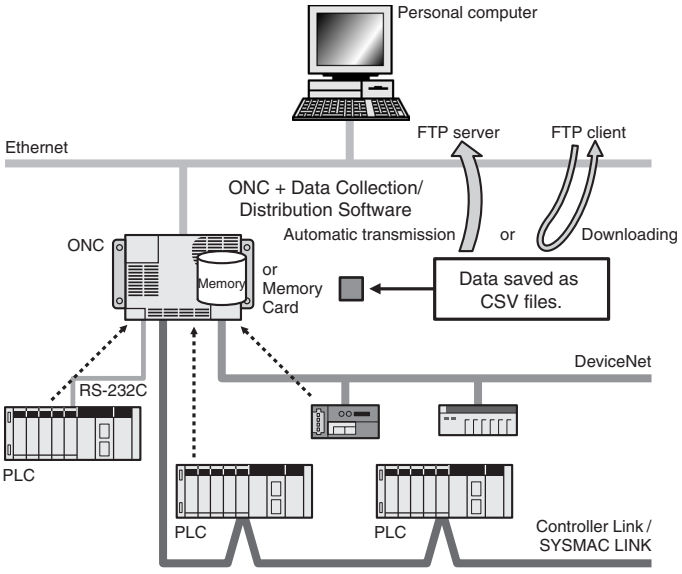
Application as a Data Collection Station

Collect Data and Send It Using FTP

Collect data under the required conditions from PLCs (see note 1) connected via various networks and from DeviceNet slaves (see note 2) and save it in CSV or binary files in the Memory Card in the ONC. Without any changes to the PLC system, the ONC can be used as a collection station for production, error, inspection, and history data.

Note: 1. CIO and DM Area data from the PLC can be collected if it is set for event memory in the ONC or specified for a serial connection.

2. Periodic collection: Collection at a specified time interval, such as 500 ms.
Event collection: Collection when some event occurs, such as a change in I/O status or data contents in the PLC or in DeviceNet devices.
Example: Collecting status information when an error occurs by using the occurrence of an error in processing or inspections on the production line as the event.
Scheduled collection: Collection at specific times, such as each hour.
Example: Collection every hour on the hour, such as 12:00 noon, 1:00 PM, etc. (minimum setting: every minute)



Example: Data collected using the Data Collection/Distribution Software can be displayed in Excel as shown below. A sample CSV file is shown set to collect data when bit 00 in CIO 0000 turns ON. The date can be added each time data is collected, and field names can be attached.

Microsoft Excel - file001_e.csv

File Edit View Insert Format Tools Data Window Help Acrobat

K20 =

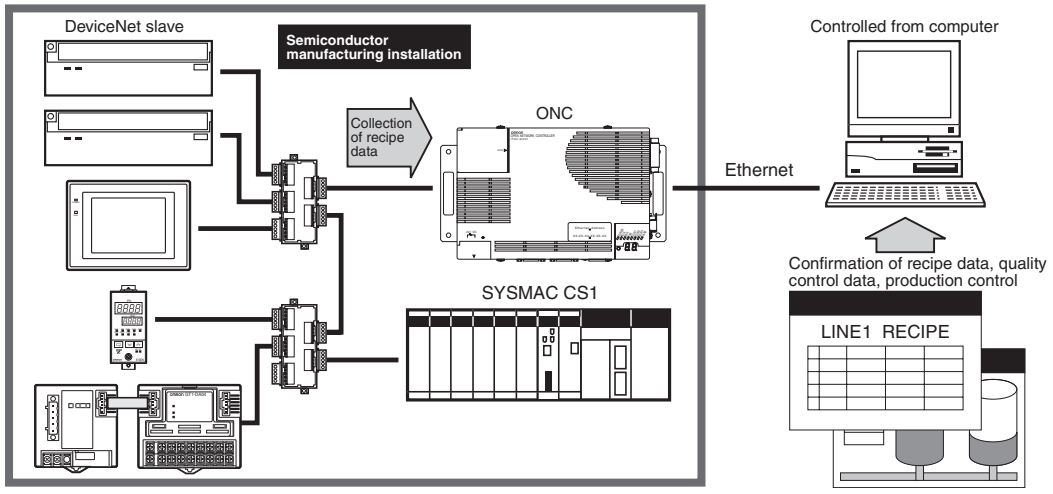
	A	B	C	D	E	F	G
1	Date	Time	DM_0ch	DM_315ch	Product Counts	Error Counts	
2	2/7/03	19:45:56	c641	da2d	6b44	4b79	
3	2/7/03	19:46:06	5669	fa3c	4728	672c	
4	2/7/03	19:46:31	be6f	a636	e430	8605	
5	2/7/03	19:47:01	1d65	160a	8813	741f	
6	2/7/03	19:47:21	a64d	3a35	c320	9304	
7							
8							
9							

Optional Software: NX-Server for DeviceNet ONC Edition

Operating data and production results collected and stored without adding a DeviceNet node and with no influence on DeviceNet traffic.

- NX-Server can collect I/O data for devices on DeviceNet without using any existing DeviceNet resources (MAC IDs). NX-Server analyzes frames that flow through the network to collect system I/O data for devices without request/response message communications. There is no influence on existing DeviceNet traffic between the devices on the DeviceNet.
- The collected data is automatically allocated to event memory (CIO and DM). By combining this functionality with the Data Collection/Distribution Software, automatic collection is possible for various types of data.

Application Example



DeviceNet Configurator
WS02-CFDC1-E/3G8E2-DRM21-EV1

Simplifies System Construction and Maintenance for DeviceNet Multivendor Networks.

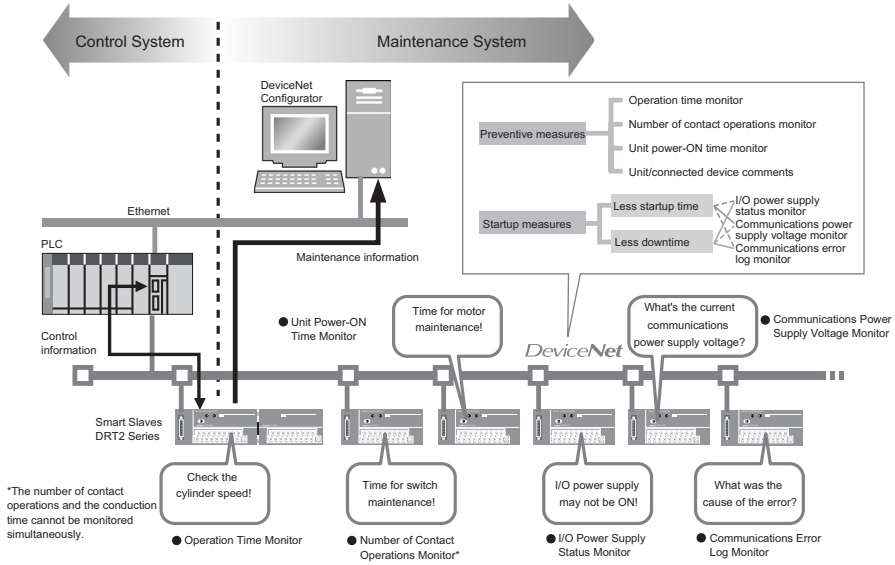
- Graphical interface to simplify network construction.
- DeviceNet Board for personal computers to enable connection from a serial port.
- Monitor devices through an online connection.
- Use Smart Slaves to build an advanced maintenance system.

Ordering Information

Name	Operating system	Model
DeviceNet Configurator Software	Windows 95, 98, Me, NT4.0, 2000, or XP	WS02-CFDC1-E
DeviceNet Configurator PC Card	Windows 95, 98, Me, 2000, or XP	3G8E2-DRM21-EV1

The DeviceNet Configurator software is included with the 3G8E2-DRM21-EV1.

System Configuration



■ Operating Environment

System requirements	**Hardware**	Computer: IBM PC/AT or compatible CPU: Pentium 166 MHz or better (Pentium 150 MHz or better for Windows Me) (Recommended: 200 MHz or better) Recommended memory: 32 MB or more Available hardware disk space: 15 MB or more
Network connection method	**Card**	3G8E2-DRM21-EV1 DeviceNet Configurator PC Card (PCMCIA) (DeviceNet Configurator Software included)
	Serial	Peripheral port or RS-232C port on CPU Unit or RS-232C port on Serial Communications Unit/Board mounted to CS/CJ-series PLC.

Note: 1. Windows is a registered trademark of the Microsoft Corporation.
2. Use version 2.1 or later for the CJ1W-DRM21.

■ Outline

The DeviceNet Configurator (ver. 2.□) provides function to aid in constructing and operating DeviceNet multivendor networks. These functions are interfaced through graphical windows for easy operation. Offline, virtual networks can be constructed and device settings can be made. If Smart Slaves are used, an advance maintenance system can be constructed by setting and monitoring maintenance information inside the Smart Slaves.

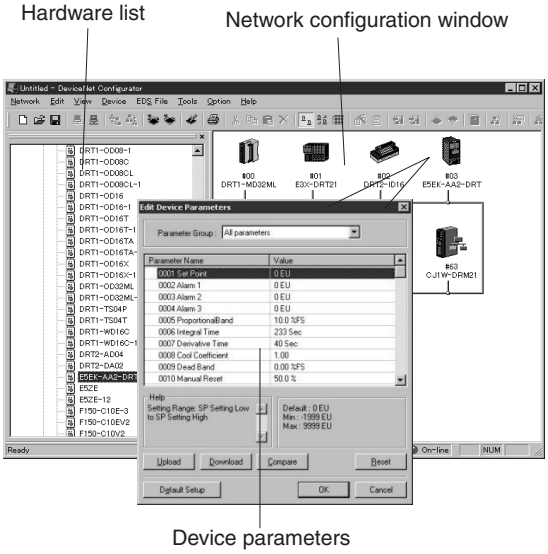
■ Network Construction and Settings

Easy Network Construction with Graphical Interface

A virtual network construction window provided by the Configurator enables dragging and dropping devices from hardware lists to build a network and make the required settings on the personal computer. The resulting information can be saved in files for downloading to the devices online.

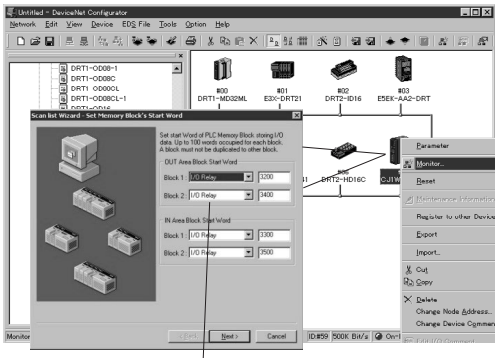
Setting DeviceNet Parameters

Offline, device files can be drug and dropped on a virtual network inside the Configurator to build a network and the parameters for each device can be edited, greatly increasing system design efficiency.



Create Scan Lists Using a Wizard

I/O allocations and slave registrations can be easily performed in the master by using a wizard to create scan lists. The currently registered slaves and allocations can also be easily confirmed.



■ Online Connections

Connect Using a PC Card or Serial Port

Software connections from the Configurator are possible using a Card installed in the personal computer, or though a serial port on an OMRON CS- or CJ-series PLC.

DeviceNet Card

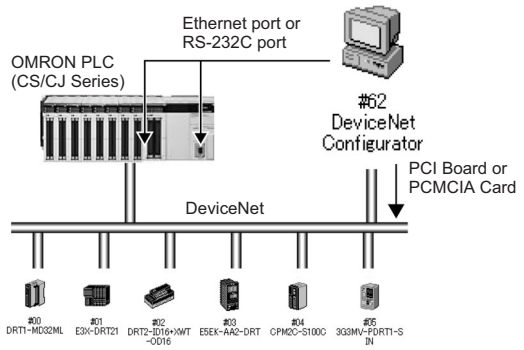
OMRON provides a PCMCIA Card to enable direct connection as a node on the DeviceNet network (one node address is allocated).

RS-232C COM Port on Computer

Connection is also possible from the COM port on the computer to the Peripheral port or RS-232C port on CPU Unit or RS-232C port on Serial Communications Unit/Board mounted to a CS/CJ-series PLC that has a DeviceNet Unit mounted to it.

Ethernet Port on Computer

Furthermore, connection is also possible from an Ethernet port on the computer to an Ethernet Unit mounted to a CS/CJ-series PLC that has a DeviceNet Unit mounted to it.



■ Device Management and Monitoring

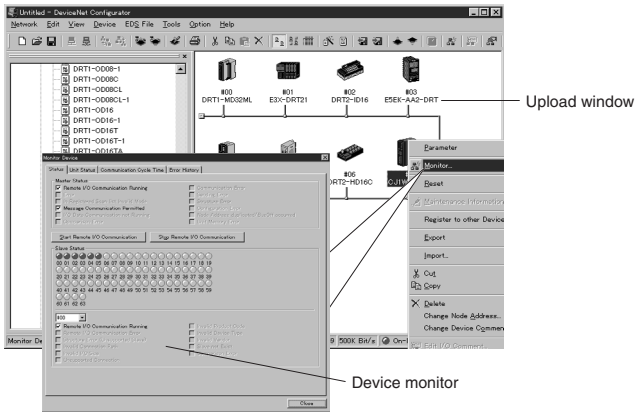
Online Device Monitoring

Use Network Uploads to Monitor Devices (See note.)

The following items can be monitored from the CPU Unit of an OMRON CS- or CJ-series PLC.

- Overall network communications status
- Master and slave status
- Unit status
- Communications cycle time
- Error log

Note: Supported only by devices with a monitor function.

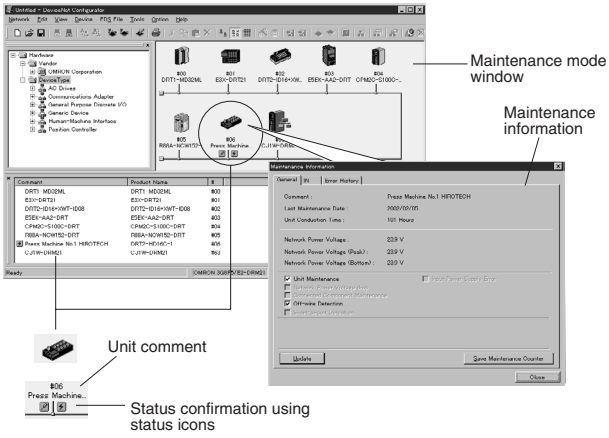


■ Maintenance System Construction

Use Smart Slaves for an Advance Maintenance System

Smart Slave Maintenance Information

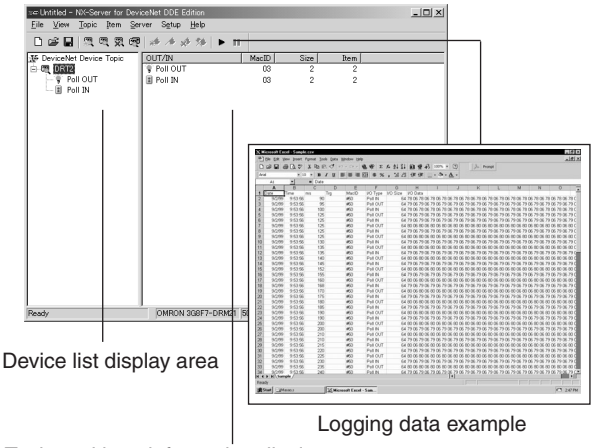
Maintenance information stored in Smart Slaves can be read and use to build a maintenance system that functions separately from the control system.



NX-Server
WS02-NXD1-E

Easily monitor and record all kinds of I/O data in the DeviceNet Network.

- I/O data being transferred through DeviceNet can be monitored.
- The advanced trigger function allows a specific device's data to be recorded.
- Nodes are not used because the Server is equipped with an original frame analysis engine.
- Data can be accessed without increasing network traffic.
- A development kit for developing applications with the DDE Server and software for operating existing user applications are also available.



■ NX-Server Functions

- Topic names and data areas can be set freely for each device that you want to monitor or record.
- DDE interface's server name as a public user interface: NETXDNET
- The data size and format (bit, byte, word) can be specified.
- Data logging can be set independently for each device and their trigger conditions can also be set.
- The recorded data can be checked in standard CSV format.
- Nodes are not used because the Server is equipped with an original frame analysis engine.
- Data can be accessed without increasing network traffic.

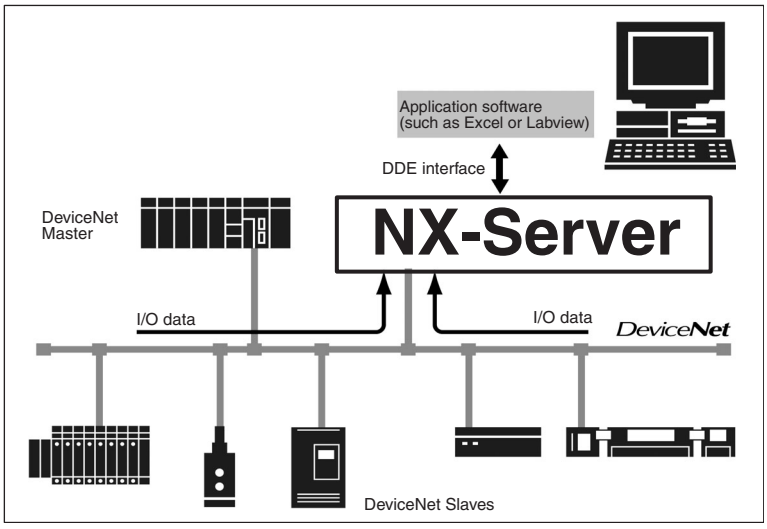
Ordering Information

Name	Model
NX-Server for DeviceNet DDE Edition	WS02-NXD1-E

Note: 1. NX-Server DDE Edition is a DDE (Dynamic Data Exchange) Server that collects I/O data and provides that data to higher-level monitoring software.

2. The 3G8E2-DRM21-EV1 PC Card can be used.

System Configuration



Specifications

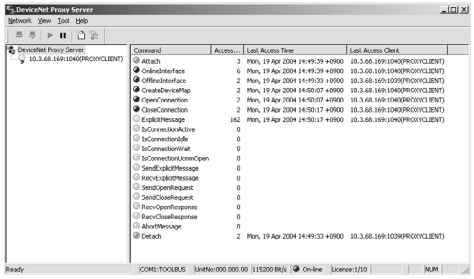
■ System Requirements

Hardware	OMRON DeviceNet Configurator PC Cards: 3G8E2-DRM21-EV1 PC Card (included with DeviceNet Configurator) National Instruments DeviceNet boards: Any board that supports NI-DNET Software
Computer	IBM PC/AT or compatible
OS	When using the 3G8E2-DRM21-EV1: Windows 95, 98, Me, 2000, or XP
CPU	Pentium 166 MHz or better
Available hard disk space	5 MB min.
Memory	32 MB min.
Floppy disk drive	Drive that can read 1.44-Mbyte, 3.5-inch, 2HD floppy disks
Display	VGA or better

Note: Windows is a registered trademark of Microsoft Corporation.

DeviceNet Proxy Server
WS02-PEDC1-E

Enables Setting the System from Multiple DeviceNet Configurators or Remote Configuration via Ethernet



- Add-in remote connection for DeviceNet Configurators.
- Simultaneous connection of clients to DeviceNet Proxy Server. (See note 1.)
- Access the DeviceNet line from wireless LAN or RAS.
- Essentially the same performance as a PCI interface compared with an Ethernet Unit interface. Performance: Serial < Ethernet Unit < PCI (essentially equal to a remote interface, see note 2).
- Security functions, e.g., restricting writing with passwords.

Note: 1. Licenses included for 10 simultaneous connections. Additional licenses required for more than 10 simultaneous connections.

2. The performance depends on the Ethernet connection type.

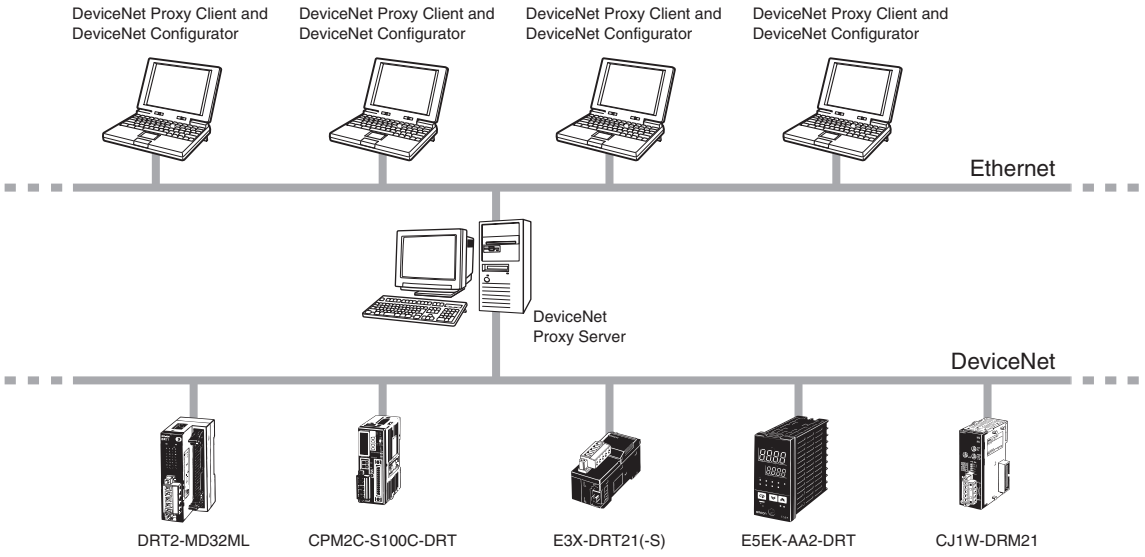
Ordering Information

Name	Applicable OS	Model
DeviceNet Proxy Server	Windows 95, 98, Me, NT4.0, 2000, or XP	WS02-PEDC1-E

Function

The Proxy is a client-server system that enables simultaneous access to the system from multiple DeviceNet Configurators. The DeviceNet Proxy Client is installed on client computers and the DeviceNet Proxy Server is installed on the server computer.

System Configuration



Main Functions

■ DeviceNet Proxy Server

- Connection monitoring: Displays the status of connections to the DeviceNet Proxy Server, including IP addresses, connection ports, and host names of currently connected clients.
- Message monitoring: Displays message requests from DeviceNet Proxy Clients.
- Logging: Communications status (connections and disconnections) is output to a log file.

■ Connection Monitoring

Displays the connected client status, including IP addresses, client TCP ports, and host names.

■ Message Monitoring

Monitors message requests, including total number of accesses, final access time, and final access client data.

■ Logging

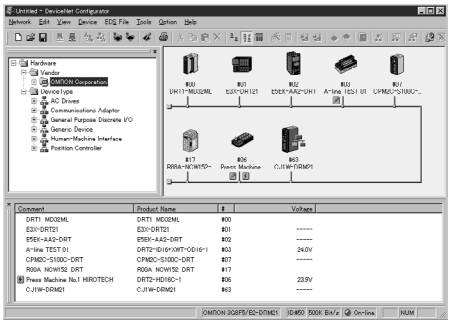
Communications status log, including client information (IP address and host name), request time, and connection/disconnection status.

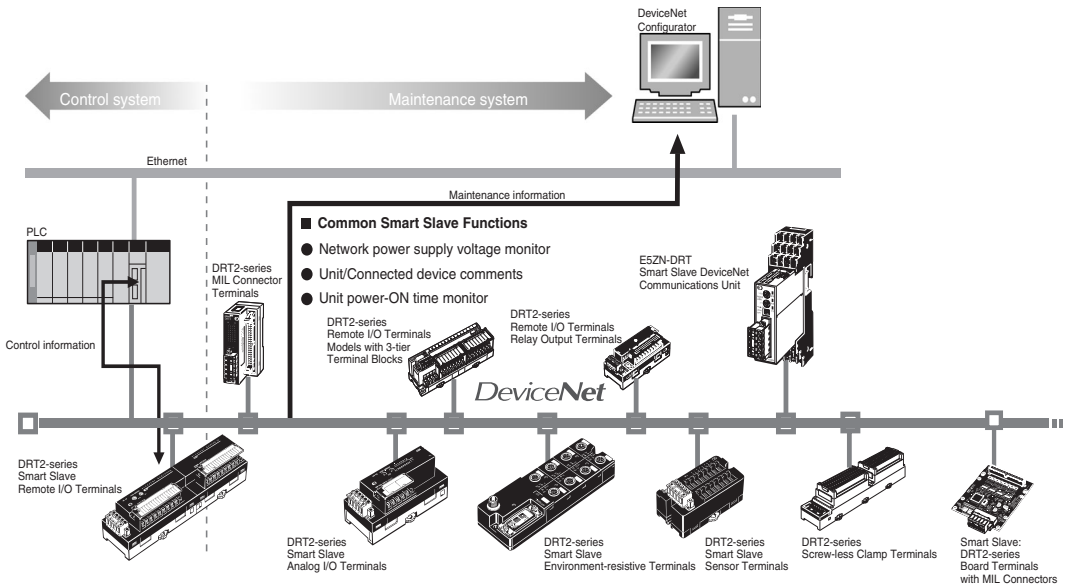
Smart Slaves DRT2 Series

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

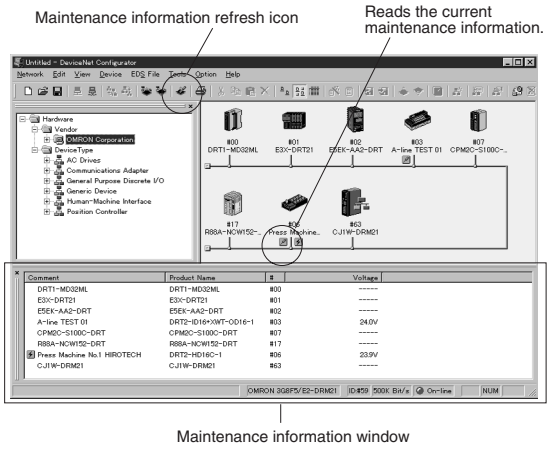
- Operation time monitor function
- Contact operations counter (See note.)
- Unit conduction time monitor function
- Total ON time monitor function (See note.)
- Network power supply voltage monitor function
- Communications error log function
- Last maintenance date
- Comparator function
- Selectable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

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

Configurator (Ver. 2.20 or Later) Maintenance Window

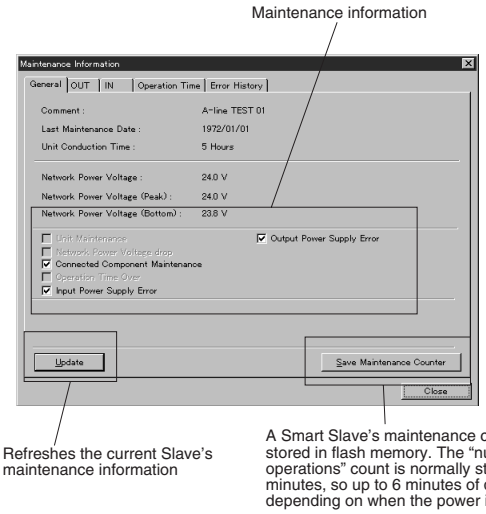
Various equipment information can be monitored from the following Configurator window (Ver. 2.20 or later) through DRT2-series Smart Slaves.

Maintenance Mode Window

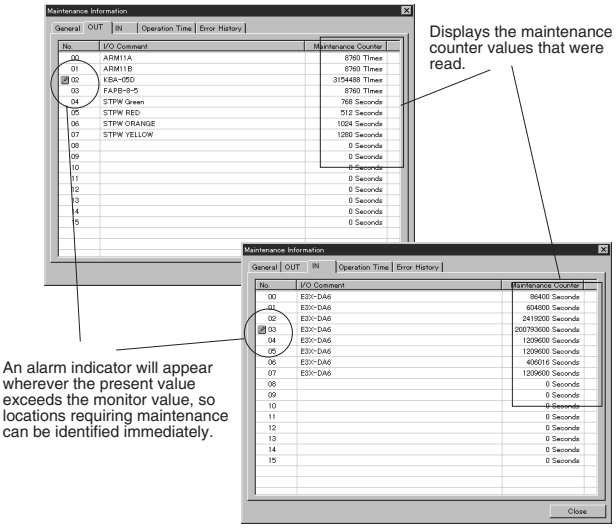


Individual Slave's Maintenance Information Window

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.



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.



Functions Supported by Smart Slaves

Group	General Slaves											
	Remote I/O Terminals						MIL Connector Terminals			Board Terminals with MIL Connector		
Type	Transistors		Relays	Transistors with 3-tier terminal block								
Model	DRT2-□D16(-1)		DRT2-ROS16	DRT2-□D16TA(-1)			DRT2-□D32ML(-1)			DRT2-□D32B(-1) DRT2-□D32BV(-1)		
Function	Input	Output	Output	Input	Output	I/O	Input	Output	I/O	Input	Output	I/O
Operation time monitor	OK (Input+Output only)		---	OK						OK		
Contact operation counter	OK									OK		
Unit conduction time monitor	OK									OK		
Total ON time monitor	OK									OK		
Unit comments	OK									OK		
Connected device comments	OK									OK		
Network power supply voltage monitor	OK									OK		
I/O power supply monitor	OK		---	OK						OK		
Communications error log	OK									OK		
Input filter	OK	---		OK	---	OK		---	OK	OK	---	OK
Power-ON inrush current protection	OK	---		OK	---	OK		---	OK	OK	---	OK
Sensor power supply short-circuit detection	---									---		
External load short-circuit detection	---									---		
External load disconnection detection	---									---		
Disconnected sensor detection	---									---		
Removable terminal block	OK		---							---		
Communications speed auto-detect	OK									OK		
No need to wire Unit power supply	OK									OK		
No need to wire input device power supply	---		OK	---						---		
Expansion via Expansion I/O Units	OK			---						---		
Scaling	---									---		
User compensation	---									---		
Last maintenance date	OK									OK		
Cumulative counter	---									---		
Moving average processing	---									---		
Number of A/D conversion points (conversion cycle) setting	---									---		
Peak/bottom hold	---									---		
Top/valley hold	---									---		
Percentage change calculation	---									---		
Comparator	---									---		
Selectable output value after error	---									---		
Page	44 to 49		60 to 62	50 to 53			54 to 59			63 to 67		

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

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

General Slaves						Environment-resistive Terminals		General Slaves		Analog Slaves			
Screw-less clamp terminals								Sensor Connector Terminals		Analog I/O Terminals			Temperature Input Terminals
Transistors						Transistors		Transistors with connector					
Detection function			No detection function										
DRT2-□D32SL(-1)			DRT2-□D32SLH(-1)			DRT2-□D08C(-1) DRT2-HD16C(-1)		DRT2-□D16S(-1)		DRT2-AD04	DRT2-AD04H	DRT2-DA02	DRT2-TS04□
Input	Output	I/O	Input	Output	I/O	Input	Output	Input	Output	Input		Output	Input
OK						---		---	OK	---			
OK						OK		OK		---			
OK						OK		OK		OK			
OK						OK		OK		---			
OK						OK		OK		OK			
OK						OK		OK		OK			
OK						OK		OK		OK			
OK						---	OK	---		---			
OK						OK		OK		OK			
OK	---	OK	---		OK	OK	---	OK		---			
OK	---	OK	---		OK	OK	---	OK		---			
---			OK	---	OK	OK	---	OK		---			
---						---	OK	---	OK	---			
---				OK				---		---			
---			OK	---	OK	OK	---	---		---			
OK						---		---		OK			
OK						OK		OK		OK			
OK						OK		OK		OK			
---						OK	---	OK		---			
---						---		---		---			
---						---		---		OK			
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OK						OK		OK		OK			
---						---		---		OK			
---						---		---		OK	OK	---	OK
---						---		---		OK	---	---	---
---						---		---		OK	OK	---	OK
---						---		---		OK	OK	---	OK
---						---		---		OK	OK	---	OK
---						---		---		OK	OK	---	OK
---						---		---		---	---	OK	---
68 to 75						76 to 82		83 to 86		87 to 91			92 to 96

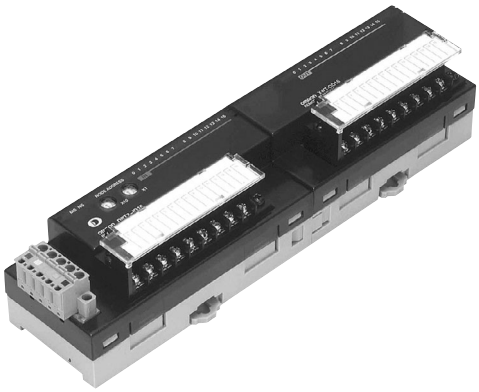
OK: Function supported, ---: Function not supported.

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

Transistor Remote I/O Terminals
DRT2-□D16(-1)

Allows I/O Expansion with Transistor Terminals

- All kinds 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.
- Easily locate trouble spots in the system.
- Maintenance and setup have been simplified with new features like auto-detection of the communications speed.



Smart Slave Functions

Most Compact Unit in the Industry

Basic Units are just 115-mm wide (just 77% as wide as its DRT1-series predecessor) and the Expansion Units are just 94-mm wide, so the overall width is the industry's narrowest at 209 mm.

Detachable Terminal Block

The terminal block can be detached.

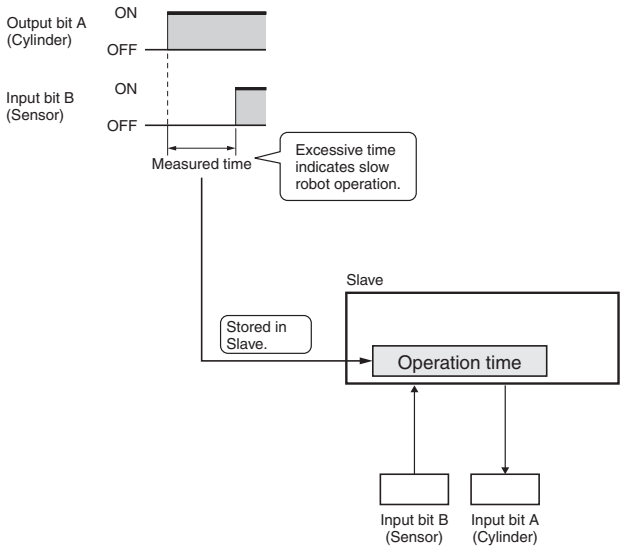
Expansion I/O Units

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

Operation Time Monitor Function

This Slave can quickly measure the time it takes for an input to go ON after a corresponding output goes ON (independent of the ladder program) and notify the Master through the status bits if the time exceeds the value that was preset in the Slave.

Note: This function is only supported in a Slave that has both inputs and outputs in a Main I/O Unit and Expansion I/O Unit.

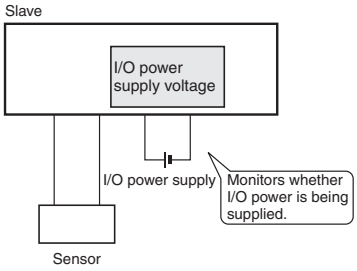


No Wiring Required for Internal Circuits

Power for the Slave's internal circuits is supplied from the communications power supply, so it is not necessary to wire the Slave's internal power supply separately.

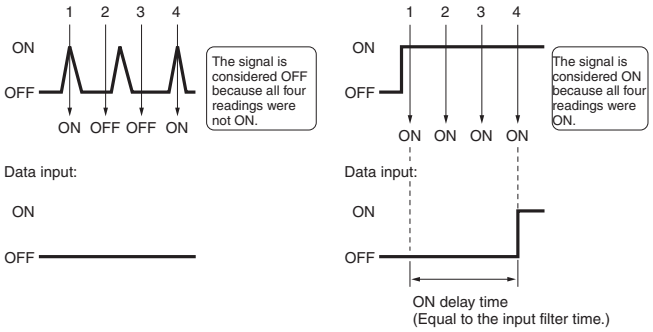
I/O Power Supply Status Monitor Function

This function can detect whether or not the I/O power is being supplied and indicate that condition in the status.



Input Filter Function

This function can read the input value several times within a preset period and eliminate 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.



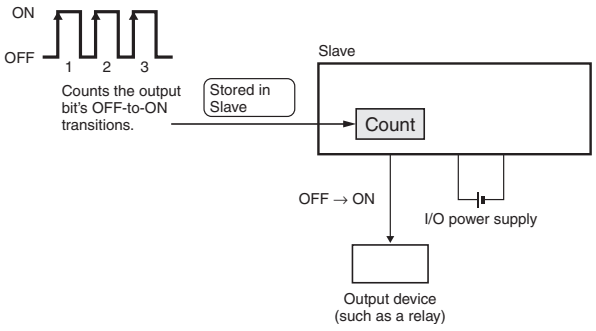
Power-ON Inrush Current Protection Function

This function prevents inputs from being read for 100 ms after the I/O power supply goes from OFF to ON, so that the power supply can stabilize after being turned ON. This 100-ms delay can be used to eliminate false inputs generated by inrush currents when the I/O power supply goes ON.

Contact Operation Counter

Counts (max. resolution 50 Hz) and stores the number of OFF-to-ON transitions for an input or output. In addition, a set value can be set in the Slave and a notification can be sent through the status bits when the count reaches the set value.

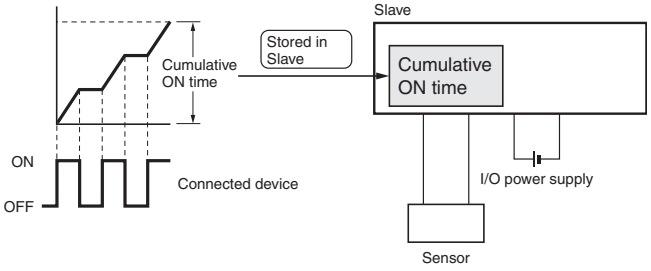
Note: The contact operation counter function and the total ON time monitor function cannot be used simultaneously for the same contact.



Total ON Time Monitor Function

Adds and stores the total time that a connected device (such as a sensor or relay) is ON. In addition, a set value can be set in the Slave and a notification can be sent through the status bits when the total reaches the set value.

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



Ordering Information

Basic Units

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

Expansion Units

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

Specifications

■ General Specifications

Communications power supply voltage	11 to 25 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 $^{+10\%}/_{-15\%}$)
Current consumption	Communications: Basic Unit: 60 mA max. With 16-point expansion: 70 mA max. With 8-input expansion: 65 mA max. With 16-output expansion: 64.5 mA max.
Dielectric strength	500 VAC (between isolated circuits)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 56 Hz, 0.7-mm double amplitude 56 to 150 Hz, 50 m/s^2
Shock resistance	150 m/s^2
Mounting method	35-mm DIN Track mounting
Screw tightening torque	M3 (power supply and I/O terminals): 0.3 to 0.5 N·m
Ambient temperature	Operating: –10°C to 55°C Storage: –25°C to 65°C
Ambient humidity	Operating: 25% to 85% (with no condensation)
Weight	Basic Unit: 140 g max. 16-point Expansion Unit: 120 g max. 8-point Expansion Unit: 80 g max.

■ Ratings

Inputs

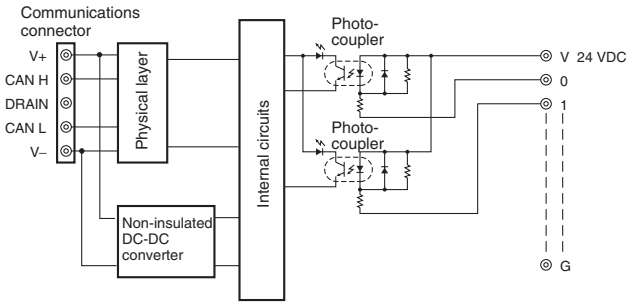
Input current		6 mA max./point (at 24 VDC)
ON delay time		1.5 ms max.
OFF delay time		1.5 ms max.
ON voltage	**NPN**	15 VDC min. between each input terminal and V
	PNP	15 VDC min. between each input terminal and G
OFF voltage	**NPN**	5 VDC max. between each input terminal and V
	PNP	5 VDC max. between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

Outputs

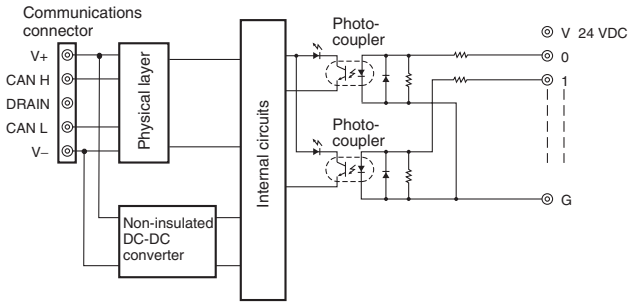
Rated output current	0.5 A/point, 4.0 A/common
ON delay time	0.5 ms max.
OFF delay time	1.5 ms max.
Residual voltage	1.2 V max.
Leakage current	0.1 ms max.
Isolation method	Photocoupler
Output indicators	LED (yellow)

Internal Circuit Configuration

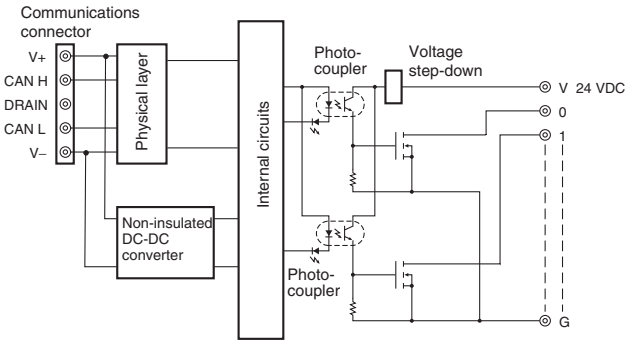
DRT2-ID16 (NPN)



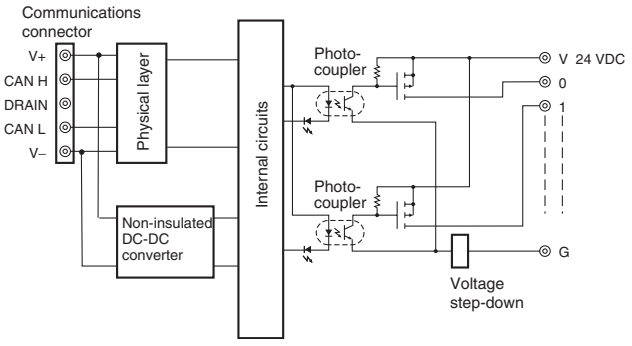
DRT2-ID16-1 (PNP)



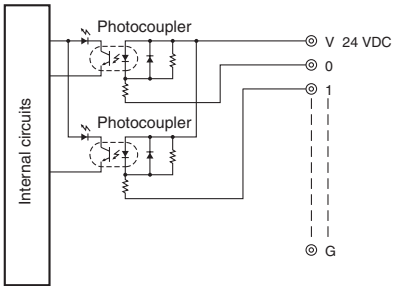
DRT2-OD16 (NPN)



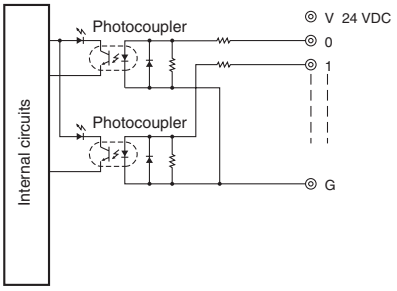
DRT2-OD16-1 (PNP)



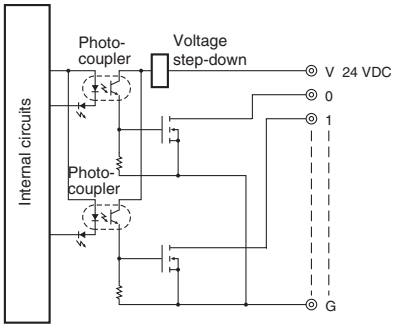
XWT-ID08 (NPN)
XWT-ID16 (NPN)



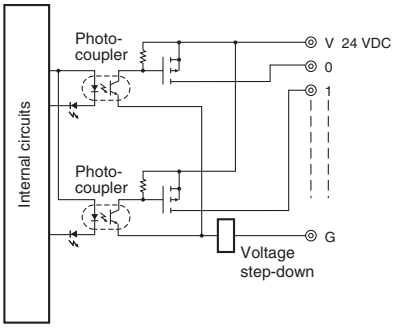
XWT-ID08-1 (PNP)
XWT-ID16-1 (PNP)



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



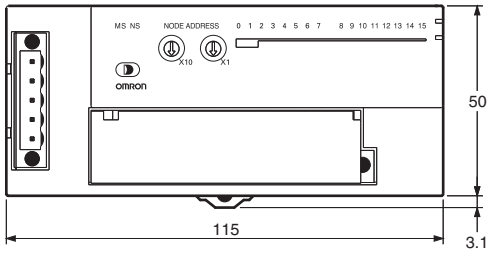
XWT-OD08-1 (PNP)
XWT-OD16-1 (PNP)

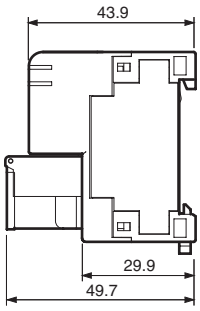


Dimensions (Unit: mm)

Remote I/O Terminals: Basic Units

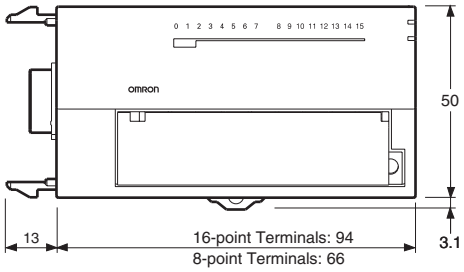
DRT2-ID16
DRT2-ID16-1
DRT2-OD16
DRT2-OD16-1

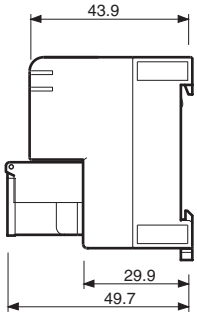




Remote I/O Terminals: Expansion Units

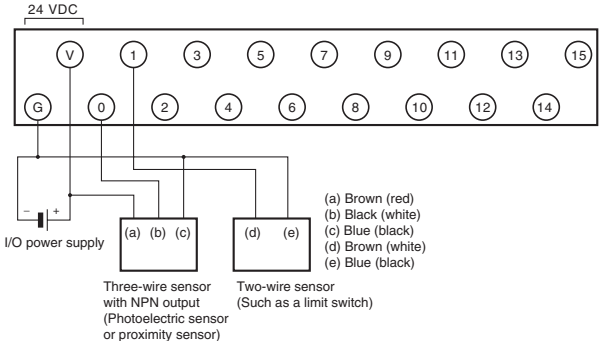
XWT-ID16	**XWT-ID08**
XWT-ID16-1	**XWT-ID08-1**
XWT-OD16	**XWT-OD08**
XWT-OD16-1	**XWT-OD08-1**



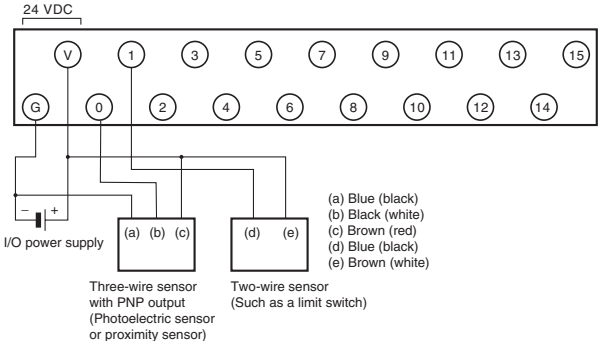


Wiring

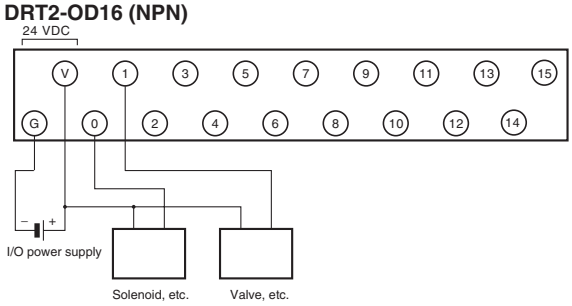
DRT2-ID16 (NPN)



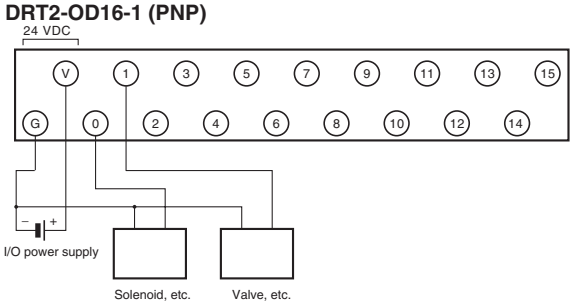
DRT2-ID16-1 (PNP)



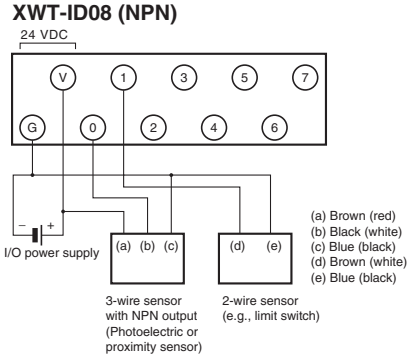
DRT2-OD16 (NPN)



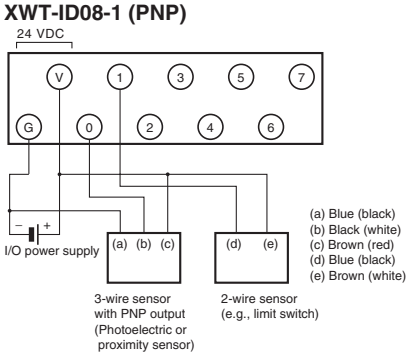
DRT2-OD16-1 (PNP)



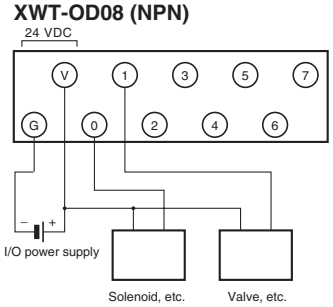
XWT-ID08 (NPN)



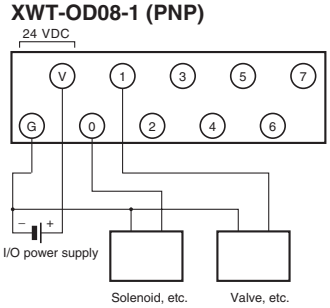
XWT-ID08-1 (PNP)



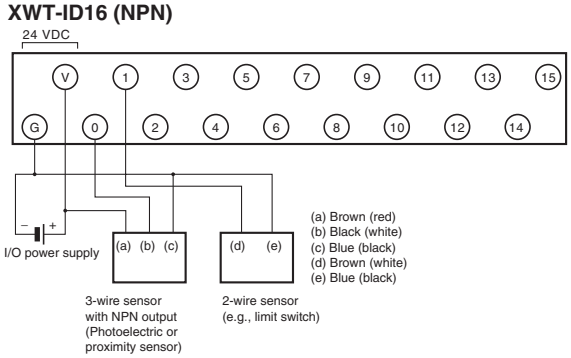
XWT-OD08 (NPN)



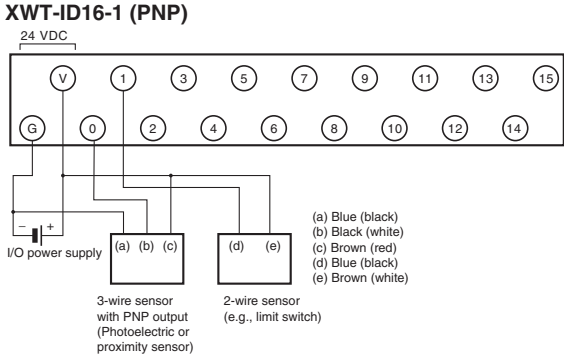
XWT-OD08-1 (PNP)



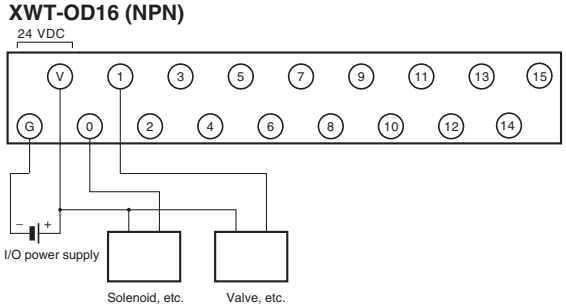
XWT-ID16 (NPN)



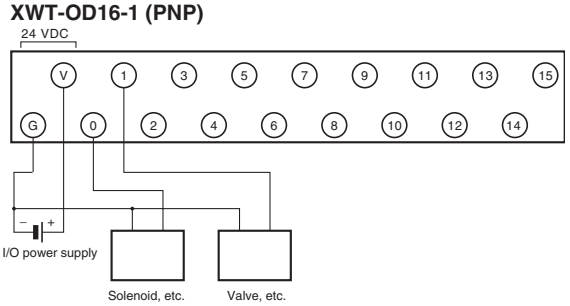
XWT-ID16-1 (PNP)



XWT-OD16 (NPN)



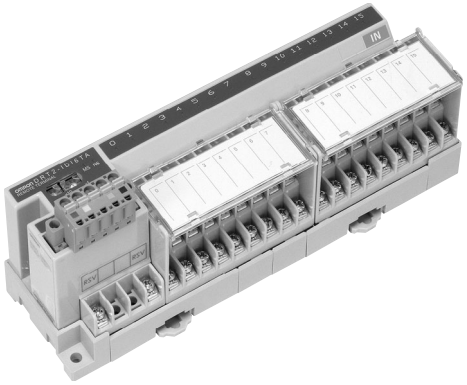
XWT-OD16-1 (PNP)



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.
- Removable cassette-type circuit sections.



Smart Slave Functions

Improved Monitor Functions

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

Slave and Connected Device Comments

Automatic Detection of Communications Speed

Input filter on Input and I/O Terminals

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

Ordering Information

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

Specifications

■ Input Ratings

Terminals with 16 Transistor Inputs

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

Terminals with 8 Transistor Inputs and 8 Transistor Outputs

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

■ Output Ratings

Terminals with 16 Transistor Outputs

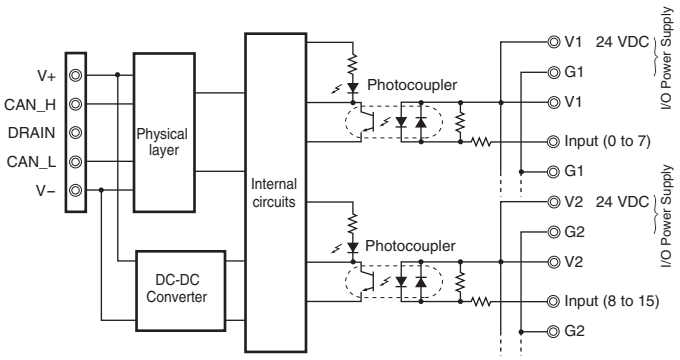
Item	DRT2-OD16TA	DRT2-OD16TA-1
Internal I/O common	NPN	PNP
I/O points	16 outputs	
Rated output voltage	0.5 A/point	
Residual voltage	1.2 VDC max. (0.5 A DC between output and G terminal)	1.2 VDC min. (0.5 A DC between input and V terminal)
Leakage current	0.1 mA max.	
ON delay time	0.5 ms max.	
OFF delay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

Terminals with 8 Transistor Inputs and 8 Transistor Outputs

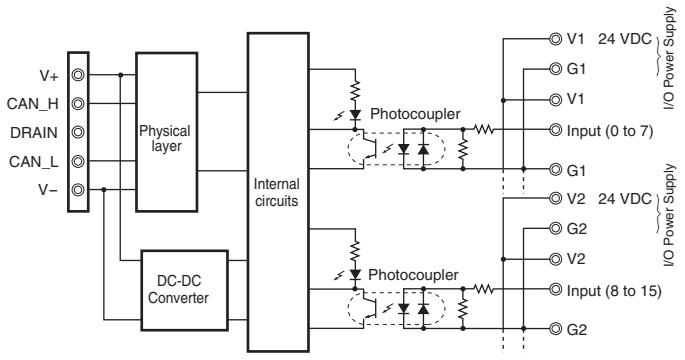
Item	DRT2-MD16TA	DRT2-MD16TA-1
Internal I/O common	NPN	PNP
I/O points	8 outputs	
Rated output voltage	0.5 A/point	
Residual voltage	1.2 VDC max. (0.5 A DC between output and G terminal)	1.2 VDC min. (0.5 A DC between input and V terminal)
Leakage current	0.1 mA max.	
ON delay time	0.5 ms max.	
OFF delay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

Internal Circuit Configuration

DRT2-ID16TA



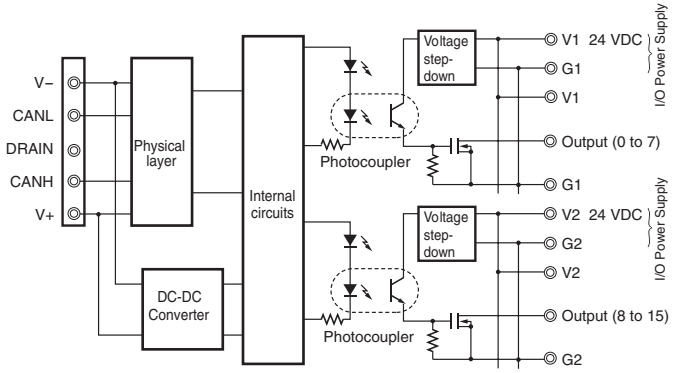
DRT2-ID16TA-1



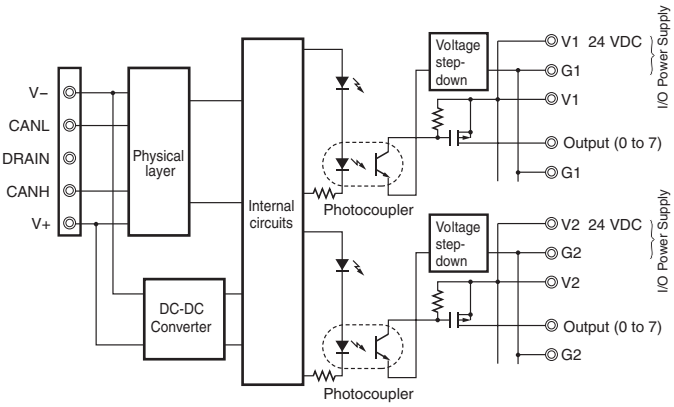
Unit Descriptions

Transistor Remote I/O Terminals with 3-tier Terminal Blocks
DRT2-□D16TA(-1)

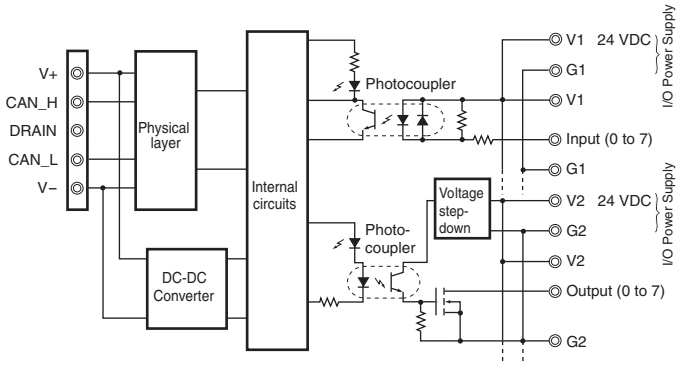
DRT2-OD16TA



DRT2-OD16TA-1



DRT2-MD16TA



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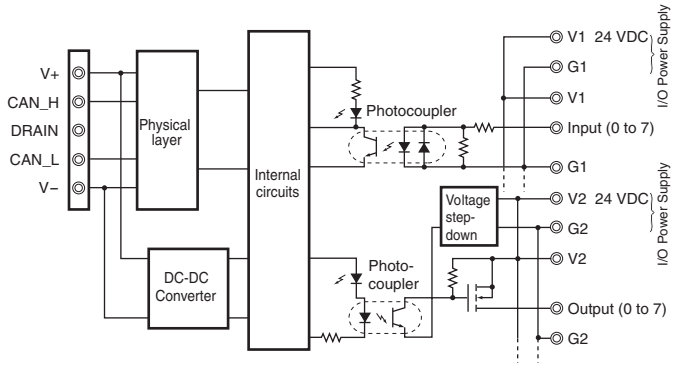
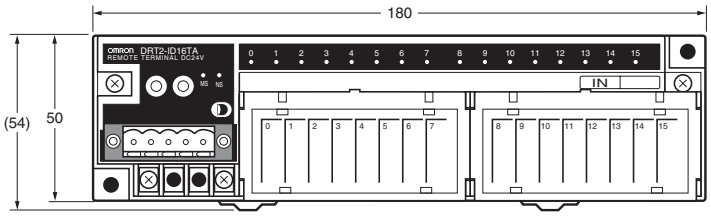
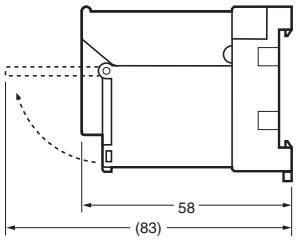


Dimensions (Unit: mm)

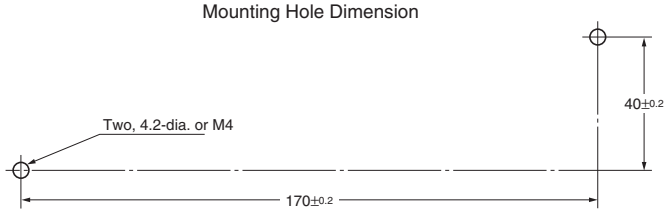
DRT2-ID16TA(-1)
DRT2-OD16TA(-1)
DRT2-MD16TA(-1)





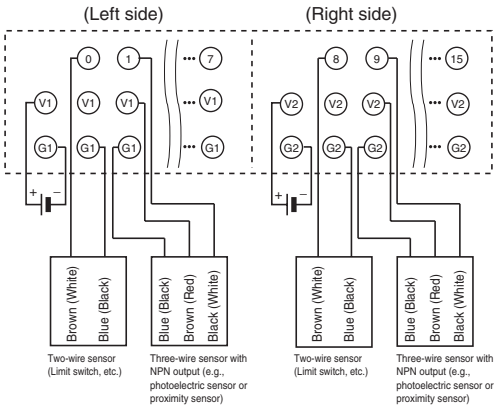
Dimensions in parentheses are reference values.

Mounting Hole Dimension



Wiring

DRT2-ID16TA



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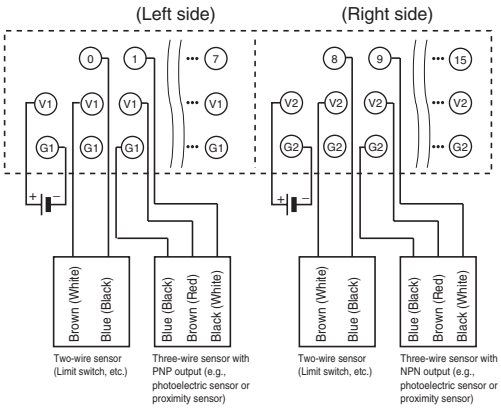

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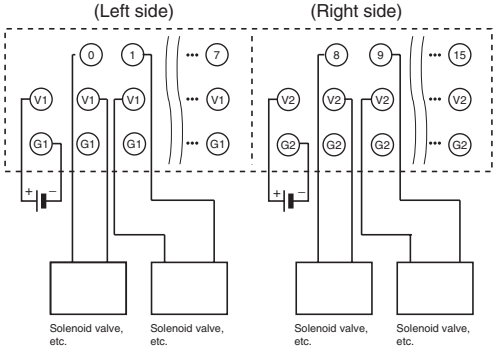

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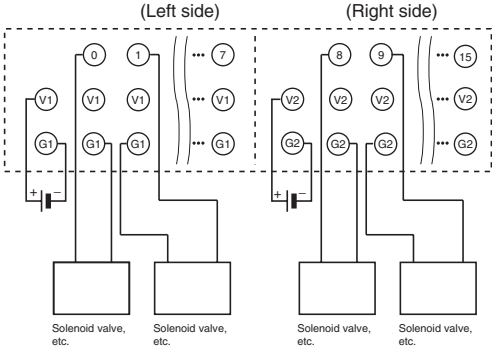

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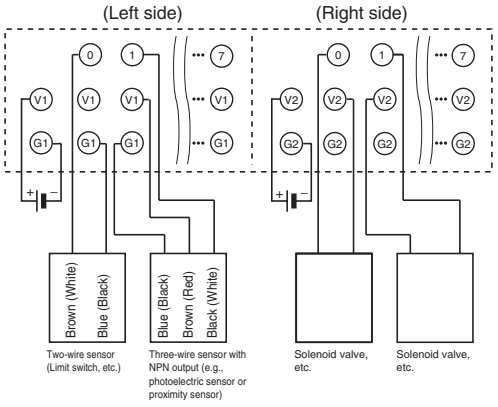
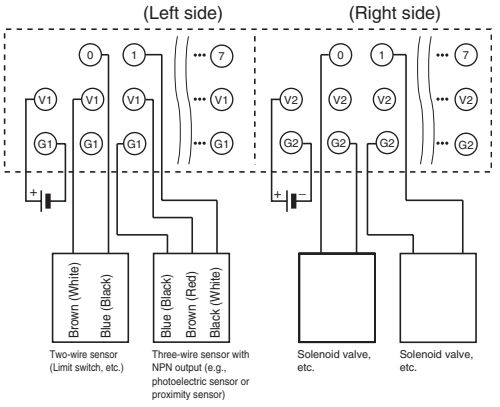


DRT2-MD16TA-1



MIL Connector Terminals
DRT2-□D32ML(-1)

Very Compact 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

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

Slave and Connected Device Comments

Expansion I/O Units Can Be Added.

Shared Internal and Communications Power Supply
- Reduces wiring. (I/O power supplied externally.)

Automatic Detection of Communications Speed

Input filter on Input and I/O Terminals

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

Ordering Information

I/O type	Internal I/O common	Number of I/O points	I/O terminals	Internal circuit power	Rated I/O power supply voltage	Model
Inputs	NPN (+ common)	32	MIL connector	Supplied from communications connector.	24 VDC	DRT2-ID32ML
	PNP (– common)					DRT2-ID32ML-1
Outputs	NPN (– common)					DRT2-OD32ML
	PNP (+ common)					DRT2-OD32ML-1
I/O	NPN (+ common for inputs, – common for outputs)	16 inputs and 16 outputs				DRT2-MD32ML
	PNP (– common for inputs, + common for outputs)					DRT2-MD32ML-1

Specifications

■ Input Ratings

Terminals with 32 Transistor Inputs

Item	DRT2-ID32ML	DRT2-ID32ML-1
Internal I/O common	NPN	PNP
I/O points	32 inputs	
ON voltage	17 VDC min. (between input and V terminal)	17 VDC min. (between input and G terminal)
OFF voltage	5 VDC max. (between input and V terminal)	5 VDC max. (between input and G terminal)
OFF current	1.0 mA max.	
Input current	24 VDC: 6.0 mA max./point 17 VDC: 3.0 mA max./point	
ON delay time	1.5 ms max.	
OFF delay time	1.5 ms max.	
Circuits per common	32	

Terminals with 16 Transistor Inputs and 16 Transistor Outputs

Item	DRT2-MD32ML	DRT2-MD32ML-1
Internal I/O common	NPN	PNP
I/O points	16 inputs	
ON voltage	17 VDC min. (between input and V terminals)	17 VDC min. (between input and G terminals)
OFF voltage	5 VDC max. (between input and V terminals)	5 VDC max. (between input and G terminals)
OFF current	1.0 mA max.	
Input current	24 VDC: 6.0 mA max./point 17 VDC: 3.0 mA max./point	
ON delay time	1.5 ms max.	
OFF delay time	1.5 ms max.	
Max. ON inputs	16	
Circuits per common	16	

■ Output Ratings

Terminals with 32 Transistor Outputs

Item	DRT2-OD16TA	DRT2-OD16TA-1
Internal I/O common	NPN	PNP
I/O points	32 outputs	
Rated output current	0.3 A/point, 4 A/common (See note.)	
Residual voltage	1.2 VDC max. (0.3 A DC between output and G terminal)	1.2 VDC min. (0.3 A DC between input and V terminal)
Leakage current	0.1 mA max.	
ON delay time	0.5 ms max.	
OFF delay time	1.5 ms max.	
Circuits per common	32	

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

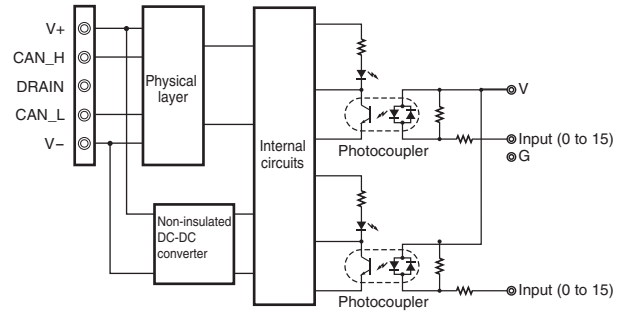
Terminals with 16 Transistor Inputs and 16 Transistor Outputs

Item	DRT2-MD16TA	DRT2-MD16TA-1
Internal I/O common	NPN	PNP
I/O points	16 outputs	
Rated output voltage	0.3 A/point, 4 A/common (See note.)	
Residual voltage	1.2 VDC max. (0.3 A DC between output and G terminal)	1.2 VDC min. (0.3 A DC between input and V terminal)
Leakage current	0.1 mA max.	
ON delay time	0.5 ms max.	
OFF delay time	1.5 ms max.	
Circuits per common	16	

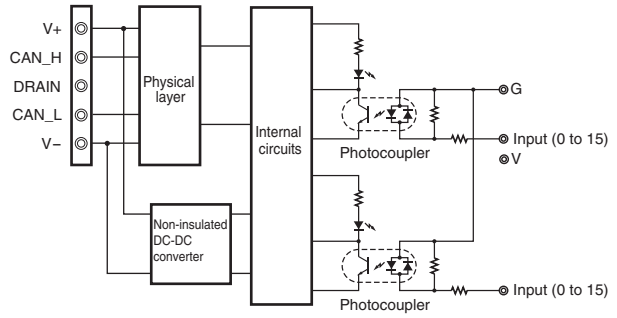
Note: The maximum total load current is 4 A. The maximum current for the V and G terminals is 1 A per terminal.

