

# High Density Module

# DRT1

## Ultra-compact 32-point Remote Terminals

- Compact size: 35 x 60 x 80 mm (W x D x H).
- Isolated structure allows separate power supplies to be used for internal circuits and I/O.
- Power is supplied from the communications power supply for the internal circuits.
- Meets UL and CSA safety standards.



## Ordering Information

### ■ Standard Modules

**Note:** See Cabling & Wiring Device Selection Guide on page 2 for more information.

| I/O type           | Internal I/O common | Number of I/O points | I/O connectors     | Model          |
|--------------------|---------------------|----------------------|--------------------|----------------|
| Digital input      | NPN (+common)       | 32 points            | MIL type connector | DRT1-ID32ML    |
|                    | PNP (-common)       |                      |                    | DRT1-ID32ML-1  |
| Digital I/O        | NPN (+common)       |                      |                    | DRT1-MD32ML    |
|                    | PNP (-common)       |                      |                    | DRT1-MD32ML-1  |
| Digital output     | NPN (+common)       |                      |                    | DRT1-OD32ML    |
|                    | PNP (-common)       |                      |                    | DRT1-OD32MLT-1 |
| Mounting bracket B |                     |                      |                    | SRT2-ATT02     |

### ■ Compatible Connectors

| Product                           |               | Comments                                               | Model                         |
|-----------------------------------|---------------|--------------------------------------------------------|-------------------------------|
| Flat cable, crimp terminals       |               | ---                                                    | XG4M-4030-T                   |
| Loose wires, crimp terminals      | Partial cover | ---                                                    | XG5S-2001                     |
| Pre-made cable for relay blocks   | ---           | Use with G7TC or G70A or G70D relay blocks (In or Out) | G79-□□□-□□-D1<br>(See Note 1) |
| Pre-made cables for wiring blocks | ---           | Use with XW2B-□□G4 or XW2B-□□G5                        | XW2Z-□□□-K<br>(See Note 2)    |

**Note:** 1. Complete G79 number with 50 - 25 or 75 - 50.

2. Complete XW2Z number with 100 (1 meter), 150 (1.5 meter), 200 (2 meters), or 300 (3 meters).

# Cabling and Wiring Device Selection Guide

**Note:** Complete G79 number with 50 - 25 or 75 - 50. Complete XW2Z number with 100 (1 meter), 150 (1.5 meter), 200 (2 meters), or 300 (3 meters).

| #In | #Out | Polarity | Cables      | Wiring device  | High density module |
|-----|------|----------|-------------|----------------|---------------------|
| 32  | ---  | NPN      | G79I□-□-D1  | G7TC-IA16/ID16 | DRT1-ID32ML         |
|     |      |          | XW2Z-□□□K   | XW2B40G4/G5    |                     |
| 32  | ---  | PNP      | XW2Z-□□□K   | XW2B40G4/G5    | DRT1-ID32ML-1       |
| --- | 32   | NPN      | G79-O□-□-D1 | G7TC-OC16      | DRT1-OD32ML         |
|     |      |          |             | G70D-SOC16     |                     |
|     |      |          |             | G70D-VSOC16    |                     |
|     |      |          |             | G70A-ZOC16     |                     |
|     |      |          |             | XW2Z-□□□K      |                     |
| --- | 32   | PNP      | G79-O□-□D1  | G70A-ZOC16-4   | DRT1-OD32ML-1       |
|     |      |          | XW2Z-□□□K   | XW2B40G4/G5    |                     |
|     |      |          | G79-□-□D1   | ---            |                     |
| 16  | ---  | NPN      | G79-M□-□-D1 | G7TC-IA16/ID16 | DRT1-MD32ML         |
|     |      |          | XW2Z-□□□K   | XW2B40G4/G5    |                     |
| --- | 16   | NPN      | G79-M□-□-D1 | G7TC-OC16      | DRT1-MD32ML         |
|     |      |          |             | G70D-SOC16     |                     |
|     |      |          |             | G70D-VSOC16    |                     |
|     |      |          |             | G70A-ZOC16-3   |                     |
|     |      |          |             | XW2Z-□□□K      |                     |
| 16  | ---  | PNP      | XW2Z-□□□K   | XW2B40G4/G5    | DRT1-MD32ML-1       |
|     |      |          | G79-M□-□-D1 | G70A-ZOC16-4   |                     |
| --- | 16   | PNP      | XW2Z-□□□K   | XW2B40G4/G5    |                     |

