

New!

OMRON

DeviceNet Smart Slaves

Remote I/O Terminals with Transistors

DRT2-ID08(-1)/OD08(-1)/MD16(-1)

MIL Connector Terminals with Transistors

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

Environment-resistive Terminals with Transistors (without detection functions)

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

MD16CL(-1)/HD16CL(-1)



Remote Maintenance

The lineup now includes a wide variety of Smart Slaves with different numbers of control points that contribute to production site servicing and repair.

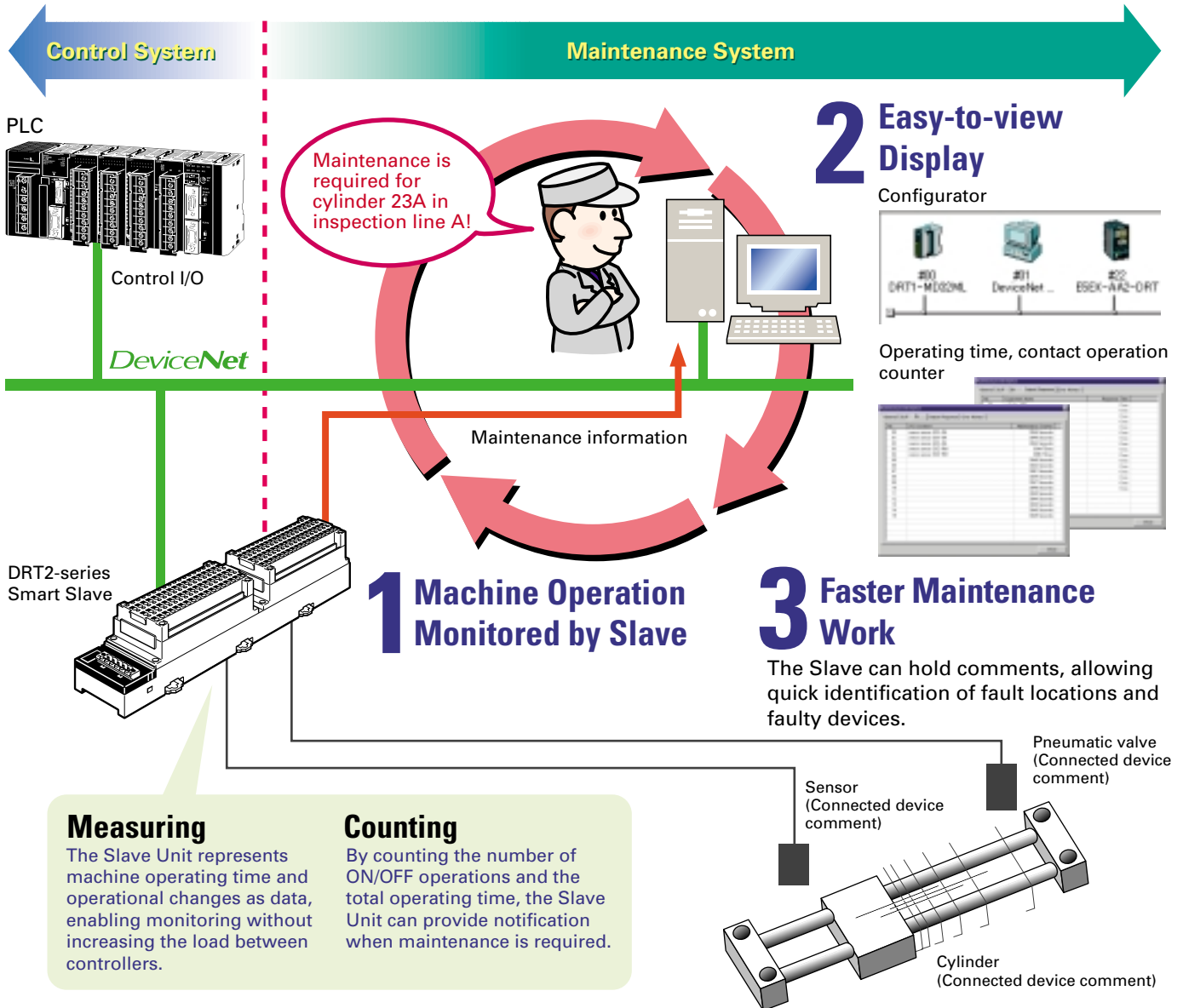


realizing



Use production site information in a variety of applications, such as maintenance and quality control.

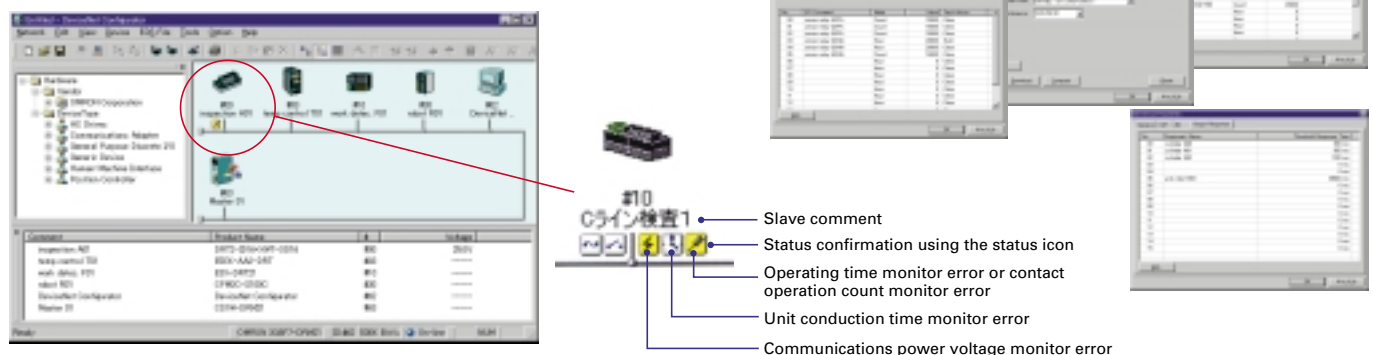
OMRON's DRT2-series Smart Slaves do not just input and output ON/OFF signals. They collect a variety of value-added information to help increase the rate of operation without changing the wiring for existing DeviceNet networks. In particular, they allow the separation of control systems and maintenance systems so that maintenance systems can be created independently of control systems.

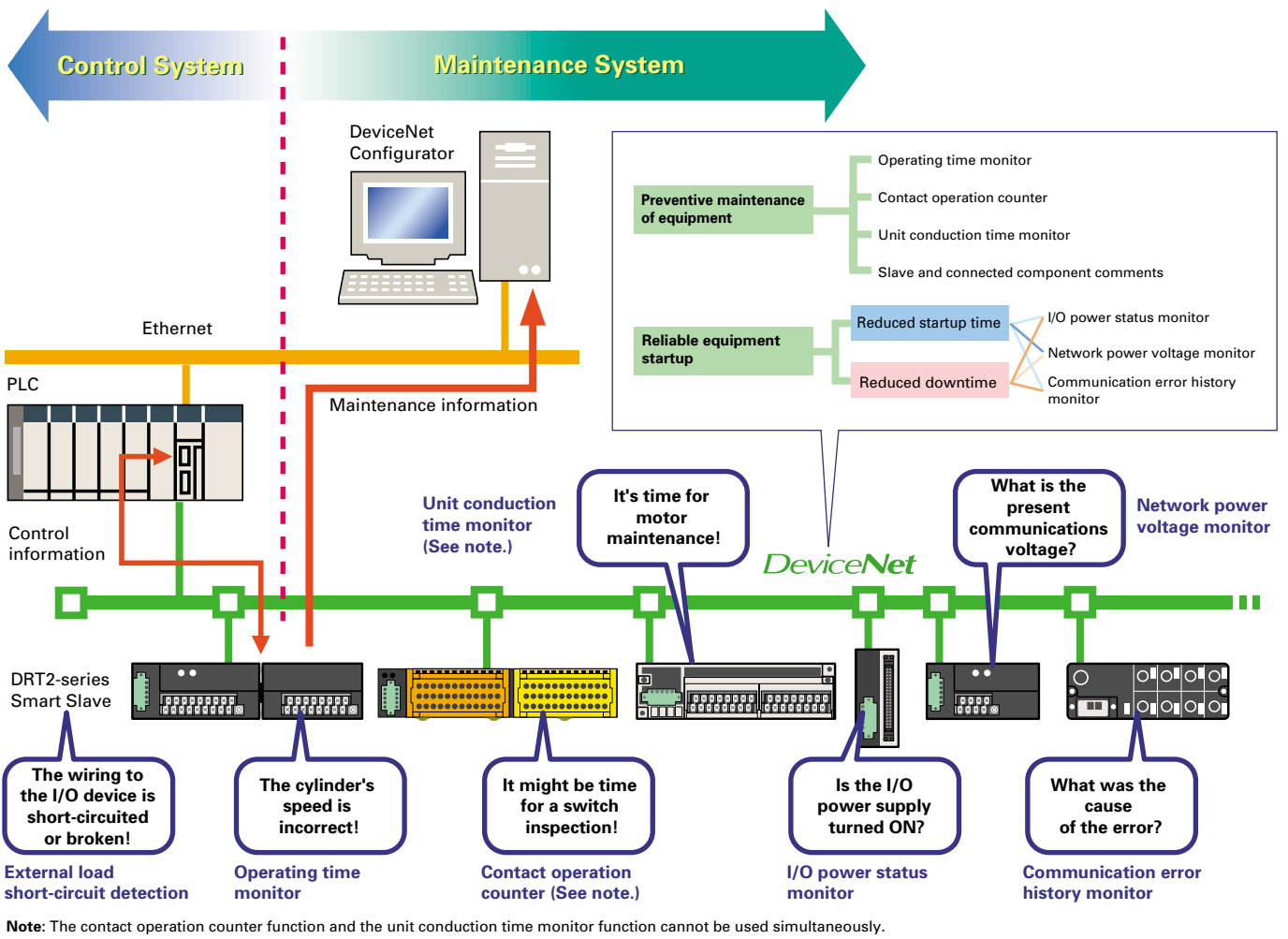


Collect a variety of data from maintenance systems without influencing control systems and productivity.

All data can be converted to electronic format and, by combining with an OMRON PLC (CS/CJ Series), checked directly from Ethernet or the Internet to allow remote maintenance.