Internal Circuit Configuration

DRT2-ID32ML



DRT2-ID32ML-1



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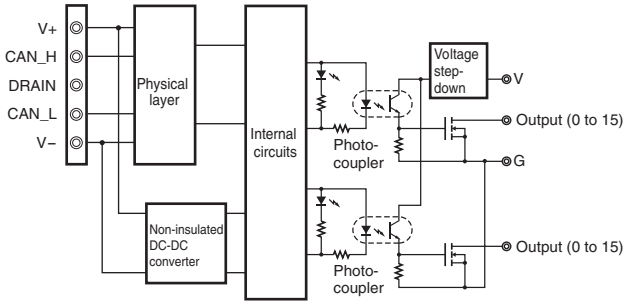

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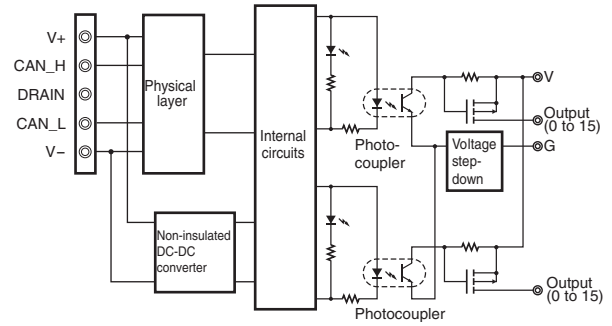

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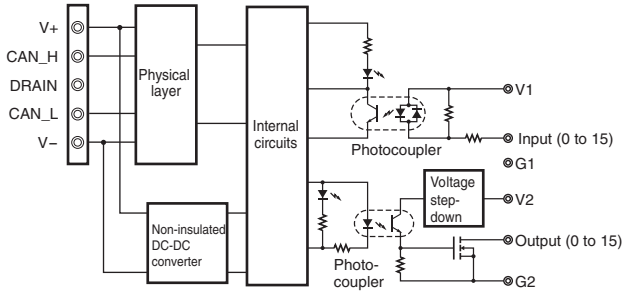
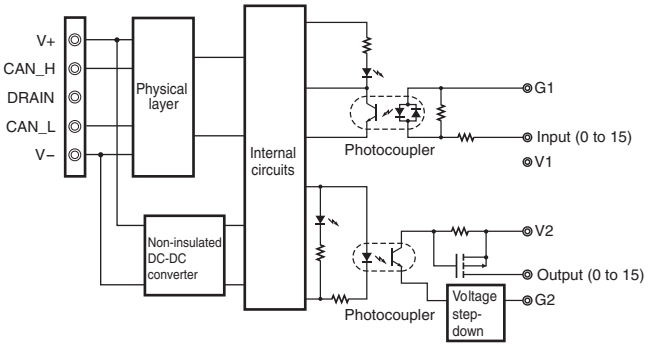
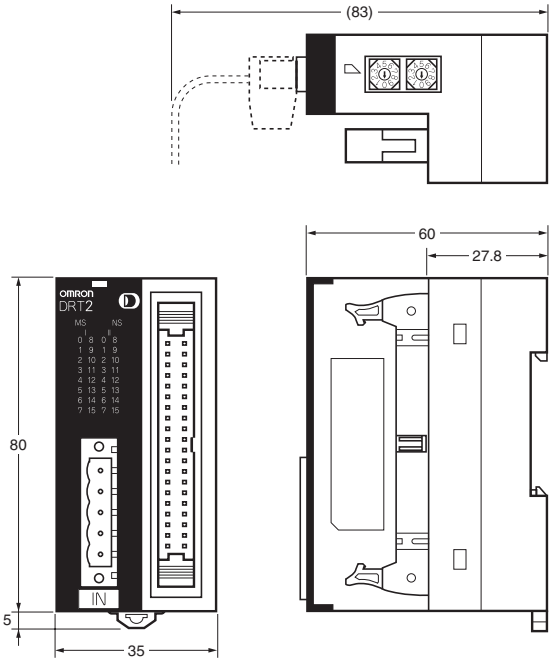


DRT2-MD32ML-1



Dimensions (Unit: mm)

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



Dimensions in parentheses are reference values.

■ Compatible Connectors

Product		Model	Comments
Flat Cable, crimp terminals		XG4M-4030-T	---
Loose wires, crimp terminals	Socket	XG5M-4032-N	For 24 AWG wire
		XG5M-4035-N	For 26 to 28 AWG wire
	Partial Cover	XG5S-2001	---
	Hood Cover	XG5S-4022	DeviceNet connectors for multi-drop wiring cannot be used with the Hood Cover.

■ Applicable Cables

Cable Models

Cable type	Cable model	Connected product	Applicable model
Cables with connectors (1-to-2 connection)	G79-I□□-□□-D1	G7TC G70D G70A	DRT2-ID32ML
	G79-M□□-□□-D1		DRT2-MD32ML
	G79-O□□-□□-D1		DRT2-OD32ML/DRT2-OD32ML-1
	G79-I□□-□□-D2		DRT2-ID32ML-1
	G79-M□□-□□-D2		DRT2-MD32ML-1
Cables with Connectors (1-to-1 Connection)	XW2Z-C□□K	---	All models
Stranded-wire Cables with Crimp Terminals	G79-Y□00C-D1	---	
Stranded-wire Cables	G79-A□00C-D1	---	

Cables with Connectors (1-to-2 Connection)

Model	Connected product	Applicable cable	Remarks
DRT2-ID32ML	G7TC-ID16 G7TC-IA16	G79-I50-25-D1 (50 cm) G79-I75-50-D1 (75 cm)	---
DRT2-MD32ML	Input side: G7TC-ID16 G7TC-IA16 Output side: G7TC-OC16/OC08 G70D-SOC16/VSOC16 G70D-FOM16/VFOM16 G70A-ZOC16-3	G79-M50-25-D1 (50 cm) G79-M75-50-D1 (75 cm)	In order to distinguish between input and output, the tube for the input side is red and the tube for the output side is yellow.
DRT2-OD32ML	G7TC-OC16/OC08 G70D-SOC16/VSOC16 G70D-FOM16/VFOM16 G70A-ZOC16-3	G79-O50-25-D1 (50 cm) G79-O75-50-D1 (75 cm)	---
DRT2-ID32ML-1	G70A-ZIM16-5	G79-I50-25-D2 (50 cm) G79-I75-50-D2 (75 cm)	---
DRT2-MD32ML-1	Input side: G70A-ZIM16-5 Output side: G70A-ZOC16-4 G70D-SOC16-1 G70D-FOM16-1	G79-M50-25-D2 (50 cm) G79-M75-50-D2 (75 cm)	In order to distinguish between input and output, the tube for the input side is red and the tube for the output side is yellow.
DRT2-OD32ML-1	G70A-ZOC16-4 G70D-SOC16-1 G70D-FOM16-1	G79-O50-25-D1 (50 cm) G79-O75-50-D1 (75 cm)	---
	G7TC-OC16-1	G79-I50-25-D1 (50 cm) G79-I75-50-D1 (75 cm)	---

Cables with Connectors (1-to-1 Connection)

Model	Connected product	Applicable cable	Remark
All models	XW2B-40G XW2B-40G5 XW2D-40G6	XW2Z-C25K (25 cm)	XW2B-40G4 XW2B-40G5
		XW2Z-C50K (50 cm)	

Stranded-wire Cables with Crimp Terminals

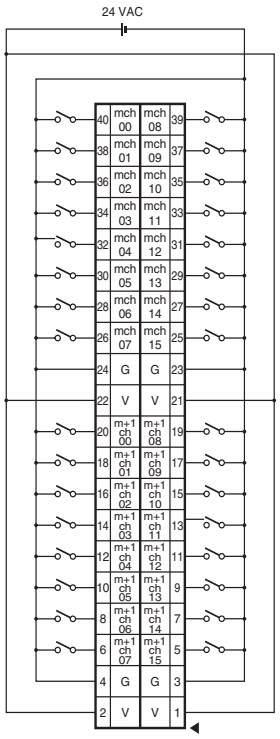
Model	Connected product	Applicable cable	Remark
All models	---	G79-Y100C-D1 (1 m)	---
		G79-Y200C-D1 (2 m)	
		G79-Y500C-D1 (5 m)	

Stranded-wire Cables

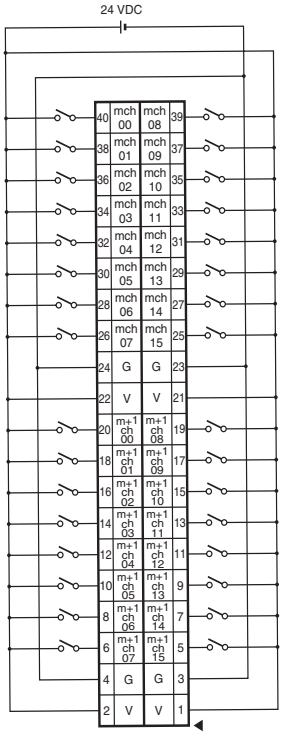
Model	Connected product	Applicable cable	Remark
All models	---	G79-A200C-D1 (2 m)	---
		G79-A500C-D1 (5 m)	

Internal Circuit Configuration

DRT2-ID32ML



DRT2-ID32ML-1



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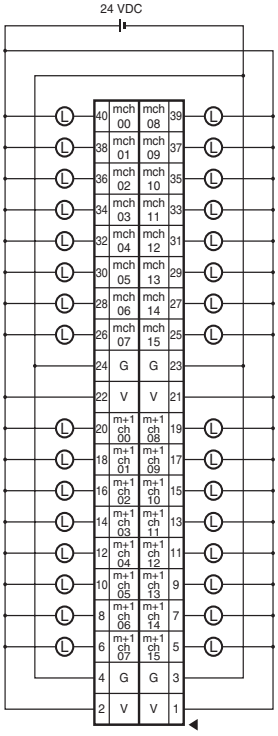
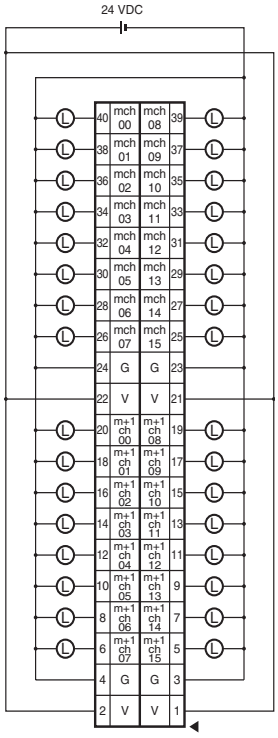


DRT2-OD32ML-1



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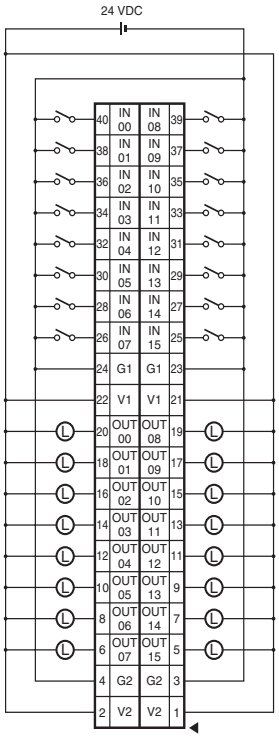

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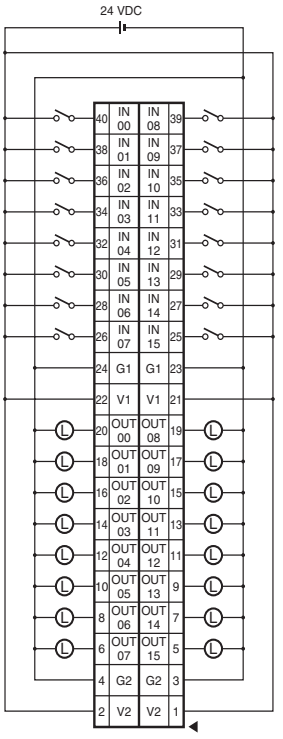
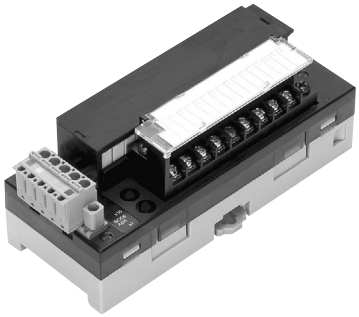


Remote I/O Terminal with Relay Outputs
DRT2-ROS16

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

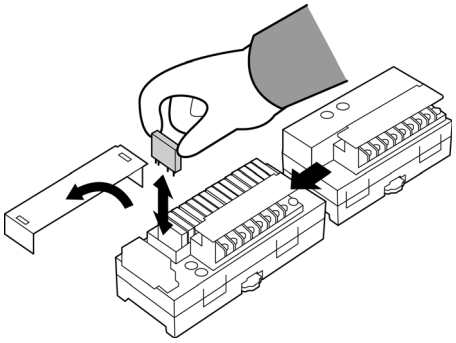
- Capable of handling large-capacity output devices (3 A max.)
- Easy relay replacement.
- I/O expansion possible to transistor I/O devices with terminal blocks (XWT Series).



Smart Slave Functions

Easy Relay Replacement

- Slim Power Relays (5-mm width) mounted as standard feature.
- Maintain devices with easy relay replacement.



Improved Monitor Functions

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

Slave and Connected Device Comments

Expansion I/O Units Can Be Added.

Shared I/O and Communications Power Supply

- Reduces wiring.
- I/O power supply monitoring.

Automatic Detection of Communications Speed

Ordering Information

I/O type	Mounted relays	I/O points	I/O terminals	Internal circuit power supply	I/O power supply voltage	Model
Relay output	DRTA-NY5W-K	16	M3 terminal block	Supplied from communications connector.		DRT2-ROS16

Specifications

■ General Specifications

Communications power supply voltage	11 to 25 VDC (Supplied from communications connector.)
Communications current consumption	395 mA
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	10 to 55 Hz, 0.7-mm double amplitude
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 Track
Screw tightening torque	M2 (communications connector screws): 0.26 to 0.3 N·m M3 (screw terminals): 0.3 to 0.5 N·m
Weight	260 g max.

■ Output Specifications per Relay

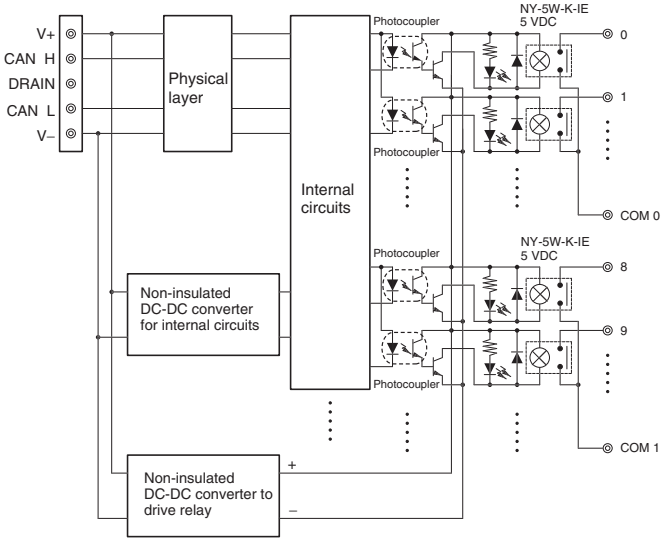
Mounted relays	NY-5W-K-IE (5 VDC) (See note 1.)
Rated load	Resistive load: 2 A at 250 VAC, 8 A per common 2 A at 30 VDC, 8 A per common
Rated current	3 A (See note 2.)
Max. contact voltage	250 VAC, 125 VDC
Max. contact current	3 A
Max. switching capacity	750 VA AC, 90 VDC
Min. applicable load (reference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

Note: 1. Order replacement relays using the following model number.

Model
DRTA-NY5W-K

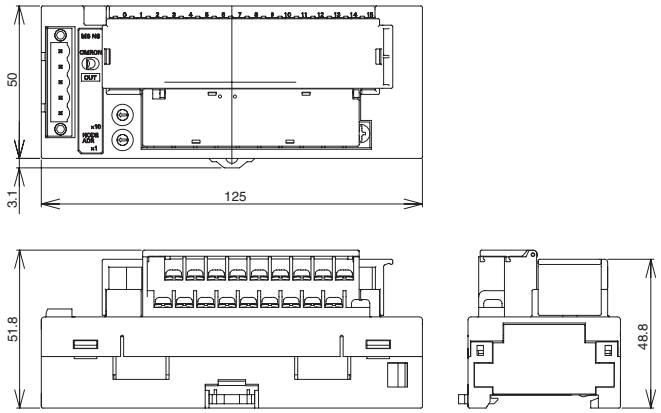
2. The maximum number of ON contacts per common is four, and 3 A (10 A per common) will flow at an ambient temperature of 45°C max.

Internal Circuit Configuration

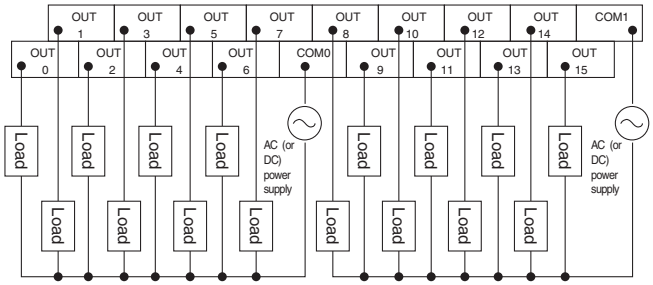


Dimensions (Unit: mm)

DRT2-ROS16



Wiring

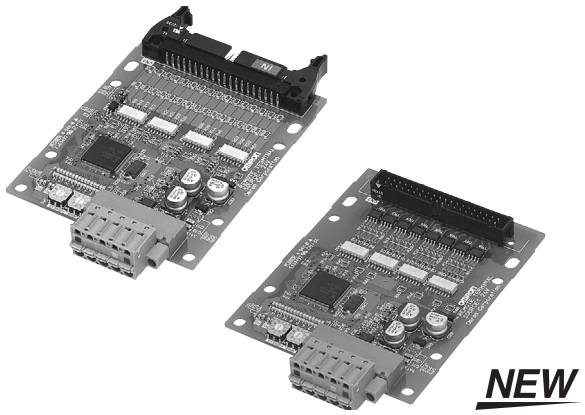


Board Terminals with MIL Connector

DRT2-□D32B(-1)/DRT2-□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

Improved Monitor Functions

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

Slave and Connected Device Comments

Automatic Baud Rate Detection

Input filter on Input Terminals and I/O Terminals

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

Ordering Information

I/O type	Internal I/O common	Number of I/O points	I/O terminals	Internal circuit power	Rated I/O power supply voltage	Model	
						Parallel Mounting MIL Connector	Perpendicular Mounting MIL Connector
Inputs	NPN (+ common)	32 inputs	MIL connector	Supplied from communications connector.	24 VDC	DRT2-ID32B	DRT2-ID32BV
	PNP (– common)					DRT2-ID32B-1	DRT2-ID32BV-1
Outputs	NPN (– common)	32 outputs				DRT2-OD32B	DRT2-OD32BV
	PNP (+ common)					DRT2-OD32B-1	DRT2-OD32BV-1
I/O	NPN (+ common for inputs and – common for outputs)	16 inputs/ 16 outputs				DRT2-MD32B	DRT2-MD32BV
	PNP (– common for inputs and + common for outputs)					DRT2-MD32B-1	DRT2-MD32BV-1

Input Specifications

■ Terminals with 32-input Connector

Item	DRT2-ID32B DRT2-ID32BV	DRT2-ID32B-1 DRT2-ID32BV-1
Internal I/O common	NPN	PNP
Number of I/O points	32 inputs	
ON voltage	17 VDC min. (between input and V terminal)	17 VDC min. (between input and G terminal)
OFF voltage	5 VDC max. (between input and V terminal)	5 VDC min. (between input and G terminal)
OFF current	1.0 mA max.	
Input current	24 VDC: 6.0 mA max./point 17 VDC: 3.0 mA max./point	
ON delay time	1.5 ms max.	
OFF delay time	1.5 ms max.	
Circuits per common	32	

■ Terminals with 16-input/16-output Connector

Item	DRT2-MD32B DRT2-MD32BV	DRT2-MD32B-1 DRT2-MD32BV-1
Internal I/O common	NPN	PNP
Number of I/O points	16 inputs	
ON voltage	17 VDC min. (between input and V terminal)	17 VDC min. (between input and G terminal)
OFF voltage	5 VDC max. (between input and V terminal)	5 VDC min. (between input and G terminal)
OFF current	1.0 mA max.	
Input current	24 VDC 6.0 mA max./point 17 VDC 3.0 mA max./point	
ON-delay time	1.5 ms max.	
OFF-delay time	1.5 ms max.	
Circuits per common	16	

Output Specifications

■ Terminals with 32-input Connector

Item	DRT2-ID32B DRT2-ID32BV	DRT2-ID32B-1 DRT2-ID32BV-1
Internal I/O common	NPN	PNP
Number of I/O points	32 outputs	
Rated output current	0.3 A/point, 4 A/common (See note.)	
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.	
Circuits per common	32	

Note: 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.

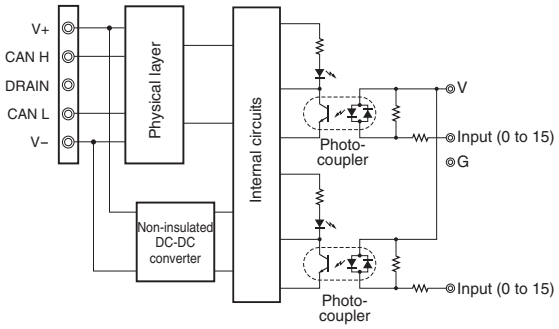
■ Terminals with 16-input/16-output Connector

Item	DRT2-MD32B DRT2-MD32BV	DRT2-MD32B-1 DRT2-MD32BV-1
Internal I/O common	NPN	PNP
Number of I/O points	16 outputs	
Rated output current	0.3 A/point, 2 A/common (See note.)	
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.	
Circuits per common	16	

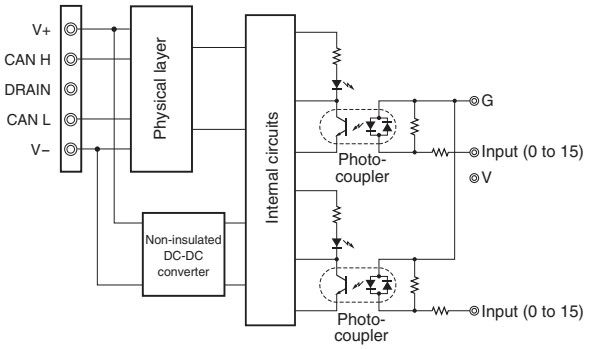
Note: The maximum total load current is 2 A. The maximum current for the V and G terminals is 1 A per terminal. Do not exceed these values.

Internal Circuit Configuration

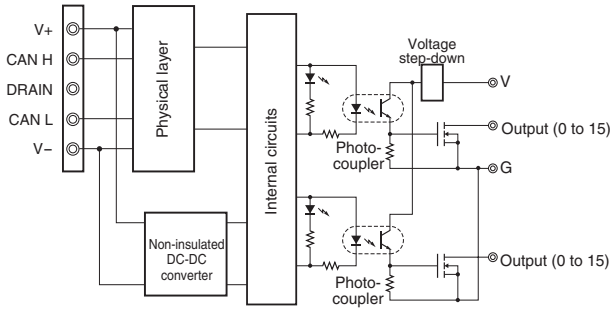
DRT2-ID32B
DRT2-ID32BV



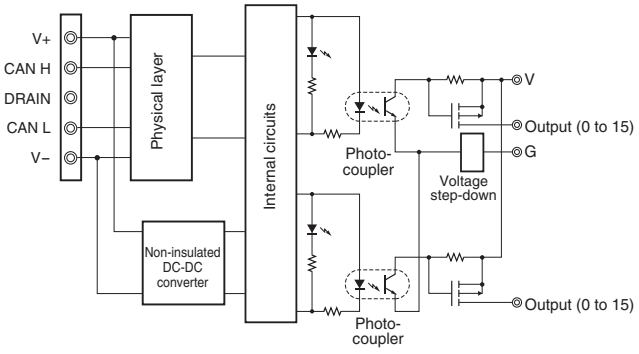
DRT2-ID32B-1
DRT2-ID32BV-1



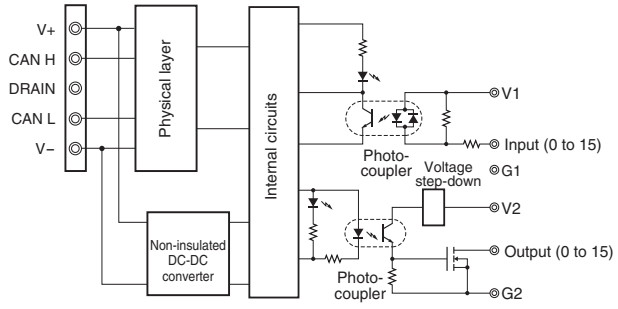
DRT2-OD32B
DRT2-OD32BV



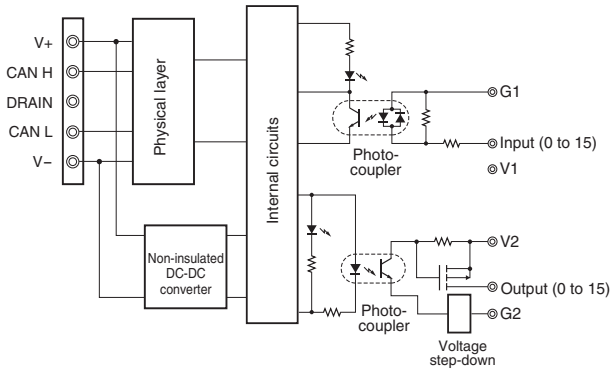
DRT2-OD32B-1
DRT2-OD32BV-1



DRT2-MD32B
DRT2-MD32BV

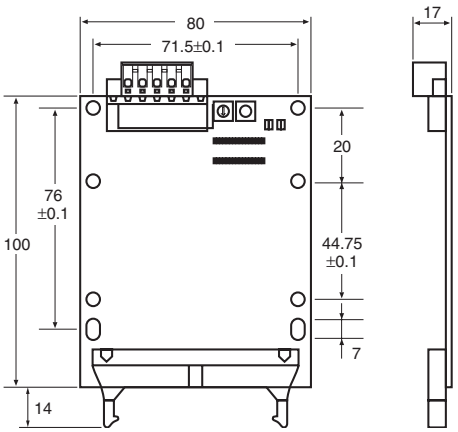


DRT2-MD32B-1
DRT2-MD32BV-1

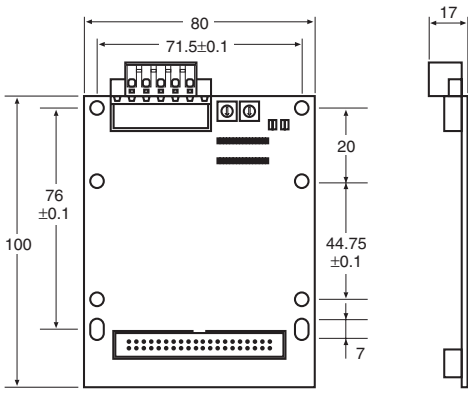


Dimensions (Unit: mm)

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

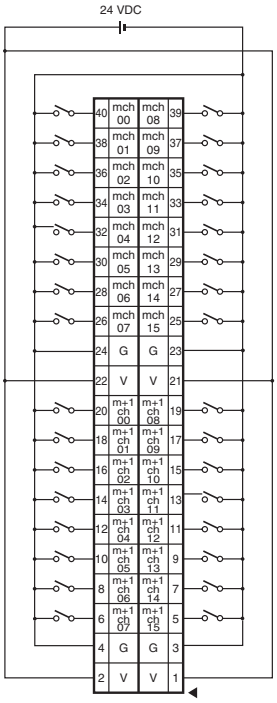


DRT2-ID32BV(-1)
DRT2-OD32BV(-1)
DRT2-MD32BV(-1)

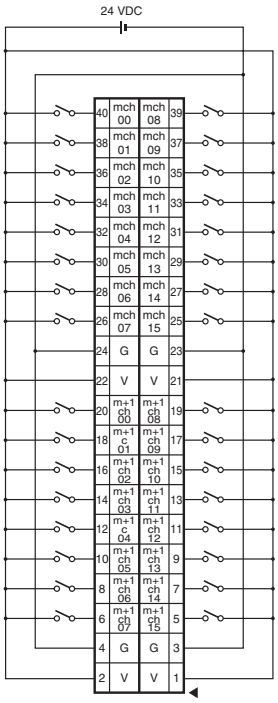


Wiring

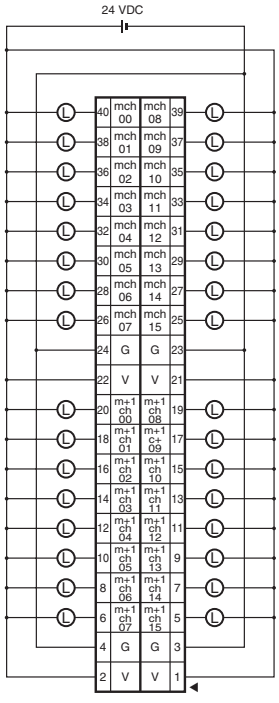
DRT2-ID32B
DRT2-ID32BV



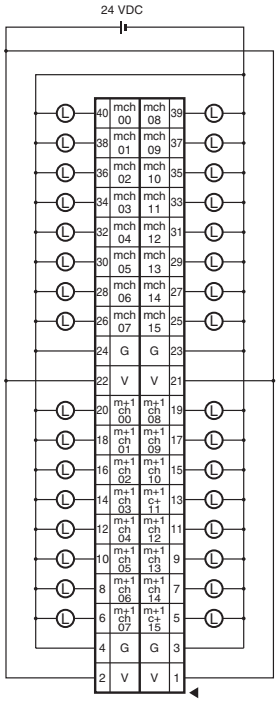
DRT2-OD32B
DRT2-ID32BV-1



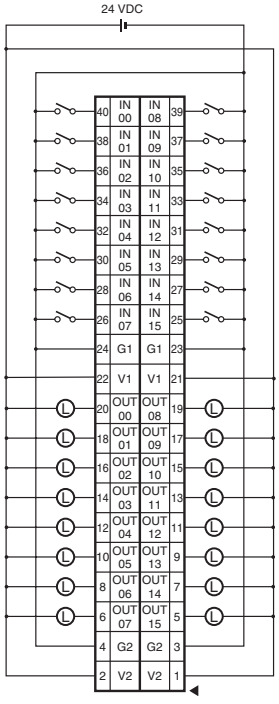
DRT2-OD32B-1
DRT2-OD32BV



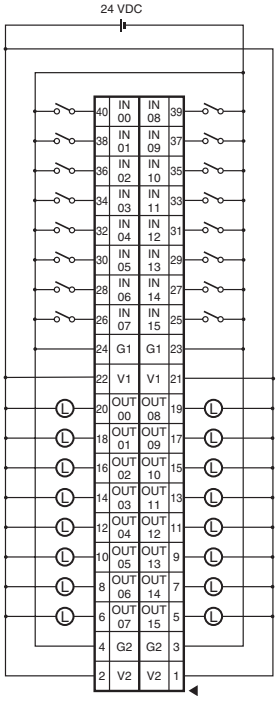
DRT2-OD32B-1
DRT2-OD32BV-1



DRT2-MD32B
DRT2-MD32BV



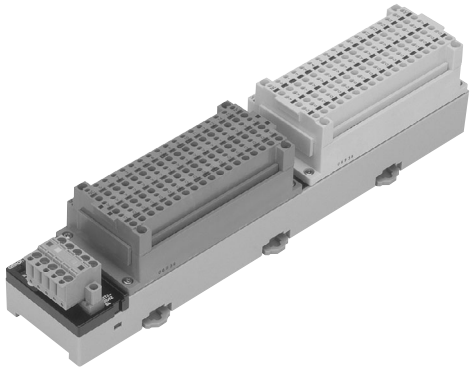
DRT2-MD32B-1
DRT2-MD32BV-1



Screw-less Clamp Terminals with Transistors
DRT2-□D32SL(-1)/□D32SLH(-1)

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

- Screw-less (M3) structure eliminates tightening work.
- Removable terminal blocks for easier maintenance.
- Single-step wiring by simply inserting pole terminals.
- Applicable wire sizes range from AWG24 to AWG16 (0.2 to 1.25 mm^2 dia.)



Smart Slave Functions

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

Improved Monitor Functions

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

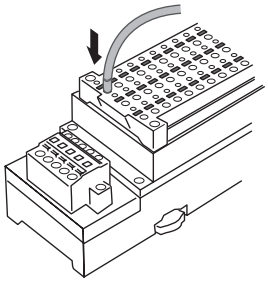
Slave and Connected Device Comments

Automatic Detection of Communications Speed

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

Just Insert Pole Terminals to Complete Wiring

One Step



Ordering Information

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

Specifications

Terminals with 32 Transistor Inputs (Input Ratings)

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

Terminals with 32 Transistor Outputs (Output Rating)

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

Input Ratings with 16 Transistor Inputs/16 Transistor Outputs

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

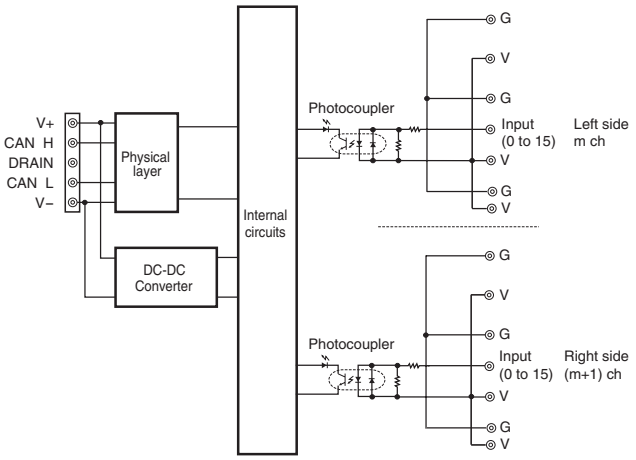
Item	DRT2-MD32SL	DRT2-MD32SL-1	DRT2-MD32SLH	DRT2-MD32SLH-1
Circuits per common	16			
Power short-circuit protection	---		Operates at 50 mA/point min.	
Disconnection detection	---		Operates at 0.3 mA/point max.	

Output Ratings with 16 Transistor Inputs/16 Transistor Outputs

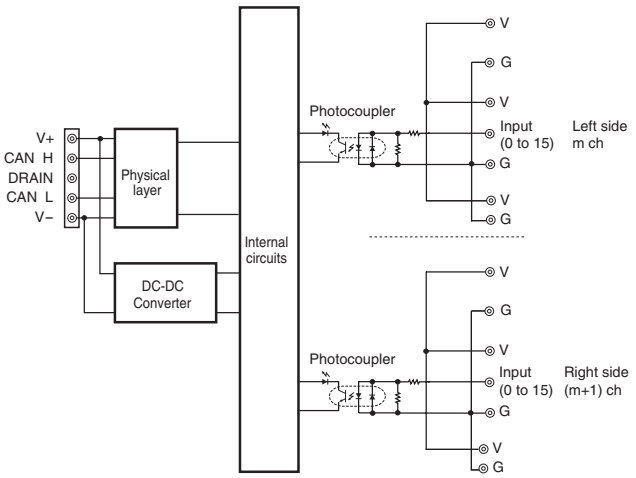
Item	DRT2-MD32SL	DRT2-MD32SL-1	DRT2-MD32SLH	DRT2-MD32SLH-1
Internal I/O common	NPN	PNP	NPN	PNP
Output points	16 outputs			
I/O power supply voltage	20.4 to 26.4 (24 VDC −15% to +10%)			
Rated output current	0.5 A/point, 4.0 A/common (See note.)			
Residual voltage	1.2 V max.			
Leakage current	0.1 mA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

Internal Circuit Configuration

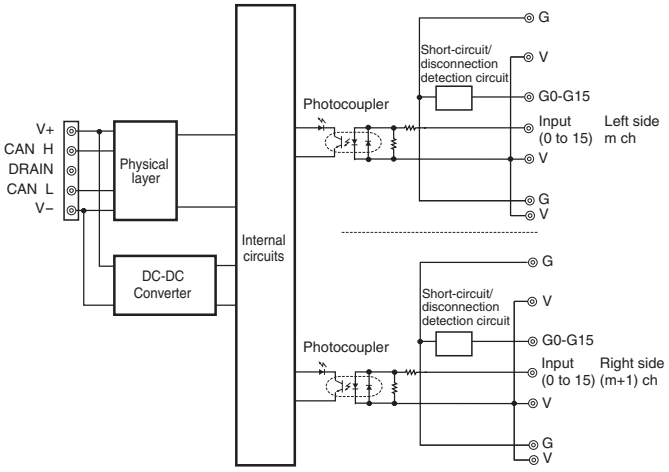
DRT2-ID32SL



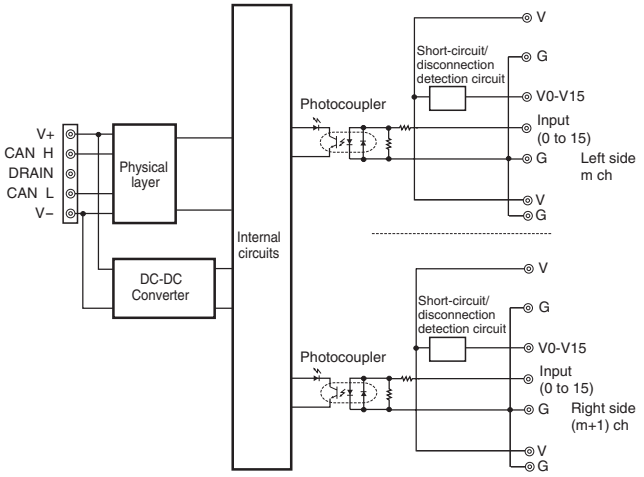
DRT2-ID32SL-1



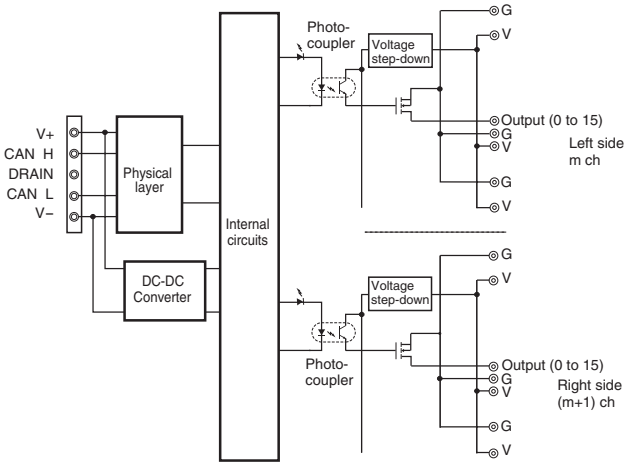
DRT2-ID32SLH



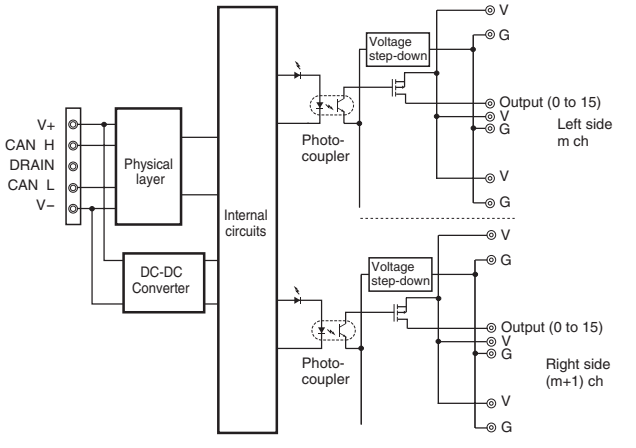
DRT2-ID32SLH-1



DRT2-OD32SL



DRT2-OD32SL-1

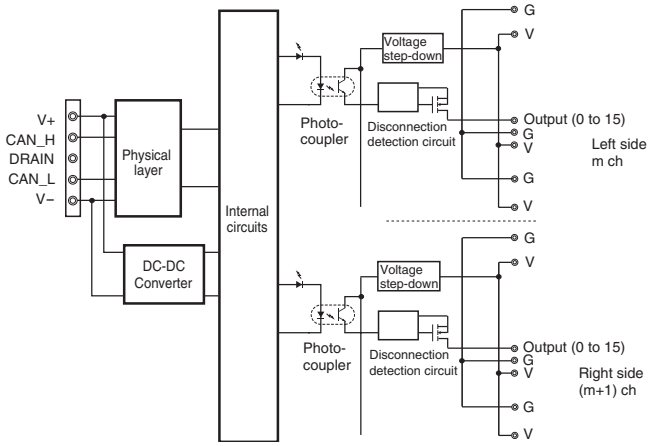


Unit Descriptions

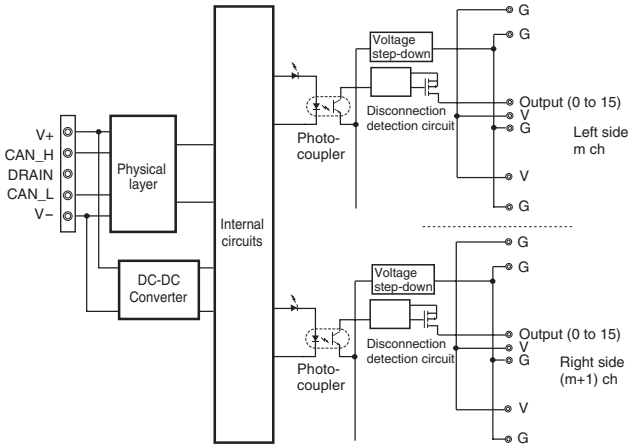
Screw-less Clamp Terminals with Transistors

DRT2-□D32SL(-1)/□D32SLH(-1)

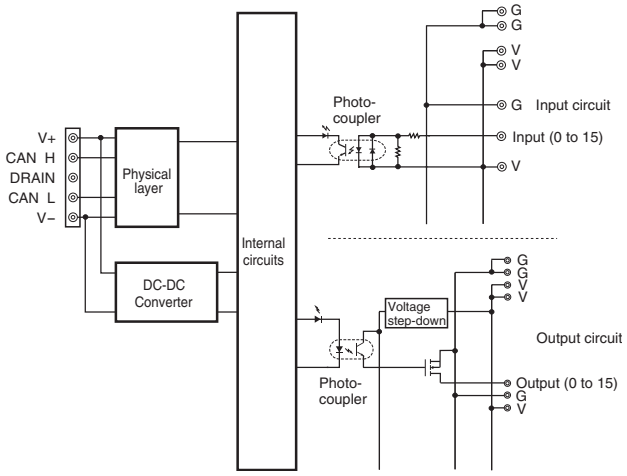
DRT2-OD32SLH



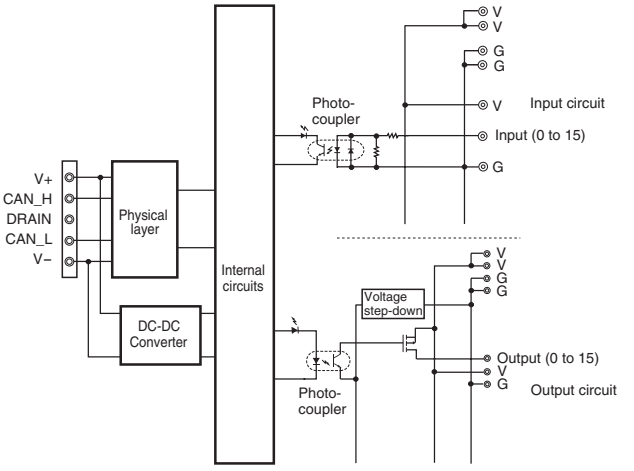
DRT2-OD32SLH-1



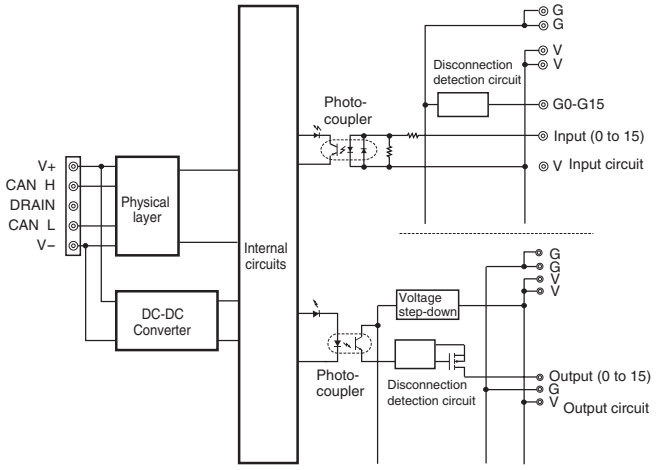
DRT2-MD32SL



DRT2-MD32SL-1



DRT2-MD32SLH



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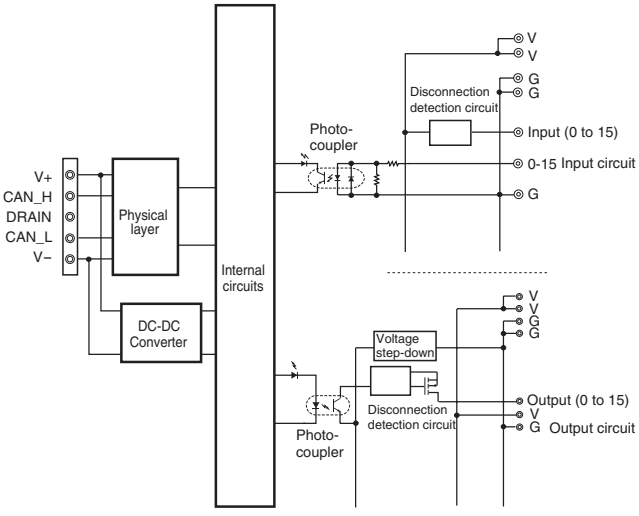
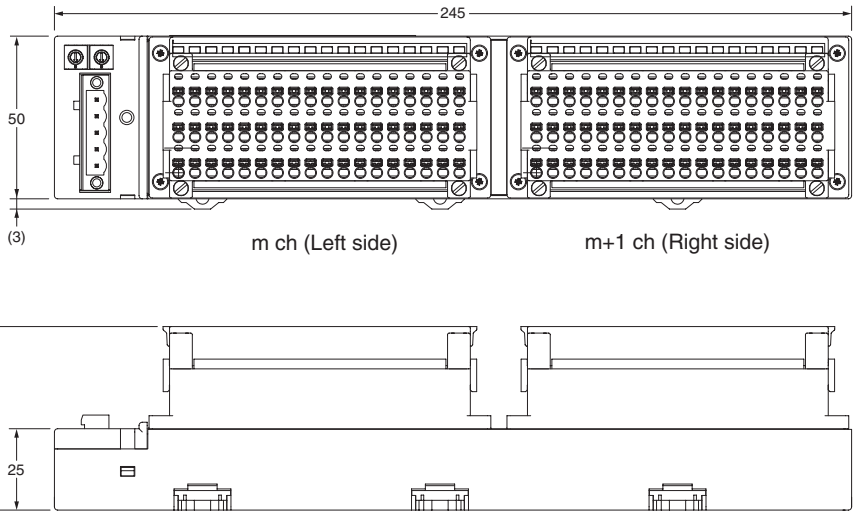


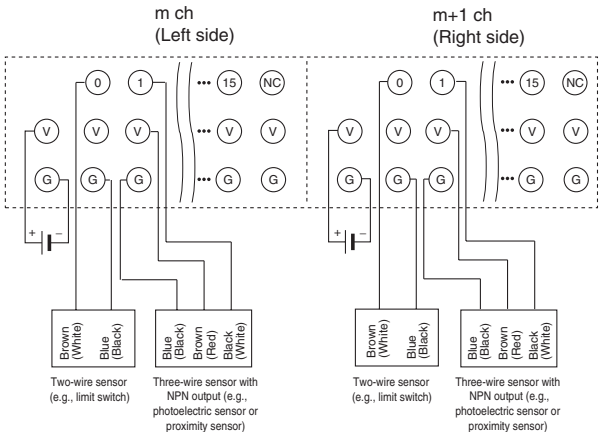
Dimensions (Unit: mm)

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

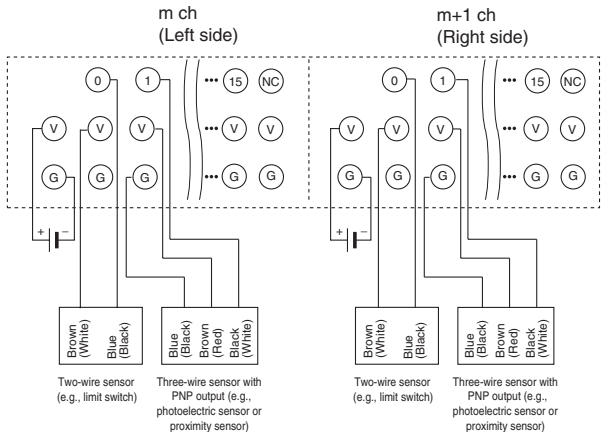


Wiring

DRT2-ID32SL



DRT2-ID32SL-1



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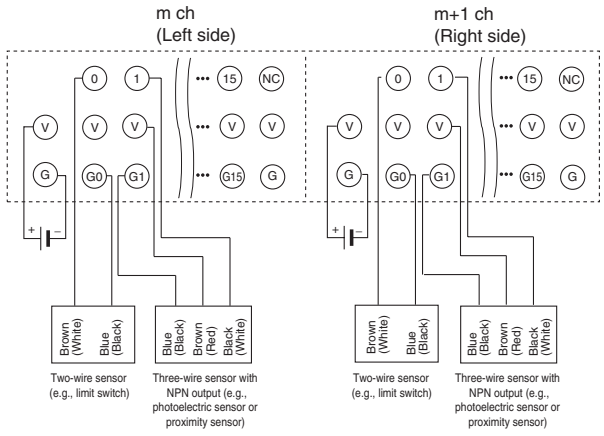

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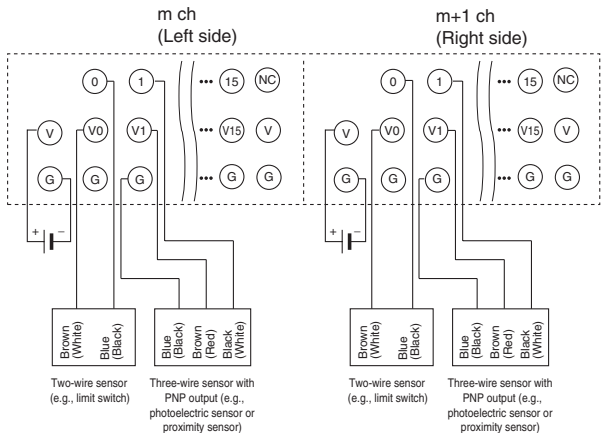

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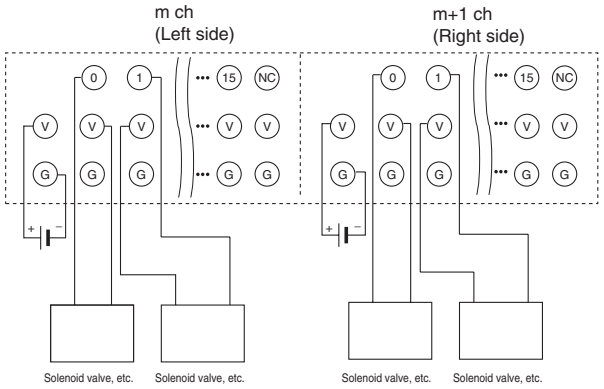
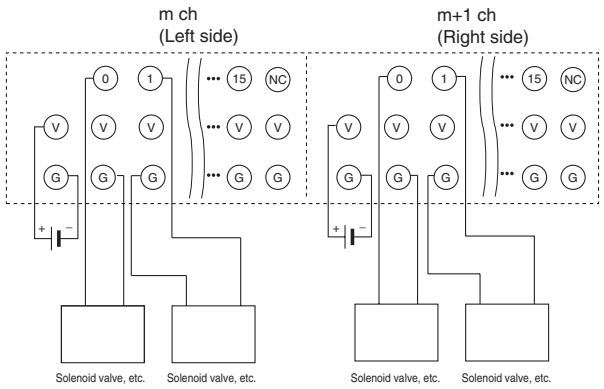
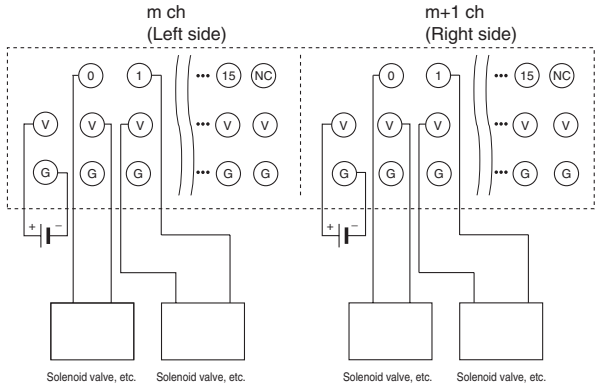


DRT2-OD32SL-1

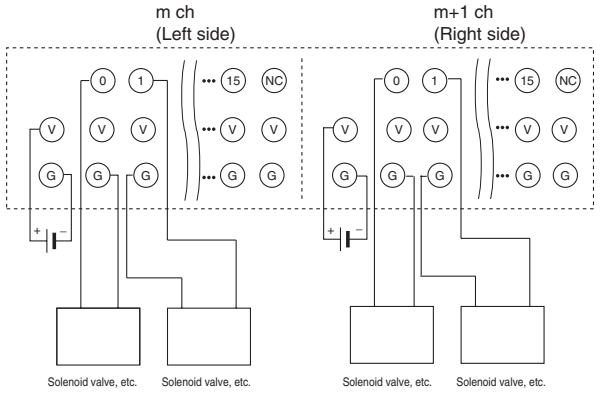


Unit Descriptions

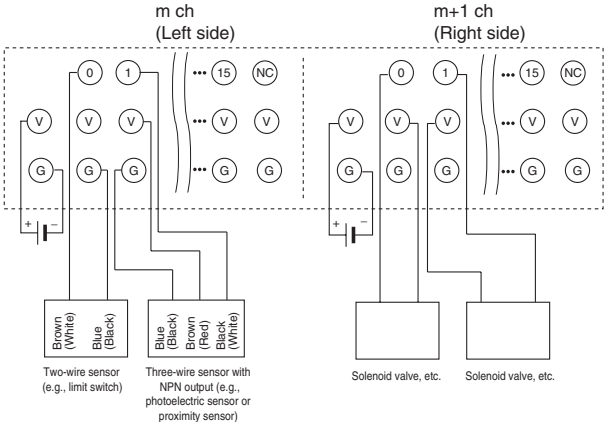
DRT2-OD32SL



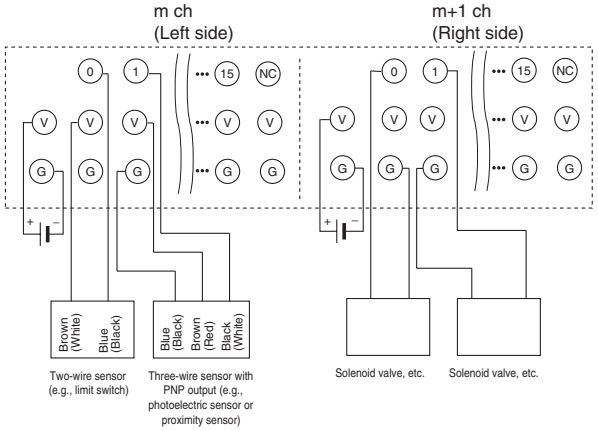
DRT2-OD32SLH-1



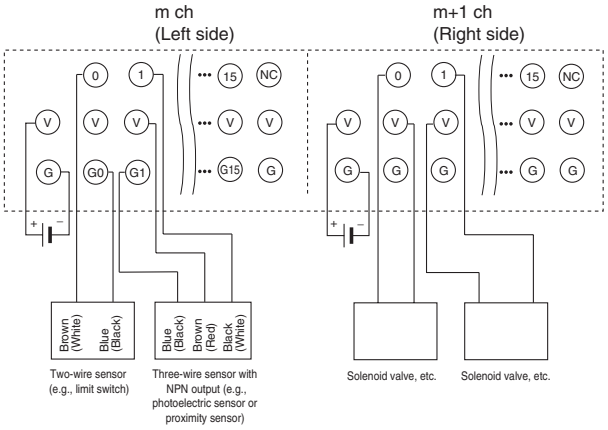
DRT2-MD32SL



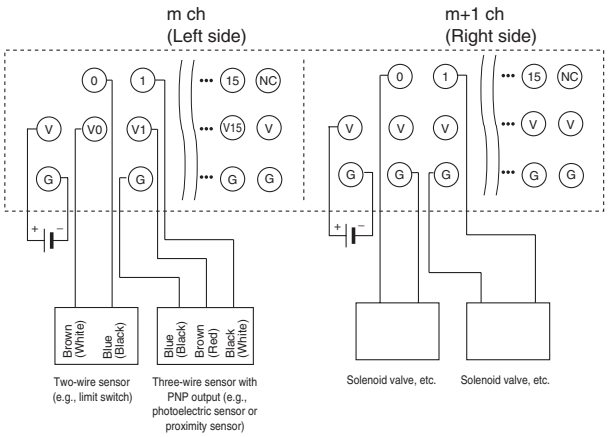
DRT2-MD32SL-1



DRT2-MD32SLH



DRT2-MD32SLH-1



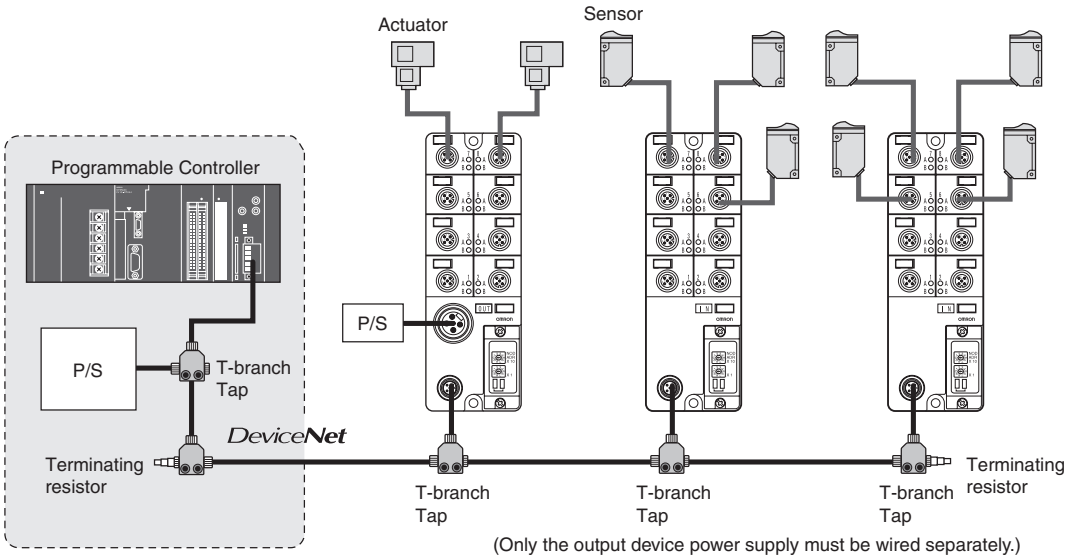
Environment-resistive Terminals with Transistors
DRT2-□D08C(-1)/□D16C(-1)

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.
- Conforms to IP67 standards. The Terminal's materials are also oil-resistant and spatter-resistant.
- 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.

System Configuration

The communications, Slave, and input device wiring can be wired to a single power supply system.



(Only the output device power supply must be wired separately.)

Smart Slave Functions

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

The Environment-resistive Terminals conform to IP67 standards, so they can be used in severe environments and subjected to direct oil and water spray without a protective enclosure. The elimination of a separate enclosure saves space and reduces the time required for installation and wiring.

Power Supply Wiring not required for Input Devices

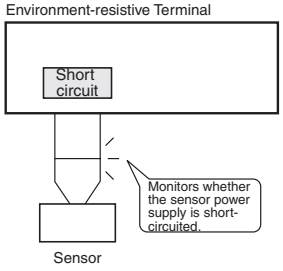
The same power supply is shared for communications, internal circuits, and input devices. Only the communications power supply needs to be wired.

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

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

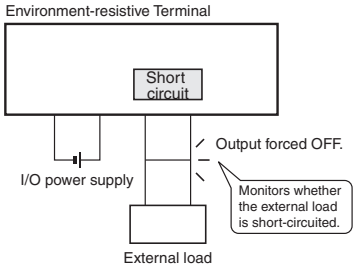
Sensor Power Supply Short-circuit Detection Function

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



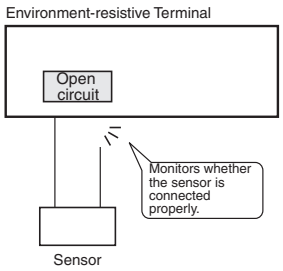
External Load Short-circuit Detection Function (Output Units Only)

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



Disconnected Sensor Detection Function (Input Units Only)

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

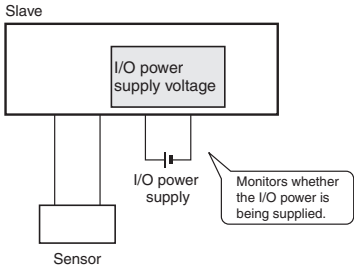


Power Supply Wiring not required for the Slave's Internal Circuits

Power is supplied to the Unit's internal circuits from the communications power supply, so it is not necessary to wire the Unit's internal power supply.

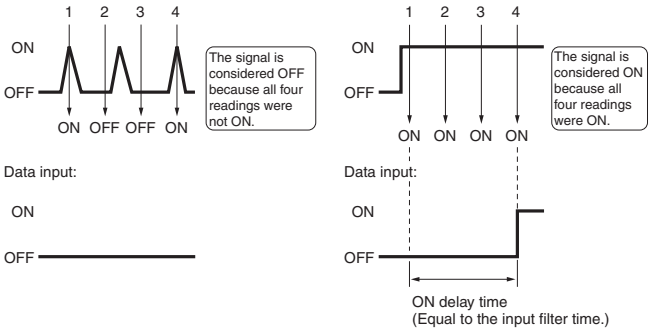
I/O Power Supply Monitor Function

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



Input Filter Function (Input Units Only)

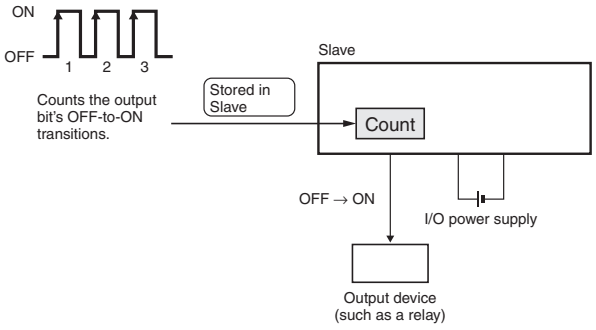
The Slave can read the input value several times within a preset period and eliminate incorrect signals due to switch chattering or data corrupted by noise. The input filter function can also be used for ON delay operation and OFF delay operation.



Contact Operation Counter Function

Counts (max. resolution 50 Hz) and stores the number of OFF-to-ON transitions for an input or output. In addition, a set value can be set in the Slave and a notification can be sent through the status bits when the count reaches the set value.

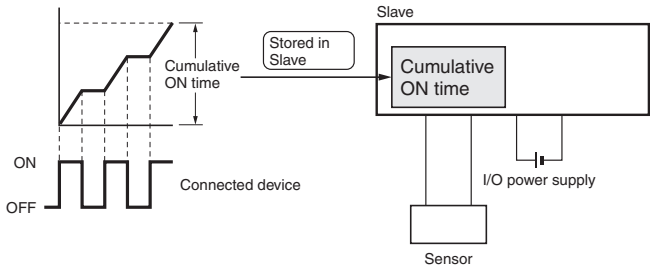
Note: The contact operation counter function and total ON time monitor function cannot be used simultaneously for the same contact.



Total ON Time Monitor Function

Adds and stores the total time that a connected device (such as a sensor or relay) is ON. In addition, a set value can be set in the Slave and a notification can be sent through the status bits when the total reaches the set value.

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



Ordering Information

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

Specifications

■ Ratings

Inputs

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

Outputs

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

■ Characteristics

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

■ Connectors

Communications Cables

Thin Cable

Thin cable with attached Micro Connectors (formerly M12).

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

Thick Cable

Thick cable with attached Mini Connectors

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

Terminating Resistors

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

I/O Wiring Cables

I/O Power Supply Wiring

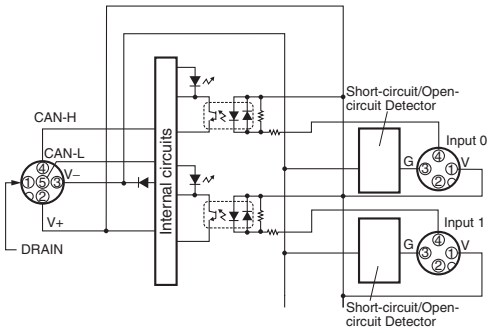
Model	Specifications
XS4W-D421-1□□-A	Cable with connectors on both ends (one socket and one plug)
XS4F-D421-1□□-A	Cable with female connectors (sockets) on both ends
XS4H-D421-1□□-A	Cable with male connectors (plugs) on both ends
XS4R-D424-5T	T-shaped Joint

I/O Wiring

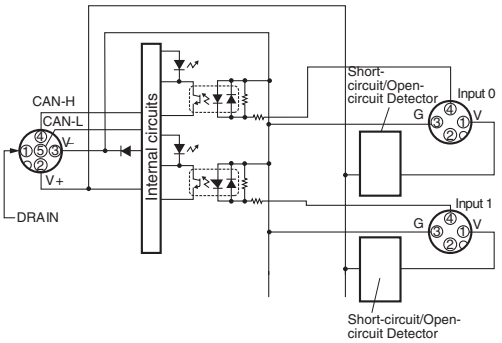
Model	Specifications
XS2H-D421-□80-A	Cable with male connector plug on one end
XS2W-D42□-□81-A	Cable with connectors on both ends (one socket and one plug)
XS2G-D4□□	Male connector plug for assembly (Crimp connection or solder connection)

Internal Circuit Configuration

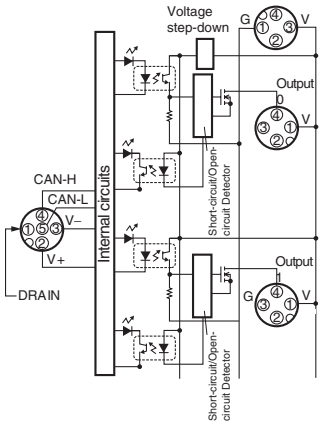
DRT2-ID08C (NPN)



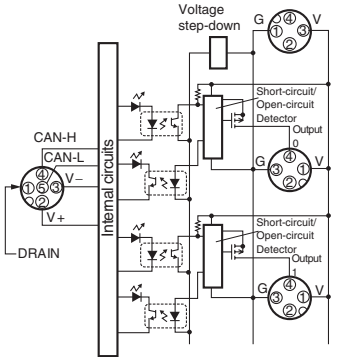
DRT2-ID08C-1 (PNP)



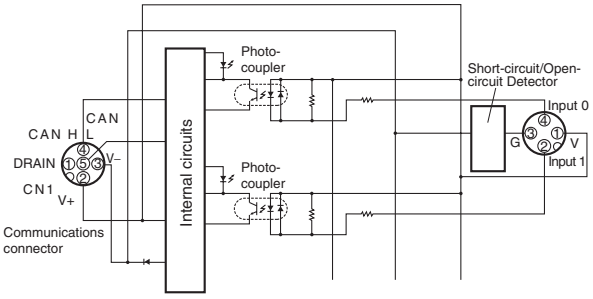
DRT2-OD08C (NPN)



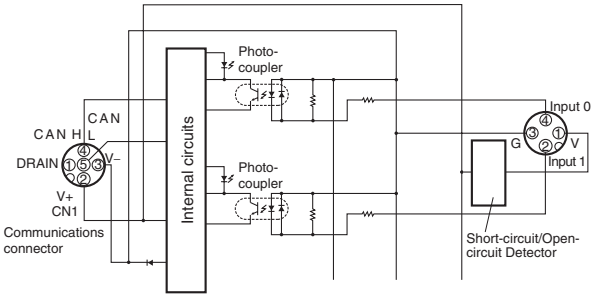
DRT2-OD08C-1 (PNP)



DRT2-HD16C (NPN)



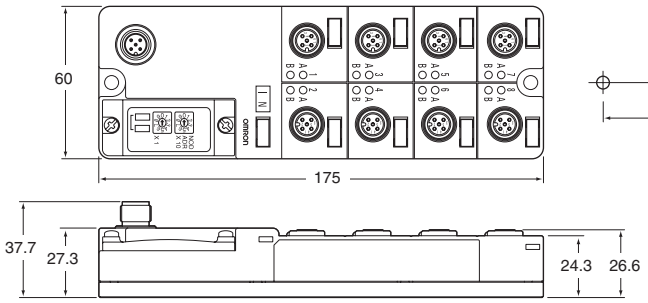
DRT2-HD16C-1 (PNP)



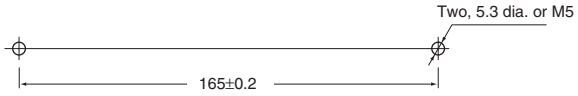
Dimensions (Unit: mm)

Environment-resistive Terminals (8 or 16 Inputs)

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

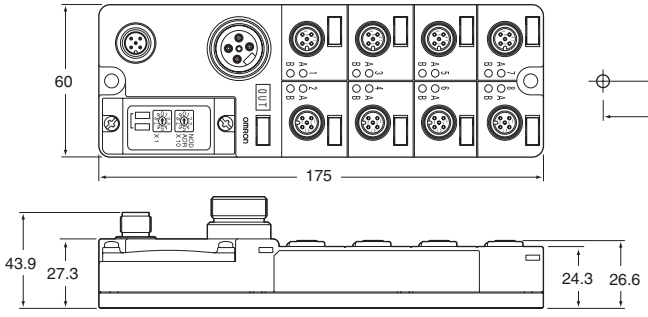


Mounting Hole Dimensions

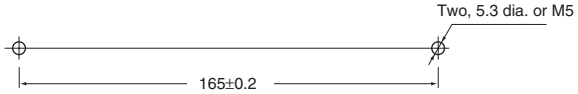


Environment-resistive Terminals (8 Outputs)

DRT2-OD08C
DRT2-OD08C-1

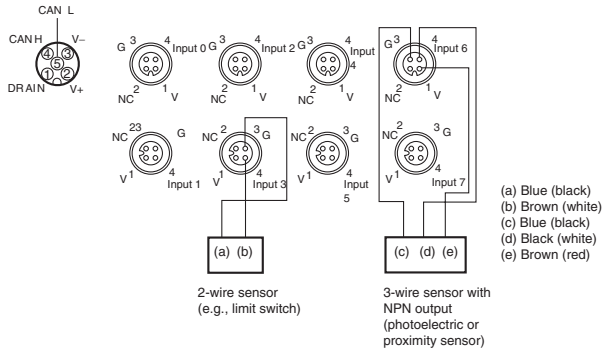


Mounting Hole Dimensions

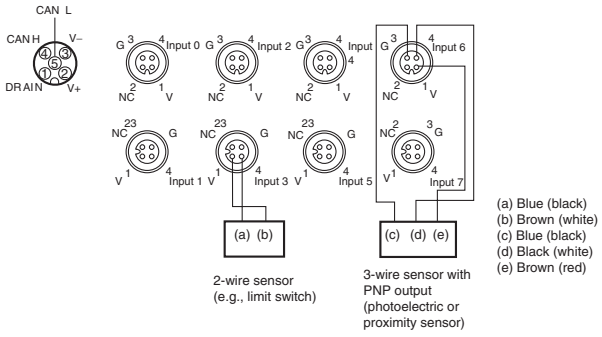


Wiring

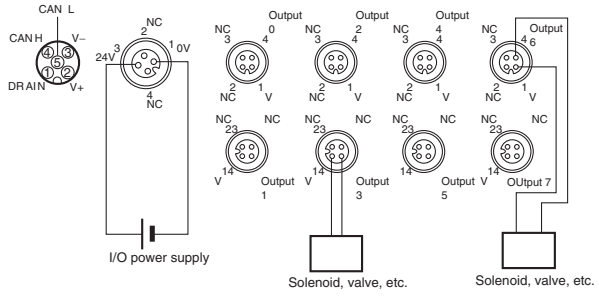
DRT2-ID08C (NPN)



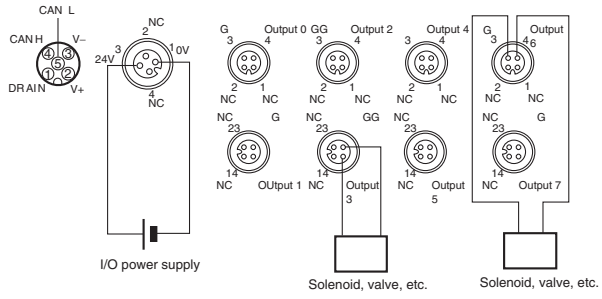
DRT2-ID08C-1 (PNP)



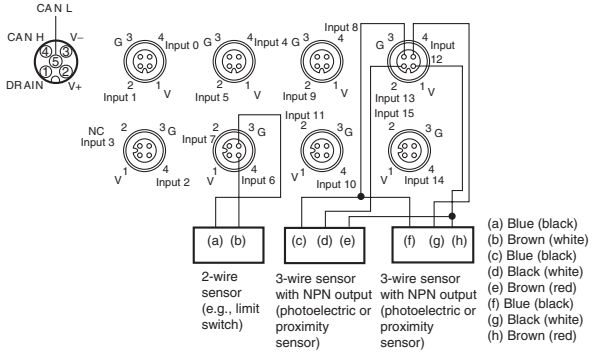
DRT2-OD08C (NPN)



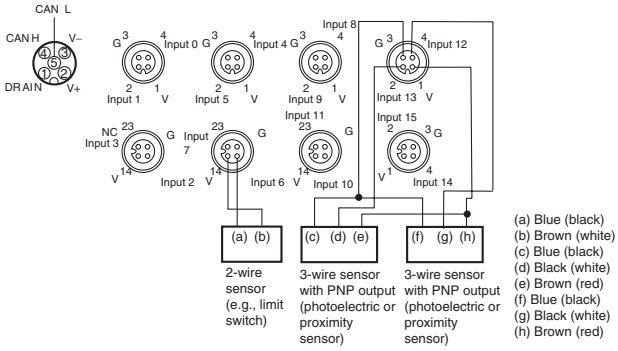
DRT2-OD08C-1 (PNP)



DRT2-HD16C (NPN)



DRT2-HD16C-1 (PNP)



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.