# Specifications

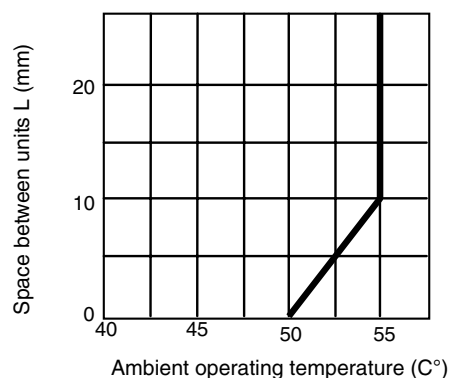
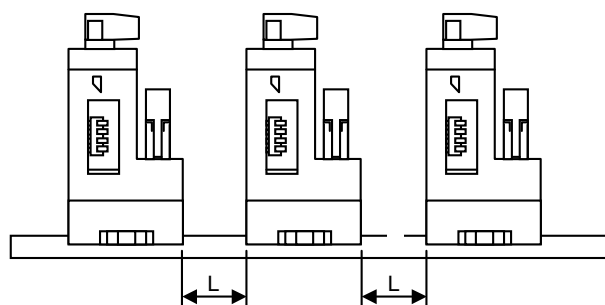
## General Specifications

| Item                                               | ID32ML/ID32ML-1                                                      | MD32ML/MD32ML-1 | OD32ML/OD32ML-1 |
|----------------------------------------------------|----------------------------------------------------------------------|-----------------|-----------------|
| Communication power supply voltage                 | 11 to 25 VDC                                                         |                 |                 |
| I/O power supply voltage                           | 20.4 to 26.4 VDC                                                     |                 |                 |
| Current consumption of Communications power supply | 50 mA max.                                                           | 70 mA max.      | 90 mA max.      |
| Dielectric strength                                | 500 VAC for minute (1 mA current detected between isolated circuits) |                 |                 |
| Vibration resistance                               | 10 to 150 Hz, 0.7 mm double amplitude or 50 m/s <sup>2</sup>         |                 |                 |
| Ambient temperature                                | Operating: -10°C to 55°C<br>Storage: -25°C to 65°C                   |                 |                 |
| Ambient humidity                                   | Operating: 25 to 85% (with no icing or condensation)                 |                 |                 |
| Weight                                             | 100g                                                                 |                 | 90g             |

## Input Specifications

| Item                                             | ID32ML                                        | MD32ML                        | ID32ML-1                                   | MD32ML-1                      |
|--------------------------------------------------|-----------------------------------------------|-------------------------------|--------------------------------------------|-------------------------------|
| ON voltage                                       | 17 VDC min. (between each input pin and V)    |                               | 17 VDC min. (between each input pin and G) |                               |
| OFF voltage                                      | 5 VDC max. (between each input pin and V)     |                               | 5 VDC max. (between each input pin and G)  |                               |
| OFF current                                      | 1.0 mA max.                                   |                               |                                            |                               |
| Input current                                    | 6.0 mA TYP at 24 VDC<br>3.0 mA min. at 17 VDC |                               |                                            |                               |
| Input impedance                                  | 4.4 kΩ                                        |                               |                                            |                               |
| ON delay time                                    | 1.5 ms max.                                   |                               |                                            |                               |
| OFF delay time                                   | 1.5 ms max.                                   |                               |                                            |                               |
| Max. number of simultaneous inputs<br>(See Note) | 32 inputs                                     | 16 inputs                     | 32 inputs                                  | 16 inputs                     |
| Number of circuits                               | 32 inputs/common<br>1 circuit                 | 16 inputs/common<br>1 circuit | 32 inputs/common<br>1 circuit              | 16 inputs/common<br>1 circuit |

**Note:** Refer to the ambient operating temperature graph to determine proper spacing between units. Spacing is limited by ambient temperature and the number of points that can be ON simultaneously. For example, when the maximum number of simultaneous input points is 32, at 55°C ambient temperature, the spacing between units must be at least 10 mm.