Information monitoring for each Slave





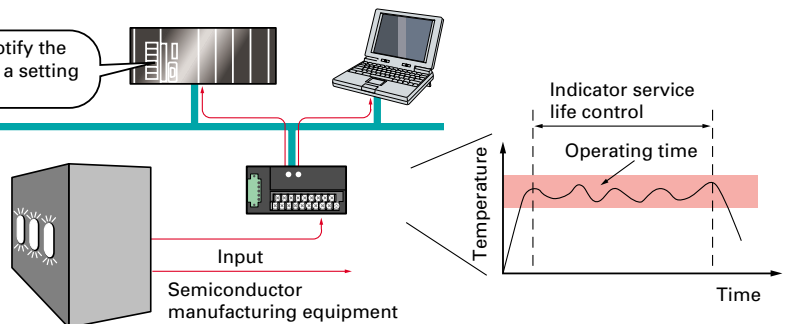
Using OMRON Temperature Input Terminals for Maintenance

Failure Prediction and Maintenance

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

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

Slaves can notify the Master when a setting is exceeded.

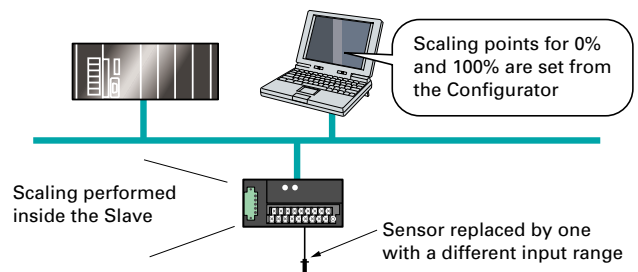


The peaks or valleys of temperature inputs that change in a regular pattern are counted to predict when devices operating with severe temperature swings are due for maintenance.

Short Startup

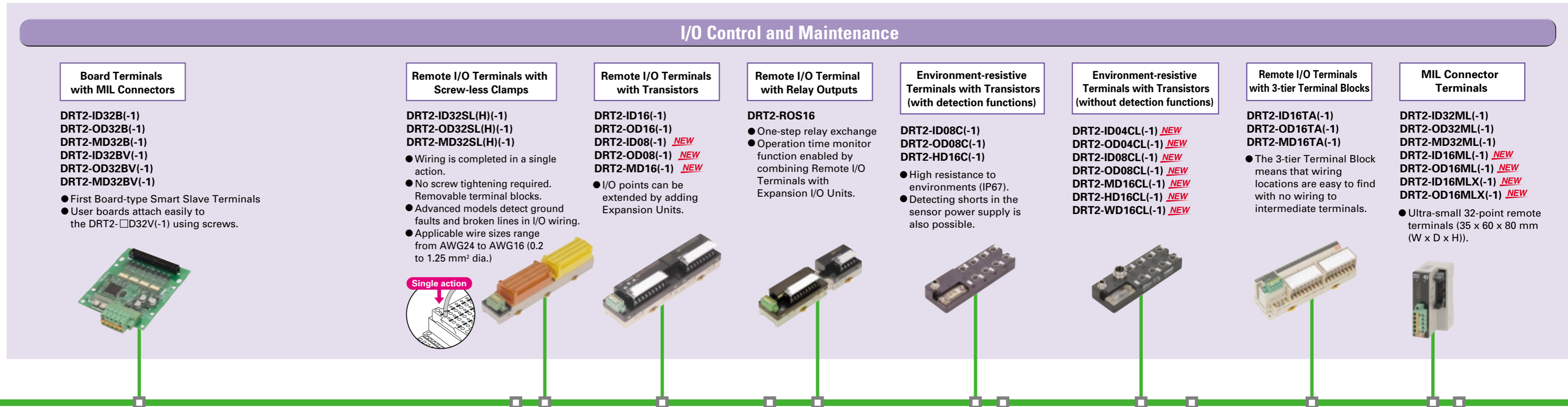
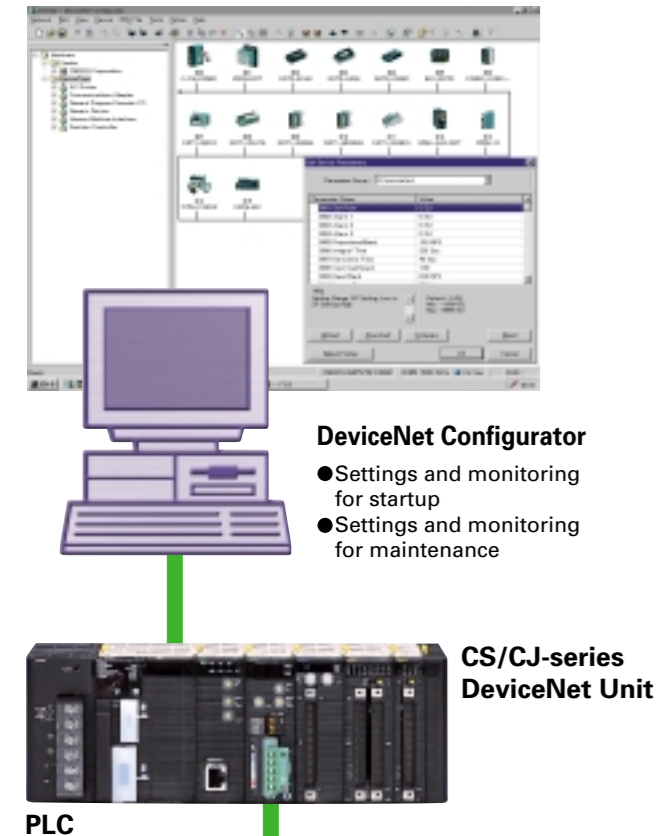
If it takes too long to modify the ladder program on the Master when a Temperature Sensor is replaced:

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



Wide variety of control and maintenance functions using DeviceNet.

Monitor network devices using a DeviceNet Configurator.



New Lineup

Models with 8 Input, 8 Output, or 16 I/O Points Added to the Lineup

Remote I/O Terminals with Transistors
DRT2-ID08(-1)/OD08(-1)/MD16(-1)

- Collect a variety of data from maintenance systems without influencing control systems and productivity.
- Communications power supply voltage monitor, deterioration due to aging, operating time data, and other information can be easily collected and managed via the network.
- Locations of problems can be easily identified.

Remote I/O Terminals with IP67 High Environmental Resistance

Environment-resistive Terminals with Transistors
DRT2-ID04CL(-1)/OD04CL(-1)/ID08CL(-1)/OD08CL(-1)/MD16CL(-1)/HD16CL(-1)/WD16CL(-1)

- Smart Slave functions provide robust support for effective maintenance and monitoring device operation status.
- The terminals conform to IP67 and use materials selected for resistance to oil and spattering.
- Models with two-output connector are also available to improve ease of connection with hydraulic valve devices.

Terminals with 16 Inputs or Outputs

MIL Connector Terminals with Transistors
DRT2-ID16ML(-1)/OD16ML(-1)/ID16MLX(-1)/OD16MLX(-1)

- Connection with an array of I/O interfaces is achieved by combining adaptor boards for D-Sub or other interfaces.

e-CON Connector Terminals

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

- Includes industry-standard e-CON connector that can be used to connect prewired sensors without using special tools. (The OMRON XN2 Connector can be used.)

Sensor Input and Maintenance

Analog I/O Terminals

DRT2-AD04/DRT2-AD04H
DRT2-DA02

- The DRT2-AD04H offers high resolution at 1/30,000 (full scale) and insulation between input channels.
- The DRT2-AD04 and DRT2-DA02 support a wide variety of data sampling function, including scaling, peak/bottom hold, top/valley hold, comparator, integral, and differential operation functions.

Analog Control and Maintenance

Temperature Input Terminals

DRT2-TS04T
DRT2-TS04P

- 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 time in a preset temperature range and temperature difference detection between input channels.

DeviceNet Communications Unit for E5ZN Digital Temperature Controllers

E5ZN-DRT

- Monitoring and setting of Temperature Controller from PLC.
- Batch download of all Temperature Controller parameters from Configurator.

DeviceNet Communications Units/Cards for Inverters

3G3MV-PDRT2 (for 3G3MV Series)
3G3RV-PDRT2 (for 3G3RV Series)

- Frequencies and other specifications can be designated from PLC.
- Monitor-related maintenance possible, including output current (torque) error detection/trace, operation monitor, and general-purpose I/O read.

Monitor Control and Maintenance

Functions Supported by Smart Slaves

| Slave name | General-purpose Slaves | | | | | | | | | | | | | | | General-purpose Slaves | | | | | | Environment-resistive Slaves | | | | | | General-purpose Slaves | | Analog Slaves | | | |
|---|-----------------------------|--------|--------------|--------------|---------------|--------------------------|------------------------------------|--------------|-------|---|-------------------------|-------|---------------------------------|-----------------|--|----------------------------|--------------|---|--------|--------------|--|---------------------------------|--------------|---|--------------|-------|---------------|---------------------------|-----------|----------------------|-----------|------------|-----------------------------|
| | Remote I/O Terminals | | | | | | | | | | MIL Connector Terminals | | | Board Terminals | | Screw-less Clamp Terminals | | | | | | Environment-resistive Terminals | | | | | | e-con Connector Terminals | | Analog I/O Terminals | | | Temperature Input Terminals |
| | Models with Transistors | | | | | Model with Relay Outputs | Models with 3-tier Terminal Blocks | | | Models with Transistors | | | Models with MIL Connectors | | Models with Transistors With Detection Functions | | | Models with Transistors Without Detection Functions | | | Models with Transistors With Detection Functions | | | Models with Transistors Without Detection Functions | | | | | | | | | |
| | DRT2-D16(-1) | | DRT2-D08(-1) | | DRT2-MD16(-1) | DRT2-ROS16 | DRT2-D16TA(-1) | | | DRT2-D32ML(-1) DRT2-D16ML(-1) DRT2-D16MLX(-1) | | | DRT2-D32B(-1) DRT2-D32BV(-1) | | DRT2-D32SLH(-1) | | | DRT2-D32SL(-1) | | | DRT2-D08C(-1) DRT2-D16C(-1) | | | DRT2-D04CL(-1) DRT2-D08CL(-1) DRT2-D16CL(-1) | | | DRT2-D16S(-1) | | DRT2-AD04 | DRT2-AD04H | DRT2-DA02 | DRT2-TS04□ | |
| Input | | Output | | Input/output | Output | Input | Output | Input/output | Input | Output | Input/output | Input | Output | Input/output | Input | Output | Input/output | Input | Output | Input/output | Input | Output | Input/output | Input | Input/output | Input | Output | Input | | | | | |
| Operating time monitor | ○ (Inputs and outputs only) | | --- | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Contact operation count monitor | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Unit conduction time monitor | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Total RUN (ON) time monitor | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Unit comment | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Connected device comment | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Network power voltage monitor | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| I/O power status monitor | | | ○ | | --- | ○ | --- | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Communications error history monitor | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Input filter | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | | |
| Prevention of malfunctions due to sensor inrush current | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | --- | ○ | ○ | | |
| Sensor power short-circuit detection | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | ○ | --- | --- | --- | ○ | --- | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| External load short-circuit detection | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ (See note.) | --- | --- | --- | --- | --- | ○ | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| Sensor disconnection detection | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | ○ | --- | --- | --- | ○ | --- | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| External load disconnection detection | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | ○ | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | | |
| Removable terminal blocks | | | | | ○ | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | ○ | | | |
| Automatic baud rate detection | | | | | ○ | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | ○ | | | |
| Unit power supply wiring not required | | | | | ○ | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | ○ | | | |
| Power supply wiring not required for input devices | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | --- | | | |
| Expansion I/O Units mountable | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | --- | ○ | | |
| Scaling | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | ○ | | | |
| User calibration | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | ○ | | | |
| Last maintenance date | | | | | ○ | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | ○ | | | |
| Integral function | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | ○ | | | |
| Moving average processing | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | ○ | | | |
| Number of AD conversion points setting (conversion cycle) | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | --- | | | |
| Peak/bottom hold | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | ○ | | | |
| Top/valley hold | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | ○ | | | |
| Change rate calculations | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | ○ | | | |
| Comparator function | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | ○ | | | |
| Setting output value for errors | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | --- | --- | | | |
| Top/valley count | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | | | |
| Operating time in a preset temperature range | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | | | |
| Temperature difference detection between input channels | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ○ | | | |

○: Yes, ---: No

Note: The contact operation count monitor and the total RUN (ON) time monitor cannot be used at the same time for one contact. External load detection is supported only by the DRT2-MD32SLH-1 and DRT2-OD32SLH-1.