Ordering Information

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

Specifications

■ Characteristics

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

■ Input Ratings

Terminals with 16 Inputs

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

Terminals with 8 Inputs and 8 Outputs

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

■ Output Ratings

Terminals with 8 Inputs and 8 Outputs

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

■ Connectors

OMRON Connectors

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

Tyco Electronics Connectors

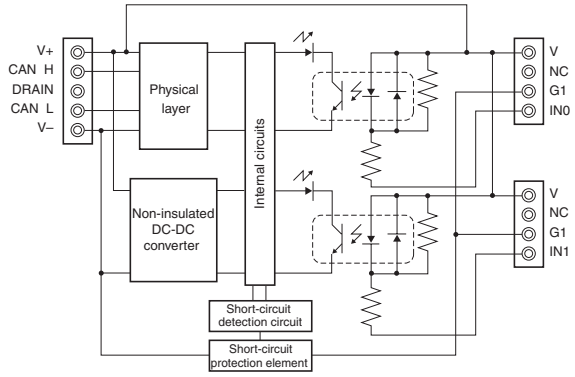
Model	Specifications	Compatible wire size
1-1473562-4	Red	28 to 24 AWG (0.08 to 0.2 mm^2) wire, 0.9 to 1.0 mm max. outer diameter including insulation
1473562-4	Yellow	24 to 22 AWG (0.2 to 0.3 mm^2) wire, 1.0 to 1.15 mm max. outer diameter including insulation
2-1473562-4	Blue	22 to 20 AWG (0.3 to 0.5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

Sumitomo 3M Connectors

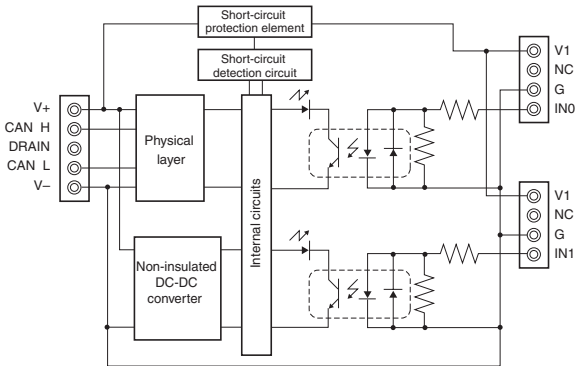
Model	Specifications	Compatible wire size
37104-3101-000FL	Red	26 to 24 AWG (0.14 to 0.2 mm^2) wire, 0.8 to 1.0 mm max. outer diameter including insulation
37104-3122-000FL	Yellow	26 to 24 AWG (0.14 to 0.2 mm^2) wire, 1.0 to 1.2 mm max. outer diameter including insulation
37104-3163-000FL	Orange	26 to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

Internal Circuit Configuration

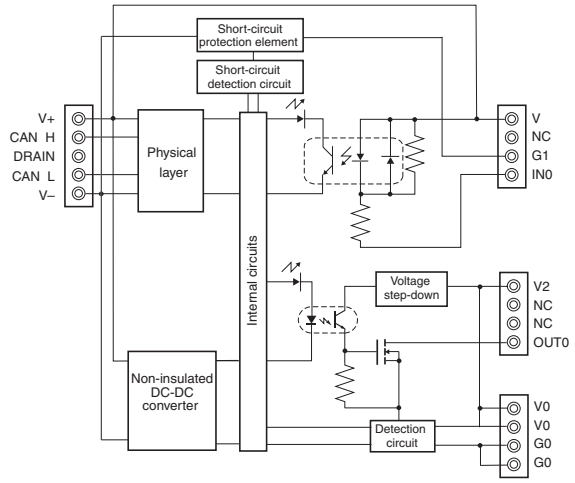
DRT2-ID16S (NPN)



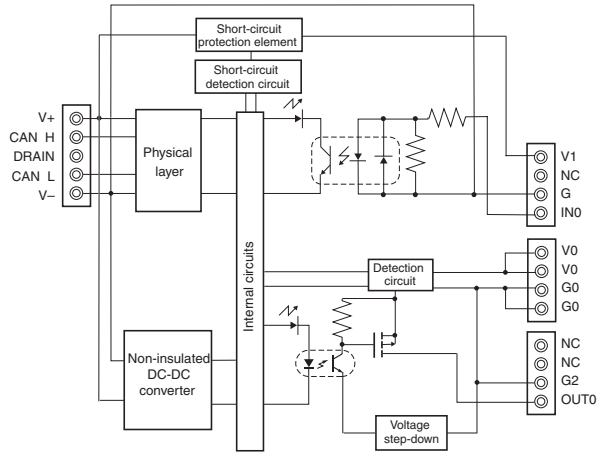
DRT2-ID16S-1 (PNP)



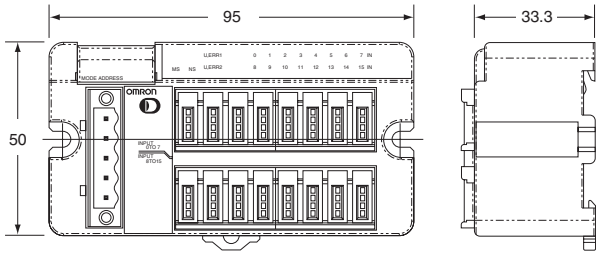
DRT2-MD16S (NPN)



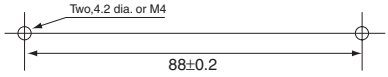
DRT2-MD16S-1 (PNP)



Dimensions (Unit: mm)

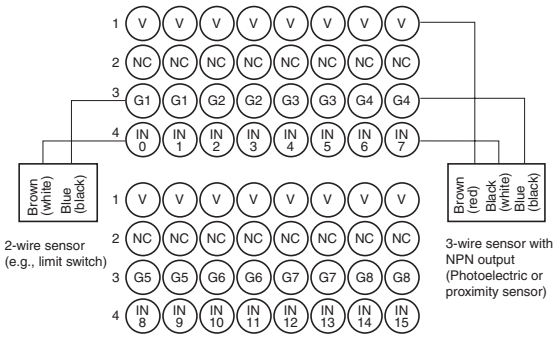


Mounting Hole Dimensions

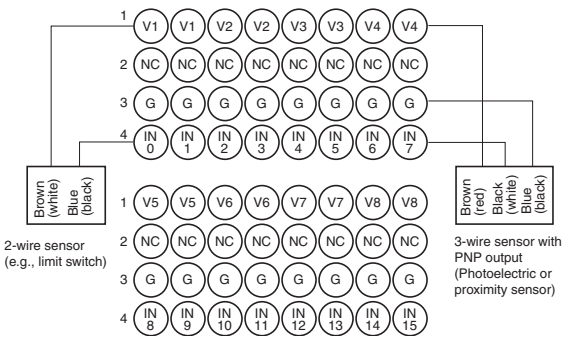


Wiring

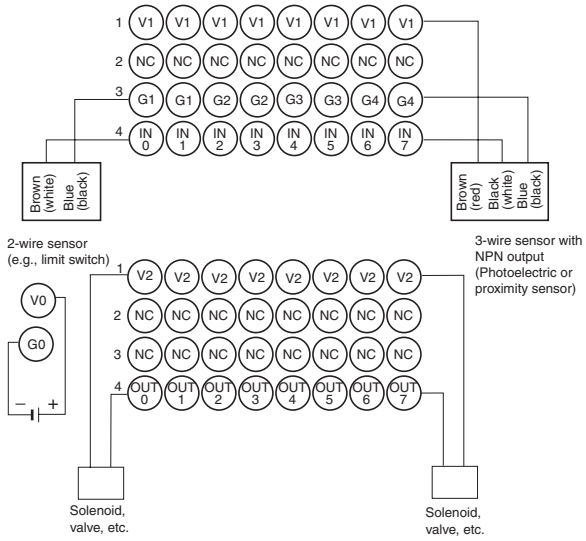
DRT2-ID16S (NPN)



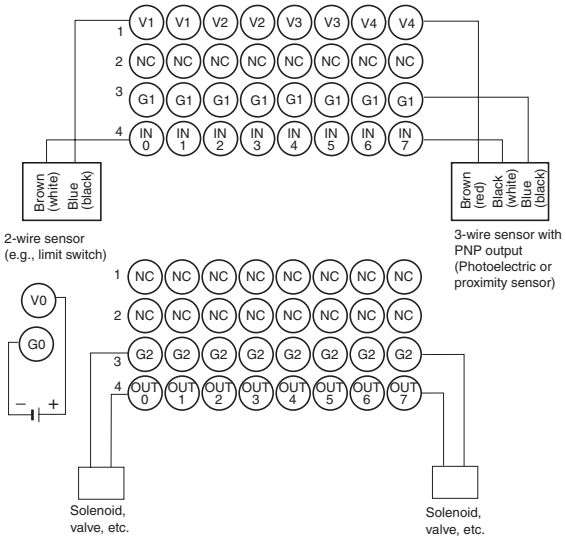
DRT2-ID16S-1 (PNP)



DRT2-MD16S (NPN)

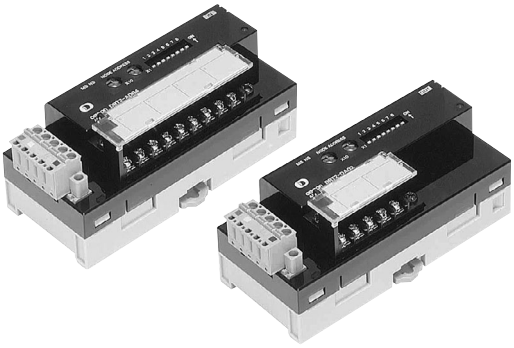


DRT2-MD16S-1 (PNP)



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.



- New high-resolution model: DRT2-AD04H
- 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.
- 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.
- Offers high resolution at 1/30,000 (full scale).

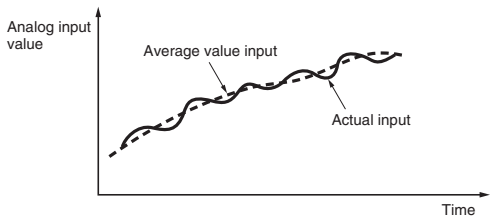
Smart Slave Functions

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

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

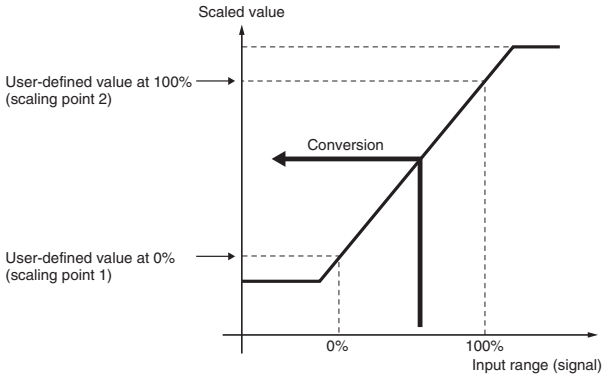
Moving Average Processing Function (Input Terminals Only)

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



Scaling Function

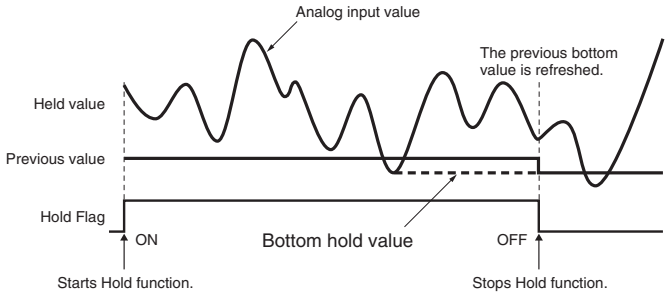
The analog input's converted data can be scaled to any user-defined industrial units. Using the scaling function in the Slave can reduce the ladder program processing load for the Master. If an offset is required, the offset value function can be used to offset the analog value calculated by the scaling function.



Note: The Output Terminals also support scaling.

Peak/Bottom Hold Function (Input Terminals Only)

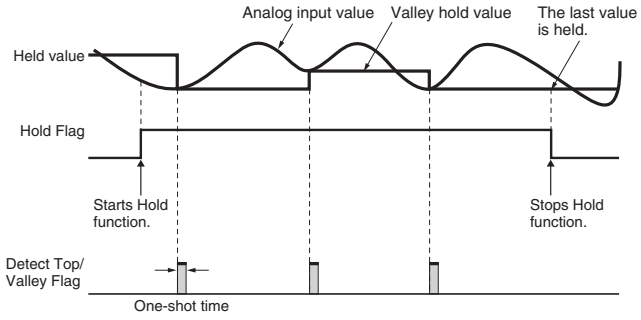
Holds the maximum (peak) value or minimum (bottom) value read by the Analog Input Terminal. In addition, the comparator function can be used to compare the peak value or bottom value to a preset alarm value and turn ON a flag in the status bits when the alarm value is exceeded.



Top/Valley Hold Function (Input Terminals Only)

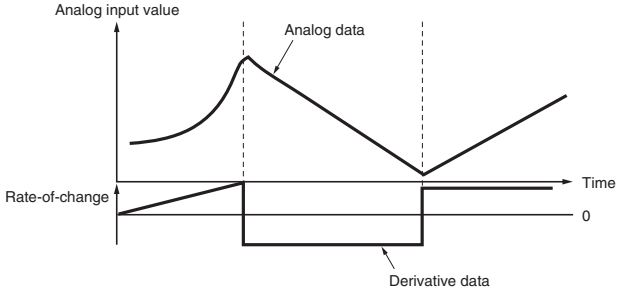
Holds the top value or valley value read by the Analog Input Terminal. The Top/Valley Detection Timing Flags can be used to set the timing for detection of the top/valley. In addition, the comparator function can be used to compare the top value or valley value to a preset alarm value and turn ON a flag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

Example: Valley Hold Operation



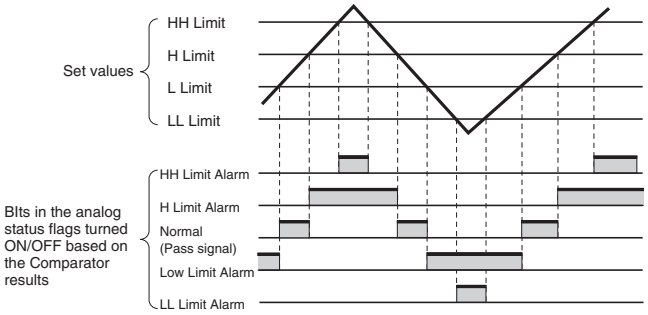
Rate-of-change Calculation Function (Input Terminals Only)

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



Comparator Function (Input Terminals Only)

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



Disconnection Detection Function (Input Terminals Only)

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

User Adjustment Function

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

Cumulative Counter

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

Selectable Output Value after Error (Output Terminals Only)

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

Ordering Information

Classification	I/O points	Model
Analog input	4 points	DRT2-AD04
		DRT2-AD04H
Analog output	2 points	DRT2-DA02

Specifications

■ Ratings

Input

Item	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
Max. 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		1/30,000 FS	
Accuracy	25°C: ±0.3% FS –10°C to 55°C: ±0.6% FS	25°C: ±0.4% FS –10°C to 55°C: ±0.8% FS	25°C: ±0.3% FS –10°C to 55°C: ±0.6% FS	25°C: ±0.4% FS –10°C to 55°C: ±0.8% FS
Conversion time	4 ms max. for 4 inputs (when calculation functions are not used and the DeviceNet communications cycle is 4 ms)		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	
Isolation 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)	
Insulation resistance	20 MΩ min. at 250 VDC (between isolated circuits)		Terminal block connection	
Accessories	Four shorting bars for use with current inputs.			

Output

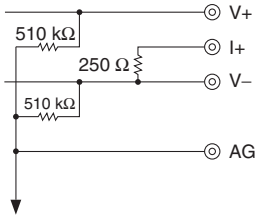
Item	DRT2-DA02	
	Voltage output	Current output
Output points	2 points	
Output type	0 to 5 V 1 to 5 V 0 to 10 V –10 to 10 V	0 to 20 mA 4 to 20 mA
Allowable output load resistance	1 KΩ min.	600 Ω max.
External output impedance	0.5 Ω max.	---
Resolution	1/6,000	
Accuracy	25°C: ±0.4% full scale –10°C to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

■ Characteristics

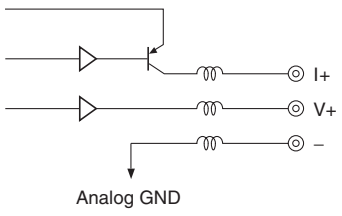
Item	DRT2-AD04	DRT2-AD04H	DRT2-DA02
Communications power supply voltage	11 to 25 VDC		
Internal power supply voltage	Not required. (Supplied from the communications connector.)		
Current consumption	90 mA max. at 24 VDC	70 mA max. at 24 VDC	120 mA max. at 24 VDC
Dielectric strength	500 VAC for 1 min between the communications circuit and analog circuit (1-mA sensing current)		
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)		
Vibration resistance	10 to 150 Hz, 0.7-mm double amplitude		
Shock resistance	150 m/s^2		
Mounting strength	50 N (10 N in the DIN Track direction)		
Screw tightening torque	0.3 to 0.5 N·m (terminal screws) 0.25 to 0.3 N·m (communications connector screws)		
Ambient temperature	Operating: –10°C to 55°C Storage: –25°C to 65°C		
Ambient humidity	Operating: 25% to 85% (with no condensation)		
Ambient environment	No corrosive gases		
Weight	170 g max.	160 g max.	150 g max.

Internal Circuit Configuration

DRT2-AD04
DRT2-AD04H



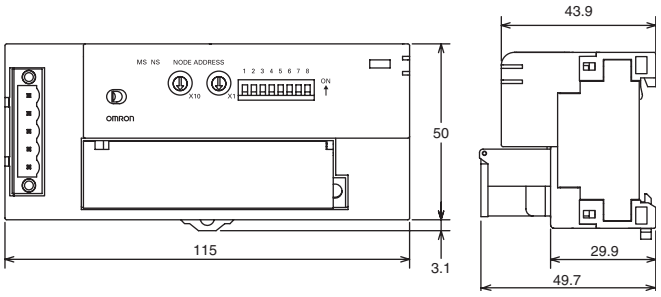
DRT2-DA02



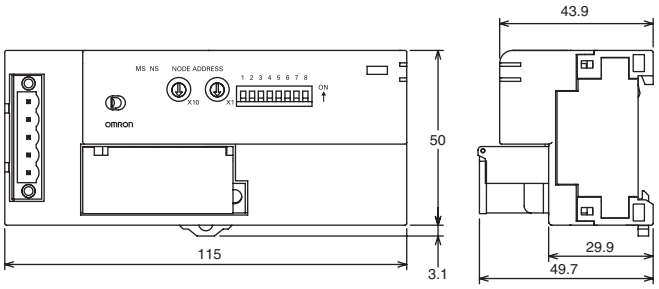
The – terminals of outputs 0 and 1 are connected internally.

Dimensions (Unit: mm)

DRT2-AD04
DRT2-AD04H

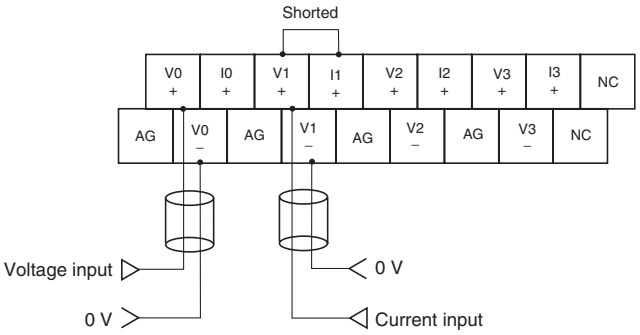


DRT2-DA02



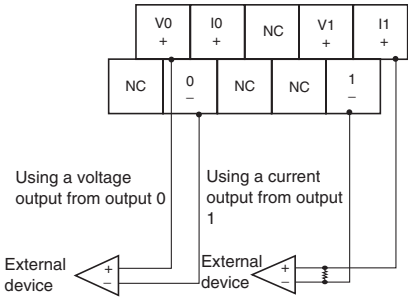
Wiring

DRT2-AD04
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

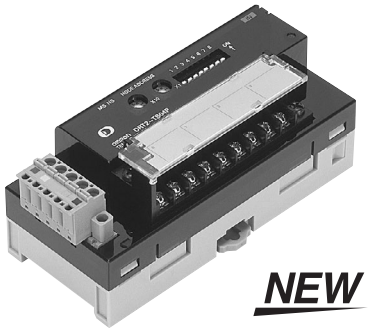


Note: The voltage and current output ranges (signals) are set with either the DIP switch or the Configurator settings.

Temperature Input Terminals
DRT2-TS04□

New Smart Temperature Input Terminal

- Offers basically the same functions as Analog Input Terminals, such as scaling and comparators.
- Also provides functions that are available only from Temperature Input Terminals, such as the operating time in a preset temperature range and temperature difference detection between input channels.



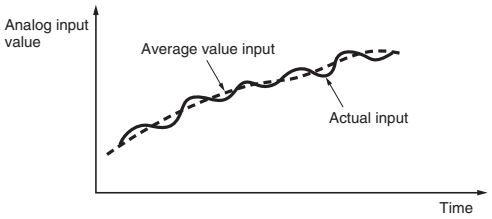
Smart Slave Functions

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

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

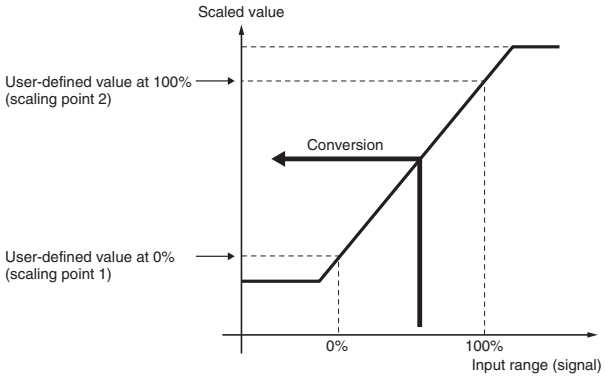
Moving Average Processing Function (Input Terminals Only)

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



Scaling Function

The analog input's converted data can be scaled to any user-defined industrial units. Using the scaling function in the Slave can reduce the ladder program processing load for the Master. If an offset is required, the offset value function can be used to offset the analog value calculated by the scaling function.



Note: The Output Terminals also support scaling.

The Output Terminals are equipped with standard Smart Slave Functions to provide powerful support for monitoring operating status and implementing effective maintenance

Improved Monitor Functions

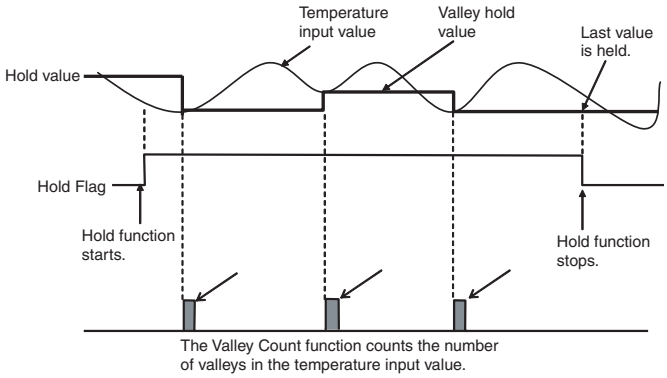
- Smart Functions as Analog Slave
- Moving average
- Scaling
- Peak/bottom hold
- Top/valley hold
- Rate of change calculation
- User compensation
- Broken wire detection

Smart Slave Functions of Temperature Input Terminals

Top/Valley Counter Function

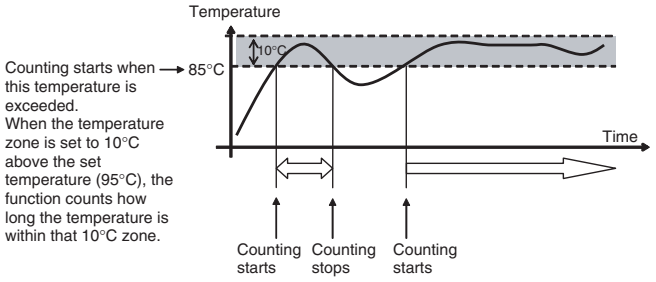
This function counts the number of temperature tops or valleys in devices or applications that have repetitive temperature rises (or drops). A threshold value can be set for the counter to indicate when preventative maintenance is required for the Unit or sensors.

Valley Counter Operation



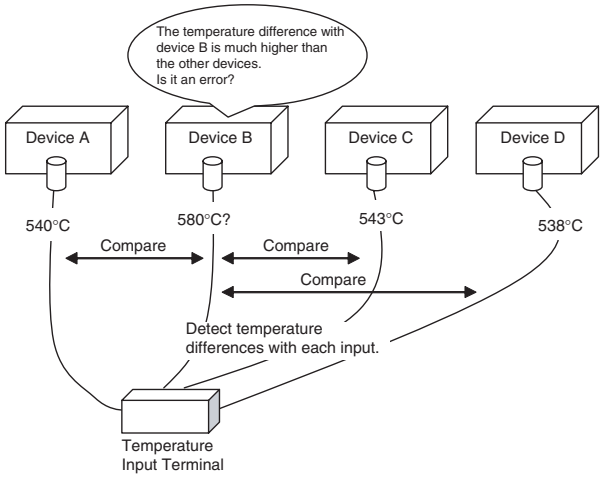
Temperature Zone Counter Function

This function times (in 1-second units) how long the temperature input value is within a user-set temperature range. The zone count can indicate when preventative maintenance is required for devices or applications that deteriorate at a fixed rate within the user-set temperature range.



Detecting Temperature Differences between Input Channels

This function can be used to compare the temperature values in any two inputs (inputs 0 to 3) and monitor the relative temperature difference. A threshold value can be set to detect an excessive temperature difference for preventative maintenance in devices in which the temperature difference may cause or indicate a problem.



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

Specifications

Item	DRT2-TS04T	DRT2-TS04P
Communications power supply voltage	11 to 25 VDC (supplied from the communications connector)	
Current consumption	70 mA max. at 24 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 temperature	Operating: −10 to 55°C (with no icing or condensation) Storage: −25 to 65°C	
Ambient humidity	25% to 85%	
Ambient environment	No corrosive gases	
Mounting method	35-mm DIN track mounting	
Mounting strength	50 N for 10 s (in the DIN Track direction)	
Terminal strength	No damage when 50 N pull load was applied.	
Weight	160 g max.	

Performance Specifications

<table>
<tr><th>Item</th><th colspan="2">Specifications</th></tr>
<tr><td>Model</td><td>DRT2-TS04T</td><td>DRT2-TS04P (See note 1.)</td></tr>
<tr><td>Input type</td><td>Switchable between R, S, K1, K2, J1, J2, T, B, L1, L2, E, U, N, W, and PL2
When set with Configurator: Input types can be set individually for each input.
Wen set with DIP switch: The same input type setting applies to all 4 inputs.</td><td>Switchable between PT, JPT, PT2, and JPT2
When set with Configurator: Input types can be set individually for each input.
Wen set with DIP switch: The same input type setting applies to all 4 inputs.</td></tr>
<tr><td>Indicator accuracy</td><td>(±0.3% of indication value or ±1°C, whichever is larger) ±1 digit max.
(See note 2.)
Indicator Accuracy in Exceptional Cases
<table>
<tr><th>Input type and temperature range</th><th>Input accuracy</th></tr>
<tr><td>K1, K2, T, and N below −100°C</td><td>±2°C ±1 digit max.</td></tr>
<tr><td>U, L1, and L2</td><td>±2°C ±1 digit max.</td></tr>
<tr><td>R and S below 200°C</td><td>±3°C ±1 digit max.</td></tr>
<tr><td>B below 400°C</td><td>Not specified.</td></tr>
<tr><td>W</td><td>±0.3% of indication value or ±3°C (whichever is larger) ±1 digit max.</td></tr>
<tr><td>PL2</td><td>±0.3% of indication value or ±2°C (whichever is larger) ±1 digit max.</td></tr>
</table></td><td>−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.</td></tr>
<tr><td>Conversion cycle</td><td colspan="2">250 ms/4 points</td></tr>
<tr><td>Temperature conversion data</td><td colspan="2">Hexadecimal data (4-digit hexadecimal when normal display mode is selected or 8-digit hexadecimal when 1/100 display mode is selected.)</td></tr>
<tr><td>Isolation method</td><td colspan="2">Between input and communication lines: Photocoupler isolation
Between temperature input signals: Photocoupler isolation</td></tr>
</table>

Note: 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.

Effects of Mounting Direction on Indicator Accuracy

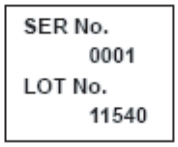
In the DRT2-TS04T, a cold junction compensator is included in the Terminal Block. The indicator accuracy will be reduced depending on the mounting direction if just the Terminal Unit itself is replaced and the serial numbers of the Terminal Block and Terminal Unit do not match. The serial numbers of the Terminal Block and Terminal Unit can be found on the labels affixed to the Units as shown below.

Terminal Unit Label

Remove the terminal block. The label is attached to the Unit under the terminal block.

Terminal Block Label

The label is attached to the back of the terminal block.

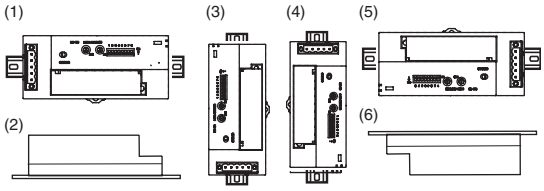


If the serial number of the terminal block and Unit are the same, basic performance specifications apply regardless of the mounting direction. If the serial numbers are different, the following indication accuracies apply.

Mounting direction	Input accuracy
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 larger) ±1 digit max.

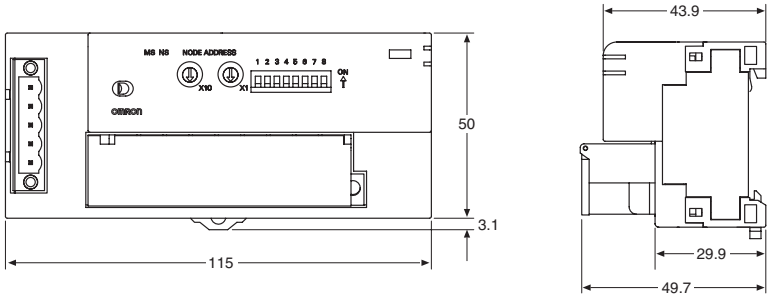
Indicator Accuracy in Exceptional Cases

Input type and temperature range	Input accuracy
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.
PL2	±0.3% of indication value or ±3°C (whichever is larger)



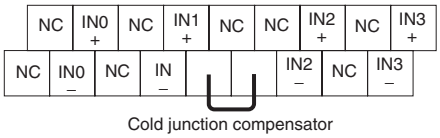
Dimensions (Unit: mm)

DRT2-TS04T
DRT2-TS04P



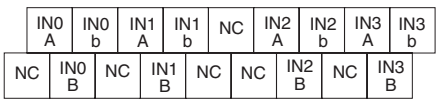
Terminal Arrangement

DRT2-TS04T



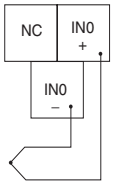
Do not touch or remove the cold junction compensator. Otherwise temperature data will not display properly.

DRT2-TS04P

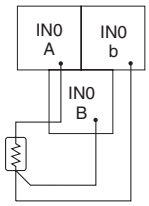


Wiring

DRT2-TS04T



DRT2-TS04P

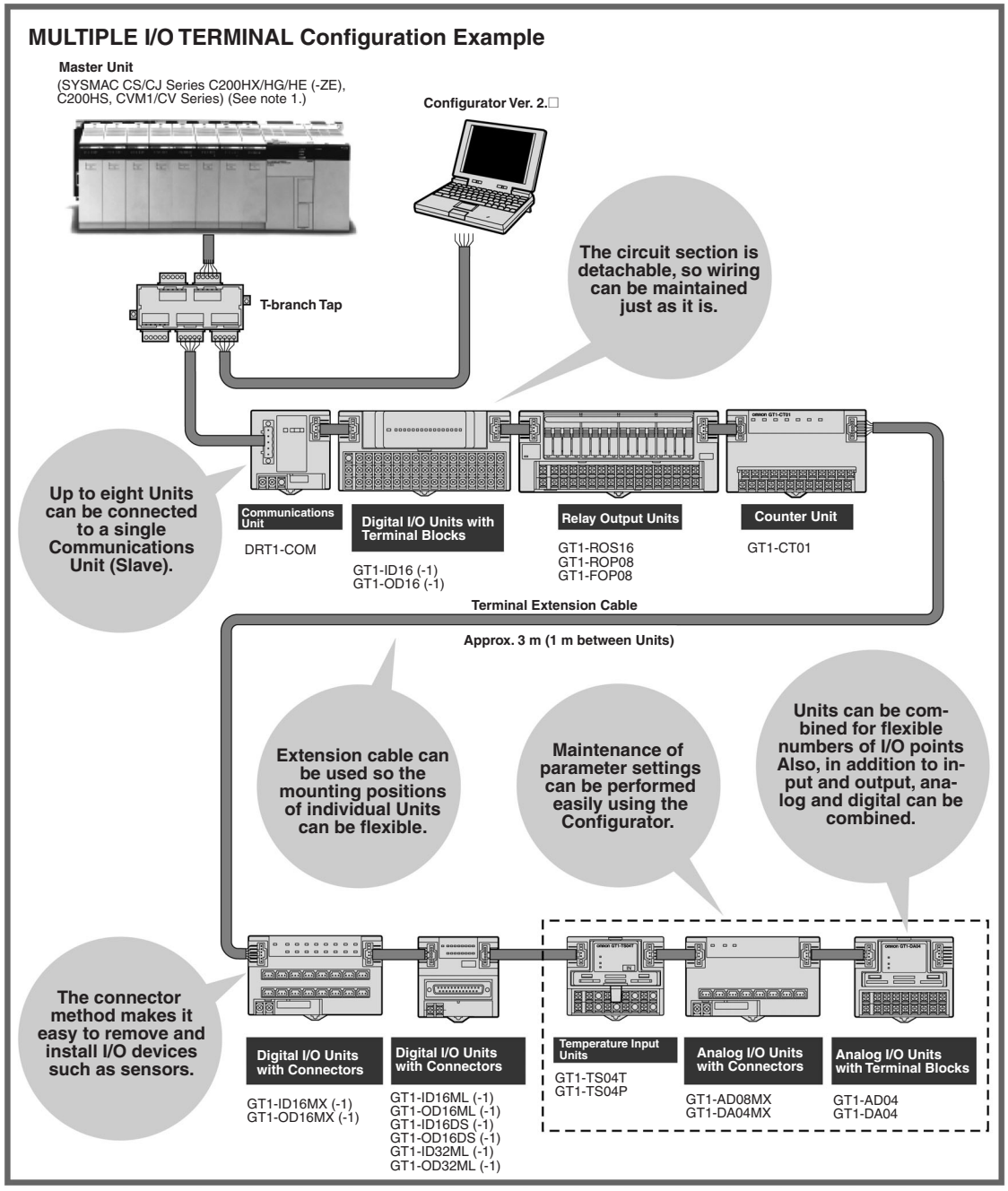


MULTIPLE I/O TERMINAL Series

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.

Note: 1. Using the DeviceNet Configurator (purchased separately) enables up to 32,000 points to be used with a CS1W-DRM21-V1 or CJ1W-DRM21 DeviceNet Unit, up to 4,800 points to be used with a C200HX/HG/HE (-ZE) Master, and up to 6,400 points with a CVM1/CV-series Master.

2. 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.
- Dimensions: 65 x 64 x 65 (W x H x D)
- DIN track mounting.

Ordering Information

Power supply voltage	Model
24 VDC	DRT1-COM

Specifications

■ Ratings

Connectable Units	8
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.) (See note 1.)
Dielectric strength	500 VAC for 1 min.
Mounting method	35-mm DIN track mounting
Unit output power supply	0.4 A max. (See note 2.)

Note: 1. One cable is provided with each I/O Unit.

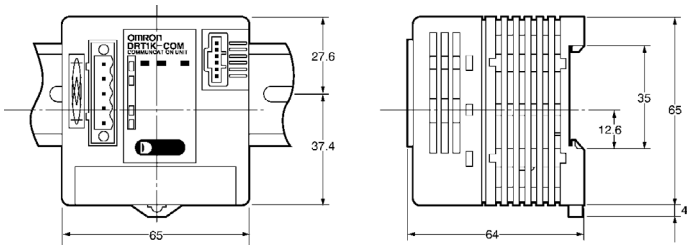
2. The total current consumption for I/O Unit interfaces must not exceed 0.4 A.

■ Characteristics

Communications power supply voltage	11 to 25 VDC (supplied from the communications connector)
Internal power supply voltage	20.4 to 26.4 VDC (24 VDC +10%/–15%)
I/O power supply voltage	
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 temperature	Operating: –10°C to 55°C (with no icing or condensation) Storage: –25°C to 65°C (with no icing or condensation)
Ambient humidity	Operating: 25% to 85%
Accessories	End connector (one)

Dimensions (Unit: mm)

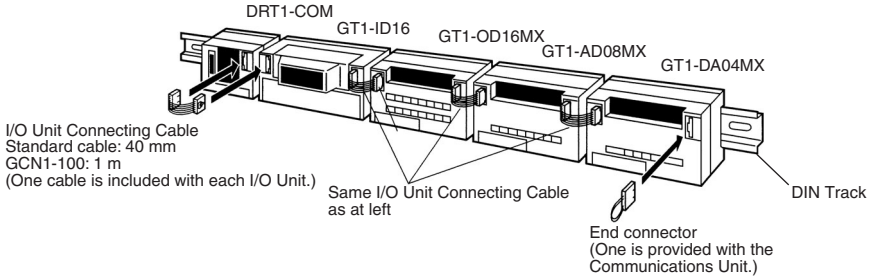
DRT1-COM



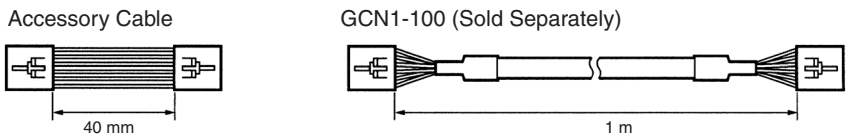
Note: The Unit is shown with the end connector mounted in the above diagram.

Mounting and Connecting Units

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



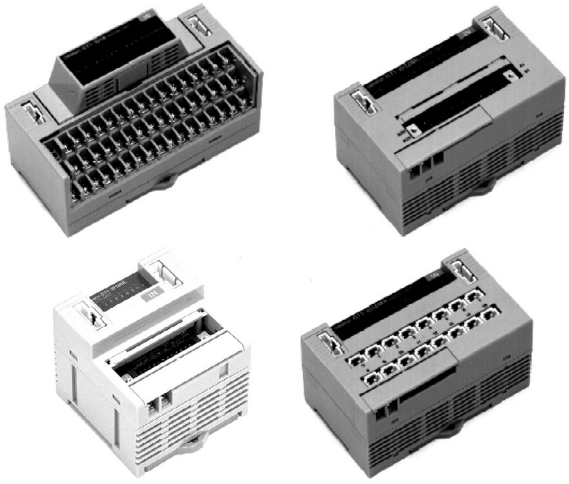
Note: The connecting cable for the I/O Unit is shown below.



Digital I/O Units
GT1-ID/OD

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 dismounted for ease of maintenance without disconnecting the wires.
- Dimensions of terminal block model:
  140 x 80 x 65 mm (W x H x D)
  Dimensions of connector model:
  110 x 60 x 65 mm (W x H x D) (Molex)
  65 x 60 x 65 mm (W x H x D) (Fujitsu and D-sub)
  Dimensions of high-density connector model:
  110 x 60 x 65 mm (W x H x D)
- DIN track mounting.



Ordering Information

Unit	I/O classification	Internal I/O circuit common	I/O points	Terminal	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)				0.5 A, DC/transistor	GT1-OD16
		PNP (+ common)					GT1-OD16-1
Connector model	Digital input	NPN (+ common)		Molex connector		DC/transistor	GT1-ID16MX
		PNP (– common)					GT1-ID16MX-1
	Digital output	NPN (– common)				0.5 A, DC/transistor	GT1-OD16MX
		PNP (+ common)					GT1-OD16MX-1
	Digital input	NPN (+ common)		Fujitsu connector		DC/transistor	GT1-ID16ML
		PNP (– common)					GT1-ID16ML-1
	Digital output	NPN (– common)				0.5 A, DC/transistor	GT1-OD16ML
		PNP (+ common)					GT1-OD16ML-1
	Digital input	NPN (+ common)		D-sub 25-pin connector		DC/transistor	GT1-ID16DS
		PNP (– common)					GT1-ID16DS-1
	Digital output	NPN (– common)				0.5 A, DC/transistor	GT1-OD16DS
		PNP (+ common)					GT1-OD16DS-1
High-density connector model	Digital input	NPN (+ common)	32	Fujitsu connector		DC/transistor	GT1-ID32ML
		PNP (– common)					GT1-ID32ML-1
	Digital output	NPN (– common)				0.5 A, DC/transistor	GT1-OD32ML
		PNP (+ common)					GT1-OD32ML-1

Specifications

■ Ratings

Inputs

Item	GT1-ID□□
ON delay time	1.5 ms max.
OFF delay time	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)

Outputs

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

Note: 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

■ Characteristics

I/O power supply voltage	20.4 to 26.4 VDC (24 VDC +10%/–15%)		
Current consumption (See note.)	**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	35-mm DIN 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 temperature	Operating: –10°C to 55°C (with no icing or condensation) Storage: –25°C to 65°C (with no icing or condensation)		
Ambient humidity	Operating: 25% to 85%		
Accessories	I/O Unit Connecting Cable (40 mm)		

Note: 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.

■ Connectors

Type			Model	Remarks
Molex connector	Press-fit terminal	Housing	52109-0390	Corresponding to 24 AWG
	Solderless terminal	Housing	51030-0330	---
		Chain terminal	50083-8014	Corresponding to 24 to 30 AWG
			50084-8014	Corresponding to 22 to 24 AWG
		Loose terminal	50083-8114	Corresponding to 24 to 30 AWG
			50084-8114	Corresponding to 22 to 24 AWG
		Press-fit tool	57037-5000	---
Fujitsu connector (16 points)	Solder terminal		FCN361J024-AU	---
	Press-fit terminal		FCN367J024-AU/F	---
	Solderless terminal		FCN363J024-AU	---
Fujitsu connector (32 points)	Solder terminal		FCN361J040-AU	---
	Press-fit terminal		FCN367J040-AU/F	---
	Solderless terminal		FCN363J040-AU	---
OMRON D-sub Connector	Plug		XM2A-2501	---
	Hood		XM2S-2513	#4-40UNC inch screws

Cables with High-density Connectors (Fujitsu-compatible Connectors)

I/O type	Model
Digital input (16 points)	XW2Z-□□□A
	G79-□C
Digital output (16 points)	XW2Z-□□□A
	G79-□C
Digital input (32 points)	XW2Z-□□□B
	G79-I□C□
Digital output (32 points)	XW2Z-□□□B
	G79-O□C-□

Note: Refer to page 230 for ordering information.

■ Cables for I/O Connector

Cables for Connector Terminal Conversion Units (16 Points)

I/O classification	Model (Digital I/O Unit)	Applicable cable	Connected product	Remarks
For digital input (16 points)	GT1-ID16ML (-1)	XW2Z-□□□A	XW2D-20G6	Slim-type Connector Terminal Conversion Unit
			XW2E-20G5-IN16	Common terminal (3-tier input type)
For digital output (16 points)	GT1-OD16ML (-1)		XW2D-20G6	Slim-type Connector Terminal Conversion Unit

Cables for Connector Terminal Conversion Units (32 Points)

I/O classification	Model (Digital I/O Unit)	Applicable cable	Connected product	Remarks
For digital input (32 points)	GT1-ID32ML (-1)	XW2Z-□□□B	XW2D-40G6	Slim-type Connector Terminal Conversion Unit
For digital output (32 points)	GT1-OD32ML (-1)			

Cables for I/O Blocks (16 Points)

I/O classification	Model (Digital I/O Unit)	Applicable cable	Connected product	Remarks
For digital input (16 points) NPN	GT1-ID16ML	G79-□C	G7TC-ID16 G7TC-IA16	For I/O Block input
For digital input (16 points) PNP	GT1-ID16ML-1		G7TC-ID16-1 G7TC-IA16-1	For I/O Block output
For 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 M7F-□N□□□	Digital Display Unit
For digital output (16 points) PNP	GT1-OD16ML-1		G7TC-OC16-1 G70D-SOC16-1 G70A-ZOC16-4	For I/O Block output
			M7E-01MB□-□□ M7F-□P□□□	Digital Display Unit

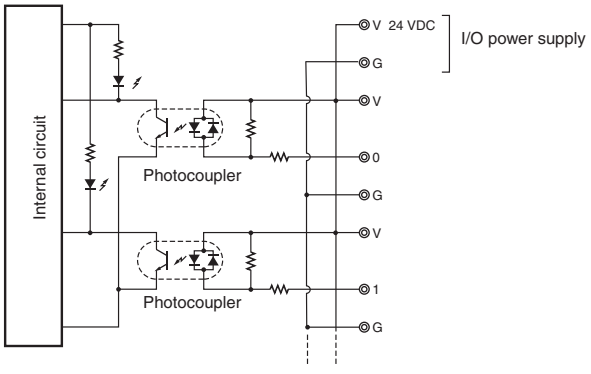
Cables for I/O Blocks (32 Points)

I/O classification	Model (Digital I/O Unit)	Applicable cable	Connected product	Remarks
For digital input (32 points) NPN	GT1-ID32ML	G79-I□C-□	G7TC-ID16 G7TC-IA16	For I/O Block input
For digital input (32 points) PNP	GT1-ID32ML-1		G7TC-ID16-1 G7TC-IA16-1	For I/O Block input
For digital output (32 points) NPN	GT1-OD32ML	G79-O□C-□	G7TC-OC16 G7TC-OC08 G70D-SOC16 G70D-FOM16 G70D-VSOC16 G70D-VFOM16 G70A-ZOC16-3	For I/O Block output
For digital output (32 points) PNP	GT1-OD32ML-1		G7TC-OC16-1 G70D-SOC16-1 G70D-FOM16-1 G70A-ZOC16-4	For I/O Block output

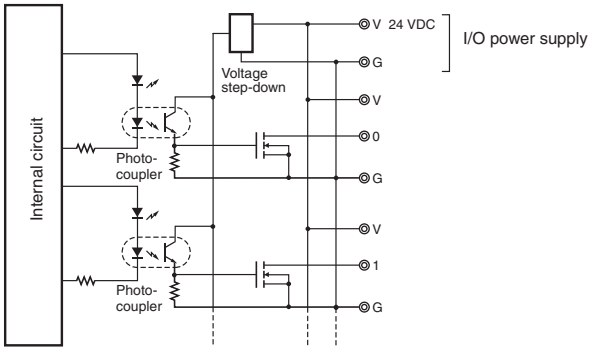
Note: For details of applicable cables and connectors, refer to pages 230 and 231.

Internal Circuit Configuration

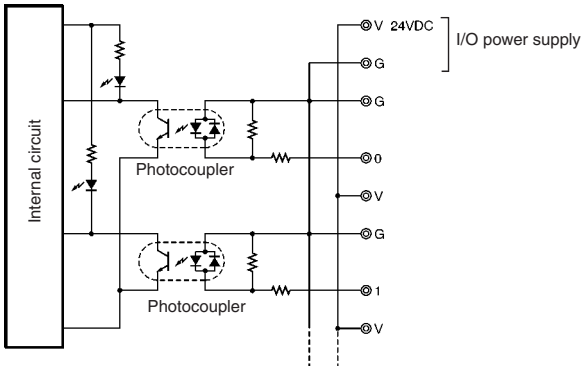
GT1-ID16



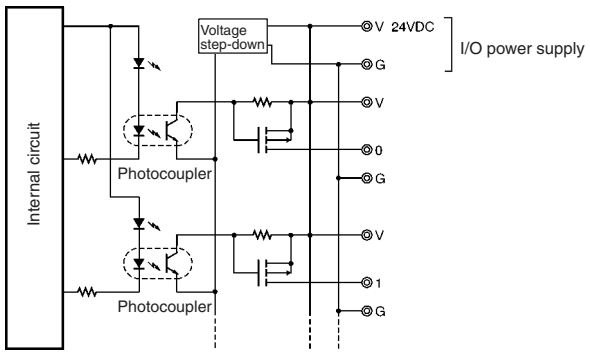
GT1-OD16



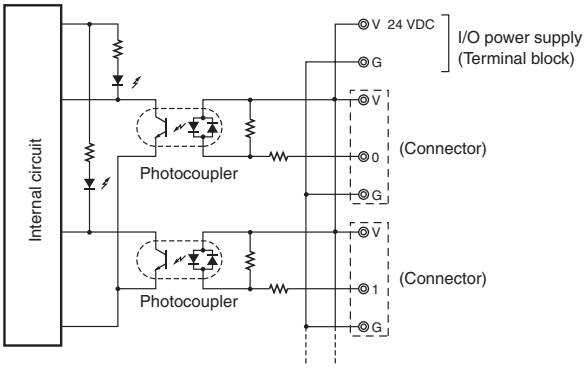
GT1-ID16-1



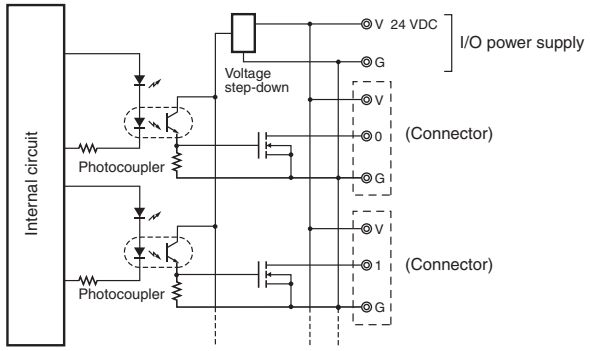
GT1-OD16-1



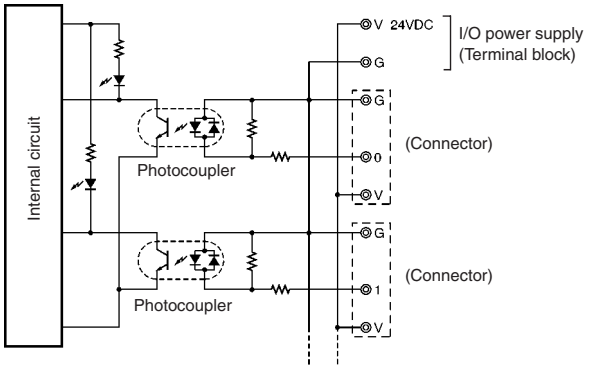
GT1-ID16MX



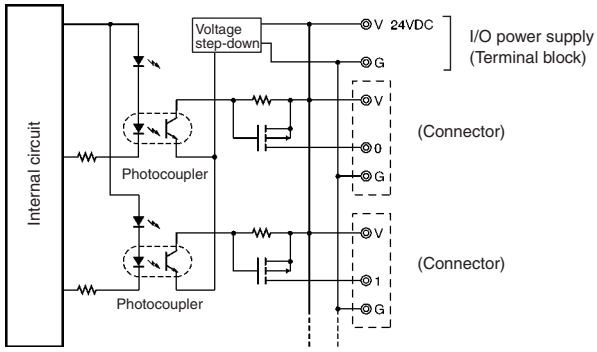
GT1-OD16MX



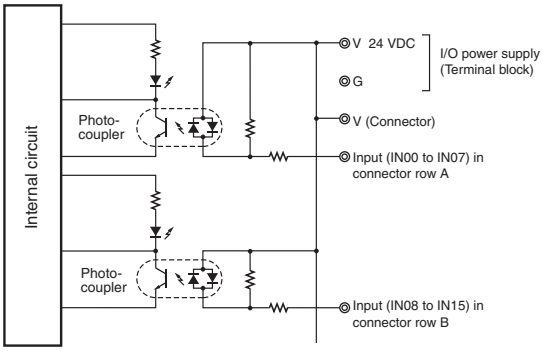
GT1-ID16MX-1



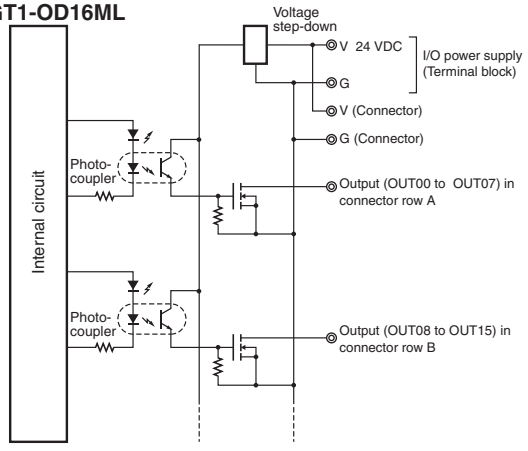
GT1-OD16MX-1



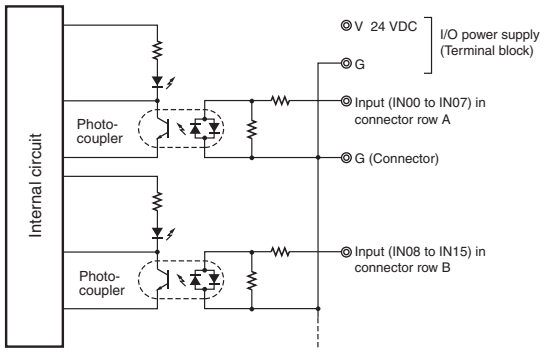
GT1-ID16ML



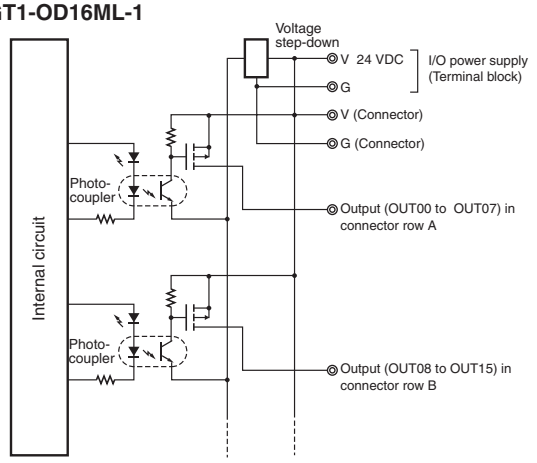
GT1-OD16ML



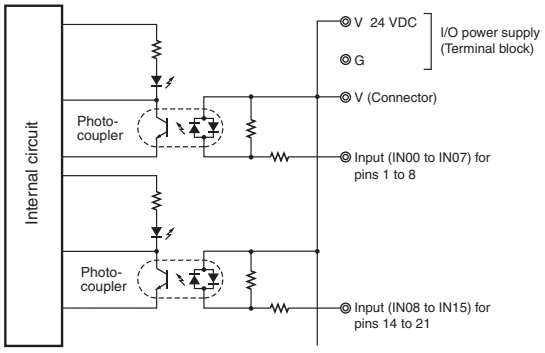
GT1-ID16ML-1



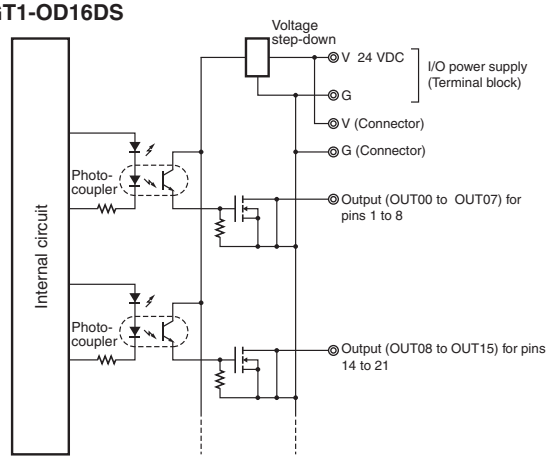
GT1-OD16ML-1



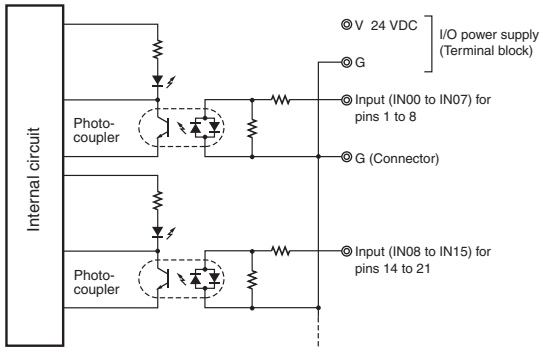
GT1-ID16DS



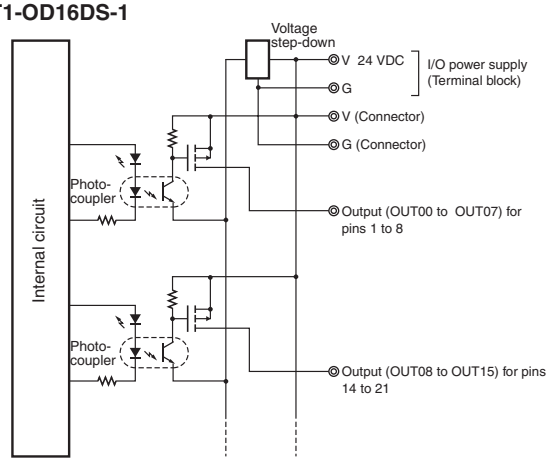
GT1-OD16DS



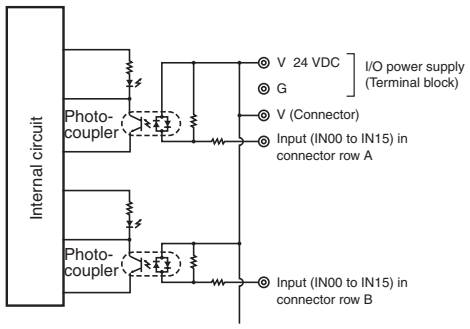
GT1-ID16DS-1



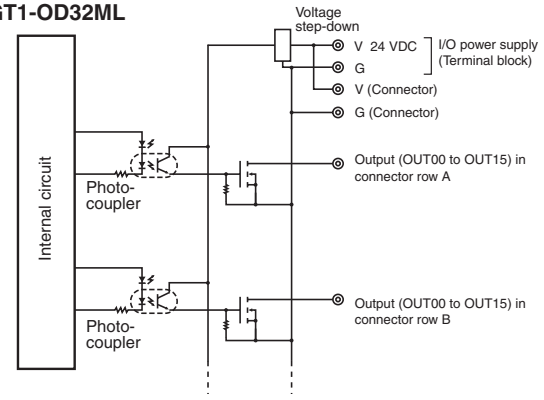
GT1-OD16DS-1



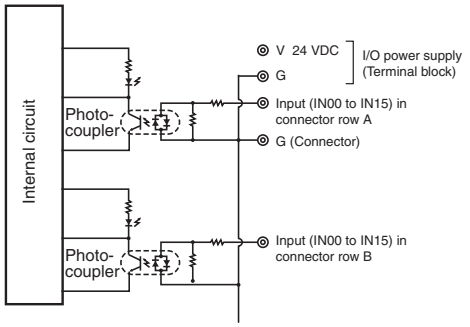
GT1-ID32ML



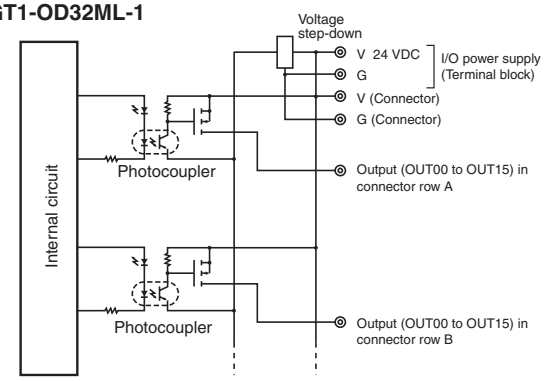
GT1-OD32ML



GT1-ID32ML-1

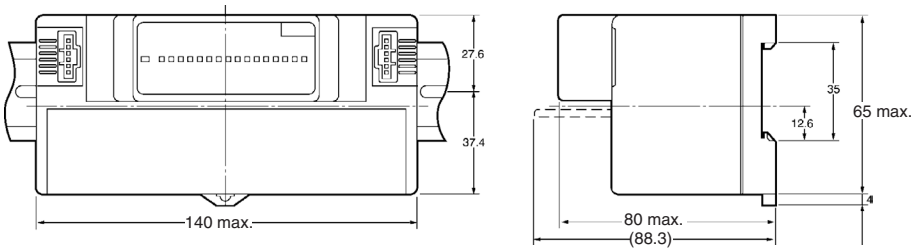


GT1-OD32ML-1



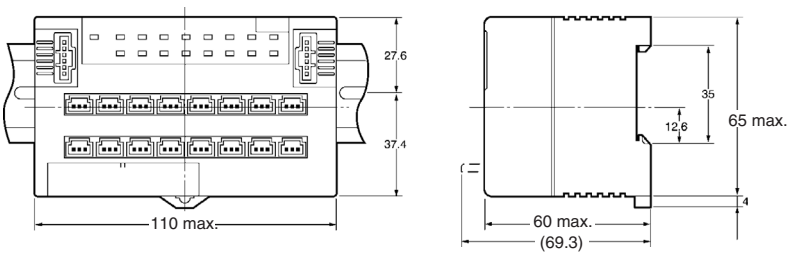
Dimensions (Unit: mm)

- Terminal Block Model
  GT1-ID16
  GT1-ID16-1
  GT1-OD16
  GT1-OD16-1



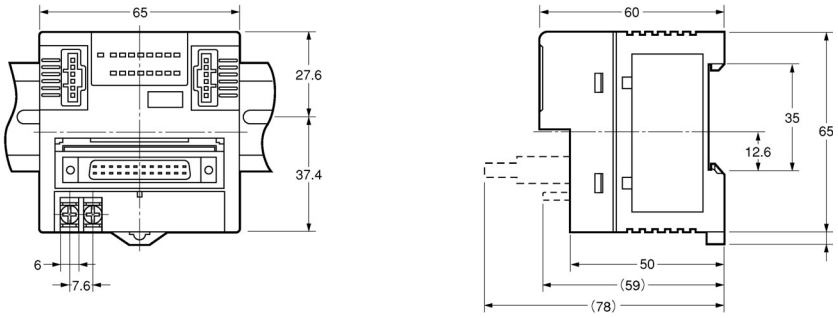
Note: Accessory cable included.

- Connector Model
  GT1-ID16MX
  GT1-ID16MX-1
  GT1-OD16MX
  GT1-OD16MX-1



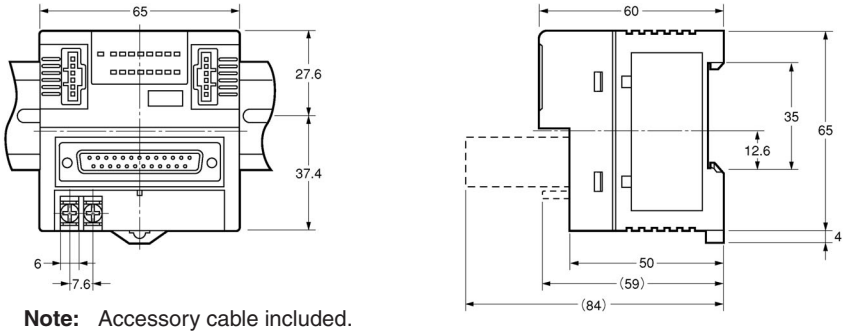
Note: Accessory cable included.

- Connector Model
  GT1-ID16ML
  GT1-ID16ML-1
  GT1-OD16ML
  GT1-OD16ML-1



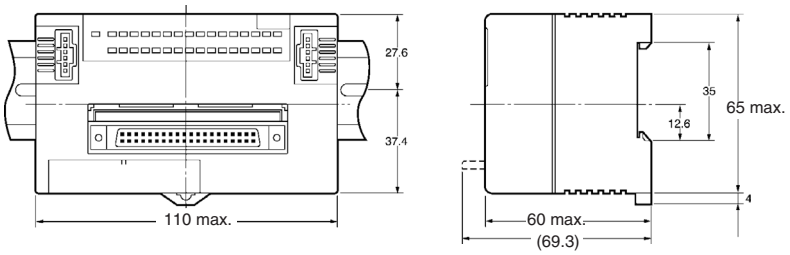
Note: Accessory cable included.

- Connector Model
  GT1-ID16DS
  GT1-ID16DS-1
  GT1-OD16DS
  GT1-OD16DS-1



Note: Accessory cable included.

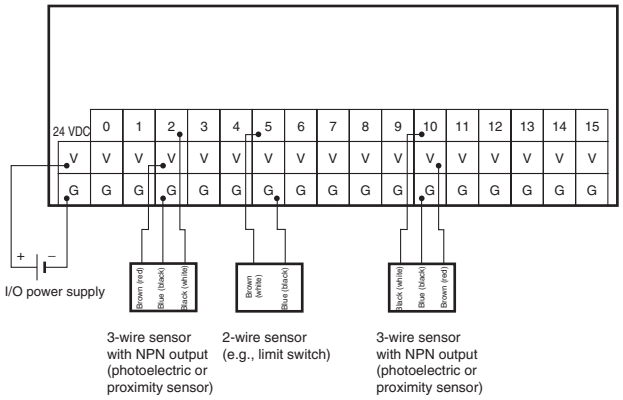
- High-density Connector Model
  GT1-ID32ML
  GT1-ID32ML-1
  GT1-OD32ML
  GT1-OD32ML-1



Note: Accessory cable included.