## Output Specifications

| Item              | OD32ML                                 | MD32ML                                 | OD32ML-1                               | MD32ML-1                               |
|-------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
| Outputs current   | 0.3A/point<br>4A/common (See Note 1,3) | 0.3A/point<br>2A/common (See Note 2,3) | 0.3A/point<br>4A/common (See Note 1,3) | 0.3A/point<br>2A/common (See Note 2,3) |
| Residual voltage  | 1.2V max (DC 0.3A).                    |                                        | 1.2V (DC 0.3A)                         |                                        |
| Leakage current   | 0.1 mA max at DC24V                    |                                        |                                        |                                        |
| ON delay time     | 0.5 ms. max.                           |                                        |                                        |                                        |
| OFF delay time    | 1.5 ms. max.                           |                                        |                                        |                                        |
| Number of circuit | 32 points/common<br>1 circuit          | 16 points/common<br>1 circuit          | 32 points/common<br>1 circuit          | 16 points/common<br>1 circuit          |

**Note:** 1. The total load current is 4A.

2. The total load current is 2A.

3. Each V or G pin is 1A.

## Operation

### Indicator

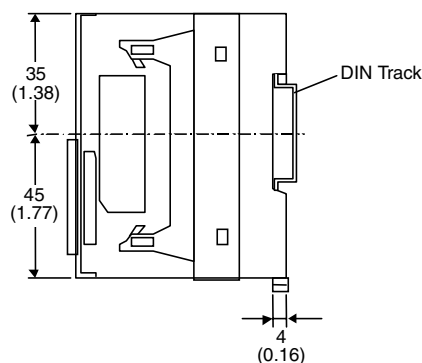
| Indicator | Color  | Status   | Meaning                                      |
|-----------|--------|----------|----------------------------------------------|
| MS        | Green  | Lit      | The unit is normal                           |
|           |        | Flashing | No node has been set                         |
|           | Red    | Lit      | The unit has a fatal error                   |
|           |        | Flashing | The unit has a non-fatal error               |
|           | ---    | Not lit  | No power is supplied to the unit             |
| NS        | Green  | Lit      | Communications connection established        |
|           |        | Flashing | Communications connection is not established |
|           | Red    | Lit      | Fatal communications error occurred          |
|           |        | Flashing | Non-fatal communications error occurred      |
|           | ---    | Not lit  | The communications power supply is OFF       |
| 0 to 15   | Yellow | Lit      | Corresponding I/O signal is ON               |
|           |        | Not Lit  | Corresponding I/O signal is OFF              |

### Mounting Method

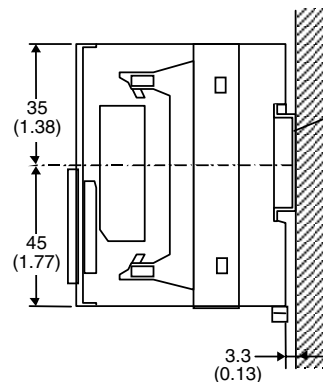
Unit: mm (inch)

The product can be mounted on a 35 mm DIN rail or the attachment (SRT2-ATT02) by using the DIN rail attachment hook of the product. Do not install the product in places to be touched by accident to avoid malfunction caused by static electricity.