Specifications

| | | |
|-------------------------------------|--|---|
| Communications power supply voltage | 11 to 25 VDC (supplied from communications connector) | |
| I/O power supply voltage | 20.4 to 26.4 VDC (24 VDC -15% to +10%) | |
| Noise immunity | Conforms to IEC61000-4-4, 2 kV (power lines) | |
| Vibration resistance | 10 to 60 Hz, 0.7-mm double amplitude, 60 to 150 Hz, 50 ms ² for 80 min each in the X, Y, and Z directions | |
| Shock resistance | 150m/s ² , 6 directions, 3 times each | |
| Dielectric strength | 500 VAC (between isolated circuits) | |
| Insulation resistance | 20 MΩ min. (between isolated circuits) | |
| Ambient operating temperature | -10 to 55°C | |
| Ambient operating humidity | 25 to 85% | |
| Ambient operating atmosphere | No corrosive gases | |
| Ambient storage temperature | -20 to 65°C | |
| Degree of protection | IP67 | |
| Mounting method | DRT2-□D08□-1/□D16(-1): DRT2-□D32ML(-1)/□D16ML(-1): DRT2-□D04CL(-1)/□D08CL(-1)/□D16CL(-1): | 35-mm DIN Track 35-mm DIN Track M5 screws mounting (front or back) |
| Screw tightening torque | DRT2-□D08(-1)/□D16(-1): DRT2-□D32ML(-1)/□D16ML(-1): DRT2-□D04CL(-1)/□D08CL(-1)/□D16CL(-1): | M3 (power supply and I/O terminals): 0.3 to 0.5 N-m M2 (communications connector screws): 0.26 to 0.3 N-m, M3 (screw terminals): 0.3 to 0.5N-m Round connectors (communications connector, power supply, and I/O): 0.39 to 0.49 N-m M5 (Unit mounting from the front): 1.47 to 1.96 N-m |

Input Specifications

Remote I/O Terminals with Transistors

Terminals with 8 Inputs

| Item | Model | DRT2-ID08(-1) |
|------------------|-------|---|
| Input current | | 6.0 mA max. per 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 min. (between each input terminal and G) |
| OFF current | | 1.0 mA max. |
| Isolation method | | Photocoupler isolation |
| Input indicator | | Yellow LED indicator |

Terminals with 8 Inputs/8 Outputs

| Item | Model | DRT2-MD16 | DRT2-MD16-1 |
|-----------------------------|-------|--|---|
| Internal I/O common | | NPN | PNP |
| Number of I/O points | | 8 inputs | |
| ON voltage | | 15 VDC min. (between each input terminal and V) | 15 VDC min. (between each input terminal and G) |
| OFF voltage | | 5 VDC max. (between each input terminal and V) | 5 VDC min. (between each input terminal and G) |
| OFF current | | 1 mA max. | |
| Input current | | 6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC | |
| ON delay time | | 1.5 ms max. | |
| OFF delay time | | 1.5 ms max. | |
| Number of points per common | | 8 points per common | |

MIL Connector Terminals with Transistors

Terminals with 16 Inputs, with Connectors

| Item | Model | DRT2-ID16ML DRT2-ID16MLX | DRT2-ID16ML-1 DRT2-ID16MLX-1 |
|---|-------|--|---|
| Internal I/O common | | NPN | PNP |
| Number of I/O points | | 16 inputs | |
| ON voltage | | 17 VDC min. (between each input terminal and V) | 17 VDC min. (between each input terminal and G) |
| OFF voltage | | 5 VDC max. (between each input terminal and V) | 15 VDC min. (between each input terminal and G) |
| OFF current | | 1 mA max. | |
| Input current | | 6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC | |
| ON delay time | | 1.5 ms max. | |
| OFF delay time | | 1.5 ms max. | |
| Max. number of simultaneous ON input points | | 16 | |
| Number of points per common | | 16 points per common | |

Standard Environment-resistive Terminals and Environment-resistive Terminals with Transistors

Terminals with 4 Inputs

| Item | Model | DRT2-ID04CL | DRT2-ID04CL-1 |
|-----------------------------|-------|--|---|
| Internal I/O common | | NPN | PNP |
| Number of I/O points | | 4 inputs | |
| ON voltage | | 15 VDC min. (between each input terminal and V) | 15 VDC min. (between each input terminal and G) |
| OFF voltage | | 5 VDC max. (between each input terminal and V) | 5 VDC min. (between each input terminal and G) |
| OFF current | | 1 mA max. | |
| Input current | | 6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC | |
| I/O power supply voltage | | 20.4 to 26.4 VDC (24 VDC, -15 to +10%) | |
| ON delay time | | 1.5 ms max. | |
| OFF delay time | | 1.5 ms max. | |
| Number of points per common | | 4 points per common | |

Terminals with 8 Inputs

| Item | Model | DRT2-ID08CL | DRT2-ID08CL-1 |
|-----------------------------|-------|---|---|
| Internal I/O common | | NPN | PNP |
| Number of I/O points | | 8 inputs | |
| ON voltage | | 15 VDC min. (between each input terminal and V) | 15 VDC min. (between each input terminal and G) |
| OFF voltage | | 5 VDC max. (between each input terminal and V) | 5 VDC min. (between each input terminal and G) |
| OFF current | | 1 mA max. | |
| Input current | | 6.0 mA/6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC | |
| I/O power supply voltage | | 20.4 to 26.4 VDC (24 VDC, -15 to +10%) | |
| ON delay time | | 1.5 ms max. | |
| OFF delay time | | 1.5 ms max. | |
| Number of points per common | | 8 points per common | |

Terminals with 16 Inputs

| Item | Model | DRT2-HD16CL | DRT2-HD16CL-1 |
|-----------------------------|-------|--|---|
| Internal I/O common | | NPN | PNP |
| Number of I/O points | | 16 inputs | |
| ON voltage | | 15 VDC min. (between each input terminal and V) | 15 VDC min. (between each input terminal and G) |
| OFF voltage | | 5 VDC max. (between each input terminal and V) | 15 VDC min. (between each input terminal and G) |
| OFF current | | 1 mA max. | |
| Input current | | 6.0 mA max. per point at 24 VDC 3.0 mA max. per point at 17 VDC | |
| I/O power supply voltage | | 20.4 to 26.4 VDC (24 VDC, -15 to +10%) | |
| ON delay time | | 1.5 ms max. | |
| OFF delay time | | 1.5 ms max. | |
| Number of points per common | | 16 points per common | |

Terminals with 8 Inputs/8 Outputs

| Item | Model | DRT2-MD16CL | DRT2-MD16CL-1 |
|-----------------------------|-------|---|---|
| Internal I/O common | | NPN | PNP |
| Number of I/O points | | 8 inputs | |
| ON voltage | | 15 VDC min. (between each input terminal and V) | 15 VDC min. (between each input terminal and G) |
| OFF voltage | | 5 VDC max. (between each input terminal and V) | 5 VDC min. (between each input terminal and G) |
| OFF current | | 1 mA max. | |
| Input current | | 6.0 mA max. per point at 24 VDC 3.0 max. per point at 17 VDC | |
| I/O power supply voltage | | 20.4 to 26.4 VDC (24 VDC, -15 to +10%) | |
| ON delay time | | 1.5 ms max. | |
| OFF delay time | | 1.5 ms max. | |
| Number of points per common | | 8 points per common | |

Output Specifications

Remote I/O Terminals with Transistors

Terminals with 8 Outputs

| Item | Model | DRT2-OD08(-1) | |
|----------------------|-------|-----------------------------------|--|
| Rated output current | | 0.5 A per point, 4.0 A per 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 mA max. | |
| Isolation method | | Photocoupler isolation | |
| Output indicator | | Yellow LED indicator | |

Terminals with 8 Inputs/8 Outputs

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

MIL Connector Terminals with Transistors

Terminals with 16 Outputs, with Connectors

| Item | Model | DRT2-OD16ML DRT2-OD16MLX | DRT2-OD16ML-1 DRT2-OD16MLX-1 |
|-----------------------------|-------|--|--|
| Internal I/O common | | NPN | PNP |
| Number of I/O points | | 16 outputs | |
| Rated output current | | 0.3 A per point, 2 A per common (See note.) | |
| Residual voltage | | 1.2 V max. (0.3 A DC between each output terminal and G) | 1.2 V max. (0.3 A DC between each output terminal and V) |
| Leakage current | | 0.1 mA max. | |
| ON delay time | | 0.5 ms max. | |
| OFF delay time | | 1.5 ms max. | |
| Number of points per common | | 16 points per common | |

Note: Make sure the total external load current does not exceed 2 A.
Make sure that the V and G terminals do not exceed 1 A per terminal.