Wiring

GT1-ID16

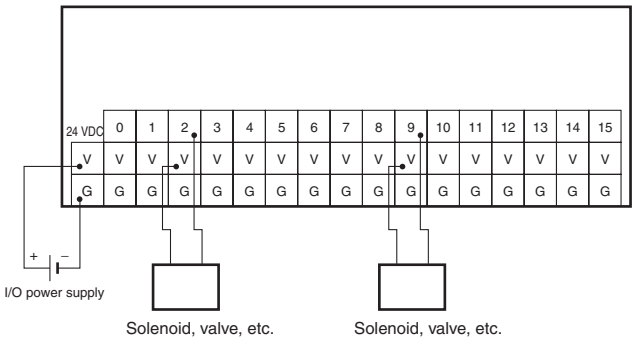


3-wire sensor with NPN output (photoelectric or proximity sensor)

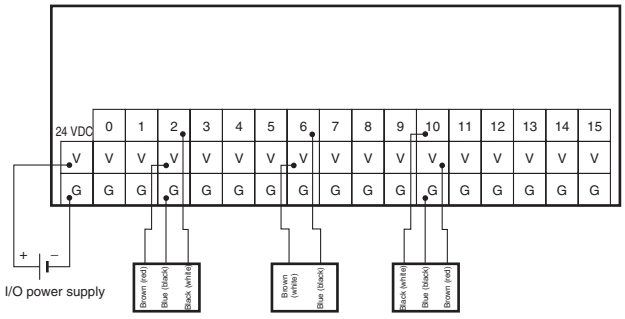
2-wire sensor (e.g., limit switch)

3-wire sensor with NPN output (photoelectric or proximity sensor)

GT1-OD16



GT1-ID16-1

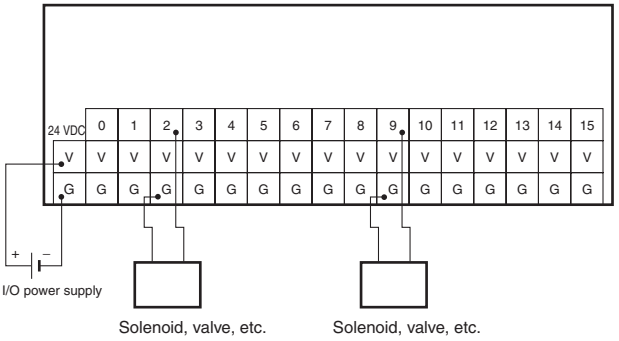


3-wire sensor with PNP output (photoelectric or proximity sensor)

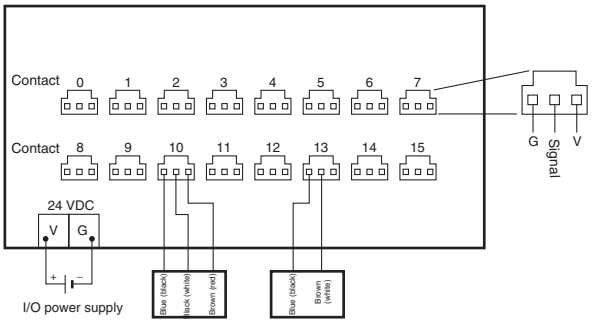
2-wire sensor (e.g., limit switch)

3-wire sensor with PNP output (photoelectric or proximity sensor)

GT1-OD16-1



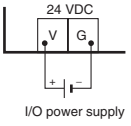
GT1-ID16MX



3-wire sensor with NPN output (photoelectric or proximity sensor)

2-wire sensor (e.g., limit switch)

GT1-ID16ML

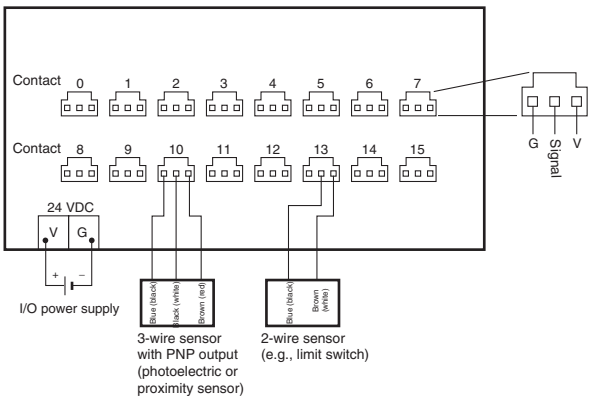


Connector Pin Arrangement

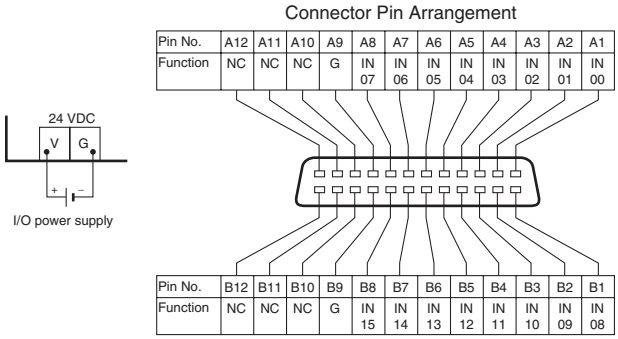
Pin No.	A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
Function	NC	NC	NC	V	IN 07	IN 06	IN 05	IN 04	IN 03	IN 02	IN 01	IN 00

Pin No.	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
Function	NC	NC	NC	V	IN 15	IN 14	IN 13	IN 12	IN 11	IN 10	IN 09	IN 08

GT1-ID16MX-1



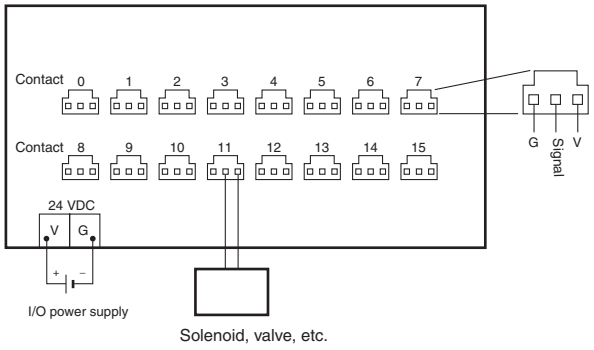
GT1-ID16ML-1



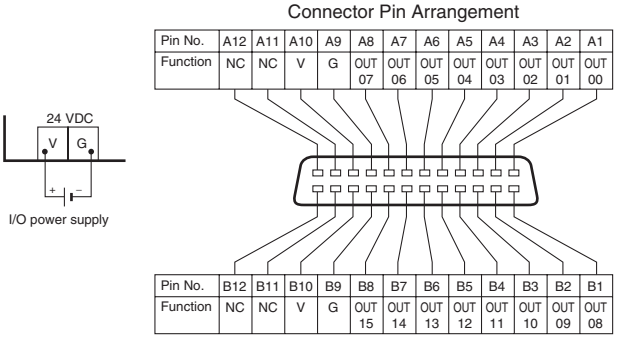
Pin No.	A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
Function	NC	NC	NC	G	IN 07	IN 06	IN 05	IN 04	IN 03	IN 02	IN 01	IN 00

Pin No.	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
Function	NC	NC	NC	G	IN 15	IN 14	IN 13	IN 12	IN 11	IN 10	IN 09	IN 08

GT1-OD16MX



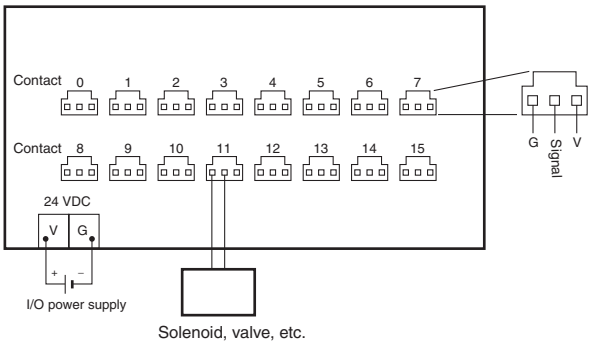
GT1-OD16ML



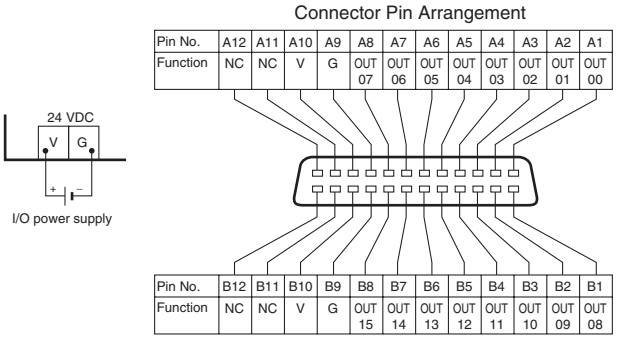
Pin No.	A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
Function	NC	NC	V	G	OUT 07	OUT 06	OUT 05	OUT 04	OUT 03	OUT 02	OUT 01	OUT 00

Pin No.	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
Function	NC	NC	V	G	OUT 15	OUT 14	OUT 13	OUT 12	OUT 11	OUT 10	OUT 09	OUT 08

GT1-OD16MX-1



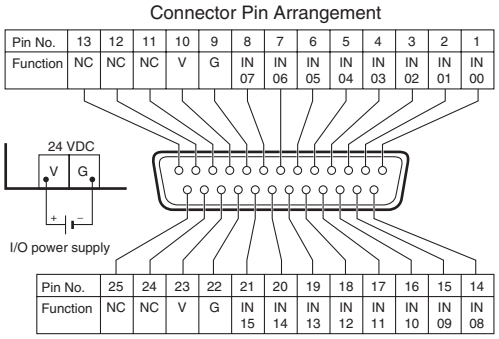
GT1-OD16ML-1



Pin No.	A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
Function	NC	NC	V	G	OUT 07	OUT 06	OUT 05	OUT 04	OUT 03	OUT 02	OUT 01	OUT 00

Pin No.	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
Function	NC	NC	V	G	OUT 15	OUT 14	OUT 13	OUT 12	OUT 11	OUT 10	OUT 09	OUT 08

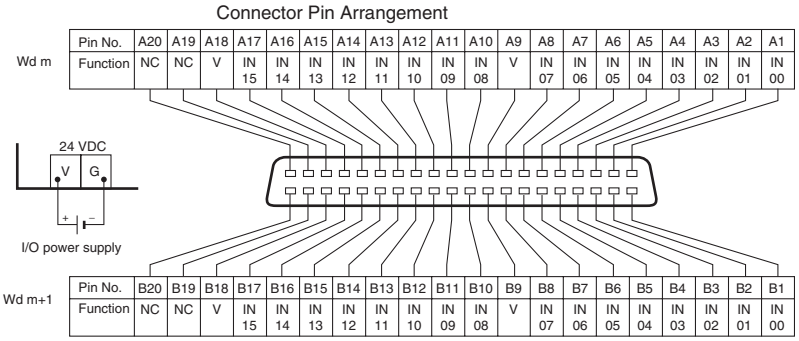
GT1-ID16DS



Pin No.	13	12	11	10	9	8	7	6	5	4	3	2	1
Function	NC	NC	NC	V	G	IN 07	IN 06	IN 05	IN 04	IN 03	IN 02	IN 01	IN 00

Pin No.	25	24	23	22	21	20	19	18	17	16	15	14
Function	NC	NC	V	G	IN 15	IN 14	IN 13	IN 12	IN 11	IN 10	IN 09	IN 08

GT1-ID32ML



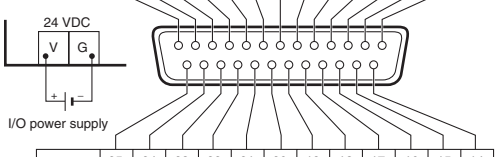
Pin No.	A20	A19	A18	A17	A16	A15	A14	A13	A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
Function	NC	NC	V	IN 15	IN 14	IN 13	IN 12	IN 11	IN 10	IN 09	IN 08	V	IN 07	IN 06	IN 05	IN 04	IN 03	IN 02	IN 01	IN 00

Pin No.	B20	B19	B18	B17	B16	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
Function	NC	NC	V	IN 15	IN 14	IN 13	IN 12	IN 11	IN 10	IN 09	IN 08	V	IN 07	IN 06	IN 05	IN 04	IN 03	IN 02	IN 01	IN 00

GT1-ID16DS-1

Connector Pin Arrangement

Pin No.	13	12	11	10	9	8	7	6	5	4	3	2	1
Function	NC	NC	NC	V	G	IN 07	IN 06	IN 05	IN 04	IN 03	IN 02	IN 01	IN 00

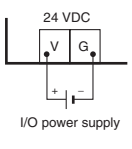


Pin No.	25	24	23	22	21	20	19	18	17	16	15	14
Function	NC	NC	V	G	IN 15	IN 14	IN 13	IN 12	IN 11	IN 10	IN 09	IN 08

GT1-ID32ML-1

Connector Pin Arrangement

	Pin No.	A20	A19	A18	A17	A16	A15	A14	A13	A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
Wd m	Function	NC	NC	G	IN 15	IN 14	IN 13	IN 12	IN 11	IN 10	IN 09	IN 08	G	IN 07	IN 06	IN 05	IN 04	IN 03	IN 02	IN 01	IN 00

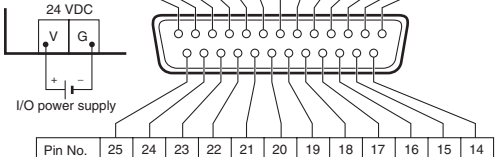


	Pin No.	B20	B19	B18	B17	B16	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
Wd m+1	Function	NC	NC	G	IN 15	IN 14	IN 13	IN 12	IN 11	IN 10	IN 09	IN 08	G	IN 07	IN 06	IN 05	IN 04	IN 03	IN 02	IN 01	IN 00

GT1-OD16DS

Connector Pin Arrangement

Pin No.	13	12	11	10	9	8	7	6	5	4	3	2	1
Function	NC	NC	NC	V	G	OUT 07	OUT 06	OUT 05	OUT 04	OUT 03	OUT 02	OUT 01	OUT 00

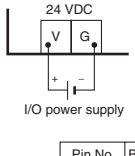


Pin No.	25	24	23	22	21	20	19	18	17	16	15	14
Function	NC	NC	V	G	OUT 15	OUT 14	OUT 13	OUT 12	OUT 11	OUT 10	OUT 09	OUT 08

GT1-OD32ML

Connector Pin Arrangement

	Pin No.	A20	A19	A18	A17	A16	A15	A14	A13	A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
Wd m	Function	V	G	OUT 15	OUT 14	OUT 13	OUT 12	OUT 11	OUT 10	OUT 09	OUT 08	V	G	OUT 07	OUT 06	OUT 05	OUT 04	OUT 03	OUT 02	OUT 01	OUT 00

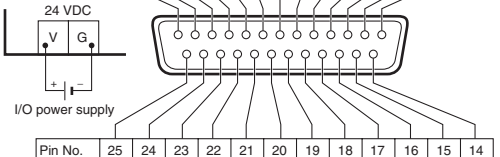


	Pin No.	B20	B19	B18	B17	B16	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
Wd m+1	Function	V	G	OUT 15	OUT 14	OUT 13	OUT 12	OUT 11	OUT 10	OUT 09	OUT 08	V	G	OUT 07	OUT 06	OUT 05	OUT 04	OUT 03	OUT 02	OUT 01	OUT 00

GT1-OD16DS-1

Connector Pin Arrangement

Pin No.	13	12	11	10	9	8	7	6	5	4	3	2	1
Function	NC	NC	NC	V	G	OUT 07	OUT 06	OUT 05	OUT 04	OUT 03	OUT 02	OUT 01	OUT 00

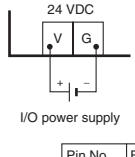


Pin No.	25	24	23	22	21	20	19	18	17	16	15	14
Function	NC	NC	V	G	OUT 15	OUT 14	OUT 13	OUT 12	OUT 11	OUT 10	OUT 09	OUT 08

GT1-OD32ML-1

Connector Pin Arrangement

	Pin No.	A20	A19	A18	A17	A16	A15	A14	A13	A12	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1
Wd m	Function	V	G	OUT 15	OUT 14	OUT 13	OUT 12	OUT 11	OUT 10	OUT 09	OUT 08	V	G	OUT 07	OUT 06	OUT 05	OUT 04	OUT 03	OUT 02	OUT 01	OUT 00



	Pin No.	B20	B19	B18	B17	B16	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
Wd m+1	Function	V	G	OUT 15	OUT 14	OUT 13	OUT 12	OUT 11	OUT 10	OUT 09	OUT 08	V	G	OUT 07	OUT 06	OUT 05	OUT 04	OUT 03	OUT 02	OUT 01	OUT 00

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.
- Dimensions of 8-point model:
  160 x 60 x 65 mm (W x H x D)
  Dimensions of 16-point model:
  160 x 60 x 65 mm (W x H x D)
- DIN track mounting.

Ordering Information

I/O classification	Relay model	I/O points	Terminal	Power supply voltage	I/O specification	Model
Relay output	G6D-1A (24 VDC)	16	M3 terminal block	24 VDC	2 A, SPST-NO	GT1-ROS16
	G2R-1-SN (24 VDC)	8			5 A, SPST-NO	GT1-ROP08
SSR	G3RD-X02SN-US-E	8			---	GT1-FOP08

Specifications

■ Characteristics

I/O power supply voltage	20.4 to 26.4 VDC (24 VDC +10%/–15%)			
Current consumption (See note.)	**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 IEC61000-4-4, 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	35-mm DIN 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 temperature	Operating: –10°C to 55°C Storage: –25°C to 65°C			
Ambient humidity	Operating: 25% to 85% (with no icing or condensation)			
Accessories	I/O Unit Connecting Cable (40 mm)			

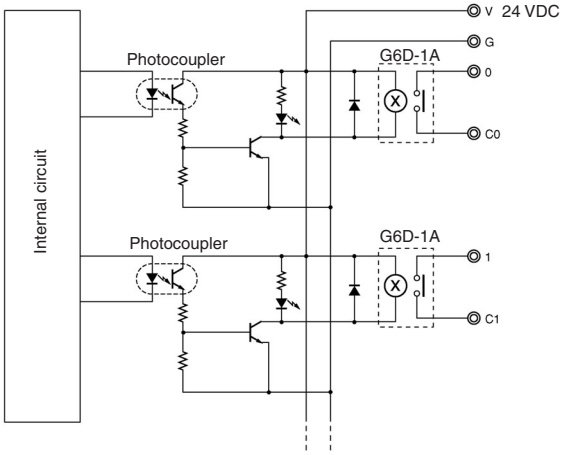
Note: The above current consumption is a value with all the points turned ON including the current consumption of the relay coils.

■ Relay Output Specifications

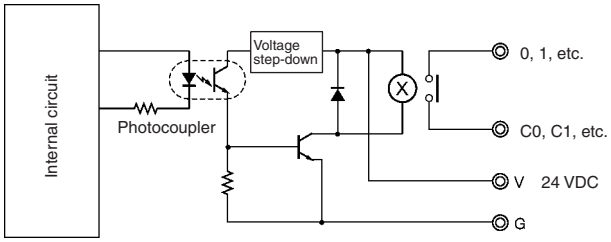
Item	G6D-1A	G2R-1-SN	G3RD-X02SN-US-E
Maximum contact current	2 A	5 A	0.01 to 1.5 A
Minimum applicable load (reference values)	5 VDC, 10 mA	5 VDC, 100 mA	4 to 48 VDC
Electrical life expectancy	100,000 operations min. with switching frequency of 1,800 operations per hour (at ambient temperature of 23°C 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

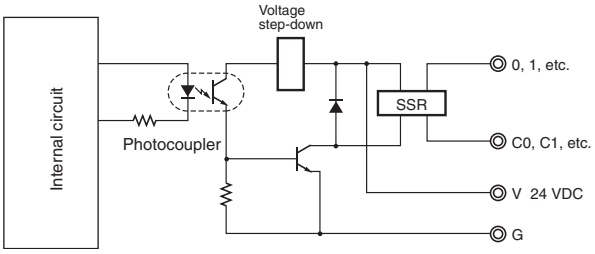
GT1-ROS16



GT1-ROP08

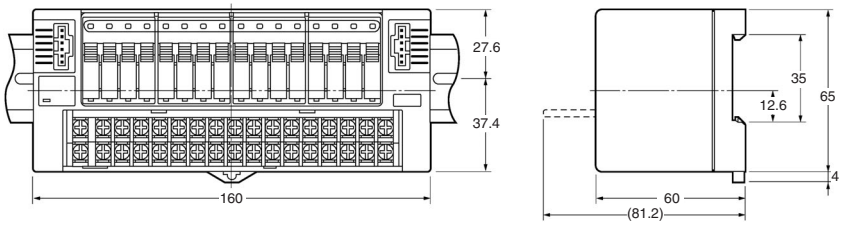


GT1-FOP08



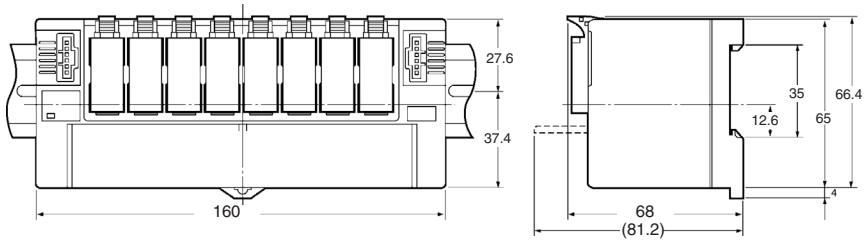
Dimensions (Unit: mm)

GT1-ROS16



Note: Accessory cable included.

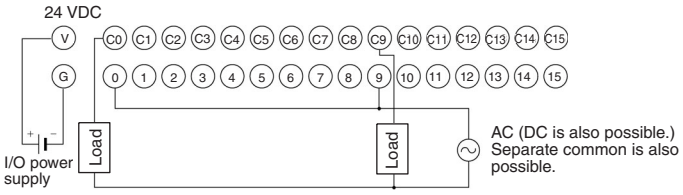
GT1-ROP08
GT1-FOP08



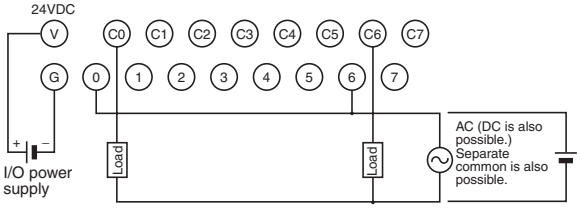
Note: Accessory cable included.

Wiring

GT1-ROS16



GT1-ROP08/GT1-FOP08



*The GT1-FOP08 can use only a DC power supply.

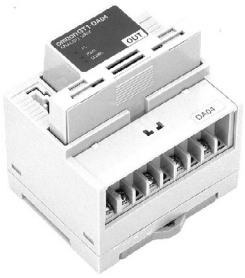
Analog I/O Units
GT1-AD/DA

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.
- Dimensions of connector model:
  110 × 60 × 65 mm (W × H × D)
  Dimensions of terminal block model:
  80 × 80 × 65 mm (W × H × D)
- DIN track mounting.

Connector model

Terminal block model



Ordering Information

I/O classification	I/O points	Terminal	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	GT1-DA04MX
		Terminal block		0 to 5 V, 1 to 5 V, 0 to 10 V, –10 to 10 V, 4 to 20 mA	GT1-DA04

Specifications

■ Input

Item		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
Max. signal input		±15 V	±30 mA
Input impedance		1 MΩ 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

Item		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		5 kΩ min.	600 Ω max.
Output impedance		0.5 Ω max.	---
Resolution		1/6,000 (full scale)	
Overall accuracy	**25°C**	±0.4% full scale	
	–10°C to 55°C	±0.8% full scale	
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.	

■ Characteristics

I/O power supply voltage	20.4 to 26.4 VDC (24 VDC +10%/–15%) (See note.)	
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 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	
Dielectric strength	500 VAC	
Mounting method	35-mm DIN 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 temperature	Operating: –10°C to 55°C Storage: –25°C to 65°C	
Ambient humidity	Operating: 25% to 85% (with no condensation)	
Accessories	I/O Unit Connecting Cable (40 mm)	

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

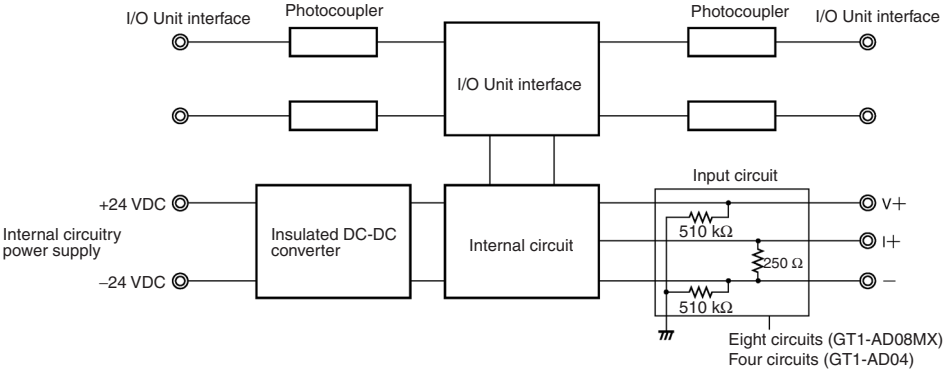
■ Connector (GT1-AD08MX, GT1-DA04MX)

Type			Model	Remarks
Molex connector	Press-fit terminal	Housing	52109-390	Corresponding to 24 AWG
	Solderless terminal	Housing	51030-0330	(See note.)
		Chain terminal	50083-8014	Corresponding to 24 to 30 AWG
			50084-8014	Corresponding to 22 to 24 AWG
		Loose terminal	50083-8114	Corresponding to 24 to 30 AWG (See note.)
			50084-8114	Corresponding to 22 to 24 AWG
		Press-fit tool	57037-5000	(See note.)

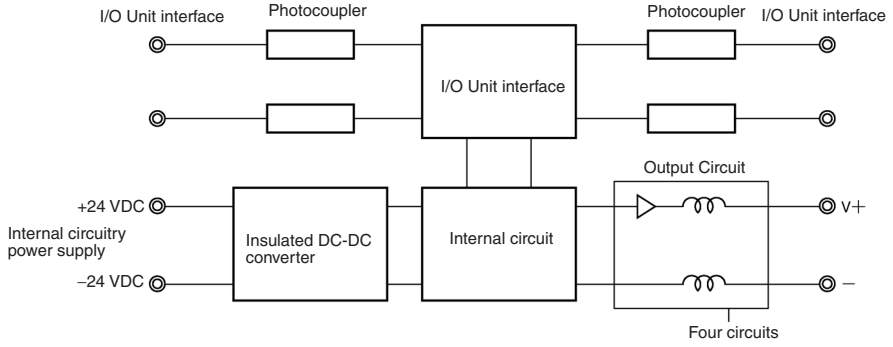
Note: Contact your OMRON representatives for the above connectors.

Internal Circuit Configuration

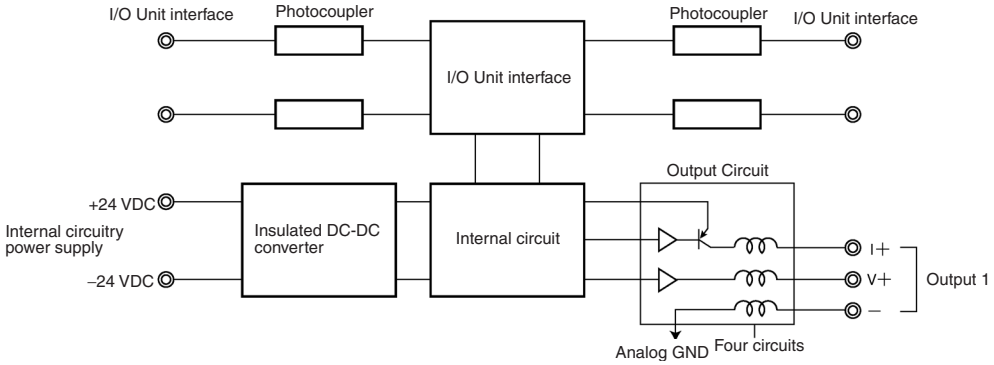
GT1-AD08MX
GT1-AD04



GT1-DA04MX

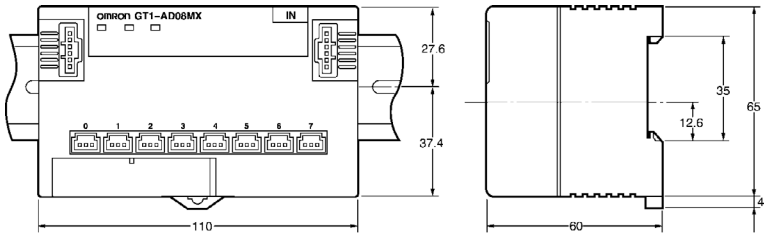


GT1-DA04



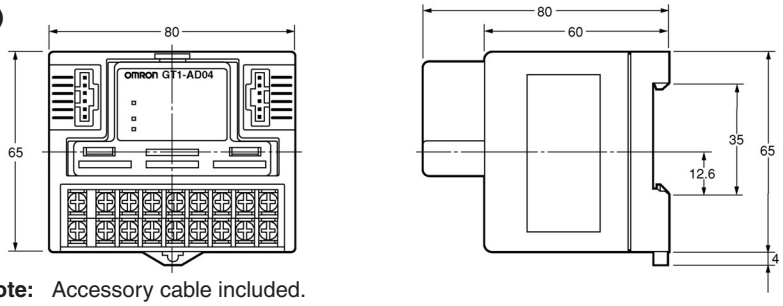
Dimensions (Unit: mm)

GT1-AD08MX
GT1-DA04MX
(Molex Connector Models)



Note: Accessory cable included.

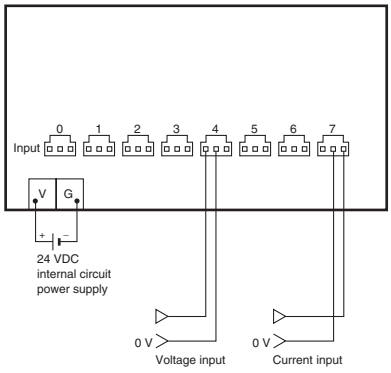
GT1-AD04
GT1-DA04
(Terminal Block Models)



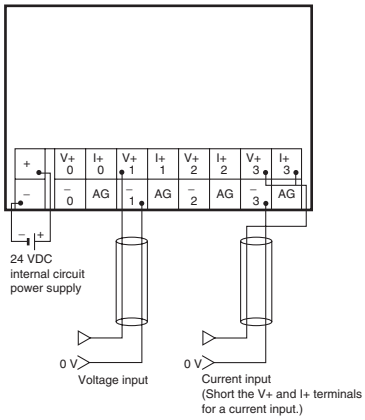
Note: Accessory cable included.

Wiring

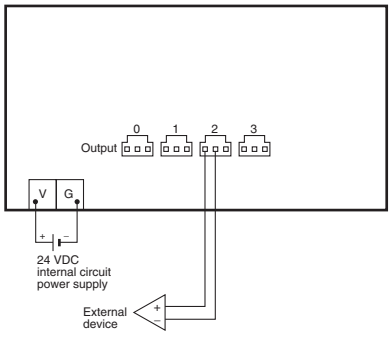
GT1-AD08MX



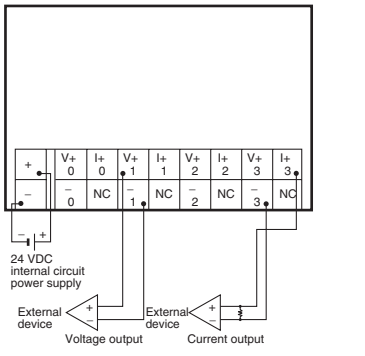
GT1-AD04



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.
- Dimensions: 80 × 65 × 80 mm (W × D × H)
- DIN track mounting.

Ordering Information

I/O type	I/O points	Connection	Rated voltage	Input specification	Model
Temperature inputs	Four inputs	Terminal Block	24 VDC	Thermocouple	GT1-TS04T
				Platinum resistance thermometer	GT1-TS04P

Specifications

■ General Specifications

Supply voltage	20.4 to 26.4 V DC (24 VDC –15% to 10%)
Current consumption	I/O Unit Interface: 50 mA max. Internal power supply: 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	35-mm DIN Track mounting
Ambient temperature	Operating: –10 to 55°C Storage: –25 to 65°C
Ambient humidity	Operating: 25% to 85% (with no condensation)
Accessories	I/O Unit Connecting Cable (40 mm)

■ Input Specifications

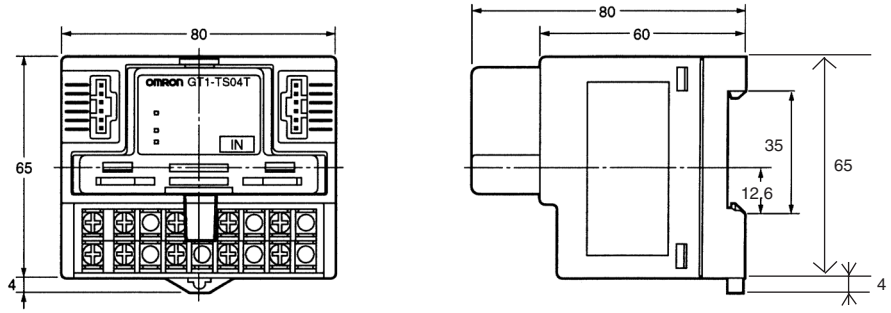
Item	GT1-TS04T	GT1-TS04P
Input type	Switchable: R, S, K, J, T, L, or B	Switchable: Pt100 or JPt100
Indicated accuracy	(The larger of ±0.3% of the indicated value or ±1°C. See note.) ±1 digit max.	When the range is –200.0 to 650.0: (The larger of ±0.3% of the indicated value or ±0.8°C) ±1 digit max. When the range is –200.0 to 200.0: (The larger of ±0.3% of the indicated value or ±0.5°C) ±1 digit max.
Conversion interval	250 ms/4 inputs	
Temperature conversion data	Binary data	
Isolation method	Photocoupler isolation between inputs and communications lines Photocoupler isolation between each temperature input signal	

Note: 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

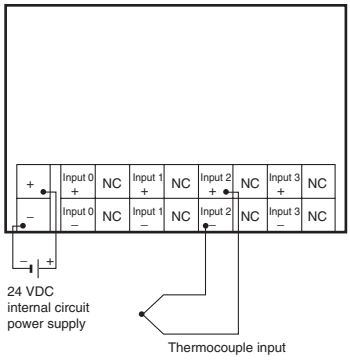
(Example: GT1-TS04T)



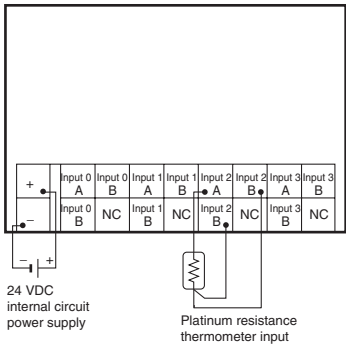
Note: Accessory cable included.

Wiring

GT1-TS04T



GT1-TS04P



Counter Unit
GT1-CT01

A Counter Unit Supporting Encoder Input for Use with MULTIPLE I/O TERMINAL

- High-speed pulse with counting speed of 50 kHz.
- Counting can be set to a multiplication factor of 1 or 4.
- Wide range of measurement: –8,388,608 to 8,388,607.
- One external input and two external outputs are available.
- Dimensions:110 × 60 × 65 mm (W × H × D).
- DIN track mounting.

Ordering Information

I/O classification	External I/O points	Terminal	Operating mode	Model
Counter Unit	Inputs: 1 Outputs: 2	Terminal block	Linear counter	GT1-CT01

Specifications

■ Output

Output current	0.5 A per point max.
Residual voltage	1.2 V max. (0.5 A DC, between each output terminal and G)
Leakage current	0.1 mA max. (24 VDC, between each output terminal and G)
ON delay time	0.5 ms max.
OFF delay time	1.5 ms max.
Number of circuits	2

■ Ratings

I/O power supply voltage	20.4 to 26.4 VDC (24 VDC –15%/+10%)
Current consumption	90 mA max.
Connection distance	Total length: 3 m Maximum length between Units: 1 m
Ambient temperature	–10°C to 55°C
Ambient humidity	Operating: 25% to 85% (with no condensation)
Weight	Approx. 250 g
Dimensions	110 × 60 × 65 mm (W × H × D)
Accessories	I/O Unit connecting cable (40 mm)

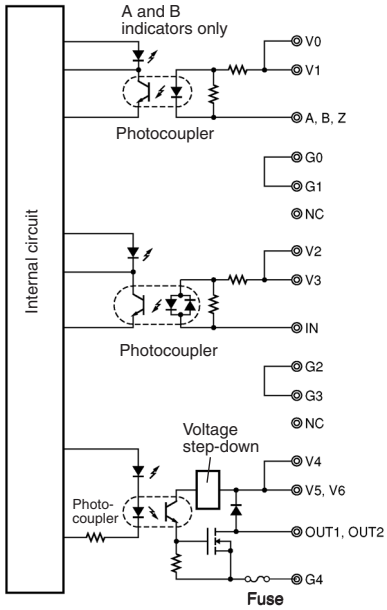
■ Characteristics

Number of counters			1
Operating mode			Linear counter
Count input	**Input signal**		Encoder input (A, B, Z)
	Signal level		24 VDC
	Input type		Differential phase pulse input Pulse and direction input
	Maximum counting speed		50 kHz (kcps)
	Counting range		–8,388,608 to +8,388,607
	Other		Differential phase pulse input can be set to a multiplication factor of 1 or 4.
External input	**Input signal**		External input (IN)
	Signal level		24 VDC
External output	**Output**		2 external outputs (OUT1 and OUT2)
	Maximum switching capacity		24 VDC 0.5 A
Allocated words		**IN**	3 words
		OUT	3 words

■ Encoders

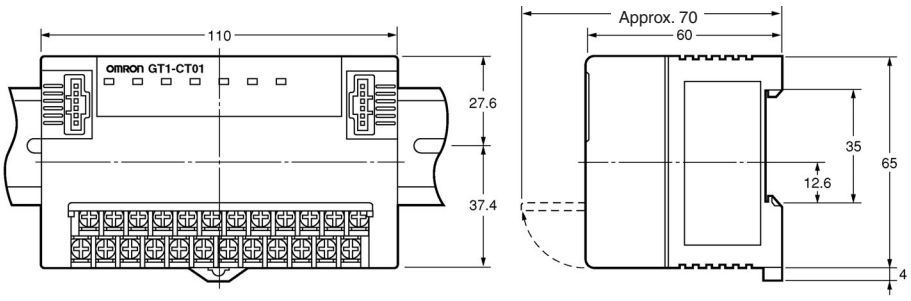
Output type	Open-collector output
Power supply voltage	24 VDC
Models	E6B2-CWZ6C E6H-CWZ6C

Internal Circuit Configuration



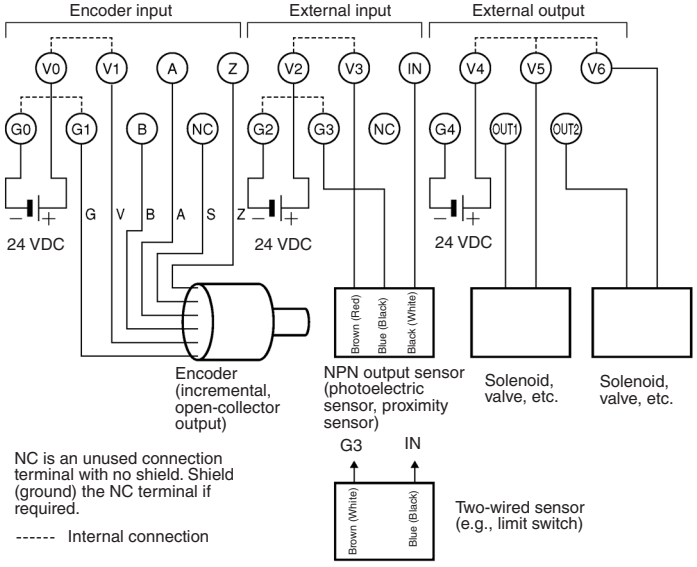
Dimensions (Unit: mm)

GT1-CT01



Note: Accessory cable included.

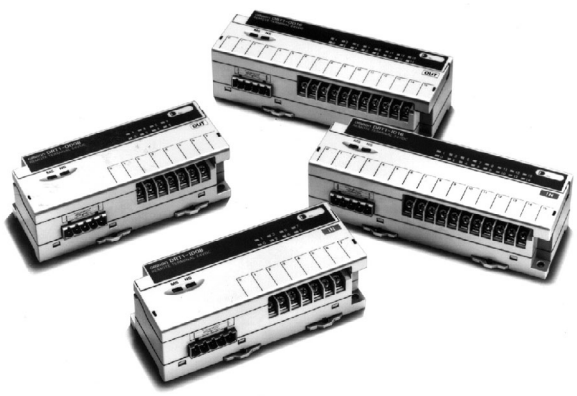
Wiring



Transistor Remote I/O Terminals
DRT1-□D08(-1)/□D16(-1)

Compact 8-point and 16-point Transistorized Terminals

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



Ordering Information

I/O classification	Internal I/O circuit common	I/O points	I/O connections	Internal circuit rated voltage	I/O rated voltage	Model
Input	NPN (+ common)	8	M3 terminal block	24 VDC	24 VDC	DRT1-ID08
	PNP (– common)					DRT1-ID08-1
Output	NPN (– common)					DRT1-OD08
	PNP (+ common)					DRT1-OD08-1
Input	NPN (+ common)	16				DRT1-ID16
	PNP (– common)					DRT1-ID16-1
Output	NPN (– common)					DRT1-OD16
	PNP (+ common)					DRT1-OD16-1
I/O	NPN inputs (inputs: + common; outputs: – common)	8 inputs and 8 outputs				DRT1-MD16

Specifications

■ Ratings

Input

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

Output

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

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

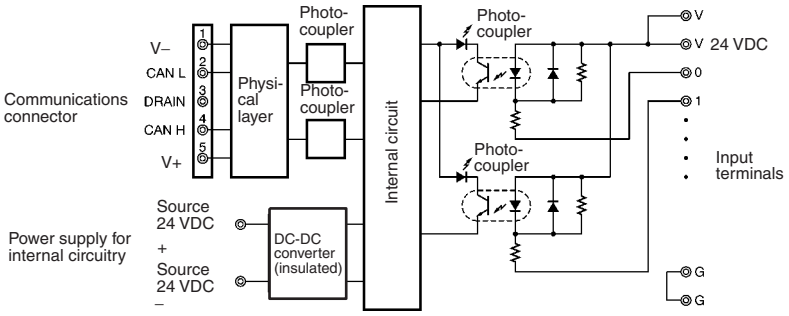
■ Characteristics

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

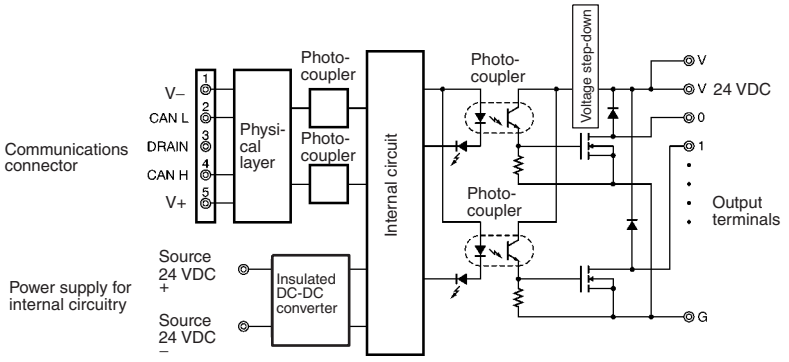
Note: The above current consumption is a value with all 8 and 16 points turned ON excluding the current consumption of the external sensor connected to the input Remote Terminal and the current consumption of the load connected to the output Remote Terminal.

Internal Circuit Configuration

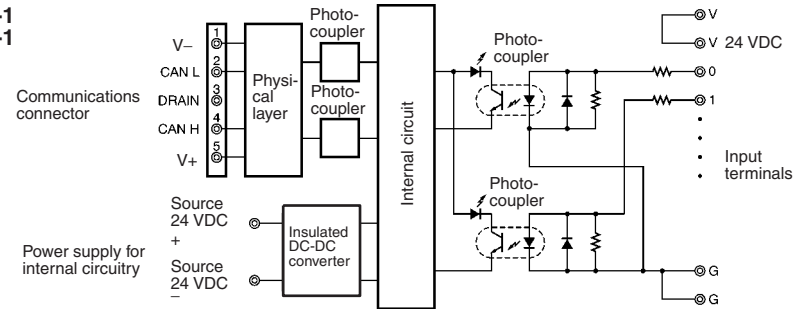
DRT1-ID08
DRT1-ID16



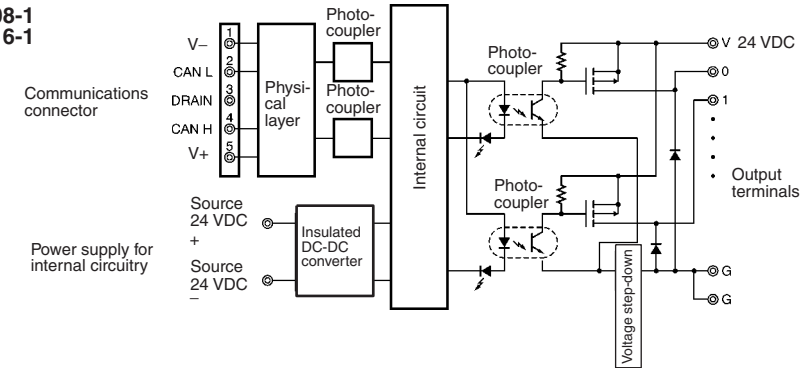
DRT1-OD08
DRT1-OD16



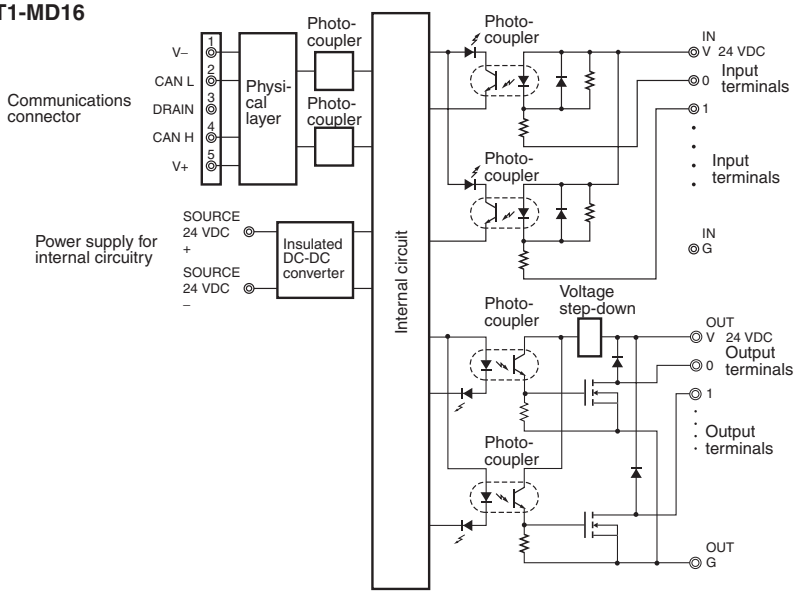
DRT1-ID08-1
DRT1-ID16-1



DRT1-OD08-1
DRT1-OD16-1

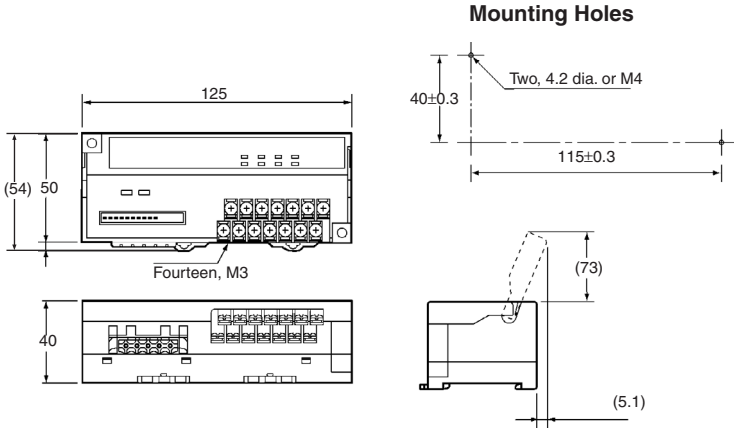


DRT1-MD16

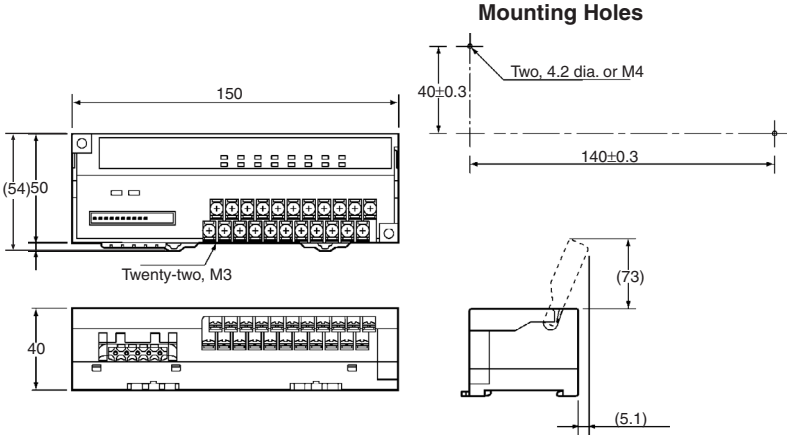


Dimensions (Unit: mm)

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

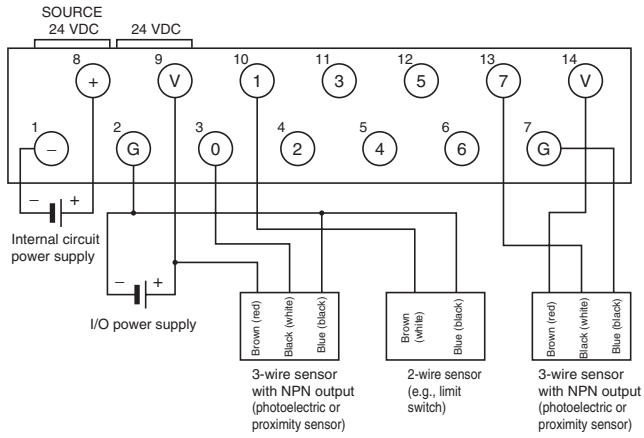


DRT1-ID16 (-1)
DRT1-OD16 (-1)
DRT1-MD16

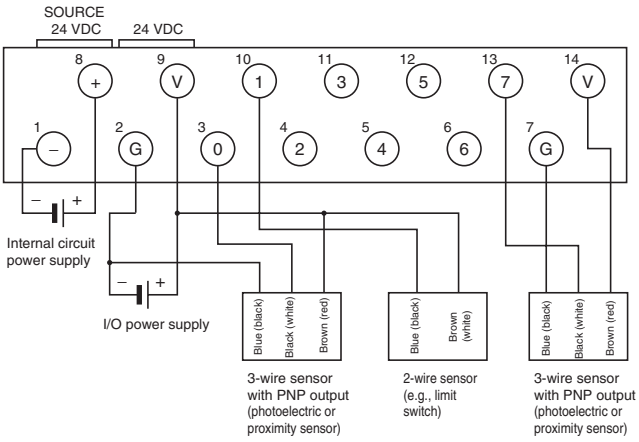


Wiring

DRT1-ID08 (NPN)



DRT1-ID08-1 (PNP)



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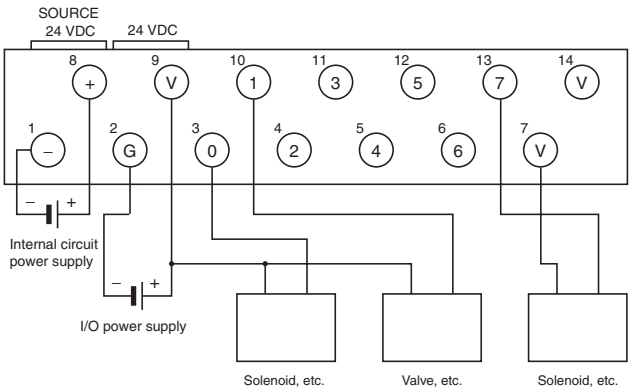
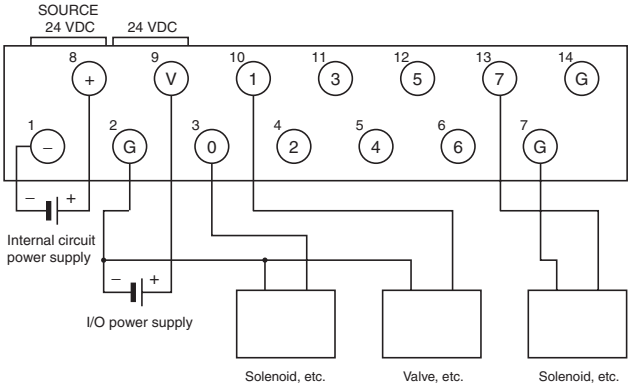
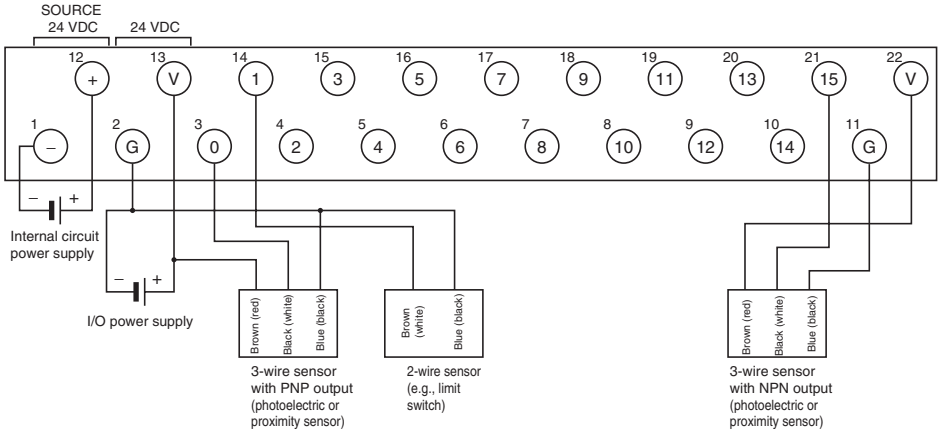


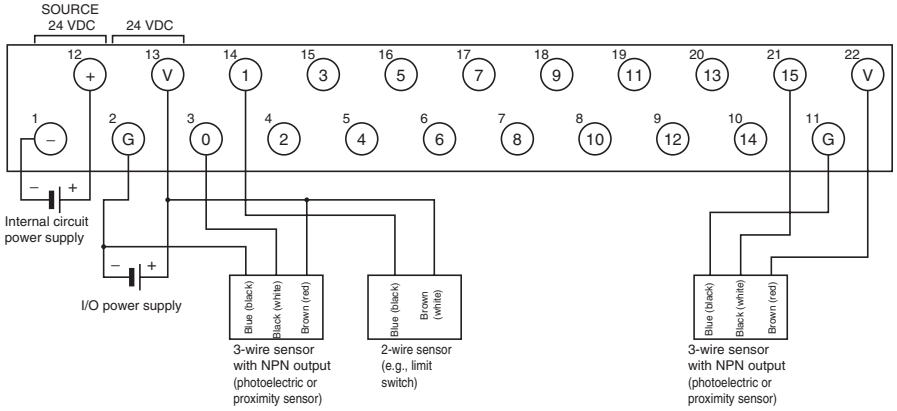
DRT1-OD08-1 (PNP)



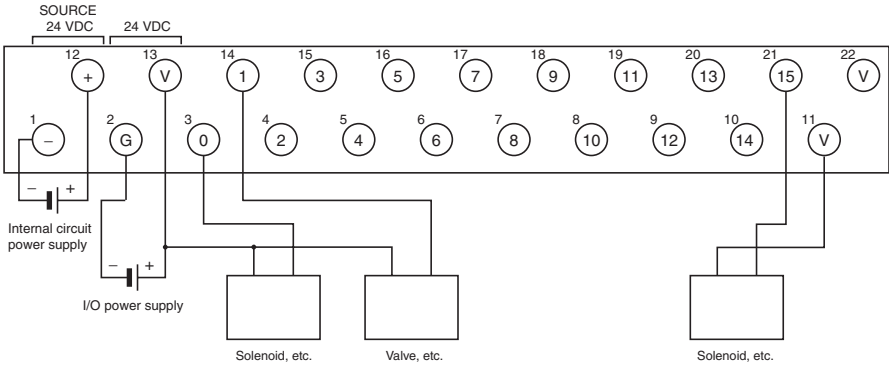
DRT1-ID16 (NPN)



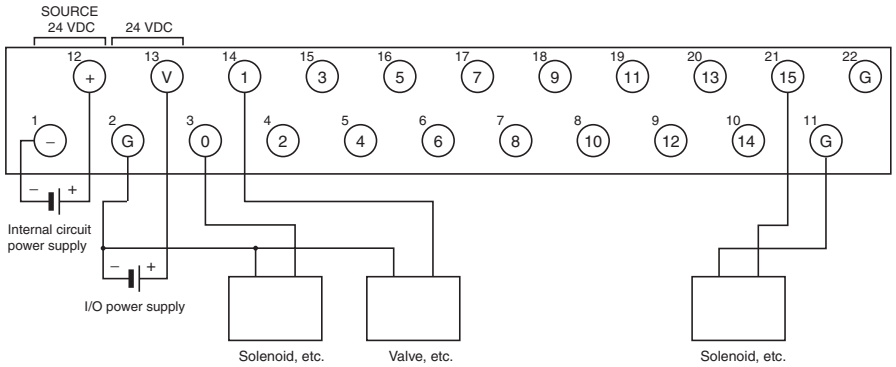
DRT1-ID16-1 (PNP)



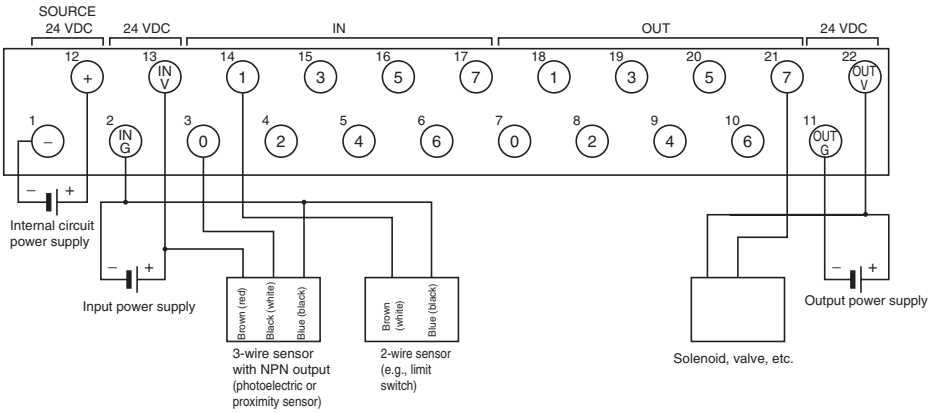
DRT1-OD16 (NPN)



DRT1-OD16-1 (PNP)



DRT1-MD16



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

Remote Adapters
DRT1-□D16X(-1)

Compact Remote Adapter with Sixteen I/O Points

- As compact as 85 x 40 x 50 mm (W x H x D).
- Relay and power MOS FET Relay outputs are available in combination with the G70D or other I/O Terminals.
- Two independent power supplies can be used because the I/O terminals are insulated from the internal circuits.
- DIN track mounting or screw mounting.
- Approved by UL and CSA.

Ordering Information

I/O classification	Internal I/O circuit common	I/O points	I/O connections	Internal circuit rated voltage	I/O rated voltage	Model
Input	NPN (+ common)	16	MIL socket flat cable connector	24 VDC	24 VDC	DRT1-ID16X
	PNP (– common)					DRT1-ID16X-1
Output	NPN (– common)					DRT1-OD16X
	PNP (+ common)					DRT1-OD16X-1

Specifications

■ Ratings

Input

Item		DRT1-ID16X (-1)
Input current		10 mA max./point (See note.)
ON delay time		9 ms max.
OFF delay time		14.5 ms max.
ON voltage	**NPN**	15 VDC min. between each input connector pin and V
	PNP	15 VDC min. between each input connector pin and G
OFF voltage	**NPN**	5 VDC max. between each input connector pin and V
	PNP	5 VDC max. between each input connector pin and G
OFF current		0.8 mA max.
Insulation method		Photocoupler

Note: The number of inputs must be 8 on average for each five-minute period.

Output

Item	DRT1-OD16X (-1)
Rated output current	30 mA/point
Residual voltage	1.2 V max.
Leakage current	0.1 mA max.
Insulation method	Photocoupler

■ Characteristics

Physical layer power supply voltage	11 to 25 VDC
Internal power supply voltage	20.4 to 26.4 VDC (24 VDC $^{+10\%}/_{-15\%}$)
I/O power supply voltage	
Current consumption (See note.)	Communications: 30 mA max. Internal circuit: 70 mA max. at 24 VDC
Dielectric strength	500 VAC for 1 min (1-mA sensing current between insulated circuits)
Noise immunity	Power supply normal: ±600 V for 10 minutes with a pulse width of 100 ns to 1 μs Power supply common: ±1,500 V for 10 minutes with a pulse width of 100 ns to 1 μs
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Malfunction: 200 m/s^2 Destruction: 300 m/s^2
Mounting strength	No damage when 50 N pull load was applied for 10 s in all directions (10 N min. in the DIN Track direction)
Terminal strength	No damage when 50 N pull load was applied for 10 s
Screw tightening torque	0.6 to 1.18 N·m
Ambient temperature	Operating: 0°C to 55°C (with no icing or condensation) Storage: –20°C to 65°C (with no icing or condensation)
Ambient humidity	Operating: 35% to 85%
Weight	95 g max.

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

■ Connecting DRT1-ID16X (-1)/OD16X (-1) to I/O Terminals

I/O Terminals		Remote Adapter
Input terminal	G7TC-ID16-5, G7TC-IA16-5	DRT1-ID16X
Output terminal	G70D-SOC16, G70D-FOM16, G7TC-OC16, G7TC-OC08, G70A-ZOC16-3	DRT1-OD16X

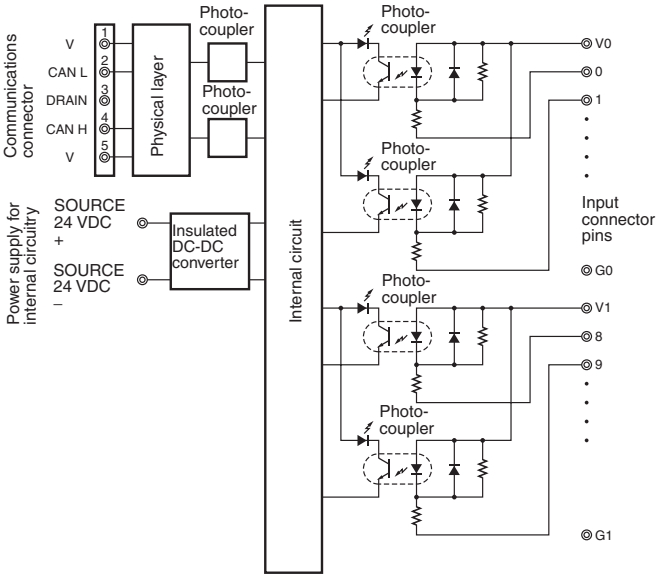
Note: A combination other than the above is not available. Do not connect the DRT1-OD16X to Input Terminals or PNP-type Terminals. Doing so may result in damage to the DRT1-OD16X due to polarity difference.

MIL Socket Flat Cable Connector (Order Separately)

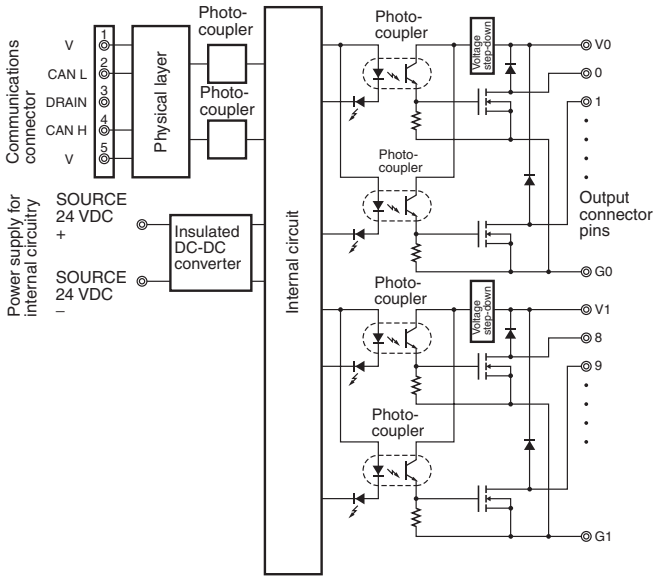
XG4A-2031	DIP straight terminal connector plug
XG4A-2034	DIP L terminal connector plug

Internal Circuit Configuration

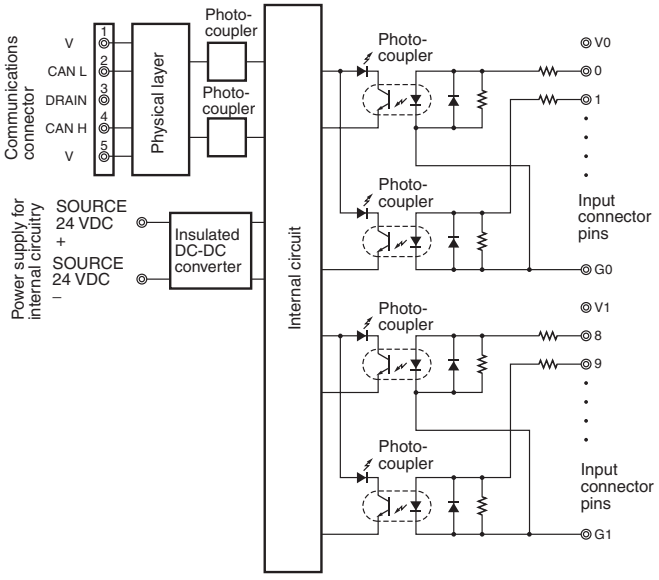
DRT1-ID16X



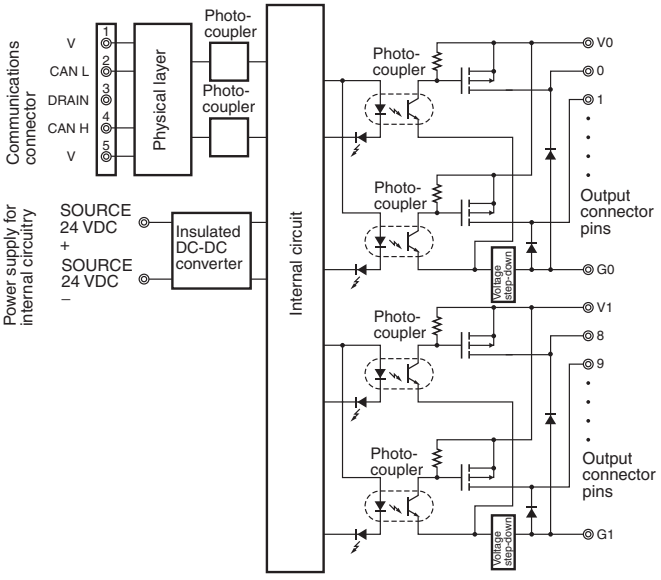
DRT1-OD16X



DRT1-ID16X-1

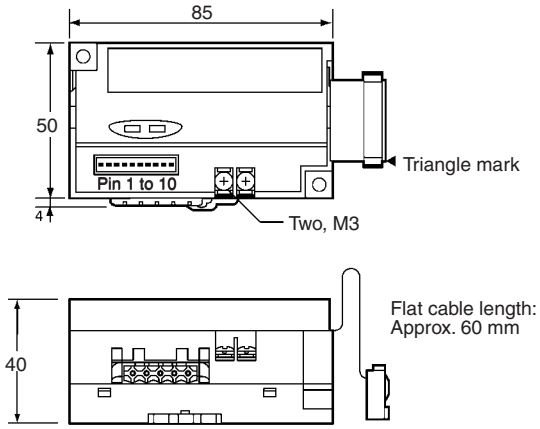


DRT1-OD16X-1

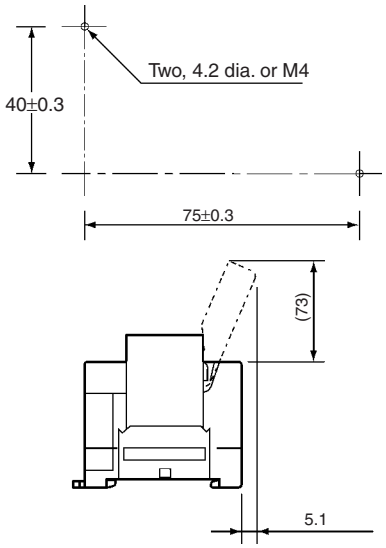


Dimensions (Unit: mm)

DRT1-ID16X (-1)
DRT1-OD16X (-1)

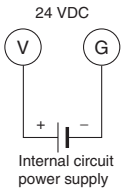


Mounting Holes



Connection Pin Arrangement

DRT1-ID16X(-1)

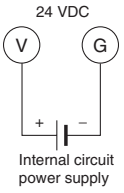


Connector Pin Arrangement

Pin No.	2	4	6	8	10	12	14	16	18	20
Function	V0	G0	IN 7	IN 6	IN 5	IN 4	IN 3	IN 2	IN 1	IN 0

Pin No.	1	3	5	7	9	11	13	15	17	19
Function	V1	G1	IN 15	IN 14	IN 13	IN 12	IN 11	IN 10	IN 9	IN 8

DRT1-OD16X(-1)



Connector Pin Arrangement

Pin No.	2	4	6	8	10	12	14	16	18	20
Function	V0	G0	OUT 7	OUT 6	OUT 5	OUT 4	OUT 3	OUT 2	OUT 1	OUT 0

Pin No.	1	3	5	7	9	11	13	15	17	19
Function	V1	G1	OUT 15	OUT 14	OUT 13	OUT 12	OUT 11	OUT 10	OUT 9	OUT 8

Note: The I/O power supply is supplied from the connector side.

Waterproof Terminals
DRT1-□D0□CL(-1)

Economical Waterproof Terminals Available in 8 Different Models

- **Reduced Labor**
  Connectors eliminate the need for connection tools.
- **Reduced Wiring**
  The Terminals can be mounted closer to Sensors and so less wiring is required for signal lines.
- **Relay Box Not Required**
  Waterproof, dust-tight, drip-proof construction (IP67) enables direct, on-site mounting.
- **Easier Maintenance**
  Significant reductions not only in setup time but also maintenance time.
- **Reduced Space, Improved Operability**
  Compact design: 160 × 5 mm (W × H) (8-point models)
  Connect to devices using connectors on front side. Switch settings also available.