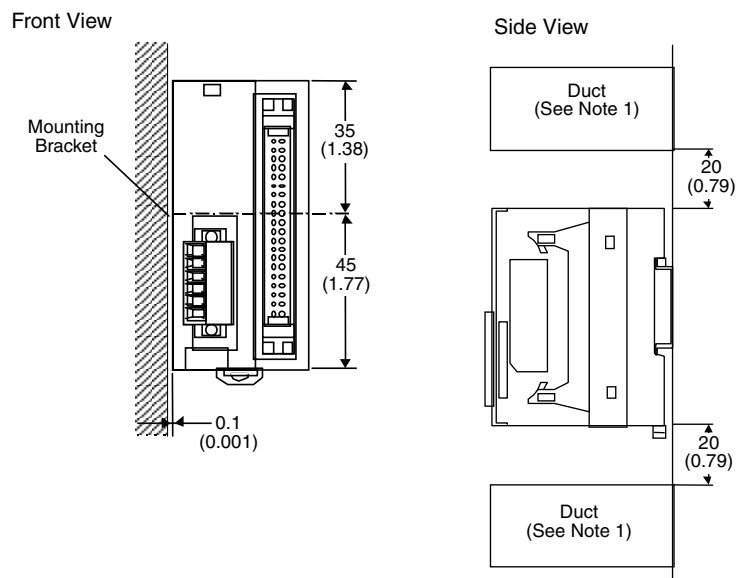
When mounting the product on DIN rail



When mounting the product on the attachment vertically



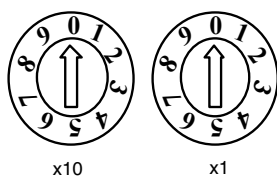
## Mounting Clearance for Panel Installation



- Note:**
1. Keep the distance between duct 20 mm minimum.
  2. The attachment (SRT2-ATT02) is not provided with units.
  3. When the product is mounted at panel horizontally, the multi-drop DeviceNet connector (XW4B-05C4-T-D) cannot be used.
  4. When the hood cover (XG5S-4022) is mounted at I/O connector, the multi-drop DeviceNet connector (XW4B-05C4-T-D) cannot be used.

## Setting Switch

### Rotary Switch

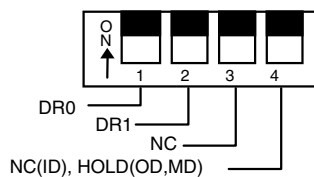


### Node Number Setting

|            |                                         |
|------------|-----------------------------------------|
| x10 switch | Sets the 10's digit of the node number. |
| x1 switch  | Sets the 1's digit of the node number.  |

- Note:**
1. Set another node number between 0 to 63. Node numbers higher than 63 are not allowed.
  2. The node number is factory-set to 00.

## DIP Switch



**Note:** NC is reserved for the system.

## Baud Rate Setting

| Switch No. |     | Baud Rate                   |
|------------|-----|-----------------------------|
| DR0        | DR1 |                             |
| OFF        | OFF | 125 k bps (default setting) |
| ON         | OFF | 250 k bps                   |
| OFF        | ON  | 500 k bps                   |
| ON         | ON  | ---                         |

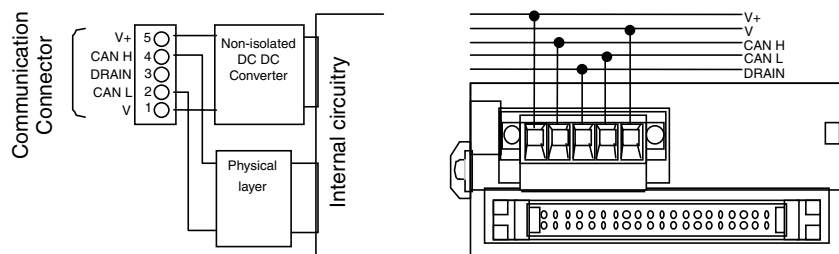
## HOLD/CLEAR Setting

| Switch No. | Hold/Clear Outputs for Communications Error |
|------------|---------------------------------------------|
| HOLD       |                                             |
| OFF        | Clear output (default setting)              |
| ON         | Hold output                                 |