Standard Environment-resistive Terminals and Environment-resistive Terminals with Transistors

Terminals with 4 Outputs

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

Terminals with 8 Outputs

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

Terminals with 16 Outputs

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

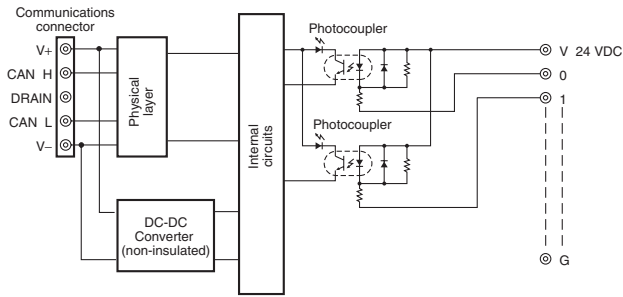
Terminals with 8 Inputs/8 Outputs

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

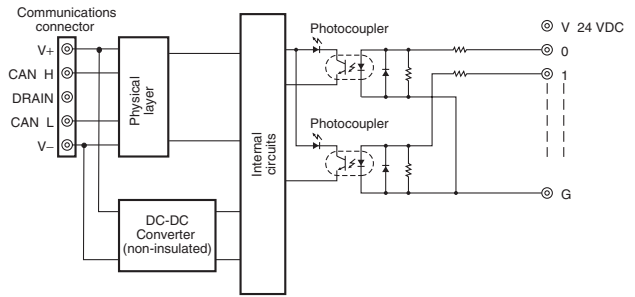
Internal Circuit Configuration

Remote I/O Terminals with Transistors

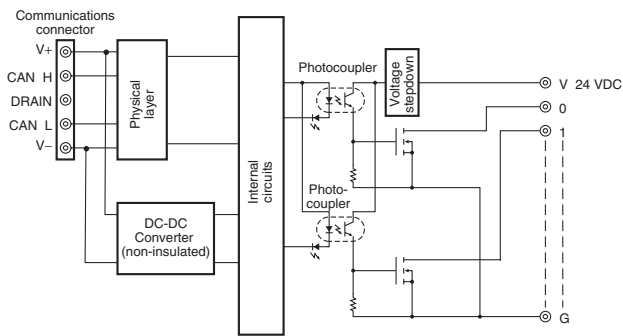
DRT2-ID08 (NPN)



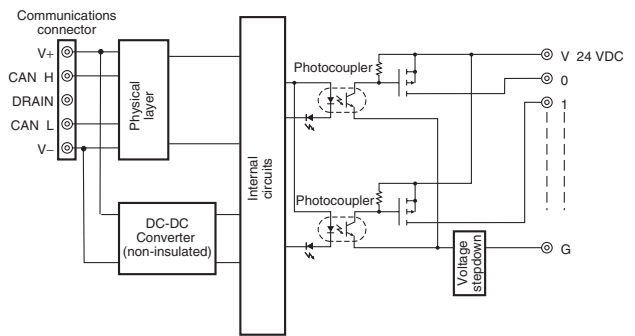
DRT2-ID08-1 (PNP)



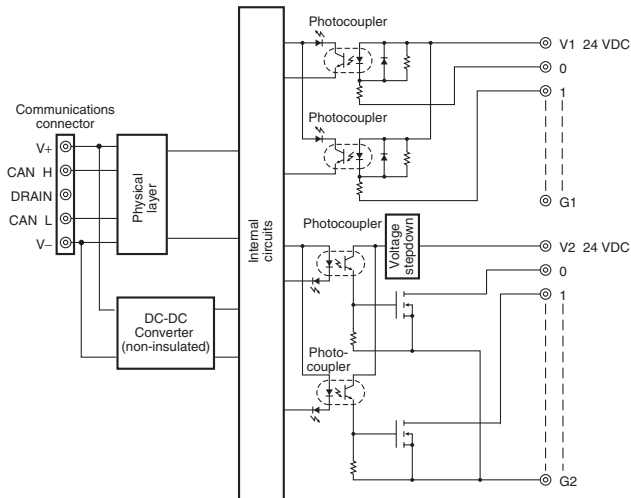
DRT2-OD08 (NPN)



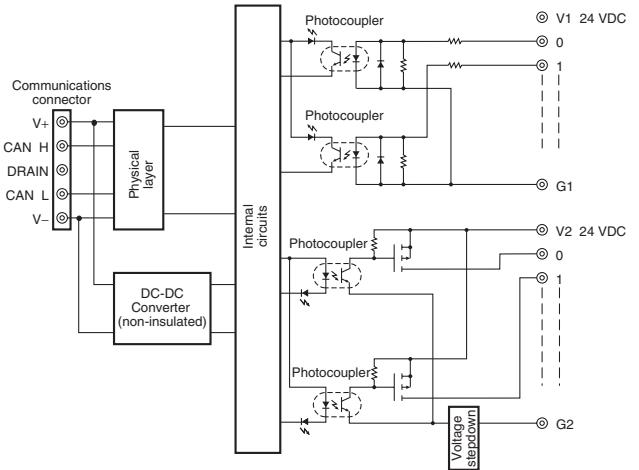
DRT2-OD08-1 (PNP)



DRT2-MD16 (NPN)

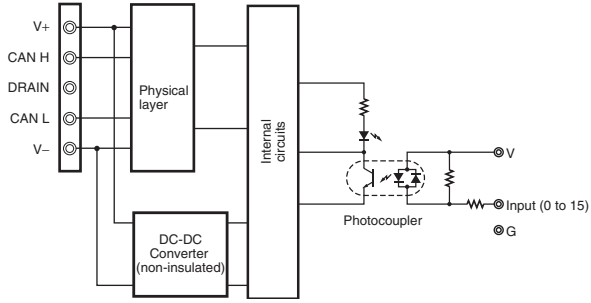


DRT2-MD16-1 (PNP)

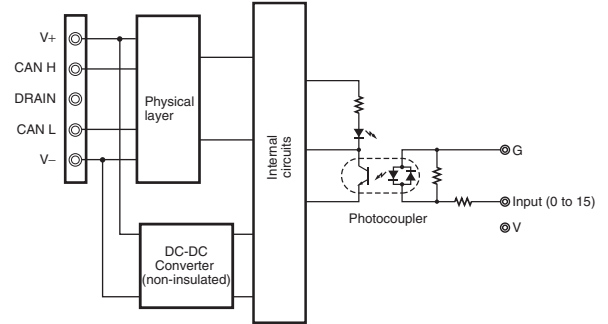


■ MIL Connector Terminals with Transistors

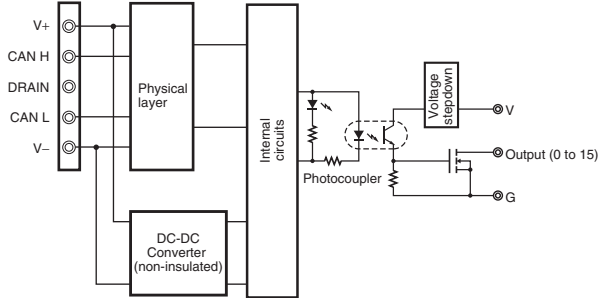
DRT2-ID16ML(X)



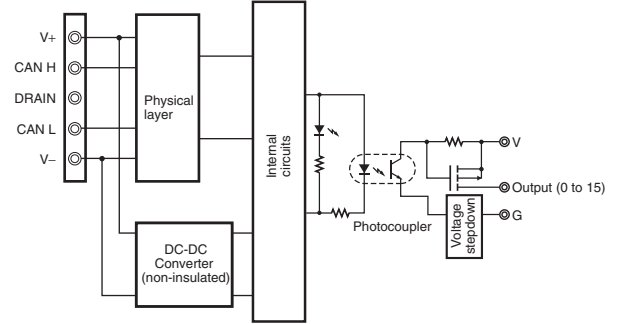
DRT2-ID16ML(X)-1



DRT2-OD16ML(X)

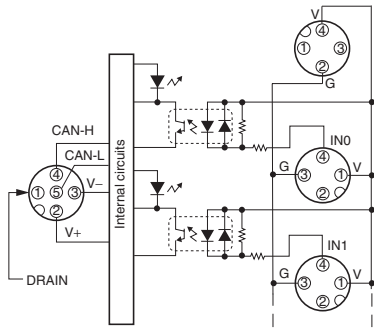


DRT2-OD16ML(X)-1

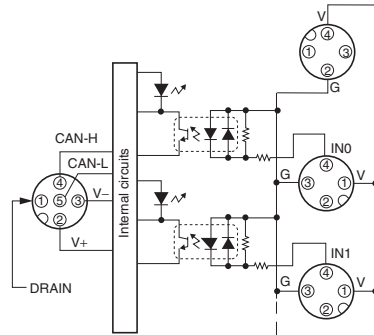


■ Standard Environment-resistive Terminals and Environment-resistive Terminals with Transistors

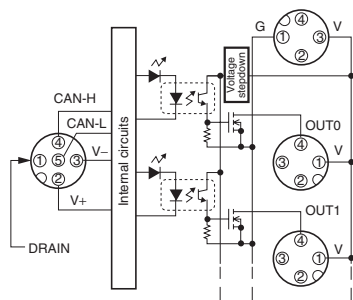
DRT2-ID04CL (NPN)



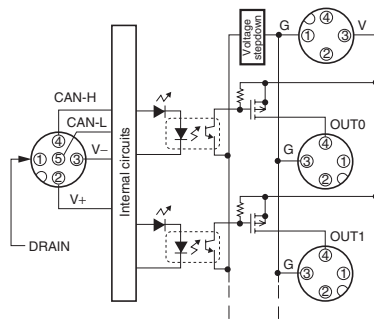
DRT2-ID04CL-1 (PNP)



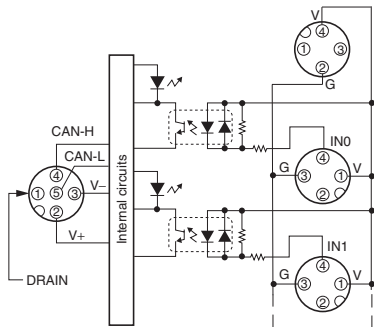
DRT2-OD04CL (NPN)



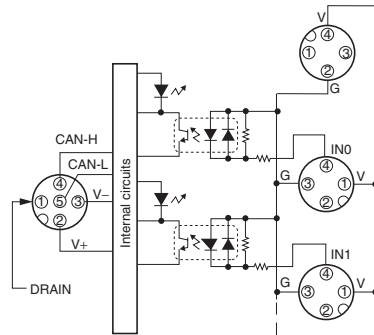
DRT2-OD04CL-1 (PNP)



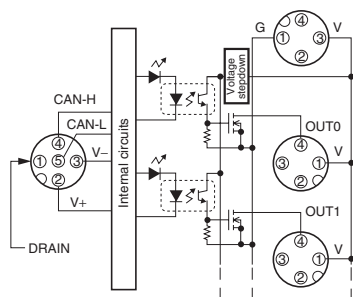
DRT2-ID08CL (NPN)



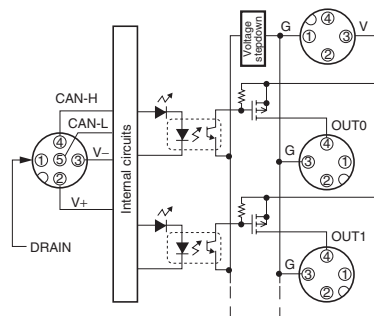
DRT2-ID08CL-1 (PNP)