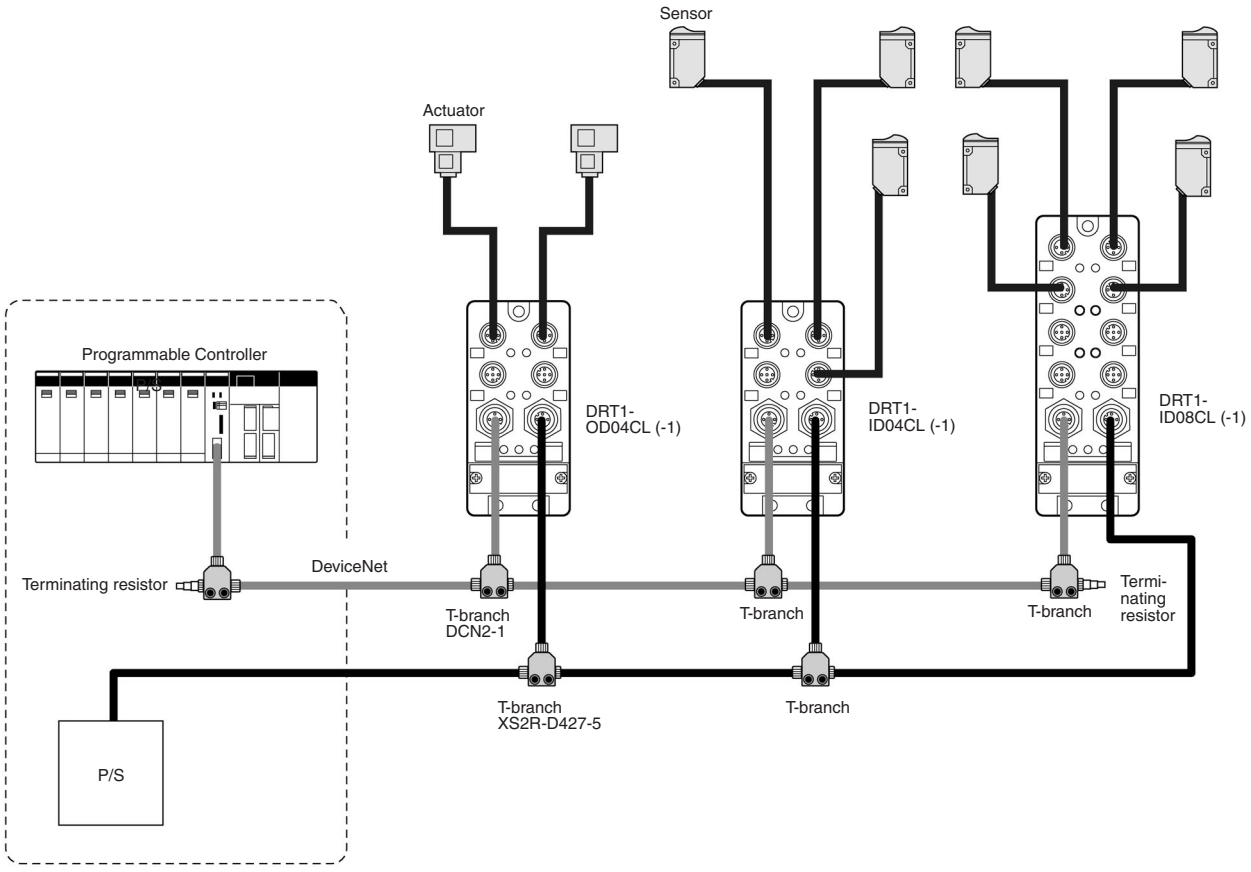
DRT1-□D04CL (-1)

DRT1-□D08CL (-1)

Ordering Information

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

System Configuration



Specifications

■ General Specifications

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

■ Input Specifications

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

■ Output Specifications

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

■ Applicable Connectors

Communications Connectors

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

Power Supply Connectors

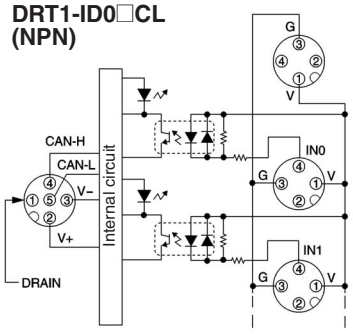
Model	Specifications
XS2C-D4□□	Assembling-type socket (crimp, solder, or screw)
XS2W-D42□-□□□-□	Cable with connector at both ends
XS2F-D42□-□80-□	Cable with connector at one end (socket)
XS2R-D427-5	T-branch connector

I/O Connectors

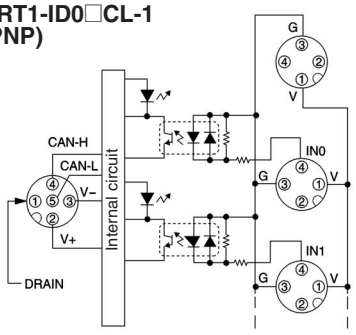
Model	Specifications
XS2G-D4□□	Assembling-type connector (crimp, solder, or screw)
XS2H-D421-□□□-□	Cable with connector at one end (plug)
XS2W-D42□-□□□-□	Cable with connector at both ends
XS2Z-12	Waterproof cover
XS2Z-15	Dust cover

Internal Circuit Diagrams

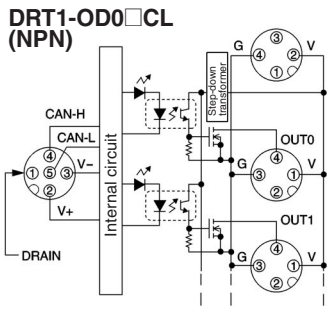
DRT1-ID0□CL (NPN)



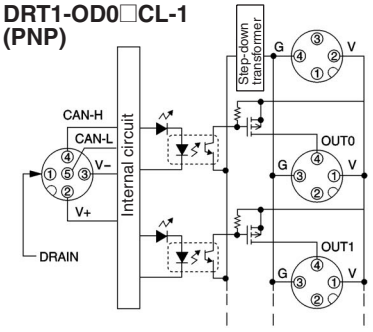
DRT1-ID0□CL-1 (PNP)



DRT1-OD0□CL (NPN)

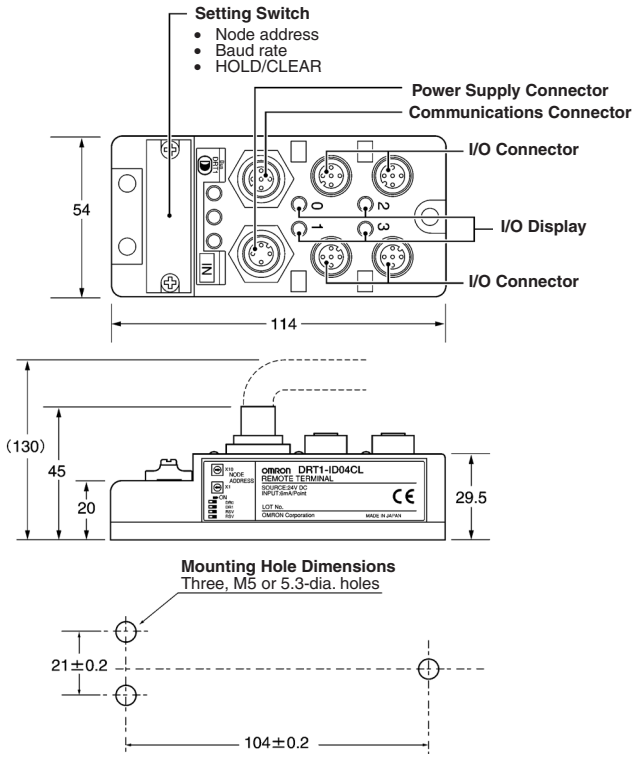


DRT1-OD0□CL-1 (PNP)

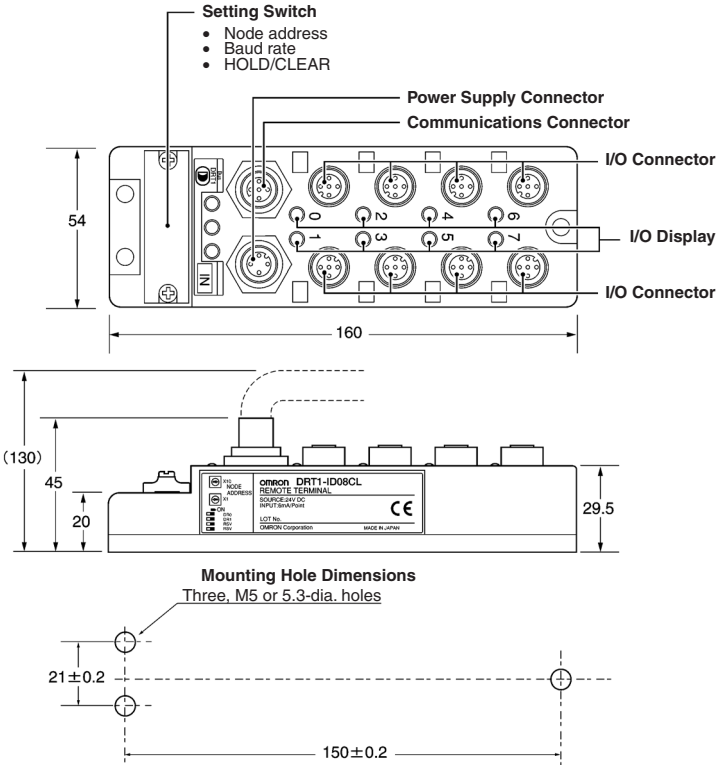


Dimensions (Unit: mm)

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



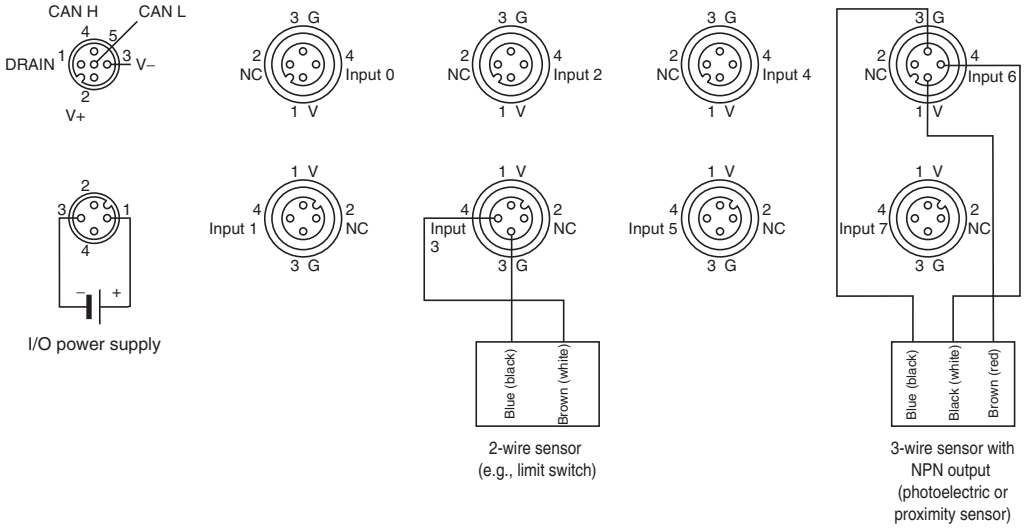
Models with 8 Points
DRT1-ID08CL/DRT1-ID08CL-1
DRT1-OD08CL/DRT1-OD08CL-1



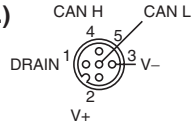
Wiring

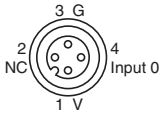
DRT1-ID04CL (See note.)
DRT1-ID08CL
(NPN)

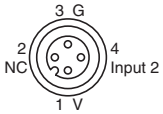
Note: The DRT1-ID04CL has only inputs 0 to 3

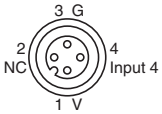


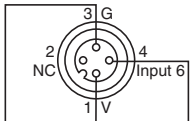
DRT1-ID04CL-1 (See note.)
DRT1-ID08CL-1
(PNP)



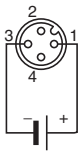


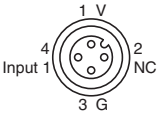


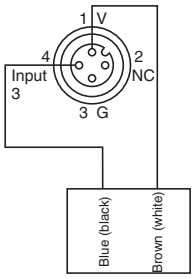


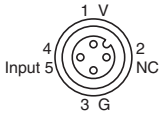


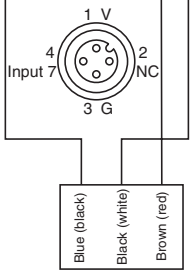
Note: The DRT1-ID04CL-1 has only inputs 0 to 3.



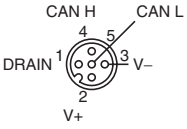


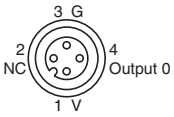


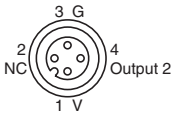


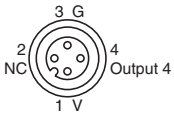


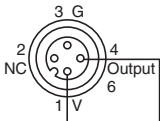
DRT1-OD04CL (See note.)
DRT1-OD08CL
(NPN)



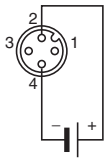


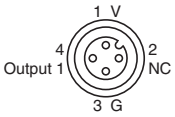


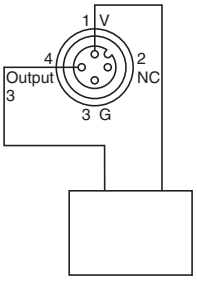


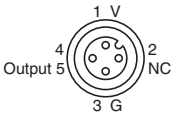


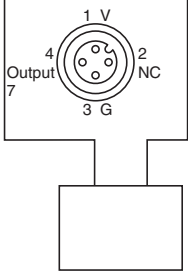
Note: The DRT1-OD04CL has only outputs 0 to 3.



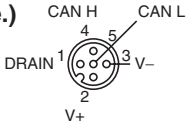


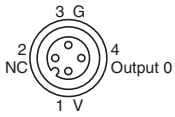


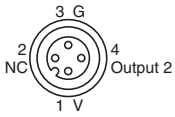


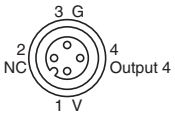


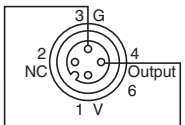
DRT1-OD04CL-1 (See note.)
DRT1-OD08CL-1
(PNP)



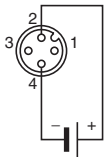


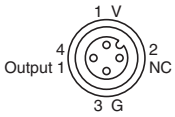


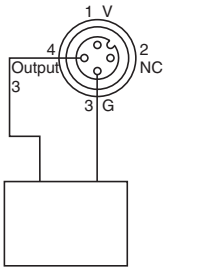


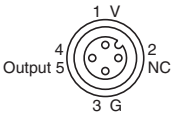


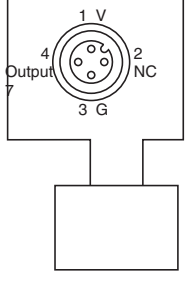
Note: The DRT1-OD04CL-1 has only outputs 0 to 3.









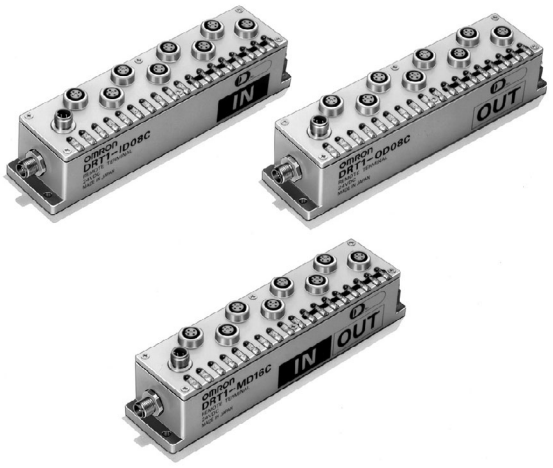


Environment-resistive Terminals
DRT1-□D08C/DRT1-□D16C(-1)

Dust-tight, Drip-proof (IP66) Terminals with Round Connectors for Easy Connection

8-point Transistor Model and 16-point Transistor Model (8 Inputs and 8 Outputs) are Available

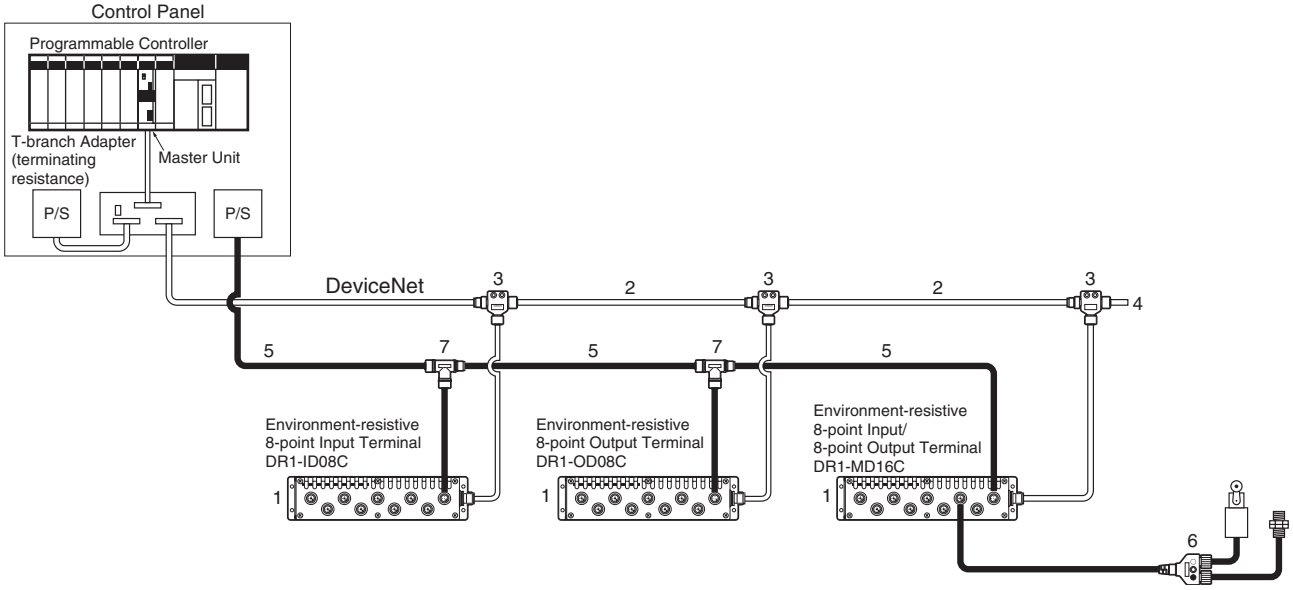
- Compact dimensions: 221 x 56 x 51 mm (W x H x D)
- No tools are required for connection to a variety of devices, such as sensors and valves incorporating connectors.
- Saves lead time for installation and maintenance.
- IP66 degree of protection ensures resistance to dust and drops or splashes of water.
- Conforms to EC directives.



Ordering Information

I/O classification	Internal I/O circuit common	I/O points	I/O specification	Rated power supply voltage	I/O port sully rated voltage	Model
Input	NPN (+ common)	8	Sensor I/O connector	24 VDC	24 VDC	DRT1-ID08C
		16				DRT1-HD16C
	PNP (– common)	16				DRT1-HD16C-1
Output	NPN (– common)	8				DRT1-OD08C
		16				DRT1-WD16C
	PNP (+ common)	16				DRT1-WD16C-1
I/O	NPN input (+ common) output (– common)	8 inputs and 8 outputs				DRT1-MD16C
	PNP input (– common) output (+ common)					DRT1-MD16C-1

System Configuration



No.	Name
1	DeviceNet Environment-resistive Terminals
2	DCA1 DeviceNet Connecting Cable
3	DCN2-1 DeviceNet T-branch Connector
4	DRS2 DeviceNet Terminator
5	XS2W Connecting Cable
6	Y-Joint Connector for Sensors
7	XS2R-D427-5 or XS2R-D422-5 T-branch Connector

Specifications

■ Ratings

Input

Item	DRT1-ID08C	DRT1-HD16C	DRT1-HD16C-1	DRT1-MD16C	DRT1-MD16C-1
Number of circuits	8 points (8 points/ common)	16 points (16 points/common)		8 points (8 points/common)	
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
OFF current	1 mA max.				
Input current	6 mA max./point (at 24 VDC between each input terminal and V terminal)		6 mA max./point (at 24 VDC between each input terminal and G terminal)	6 mA max./point (at 24 VDC between each input terminal and V terminal)	6 mA max./point (at 24 VDC between each input terminal and G terminal)
ON delay time	1.5 ms max.				
OFF delay time	2.5 ms max.				
Isolation method	Photocoupler				
External power supply capacity	1 A max. at 24 VDC				

Output

Item	DRT1-OD08C	DRT1-WD16C	DRT1-WD16C-1	DRT1-MD16C	DRT1-MD16C-1
Number of circuits	8 points (8 points/common)	16 points (16 points/common)		8 points (8 points/common)	
Rated output current	0.3 A/point, 2.4 A/common				
Residual voltage	1.2 VDC max. (0.3 A between each output terminal and ground)		1.2 VDC max. (0.3 A between each output terminal and V)	1.2 VDC max. (0.3 A between each output terminal and ground)	1.2 VDC max. (0.3 A between each output terminal and V)
Leakage current	0.1 mA max. (24 VDC between each output terminal and ground)		0.1 mA max. (24 VDC between each output terminal and V)	0.1 mA max. (24 VDC between each output terminal and ground)	0.1 mA max. (24 VDC between each output terminal and V)
ON delay time	0.5 ms max.				
OFF delay time	1.5 ms max.				
Isolation method	Photocoupler				

■ Characteristics

Communications power supply voltage	11 to 25 VDC
Internal power supply voltage	20.4 to 26.4 VDC (supplied from the communications connector) (24 VDC –15 to +10%)
Current consumption	Communications: 30 mA max. Internal circuit: 50 mA max. at 24 VDC (DRT1-WD16C(-1): 60 mA at 24 VDC)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	Malfunction: 10 to 57 Hz, 1.5-mm double amplitude and 57 to 150 Hz with 100 m/s^2 Destruction: 10 to 57 Hz, 1.0-mm double amplitude and 57 to 150 Hz with 70 m/s^2
Shock resistance	Malfunction: 200 m/s^2 Destruction: 300 m/s^2
Insulation resistance	20 MΩ min. at 250 VDC between insulated circuits and between all charged metal parts and non-charged metal parts
Dielectric strength	500 VAC for 1 min. between insulated circuits and 1,500 VAC for 1 min. between all charged metal parts and non-charged metal parts.
Ambient temperature	Operating: –10°C to 55°C Storage: –25°C to 65°C
Ambient humidity	Operating: 25% to 85% (with no condensation)
Ambient atmosphere	No corrosive gas
Degree of protection	IEC IP66
Mounting method	M5 screw mounting
Mounting strength	100 N for 10 s
Connector strength	No damage when 100 N pull load was applied for 10 s
Weight	590 g max.

■ Connectors

I/O Connectors

Model	Product
XS2G-D4□□	Connector assembly with press-fit, solder, or screw-connected plug
XS2H-D421-□□□	Connector on one end of cable
XS2W-D42□-□□□	Socket or plug on both ends of cable
XS2W-D426-□11F	Y-shaped joint with plug/socket at both ends of cable
XS2W-D426-□10F	Y-shaped joint with sockets on one end of cable
XS2W-D426-1	Y-shaped joint with plug/socket (no cable)
XS2Z-12	Waterproof cover
XS2Z-15	Dust cover

External Power Supply Connectors

Model	Product
XS2C-D4□□	Connector assembly with press-fit, solder, or screw-connected plug
XS2F-D42□-□80	Connector on one end of cable

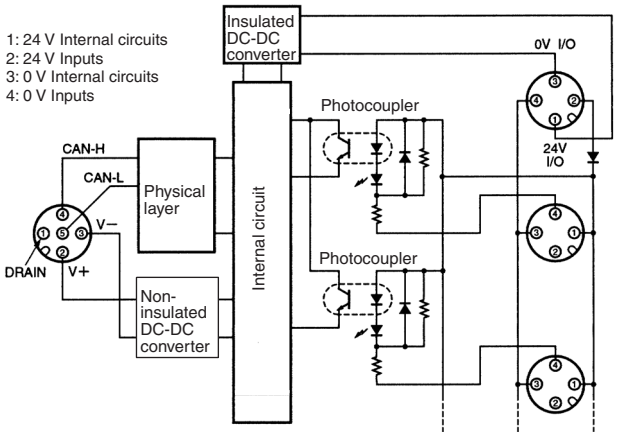
Communications Connectors

Model	Specifications
DCA1-5CN□□W1	Cable with connectors on both ends
DCA1-5CN□□F1	Cable with connector socket on one end
DCA1-5CN□□H1	Cable with connector plug on one end
DCN2-1	T-branch Connector
DRS2-1	Connector plug with terminating resistance

Internal Circuit Configuration

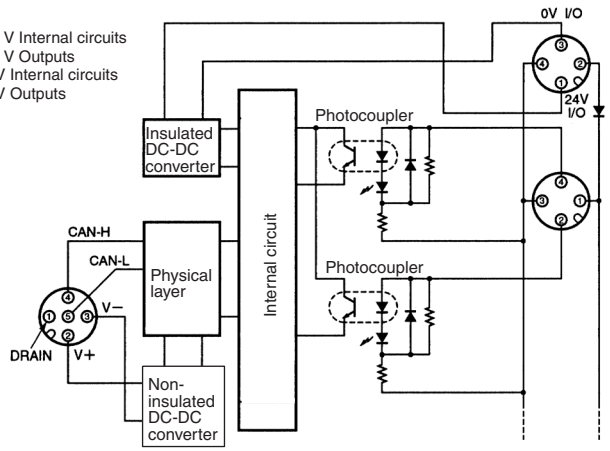
DRT1-ID08C

1: 24 V Internal circuits
2: 24 V Inputs
3: 0 V Internal circuits
4: 0 V Inputs



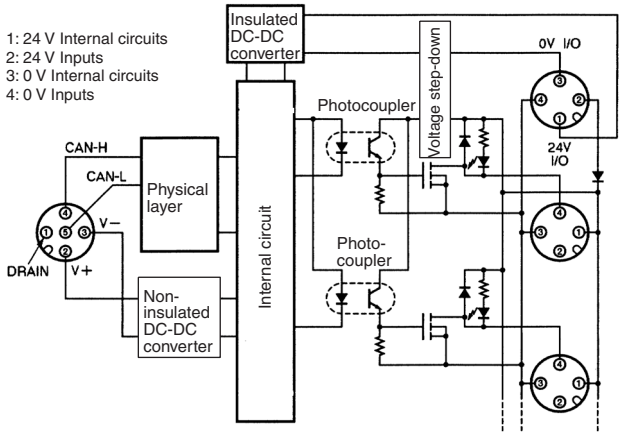
DRT1-HD16C-1

1: 24 V Internal circuits
2: 24 V Outputs
3: 0 V Internal circuits
4: 0 V Outputs



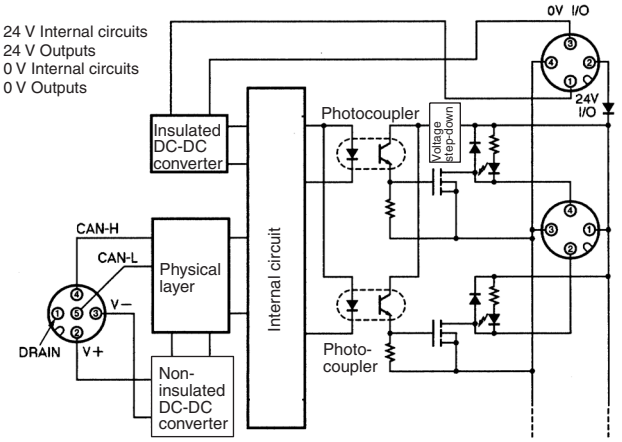
DRT1-OD08C

1: 24 V Internal circuits
2: 24 V Inputs
3: 0 V Internal circuits
4: 0 V Inputs



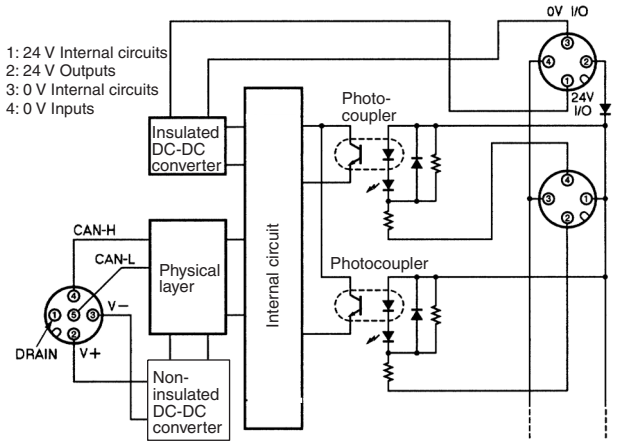
DRT1-WD16C

1: 24 V Internal circuits
2: 24 V Outputs
3: 0 V Internal circuits
4: 0 V Outputs



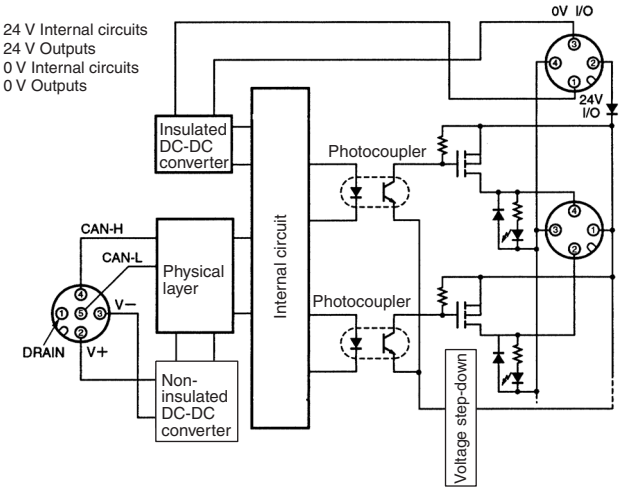
DRT1-HD16C

1: 24 V Internal circuits
2: 24 V Outputs
3: 0 V Internal circuits
4: 0 V Inputs



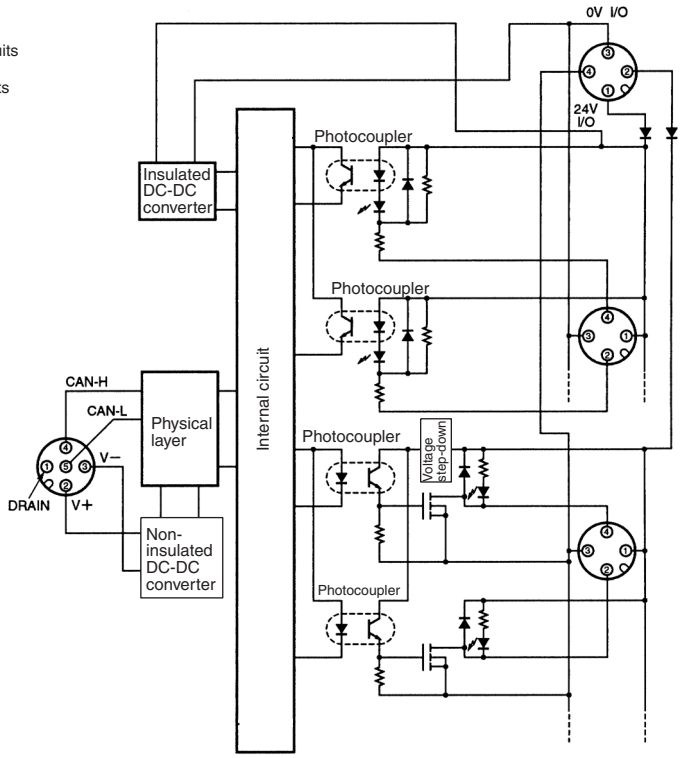
DRT1-WD16C-1

1: 24 V Internal circuits
2: 24 V Outputs
3: 0 V Internal circuits
4: 0 V Outputs



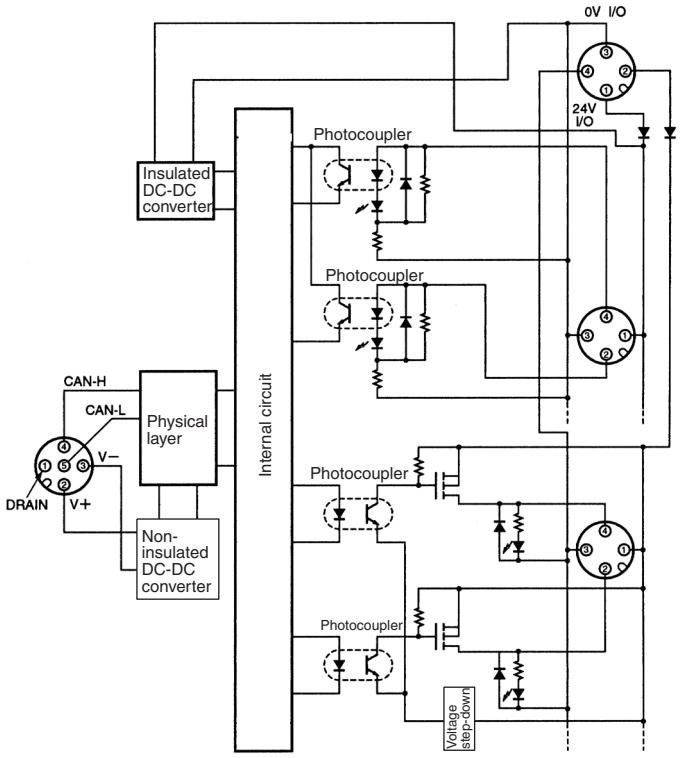
DRT1-MD16C

1: 24 V Internal circuits
2: 24 V Inputs
3: 0 V Internal circuits
4: 0 V Inputs

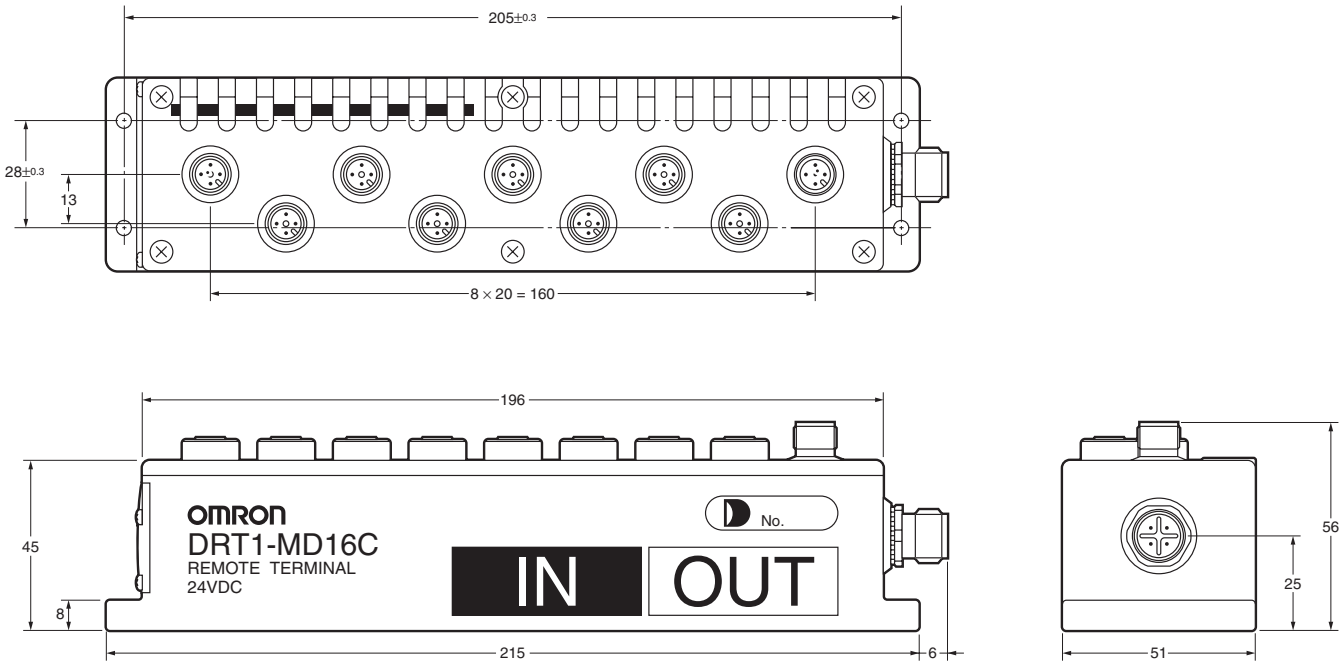


DRT1-MD16C-1

1: 24 V Internal circuits
2: 24 V Outputs
3: 0 V Internal circuits
4: 0 V Outputs

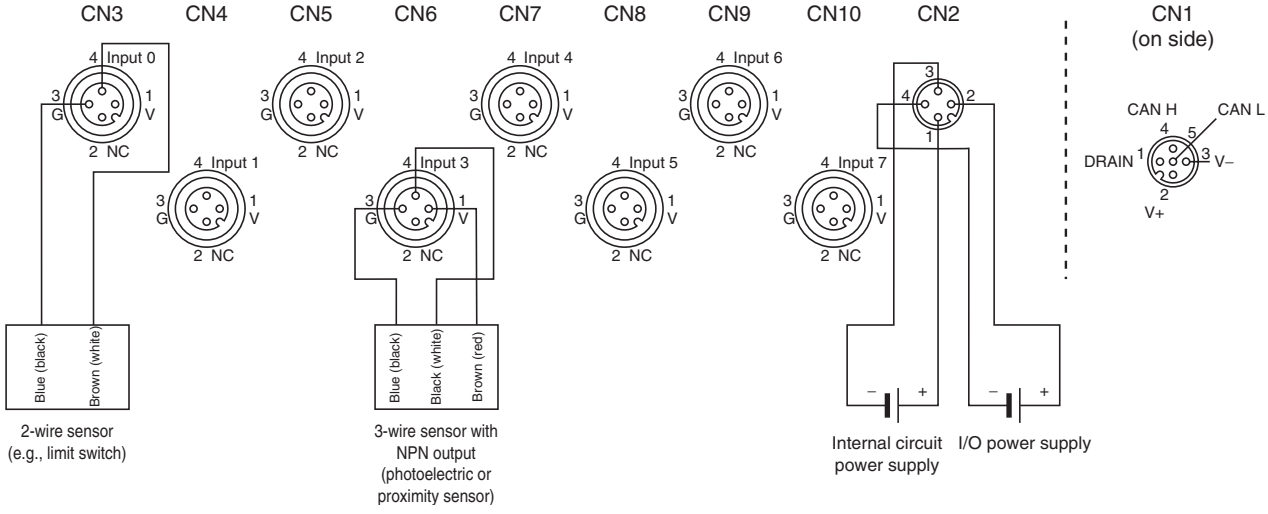


Dimensions (Unit: mm)

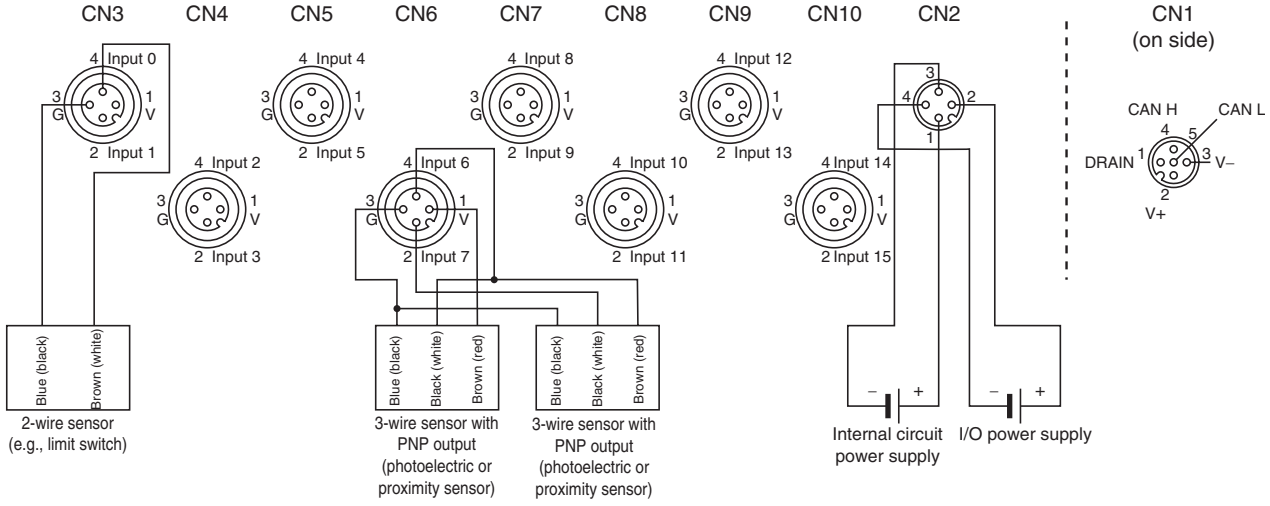


Wiring

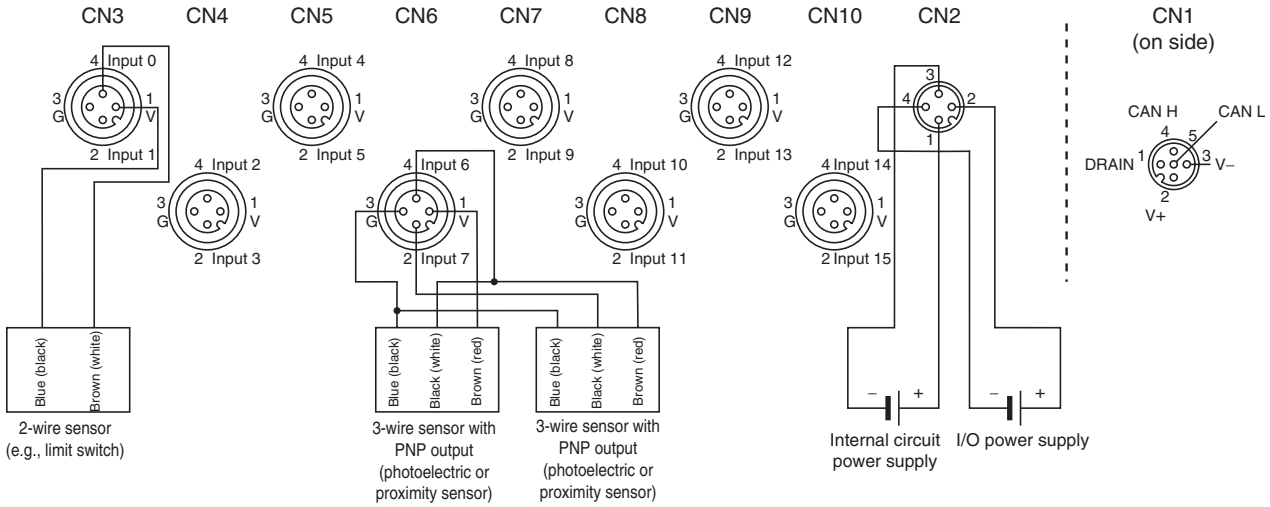
DRT1-ID08C (NPN)



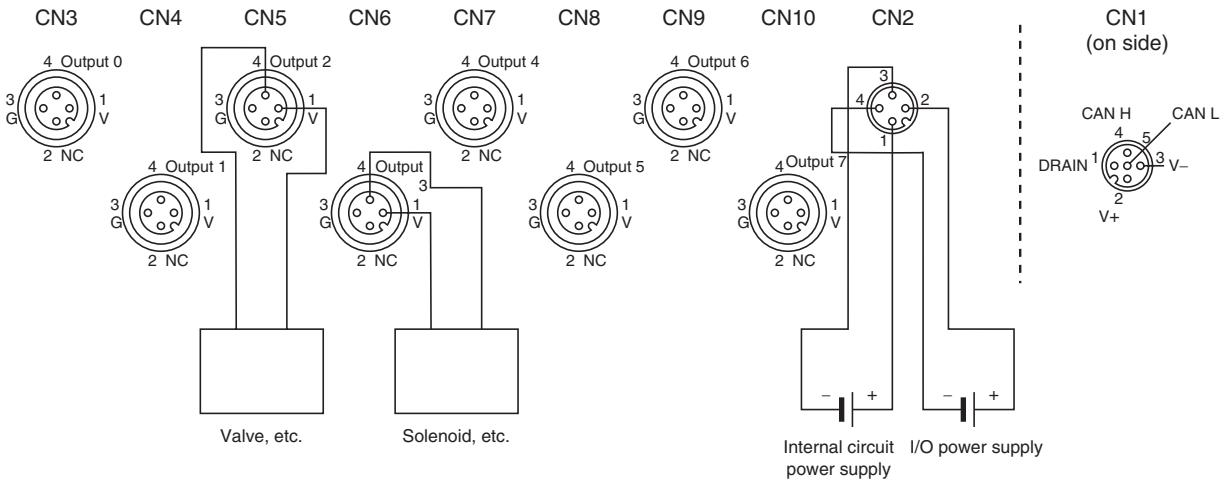
DRT1-HD16C (NPN)



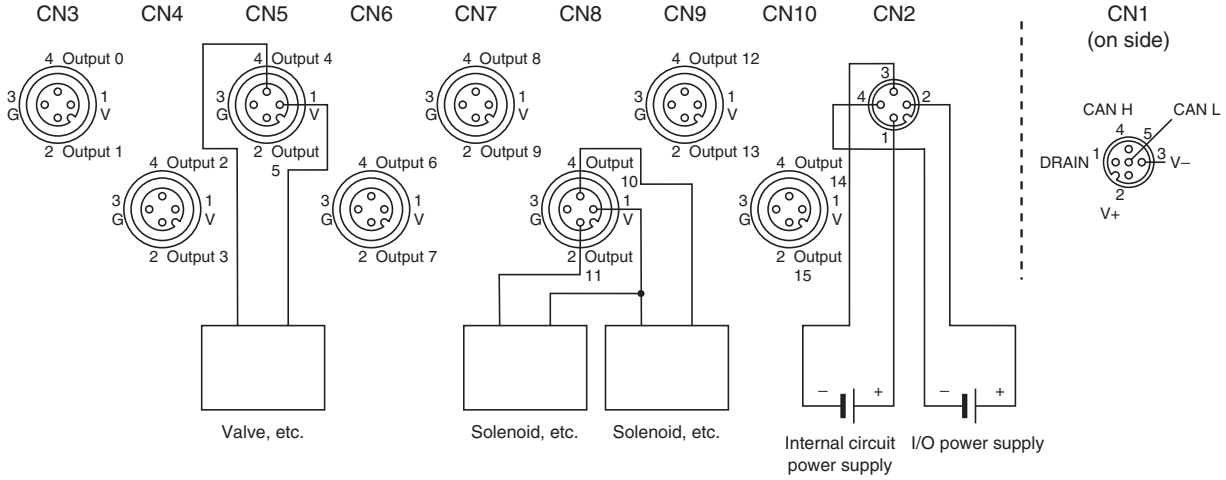
DRT1-HD16C-1 (PNP)



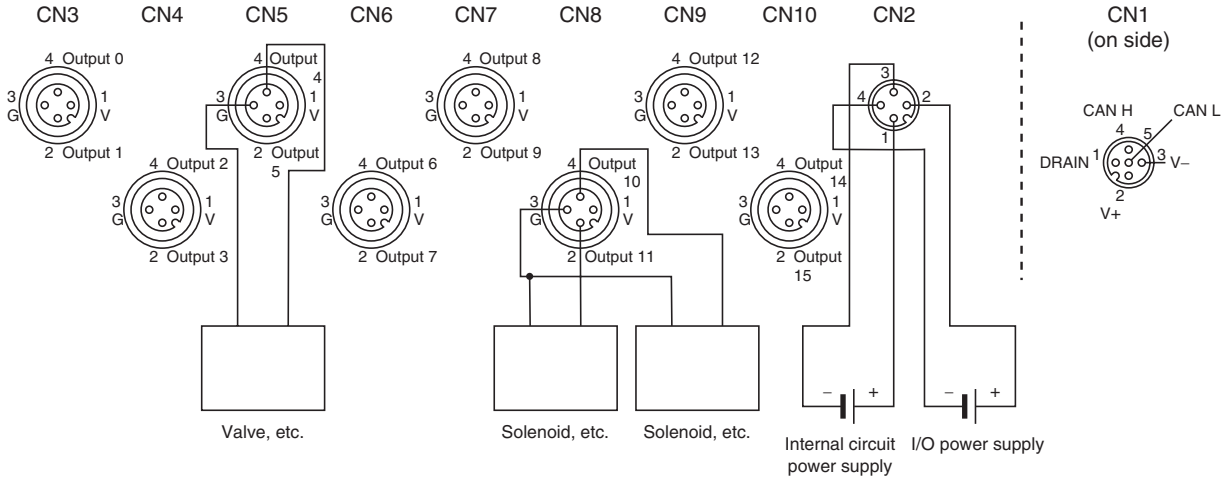
DRT1-OD08C (NPN)



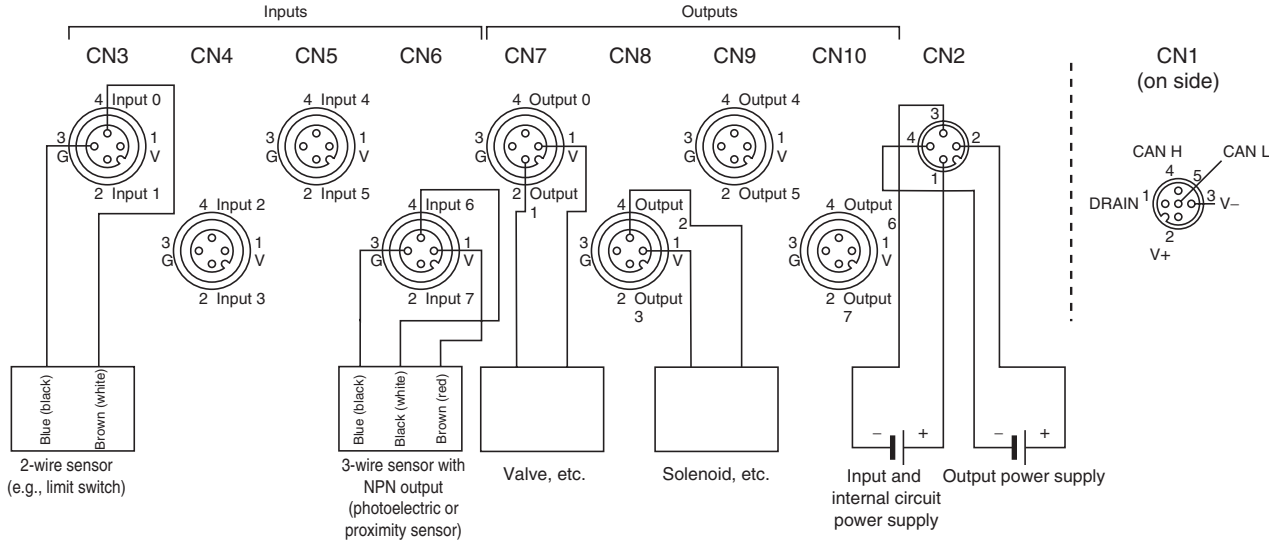
DRT1-WD16C (NPN)



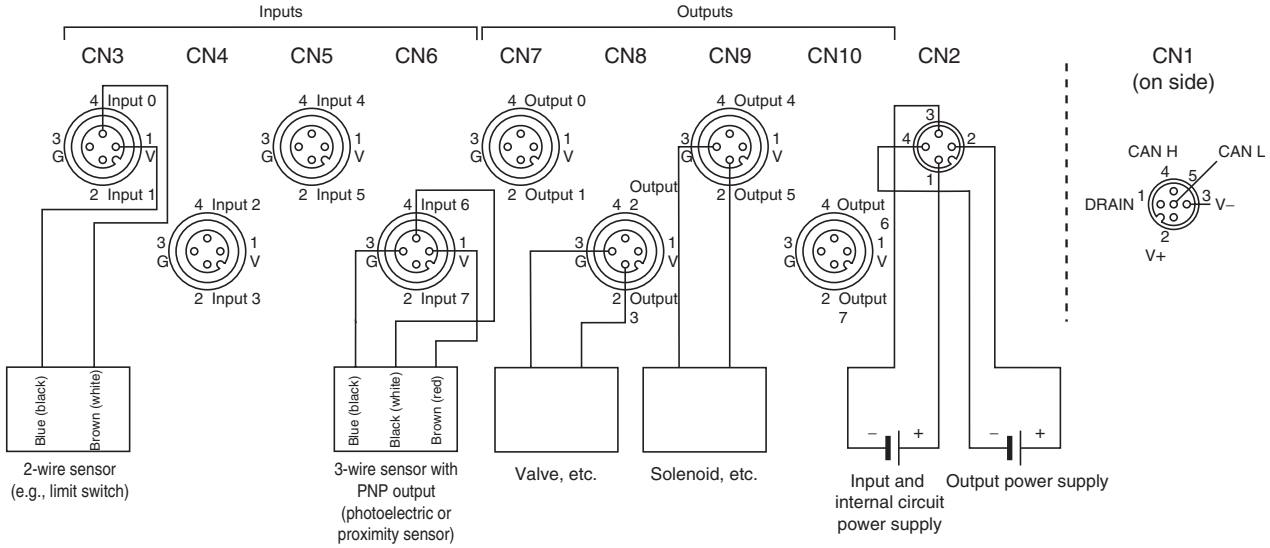
DRT1-WD16C-1 (PNP)



DRT1-MD16C (NPN)



DRT1-MD16C-1 (PNP)



B7AC Interface Unit
DRT1-B7AC

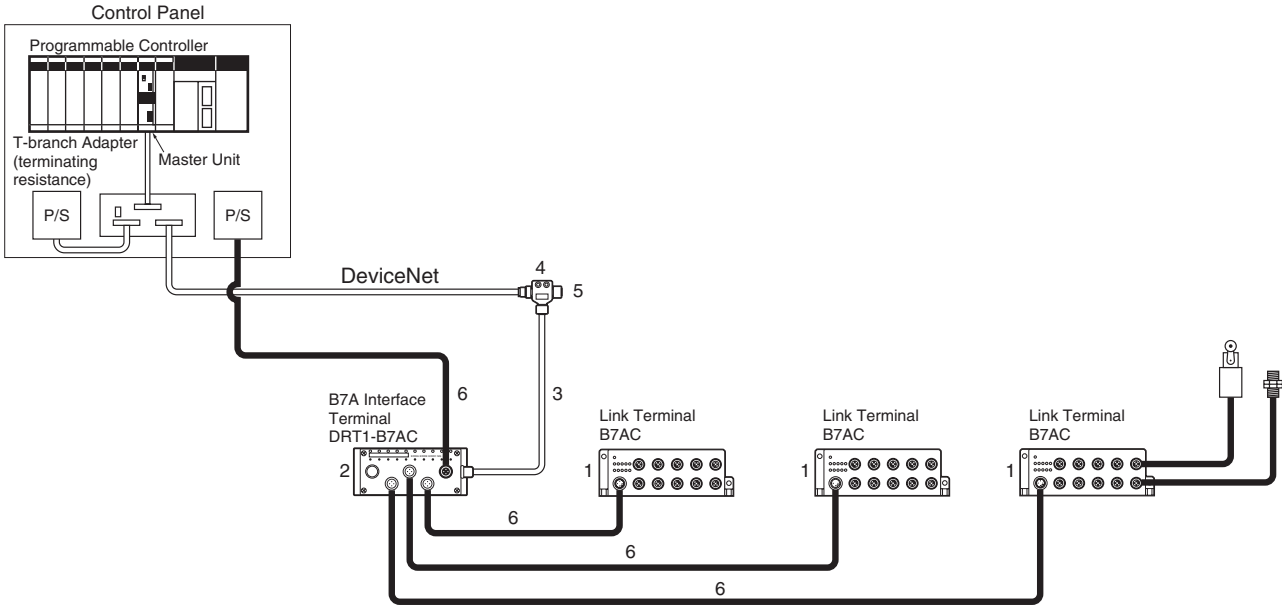
Up to Three Sensor I/O Connector-type B7AC Link Terminal Units can be connected to the DeviceNet via the B7AC Interface Unit: 10 Inputs × 3 Units

- Three B7AC Link Terminal Units can be connected.
- Incorporates connectors, thus not requiring any tools to connect devices.
- Environment-resistive, dust-proof and drip-proof construction satisfies IP66.
- As compact as 135 × 56 × 51 mm (W × H × D).

Ordering Information

Name	Number of ports	Terminal	I/O points	Model
B7AC Interface Unit	3	Sensor I/O connector	10 inputs × 3 Units	DRT1-B7AC

System Configuration



No.	Name
1	Link Terminal
2	DeviceNet B7AC Interface Terminal
3	DCA1 DeviceNet Connecting Cable
4	DCN2-1 DeviceNet T-branch Connector
5	DRS2 DeviceNet Terminator
6	XS2W Connecting Cable

Specifications

■ General

Communications power supply voltage	11.0 to 25.0 VDC
External power supply voltage	20.4 to 26.4 VDC (24 VDC –15%/+10%)
Current consumption	Unit power supply: 500 mA max. (when B7AC input is OFF)
Dielectric strength	500 VAC for 1 min. (detection current of 1 mA between insulated circuits)
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power line)
Vibration resistance	Malfunction: 10 to 150 kHz, 0.5-mm single-amplitude or 70 m/s^2 Destruction: 10 to 150 kHz, 0.75-mm single-amplitude or 100 m/s^2
Shock resistance	Malfunction: 200 m/s^2 Destruction: 300 m/s^2
Ambient temperature	Operating: –10°C to 55°C Storage: –25°C to 65°C
Ambient humidity	25% to 85% (with no condensation)
Ambient environment	No corrosive gases.
Degree of protection	IEC IP66
Mounting method	M5 mounting screws
Mounting strength	No damage when 100 N pull load applied for 10 s
Connector strength	No damage when 100 N pull load applied for 10 s
Weight	500 g max.
Dimensions	135 × 56 × 51 mm (W × H × D)

■ Applicable Cables/Connectors

DeviceNet Communications

DCA1-5CN□□W1	Cable with connectors at both ends
DCA1-5CN□□F1	Cable with connector at socket-end only
DCA1-5CN□□H1	Cable with connector at plug-end only
DCN2-1	T-branch connector
DRS2-1	Connector plug with terminating resistance

Power Supply

XS2C-D4□□	Combination connector (solderless/soldered/wired type) socket
XS2W-D42□-□□□-□	Cable with connectors at both ends
XS2F-D42□-□80	Cable with connector at socket-end only
XS2R-D427-5	T-branch connector

I/O (B7A Communications)

XS2G-D4□□	Combination connector (solderless/soldered/wired type) plug
XS2H-D421-□□□-□	Cable with connector at plug-end only
XS2W-D42□-□□□-□	Cable with connectors at both ends
XS2Z-12	Waterproof cover
XS2Z-15	Dustproof cover

■ Communications

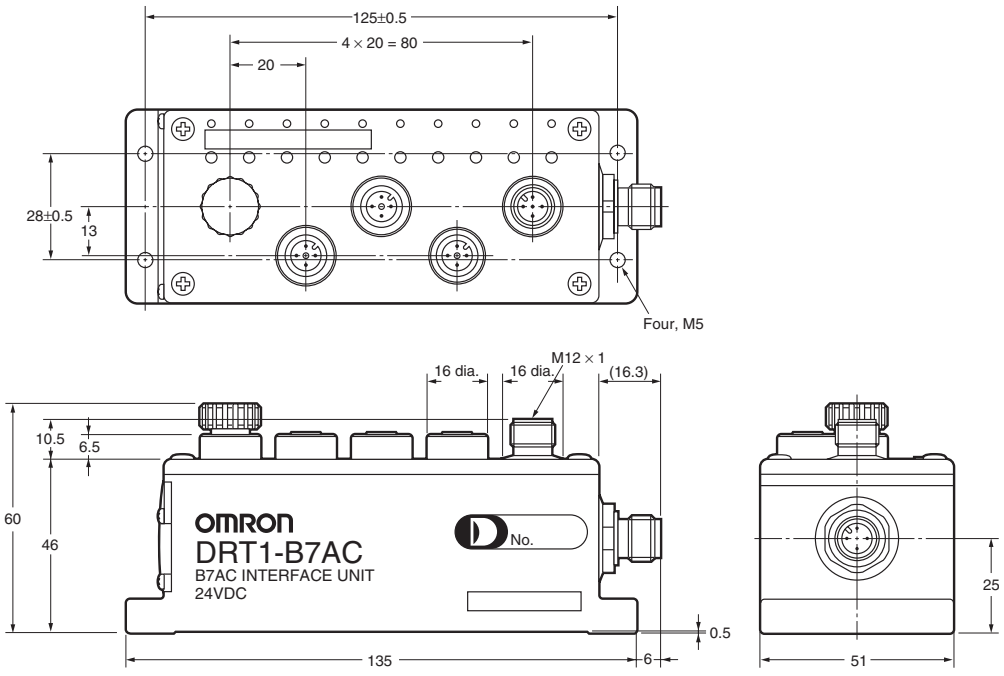
B7A

Transmission method	Split multiplex transmission in one direction.
Transmission distance	50 m max. (standard model), 30 m max. (high-speed model)
Transmission extension time (See note.)	High-speed model: Average time 3 ms Maximum time 5 ms standard model: Average time 19.2 ms Maximum time 31 ms
Number of ports	3
Terminal	Sensor I/O connector
I/O points	30 inputs (10 inputs × 3 ports)

Note: The transmission extension time is set to high-speed or standard according to the DIP switch setting.

Dimensions (Unit: mm)

DRT1-B7AC



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.

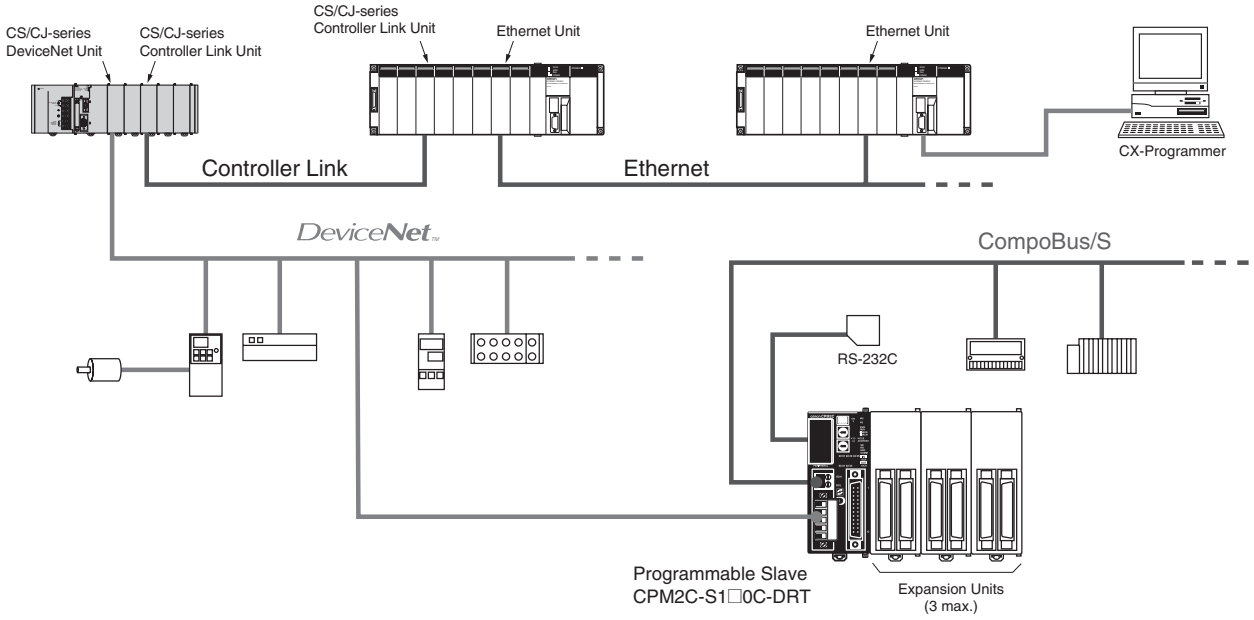
- A Programmable Slave can be programmed from a CX-Programmer up to 3 network levels away. (Includes the DeviceNet network itself. Possible only with CX-Programmer Ver. 2.1 or later and a Programmable Slave Ver. 1.04 or later.)
- DeviceNet Slave Functions
  Multiword I/O links and explicit messages are 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).
2. For details on Programmable Slave specifications, refer to the *Programmable Slave Catalog* (R071).

System Configuration



Specifications

■ 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
	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
Max. I/O capacity	CPU Unit only: 10 points Expansion I/O: 96 points (32-point Expansion I/O Unit × 3) (Up to 3 Expansion I/O Units can be connected.) 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)

Item			Specifications	
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 μs 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, CQM1-PRO01, or CQM1H-PRO01	
	SSS		IBM PC/AT or compatible (SSS Ver. 1.1 or later)	
	CPT		Windows edition	
	CX-Programmer		Windows edition	

Note: 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 power supply voltage	11 to 25 VDC
Current consumption	Communications: 30 mA max.
Max. number of I/O points	512 inputs (32 words), 512 outputs (32 words)
Default areas	Output area (area linking with the Master's output area): IR030 to IR037 (CompoBus/S output area) Input area (area linking with the Master's input area): IR020 to IR027 (CompoBus/S input area)

CompoBus/S

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

Note: 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

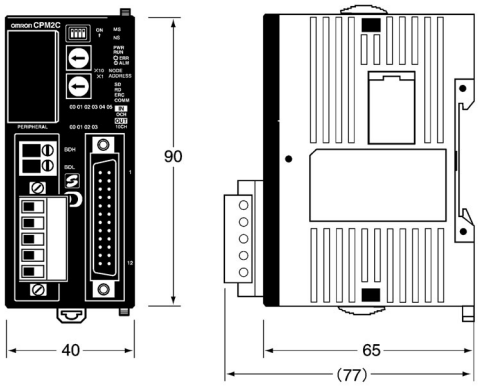
Cables for Connector–Terminal Conversion Units

Cable	Connected product	Remarks
XW2Z-□□□A	XW2D-20G6	Slim type (with M3-screw terminal block)
	XW2B-20G4	Flat cable connector type (with M3 (minus) terminal block)

Note: For details on applicable cables, refer to pages 230 to 231.

Dimensions (Unit: mm)

CPM2C-S1□C-DRT



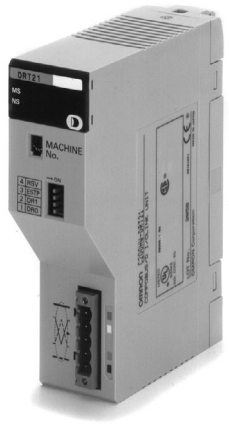
Refer to the *CPM2C-S Programmable Controller Operation Manual* (Cat. No. W377) for details.

I/O Link Unit
C200HW-DRT21

I/O Link Unit is ideal for distributed control.

PLC can be used as an Intelligent Slave on the DeviceNet.

- Intelligent DeviceNet Slave
- Supports I/O and message communications.
- Maximum I/O area size:
  512 input points (32 words)
  512 output points (32 words)
- Programming Console or Configurator freely allocates I/O areas.



Ordering Information

Name	Max. number I/O points	Model
I/O Link Unit (for SYSMAC CS1, C200HX/HG/HE)	512 inputs, 512 outputs (1,024 points in total)	C200HW-DRT21

Specifications

■ Ratings/Characteristics

General Specifications

Item	Specification
Communications power supply voltage	11 to 25 VDC
Current consumption	Communications power supply: 45 mA max. Internal circuit power supply: 250 mA max. at 5 VDC
Max. number of I/O points	512 input points (32 words) 512 output points (32 words)
Default area	Write area (linking with Master's write area): 1 word out of 350 IR words Read area (linking with Master's read area): 1 word out of 50 IR words
No. of connectable Units	10 max. (CS1/C200HX/HG/HE CPU Unit handles up to 880 I/O points)
	16 max. (CS1/C200HX/HG/HE CPU Unit handles more than 880 I/O points)
Weight	250 g max.

■ Function Specifications

Settings (Slave)

Item	Specification	
Function	A write area block and a read area block can be freely allocated to any areas or addresses respectively	
Allowable setting area	Both read and write areas can be allocated to IR, DM, HR, AR, LR, T/C, and EM areas	
First address	A readable or writable area by word (with some restrictions)	
Area size	Set in 1-byte increments up to 64 bytes for both read and write areas	
Setting method	Configurator	Refer to the *DeviceNet Configurator Operation Manual* (W328).
	Programming Console	**1.** Write the set value to I/O setting area allocated to the Special I/O Area. **2.** Turn ON the software switch allocated to the Special I/O Area and write the settings. **3.** Turn the Programming Console OFF and ON or reset the AR area.

Message Communications

Item	Specification
Function	Supports messages that can be written to or read from the CS1/C200HX/HG/HE's user I/O areas (i.e., IR, DM, HR, AR, LR, T/C, and EM areas)
Master	OMRON's Master Unit or compatible unit from Rockwell
Max. message size	Slave (C200HW-DRT21) 200 bytes per READ or WRITE command

Dimensions

35 × 130 × 101 mm (W × H × D)

Precautions

Refer to the relevant catalog for details on CS1-series and C200HX/HG/HE PLCs (CS1 Series: P047; C200HX/HG/HE: P036).

I/O Link Unit
CQM1-DRT21

Makes Distributed Control Possible

- Connects to more than one CQM1H PLC through a DeviceNet communications path.
- A maximum of 32 I/O points (16 inputs and 16 outputs).

Ordering Information

Name	Max. number of I/O points	Model
I/O Link Unit (for CQM1H PLCs)	32 points (16 inputs/16 outputs)	CQM1-DRT21

Specifications

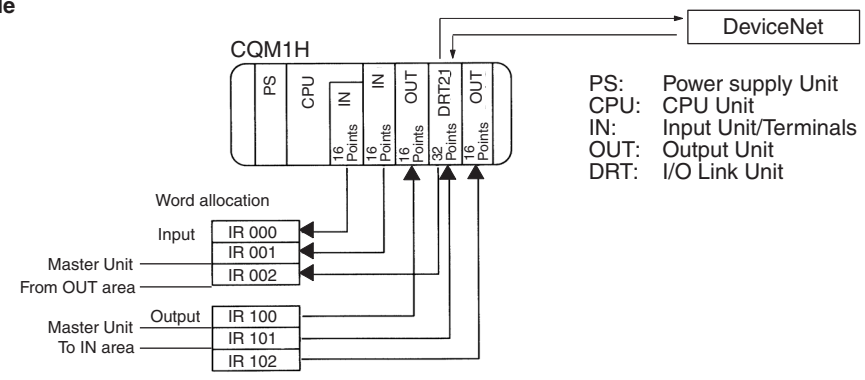
■ General Specifications

Communications power supply voltage	11 to 25 VDC
Current consumption	Communications: 40 mA max. Internal circuit: 80 mA max. at 5 VDC
Max. number of I/O points	32 points (16 inputs/16 outputs)
Number of allocated words	Input: 1 word, Output: 1 word
Weight	185 g max.

■ CQM1H Word Allocation

In the CQM1H PLCs, an I/O Link Unit is treated just like an I/O Unit with one input word and one output word, so word allocation is identical to a standard I/O Unit. Words are allocated from the left side of the PLC, beginning with IR 001 for inputs and IR 100 for outputs.

Example



■ Ratings

The ratings of the Unit are the same as those of the CQM1H.

Dimensions

32 × 110 × 107 mm (W × H × D)

Precautions

Refer to the *SYSMAC CQM1H Catalog* (Cat. No. P050) details on CQM1H PLCs.

I/O Link Unit
CPM1A-DRT21

I/O Link Unit for CPM2A/CPM1A PLCs

- Functions as a slave for DeviceNet.
- Equipped with 32 input points and 32 output points for I/O exchange with the master.
- International standards: UL, CSA, CE.

Ordering Information

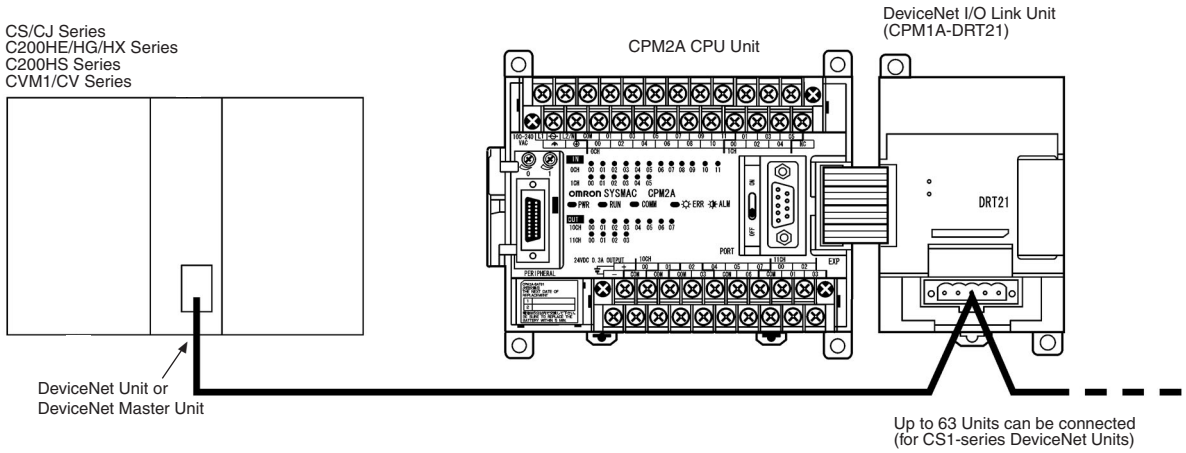
Name	Max. number of I/O points	Model
I/O Link Unit (for CPM2A and CPM1A PLCs)	32 inputs/32 outputs	CPM1A-DRT21

Specifications

Communications power supply voltage	11 to 25 VDC
Current consumption	10 mA max. at 24 VDC
Max. number of I/O points	Inputs: 32; Outputs: 32
Number of allocated words in CPM2A I/O memory	Input: 2 words; Output: 2 words (Same allocation as for other Expansion Units.)
Node address setting method	Set using DIP switch.
Max. number of connectable Units	3 max.