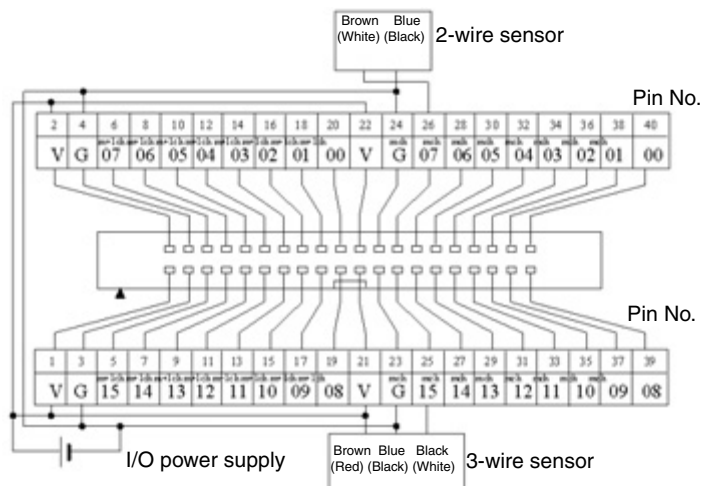
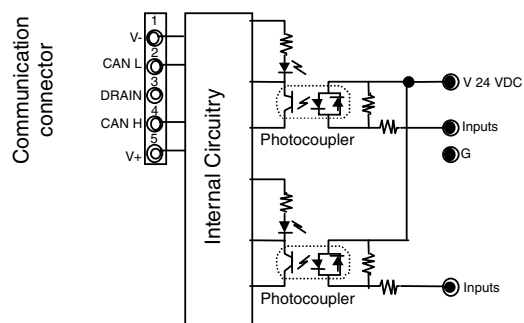
**Note:** This setting is applicable to the DRT1-OD32ML.

## Internal Circuit and Wiring

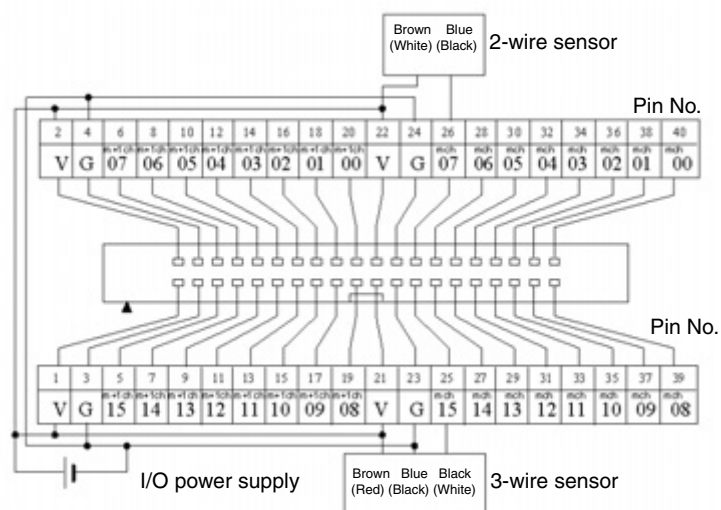
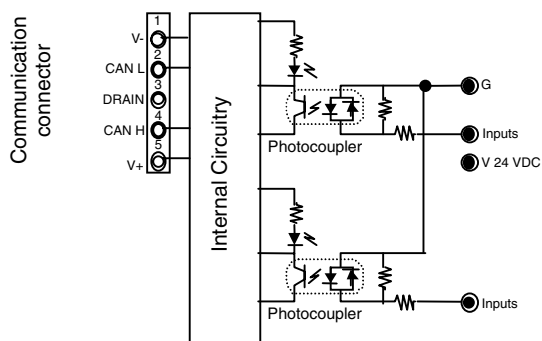
### Communication Circuit



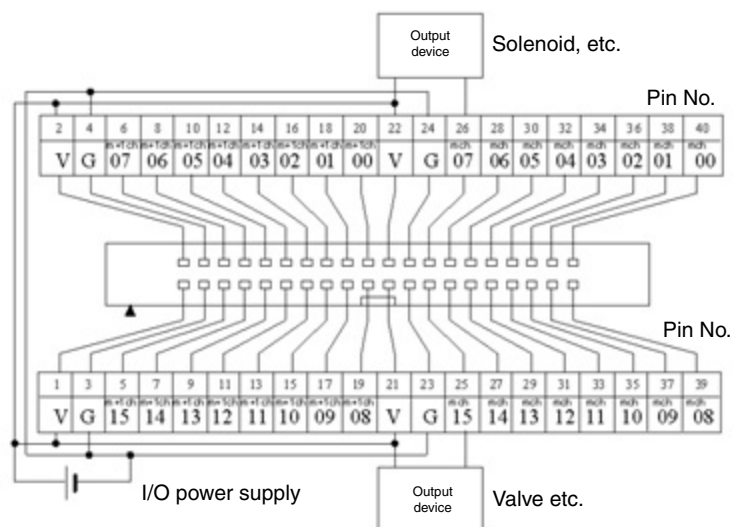
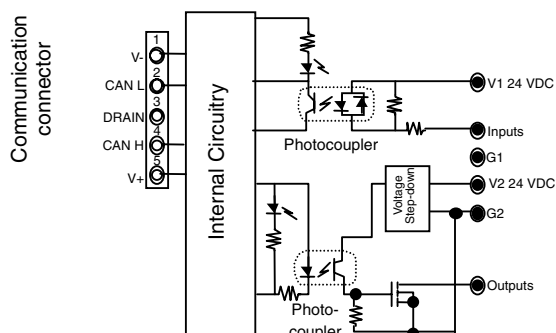
**DRT1-ID32ML**