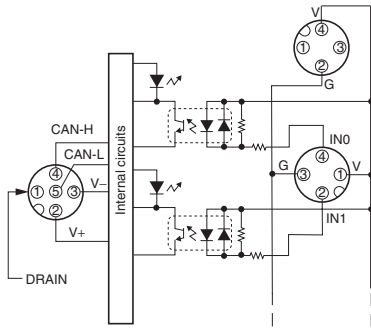
DRT2-OD08CL (NPN)



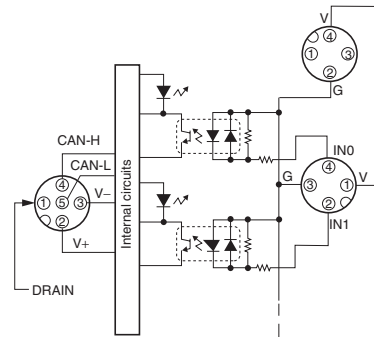
DRT2-OD08CL-1 (PNP)



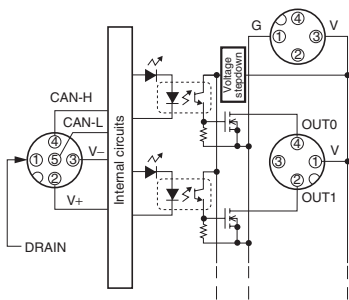
DRT2-HD16CL (NPN)



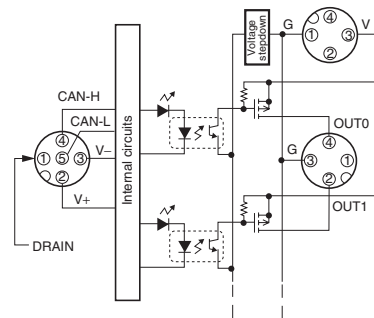
DRT2-HD16CL-1 (PNP)



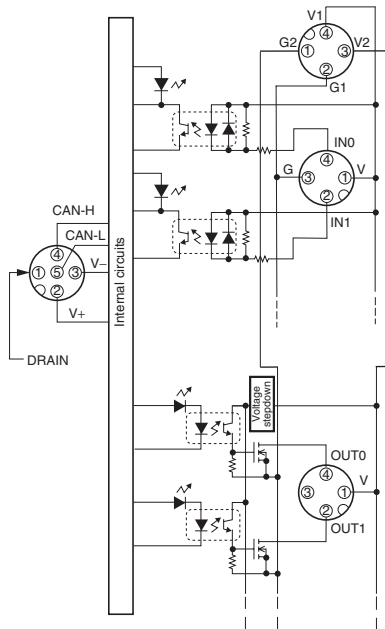
DRT2-WD16CL (NPN)



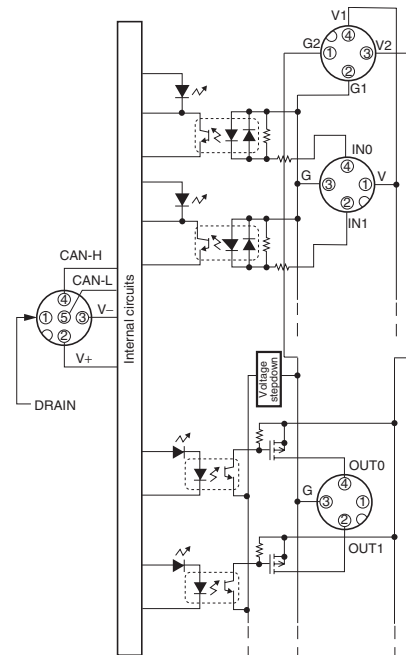
DRT2-WD16CL-1 (PNP)



DRT2-MD16CL (NPN)



DRT2-MD16CL-1 (PNP)

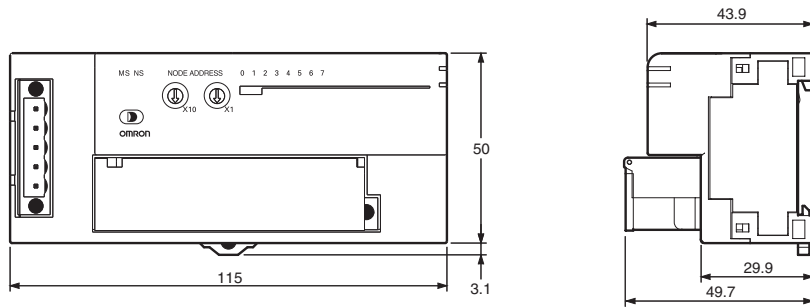


Dimensions

■ Remote I/O Terminals with Transistors

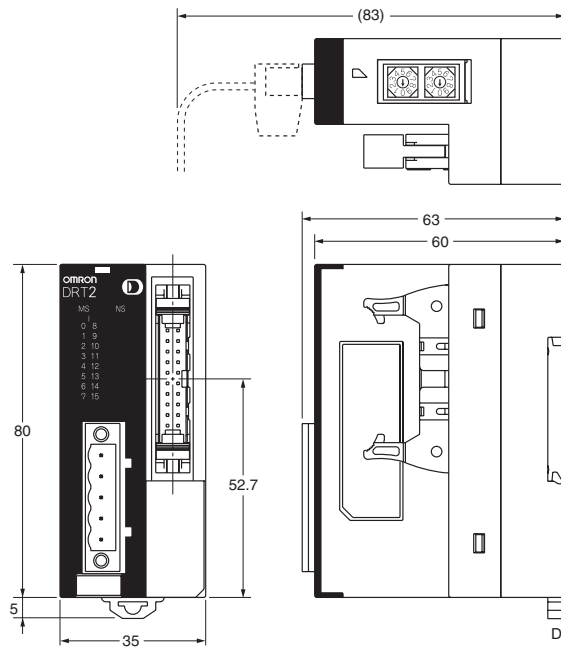
● Remote I/O Terminals

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



■ MIL Connector Terminals with Transistors

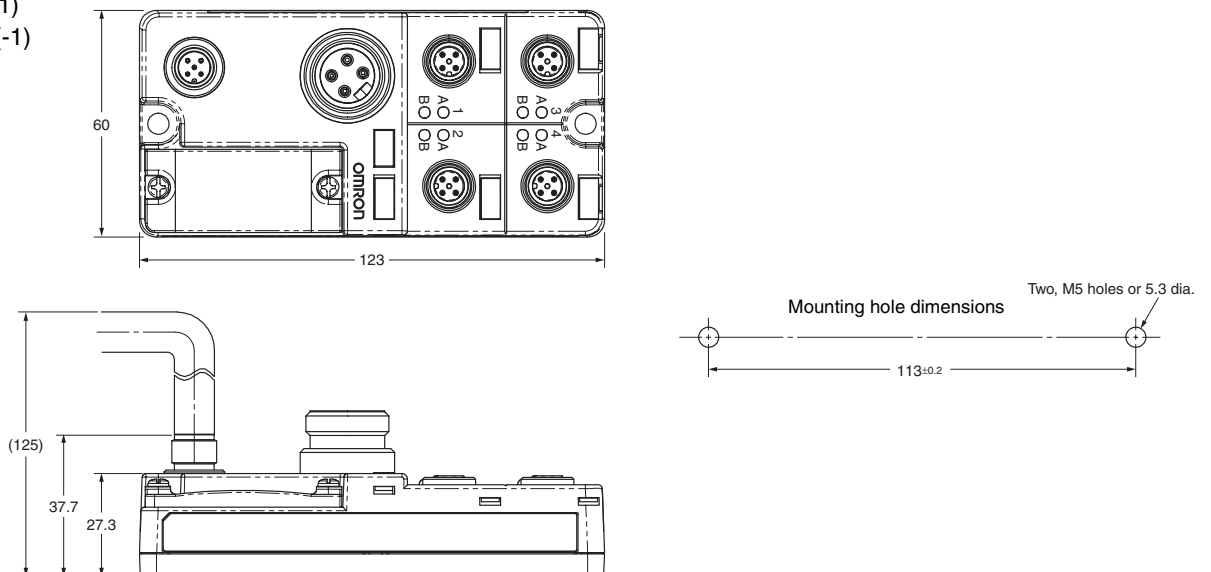
- DRT2-ID16ML(-1)
- DRT2-OD16ML(-1)
- DRT2-ID16MLX(-1)
- DRT2-OD16MLX(-1)



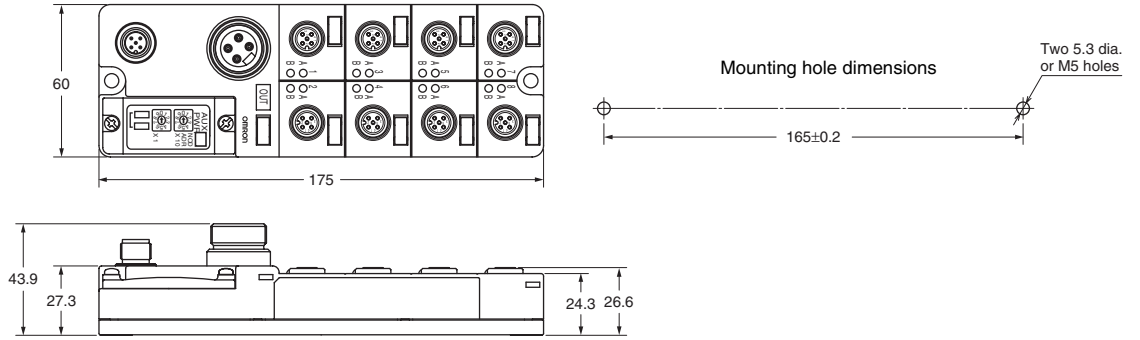
Dimensions inside parentheses are for reference only.