Application Examples

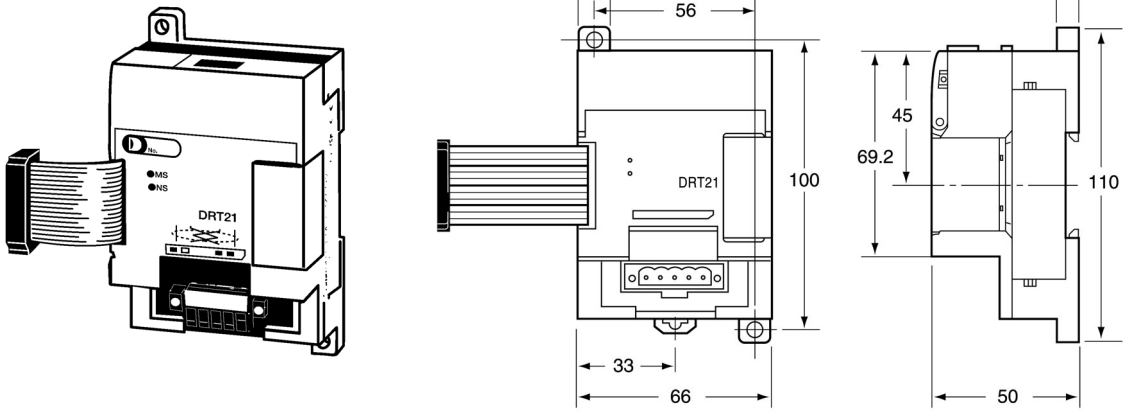
■ Configuration Example



Note: Up to 3 DeviceNet I/O Link Units and other Expansion I/O Units can be mounted to CPM1A/CPM2A CPU Units.

Dimensions (Unit: mm)

CPM1A-DRT21



Note: A terminal block is provided with the Unit.

Precautions

Refer to the relevant catalog for details on CPM1A and CPM2A PLCs (CPM1: P035; CPM2A/CPM2C: P049).

RS-232C Unit
DRT1-232C2

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

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

Ordering Information

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

Specifications

■ Ratings/Characteristics

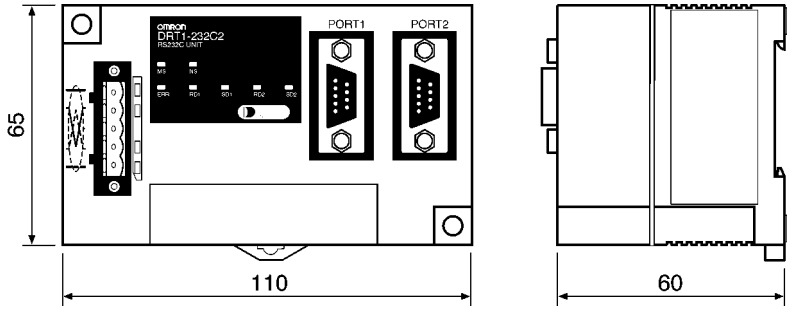
General Specifications

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

RS-232C Communications Specifications

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

Dimensions (Unit: mm)



DeviceNet Communications Unit for Fiber Amplifiers
E3X-DRT21

Connect E3X-DA-N Series Digital Fiber-optic Amplifier Units through DeviceNet

- Use remote I/O communications can to monitor ON/OFF data, status flags, and each sensor's incident light level.
- Use explicit message communications for teaching, monitoring, and changing settings in the Fiber-optic Amplifier Units.
- Significantly reduces wiring since ON/OFF output and power supply wiring are not required.

Ordering Information

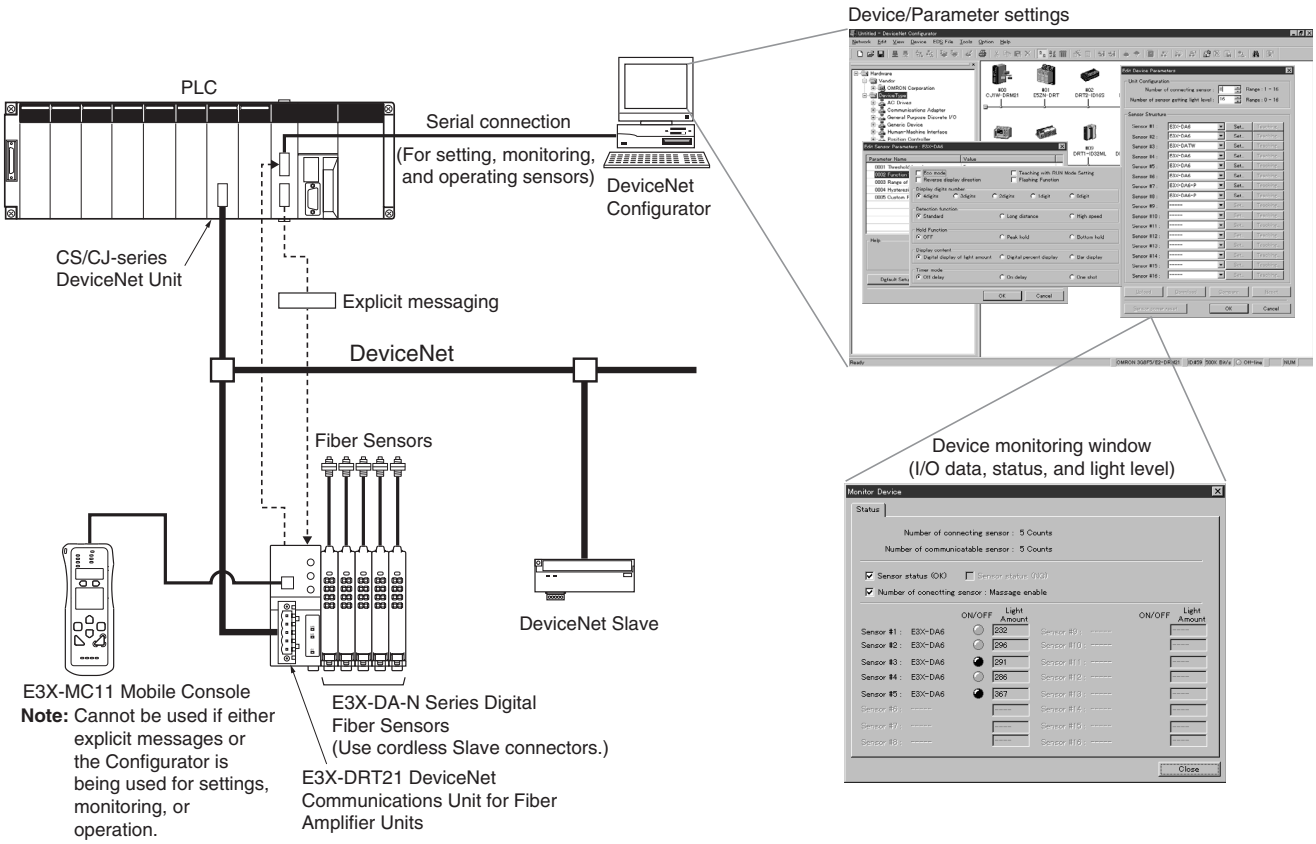
■ Communications Unit for Fiber Amplifier Units

Name	Model
DeviceNet Communications Unit for Fiber Amplifier Units	E3X-DRT21

- E39-TM1 Terminal Block Unit
- E3X-DA6-P Fiber-optic Amplifier
- E3X-CN02 Reduced-wiring Connector

Note: Order the Fiber-optic Amplifier and Reduced-wiring Connector as a set.

System Configuration



Specifications

■ DeviceNet Communications

Communications power supply voltage	11 to 25 VDC
Internal current consumption (See note 1.)	70 mA max.
Max. number of I/O points	1 to 180 words (Depends on the mode and the number of Fiber Amplifier Units connected.)
Fiber-optic Amplifier Units (See note 2.)	E3X-DA6, E3X-DA8, E3X-DAB6, E3X-DAB8, E3X-DAG6, and E3X-DAG8 (See note 3.)
	E3X-DA6TW, E3X-DA8TW, E3X-DA6-P, E39-TM1
Max. number of Fiber-optic Amplifier Units	16 max.
Ambient temperature	Operating: −20° to 55°C Storage: −30° to 70°C (with no icing or condensation)
Ambient humidity	35% to 85% (with no condensation)
Weight (including packaging)	Approx. 150 g

Note: 1. The internal current consumption does not include the power supply supplied at the Fiber-optic Amplifier.

2. Pre-wired models (such as the E3X-DA11-N) and Water-resistant models (such as the E3X-DA11V) cannot be connected.

3. Only models manufactured after 6/18/2001 are compatible. The date of manufacture can be determined from the lot number.

Lot number 1 8 6 0 1 — Date of manufacture: 6/18/01
- Indicates the year (last 2 digits.)
- Indicates the month. (October, November, and December are X, Y, and Z, respectively.)
- Indicates the day of the month.

■ Terminal Block Unit

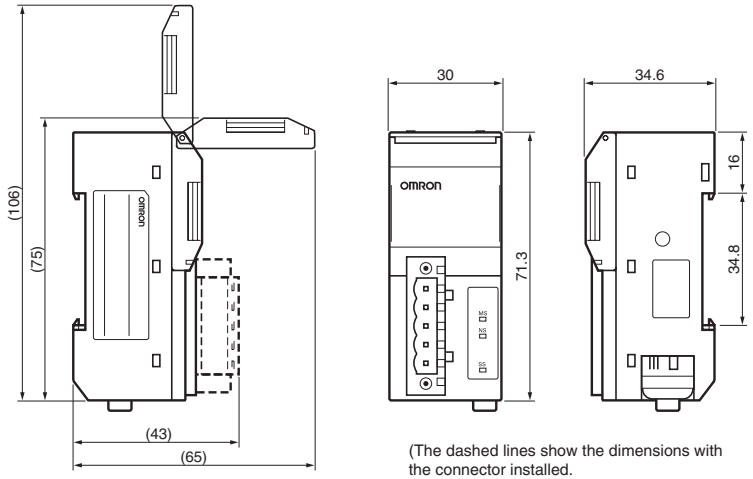
Item	E39-TM1
Power supply voltage (See note 1.)	12 to 24 VDC ±10%, Ripple (p-p) 10% max.
Sensor power supply	11 to 23 VDC (power supply voltage – 1 V)
Current consumption	40 mA max. + current consumption of sensors (total 100 mA max.)
Response time	1.2 ms max.
Input points	1 input
Input signal	NPN/PNP no-voltage inputs (contact or solid state), switchable
Input operation format	NO or NC, switchable
Indicator	Input signal indicator (orange)
Ambient temperature (See note 2.)	Operating: 1 to 3 Units connected: –25° to 55°C (with no icing or condensation) 4 to 8 Units connected: –25° to 45°C (with no icing or condensation) 9 to 16 Units connected: –25° to 40°C (with no icing or condensation) Storage: –30° to 70°C

Note: 1. The power for the E39-TM1 is supplied from the Communications Unit (sold separately.) Use an E3X-CN02 Connector (sold separately.)

2. When connecting 4 or more Units together, keep the current consumption per Unit below 75 mA.
When connecting together with E3X-DA-N Sensors, connect the E39-TM1 at the end. In this case, operate the E3X-DA-N Sensors with a max. ambient temperature that is 5°C below the rated max. temperature.

Dimensions (Unit: mm)

E3X-DRT21



(The dashed lines show the dimensions with the connector installed.

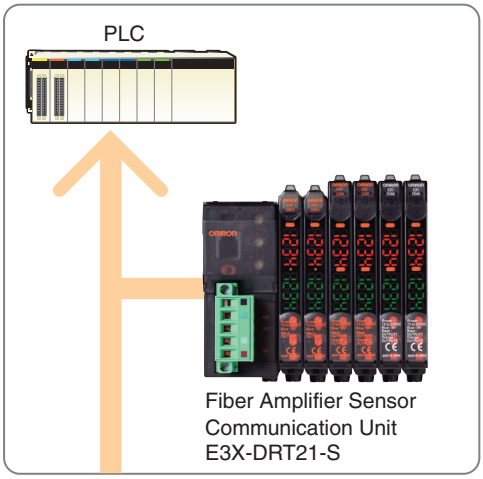
Precautions

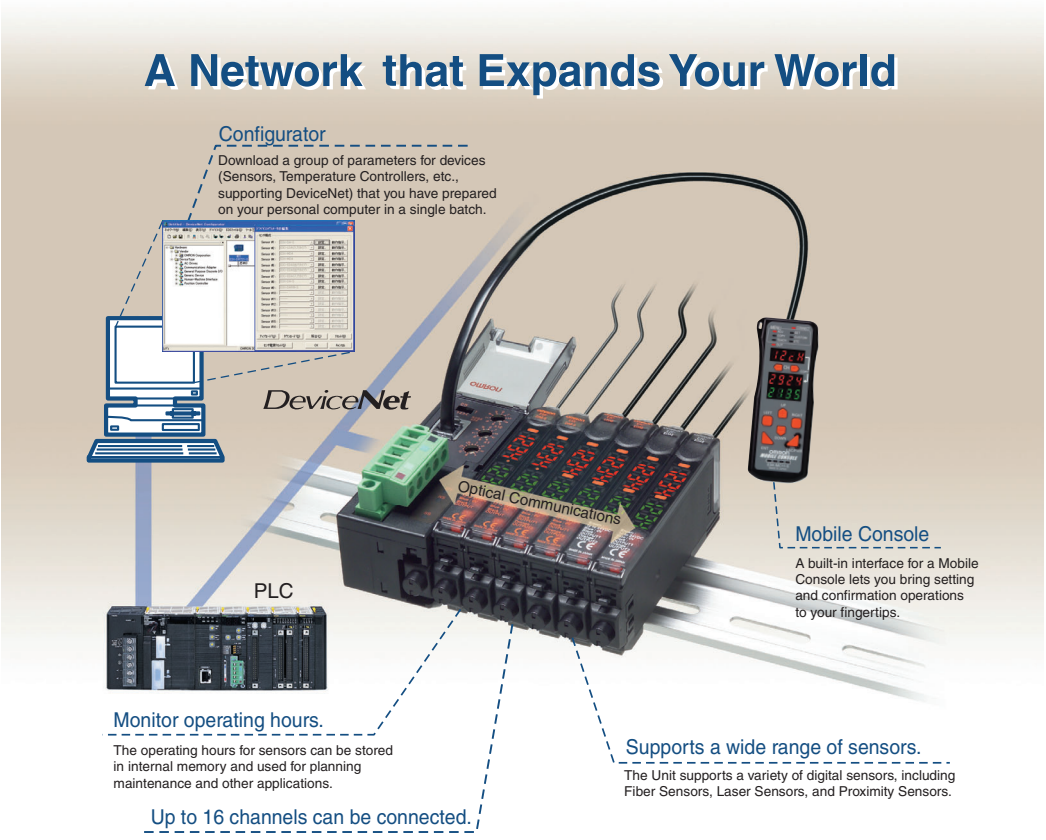
For more detailed specifications refer to the *Fiber Amplifier Sensor Communications Unit Operation Manual* (Cat. No. Z152). For more detailed specifications on the E3X-DA-N Series Digital Fiber Amplifier Units, refer to the *E3X-DA-N Series Sensor Catalog* (Cat. No. E312).

Fiber Amplifier Sensor Communication Unit
E3X-DRT21-S

Fiber Amplifier Sensor Communication Unit Supports Multi-vendor Networks

- ON/OFF signals and incident light levels can be sent to the host PLC without any need for programming (using the Remote I/O Communications Slave function).
- Threshold values and function settings can be read, written, or taught (using the Message Communications function).
- Device parameters prepared on a personal computer connected to the network can be downloaded in a batch operation (using the Configurator).





Ordering Information

■ Fiber Amplifier Sensor Communication Unit

Type	Model
DeviceNet	E3X-DRT21-S

■ Wire-reducing Connector

Type	Model
Cordless Slave Connector	E3X-CN02

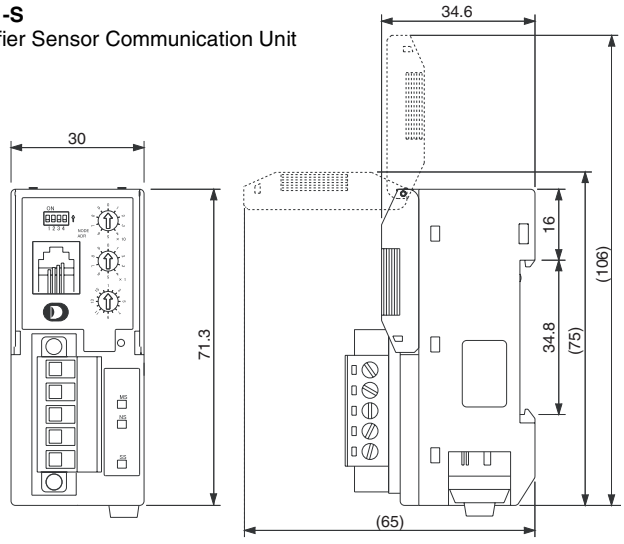
Ratings and Specifications

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)
	MessageCommunications function	Sets parameters using Explicit messages
	Configurator	Edits slave device parameters, enables device monitor functions
Mobile Console connection		E3X-MC11-S-V2 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		13 or 16 (depending on the operation mode)
Connectable Sensors		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.)		70 mA max.
Ambient operating temperature		−20 to 55°C
Ambient operating humidity		35% to 85% (with no condensation)
Storage temperature		−30 to 70°C
Dimensions (mm)		30 × 34.6 × 71.3 (W × H × D)
Weight (packed state)		Approx. 150 g

Note: This does not include the current supplied to the Sensor.

Dimensions (Unit: mm)

E3X-DRT21-S
Fiber Amplifier Sensor Communication Unit



Intelligent Flag III (for DeviceNet)
V600-HAM42-DRT

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

- Conforms to DeviceNet standards.
- 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

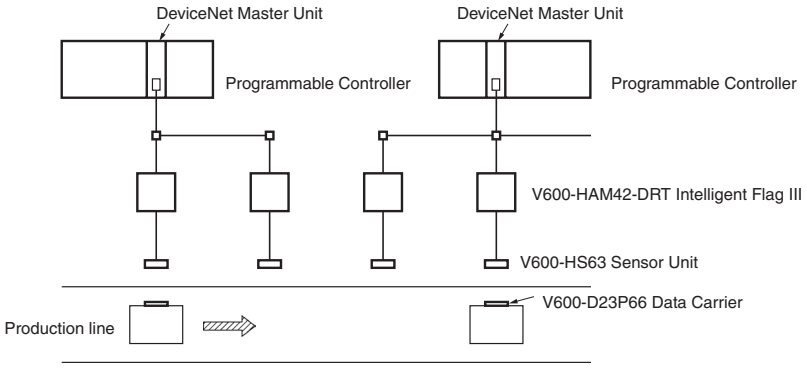
Product	Model
Intelligent Flag III	V600-HAM42-DRT

Specifications

■ Performance

Number of sensor connections	1 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

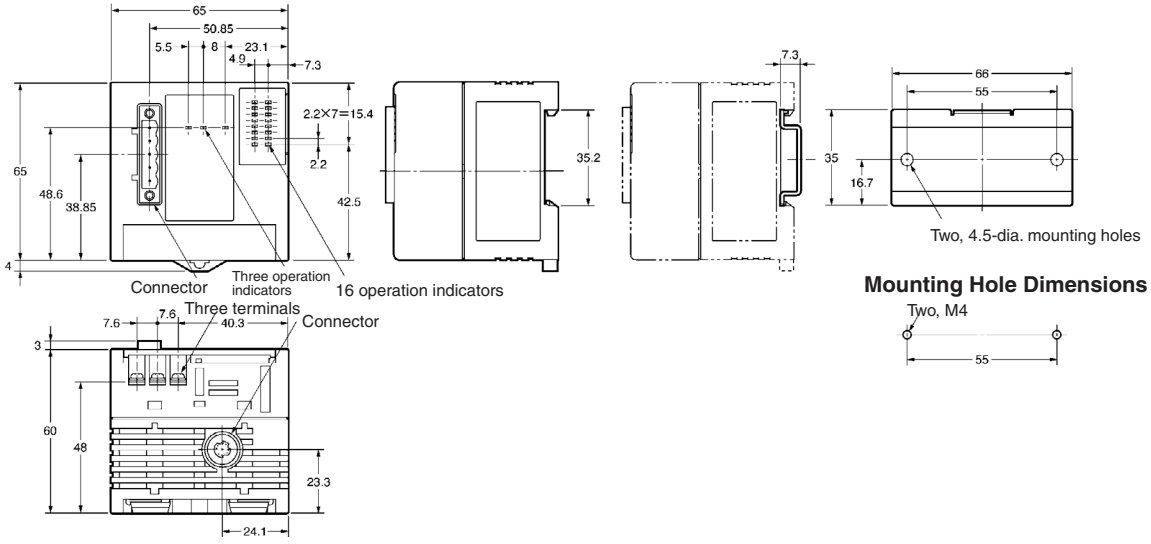
■ System Configuration



■ Characteristics

Item	Specifications
Model	V600-HAM42-DRT
Communications power supply voltage	11 to 25 VDC
Internal circuitry 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.
Noise resistance	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
Voltage resistance	500 VAC for 1 min between insulated circuits
Ambient temperature	Operating: 0°C to 55°C Storage: –25°C to 65°C
Ambient humidity	Operating: 35% to 85% (with no condensation)
Operating environment	With no corrosive gas
Dimensions	65 x 65 x 60 mm
Construction	IEC 60529: IP20, Panel-mounting
Mounting method	DIN track mounting or M4 screw mounting with provided brackets.
Weight	150 g max.

Dimensions (Unit: mm)



DeviceNet-compliant Digital Indicators
K3HB-DRT

Various Types of Digital Indicator That Are Compliant with DeviceNet

- Connect to Programmable Controllers via DeviceNet without special programming.
- Indicators for DC voltage or current input, AC voltage or current input, temperature controller input, and load cell input.
- Show operation trends with position meter.
- UL standard-certified (mark license)
- CE mark-certified by third party evaluation.

Ordering Information

Appearance	Name	Dimensions	Input signal range	Communications	Model (See note.)
	DeviceNet-compliant Process Indicator	96 × 48 × 112 mm (W × H × D)	DC voltage input (±199.99 V max.)	DeviceNet	K3HB-XVD-□-DRT□
			DC current input (±199.99 A max.)		K3HB-XAD-□-DRT□
			AC voltage input (0.0 to 400.0 V max.)		K3HB-XVA-□-DRT□
			AC current input (0.000 to 10.000 A max.)		K3HB-XAA-□-DRT□
	DeviceNet-compliant Weighing Indicator		Load cell, mV input (±199.99 mV max.)		K3HB-VLC-□-DRT□
	DeviceNet-compliant Temperature Indicator		Temperature sensor input (Platinum resistance thermometer or thermocouple)		K3HB-HTA-□-DRT□
	DeviceNet-compliant Linear Sensor Indicators		High-speed response voltage/current input (0 to 24 mA, 4 to 20 mA, 0 to 5 V, 1 to 5 V, ±10 V)		K3HB-SSD-□-DRT□

Note: 1. Select the power supply specifications from 100 to 240 VAC or 24 VAC/DC.
2. Connectors and crimp terminals are included.

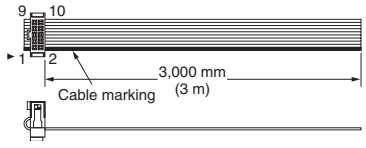
Specifications

■ Ratings

Power supply voltage		100 to 240 VAC Models 100 to 240 VAC (50/60 Hz) DeviceNet power supply: 24 VDC	24 VAC/VDC Models 24 VAC (50/60 Hz), 24 VDC 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 (See note 1.)		18 VA max.	24 VAC: 11 VA, 24 VDC: 7 W max.
Current consumption		DeviceNet power supply: 50 mA max. (24 VDC)	
Input signals	K3HB-XVD	DC voltage (±199.99 V, ±19.999 V, ±1.9999 V, 1.0000 to 5.0000 V)	
	K3HB-XAD	DC current (±199.99 mA, ±19.999 mA, ±1.9999 mA, 4.000 to 20.000 mA)	
	K3HB-XVA	AC voltage (0.0 to 400.0 V, 0.00 to 199.99 V, 0.000 to 19.999 V, 0.0000 to 1.9999 V)	
	K3HB-XAA	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)	
	K3HB-VLC	Load cell, mV (0.00 to 199.99 mV, 0.000 to 19.999 mV, ±100.00 mV, ±199.99 mV)	
	K3HB-HTA	Temperature sensor (2 types of platinum resistance thermometers, 11 types of and 12 ranges for thermocouples)	
	K3HB-SSD	DC voltage/current (0 to 5 V, 1 to 5 V, ±5 V, ±10 V, 0 to 20 mA, 4 to 20 mA)	
A/D conversion method		K3HB-SSD: Sequential comparison system Others: Delta-Sigma method	
External power supply (for models with external power supplies)		K3HB-VLC: 10 VDC ±10%, 100 mA Others: 12 VDC ±10%, 80 mA	
Event inputs (See note 2.)	Timing input Startup compensation timer 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.	
	Hold input Reset input Forced-zero input Bank 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: 0.1 mA max.	
Output ratings (depends on the model)	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 to 55°C (with no icing or condensation)	
Ambient operating humidity		25% to 85%	
Storage temperature		−25 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) (See note 3.)	

Note: 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.

■ Accessories (Sold Separately)

Name	Appearance	Wiring	Model number
Special Cable (for event inputs with 8-pin connector)		▶ 1 TIMING 2 S-TMR 3 HOLD 4 RESET 5 ZERO 6 COM 7 BANK4 8 BANK2 9 BANK1 10 COM	K32-DICN

DeviceNet Communications

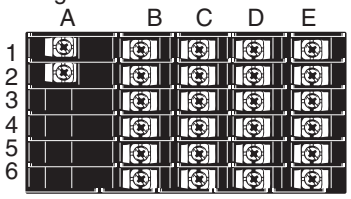
Communications protocol		Conforms to DeviceNet
Supported communications	**Remote I/O communications**	Master-Slave connection (polling, bit-strobe, COS, cyclic) Conforms to DeviceNet communications standards.
	I/O allocations	Allocate any I/O data using the Configurator. Allocate any data, such as DeviceNet-specific parameters and variable area for Digital Indicators. Input area: 2 blocks, 60 words max. Output area: 1 block, 29 words max. (The first word in the area is always allocated for the Output Execution Enabled Flags.)
	Message communications	Explicit message communications CompoWay/F communications commands can be executed (using explicit message communications)
Connection methods		Combination of multi-drop 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		See table below
Communications power supply		24-VDC DeviceNet power supply
Allowable voltage fluctuation 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

Baud rate	Network length (max.)	Drop line length (max.)	Total drop line length (max.)
500 Kbps	100 m (100 m)	6 m	39 m
250 Kbps	100 m (250 m)	6 m	78 m
125 Kbps	100 m (500 m)	6 m	156 m

The values in parentheses are for Thick Cable.

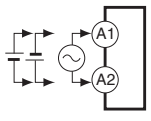
Wiring Layout

Terminal Arrangement



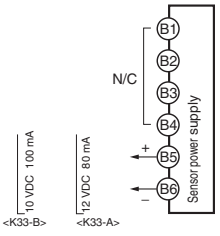
A Operating Power Supply

100 to 240 VAC
24 VAC/DC



*Check the required power supply type.

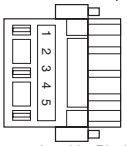
B Sensor Power Supply



C DeviceNet

<K34-DRT>

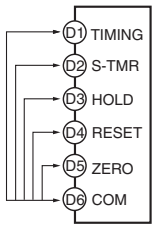
DeviceNet Connector (included)



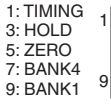
1: V- (Power supply cable: Black)
2: CAN L (Communications cable: Blue)
3: Shield
4: CAN H (Communications cable: White)
5: V+ (Power supply cable: Red)
Applicable Connector:
HR31-5.08P-5SC (01)
(HIROSE ELECTRIC CO., LTD.)
* Attach the provided crimp terminals.

D Event Inputs

Models with Terminal Blocks
<K35-1><K35-3>



Models with Connectors
<K35-2><K35-4>



1: TIMING
3: HOLD
5: ZERO
7: BANK4
9: BANK1
2: S-TMR
4: RESET
6: COM
8: BANK2
10: COM

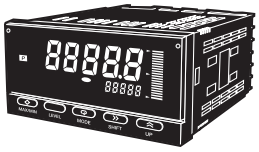
- Applicable Connector (Sold separately)
  XG4M-1030 (OMRON)
- Special Cable (Sold separately)
  K32-DICN (OMRON)
  (XG4M-1030 with 3-m cable)

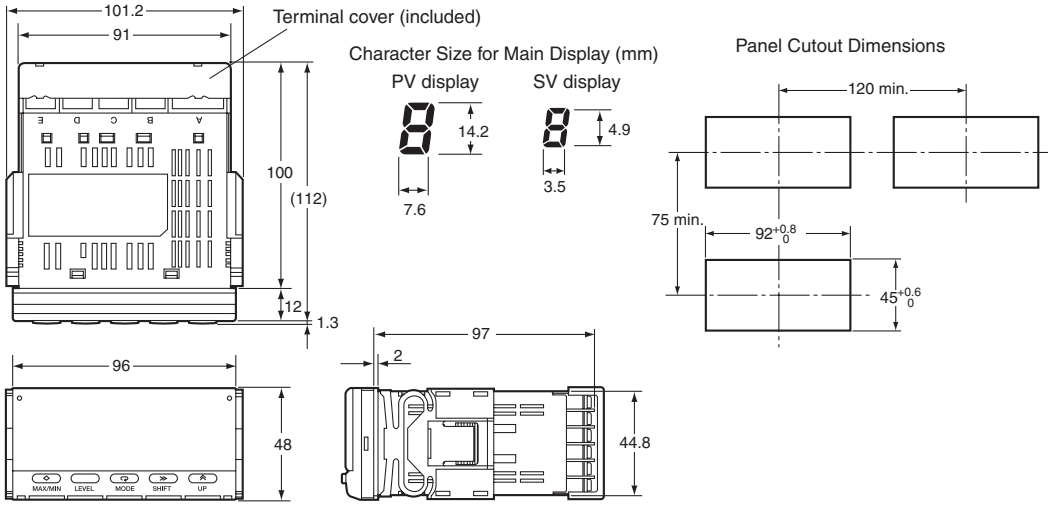
E Analog Inputs

The input section depends on the type of input signal.

Dimensions (Unit: mm)

K3HB





Note: Terminals are M3. Terminal cover is included.

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

Size	Type	Control modes	No. of outputs (control/transfer)	Optional features			Model
				No. of auxiliary outputs (SUB)	No. of event inputs	Communications	
96 × 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 1-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: 1. When ordering, specify the power supply. Different models are used for 100 to 240 VAC and 24 VDC/AC.

2. Before attempting to use a Digital Controller, always read the precautions and other required information in the following user's manuals.
E5AR/E5ER Digital Controller User's Manual (Cat. No. Z182)
E5AR/ER Digital Controller DeviceNet Communications User's Manual (Cat. No. H124)

E5ER

Size	Type	Control modes	No. of outputs (control/transfer)	Optional features			Model
				No. of auxiliary outputs (SUB)	No. of event inputs	Communications	
48 × 96 mm	Basic Type (1 input)	Standard control Heating/cooling control	2 (pulse voltage + pulse voltage/current outputs)	2 (See note 2.)	2	DeviceNet	E5ER-QTB-DRT
			2 (2 current outputs)				E5ER-CTB-DRT
	4-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 (See note 2.)	None	DeviceNet	E5ER-QTW-DRT
			2 (2 current outputs)				E5ER-CTW-DRT
	Control Valve Control Type (1 input)	1-channel position proportional control	Relay outputs (1 open and 1 closed)	2 (See note 2.)	None	DeviceNet	E5ER-PRTF-DRT

Note: 1. When ordering, specify the power supply. Different models are used for 100 to 240 VAC and 24 VDC/AC.
2. Transistor outputs.
3. Before attempting to use a Digital Controller, always read the precautions and other required information in the following user's manuals.
E5AR/E5ER Digital Controller User's Manual (Cat. No. Z182)
E5AR/ER Digital Controller DeviceNet Communications User's Manual (Cat. No. H124)

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

■ Accessories

Terminal Cover

Digital Controller	Model
E5AR	E53-COV14
E5ER	E53-COV15

Specifications

E5AR

Item		100 to 240 VAC, 50/60 Hz (See note 1.)	24 VAC, 50/60 Hz or 24 VDC (See note 1.)
Allowed voltage variance range		85% to 110% of rating power supply voltage	
Power consumption		22 VA max. (under maximum load)	15 VA/10 W max. (under maximum load)
Sensor input (See note 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) (inductive load)	
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 *Sensor inputs.*	
Transfer output		See *Control outputs.*	
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 12.8 mm, SV 7.7 mm, MV 7.7 mm	

Item	100 to 240 VAC, 50/60 Hz (See note 1.)	24 VAC, 50/60 Hz or 24 VDC (See note 1.)
Other functions	Varies by model	
Ambient operating temperature	–10 to 55°C (no condensation or icing), 3 year warranty: –10 to 50°C (no condensation or icing)	
Ambient operating humidity	25% to 85%	
Storage temperature	–25 to 65°C (no condensation or icing)	

Note: 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		100 to 240 VAC, 50/60 Hz (See note 1.)	24 VAC, 50/60 Hz or 24 VDC (See note 1.)
Allowed voltage variance range		85% to 110% of rating power supply voltage	
Power consumption		17 VA max. (under maximum load)	11 VA/7 W max. (under maximum load)
Sensor input (See note 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) (inductive load)	
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 *Sensor inputs*.	
Transfer output		See *Control outputs*.	
Control method		Advanced PID or ON/OFF	
Setting method		Digital setting by front panel keys, setting by communications	
Indicator 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 to 55°C (no condensation or icing), 3 year warranty: –10 to 50°C (no condensation or icing)	
Ambient operating humidity		25% to 85%	
Storage temperature		–25 to 65°C (no condensation or icing)	

Note: 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.

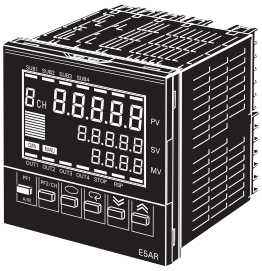
■ DeviceNet Communications Specifications

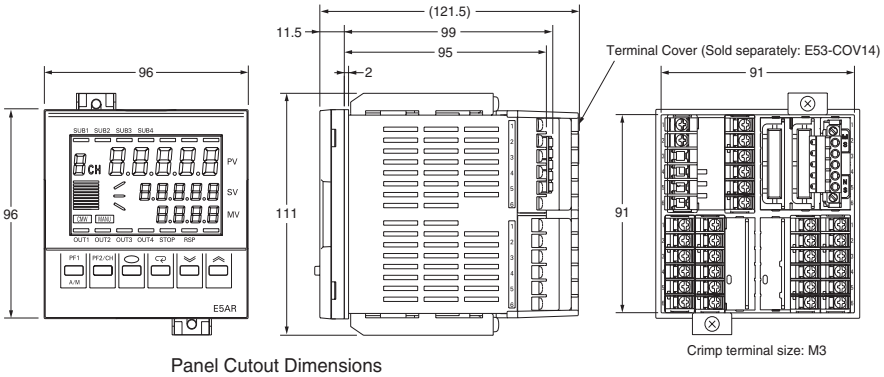
<table>
<tr><td colspan="2">Communications protocol</td><td>Conforms to DeviceNet</td></tr>
<tr><td rowspan="3">Communications functions</td><td>Remote I/O communications</td><td>• Master-slave connections (polling, bit strobe, COS, or cyclic)
• Conform to DeviceNet specifications.</td></tr>
<tr><td>I/O allocations</td><td>• Can allocate any I/O data from the Configurator.
• Can allocate any data, such parameters specific to the DeviceNet and the Digital Indicator variable area.
• Up to 2 blocks for the IN Area, up to a total of 100 words
• One block for the OUT Area, up to 100 words (The first word is always allocated to Output Enable Bits.)</td></tr>
<tr><td>Message communications</td><td>• Explicit message communications
• CompoWay/F communications commands can be sent (commands are sent as explicit messages).</td></tr>
<tr><td colspan="2">Connection format</td><td>Combination of multidrop and T-branch connections (for trunk and drop lines)</td></tr>
<tr><td colspan="2">Baud rate</td><td>DeviceNet: 125, 250, or 500 kbps, or automatic detection of master baud rate</td></tr>
<tr><td colspan="2">Communications media</td><td>Special 5-wire cable (2 signal lines, 2 power lines, and 1 shield line)</td></tr>
<tr><td colspan="2">Communications distance</td><td>
<table>
<tr><th>Baud rate</th><th>Network length</th><th>Drop line length</th><th>Total drop line length</th></tr>
<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>100 m max. (250 m max.)</td><td>6 m max.</td><td>78 m max.</td></tr>
<tr><td>125 kbps</td><td>100 m max. (500 m max.)</td><td>6 m max.</td><td>156 m max.</td></tr>
</table>
The values in parentheses apply when Thick Cables are used.
</td></tr>
<tr><td colspan="2">Communications power supply</td><td>24 VDC</td></tr>
<tr><td colspan="2">Allowable power supply voltage range</td><td>11 to 25 VDC</td></tr>
<tr><td colspan="2">Current consumption</td><td>50 mA max. (24 VDC)</td></tr>
<tr><td colspan="2">Maximum number of nodes that can be connected</td><td>64 (includes Configurator when used)</td></tr>
<tr><td colspan="2">Maximum number of slaves that can be connected</td><td>63</td></tr>
<tr><td colspan="2">Error control</td><td>CRC error detection</td></tr>
<tr><td colspan="2">Power supply</td><td>Power supplied from DeviceNet communications connector</td></tr>
</table>

Dimensions (Unit: mm)

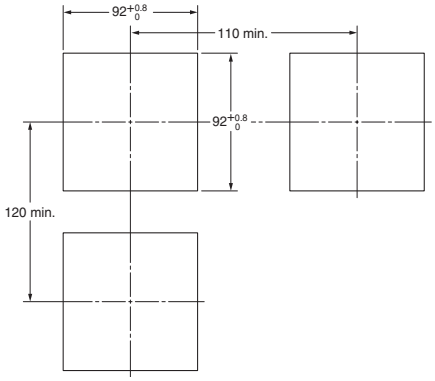
■ Digital Controllers

E5AR



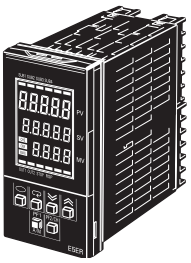


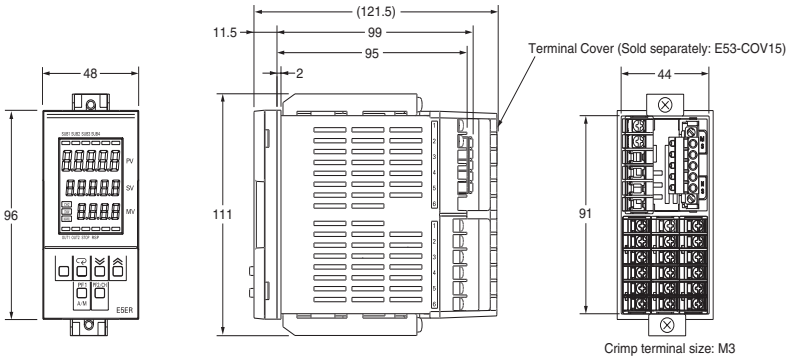
Panel Cutout Dimensions



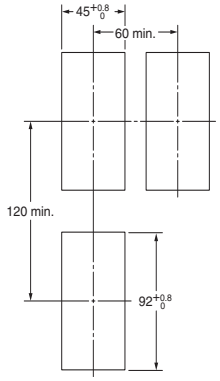
- Mounting panel thickness: 1 to 8 mm
- Do not mount Controllers side-to-side. Maintain the installation interval.
- Do not allow the rated ambient temperature to be exceeded when mounting more than one Controller.

E5ER





Panel Cutout Dimensions

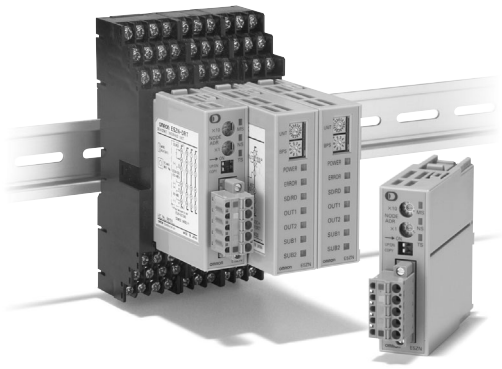


- Mounting panel thickness: 1 to 8 mm
- Do not mount Controllers side-to-side. Maintain the installation interval.
- Do not allow the rated ambient temperature to be exceeded when mounting more than one Controller.

DeviceNet Communications Unit for Digital Temperature Controllers
E5ZN-DRT

Connect the E5ZN Modular Temperature Controllers through DeviceNet

- The I/O link function can be used to make settings and monitor values (such as process values) in the E5ZN Modular Temperature Controller without communications programming.
- Up to 16 E5ZN Modular Temperature Controllers can be connected to one Unit.
- The DeviceNet Configurator can be used to upload or download all of the E5ZN Modular Temperature Controller's parameters in one batch.



Ordering Information

■ DeviceNet Communications Unit

Name	External input power supply voltage	Applicable Temperature Controller	Model
DeviceNet Communications Unit	24 VDC	E5ZN	E5ZN-DRT
Terminal Unit			E5ZN-SCT24S

Note: A DeviceNet Communications Unit and Terminal Unit are required to connect to DeviceNet. Two End Plates are provided with E5ZN-SCT24S Terminal Units. When mounting to a DIN track, be sure to mount End Plates on both sides.

■ E5ZN Modular Temperature Controllers

Name	Power supply	No. of control points	Control output	Auxiliary output	Functions		Communications functions	Input type (See note 5.)	Model
Temperature Controller (See note 1.)	24 VDC	2	Voltage output (for SSRs)	Transistor output: 2 pts (sinking)	Heater burnout alarm (See note 3.)	Heating/cooling control can be selected. (See note 4.) Event input: 1 point per Unit	RS-485	Thermocouple	E5ZN-2QNH03TC-FLK
								Platinum resistance thermometer	E5ZN-2QNH03P-FLK
				Transistor output: 2 pts (sourcing)				Thermocouple	E5ZN-2QPH03TC-FLK
								Platinum resistance thermometer	E5ZN-2QPH03P-FLK
			Transistor output	Transistor output: 2 pts (sinking)				Thermocouple	E5ZN-2TNH03TC-FLK
								Platinum resistance thermometer	E5ZN-2TNH03P-FLK
				Transistor output: 2 pts (sourcing)				Thermocouple	E5ZN-2TPH03TC-FLK
								Platinum resistance thermometer	E5ZN-2TPH03P-FLK
			Analog output (current output) (See note 2.)	Transistor output: 2 pts (sinking)	Transfer output (linear voltage output) (See note 2.)			Thermocouple	E5ZN-2CNF03TC-FLK
								Platinum resistance thermometer	E5ZN-2CNF03P-FLK
				Transistor output: 2 pts (sourcing)				Thermocouple	E5ZN-2CPF03TC-FLK
								Platinum resistance thermometer	E5ZN-2CPF03P-FLK

Note: 1. Terminal Units are required for wiring. Purchase separately.

2. When connecting the controlled system's load, the heating or cooling control output can be allocated to the control output or auxiliary output. When connecting a recording device or Digital Panel Meter, the transfer output can be allocated to the analog output model's control output or auxiliary outputs 3 and 4.

3. When using the heater burnout alarm, purchase a Current Transformer (E54-CT1 or E54-CT3) separately.

4. When using heating/cooling control, the auxiliary output will be either the heating control output or the cooling control output.

5. Analog inputs and infrared temperature sensors (ES1A Series) can also be used with thermocouple models.

■ Terminal Unit

Name	No. of terminals	Functions	Model
Terminal Unit	24	Equipped with communications terminals for power supply, communications, and setting devices.	E5ZN-SCT24S
	18 (See note 2.)	Not equipped with communications terminals for power supply, communications, and setting devices.	E5ZN-SCT18S

Note: 1. Two End Plates are provided with E5ZN-SCT24S Terminal Units. When mounting to a DIN track, be sure to mount End Plates on both sides.

2. When 2 or more E5ZNs are being mounted side-by-side, use this Terminal Unit for the second or higher Units. Up to 16 Terminal Units (32 channels) can be used. When using E5ZNs individually, be sure to use the E5ZN-SCT24S.

■ Setting Display Unit (Order Separately)

Name	Power supply	Model
Setting Display Unit (See note.)	24 VDC	E5ZN-SDL

Note: Purchase sockets for wiring separately.

Specifications

■ Ratings

Power supply voltage	**DeviceNet**	24 VDC (for internal circuits)
	External input power supply	24 VDC (for RS-485 communications circuits and Temperature Controllers)
Allowable voltage range	**DeviceNet**	11 to 25 VDC
	External input power supply	20.4 to 26.4 VDC
Power consumption (See note.)	**DeviceNet**	Approx. 1.1 W (for a current of 45 mA at 24 VDC)
	External input power supply	Approx. 0.5 W (for a current of 20 mA at 24 VDC)
Connectable Temperature Controllers		E5ZN Series
Maximum number of connectable Temperature Controllers		16
Ambient temperature		Operating: –10° to 55°C (with no icing or condensation) Storage: –25° to 65°C (with no icing or condensation)
Ambient humidity		25% to 85%

Note: The power consumption of the Temperature Controller is not included.

■ Characteristics

Insulation resistance	20 MΩ min (at 100 VDC)
Dielectric strength	500 VAC, 50/60 Hz for 1 min between the DIN track and all DeviceNet connector terminals and between the DIN track and all terminal socket terminals
Vibration resistance	10 to 55 Hz, 10 m/s^2 for 2 hrs each in ±X, ±Y, and ±Z directions
Shock resistance	150 m/s^2, 3 times each in ±X, ±Y, and ±Z directions
Weight	100 g max.
Safety standards	cURus508 application pending

■ DeviceNet Communications Specifications

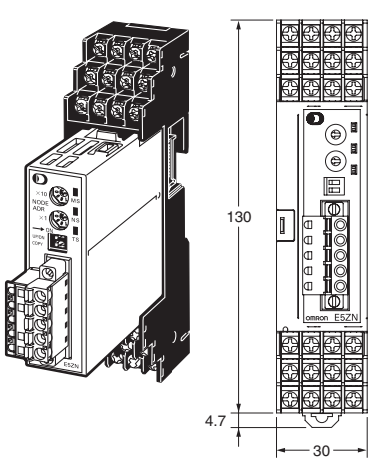
Communications power supply voltage	11 to 25 VDC
Power consumption	Communications: 45 mA max.
Max. number of I/O points	100 input words (200 bytes) or 100 output words (200 bytes), selectable (See note.)

Note: Can be set easily with the Configurator or the rotary switch.

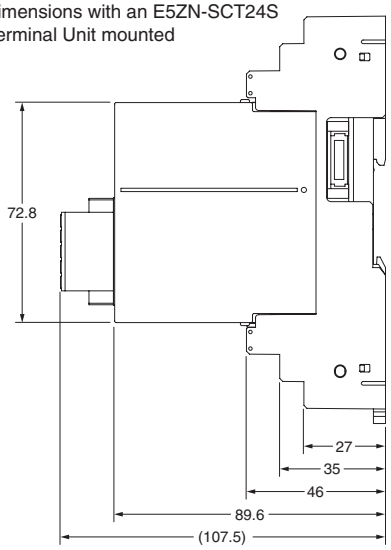
■ Communications (for Temperature Controller Expansion)

Transmission line connection method	RS-485 multipoint
Communications method	RS-485 (2-wire, half-duplex)
Synchronization method	Start-stop synchronization
Baud rate	38,400 bps
Transmission code	ASCII
Data bit length	7 bits
Stop bit length	2 bits
Error detection	Vertical parity (even)
	BCC (block check character)
Flow control	None
Number of Units that can be connected in parallel	16 Units max. (32 channels)

Dimensions (Unit: mm)



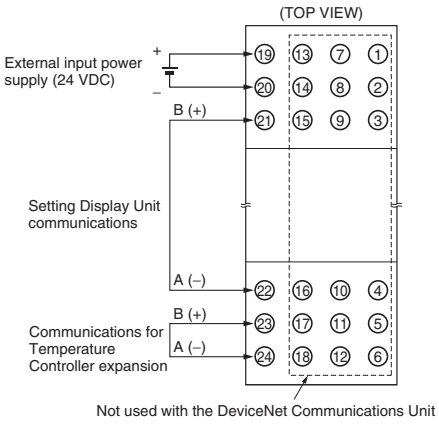
Dimensions with an E5ZN-SCT24S Terminal Unit mounted



Installation

■ Terminal Layout

E5ZN-SCT24S



Precautions

For more detailed specifications refer to the *E5ZN-DRT DeviceNet Communications Unit Datasheet* (Cat. No. H120) or the *Operation Manual* (H119).

Digital Controller
E5EK-AA2-DRT

A Digital Controller That Conforms to DeviceNet

- Conforms to DeviceNet, thus communicates with Programmable Controllers with no program required.
- High-performance range of 0.1% FS (Pt input: −100.0°C to 100.0°C)
- Configurator (sold separately) ensures easy initial settings.

Ordering Information

Size	Communication	Model
E5EK 48 x 96 mm	DeviceNet (CompoBus/D)	E5EK-AA2-DRT

Note: 1. The heater burnout alarm will be available if the ON/OFF Output Unit is applied to heat control.
2. If using both control outputs 1 and 2, two Control Output Units are required.
3. A CT is not provided with the E5EK-AA2-DRT. If using the heater burnout alarm, be sure to order the E5EK-AA2-DRT together with the CT.

Control Output Unit (Sold Separately)

Item	ON/OFF					Linear			
	Relay	SSR (See note.)	Voltage			Current		Voltage	
Model	E53-R	E53-S	E53-Q	E53-Q3	E53-Q4	E53-C3	E53-C3D	E53-V34	E53-V35

Note: The E53-S has no zero-cross function.

Note: Use the High-resolution Output Unit for the E5EK-AA2-DRT. The E53-C Current Output Unit for E5□X cannot be used.

Terminal Cover

Model	E53-COV08
Applicable model	E5EK

Current Transformer (CT) (Sold Separately)

Model	E54-CT1	E54-CT3
Hole dia.	5.8 dia.	12.0 dia.

Note: Be sure to order the CT along with the Control Output Unit if the heater burnout alarm of the E5EK-DRT is required.

Models with Test Result Sheet

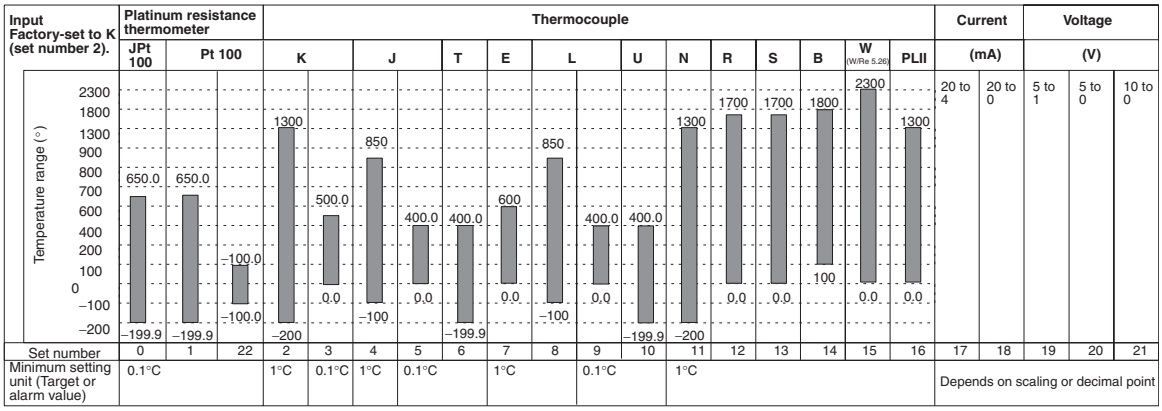
If a test result sheet is required for the model, place the order in the following way.

Model Number

Order using the following example.
E5EK-AA2-DRT-K
Add a hyphen and the suffix “K” to the end of the model number.

■ Input Voltage and Current Ranges

Platinum Resistance Thermometer vs. Thermocouple



Specifications

■ Ratings

Power supply voltage (See note 2.)		100 to 240 VAC 50/60 Hz, 24 VAC/VDC
Permissible voltage fluctuation range		85 to 110% of power supply voltage
Power consumption		15 VA (100 to 240 VAC), 12 VA (24 VAC), 8 W (24 VDC)
Input		Thermocouple: K, J, T, E, L, U, N, R, S, B, W, and PL II Platinum resistance thermometer: JPt 100, Pt 100 Current input ranges: 4 to 20 mA and 0 to 20 mA Voltage input ranges: 1 to 5 V, 0 to 5 V, and 0 to 10 V
Input impedance		Current input: 150 Ω Voltage input: 1 MΩ min. (When connecting the ES2-HB, use a 1-to-1 configuration.)
Auxiliary output		SPST-NO, 3 A at 250 VAC (resistive load)
Control method		ON/OFF or 2-PID (with auto-tuning) (See note 3.)
Setting method		Digital setting with front panel keys
Indicator		7-segment digital LED indicators with a height of 14 mm for PV and a height of 9.5 mm for SV
Control output	**Relay output**	Output Unit: Refer to *Characteristics*. Be sure to connect the Output Unit (sold separately) when using these control outputs.
	Voltage output	
	Linear voltage output	
	Current output	
Remote SP input		Current input: 4 to 20 mA (at input impedance of 150 Ω)
CT input		Connect the E54-CT1 or E54-CT3
Other functions		Manual output, heating and cooling control, SP limiter, loop break alarm, SP ramp, MV limit, MV change rate limit, input digital filter, input shift, RUN/STOP, and protector
Ambient temperature		Operating: –10°C to 55°C (with no icing) Under three-year guarantee terms: –10°C to 50°C Storage: –25°C to 65°C (with no icing)
Ambient humidity		Operating: 35% to 85%

Note: 1. In order to satisfy FCC Class A, which conforms to EN50081-2 standards for terminal noise voltage, apply TDK's ZCB2206-11, ZCB2203-M, or an equivalent noise filter to the AC power line.

2. There is a model with 100 to 240 VAC specifications and a model with 24 VAC/VDC specifications. Unless the required model is specified, the model with 100 to 240 VAC specifications will be ordered.

3. The E5EK-AA2-DRT is not equipped with a fuzzy self-tuning function.

■ Characteristics

Indication accuracy	Thermocouple: ±0.3% of ±1°C of the indicated value, whichever is larger, ±1 digit max. (See note 1.) Platinum resistance thermometer: ±0.2% or ±0.8% of the indicated value, whichever is larger, ±1 digit max. (See note 2.) Analog input: ±0.2% ±1 digit max.
Hysteresis	0.01% to 99.99% FS (0.01% increments)
Proportional band	0.1% to 999.9% FS (0.1% increments)
Integral time	0 to 3,999 s (1-s increments)
Derivative time	0 to 3,999 s (1-s increments)
Control period	1 to 99 s (1-s increments)
Manual reset value	0.0 to 100.0% (0.1% increments)
Alarm set range	–1,999 to 9,999 or –199.9 to 999.9 (Decimal position varies with the type of input and decimal point position setting.)
Sampling period	Temperature input: 250 ms Current or voltage input: 100 ms (See note 3.) Auxiliary input: 1 s (See note 4.)
Insulation resistance	20 MΩ at 500 VDC
Dielectric strength	2,000 VAC at 50/60 Hz for 1 min between charged terminals different in polarity.
Vibration resistance	Malfunction: 10 to 55 Hz with 20 m/s^2 in X, Y, and Z directions for 10 min. Destruction: 10 to 55 Hz with a single amplitude of 0.75 mm in X, Y, and Z directions for 2 h.
Shock resistance	Malfunction: 100 m/s^2, 3 times each in X, Y, and Z directions Destruction: 300 m/s^2, 3 times each in X, Y, and Z directions
Weight	Approx. 300 g Mounting Bracket: Approx. 65 g
Degree of protection	Front: NEMA4 for indoor use (conforming to IP66) Rear casing: IP20 Terminal block: IP00
Memory protection	Nonvolatile memory (Data can be written 1,100,000 times)

Note: 1. An accuracy of ±2°C±1 digit applies to K (–200°C to 1,300°C), T, and N at –100°C or below and U and L instead.
There are no specifications for B at 400°C or below.
An accuracy of ±3°C±1 digit applies to R and S at 200°C or below.
An accuracy or ±0.3% or ±3°C of the indicated value, whichever is larger, ±1 digit max. applies to W.
An accuracy of ±0.3% or ±2°C of the indicated value, whichever is larger, ±1 digit max. to PL II.

2. An accuracy of ±0.1% FS ±1 digit max. applies to Pt at a range between –100.0°C and 100.0°C.

3. A sampling period of 250 ms applies if CT or remote SP input is allocated.

4. The auxiliary input means CT or remote SP input.

■ Output Unit (Sold Separately) Ratings

Item		Model	Rating/specification
ON/OFF	Relay	E53-R	250 VAC 5 A (resistive load)
	SSR	E53-S	75 to 250 VAC 1 A (resistive load)
	Voltage	E53-Q	12 VDC, 40 mA, NPN
		E53-Q3	24 VDC, 20 mA, NPN
		E53-Q4	24 VDC, 20 mA, PNP
Linear	Current	E53-C3	4 to 20 mA (Load: 600 Ω max.); Resolution: 1/2,600
		E53-C3D	0 to 20 mA (Load: 600 Ω max.); Resolution: 1/2,600
	Voltage	E53-V34	0 to 10 VDC (Load: 1 kΩ max.); Resolution: 1/2,600
		E53-V35	0 to 5 VDC (Load: 1 kΩ max.); Resolution: 1/2,600

■ CT (Sold Separately) Ratings

Dielectric strength	1,000 VAC for 1 min
Vibration resistance	50 Hz with 98 m/s^2
Weight	E54-CT1: Approx. 11.5 g E54-CT3: Approx. 50 g
Accessories (only E54-CT3)	Armature (2), plug (2)

■ DeviceNet Communications Specifications

Communications power supply voltage	11 to 25 VDC
Unit power supply voltage	85 to 264 VDC, 20.4 to 26.4 VAC/VDC
Power consumption	Communications: 30 mA max. Internal circuit power supply: 15 VA (100 to 240 VAC) 12 VA (24 VAC) 8 W (24 VDC)
Max. number of I/O points	16 input words (52 bytes); 16 output words (32 bytes); variable

Note: This product has been tested at the test laboratory of a third-party organization authorized by the ODVA and has been certified to conform to the ODVA's conformance software versions 2.0 to 1.00. For details on Object specifications, refer to the *E5EK Digital Controller User's Manual* (H085).

■ Performance Characteristics of Heater Burnout Alarm

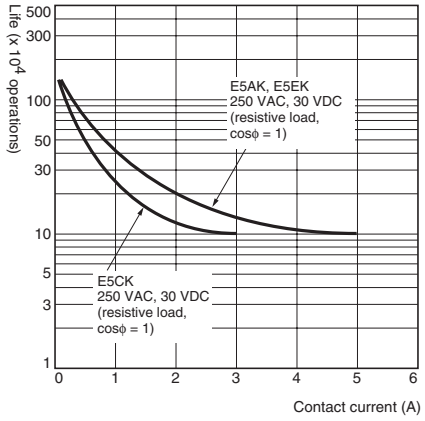
Maximum heater current	Single-phase 50 A AC (See note 1.)
Indication accuracy for heater current	±5% FS ±1 digit max.
Setting range for heater burnout alarm	0.1 to 49.9 A (0.1-A units) (See note 2.)
Minimum detection ON time	190 ms (See note 3.)

Note: 1. For burnout detection of 3-phase heaters, use the K2CU-F□□A-□GS (with gate input terminal).

2. If the heater burnout alarm is set to 0.0 A, it will always be OFF, and if it is set to 50.0 A, it will always be ON.

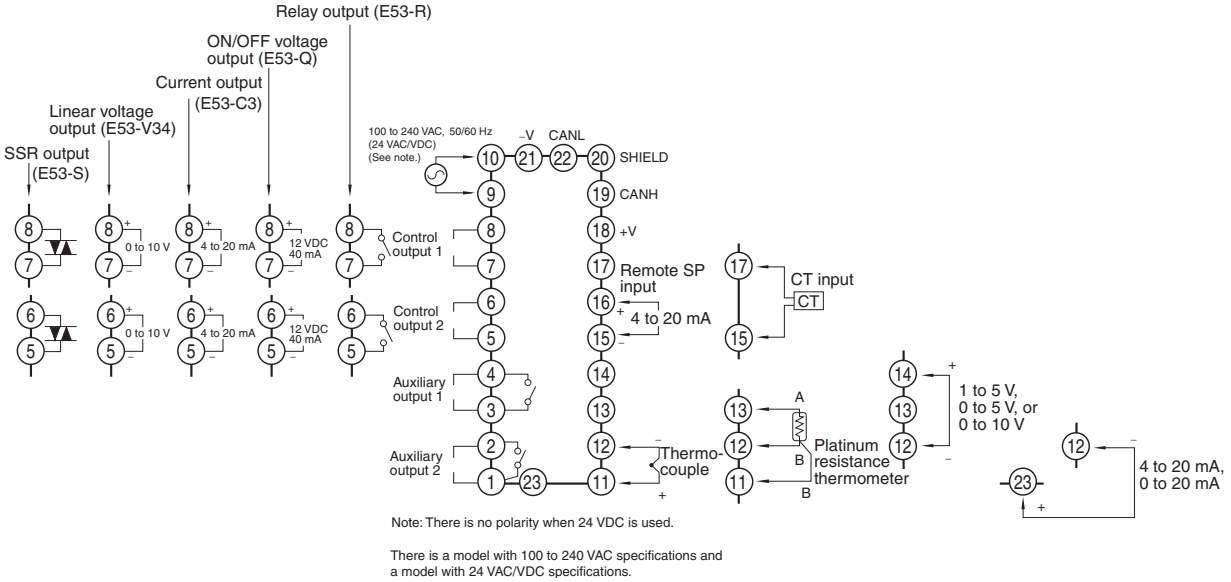
3. If the ON time for control output is less than 190 ms, heater burnout will not be detected and heater current will not be measured.

■ Relay Electrical Life Curve (Reference Values)



Operation

■ Wiring Terminals

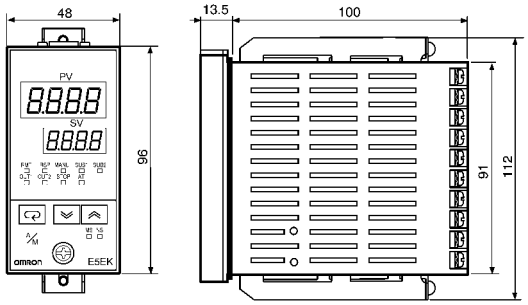


Note: There is no polarity when 24 VDC is used.

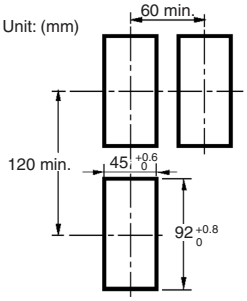
There is a model with 100 to 240 VAC specifications and a model with 24 VAC/VDC specifications.

Dimensions (Unit: mm)

E5EK-AA2-DRT



Panel Cutout Dimensions



- The panel thickness must be 1 to 8 mm.
- Do not mount the Units closely together horizontally or vertically. Keep the distances between adjacent Units.

Precautions

For details on precautions and other information required to use this product, be sure to refer to the following manuals: *E5EK Digital Controller User's Manual* (H085) and *DeviceNet Operation Manual* (W267). These manuals are not provided with this product. They must be obtained separately.

DeviceNet Option Unit (for W-series AC Servo Drives)
R88A-NCW152-DRT

Combines One-axis Position Control for AC Servo Drives and DeviceNet Functions

- One Unit, Two Roles
  The DeviceNet Option Unit incorporates both DeviceNet communications functions and Position Control Unit functions. When a W-series AC Servo Drive is attached directly to this Option Unit, it gains both communications functions and position control functions simultaneously.
- Distributed control of up to 63 Units
  As a DeviceNet Slave, the DeviceNet Option Unit can be connected in an open network with a max. network length of 500 m.
- Unified management of all Servo system operating information
  All of the information that can be displayed with a W-series Servo Drive's monitor mode display (such as the speed command and speed feedback) can also be read at the PLC through the remote I/O function.
- Error Prediction and Diagnosis
  When the specified trigger signal satisfies the trigger condition, up to 1,000 samples of the specified trace signal can be recorded (sampling cycle: 250 μs to approx. 8 s.)
  When improper operation is suspected, this trace function can be used to record the desired operating condition for analysis/diagnosis of the improper operation.

Ordering Information

Name	Model
DeviceNet Option Unit	R88A-NCW152-DRT
External I/O Connector	R88A-CNU01R
Cable for Setup Tool (2 m)	R88A-CCW002P4

■ Servo Motor and Servo Driver Variations and Combinations

R88M Servomotors						R88D Servo Drivers			Application
Style	Rated speed	Capacity	International standards CE, UL/cUL	Shaft end (without reduction gear)	Enclosure rating	100 V	200 V Single phase	200 V Three phase	
Cylinder style	3,000 r/min. (5,000 r/min.)	30 W	Approved	Straight With key With key and tap Straight with tap	IP55 (excluding shaft opening)	WTA3HL	WTA3H	---	Low-inertia machines Machines with fast tact times (Robots, Assembly machines, Conveyance machines)
		50 W				WTA5HL	WTA5H	---	
		100 W				WT01HL	WT01H	---	
		200 W				WT02HL	WT02H	---	
		400 W				---	WT04H	---	
		750 W				---	WT08H (See note.)	WT08H	
		1 kW		With key and tap Straight	IP67 (excluding shaft opening)	---	---	WT10H	
		1.5 kW				---	---	WT15H	
		2 kW				---	---	WT20H	
		3 kW				---	---	WT30H	
		4 kW				---	---	WT50H	
		5 kW				---	---	WT50H	
	1,500 r/min. (3,000 r/min.)	450 W	Approved	With key and tap Straight	IP67 (excluding shaft opening)	---	---	WT05H	Machines requiring high torque (Simple processing machines, Assembly machines, Transfer machines)
		850 W				---	---	WT10H	
		1.3 kW				---	---	WT15H	
		1.8 kW				---	---	WT20H	
		2.9 kW				---	---	WT30H	
		4.4 kW				---	---	WT50H	
		5.5 kW				---	---	WT60H	
		7.5 kW				---	---	WT75H	
	1,500 r/min. (2,000 r/min.)	11 kW				---	---	WT150H	
		15 kW				---	---	WT150H	
	1,000 r/min. (2,000 r/min.)	300 W	Approved	With key and tap Straight	IP67 (excluding shaft opening)	---	---	WT05H	Machines requiring high torque (Simple processing machines, Assembly machines, Transfer machines)
		600 W				---	---	WT08H	
		900 W				---	---	WT10H	
		1.2 kW				---	---	WT15H	
		2 kW				---	---	WT20H	
		3 kW				---	---	WT30H	
		4 kW				---	---	WT50H	
		5.5 kW				---	---	WT60H	
Flat style	3,000 r/min. (5,000 r/min.)	100 W	Approved	Straight With key With key and tap Straight with tap	IP55 (excluding shaft opening) IP67 (including shaft opening)	WT01HL	WT01H	---	Machines allowing little motor depth Machines requiring waterproof motor (Semiconductor-manufacturing machines, Food-processing machines, AGVs)
		200 W				WT02HL	WT02H	---	
		400 W				---	WT04H	---	
		750 W				---	WT08H (See note.)	WT08H	
		1.5 kW				---	---	WT15H	

Note: The power supply specification is 220 to 230 VAC (+10%/−15%).