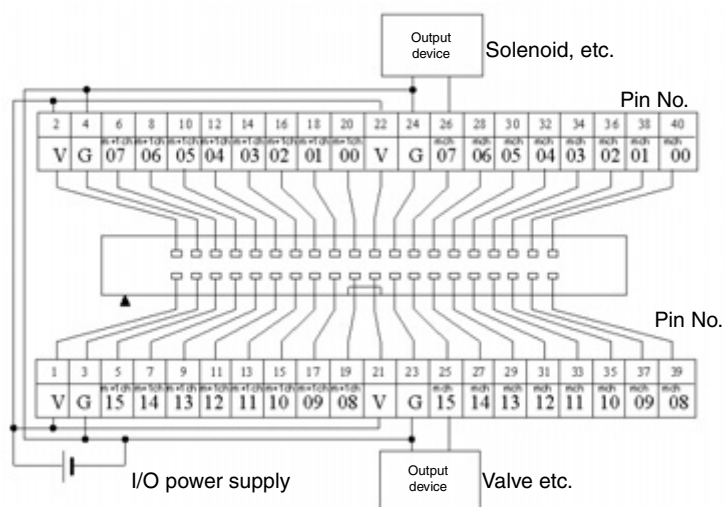
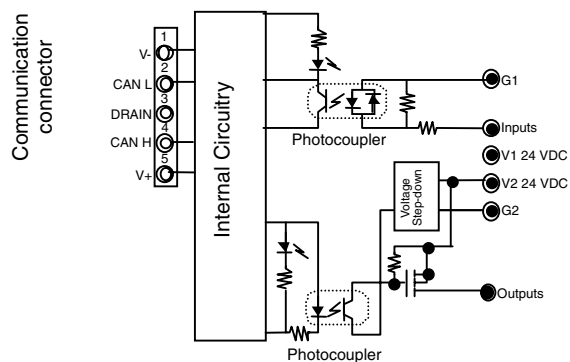
**DRT1-ID32ML-1**



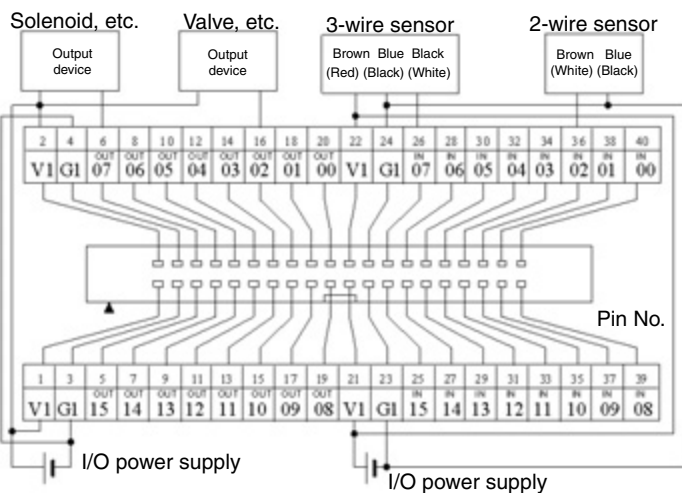
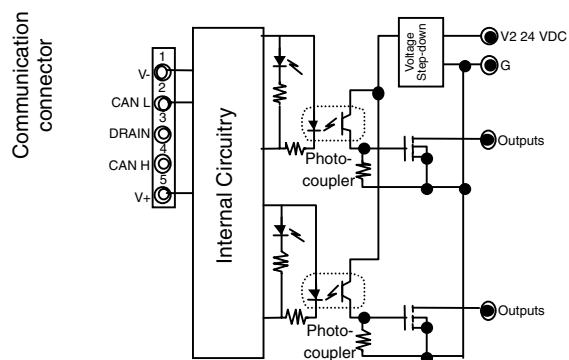
**DRT1-OD32ML**