■ Standard Environment-resistive Terminals and Environment-resistive Terminals with Transistors

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



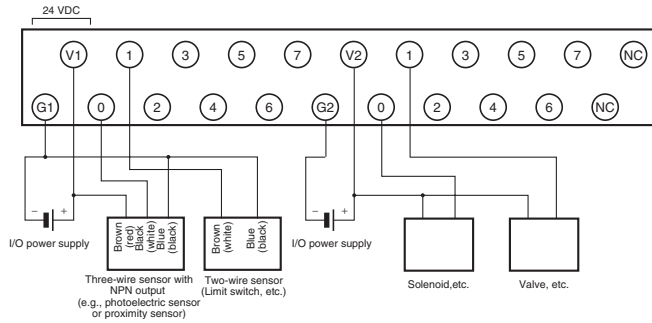
- DRT2-ID08CL(-1)
- DRT2-OD08CL(-1)
- DRT2-HD16CL(-1)
- DRT2-WD16CL(-1)
- DRT2-MD16CL(-1)



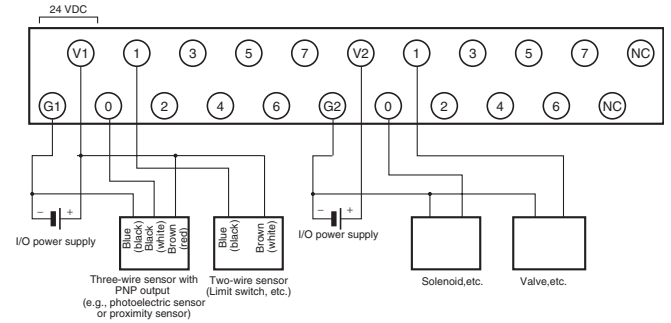
Wiring Diagrams

Remote I/O Terminals with Transistors

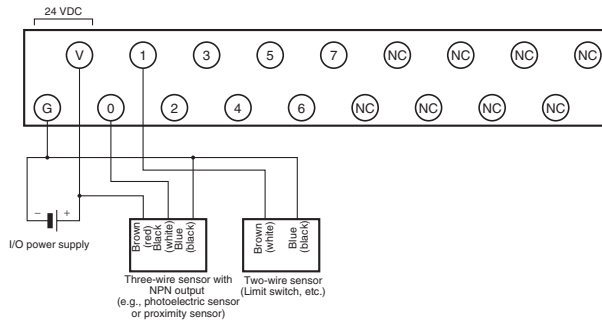
DRT2-MD16 (NPN)



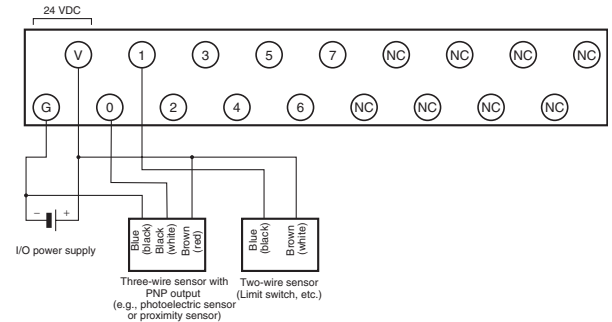
DRT2-MD16-1 (PNP)



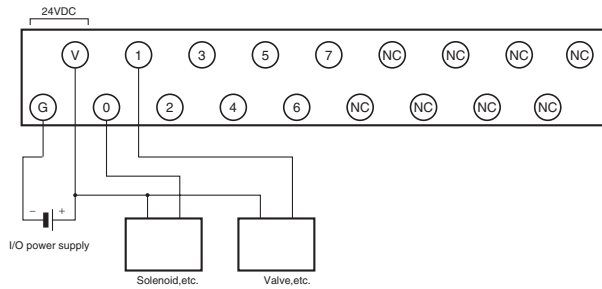
DRT2-ID08 (NPN)



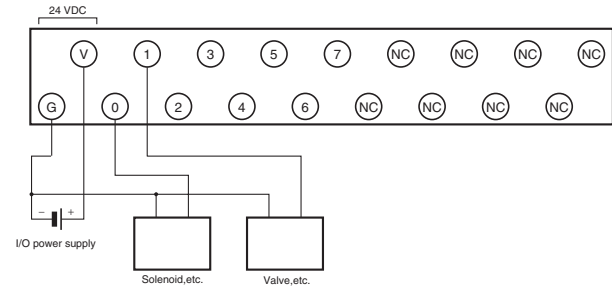
DRT2-ID08-1 (PNP)



DRT2-OD08 (NPN)

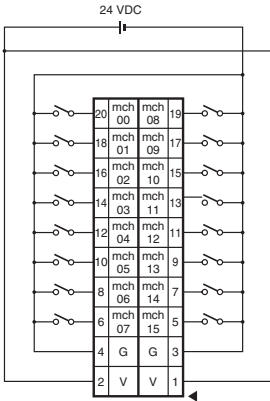


DRT2-OD08-1 (PNP)

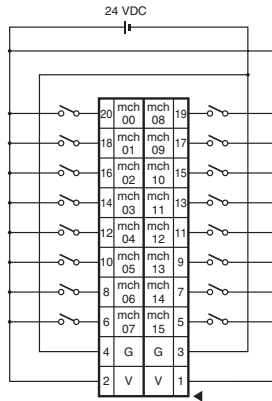


■ MIL Connector Terminals with Transistors

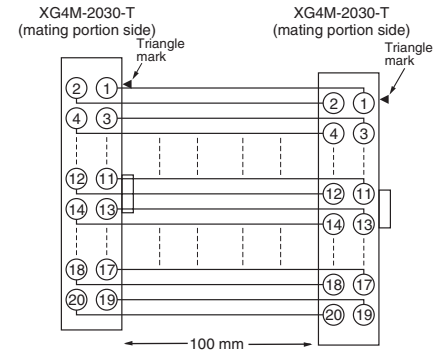
DRT2-ID16ML(X)



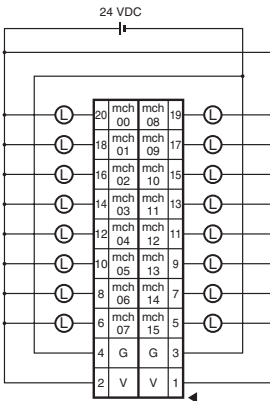
DRT2-ID16ML(X)-1



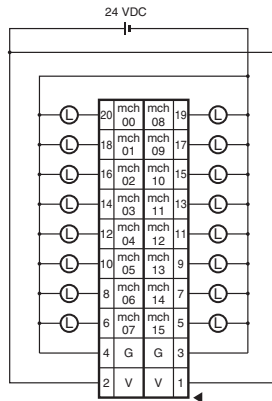
DRT2-ID16MLX(-1)/DRT2-OD16MLX(-1)
Wiring Diagram for Enclosed Cable (with Connectors)



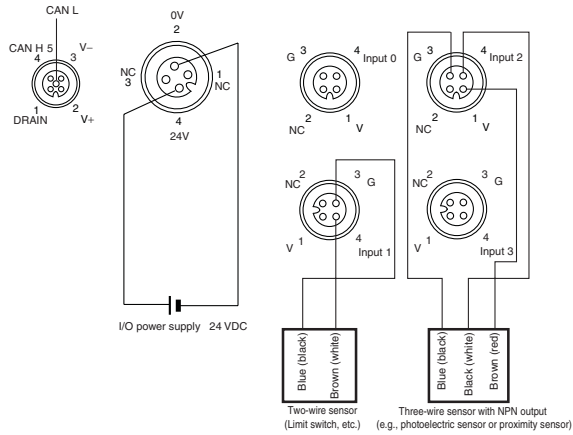
DRT2-OD16ML(X)



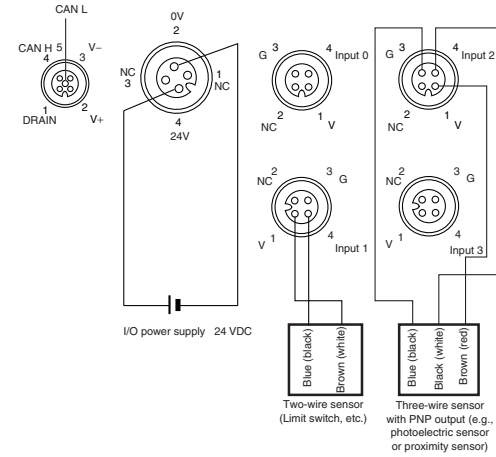
DRT2-OD16ML(X)-1



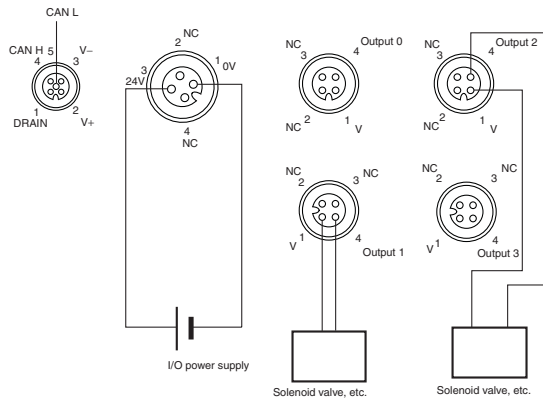
■ Standard Environment-resistive Terminals and Environment-resistive Terminals with Transistors
DRT2-ID04CL (NPN)



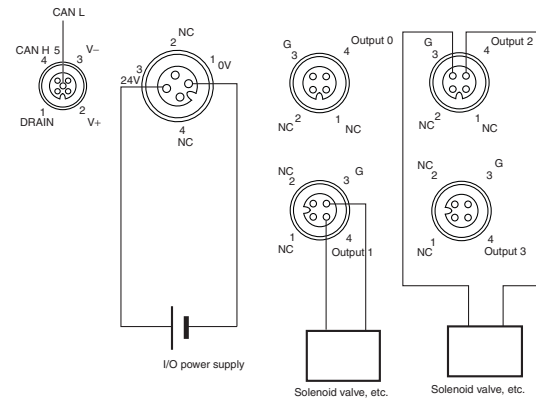
DRT2-ID04CL-1 (PNP)



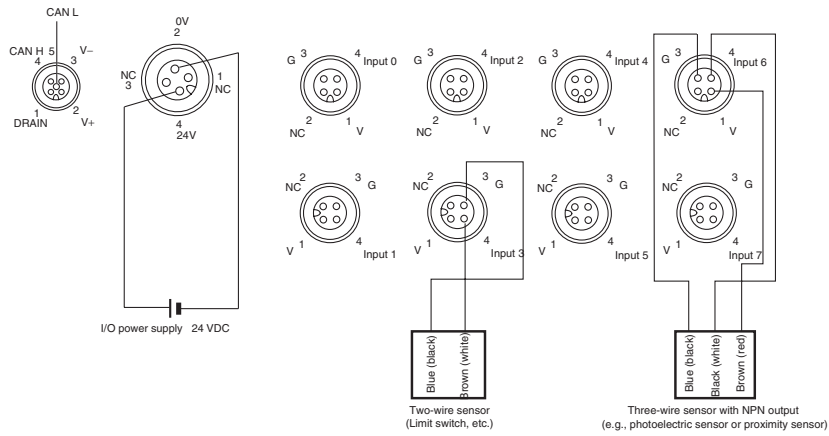
DRT2-OD04CL (NPN)