■ General Specifications

Item		Specifications
Applicable Servo Drivers		R88D-WT□ (software version: 14 or later)
Mounting to Servo Driver		Mounts to the side of the R88D-WT□.
Basic specifications	**Power supply voltage**	Unit: Supplied from Servo Driver. DeviceNet: 11 to 25 VDC from an insulated Power Supply Unit
	Power consumption	1.3 W (250 mA current consumption)
	Ambient temperature	Operating: 0° to 55°C Storage: −20 to 85°C
	Ambient humidity and environment	Operating: 90% max. (with no condensation or corrosive gases) Storage: 90% max. (with no corrosive gases)
	Shock resistance	4.9 m/s^2
	Dimensions	20 × 142 × 128 mm (W × H × D)
	Weight	0.2 kg

■ Characteristics

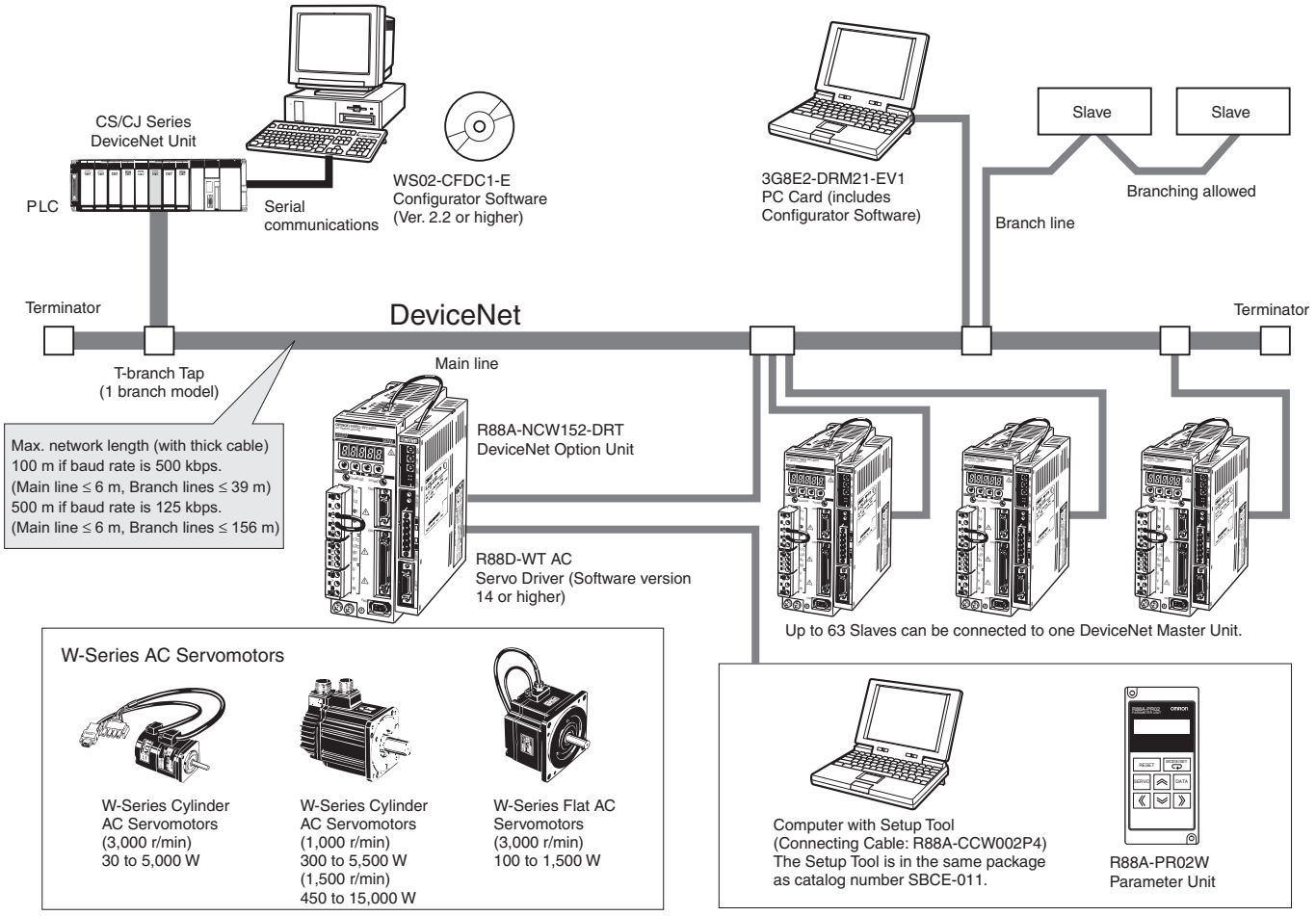
Position Control Specifications

Item		Specifications	
Number of controlled axes		1 axis/Slave	
Control method		Semi-closed loop control or full-closed loop control	
Compatible Drivers		R88D-WT Series	
Positioning units		User-defined positioning units (any units can be set.) The distance moved in each step can be set with the electronic gear ratio (setting range: 10,000,000 to 0.0000001.)	
Operating specifications	**Memory operation**	Step operation or point table operation	
	Direct operation	Direct operation, interrupt feeding, notch signal output positioning, multistep speed positioning	
Move command specifications	**Method**	INC (positioning in relative coordinates) or ABS (positioning in absolute coordinates)	
	Position command	Signed 32-bit data (Setting range: –99,999,999 to 99,999,999 steps)	
	Speed command	Unsigned 32-bit data (Unit: steps/min, Setting range: 1 to 240,000 steps)	
	Acceleration/Deceleration method	FIxed acceleration/deceleration	Single-step linear acceleration/deceleration, double-step linear acceleration/deceleration, asymmetric linear acceleration/deceleration, S-curve acceleration/deceleration, asymmetric S-curve acceleration/deceleration
		Fixed acceleration/deceleration time	Exponential acceleration/deceleration, exponential acceleration/deceleration with bias, single-step linear acceleration/deceleration
	Acceleration/Deceleration time	1 to 10,000 ms (time required to reach max. speed)	
	Coordinate system settings	Sets whether the servomotor is used as a linear axis or rotary axis.	
	Speed change	The speed can be changed in up to 16 steps during positioning (when operating in “multistep speed positioning” mode.)	
Operation control and supplemental functions	**Origin search operation**	Without reversal at limit	Uses the ON/OFF inputs from one of the following: proximity input signal + origin input signal, origin input signal, proximity input signal + phase Z, or phase Z.
		With reversal at limit	Uses the ON/OFF inputs from one of the following: proximity input signal + origin input signal, origin input signal, or proximity input signal + phase Z.
	Backlash compensation	0 to 32,767 steps	
	Jogging	Based on origin point after turning ON the power or completing an origin search.	
	Indexing operation	Performs positioning with a single motor rotation divided into a specified number of partitions (1 to 32,767 partitions.)	
	Software limit	Decelerates to a stop at the specified position. (A separate limit can be set in each direction up to ±99,999,999.)	
	Immediate stop/Deceleration stop	Can be set by remote I/O communications or an input signal.	
	Present position preset	Can be set by remote I/O communications.	
	Trace functions	Analog data to trace (Up to 2 elements can be selected.)	Reference pulse speed (r/min), position deviation/error (reference units), speed feedback (r/min), torque reference (%)
		ON/OFF data to trace (Up to 2 elements can be selected.)	Sensor ON input, alarm output, positioning completed output 1, speed coincidence output, motor rotation detected output, servo ready output, current limit detected output, speed limit detected output, brake interlock output, alarm output, positioning completed output 2, alarm code output 1, alarm code output 2, alarm code output 3
		Trigger data	Analog data to trace (rising edge, falling edge, rising/falling edge) ON/OFF data to trace (rising edge, falling edge, rising/falling edge)
		Data sampling	Sampling cycle: Set in 250-μs units (250 μs to 8,191,750 μs) Number of samples: Fixed at 1,000 samples
	Monitored value detection	Monitored values	Speed feedback (r/min), torque reference (%), number of pulses from phase Z (pulses), electrical angle (degrees), input signal monitor (no units), output signal monitor (no units), command pulse speed display (r/min), position deviation/error (reference units), motor load rate (%), regeneration load rate (%), dynamic brake resistance load rate (%), input pulse counter (rightmost 16 bits, reference units), feedback pulse counter (rightmost 16 bits, pulses)

■ DeviceNet Communications Specifications

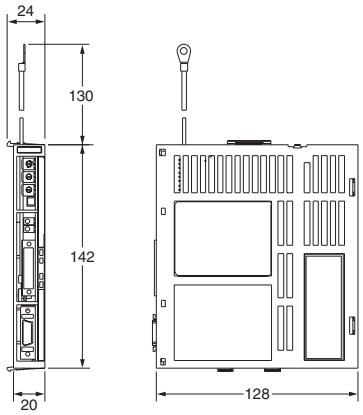
Item	Specifications	
Communications power supply voltage	11 to 25 VDC	
Current consumption	Communications: 20 mA max.	
Max. number of I/O points	4 input words, 4 output words	
Communications functions	Remote I/O communications (operating as a Slave), explicit message communications function (explicit messages can be sent)	
Communications details	Remote I/O communications	Positioner functions' move command, Origin compensation function (when using absolute encoder), Read/Write parameters in Servo Driver or DeviceNet Option Unit, Read monitored values, Present position compensation function, Alarm reset
	Explicit message communications	Set trace function, Read trace data, Read/Write parameters in Servo Driver or DeviceNet Option Unit
Connection configuration	The multi-drop and T-branch methods can be used together.	

System Configuration



Dimensions (Unit: mm)

R88A-NCW152-DRT



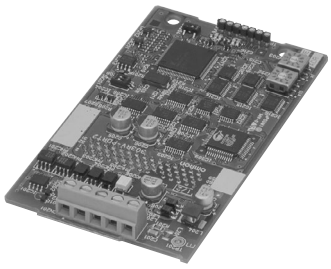
DeviceNet Communications Unit/Card for SYSDRIVE 3G3MV/3G3RV/3G3FV

3G3MV-PDRT2/3G3RV-PDRT2

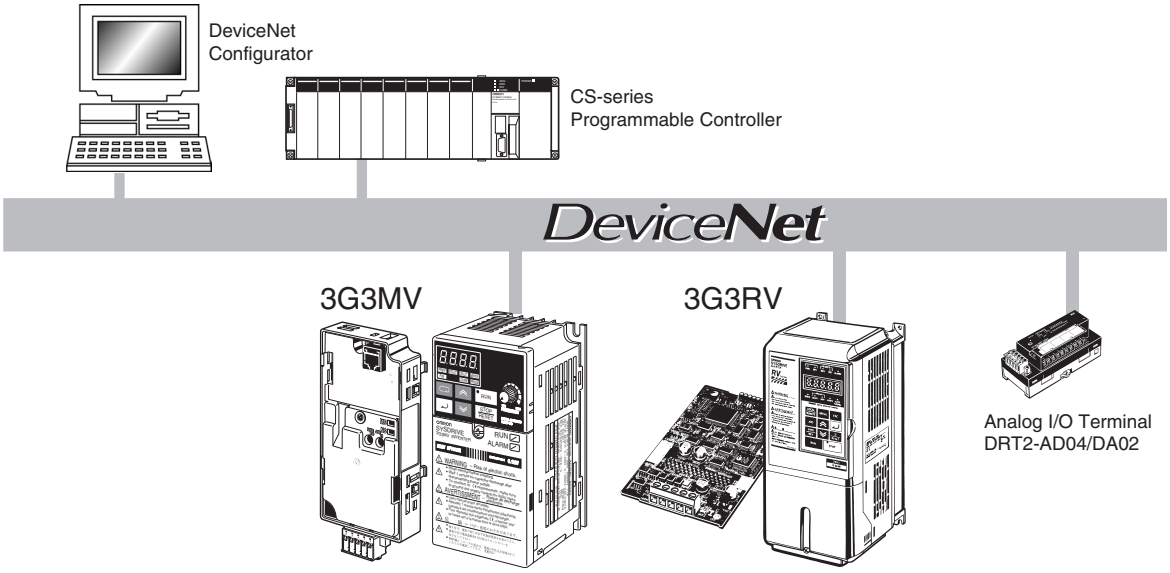
Optional Communications Unit/Card to Connect SYSDRIVE 3G3MV, 3G3RV, and 3G3FV Inverter to DeviceNet. Takes Inverter Performance to a Higher Level as a DR2-series Slave with Improved DeviceNet Preventive Maintenance Functions.

Changes a Simple Motor Control Device to a Facilities Information Terminal for a More Stable Life Cycle with High Productivity.

- Warning torque detection provides warning when output current (torque) exceeds a threshold value.
- Current traces enables saving output current (torque) in CSV.
- Average power monitor to monitor actual energy savings.



System Configuration



Examples of System Introduction 1

Advanced Error Check

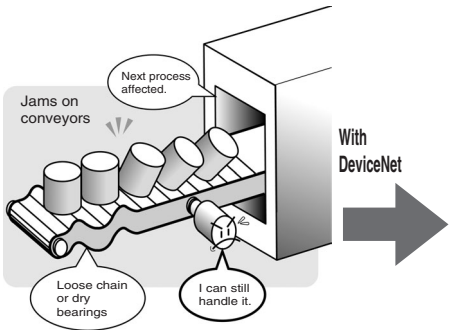
Advanced status information would prevent emergency line shutdowns and maintenance for many problems.

Example 1
Motors can keep turning even after the machine starts to age or items fall over on a conveyor, but in the end the line will have to be stopped in an emergency, affecting the next processes.

Example 2
There are components in the Inverter with limit life, such as cooling fans and electrolytic capacitors. These components are often the cause on unexpected Inverter errors when they reach the end of their life. There are also parts with limited life around the Inverter, such as motors and cylinders, and they can also be the cause of an emergency stop.

▼

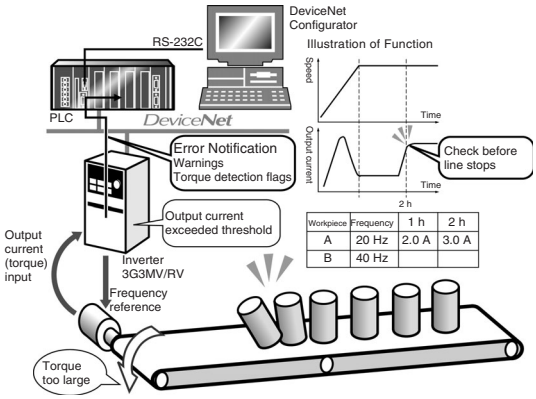
Reduces productivity and yield



Warning Torque Detection Function

Output current (torque) threshold values can be set for constant-speed operation, acceleration, and deceleration to output a warning when a threshold value is exceeded.

This enables detecting increased load due to system deterioration (e.g., loose belts, loose chains, and friction from conveyed items) before the line stops, enabling maintenance before unexpected shutdowns occur.



Examples of System Introduction 2

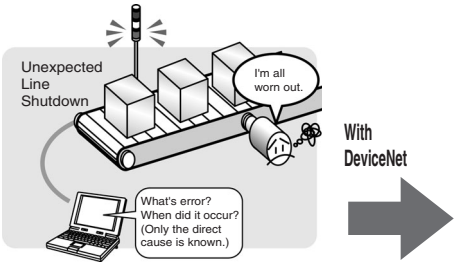
Error Trouble-shooting

Even after an error has occurred, only the direct cause of the error can be found, costing time and money.

Example 3
Time is required after an emergency stop to discover what the error is, when it occurred, and what all of the causes are. In the end, a new system must be introduced or the intuition or knowhow of experience staff must be relied on.

▼

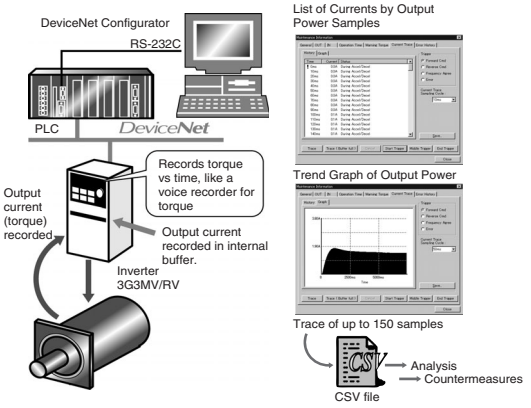
Reduced productivity and increased costs



Current Trace Function

Trace the waveform output to the motor to record the output current (torque) in 150 buffers according to the sampling time (10 ms, 20 ms ..... 100 ms). Select the trigger from forward/reverse RUN commands, frequency coincidence, errors, or manual pushbutton. Selecting the right trigger enables tracing the output current under the desired conditions, such as just before an error occurs. Save the trace data to CSV files to make graphs or perform analysis in Excel or other programs.

In other words, you can analyse the cause of shutdowns and implement countermeasures without connecting extra equipment, such as measurement devices.

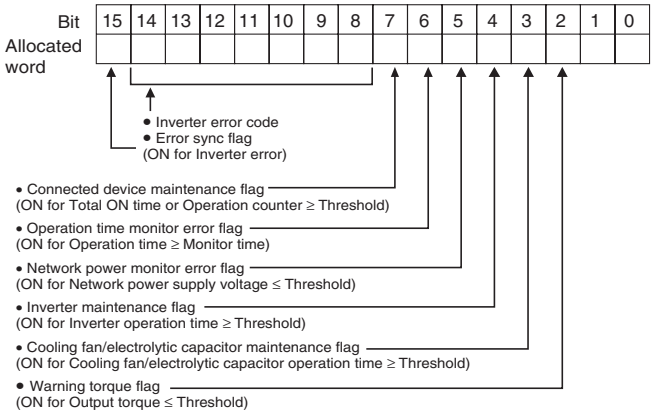


Allocations in PLC

In addition to the previous basic data, such as the frequency data input, the following data is also provided in the I/O memory or the PLC's CPU Unit when a 3G3MV-PDRT2 or 3G3RV-PDRT2 DeviceNet Communications Card/Unit is used. This enables easy monitoring of the Inverter and peripheral devices.

Unit Status

The following data is sent to the PLC as Smart Slave status.



Multi-function Input Monitor

The ON/OFF status of Inverter multi-function inputs is also sent to the PLC. If the Inverter multi-function inputs are not used, general I/O can be used, such as sensor inputs.

Other Functions

Operation Time Monitor and General I/O Input Functions

If the Inverter's multi-function I/O is not used, sensors or other general-purpose I/O devices can be connected directly to the Inverter. The time from when the general-purpose I/O or forward/reverse RUN command turns ON until the general-purpose input turns ON can be monitored and warnings given when the monitor time is exceeded.

Total ON Time Monitor Function

The total time that Inverter general-purpose I/O is ON is measured. For example, the total time that the brake release output contact from the PLC is ON can be measured to monitor the total operation time. This enables monitoring the replacement time for external I/O devices.

Contact Operation Counters

The number of ON/OFF operations for general-purpose inputs to the Inverter are counted. This, for example, enables monitoring the replacement time for external I/O devices.

Power ON Time Monitor Function

The total time that power is supplied to the Inverter is measured. This, for example, enables monitoring the replacement time for the cooling fan or internal electrolytic capacitor.

Average Power Monitor Function

The power supplied to the Inverter is monitored each hour and an average can be taken to calculate the approximate power used. This, for example, enables monitoring the effectiveness of energy savings.

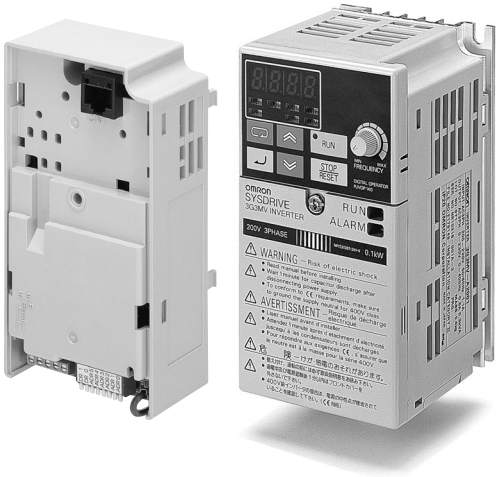
Multi-function Compact Inverter with DeviceNet Communications Unit
3G3MV-PDRT2

Inverters with Built-in DeviceNet Optional Card are Ideal for Open Networks

Mounting a DeviceNet Communications Card enables the following functions: Warning torque detection, current tracing, operation time monitor, total ON time monitor, and contact operation monitor.

These functions result in less wiring, failure prediction, and easier maintenance. An average power monitoring function is also provided to help save energy.

Monitoring is possible from a PT or Configurator.



Ordering Information

Name	Inverter	DeviceNet Slave type	Model
DeviceNet Communications Unit	SYSDRIVE 3G3MV Inverters	DRT2	3G3MV-PDRT2

Specifications

■ Main Specifications

DeviceNet Communications

Item	Specification
Communications power supply voltage	11 to 25 VDC
Current consumption	Communications: 20 mA max.
Remote I/O words	Two input words and two output words (See note.)

Note: If the special remote I/O function is used, three input words and three output words will be allocated. If the control I/O remote I/O function is used, four input words and four output words will be allocated.

Specifications

Item	Specification
Communications	Remote I/O communications (I/O automatically exchanged between CPU Unit and Inverter without special programming in the PLC.) Explicit messages (PLC instructions are used to read and write Inverter parameters when required.)
Remote I/O	PLC to Inverter: Frequency reference, Forward/reverse/stop commands, Multi-function outputs, etc. Inverter to PLC: Forward/reverse status, output current, Multi-function inputs, Unit status, etc.
Smart Slave functions	Warning torque detection, current tracing, operation time monitor, total ON time monitor, contact operation counters, Power ON time monitor, average power monitor, automatic baud rate detection, network power supply monitor, Unit comments, connected device comments, communications error log monitor, last maintenance monitor, and parameter setting with Configurator.

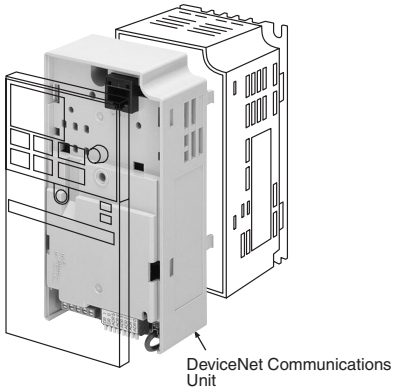
SYSDRIVE 3G3MV Inverters

Rated voltage class	Enclosure rating	Max. motor capacity
Three-phase 200 V AC	Panel-mounting (IP20 rating)	0.1 to 3.7 kW
	Enclosed wall-mounting (IP20 rating, NEMA1)	5.5 to 7.5 kW
Single-phase 200 V AC	Panel-mounting (IP20 rating)	0.1 to 3.7 kW
Three-phase 400 V AC	Panel-mounting (IP20 rating)	0.2 to 3.7 kW
	Enclosed wall-mounting (IP20 rating, NEMA1)	5.5 to 7.5 kW

Note: Refer to the *SYSDRIVE 3G3MV Catalog* (I904) for the specifications and functions of the above Inverters.

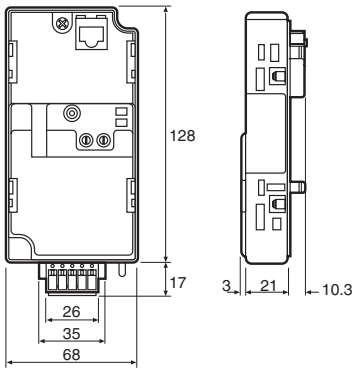
■ Installation

RS-422/485 communications are standard and the DeviceNet Communications Unit can be added to construct a complete network-compatible Inverter. This will reduce wiring enable managing the Inverter's operating status.



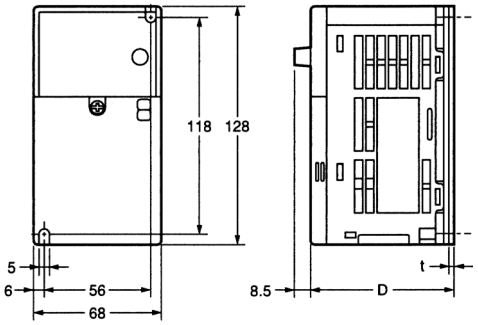
Dimensions (Unit: mm)

3G3MV-PDRT2



3G3MV-A2001 to 3G3MV-A2007 (0.1 to 0.75 kW)
3-phase 200 VAC Input

3G3MV-AB001 to 3G3MV-AB004 (0.1 to 0.4 kW)
Single-phase 200 VAC Input



Rated voltage	Model 3G3MV-	Dimensions		Approx. weight (kg)
		D	t	
200 V AC 3-phase	A2001	76	3	0.6
	A2002	76	3	0.6
	A2004	108	5	0.9
	A2007	128	5	1.1
200 V AC single-phase	AB001	76	3	0.6
	AB002	76	3	0.7
	AB004	131	5	1.0

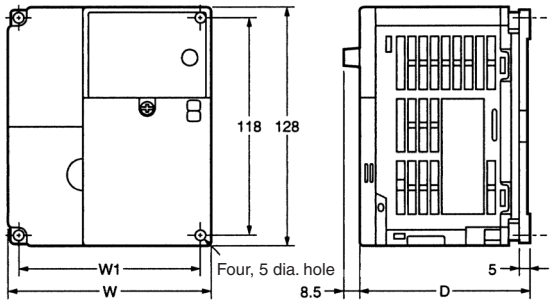
3G3MV-A2015 to 3G3MVA2037 (1.5 to 3.7 kW)
3-phase 200 VAC Input

3G3MV-A2055 to A2075 (5.5 to 7.5 kW)
3-phase 200 VAC Input

3G3MV-AB007 to 3G3MV-AB037 (0.75 to 3.7 kW)
Single-phase 200 VAC Input

3G3MV-A4002 to 3G3MV-A4037 (0.2 to 3.7 kW)
3-phase 400 VAC Input

3G3MV-A4055 to A4075 (5.5 to 7.5 kW)
3-phase 400 VAC Input



Rated voltage	Model 3G3MV-	Dimensions			Approx. weight (kg)
		W	D	W1	
200 V AC 3-phase	A2015	108	131	96	1.4
	A2022	108	140	96	1.5
	A2037	140	143	128	2.1
	A2055	180	170	164	4.6
	A2075	180	170	164	4.8
200 V AC single-phase	AB007	108	140	96	1.5
	AB015	108	156	96	1.5
	AB022	140	163	128	2.2
	AB037	170	180	158	2.9
400 V AC 3-phase	A4002	108	92	96	1.0
	A4004	108	110	96	1.1
	A4007	108	140	96	1.5
	A4015	108	156	96	1.5
	A4022	108	156	96	1.5
	A4037	140	143	128	2.1
	A4055	180	170	164	4.8
	A4075	180	170	164	4.8

Precautions

Refer to the *3G3MV DeviceNet Communications Unit Operation Manual* (I529) for precautions to observe when using a 3G3MV.

High-function General-purpose Inverter with DeviceNet Communications Card

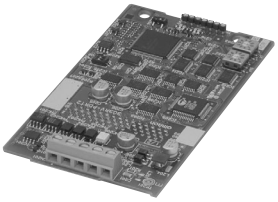
3G3RV-PDRT2

Inverters with Built-in DeviceNet Optional Card are Ideal for Open Networks

Mounting a DeviceNet Communications Card enables the following functions: Warning torque detection, current tracing, operation time monitor, total ON time monitor, and contact operation monitor.

These functions result in less wiring, failure prediction, and easier maintenance. An average power monitoring function is also provided to help save energy.

Monitoring is possible from a PT or Configurator.



Ordering Information

Product	Inverter	DeviceNet Slave type	Model
DeviceNet Communications Card	SYSDRIVE 3G3RV or 3G3FV Inverters	DRT2	3G3RV-PDRT2

Specifications

DeviceNet Communications

Item	Specification
Communications power supply voltage	11 to 25 VDC
Current consumption	Communications: 20 mA max.
Remote I/O words	Two input words and two output words (See note.)

Note: If the special remote I/O function is used, three input words and three output words will be allocated. If the control I/O remote I/O function is used, four input words and four output words will be allocated.

Specifications

Item	Specification
Communications	Remote I/O communications (I/O automatically exchanged between CPU Unit and Inverter without special programming in the PLC.) Explicit messages (PLC instructions are used to read and write Inverter parameters when required.)
Remote I/O	PLC to Inverter: Frequency reference, Forward/reverse/stop commands, Multi-function outputs, etc. Inverter to PLC: Forward/reverse status, output current, Multi-function inputs, Unit status, etc.
Smart Slave functions	Warning torque detection, current tracing, operation time monitor, total ON time monitor, contact operation counters, Power ON time monitor, average power monitor, automatic baud rate detection, network power supply monitor, Unit comments, connected device comments, communications error log monitor, last maintenance monitor, and parameter setting with Configurator.

SYSDRIVE 3G3RV Inverters

Voltage class	Protective construction	Max. applicable motor capacity
200 V	Enclosed wall-mounting	0.4 to 18.5 kW
	Panel-mounting	22 to 110 kW
400 V	Enclosed wall-mounting	0.4 to 18.5 kW
	Panel-mounting	22 to 160 kW

Note: Refer to the *SYSDRIVE 3G3RV Catalog* (I906) for the specifications and functions of the above Inverters.

SYSDRIVE 3G3FV Inverters

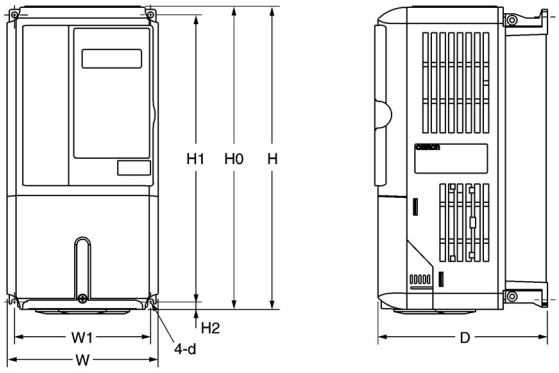
Voltage class	Protective construction	Max. applicable motor capacity
200 V	Enclosed wall-mounting	0.4 to 15 kW
	Panel-mounting	18.5 to 55 kW
400 V	Enclosed wall-mounting	0.4 to 15 kW
	Panel-mounting	18.5 to 55 kW

Note: Refer to the *SYSDRIVE 3G3FV Catalog* (I901) for the specifications and functions of the above Inverters.

Dimensions (Unit: mm)

■ SYSDRIVE 3G3RV Inverters

3G3RV-A2□□□/A4□□□



200-V Models

Model (3G3RV-)	Maximum applicable motor capacity (kW)	Dimensions							Mounting screws	Weight (kg)
		W	H	D	W1	H0	H1	H2	d	
A2004	0.4	140	280	157	126	280	266	7.0	M5	Approx. 3.0
A2007	0.75									
A2015	1.5									
A2022	2.2									
A2037	3.7			177						Approx. 4.0
A2055	5.5									
A2075	7.5	200	300	197	186	300	285	7.5	M6	Approx. 6.0
A2110	11		310							Approx. 7.0
A2150	15	240	350	207	216	350	335			Approx. 11
A2185	18.5		380							

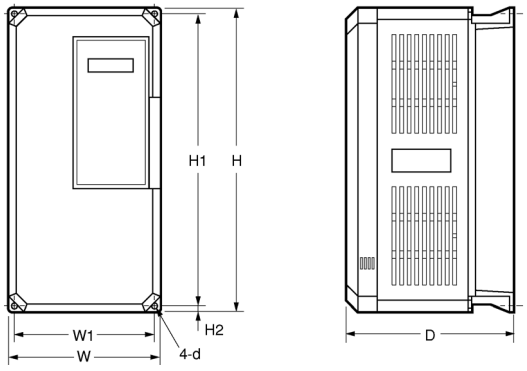
400-V Models

Model (3G3RV-)	Maximum applicable motor capacity (kW)	Dimensions							Mounting screws	Weight (kg)
		W	H	D	W1	H0	H1	H2	d	
A4004	0.4	140	280	157	126	280	266	7.0	M5	Approx. 3.0
A4007	0.75									
A4015	1.5									
A4022	2.2			177						Approx. 4.0
A4037	3.7									
A4055	5.5									
A4075	7.5	200	300	197	186	300	285	7.5	M6	Approx. 6.0
A4110	11									
A4150	15	240	350	207	216	350	335			Approx. 10
A4185	18.5									

Note: Refer to the *SYSDRIVE 3G3RV Catalog* (I906) for the dimensions of 3G3RV-B2□□□/B4□□□ Inverters.

■ SYSDRIVE 3G3FV Inverters

3G3FV-A2□□□/A4□□□



200-V Models

Model (3G3FV-)	Maximum applicable motor capacity (kW)	Dimensions						Mounting screws	Weight (kg)
		W	H	D	W1	H1	H2	d	
A2004	0.4	140	280	160	126	266	7.0	M5	Approx. 3.0
A2007	0.75								
A2015	1.5								
A2022	2.2	140	280	180	126	266	7.0	M5	Approx. 4.5
A2037	3.7								
A2055	5.5	200	300	205	186	285	8.0	M6	Approx. 5.5
A2075	7.5								Approx. 6.0
A2110	11	250	380	225	236	365	7.5	M6	Approx. 11
A2150	15		400				27.5		

400-V Models

Model (3G3FV-)	Maximum applicable motor capacity (kW)	Dimensions						Mounting screws	Weight (kg)
		W	H	D	W1	H1	H2	d	
A4004	0.4	140	280	160	126	266	7.0	M5	Approx. 3.0
A4007	0.75								
A4015	1.5	140	280	180	126	266	7.0	M5	Approx. 4.0
A4022	2.2								Approx. 4.5
A4037	3.7								
A4055	5.5	200	300	205	186	285	8.0	M6	Approx. 6.0
A4075	7.5								
A4110	11	250	380	225	236	365	7.5	M6	Approx. 11
A4150	15								

Note: Refer to the *SYSDRIVE 3G3FV Catalog* (I516) for the dimensions of 3G3FV-B2□□□/B4□□□ Inverters.

Programmable Terminal DeviceNet Interface Unit
NT-DRT21

Use NT31 and NT631 Programmable Terminals as Slaves in DeviceNet Networks

- Supports connection to 5 different PT (Programmable Terminal) models from medium-sized NT31 models to large-sized NT631 models, making for a wider selection of display devices.
- The compact Interface Unit mounts directly onto the back of the PT without taking up unnecessary space.
- Allows both remote I/O communications and message communications.

Ordering Information

Applicable PT	Number of I/O points	Power supply voltage	Model number
NT31 models NT631 models	64 words (8 words are used for the PT status control area and PT status notify area)	24 VDC	NT-DRT21

Specifications

■ General Specifications

Rated power supply voltage	24 VDC (supplied from the PT)
Allowable power supply voltage range	20.4 to 26.4 VDC (24 VDC –15%/+10%)
Interface power consumption (See note 1.)	NT31/31C PT with Expansion Interface: 15 W max. NT631C PT with Expansion Interface: 18 W max. NT631 PT with Expansion Interface: 30 W max.
Communications power supply (See note 2.)	30 mA max.
Ambient operating temperature	0 to 50°C
Ambient storage temperature	–20 to 60°C
Ambient operating humidity	35% to 85% (with no condensation)
Ambient operating atmosphere	No corrosive gases
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)
Vibration resistance (when operating)	10 to 57 Hz with 0.075-mm single amplitude, 57 to 150 Hz with acceleration 9.8 m/s^2 for 30 minutes each in X, Y, and Z directions
Shock resistance (when operating)	147 m/s^2 3 times each in X, Y, and Z directions
External dimensions	96 × 91 × 20 mm (W × H × D) (Total thickness when Interface Unit is mounted to PT: 74 mm.)
Weight	350 g max.

Note: 1. Because power is supplied from the PT, the figures for power consumption given above are for both the Interface Unit and PT combined. The power consumption for the Interface Unit itself is 1 W max.

2. The power consumption for DeviceNet communications is 0.75 W max. (supplied separately).

■ Function Specifications

Remote I/O communications	I/O data area: 64 words (This includes 5 input words and 3 output words used as the PT status communications area.)
Message communications	Read/write transfer (transfer of character string memory tables, numeral memory tables, or bit memory tables)
Software specifications	The following software can be used: NT-series Support Tool Version 4 Interface Unit's System Program Version 1

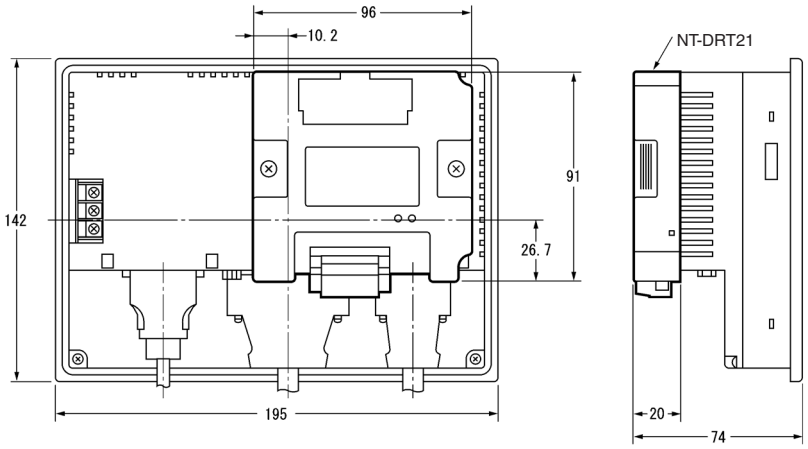
Note: For details on NT31/631-series PT specifications, refer to the *NT31/631-series Programmable Terminals Catalog* (V052) or *NT31/631-series Programmable Terminals Operation Manual* (V060).

■ DeviceNet Communications Specifications

Communications power supply voltage	11 to 25 VDC
Max. number of I/O points	64 words

Dimensions (Unit: mm)

NT-DRT21 (Mounted to the NT31/31C)



DeviceNet Wireless Units
WD30

Wireless DeviceNet Units Connects Slaves without Wires

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

WD30-ME (WD30-SE)

WD30-SE01 (WD30-ME01)

Ordering Information

■ List of Models

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

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

■ Optional Accessories (Micro Connectors)

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

■ Included Accessories

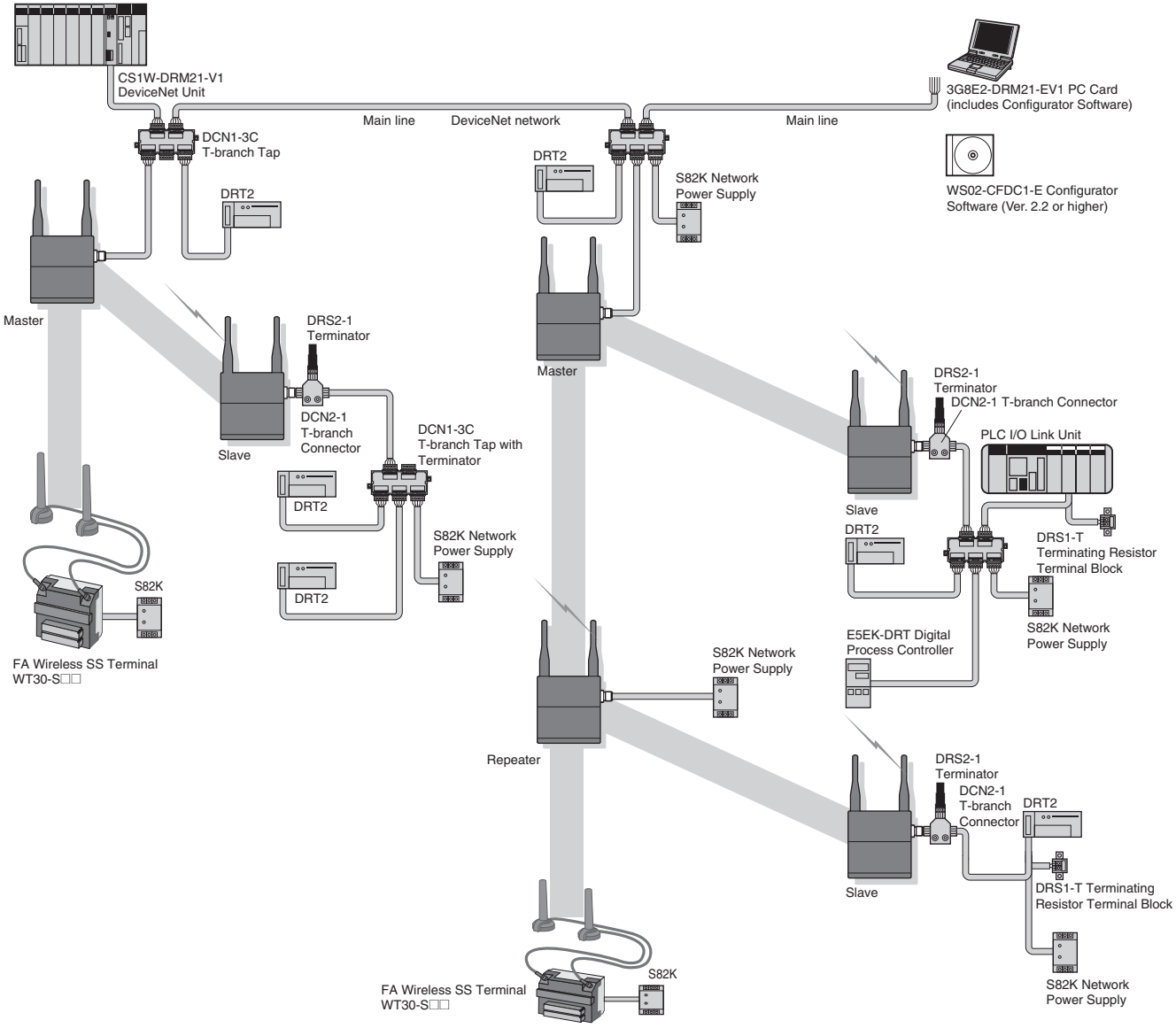
The following accessories are included with a DeviceNet Wireless Master or DeviceNet Wireless Slave.

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

■ Optional Accessories (Configurator Software)

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

System Configuration



Specifications

■ General Specifications

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

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

■ Wireless Interface Specifications

Item	Specifications
Wave type	Spread Spectrum (direct sequence; DS-SS)
Communication method	Simplex (half duplex)
Frequency band	2.4 GHz (2401 MHz to 2480.2 MHz)
Number of channels	67 channels (based on frequency division)
Antenna power	10 mW
Data transfer speed between wireless units	100 kbps
Transmission distance (See note 1.)	Indoors: 60 m (approx. 50 m with magnetic base antennas) Outdoors: 300 m (unobstructed)
Relay stations	3 repeaters max.
Max. number of sets in the same area (See note 1.)	10 sets max.
Max. number of wireless Slaves	64 max.

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

■ DeviceNet Interface Specifications (Summary)

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

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

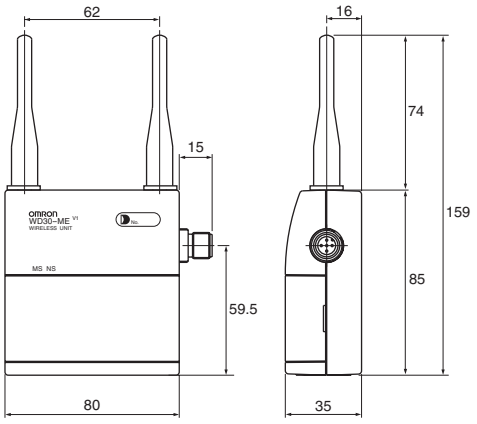
■ I/O Points

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

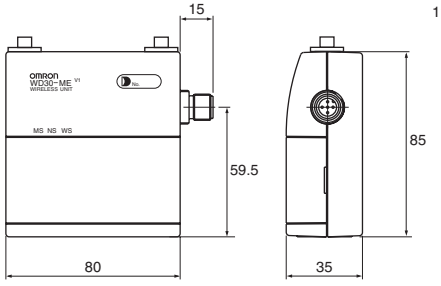
Note: Relay Stations can be used to create up to 3 levels and DeviceNet Slaves can be connected in each level. Terminators are required when Slaves are connected to a Relay Station or Slave Station. Refer to the *WD30 DeviceNet Wireless Units Operation Manual* for details on Terminator installation.

Dimensions (Unit: mm)

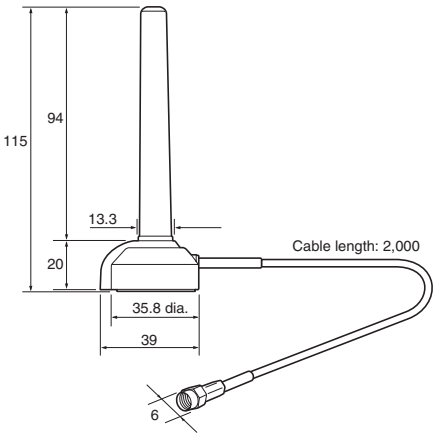
WD30-ME and WD30-SE DeviceNet Wireless Units



WD30-ME01 and WD30-SE01 DeviceNet Wireless Units



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



Precautions

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

FA Wireless SS Terminals
WT30

Functions as a Slave Station for a WD30 DeviceNet Wireless Unit.

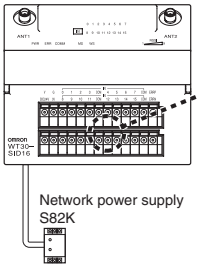
- Features wireless I/O slave station connection.
- Stands 90-mm tall and mounts on DIN tracks for easy in- panel installation.
- Clearly indicates the status of wireless communications with built-in indicators.
- Pending approval for compliance with China, U.S., and European radio wave standards.

NEW

Features

Wireless I/O Slave Station Connection Slaves Space, Labor, and Cost

Space-saving wireless I/O slave station connection reduces overall costs.



● Terminal arrangement

WT30-SID16 with 16 Inputs

V	G	IN 00	IN 01	IN 02	IN 03	COM (IN)	IN 04	IN 05	IN 06	IN 07	COM (IN)	ERR (P)
24 VDC	0 VDC	IN 08	IN 09	IN 10	IN 11	COM (IN)	IN 12	IN 13	IN 14	IN 15	COM (IN)	ERR (N)

WT30-SMD16 (NPN) with 8 Inputs and 8 Outputs
WT30-SMD16-1 (PNP) with 8 Inputs and 8 Outputs

V	G	IN 00	IN 01	IN 02	IN 03	COM (IN)	IN 04	IN 05	IN 06	IN 07	COM (IN)	ERR (P)
24 VDC	0 VDC	OUT 00	OUT 01	OUT 02	OUT 03	COM (OUT)	OUT 04	OUT 05	OUT 06	OUT 07	COM (OUT)	ERR (N)

Ordering Information

■ Main Unit

Model	Type	Specifications (No. of I/O points)
WT30-SID16	I/O Slave Station	16 DC inputs (NPN/PNP)
WT30-SMD16		8 DC inputs (NPN/PNP) and 8 transistor outputs (NPN)
WT30-SMD16-1		8 DC inputs (NPN/PNP) and 8 transistor outputs (PNP)

Note: The Antenna and Mounting Brackets are not included with the Wireless SS Terminal.

■ Antennas

Model	Type
WT30-AT001	Magnet-base Antenna (2 Antennas in a set)
WT30-AT002	Flat Diversity Antenna (1 Antenna)
WT30-AT003	Pencil Antenna (2 Antennas in a set)

■ Other

Model	Type
WT30-FT001	DIN Track Mounting Bracket for TH35-7.5
WT30-FT002	DIN Track Mounting Bracket for TH35-15
WT30-FT003	Screw-mounting Surface Mounting Bracket (2 brackets per set)
WT30-FT011	Flat Diversity Antenna Mounting Bracket (with magnets)

Specifications

■ Ratings

Item		Specifications
Power supply	Rated voltage	24 VDC
	Allowable voltage range	20.4 to 26.4 VDC
	Power consumption	3 W
	Inrush current	10 A max.
I/O power supply (for I/O circuits)	Rated voltage	24 VDC
	Allowable voltage range	20.4 to 26.4 VDC
Ambient operating temperature		Number of simultaneously ON I/O points 10 max.: −10 to 55°C 16 max.: −10 to 50°C (with the Terminal mounted with the dust-proof label facing up)
Ambient operating humidity		25% to 85% (with no condensation)
Ambient environment		No corrosive gases
Storage temperature		−25 to 65°C
Terminal Configuration		Screw-less terminal block (Phoenix Contact FFKDS/V 1-5.08 or equivalent)
Weight		330 g max.

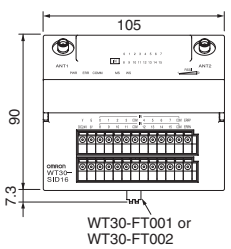
■ I/O Specifications

Item		Specifications
Input Characteristics	Input voltage	24 VDC
	Allowable voltage range	20.4 to 26.4 VDC
	Input impedance	4.7 kΩ (typical)
	Input current	5 mA (typical)
	ON voltage/current characteristics	17.4 VDC, 3.0 mA min.
	OFF voltage/current characteristics	5.0 VDC, 1.0 mA
	Input filter	10 ms/100 ms (Selected using switch.)
Output/Error Output Characteristics	Input voltage	24 VDC
	Allowable voltage range	20.4 to 26.4 VDC
	Max. switching current	100 mA max. per output (at 20.4 to 26.4 VDC) Simultaneous usage of error output NPN/PNP is not possible.
	Leakage current	0.1 mA max.
	Residual voltage	1.0 V max.
	Fuse	One for every two outputs except for error output circuits, which have one for every NPN/PNP output. (No fuses can be replaced by the user.)

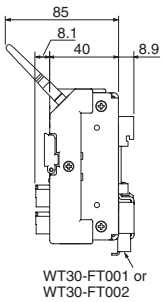
Dimensions (Unit: mm)

● I/O Slave Station

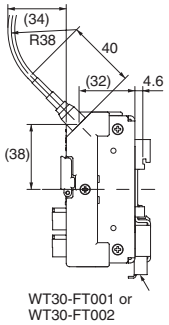
WT30-SID16
WT30-SMD16
WT30-SMD-16-1



WT30-AT003



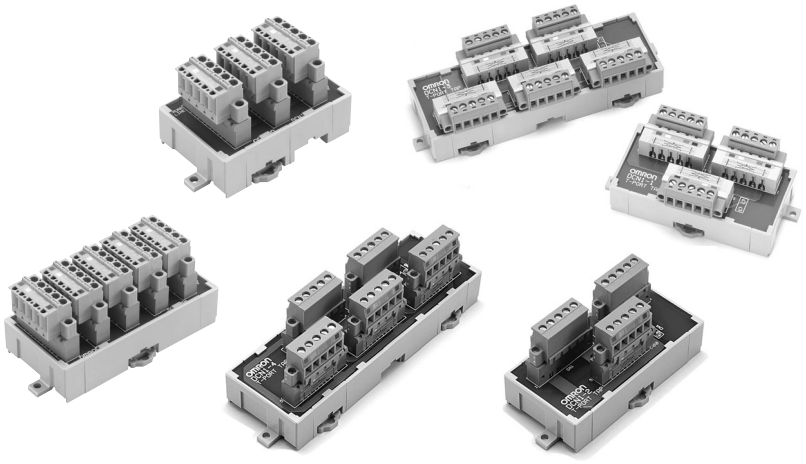
WT30-AT001



Peripheral Devices

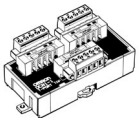
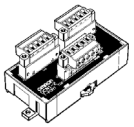
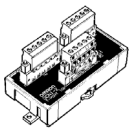
Peripheral Devices for DeviceNet Communications

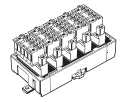
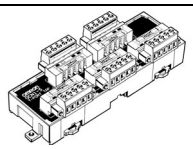
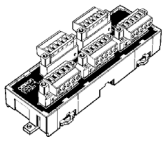
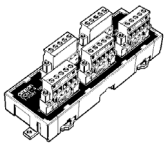
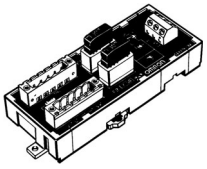
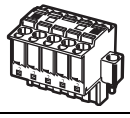
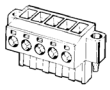
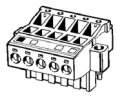
- T-branch Taps and Terminal-block Terminator
- T-branch Taps Create One or Three Branch Lines



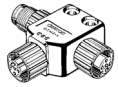
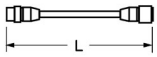
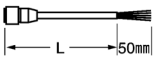
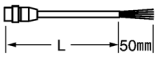
■ Ordering Information

General-purpose Models

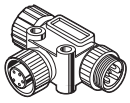
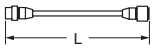
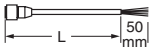
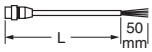
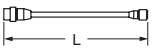
Product	Appearance	Model	Specification	
T-branch Tap for 1 branch line		DCN1-1NC	Cable wiring direction: Toward top Cable lock direction: From top Connector screw direction: From top	Provided with 3 parallel connectors with clamps (XW4G-05C1-H1-D), standard terminating resistor
		DCN1-1C	Cable wiring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

Product		Appearance	Model	Specification	
T-branch Tap for 3 branch lines			DCN1-3NC	Cable wiring direction: Toward top Cable lock direction: From top Connector screw direction: From top	Provided with 5 parallel clamp connectors with screws (XW4G-05C1-H1-D), standard terminating resistor
			DCN1-3C	Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From side	Provided with 5 parallel connectors with screws (XW4B-05C1-H1-D), standard terminating resistor
			DCN1-4C	Cable wiring direction: Toward top Cable screw direction: From side Connector screw direction: From top	
			DCN1-4R	Cable wiring direction: Toward side Cable screw direction: From top Connector screw direction: From top	Provided with 5 orthogonal clamp connectors with screws (XW4B-05C1-VIR-D), standard terminating resistor
Power Supply Tap			DCN1-1P	One-branch tap provided with 2 connectors, standard terminating resistor, and fuse	
Connectors			XW4G-05C1-H1-D	Parallel clamp connector with screws Connector insertion and wiring both performed horizontally.	
			XW4G-05C4-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-VIR-D	Orthogonal connector with screws Connector insertion and wiring performed at a right angle.	
DeviceNet 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	

Environment-resistive Models for Thin Wires and 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	Cable with connectors on both ends
		DCA1-5CN01W1	Length (L): 1 m	
		DCA1-5CN02W1	Length (L): 2 m	
		DCA1-5CN03W1	Length (L): 3 m	
		DCA1-5CN05W1	Length (L): 5 m	
		DCA1-5CN10W1	Length (L): 10 m	
	 	DCA1-5CNC5F1	Length (L): 0.5 m	Cable with connector socket on one end
		DCA1-5CN01F1	Length (L): 1 m	
		DCA1-5CN02F1	Length (L): 2 m	
		DCA1-5CN03F1	Length (L): 3 m	
		DCA1-5CN05F1	Length (L): 5 m	
		DCA1-5CN10F1	Length (L): 10 m	
	 	DCA1-5CNC5H1	Length (L): 0.5 m	Cable with connector plug on one end
		DCA1-5CN01H1	Length (L): 1 m	
		DCA1-5CN02H1	Length (L): 2 m	
		DCA1-5CN03H1	Length (L): 3 m	
		DCA1-5CN05H1	Length (L): 5 m	
		DCA1-5CN10H1	Length (L): 10 m	
Shielded Panel-mounting Connector, female		DCA1-5CNC5P1	Panel-mounting connector socket With 0.05 cable	
		XS2P-D522-2	Panel-mounting connector socket Solder-cup terminals	
Shielded Panel-mounting Connector, male		DCA1-5CNC5M1	Panel-mounting connector plug With 0.05 cable	
		XS2M-D524-4	Panel-mounting connector plug Solder-cup terminals	

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	Cable with connectors on both ends
		DCA2-5CN02W1	Length (L): 2 m	
		DCA2-5CN05W1	Length (L): 5 m	
		DCA2-5CN10W1	Length (L): 10 m	
	 	DCA2-5CN01F1	Length (L): 1 m	Cable with connector socket on one end
		DCA2-5CN02F1	Length (L): 2 m	
		DCA2-5CN05F1	Length (L): 5 m	
		DCA2-5CN10F1	Length (L): 10 m	
	 	DCA2-5CN01H1	Length (L): 1 m	Cable with connector plug on one end
		DCA2-5CN02H1	Length (L): 2 m	
		DCA2-5CN05H1	Length (L): 5 m	
		DCA2-5CN10H1	Length (L): 10 m	
	 	DCA1-5CN01W5	Length (L): 1 m	Cable with connectors on both ends Thin cable M12 socket
		DCA1-5CN02W5	Length (L): 2 m	
		DCA1-5CN05W5	Length (L): 5 m	
		DCA1-5CN10W5	Length (L): 10 m	
Panel-mounting Connector (female)		DCA2-5CNC5P1	Connector socket for panel mounting Cable: 0.5 m	
Panel-mounting Connector (male)		DCA2-5CNC5M1	Connector plug for panel mounting Cable: 0.5 m	
Panel-mounting Connector (male)		XS4M-D521-1	Connector plug for panel mounting DIP terminals	

■ Specifications

General-purpose Models (T-branch Taps)

Ratings/Characteristics

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

Materials

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

Note: The terminal block connector is a product of Phoenix Contact.

Environment-resistive Models (Thin Wire Communications Connectors)

Ratings/Characteristics

Item	DCA1-5CN□□□1 Connectors with Cables	DCN2-1 T-branch Connector	XS2□-D5S7 Assembling-type Connector	DRS2-□ Connectors with Terminating Resistor
Rated current	3 A			
Rated voltage	125 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 temperature range	–20 to 65°C			
Storage temperature range	–25 to 70°C			
Enclosure rating	IEC IP67			
Insertion durability	200 times			
Cable strength	98 N for 15 s	---		
Vibration resistance	No current interruptions of more than 1 μm while performing simple vibrations at either 10 to 500 Hz with 1.52-mm full amplitude or at acceleration 100 m/s^2, whichever is smaller			

Environment-resistive Models (Thick Wire Communications Connectors)

Ratings/Characteristics

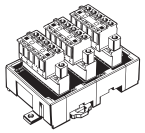
Item	DCA2-5CN□□□1 Connectors with Thick Wires	DCA1-5CN□□W5 Connectors with Thick Wires	DCN3-11 T-branch Connector	DCN3-12 T-branch Connector	DRS3-1 Connectors with Terminating Resistor	DCA2-5CNC5P1 Panel Mounting Connector	XS4M-D521-1 Panel Mounting Connector
Rated current	8 A	3 A	8 A	3 A (See note.)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

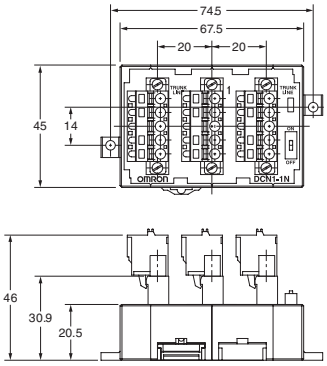
Note: The rated current between thick wires is 8 A.

■ Dimensions (Unit: mm)

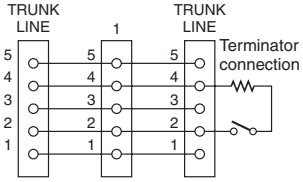
General-purpose Models

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



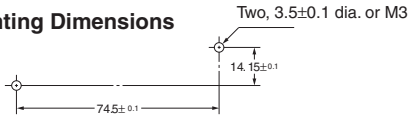


Internal Circuit

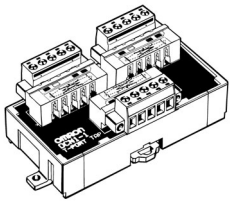


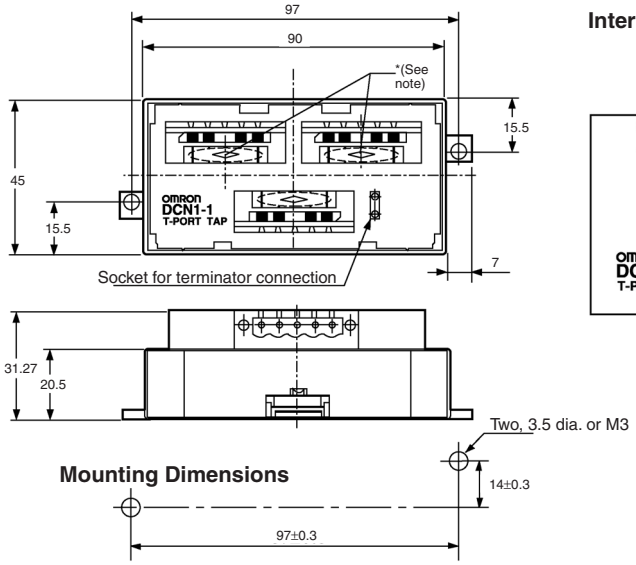
Terminal No.	Name
1	V–
2	CAN-L
3	DRAIN
4	CAN-H
5	V+

Mounting Dimensions

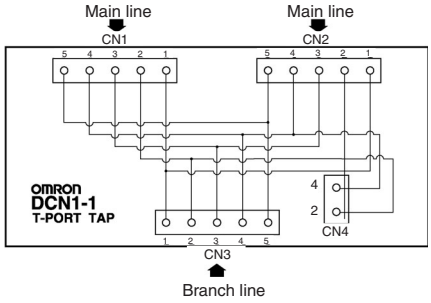


DCN1-1C
T-branch Tap for 1 Branch Line
(With Three Branching Connectors)





Internal Circuit

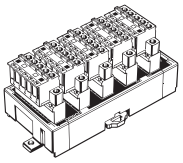


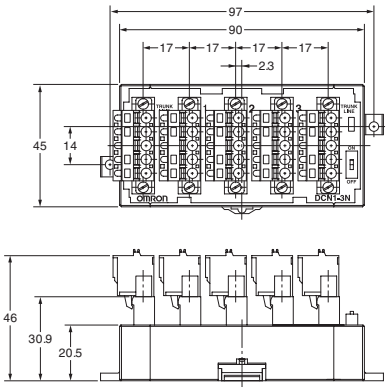
Terminal No.	Name
1	V–
2	CAN-L
3	DRAIN
4	CAN-H
5	V+

Mounting Dimensions

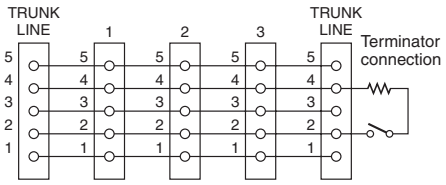
Note: When connecting a branch line to the main line, connect the main line to the connector marked with an asterisk because the resistance between the asterisks is minimal.

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



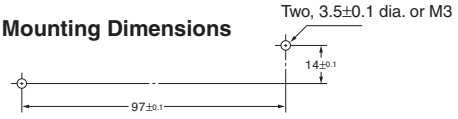


Internal Circuit

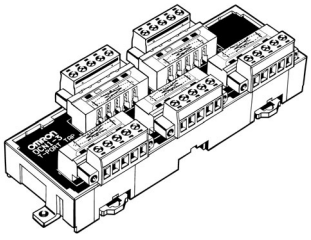


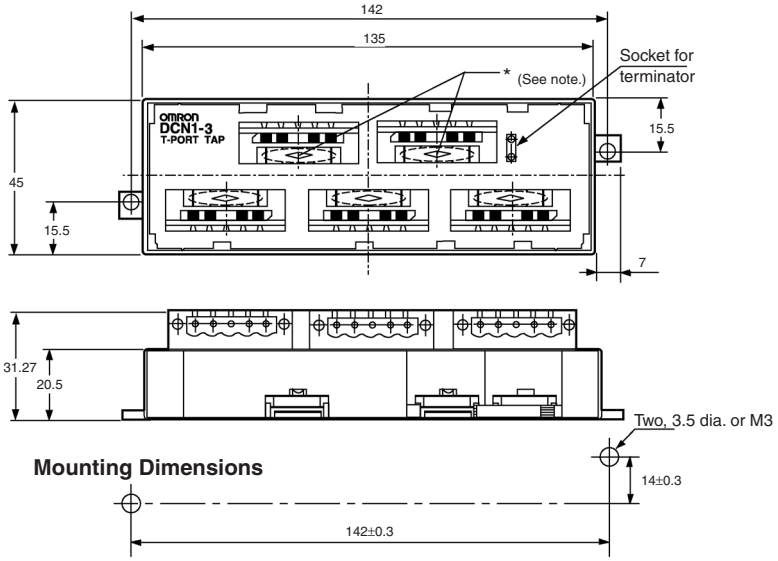
Terminal No.	Name
1	V–
2	CAN-L
3	DRAIN
4	CAN-H
5	V+

Mounting Dimensions



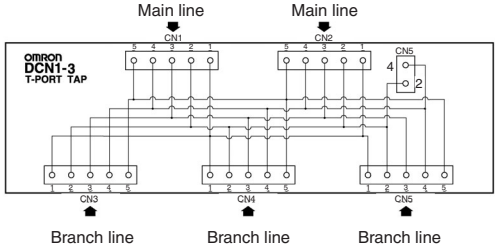
DCN1-3C
T-branch Tap for 3 Branch Lines
(With Five Branching Connectors)





Mounting Dimensions

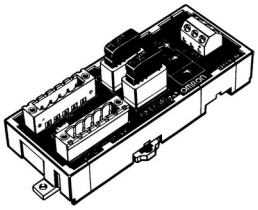
Internal Circuit

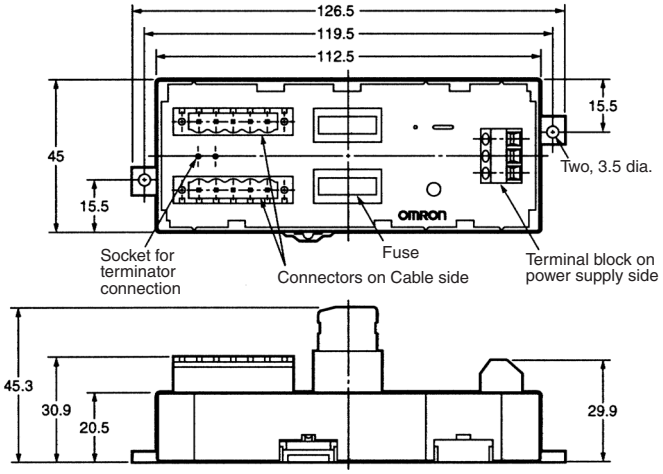


Terminal No.	Name
1	V–
2	CAN-L
3	DRAIN
4	CAN-H
5	V+

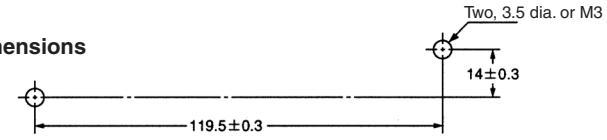
Note: When connecting a branch line to the main line, connect the main line to the connector marked with an asterisk because the resist ance between the asterisked portion is minimal.

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

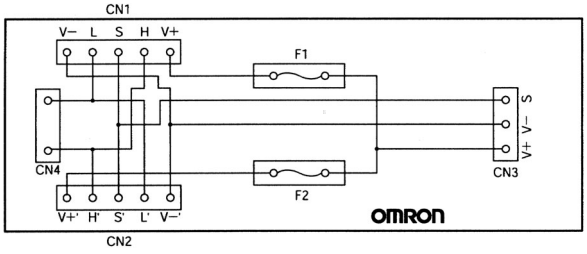




Mounting Dimensions

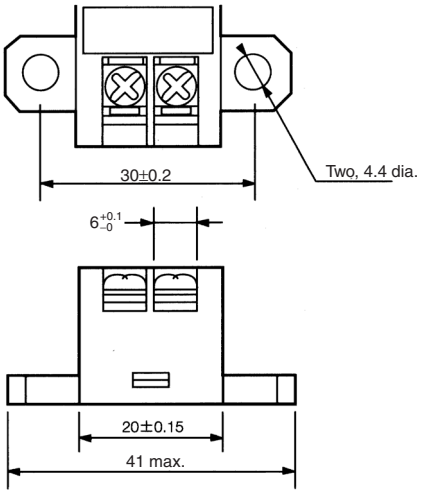


Internal Circuit

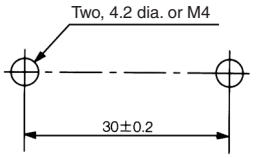


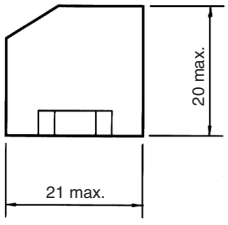
Terminal No.	Name
V–	V–
L	CAN-L
S	DRAIN
H	CAN-H
V+	V+

DRS1-T Terminal-block Terminator



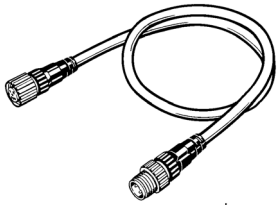
Mounting Holes



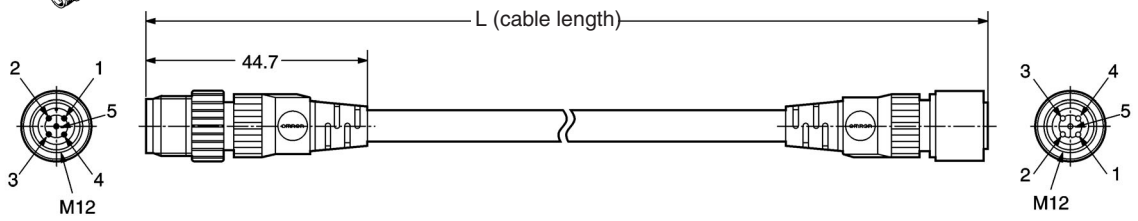


Environment-resistive Models for Thin Wires

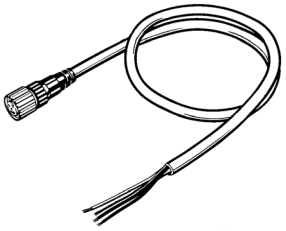
DCA1-5CN□□W1
Cables with Connectors on Both Ends



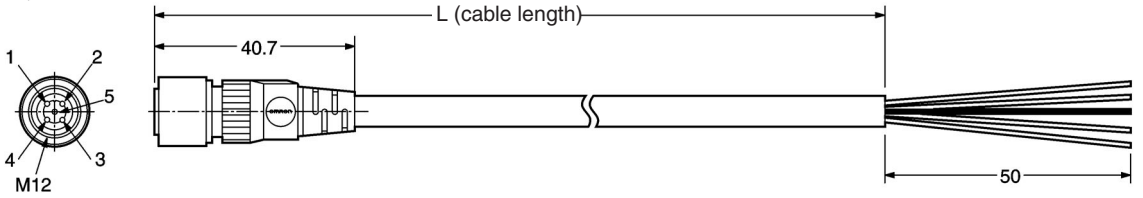
Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN L



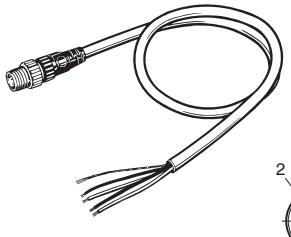
DCA1-5CN□□F1
Cables with Connector (Socket) on Single End



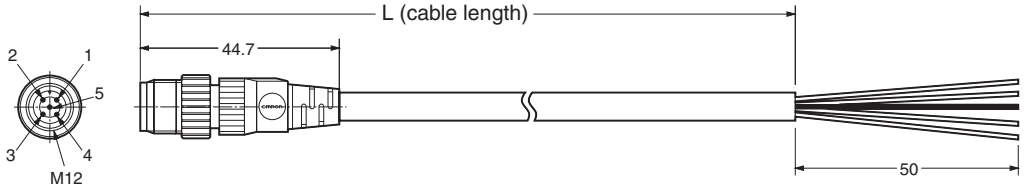
Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN L



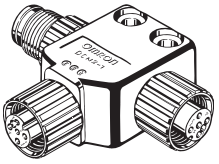
DCA1-5CN□□H1
Cables with Connector (Plug) on Single End



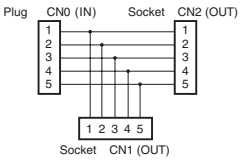
Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN L



DCN2-1
T-branch Connector

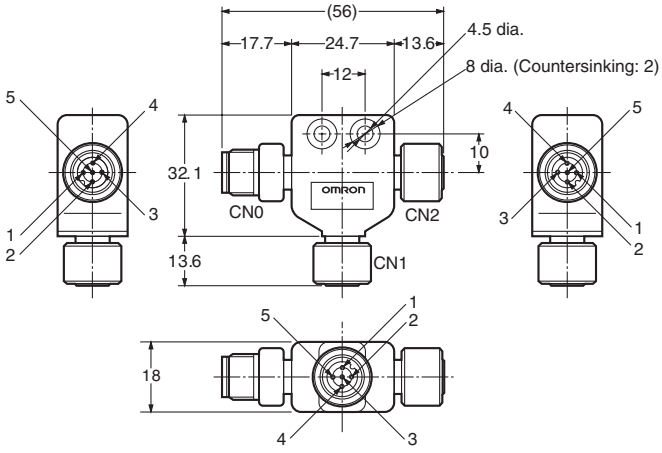


Connections Diagram

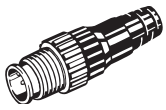


Wiring

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



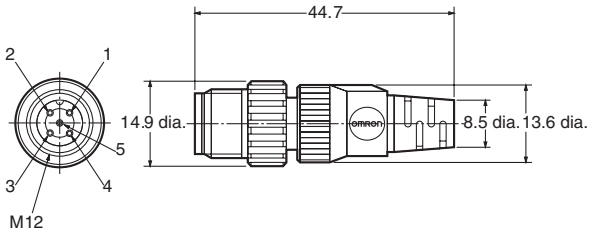
DRS2-1 (Plug)
DRS2-2 (Socket)
Connectors with Terminating Resistance



Wiring

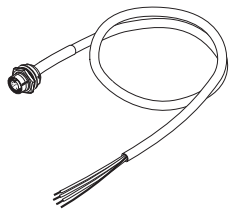
Terminal No.	Name
1	DRAIN: NC
2	V+: NC
3	V–: NC
4	CAN-H: 121 Ω
5	CAN-L:

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

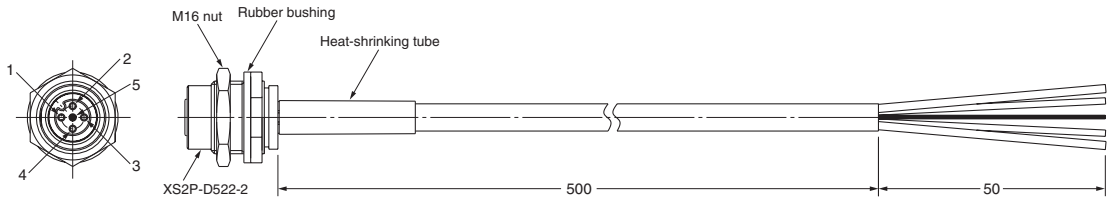


Note: The diagram shows the DRS2-1 (plug).