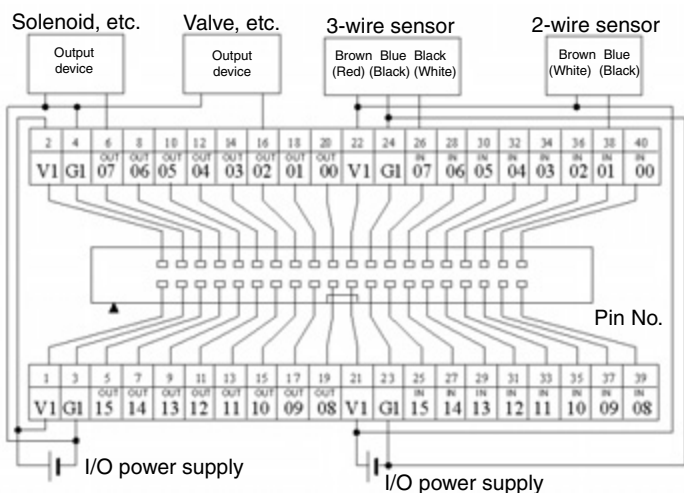
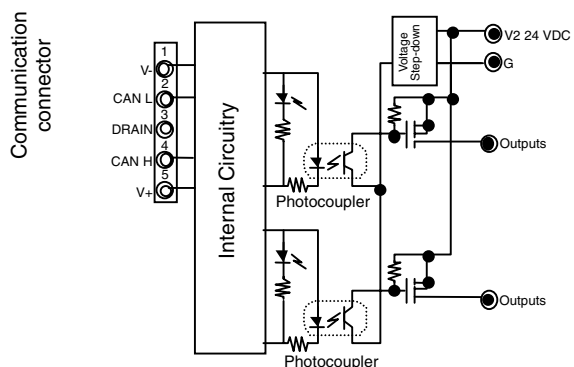
## DRT1-OD32ML-1



## DRT1-MD32ML



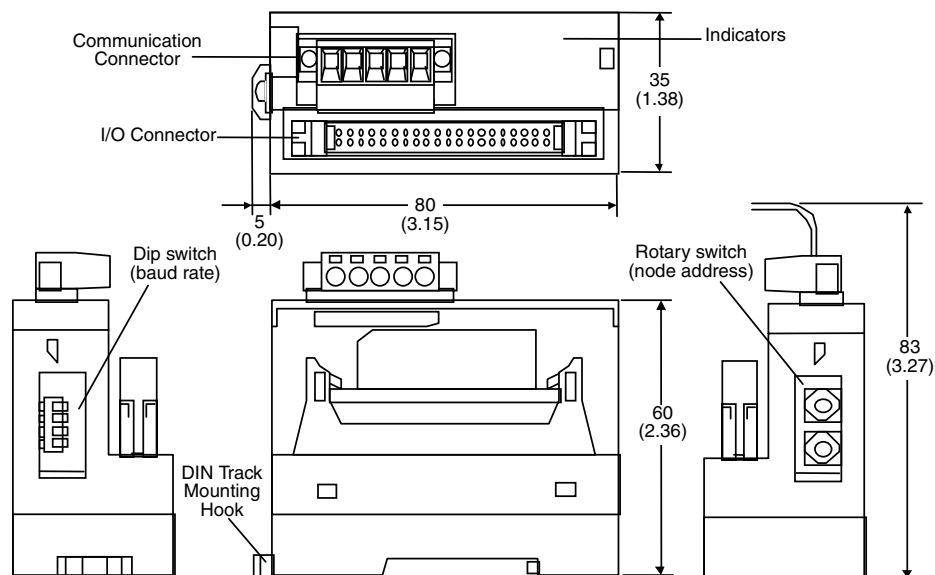
## DRT1-MD32ML-1





# Dimensions

Unit: mm (inch)



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters into inches, divide by 25.4

## OMRON

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