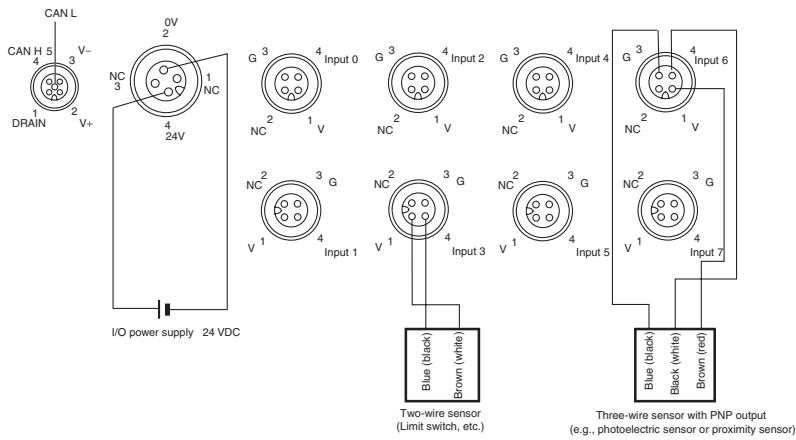
DRT2-OD04CL-1 (PNP)



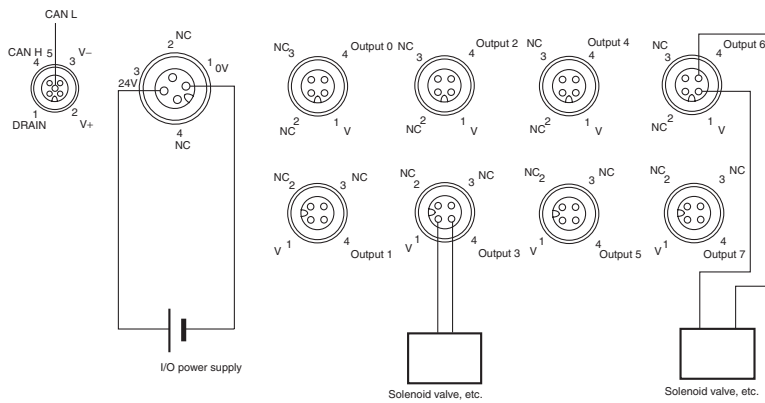
DRT2-ID08CL (NPN)



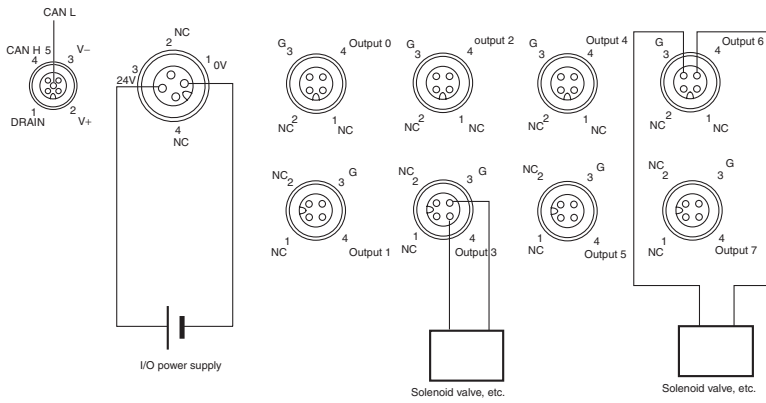
DRT2-ID08CL-1 (PNP)



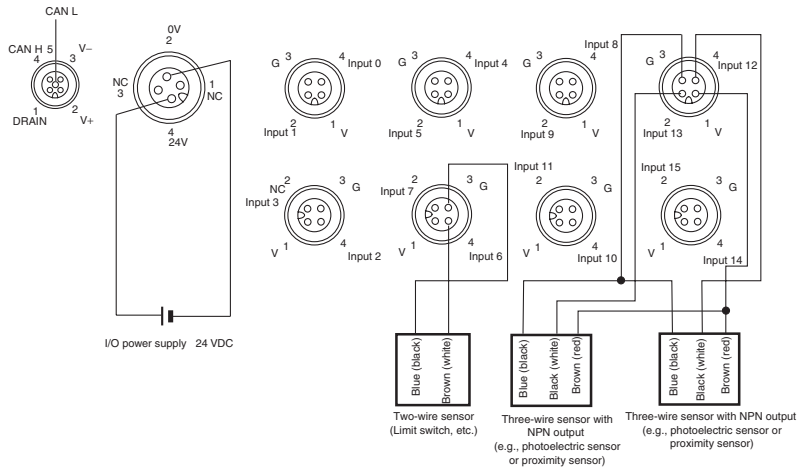
DRT2-OD08CL (NPN)



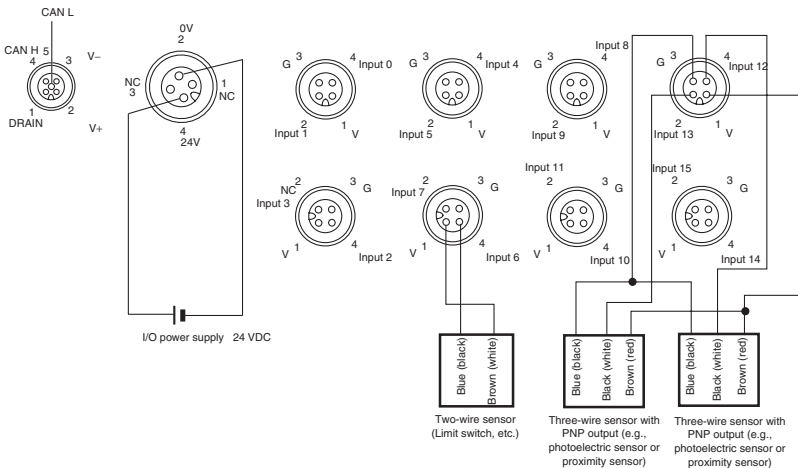
DRT2-OD08CL-1 (PNP)



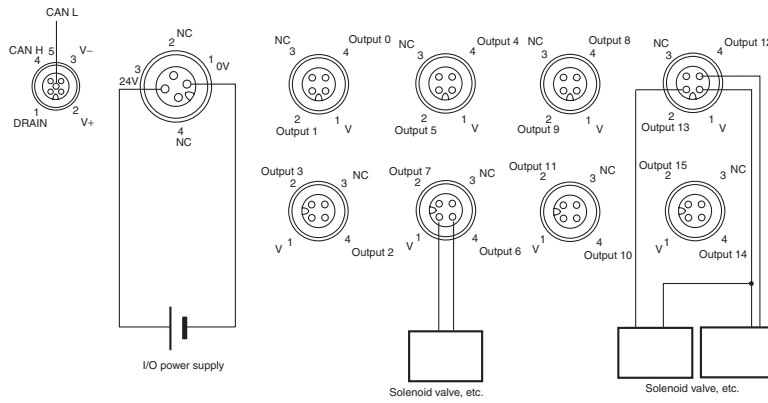
DRT2-HD16CL (NPN)



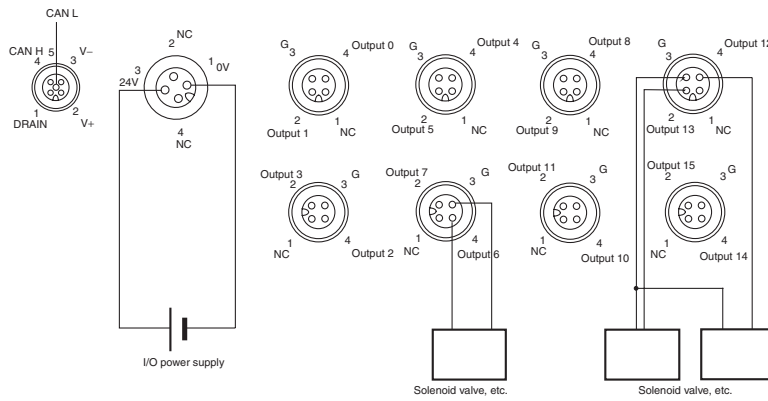
DRT2-HD16CL-1 (PNP)



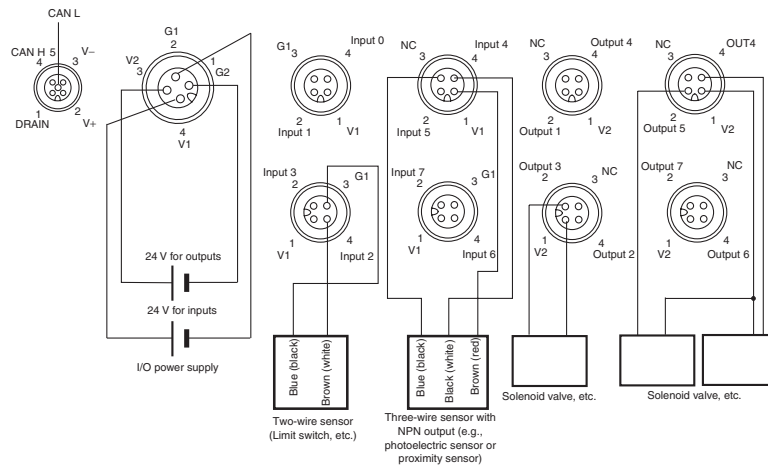
DRT2-WD16CL (NPN)



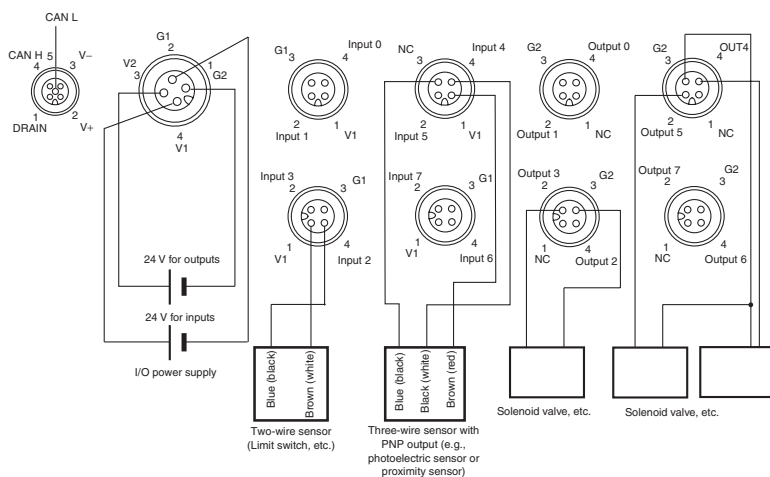
DRT2-WD16CL-1 (PNP)



DRT2-MD16CL (NPN)



DRT2-MD16CL-1 (PNP)



Applicable Cables

■ MIL Connectors with Transistors

● Connector-Terminal Block Conversion Unit and Connecting Cable (16 Points)

Cables with Connectors (1:1)

| Model | Applicable cable | Connected Relay Terminal | Remarks |
|--|------------------|---|--|
| DRT2-ID16ML DRT2-ID16ML-1 DRT2-OD16ML DRT2-OD16ML-1 | G79-O□C | XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16 | Connector Terminal Block Conversion Unit |

● I/O Relay Terminal Connector Cables (16 Points)