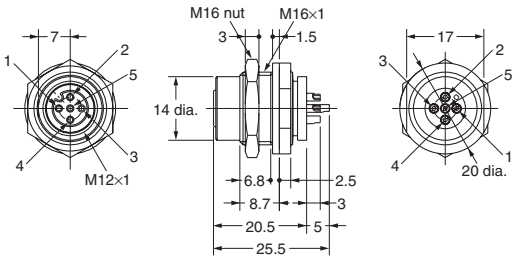
DCA1-5CNC5P1
Panel-mounting Connector Socket with 0.5 m Cable



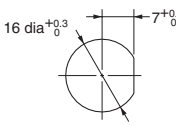
Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN L



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

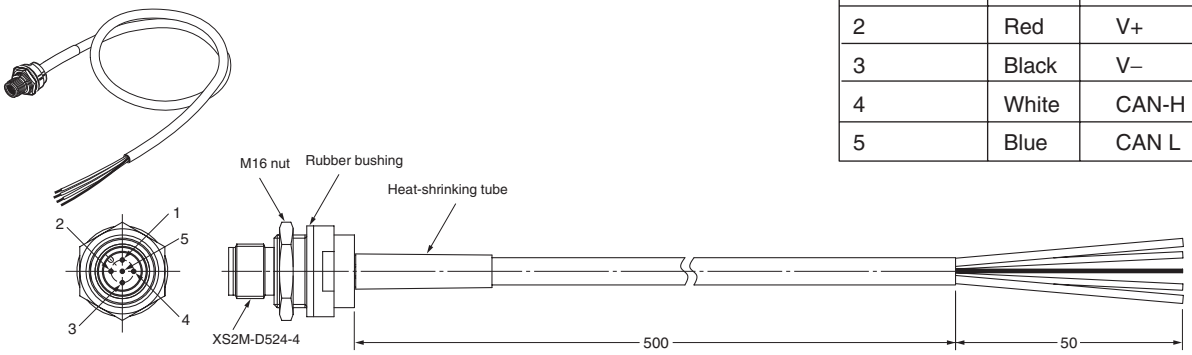


Panel Cutout

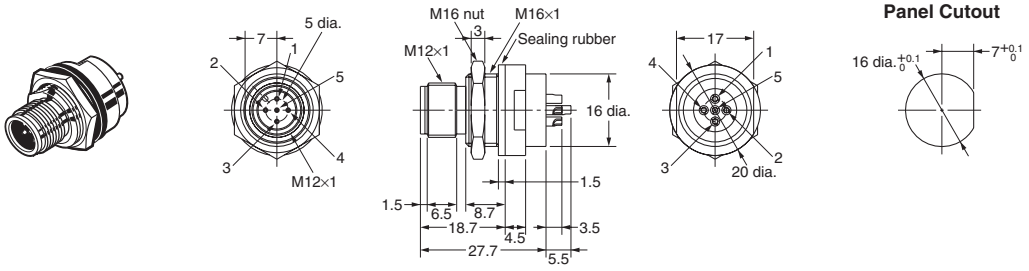


DCA1-5CNC5M1
Panel-mounting Connector Plug with 0.5 m Cable

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

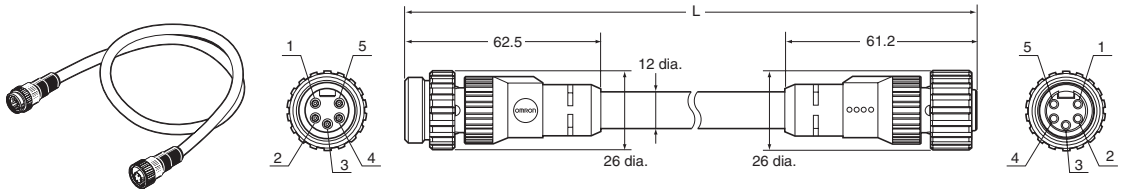


XS2P-D524-4
Panel-mounting Connector Plug, Solder-cup Terminals



Environment-resistive Models for Thick Wires

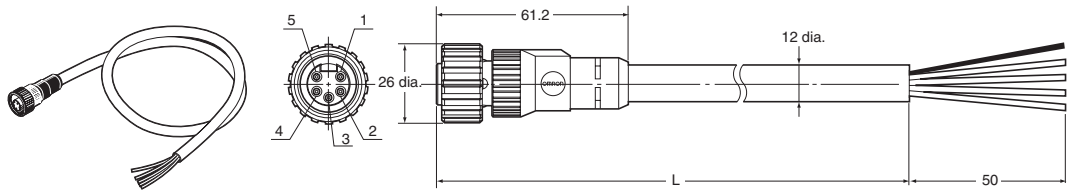
DCA2-5CN□□W1
Thick Cable with Connectors on Both Ends
(5 Conductors for Communications)



Wiring

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

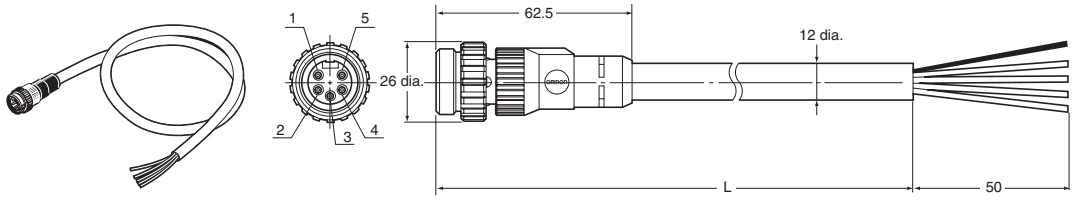
DCA2-5CN□□F1
Thick Cable with Connector Socket on One End
(5 Conductors for Communications)



Wiring

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

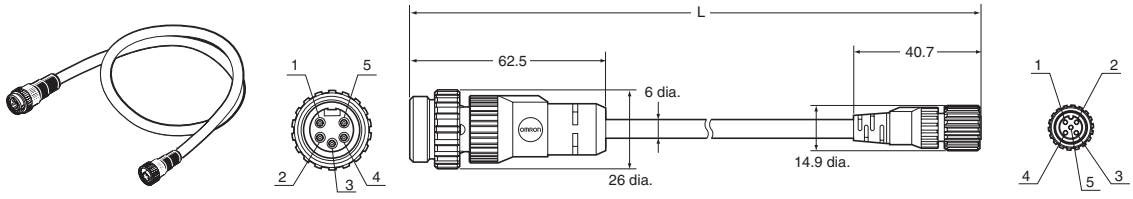
DCA2-5CN□□H1
Thick Cable with Connector Plug on One End
(5 Conductors for Communications)



Wiring

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

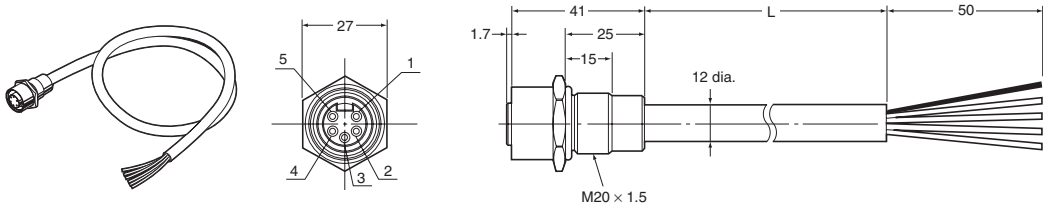
DCA1-5CN□□W5
Thin Cable with Connectors on Both Ends
(5 Conductors for Communications)



Wiring

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

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

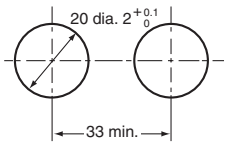


Wiring

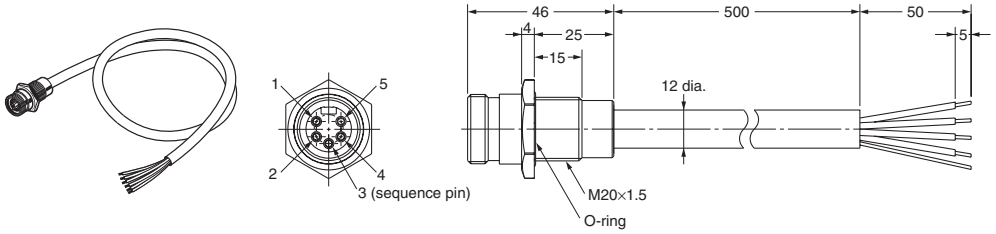
Terminal No.	Color	Name
1	---	DRAIN
2	Red	V+
3	Black	V–
4	White	CAN-H
5	Blue	CAN-L

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

Panel Cutout Dimensions



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

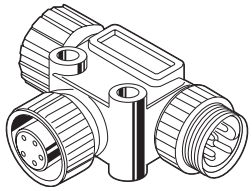


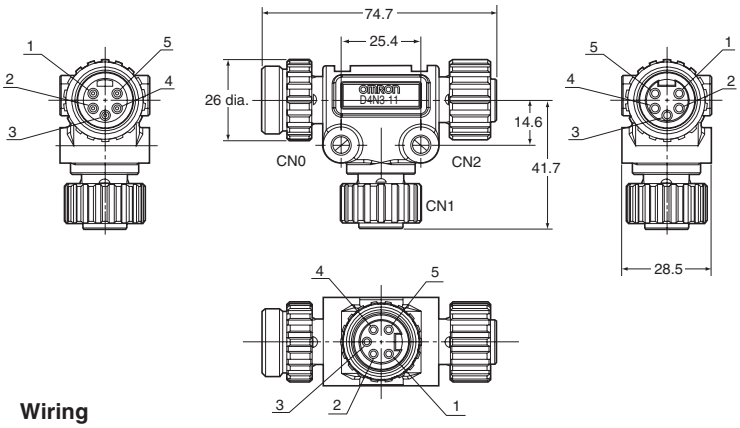
Wiring

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

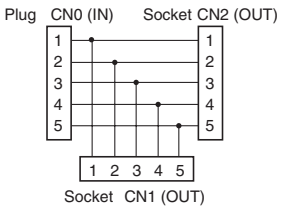
Note: A nut is included.

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





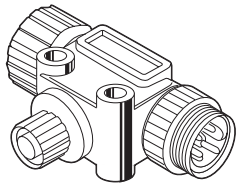
Connections Diagram

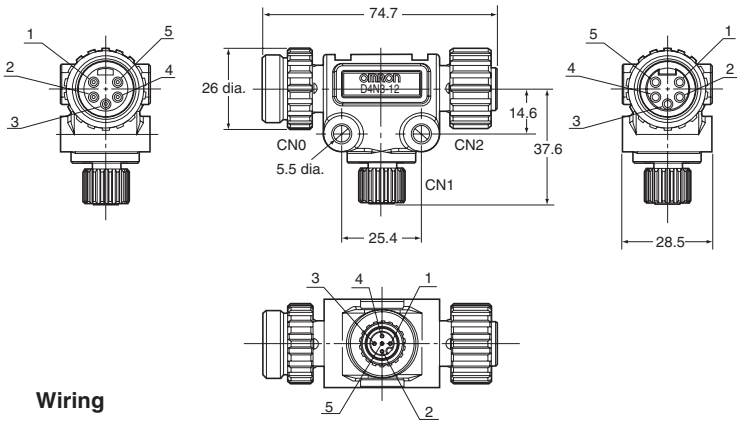


Wiring

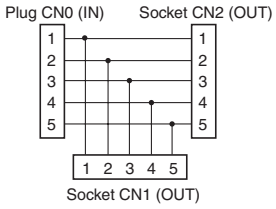
Terminal No.	Name
1	DRAIN
2	V+
3	V–
4	CAN-H
5	CAN-L

DCN3-12
T-branch Connector (5 Conductors for Communications)





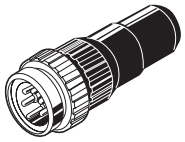
Connections Diagram



Wiring

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

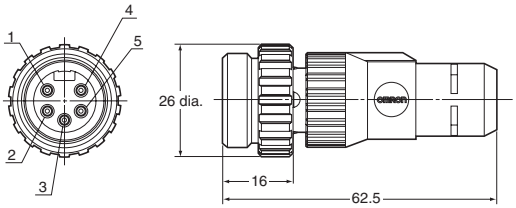
DRS3-1
Connector Plug with Terminating Resistance



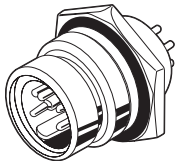
Wiring

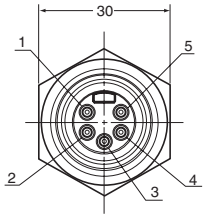
Terminal No.	Name
1	DRAIN: NC
2	V+: NC
3	V–: NC
4	CAN-H: 121 Ω
5	CAN-L: 121 Ω

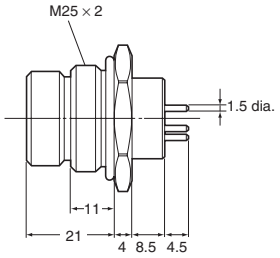
Note: Terminating resistance (121 Ω) is connected between terminals 4 and 5.



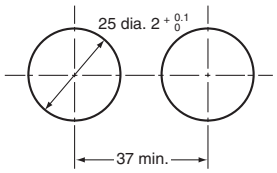
XS4M-D521-1
Panel-mounting Connector Plug
(5 Pins for Communications)



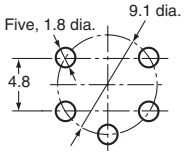




Panel Cutout Dimensions



PCB Processing Dimensions



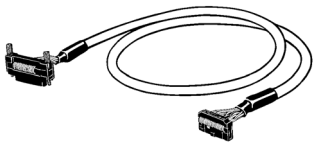
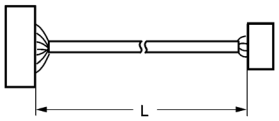
Note: A rubber seal and nut for panel mounting are included.

I/O Connectors for Programmable Slaves

Connector Terminal Conversion Units

Applicable cable	Connected model	Remarks
XW2Z-□□□A	XW2D-20G6	Slim type (with M3 screw terminals)
	XW2B-20G4	Flat cable connectors (with M3 terminal screws for flat-blade screwdriver)

XW2Z Cables with Connectors (16 Digital Inputs/Outputs)

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

I/O Connectors for Transistor Remote I/O Terminals (with Connectors)

■ Applicable Connectors

Type		Model	Remarks
Flat Cable Pressure-welded Connectors		XG4M-4030-T	---
Pressure-welded Connectors with Loose Wires	Socket	XG5M-4032-N	AWG 24
		XG5M-4035-N	AWG 28 to 26
	Semicover	XG5S-2001	---
	Hood Cover (See note.)	XG5S-4022	---

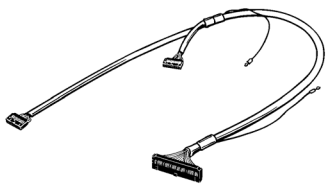
Note: When using the Hood Cover, a multidrop DeviceNet connector cannot be used.

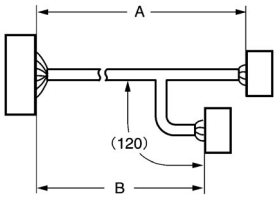
■ Cables

Type	Model	Connected device	Applicable models
Cable with Connectors (1:2)	G79-I□□-□□-D1	G7TC/G70D/G70A	DRT1-ID32ML
	G79-M□□-□□-D1		DRT1-MD32ML
	G79-O□□-□□-D1		DRT1-OD32ML/DRT1-OD32ML-1
	G79-I□□-□□-D2		DRT1-ID32ML-1
	G79-M□□-□□-D2		DRT1-MD32ML-1
Cable with Connector (1:1)	XW2Z-C□□K	---	All models
Cable with Loose Wires with Crimp Terminals	G79-Y□00C-D1		
Cable with Loose Wires	G79-A□00C-D1		

■ Cables with Connectors

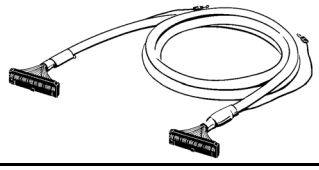
G79-□□-□-D□ Cables with Connectors (1-to-2 Connection)

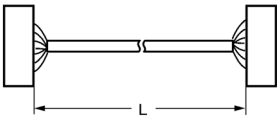
Appearance	Cable length (mm)		Model number
	A	B	
	500	250	G79-I50-25-D1
	750	500	G79-I75-50-D1
	500	250	G79-O50-25-D1
	750	500	G79-O75-50-D1
	500	250	G79-M50-25-D1
	750	500	G79-M75-50-D1
	500	250	G79-I50-25-D2
	750	500	G79-I75-50-D2
	500	250	G79-M50-25-D2
	750	500	G79-M75-50-D2



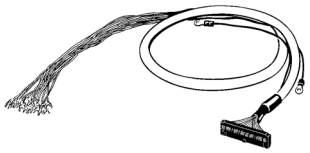
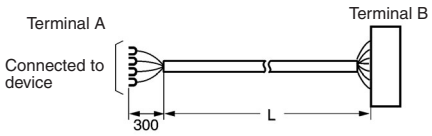
Length without any bending

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

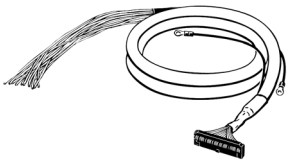
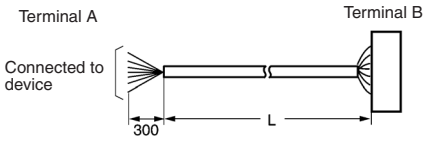
Appearance	Cable length (mm)	Model number
	250	XW2Z-C25K
	500	XW2Z-C50K



G79-Y□C-D1 Cables with Crimp Terminals (at the End of Loose Wires)

Appearance	Cable length (mm)		Model number
		1,000	G79-Y100C-D1
		2,000	G79-Y200C-D1
		5,000	G79-Y500C-D1

G79-A□C Cables with Loose Wires

Appearance	Cable length (mm)		Model number
		2,000	G79-A200C-D1
		5,000	G79-A500C-D1

Applicable Flat Cable Connectors for Remote Adapters

■ Applicable Connectors

Flat Cable Connectors with MIL-type Plugs

Model	Specifications
XG4A-2031	DIP straight terminals
XG4A-2034	DIP L-shape terminals

Connectors for Sensor Terminal Cables

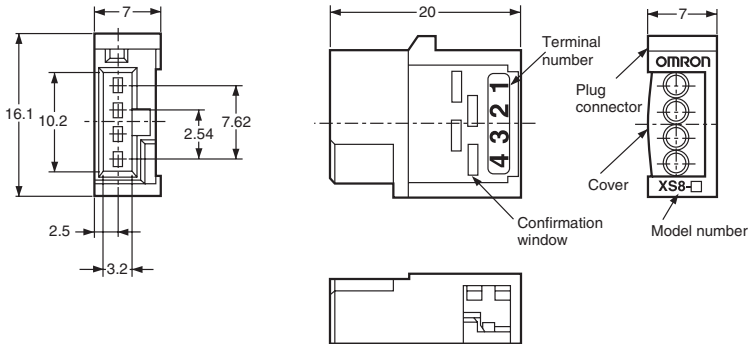
■ Flat Cable Connectors with MIL-type Plugs

Applicable wire gauge	Model
0.3 to 0.5 mm^2	XS8A-0441
0.14 to 0.2 mm^2	XS8A-0442

Note: These connectors are packaged in units of 10. Order in multiples of 10.

■ Dimensions (Unit: mm)

XS8A-044□ (Connectors for Cables)



Environment-resistive Peripheral Devices (for Power Supplies or I/O)

■ Applicable Connectors

Power Supply Connectors (M12 Microconnectors)

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

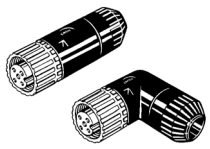
Power Supply Connectors (7/8-16UN Miniconnectors)

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

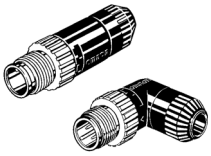
I/O Connectors (M12 Microconnectors)

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

Connector Assemblies with Socket (M12 Microconnectors for Power Supply)

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

Connector Assemblies with Plug (M12 Microconnectors for Power Supply)

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

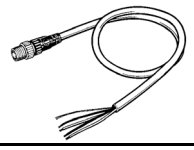
Cables with Connector Socket on One End (M12 Microconnectors for Power Supply)

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

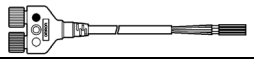
Cables with Connector (Socket/Plug) on Both Ends (M12 Microconnectors for Power Supply and I/O)

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

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

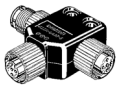
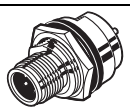
Appearance	Cable direction	Number of core wires	Cable length (m)	Standard cable
	Straight	3	0.3	XS2H-D421-AC0-A
		4		XS2H-D421-A80-A
		3	1	XS2H-D421-CC0-A
		4		XS2H-D421-C80-A

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

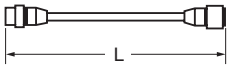
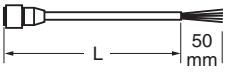
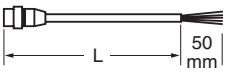
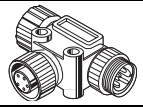
Appearance	With/without cable	Connector	DC models	
			Cable length (m)	Model number
	With cable	Connectors on both ends	0.5	XS2R-D426-B11-F
			1	XS2R-D426-C11-F
			2	XS2R-D426-D11-F
			3	XS2R-D426-E11-F
		Connector on one end	2	XS2R-D426-D10-F
			5	XS2R-D426-G10-F
	Without cable	Connectors on both ends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

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

T-branch Connectors and Connector Covers (M12 Microconnectors)

Appearance	Type	Model number	Application
	T-branch connector	XS2R-D427-5	For branching power lines
	Panel-mounting connector socket Solder-cup terminals	XS2R-D422-2	For power line panel mounting, female
	Panel-mounting connector plug Solder-cup terminals	XS2R-D424-4	For power line panel mounting, male
	Waterproof cover	XS2Z-12	For covering unused I/O connectors
	Dust cover	XS2Z-15	

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

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

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

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

I/O Connectors for MULTIPLE I/O TERMINALs

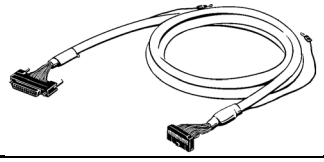
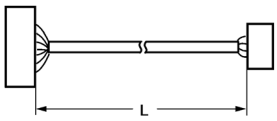
■ Connectors

Type			Model	Remarks
Molex connector	Pressure-welded terminals	Housing	52109-0390	Corresponding to 24 AWG
	Crimped terminals		51030-0330	
		Chain terminal	50083-8014	Corresponding to 24 to 30 AWG
			50084-8014	Corresponding to 22 to 24 AWG
		Loose terminal	50083-8114	Corresponding to 24 to 30 AWG
			50084-8114	Corresponding to 22 to 24 AWG
		Press-fit tool	57036-5000	Corresponding to 22 to 26 AWG
			57037-5000	Corresponding to 24 to 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	---
	Pressure-welded terminals		FCN367J040-AU/F	---
	Crimped terminals		FCN363J040-AU	---
OMRON D-sub Connector	Plug		XM2A-2501	---
	Hood		XM2S-2513	#4-40UNC inch screws

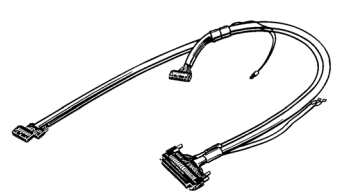
■ Applicable Cables with Connectors (Fujitsu Connectors)

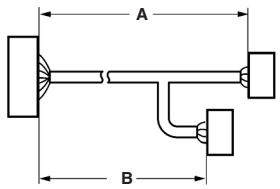
I/O classification	Model number
Digital input, 16 points	XW2Z-□□□A
	G79-□C
Digital output, 16 points	XW2Z-□□□A
	G79-□C
Digital input, 32 points	XW2Z-□□□B
	G79-I□C□
Digital output, 32 points	XW2Z-□□□B
	G79-O□C□

G79-□C Cables with Connectors (1-to1 Connection) for Digital Input/Output (16 Points)

Appearance	Cable length L (mm)	Model number
	 1,000	G79-100C
	1,500	G79-150C
	2,000	G79-200C
	3,000	G79-300C
	5,000	G79-500C

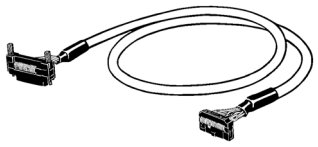
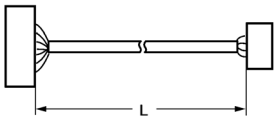
G79-O□C-□, G79-I□C-□ Cables with Connectors (1-to-2 Connection) for Digital Input/Output (32 Points)

Appearance	Cable length L (mm)		Model number	
	A	B	Input	Output
	1,000	750	G79-I100C-75	G79-O100C-75
	1,500	1,250	G79-I150C-125	G79-O150C-125
	2,000	1,750	G79-I200C-175	G79-O200C-175
	3,000	2,750	G79-I300C-275	G79-O300C-275
	5,000	4,750	G79-I500C-475	G79-O500C-475

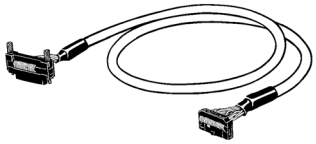
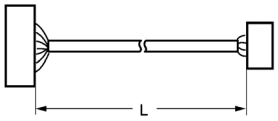


Length without any bending

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

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

XW2Z Cables with Connectors for Digital Input/Output (32 Points)

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

Power Supplies

■ S8VS Switch Mode Power Supplies (60/90 W)

Power Supplies with Maintenance Forecast Function

Ordering Information

Power ratings	Output voltage	Output current	Model number
60 W	24 V	2.5 A	S8VS-06024
			S8VS-06024A
90 W		3.75 A	S8VS-09024
			S8VS-09024A

Note: Monitor function provided with S8VS-□□□24A only.

■ S8TS Switching Power Supplies (25/30/60 W)

Block-Type-Switching Power Supply that Mounts to DIN Track

Ordering Information

Basic Blocks with Terminal Blocks

Type	Capacity	Output voltage	Output current	100 to 240 VAC
				Model number
Basic Blocks (See note 1.)	25 W	5 V	5 A	S8TS-02505
	30 W	12 V	2.5 A	S8TS-03012
	60 W	24 V		S8TS-06024
Basic Block Bus Line Connectors	30 W	12 V	2.5 A	S8TS-03012-E1
	60 W	24 V		S8TS-06024-E1

Note: Basic Blocks with Connector Terminals are also available.

Bus Line Connector

Type	Number of Connectors	Model number
AC line + DC line bus (For parallel operation)	1 Connector	S8T-BUS01
	10 Connectors (See note 2.)	S8T-BUS11
AC line bus (For series operation or isolated operation)	1 Connector	S8T-BUS02
	10 Connectors (See note 3.)	S8T-BUS12

Note: 1. Bus Line Connectors are sold separately. Order Bus Line Connectors separately when linking Blocks.
2. One package contains 10 S8T-BUS01 Connectors.
3. One package contains 10 S8T-BUS02 Connectors.

■ S8T-DCBU-01 Block Power Supply DC Backup Block

DC Backup Block for S8TS for Preventing 24 VDC Outages due to Instantaneous Power Failures

Ordering Information

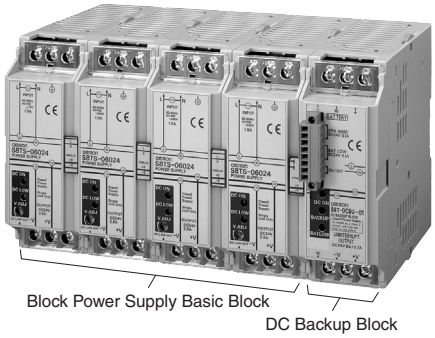
DC Backup Block (See Note 2.)

Output voltage	Output current	Model number
24 V	3.7 A/ 8 A (See note 3.)	S8T-DCBU-01

Note: 1. Use the S8T-DCBU-01 together with an S8TS-06024□ Block Power Supply Basic Block.
2. One Bus Line Connector, S8T-BUS03, is included as an accessory.
3. Using specified battery LC-□122R2□□: 3.7 A max.
Using specified battery LC-□123R4□□: The output current can be selected by the overcurrent protection operating point selector.

Battery Holder

Model number
S82Y-TS01



■ S82K Switching Power Supply (3/7.5/15/30/50/90/100/240 W)

Ultimate DIN-track-mounting Power Supply with a Wide Power Range from 3 to 240 W

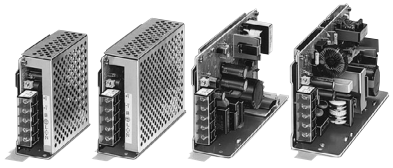
Ordering Information

Capacity	Input current	Output voltage	Output current	Model	Class 2 (UL, CSA)
3 W	100 to 240 VAC	24 V	0.13 A	S82K-00324	Conforms
7.5 W			0.3 A	S82K-00724	
15 W			0.6 A	S82K-01524	
30 W			1.3 A	S82K-03024	
50 W			2.1 A	S82K-05024	
90 W	100/200 VAC		3.75 A	S82K-09024	
100 W			4.2 A	S82K-10024	External fuse required
240 W			10 A	S82K-24024	---

■ S82J Switching Power Supply (10/25/50/100/150/300/600 W)

Compact and Economical Switching Power Supplies with Capacities Up to 600 W

Ordering Information



Capacity	Output voltage	Output current	100 to 240 VAC
			Model number
10 W	24 V	0.5 A	S82J-01024D
25 W		1.1 A	S82J-02524D
50 W		2.1 A	S82J-05024D
100 W		4.5 A	S82J-10024D

Capacity	Output voltage	Output current	100/200 240 VAC switch input (150 W model switches automatically)
			Model number
150 W	24 V	6.5 A	S82J-15024D
300 W		14 A	S82J-30024
600 W		27 A	S82J-60024

Note: The above Power Supplies have covers and mount to the front.

■ S8PS Switching Power Supply (50/100/150/300/600 W)

The most Compact DIN-track-mounting Switching Power Supplies Even with Capacities Up to 600 W

Ordering Information

Capacity	Output voltage	Output current	100 to 240 VAC
			Model number
50 W	24 V	2.1 A	S8PS-05024C
100 W		4.5 A	S8PS-10024C
150 W		6.5 A	S8PS-15024C
300 W		14 A	S8PS-30024C
600 W		27 A	S8PS-60024C

Note: The above Power Supplies have covers and mount to the front.

Ordering Information

International Standards and EC Directives

- The abbreviations used in the “Standards” column in the following tables indicate the following international standards.
  U: UL, C: CSA, UC: cULus, CU: cUL, N: NK, L: Lloyd, CE: EC Directives
  See OMRON sales representatives for conditions under which UL, CSA, cULus, cUL, NK, LLOYD, and CE standards were met. The information on standards is current as of March 2005.

■ 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.)

PLCs are electrical devices that are incorporated in machines and 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

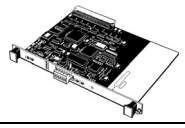
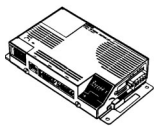
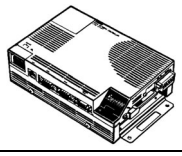
Applicable Standard

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.

Masters

Product	Appearance	Model	Specifications	Standards
DeviceNet Unit		CJ1W-DRM21	For CJ Series Functions as either a master or a slave. 2,048 I/O points	UC, N, CE
		CS1W-DRM21-V1	For CS Series Functions as either a master or a slave. 2,048 I/O points	
Master Units		C200HW-DRM21-V1	For CS1, C200HS, C200HX/HG/HE With CS1, C200HX/HG/HE: 800 input points, 800 output points (1,600 points in total) With C200HS: 512 input points, 512 output points (1,024 points total)	U, C, N, L, CE
		CVM1-DRM21-V1	For CVM1/CV Series 1,024 input points, 1,024 output points (2,048 points in total)	U, C, CE
Master Board		3G8B3-DRM21-E	VME Board I/O allocation: 12,288 bytes	---
Open Network Controllers with DeviceNet Interface		ITNC-EIS01-DRM	No expansion slot, two COM ports, and DeviceNet capability	U, C, CE
		ITNC-EPX01-DRM	Expansion slot, three COM ports, and DeviceNet capability	
Optional software	---	ITNC-NSIQ-EF	NX-Server for DeviceNet ONC Edition Ver. 1.00	---

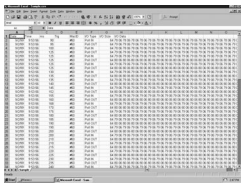
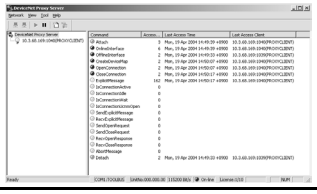
Note: Refer to the CJ1 Catalog (Cat. No. P052) for details on the SYSMAC CJ1.
Refer to the CS1 Catalog (Cat. No. P047) for details on the SYSMAC CS1.
Refer to the SYSMAC C200HX/HG/HE Catalog (Cat. No. P036) for details on the SYSMAC C200HX/HG/HE.

Ordering Information

Configurator

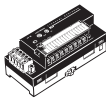
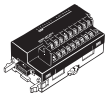
Product	Appearance	Model	Specifications	Standards
DeviceNet Configurator		WS02-CFDC1-E	DeviceNet Configurator Software (Windows 95, 98, NT4.0, 2000, or XP)	---
		3G8E2-DRM21-EV1	PC Card (provided with software running on Windows 95, 98, Me, 2000, or XP)	

Software

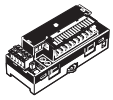
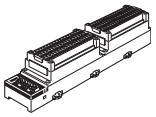
Product	Appearance	Model	Specifications	Standards
NX-Server		WS02-NXD1-E	DDE Edition (Windows 95, 98, NT4.0, ME, 2000, or XP)	---
DeviceNet Proxy Server		WS02-PEDC1-E	Software (Windows 95, 98, NT4.0, 2000, or XP)	---

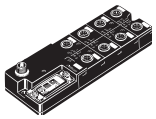
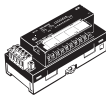
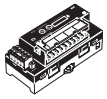
Slaves

■ Smart Slaves

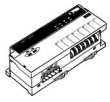
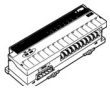
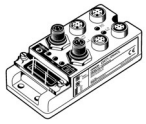
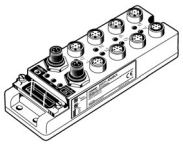
Product	Appearance	Model	Specifications	Standards
Remote I/O Terminals with Transistors		DRT2-ID16	16 inputs with NPN, ⊕ common	UC, CE
		DRT2-ID16-1	16 inputs with PNP, ⊖ common	
		DRT2-OD16	16 outputs with NPN, ⊖ common	
		DRT2-OD16-1	16 outputs with PNP, ⊕ common	
Remote I/O Terminal Expansion Units with Transistors		XWT-ID08	8 inputs with NPN, ⊕ common	UC, CE
		XWT-ID08-1	8 inputs with PNP, ⊖ common	
		XWT-OD08	8 outputs with NPN, ⊖ common	
		XWT-OD08-1	8 outputs with PNP, ⊕ common	
		XWT-ID16	16 inputs with NPN, ⊕ common	
		XWT-ID16-1	16 inputs with PNP, ⊖ common	
		XWT-OD16	16 outputs with NPN, ⊖ common	
		XWT-OD16-1	16 outputs with PNP, ⊕ common	
Remote I/O Terminals with 3-tier Terminal Blocks and Transistors		DRT2-ID16TA	16 inputs with NPN, ⊕ common	UC, CE
		DRT2-ID16TA-1	16 inputs with PNP, ⊖ common	
		DRT2-OD16TA	16 outputs with NPN, ⊖ common	
		DRT2-OD16TA-1	16 outputs with PNP, ⊕ common	
		DRT2-MD16TA	8 inputs/8 outputs with NPN, ⊕ common for inputs, ⊖ common for outputs	
		DRT2-MD16TA-1	8 inputs/8 outputs with PNP, ⊖ common for inputs, ⊕ common for outputs	

Ordering Information

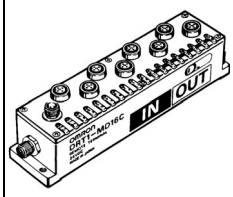
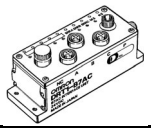
Product	Appearance	Model	Specifications	Standards
MIL Connector Terminals		DRT2-ID32ML	32 inputs with NPN, ⊕ common	UC, CE
		DRT2-ID32ML-1	32 inputs with PNP, ⊖ common	
		DRT2-OD32ML	32 outputs with NPN, ⊖ common	
		DRT2-OD32ML-1	32 outputs with PNP, ⊕ common	
		DRT2-MD32ML	16 inputs/16 outputs with NPN, ⊕ common for inputs, ⊖ common for outputs	
		DRT2-MD32ML-1	16 inputs/16 outputs with PNP, ⊖ common for inputs, ⊕ common for outputs	
Remote I/O Terminal with Relays		DRT2-ROS16	16 outputs	UR, CE
Board Terminals with MIL Connectors (Parallel Mounting)		DRT2-ID32B	32 inputs with NPN, ⊕ common	UC, CE
		DRT2-ID32B-1	32 inputs with PNP, ⊖ common	
		DRT2-OD32B	32 outputs with NPN, ⊖ common	
		DRT2-OD32B-1	32 outputs with PNP, ⊕ common	
		DRT2-MD32B	16 inputs/16 outputs with NPN, ⊕ common for inputs, ⊖ common for outputs	
		DRT2-MD32B-1	16 inputs/16 outputs with PNP, ⊖ common for inputs, ⊕ common for outputs	
Board Terminals with MIL Connector (Perpendicular Mounting)		DRT2-ID32BV	32 inputs with NPN, ⊕ common	UC, CE
		DRT2-ID32BV-1	32 inputs with PNP, ⊖ common	
		DRT2-OD32BV	32 outputs with NPN, ⊖ common	
		DRT2-OD32BV-1	32 outputs with PNP, ⊕ common	
		DRT2-MD32BV	16 inputs/16 outputs with NPN, ⊕ common for inputs, ⊖ common for outputs	
		DRT2-MD32BV-1	16 inputs/16 outputs with PNP, ⊖ common for inputs, ⊕ common for outputs	
Screw-less Clamp Terminals with Transistors		DRT2-ID32SLH	32 inputs with NPN, ⊕ common, with detection functions	UC, CE
		DRT2-ID32SLH-1	32 inputs with PNP, ⊖ common, with detection functions	
		DRT2-OD32SLH	32 outputs with NPN, ⊖ common, with detection functions	
		DRT2-OD32SLH-1	32 outputs with PNP, ⊕ common, with detection functions	
		DRT2-MD32SLH	16 inputs/16 outputs with NPN, ⊕ common for inputs, ⊖ common for outputs, with detection functions	
		DRT2-MD32SLH-1	16 inputs/16 outputs with PNP, ⊖ common for inputs, ⊕ common for outputs, with detection functions	
		DRT2-ID32SL	32 inputs with NPN, ⊕ common, without detection functions	
		DRT2-ID32SL-1	32 inputs with PNP, ⊖ common, without detection functions	
		DRT2-OD32SL	32 outputs with NPN, ⊖ common, without detection functions	
		DRT2-OD32SL-1	32 outputs with PNP, ⊕ common, without detection functions	
		DRT2-MD32SL	16 inputs/16 outputs with NPN, ⊕ common for inputs, ⊖ common for outputs, without detection functions	
		DRT2-MD32SL-1	16 inputs/16 outputs with PNP, ⊖ common for inputs, ⊕ common for outputs, without detection functions	

Product	Appearance	Model	Specifications	Standards
Environment-resistive Terminals with Transistors		DRT2-ID08C	8 inputs with NPN, ⊕ common	UC, CE
		DRT2-ID08C-1	8 inputs with PNP, ⊖ common	
		DRT2-OD08C	8 outputs with NPN, ⊖ common	
		DRT2-OD08C-1	8 outputs with PNP, ⊕ common	
		DRT2-HD16C	16 inputs with NPN, ⊕ common	
		DRT2-HD16C-1	16 inputs with PNP, ⊖ common	
Sensor Connector Terminals with Transistors and Connectors		DRT2-ID16S	16 inputs with NPN, ⊕ common	UC, CE
		DRT2-ID16S-1	16 inputs with PNP, ⊖ common	
		DRT2-MD16S	8 inputs/8 outputs with NPN, ⊕ common for inputs, ⊖ common for outputs	
		DRT2-MD16S-1	8 inputs/8 outputs with PNP, ⊖ common for inputs, ⊕ common for outputs	
Analog Input Terminals		DRT2-AD04	4 inputs	UC, CE
		DRT2-AD04H	4 inputs	
Analog Output Terminal		DRT2-DA02	2 outputs	
Temperature Input Terminals with Thermocouple Inputs		DRT2-TS04T	4 inputs	UC, CE
Temperature Input Terminals with Platinum-resistance Thermometer Inputs		DRT2-TS04P	4 inputs	

■ General-purpose Slaves, DR1 Series

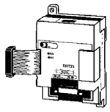
Product	Appearance	Model	Specifications	Standards
Remote I/O Terminals with Transistors		DRT1-ID08	8 inputs with NPN, ⊕ common	U, C, CE
		DRT1-ID08-1	8 inputs with PNP, ⊖ common	
		DRT1-OD08	8 outputs with NPN, ⊖ common	
		DRT1-OD08-1	8 outputs with PNP, ⊕ common	
		DRT1-ID16	16 inputs with NPN, ⊕ common	
		DRT1-ID16-1	16 inputs with PNP, ⊖ common	
		DRT1-OD16	16 outputs with NPN, ⊖ common	
		DRT1-OD16-1	16 outputs with PNP, ⊕ common	
Remote Adapters		DRT1-ID16X	16 inputs with pull-wire connectors, NPN, ⊕ common	U, C, CE,
		DRT1-ID16X-1	16 inputs with pull-wire connectors, PNP, ⊖ common	
		DRT1-OD16X	16 outputs with pull-wire connectors, NPN, ⊖ common	
		DRT1-OD16X-1	16 outputs with pull-wire connectors, PNP, ⊕ common	
MIL Socket Flat Cable Connectors	---	XG4A-2031	DIP straight terminal connector plug	---
		XG4A-2034	DIP L terminal connector plug	
Waterproof Terminals (with Transistors)		DRT1-ID04CL	4 transistor inputs, NPN (⊕ common)	UC, CE, L
		DRT1-ID04CL-1	4 transistor inputs, PNP (⊖ common)	
		DRT1-OD04CL	4 transistor outputs, NPN (⊖ common)	
		DRT1-OD04CL-1	4 transistor outputs, PNP (⊕ common)	
		DRT1-ID08CL	8 transistor inputs, NPN (⊕ common)	
		DRT1-ID08CL-1	8 transistor inputs, PNP (⊖ common)	
		DRT1-OD08CL	8 transistor outputs, NPN (⊖ common)	
		DRT1-OD08CL-1	8 transistor outputs, PNP (⊕ common)	

Ordering Information

Product	Appearance	Model	Specifications	Standards
Environment-resistive Transistor Terminals		DRT1-ID08C	8 inputs, NPN (⊕ common)	U, C, CE
		DRT1-HD16C	16 inputs, NPN (⊕ common)	
		DRT1-HD16C-1	16 inputs, PNP (⊖ common)	U, C
		DRT1-OD08C	8 outputs, NPN (⊖ common)	U, C, CE
		DRT1-WD16C	16 outputs, NPN (⊖ common)	
		DRT1-WD16C-1	16 outputs, PNP (⊕ common)	U, C
		DRT1-MD16C	8 inputs, NPN (⊕ common) 8 outputs, NPN (⊖ common)	U, C, CE
		DRT1-MD16C-1	8 inputs, PNP (⊖ common) 8 outputs, PNP (⊕ common)	U, C
B7AC Interface Unit		DRT1-B7AC	10 inputs x 3 Units (i.e., branching for 3 B7AC Units)	U, C, CE

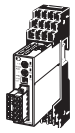
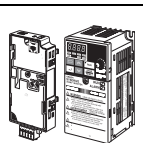
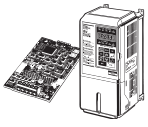
Note: Orders are accepted in units of 10 Connectors.

■ Intelligent Slaves Operating as PLC Units

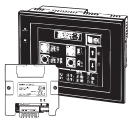
Product	Appearance	Model	Specifications		Standards
Programmable Slaves		CPM2C-S100C-DRT	Slave equipped with CPM2C CPU Unit functions 1,024 points max. for Remote I/O Links Includes CompoBus/s Master.	4 transistor outputs (sinking)	U, C, CE
		CPM2C-S110C-DRT		4 transistor outputs (sourcing)	
I/O Link Units		C200HW-DRT21	For CS1, C200HX/HG/HE 512 input points max. 512 output points max.		U, C, N, CE
		CQM1-DRT21	For CQM1H 16 input points 16 output points		U, C, CE
		CPM1A-DRT21	For CPM1A/CPM2A 32 input points 32 output points		

■ Other Intelligent Slaves

Product	Appearance	Model	Specifications	Standards
RS-232C Unit		DRT1-232C2	2 RS-232C ports 16 input points (communications status)	U, C, CE
Fiber Amplifier DeviceNet Communications Unit		E3X-DRT21	Up to 16 E3X-DA-N Fiber Amplifiers can be connected.	---
		E3X-DRT21-S	Up to 16 E3X-DA-S, E3X-MDA, E3X-LDA, and E2C-EDA Fiber Amplifiers can be connected.	
	---	E3X-DA6-P (See note.)	Fiber Amplifier	
		E3X-CN02 (See note.)	Reduced-wiring Connector	
		E39-TM1	Terminal Block Unit	

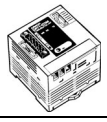
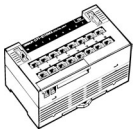
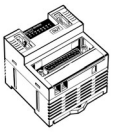
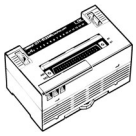
Product	Appearance	Model	Specifications		Standards
Intelligent Flag III		V600-HAM42-DRT	ID system for DeviceNet		CE
DeviceNet-compliant Indicators		K3HB-XVD-A-DRT1	Voltage	DeviceNet-compliant Process Indicator DC input	UC, CE
		K3HB-XAD-A-DRT1	Current		
		K3HB-XVA-DRT1	Voltage	DeviceNet-compliant Process Indicator AC input	
		K3HB-XAA-DRT1	Current		
		K3HB-VLC-B-DRT1	DeviceNet-compliant Weighing Indicator		
		K3HB-HTA-DRT1	DeviceNet-compliant Temperature Indicator		
		K3HB-SSD-A-DRT1	DeviceNet-compliant Linear Sensor Indicators		
		K3HB-RNB-A-DRT1	DeviceNet-compliant Rotary Pulse Indicator		
		K3HB-PNB-A-DRT1	DeviceNet-compliant Time Interval Indicator		
		K3HB-CNB-A-DRT1	DeviceNet-compliant Up/Down Counting Pulse Indicator		
DeviceNet-compliant Digital Controllers		E5AR-Q4B-DRT	Basic Type (1 input)		CU, CE
		E5AR-C4B-DRT			
		E5AR-QC4B-DRT			
		E5AR-QQ4W-DRT	2-input Type		
		E5AR-CC4WW-DRT	4-input Type		
		E5AR-PR4F-DRT	Control Valve Control Type (1 input)		
		E5AR-PRQ4F-DRT			
		E5ER-QTB-DRT	Basic Type (1 input)		
		E5ER-CTB-DRT			
		E5ER-QTW-DRT	2-input Type		
		E5ER-CTW-DRT			
		E5ER-PRTF-DRT	Control Valve Control Type (1 input)		
Digital Controller		E5EK-AA2-DRT-500	Digital Controller for DeviceNet		---
Modular Temperature Controller		E5ZN-DRT	E5ZN DeviceNet Communications Unit		---
		E5ZN-SCT24S	Terminal Unit		
	---	E3ZN-SDL	Setting/Display Device		
AC Servo Drivers		R88A-NCW152-DRT	DeviceNet Option Unit for OMNUC W-series AC Servo Drivers		CE
	---	R88A-CNU01R	External I/O Connector		---
		R88A-CCW002P4	Cable for Setup Tool (IBM PC/AT or compatible, 2 m)		
Multi-function Compact Inverter		3G3MV-PDRT2	DeviceNet Communications Unit for 3G3MV		U, CE
High-function General-purpose Inverter		3G3RV-PDRT2	DeviceNet Communications Card for 3G3RV/3G3FV Inverters		U, CE

Ordering Information

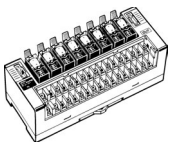
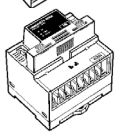
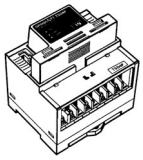
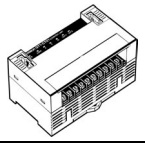
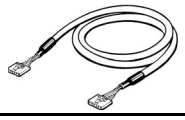
Product	Appearance	Model	Specifications		Standards
Programmable Terminals		NT-DRT21	DeviceNet Interface Unit for NT31/NT631 Programmable Terminals		U, CE
DeviceNet Wireless Units		WD30-ME	DeviceNet Wireless Master Station	Pencil-type antenna	---
		WD30-ME01		Magnetic Base Antenna	
		WD30-SE	DeviceNet Wireless Slave Station	Pencil-type antenna	
		WD30-SE01		Magnetic Base Antenna	
	---	WD30-AT001	Magnetic Base Antenna		
FA Wireless SS Terminals		WT30-SID16	WD30 DeviceNet Wireless Slave Station	16 DC inputs (NPN/PNP)	
		WT30-SMD16		8 DC inputs (NPN/PNP) + 8 transistor outputs (NPN)	
		WT30-SMD16-1		8 DC inputs (NPN/PNP) + 8 transistor outputs (PNP)	

Note: Order the Fiber Amplifier and Reduced-wiring Connector together.

■ MULTIPLE I/O TERMINAL Units

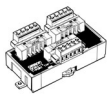
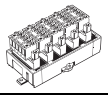
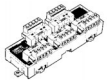
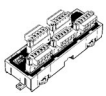
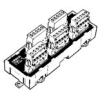
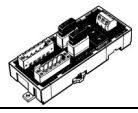
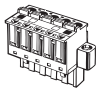
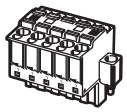
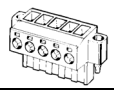
Product		Appearance	Model	I/O points	Specifications	Standards
Communications Unit			DRT1-COM	---	Number of slave I/O points: 1,024 max. (inputs and outputs)	U, C, CE
Digital I/O Units	Terminal block models		GT1-ID16	16 inputs	NPN, ⊕ common	
			GT1-ID16-1	16 inputs	PNP, ⊖ common	
			GT1-OD16	16 outputs	NPN, ⊖ common	
			GT1-OD16-1	16 outputs	PNP, ⊕ common	
	Molex connector models		GT1-ID16MX	16 inputs	NPN, ⊕ common	
			GT1-ID16MX-1	16 inputs	PNP, ⊖ common	
			GT1-OD16MX	16 outputs	NPN, ⊖ common	
			GT1-OD16MX-1	16 outputs	PNP, ⊕ common	
	Fujitsu connector models		GT1-ID16ML	16 inputs	NPN, ⊕ common	
			GT1-ID16ML-1	16 inputs	PNP, ⊖ common	
			GT1-OD16ML	16 outputs	NPN, ⊖ common	
			GT1-OD16ML-1	16 outputs	PNP, ⊕ common	
	D-sub, 25-pin connector models		GT1-ID16DS	16 inputs	NPN, ⊕ common	
			GT1-ID16DS-1	16 inputs	PNP, ⊖ common	
			GT1-OD16DS	16 outputs	NPN, ⊖ common	
			GT1-OD16DS-1	16 outputs	PNP, ⊕ common	
Digital I/O Units	Fujitsu high-density connector models		GT1-ID32ML	32 inputs	NPN, ⊕ common	U, C, CE
			GT1-ID32ML-1	32 inputs	PNP, ⊖ common	
			GT1-OD32ML	32 outputs	NPN, ⊖ common	
			GT1-OD32ML-1	32 outputs	PNP, ⊕ common	
Relay Output Unit			GT1-ROS16	16 outputs	Relay Output Unit with 16 points, 2 A, SPST-NO terminal block	U, C, CE

Ordering Information

Product	Appearance	Model	I/O points	Specifications	Standards
Relay Output Unit		GT1-ROP08	8 outputs	Relay Output Unit with 8 points, 5 A, SPST-NO terminal block	U, C, CE
		GT1-FOP08	8 outputs	SSR Output Unit with 8 points, 1.5 A, SPST-NO terminal block	---
Analog Input Units		GT1-AD08MX	8 inputs	Molex connector	U, C, CE
		GT1-AD04	4 inputs	Terminal block	
Analog Output Units		GT1-DA04MX	4 outputs	Molex connector	
		GT1-DA04	4 outputs	Terminal block	
Temperature Input Units		GT1-TS04T	4 inputs	Thermocouple input	U, C, CE
		GT1-TS04P	4 inputs	Platinum-resistance thermometer input	
Counter Unit		GT1-CT01	1 input 2 outputs	Counter Unit for encoder input with 1 input and 2 outputs	U, CE
I/O Unit Connecting Cable		GCN1-100	---	1 m	---

Peripheral Devices

■ General-purpose Peripheral Devices

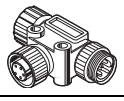
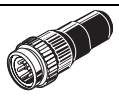
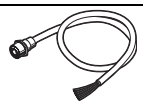
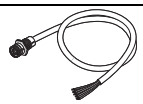
Product	Appearance	Model	Specifications	
T-branch Tap for 1 branch line		DCN1-1NC	Cable wiring direction: Toward top Cable lock direction: From top Connector screw direction: From top	Provided with 3 parallel clamp connectors with screws (XW4G-05C1-H1-D), standard terminating resistor
		DCN1-1C	Cable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

Product	Appearance	Model	Specifications
Terminal-block Terminator		DRS1-T	Resistance of 121 Ω

■ 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	Cable with connectors on both ends	Length: 0.5 m
		DCA1-5CN01W1		Length: 1 m
		DCA1-5CN02W1		Length: 2 m
		DCA1-5CN03W1		Length: 3 m
		DCA1-5CN05W1		Length: 5 m
		DCA1-5CN10W1		Length: 10 m
		DCA1-5CNC5F1	Cable with connector socket on one end	Length: 0.5 m
		DCA1-5CN01F1		Length: 1 m
		DCA1-5CN02F1		Length: 2 m
		DCA1-5CN03F1		Length: 3 m
		DCA1-5CN05F1		Length: 5 m
		DCA1-5CN10F1		Length: 10 m
		DCA1-5CNC5H1	Cable with connector plug on one end	Length: 0.5 m
		DCA1-5CN01H1		Length: 1 m
		DCA1-5CN02H1		Length: 2 m
		DCA1-5CN03H1		Length: 3 m
		DCA1-5CN05H1		Length: 5 m
		DCA1-5CN10H1		Length: 10 m
Shielded Panel-mounting Connectors, female		DCA1-5CNC5P1	Panel-mounting connector socket	Length: 0.5 m
		XS2P-D522-2	Panel-mounting connector socket	Solder-cup terminals
Shielded Panel-mounting Connectors, male		DCA1-5CNC5M1	Panel-mounting connector plug	Length: 0.5 m
		XS2M-D524-4	Panel-mounting connector plug	Solder-cup terminals

■ Environment-resistive Connection Products (for Thick Cable, 7/8-16UN, Mini Connectors)

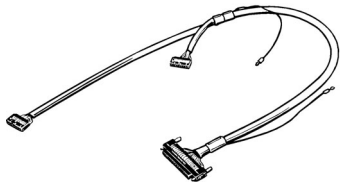
Product	Appearance	Model	Specifications	
Sealed T-branch Connector		DCN3-11	T-branch Connector	
		DCN3-12	T-branch Connector (Branch connector is M12.)	
Sealed Connector with Terminating Resistor		DRS3-1	Plug	
Cables with Sealed Connectors		DCA2-5CN01W1	Cable with connectors on both ends	Length: 1 m
		DCA2-5CN02W1		Length: 2 m
		DCA2-5CN05W1		Length: 5 m
		DCA2-5CN10W1		Length: 10 m
		DCA2-5CN01F1	Cable with connector socket on one end	Length: 1 m
		DCA2-5CN02F1		Length: 2 m
		DCA2-5CN05F1		Length: 5 m
		DCA2-5CN10F1		Length: 10 m
		DCA2-5CN01H1	Cable with connector plug on one end	Length: 1 m
		DCA2-5CN02H1		Length: 2 m
		DCA2-5CN05H1		Length: 5 m
		DCA2-5CN10H1		Length: 10 m
		DCA1-5CN01W5	Cable with connectors on both ends Thin cable M12 socket	Length: 1 m
		DCA1-5CN02W5		Length: 2 m
		DCA1-5CN05W5		Length: 5 m
		DCA1-5CN10W5		Length: 10 m
Panel-mounting Connector (female)		DCA2-5CNC5P1	Connector socket for panel mounting Cable: 0.5 m	
Panel-mounting Connector (male)		DCA2-5CNC5M1	Connector plug for panel mounting Cable: 0.5 m	
Panel-mounting Connector (male)		XS4M-D521-1	Connector plug for panel mounting DIP terminals	

■ Cables with Connectors Compatible with MULTIPLE I/O TERMINAL Connectors

G79-□C Cables with Fujitsu Connectors

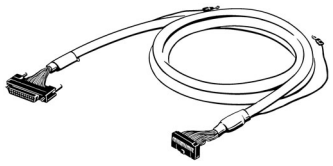
Cables with 32-point Connectors

Size (mm)		Input (32 points)	Output (32 points)
A	B	Model	
1,000	750	G79-I100C-75	G79-O100C-75
1,500	1,250	G79-I150C-125	G79-O150C-125
2,000	1,750	G79-I200C-175	G79-O200C-175
3,000	2,750	G79-I300C-275	G79-O300C-275
5,000	4,750	G79-I500C-475	G79-O500C-475



Cables with 16-point Connectors

Cable length L (mm)	Model (16 I/O points)
1,000	G79-100C
1,500	G79-150C
2,000	G79-200C
3,000	G79-300C
5,000	G79-500C



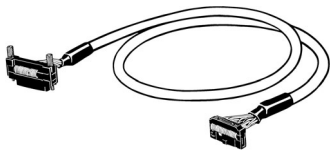
XW2Z Cables with Fujitsu Connectors

Cables with 16-point Connectors

Cable length L (mm)	Model (16 I/O points)
500	XW2Z-050A
1,000	XW2Z-100A
1,500	XW2Z-150A
2,000	XW2Z-200A
3,000	XW2Z-300A
5,000	XW2Z-500A

Cable with 32-point Connectors

Cable length L (mm)	Model (32 I/O points)
500	XW2Z-050B
1,000	XW2Z-100B
1,500	XW2Z-150B
2,000	XW2Z-200B
3,000	XW2Z-300B
5,000	XW2Z-500B



DIP Switch Settings and Node Addresses

The following indicate DIP switch settings for corresponding node addresses. The name or pin orientation of the DIP switch of the Slave Unit may vary with the Slave Unit model. Each pin, however, corresponds to a binary digit.

DIP Switch Settings and Corresponding Node Addresses

Node address	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Node address	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
	1	2	4	8	16	32		1	2	4	8	16	32
#0	0	0	0	0	0	0	#32	0	0	0	0	0	1
#1	1	0	0	0	0	0	#33	1	0	0	0	0	1
#2	0	1	0	0	0	0	#34	0	1	0	0	0	1
#3	1	1	0	0	0	0	#35	1	1	0	0	0	1
#4	0	0	1	0	0	0	#36	0	0	1	0	0	1
#5	1	0	1	0	0	0	#37	1	0	1	0	0	1
#6	0	1	1	0	0	0	#38	0	1	1	0	0	1
#7	1	1	1	0	0	0	#39	1	1	1	0	0	1
#8	0	0	0	1	0	0	#40	0	0	0	1	0	1
#9	1	0	0	1	0	0	#41	1	0	0	1	0	1
#10	0	1	0	1	0	0	#42	0	1	0	1	0	1
#11	1	1	0	1	0	0	#43	1	1	0	1	0	1
#12	0	0	1	1	0	0	#44	0	0	1	1	0	1
#13	1	0	1	1	0	0	#45	1	0	1	1	0	1
#14	0	1	1	1	0	0	#46	0	1	1	1	0	1
#15	1	1	1	1	0	0	#47	1	1	1	1	0	1
#16	0	0	0	0	1	0	#48	0	0	0	0	1	1
#17	1	0	0	0	1	0	#49	1	0	0	0	1	1
#18	0	1	0	0	1	0	#50	0	1	0	0	1	1
#19	1	1	0	0	1	0	#51	1	1	0	0	1	1
#20	0	0	1	0	1	0	#52	0	0	1	0	1	1
#21	1	0	1	0	1	0	#53	1	0	1	0	1	1
#22	0	1	1	0	1	0	#54	0	1	1	0	1	1
#23	1	1	1	0	1	0	#55	1	1	1	0	1	1
#24	0	0	0	1	1	0	#56	0	0	0	1	1	1
#25	1	0	0	1	1	0	#57	1	0	0	1	1	1
#26	0	1	0	1	1	0	#58	0	1	0	1	1	1
#27	1	1	0	1	1	0	#59	1	1	0	1	1	1
#28	0	0	1	1	1	0	#60	0	0	1	1	1	1
#29	1	0	1	1	1	0	#61	1	0	1	1	1	1
#30	0	1	1	1	1	0	#62	0	1	1	1	1	1
#31	1	1	1	1	1	0	#63	1	1	1	1	1	1

Note: Node addresses are all factory-set to #0.

Data Sizes

Masters with Slave Functions

Model	IN size		OUT size		Remarks
	Default size (bytes)	Max. size (bytes)	Default size (bytes)	Max. size (bytes)	
CJ1W-DRM21	2	400	2	200	Depends on setting.
CS1W-DRM21-V1	2	400	2	200	Depends on setting.

Slaves

■ Smart Slaves, DRT2 Series

Model	IN size		OUT size		Remarks
	Default size (bytes)	Max. size (bytes)	Default size (bytes)	Max. size (bytes)	
DRT2-AD04	8	16	0	1	Can select from several instances.
DRT2-AD04H	8	16	0	1	Can select from several instances.
DRT2-DA02	0	1	4	4	
DRT2-HD16C(-1)	1	2	1	1	Status can be appended.
DRT2-ID08C(-1)	1	2	0	0	Status can be appended.
DRT2-ID16(-1)	2	3	0	0	Status can be appended.
DRT2-ID16S(-1)	2	3	0	0	
DRT2-ID16TA(-1)	2	3	0	0	Status can be appended.
DRT2-ID32B(-1)	4	5	0	0	Status can be appended.
DRT2-ID32BV(-1)	4	5	0	0	Status can be appended.
DRT2-ID32ML(-1)	4	5	0	0	Status can be appended.
DRT2-ID32SL(-1)	4	5	0	0	Status can be appended.
DRT2-ID32SLH(-1)	4	8	0	0	Status can be appended. Short/Off Wire data can be selected.
DRT2-MD16S(-1)	1	2	1	1	
DRT2-MD16TA(-1)	1	2	1	1	Status can be appended.
DRT2-MD32B(-1)	2	3	2	2	Status can be appended.
DRT2-MD32BV(-1)	2	3	2	2	Status can be appended.
DRT2-MD32ML(-1)	2	3	2	2	Status can be appended.
DRT2-MD32SL(-1)	2	3	2	2	Status can be appended.
DRT2-MD32SLH(-1)	2	8	2	2	Status can be appended. Short/Off Wire data can be selected.
DRT2-OD08C(-1)	0	1	1	1	Status can be appended.
DRT2-OD16(-1)	0	1	2	2	Status can be appended.
DRT2-OD16TA(-1)	0	1	2	2	Status can be appended.
DRT2-ID32B(-1)	0	1	4	4	Status can be appended.
DRT2-OD32BV(-1)	0	1	4	4	Status can be appended.
DRT2-OD32ML(-1)	0	1	4	4	Status can be appended.
DRT2-OD32SL(-1)	0	1	4	4	Status can be appended.
DRT2-OD32SLH(-1)	0	8	4	4	Status can be appended. Short/Off Wire data can be selected.
DRT2-ROS16	0	1	2	2	Status can be appended.
DRT2-TS04P	8	32	0	1	Can select from several instances.
DRT2-TS04T	8	32	0	1	Can select from several instances.
XWT-ID08(-1)	1	1	0	0	

Data Sizes

Model	IN size		OUT size		Remarks
	Default size (bytes)	Max. size (bytes)	Default size (bytes)	Max. size (bytes)	
XWT-ID16(-1)	2	2	0	0	
XWT-OD08(-1)	0	0	1	1	
XWT-OD16(-1)	0	0	2	2	

■ General-purpose Slaves, DRT1 Series

Model	IN size		OUT size		Remarks
	Default size (bytes)	Max. size (bytes)	Default size (bytes)	Max. size (bytes)	
DRT1-ID08(-1)	1	1	0	0	
DRT1-OD08(-1)	0	0	1	1	
DRT1-ID16(-1)	2	2	0	0	
DRT1-OD16(-1)	0	0	2	2	
DRT1-MD16	1	1	1	1	
DRT1-ID16TA(-1)	2	2	0	0	
DRT1-OD16TA(-1)	0	0	2	2	
DRT1-MD16TA(-1)	1	1	1	1	
DRT1-ID16T(-1)	2	2	0	0	
DRT1-OD16T(-1)	0	0	2	2	
DRT1-MD16T(-1)	1	1	1	1	
DRT1-ID32ML(-1)	4	4	0	0	
DRT1-OD32ML(-1)	0	0	4	4	
DRT1-MD32ML(-1)	2	2	2	2	
DRT1-ID16X(-1)	2	2	0	0	
DRT1-OD16X(-1)	0	0	2	2	
DRT1-AD04	8	8	0	0	
DRT1-AD04H	8	8	0	0	
DRT1-DA02	0	0	4	4	
DRT1-TS04T	8	8	0	0	
DRT1-TS04P	8	8	0	0	
DRT1-HD16S	2	2	0	0	
DRT1-ND16S	1	1	1	1	
DRT1-ID04CL(-1)	1	1	0	0	
DRT1-ID08CL(-1)	1	1	0	0	
DRT1-OD04CL(-1)	0	0	1	1	
DRT1-OD08CL(-1)	0	0	1	1	
DRT1-ID08C	1	1	0	0	
DRT1-HD16C(-1)	2	2	0	0	
DRT1-OD08C	0	0	1	1	
DRT1-WD16C(-1)	0	0	2	2	
DRT1-MD16C(-1)	1	1	1	1	
DRT1-B7AC	4	4	0	0	

■ Intelligent Slaves, PLC Units

Model	IN size		OUT size		Remarks
	Default size (bytes)	Max. size (bytes)	Default size (bytes)	Max. size (bytes)	
CPM2C-S100C-DRT	20	64	16	64	Depends on setting.
CPM2C-S110C-DRT	20	64	16	64	Depends on setting.
C200HW-DRT21	2	64	2	64	Depends on setting.
CQM1-DRT21	2	2	2	2	
CPM1A-DRT21	4	4	4	4	

■ Other Intelligent Slaves

Model	IN size		OUT size		Remarks
	Default size (bytes)	Max. size (bytes)	Default size (bytes)	Max. size (bytes)	
DRT1-232C2	2	2	0	0	
E3X-DRT21(-S)	2	36	0	0	Status and reception light level can be appended.
V600-HAM42-DRT	4	4	4	4	
K3HB-□-DRT1	4	200	20	200	
E5AR-□-DRT	12	200	32	200	
E5ER-□-DRT	12	200	32	200	
E5EK-AA2-DRT	6	6	8	8	
E5ZN-DRT	32 + n × 4	200	16 + n × 4	200	Default will automatically change according to number of Units.
E5ZE-8□D1□B-V2	28	28	18	18	
R88A-NCW152-DRT	8	8	8	8	
3G3MV-PDRT2	4	10	4	8	
3G3RV-PDRT2	4	10	4	8	
NT-DRT21	64	64	64	64	
WD30	---	200	---	200	The is no default. Always set the sizes.

■ MULTIPLE I/O TERMINALs

Model	IN size		OUT size		Remarks
	Default size (bytes)	Max. size (bytes)	Default size (bytes)	Max. size (bytes)	
DRT1-COM	4	4	0	0	The DRT1-COM has 4 bytes of status flags.
GT1-ID16(-1)	2	2	0	0	
GT1-OD16(-1)	0	0	2	2	
GT1-ID16MX(-1)	2	2	0	0	
GT1-OD16MX(-1)	0	0	2	2	
GT1-ID16ML(-1)	2	2	0	0	
GT1-OD16ML(-1)	0	0	2	2	
GT1-ID16DS(-1)	2	2	0	0	
GT1-OD16DS(-1)	0	0	2	2	
GT1-ID32ML(-1)	4	4	0	0	
GT1-OD32ML(-1)	0	0	4	4	
GT1-AD08MX	8	8	0	0	4-byte Mode
	16	16	0	0	8-byte Mode
GT1-ROS16	0	0	2	2	
GT1-ROP08	0	0	2	2	
GT1-FOP08	0	0	2	2	
GT1-AD04	8	8	0	0	
GT1-DA04MX	0	0	8	8	
GT1-DA04	0	0	8	8	
GT1-TS04T	8	8	0	0	Normal format mode
	16	16	0	0	With two places below the decimal
GT1-TS04P	8	8	0	0	Normal format mode
	16	16	0	0	With two places below the decimal
GT1-CT01	6	6	6	6	

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