Cables with Connectors (1:1)

| Model | Applicable cable | Connected Relay Terminal | Remarks |
|---------------|------------------|--|--------------------------------|
| DRT2-ID16ML | G79-I□C | G7TC-ID16 G7TC-IA16 | For I/O Relay Terminal inputs |
| DRT2-ID16ML-1 | --- | --- | (No applicable models) |
| DRT2-OD16ML | G79-O□C | G7TC-OC16/OC08 G70D-SOC16/VSOC16 G70D-FOM16/VFOM16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08 | For I/O Relay Terminal outputs |
| DRT2-OD16ML-1 | G79-I□C | G7TC-OC16-1 | For I/O Relay Terminal outputs |
| | G79-O□C | G70D-SOC16-1 G70D-FOM16-1 G70A-ZOC16-4 | For I/O Relay Terminal outputs |

● Cables with Loose Wires with Crimp Terminals


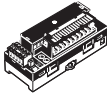

| Model | Applicable cable | Remarks |
|--|------------------|---|
| DRT2-ID16ML DRT2-ID16ML-1 DRT2-OD16ML DRT2-OD16ML-1 | G79A-Y□C-D1 | 20-pole connector/ bundled cable (with crimp-style terminals) conversion cable |

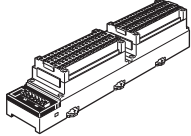
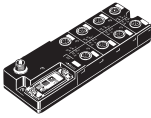





● Cables with Loose Wires

| Model | Applicable cable | Remarks |
|--|------------------|---|
| DRT2-ID16ML DRT2-ID16ML-1 DRT2-OD16ML DRT2-OD16ML-1 | G79A-A□C-D1 | 20-pole connector/ bundled cable conversion cable |


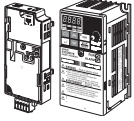

List of Models

●DRT2-series Smart Slaves

| Product name | Shape | Model | Specifications | Approved standards |
|---|---|----------------|--|--------------------|
| Remote I/O Basic Terminals with Transistors |  | DRT2-ID16 | 16 inputs, NPN (+ common) | UC, CE |
| | | DRT2-ID16-1 | 16 inputs, PNP (- common) | |
| | | DRT2-OD16 | 16 outputs, NPN (- common) | |
| | | DRT2-OD16-1 | 16 outputs, PNP (+ common) | |
| | | DRT2-MD16 | 8 inputs/8 outputs with NPN, + common for inputs, - common for outputs | |
| | | DRT2-MD16-1 | 8 inputs/8 outputs with PNP, - common for inputs, + common for outputs | |
| | | DRT2-ID08 | 8 inputs, NPN (+ common) | |
| | | DRT2-ID08-1 | 8 inputs, PNP (- common) | |
| | | DRT2-OD08 | 8 outputs, NPN (- common) | |
| | | DRT2-OD08-1 | 8 outputs, PNP (+ common) | |
| Remote I/O Terminal Expansion Units with Transistors |  | XWT-ID08 | 8 inputs for terminals with NPN, + common | UC, CE |
| | | XWT-ID08-1 | 8 inputs for terminals with PNP, - common | |
| | | XWT-OD08 | 8 outputs for terminals with NPN, - common | |
| | | XWT-OD08-1 | 8 outputs for terminals with PNP, + common | |
| | | XWT-ID16 | 16 inputs for terminals with NPN, + common | |
| | | XWT-ID16-1 | 16 inputs for terminals with PNP, - common | |
| | | XWT-OD16 | 16 outputs for terminals with NPN, - common | |
| | | XWT-OD16-1 | 16 outputs for terminals with PNP, + common | |
| Remote I/O Terminals with 3-tier Terminal Blocks with 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 | | | |
| MIL Connector Terminals with Transistors |  | 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 | |
| | | DRT2-ID16ML | 16 inputs with NPN, + common | |
| | | DRT2-ID16ML-1 | 16 inputs with PNP, - common | |
| | | DRT2-OD16ML | 16 outputs with NPN, - common | |
| | | DRT2-OD16ML-1 | 16 outputs with PNP, + common | |
| | | DRT2-ID16MLX | 16 inputs with NPN, + common, cable with connectors: 10 cm | |
| | | DRT2-ID16MLX-1 | 16 inputs with PNP, - common, cable with connectors: 10 cm | |
| | | DRT2-OD16MLX | 16 outputs with NPN, - common, cable with connectors: 10 cm | |
| DRT2-OD16MLX-1 | 16 outputs with PNP, + common, cable with connectors: 10 cm | | | |
| Remote I/O Terminals with Relay Outputs |  | DRT2-ROS16 | 16 outputs | UR, CE |
| Board Terminals with MIL Connectors (horizontal mounting) |  | DRT2-ID32B | 32 inputs, NPN (+ common) | U, CE |
| | | DRT2-ID32B-1 | 32 inputs, PNP (- common) | |
| | | DRT2-OD32B | 32 outputs, NPN (- common) | |
| | | DRT2-OD32B-1 | 32 outputs, PNP (+ common) | |
| | | DRT2-MD32B | 16 inputs/16 outputs, NPN (inputs: + common/outputs: - common) | |
| | | DRT2-MD32B-1 | 16 inputs/16 outputs, PNP (inputs: - common/outputs: + common) | |
| Board Terminals with MIL Connectors (vertical mounting) |  | DRT2-ID32BV | 32 inputs, NPN (+ common) | U, CE |
| | | DRT2-ID32BV-1 | 32 inputs, PNP (- common) | |
| | | DRT2-OD32BV | 32 outputs, NPN (- common) | |
| | | DRT2-OD32BV-1 | 32 outputs, PNP (+ common) | |
| | | DRT2-MD32BV | 16 inputs/16 outputs, NPN (inputs: + common/outputs: - common) | |
| | | DRT2-MD32BV-1 | 16 inputs/16 outputs, PNP (inputs: - common/outputs: + common) | |

| Product name | Shape | Model | Specifications | Approved standards |
|--|---|-------------------------------|---|--------------------|
| Screw-less Clamp Terminals with Transistors |  | DRT2-ID32SLH | 32 inputs, NPN (+ common) with detection functions | UC, CE |
| | | DRT2-ID32SLH-1 | 32 inputs, PNP (- common) with detection functions | |
| | | DRT2-OD32SLH | 32 outputs, NPN (- common) with detection functions | |
| | | DRT2-OD32SLH-1 | 32 outputs, PNP (+ common) with detection functions | |
| | | DRT2-MD32SLH | 16 inputs/16 outputs, NPN (inputs: + common/outputs: - common) with detection functions | |
| | | DRT2-MD32SLH-1 | 16 inputs/16 outputs, PNP (inputs: - common/outputs: + common) with detection functions | |
| | | DRT2-ID32SL | 32 inputs, NPN (+ common) without detection functions | |
| | | DRT2-ID32SL-1 | 32 inputs, PNP (- common) without detection functions | |
| | | DRT2-OD32SL | 32 outputs, NPN (- common) without detection function | |
| | | DRT2-OD32SL-1 | 32 outputs, PNP (+ common) without detection function | |
| Environment-resistive Terminals with Transistors |  | DRT2-ID08C | 8 inputs, NPN (+ common) with detection functions | UC, CE |
| | | DRT2-ID08C-1 | 8 inputs, PNP (- common) with detection functions | |
| | | DRT2-OD08C | 8 outputs, NPN (- common) with detection functions | |
| | | DRT2-OD08C-1 | 8 outputs, PNP (+ common) with detection functions | |
| | | DRT2-HD16C | 16 inputs, NPN (+ common) with detection functions | |
| | | DRT2-HD16C-1 | 16 inputs, PNP (- common) with detection functions | |
| Environment-resistive Terminals with Transistors |  | DRT2-ID04CL | 4 inputs, NPN (+ common) without detection functions | UC, CE |
| | | DRT2-ID04CL-1 | 4 inputs, PNP (- common) without detection functions | |
| | | DRT2-OD04CL | 4 outputs, NPN (- common) without detection functions | |
| | | DRT2-OD04CL-1 | 4 outputs, PNP (+ common) without detection functions | |
| |  | DRT2-ID08CL | 8 inputs, NPN (+ common) without detection functions | UC, CE |
| | | DRT2-ID08CL-1 | 8 inputs, PNP (- common) without detection functions | |
| | | ADRT2-OD08CL | 8 outputs, NPN (- common) without detection functions | |
| | | DRT2-OD08CL-1 | 8 outputs, PNP (+ common) without detection functions | |
| | | DRT2-HD16CL | 16 inputs, NPN (+ common) without detection functions | |
| | | DRT2-HD16CL-1 | 16 inputs, PNP (- common) without detection functions | |
| | | DRT2-WD16CL | 16 outputs, NPN (- common) without detection functions | |
| | | DRT2-WD16CL-1 | 16 outputs, PNP (+ common) without detection functions | |
| | | DRT2-MD16CL | 8 inputs/8 outputs, NPN (inputs: + common/outputs: - common) without detection function | |
| | | DRT2-MD16CL-1 | 8 inputs/8 outputs, PNP (inputs: - common/outputs: + common) without detection function | |
| e-con Connector Terminals |  | DRT2-ID16S | 16 inputs, NPN (+ common) | UC, CE |
| | | DRT2-ID16S-1 | 16 inputs, PNP (- common) | |
| | | DRT2-MD16S | 8 inputs/8 outputs, NPN (inputs: + common/outputs: - common) | |
| | | DRT2-MD16S-1 | 8 inputs/8 outputs, PNP (inputs: - common/outputs: + common) | |
| Analog Input Terminals |  | DRT2-AD04 | 4 inputs (resolution: 6,000) | UC, CE |
| DRT2-AD04H | | 4 inputs (resolution: 30,000) | | |
| Analog Output Terminals | | DRT2-DA02 | 2 outputs | |
| Temperature Input Terminals with Thermocouple Inputs |  | DRT2-TS04T | 4 inputs | U, CE |
| Temperature Input Terminals with Resistance-thermometer Inputs | | DRT2-TS04P | 4 inputs | |

● Intelligent Slaves

| Product name | Shape | Model | Specifications | Approved standards |
|---|---|-------------|---|--------------------|
| Modular Temperature Controllers |  | E5ZN-DRT | DeviceNet Communications Unit for E5ZN | --- |
| | | E5ZN-SCT24S | Terminal Unit | |
| | --- | E5ZN-SDL | Setting Display Unit | |
| Multi-function Compact Inverter |  | 3G3MV-PDRT2 | Communications Unit for 3G3MV Inverters | U, CE |
| High-function General-purpose Inverters |  | 3G3RV-PDRT2 | 3G3RV/3G3FV DeviceNet Communications Card | U, CE |

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Cat. No. R110-E1-05
Printed in Japan
1006-0.3M