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Transistor Remote Modules

Compact 8-point and 16-point Transistorized Modules

- 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

<table>
<thead>
<tr>
<th>I/O classification</th>
<th>Internal I/O circuit common</th>
<th>I/O points</th>
<th>Terminal</th>
<th>Rated voltage</th>
<th>I/O rated voltage</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>NPN (+ common)</td>
<td>8</td>
<td>Screw terminal</td>
<td>24 VDC</td>
<td>24 VDC</td>
<td>DRT1-ID08</td>
</tr>
<tr>
<td></td>
<td>PNP (- common)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DRT1-ID08-1</td>
</tr>
<tr>
<td>Output</td>
<td>NPN (- common)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DRT1-OD08</td>
</tr>
<tr>
<td></td>
<td>PNP (+ common)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DRT1-OD08-1</td>
</tr>
<tr>
<td>Input</td>
<td>NPN (+ common)</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td>DRT1-ID16</td>
</tr>
<tr>
<td></td>
<td>PNP (- common)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DRT1-ID16-1</td>
</tr>
<tr>
<td>Output</td>
<td>NPN (- common)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DRT1-OD16</td>
</tr>
<tr>
<td></td>
<td>PNP (+ common)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DRT1-OD16-1</td>
</tr>
</tbody>
</table>

Note: A communications cable, GCN1-004, is included with each module.

Specifications

- Ratings

  Input

<table>
<thead>
<tr>
<th>Item</th>
<th>DRT1-ID□□(-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input current</td>
<td>10 mA max./point</td>
</tr>
<tr>
<td>ON delay time</td>
<td>1.5 ms max.</td>
</tr>
<tr>
<td>OFF delay time</td>
<td>1.5 ms max.</td>
</tr>
<tr>
<td>ON voltage</td>
<td>NPN 15 VDC min. between each input terminal and V</td>
</tr>
<tr>
<td></td>
<td>PNP 15 VDC max. between each input terminal and G</td>
</tr>
<tr>
<td>OFF voltage</td>
<td>NPN 5 VDC max. between each input terminal and V</td>
</tr>
<tr>
<td></td>
<td>PNP 5 VDC max. between each input terminal and G</td>
</tr>
<tr>
<td>OFF current</td>
<td>1 mA max.</td>
</tr>
<tr>
<td>Insulation method</td>
<td>Photocoupler</td>
</tr>
<tr>
<td>Input indicators</td>
<td>LED (yellow)</td>
</tr>
</tbody>
</table>
Output

<table>
<thead>
<tr>
<th>Item</th>
<th>DRT1-OD____(-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated output current</td>
<td>0.3 A/point (see note)</td>
</tr>
<tr>
<td>Residual voltage</td>
<td>1.2 V max.</td>
</tr>
<tr>
<td>Leakage current</td>
<td>0.1 mA max.</td>
</tr>
<tr>
<td>Insulation method</td>
<td>Photocoupler</td>
</tr>
<tr>
<td>Output indicators</td>
<td>LED (yellow)</td>
</tr>
</tbody>
</table>

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

### Characteristics

<table>
<thead>
<tr>
<th>Communications power supply voltage</th>
<th>11 to 25 VDC (supplied from the communications connector)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal power supply voltage</td>
<td>24 VDC +10%/-15%</td>
</tr>
<tr>
<td>I/O power supply voltage</td>
<td>24 VDC +10%/-15%</td>
</tr>
<tr>
<td>Current consumption (see note)</td>
<td>Communications: 30 mA max. at 24 VDC</td>
</tr>
<tr>
<td></td>
<td>Internal circuit: 60 mA max. at 24 VDC for DRT1-ID08-1, 16</td>
</tr>
<tr>
<td></td>
<td>70 mA max. at 24 VDC for DRT1-ID16 and DRT1-ID08-1,</td>
</tr>
<tr>
<td></td>
<td>DRT1-ID08-1, DRT1-ID16-1, DRT1-ID08-1, DRT1-ID16-1</td>
</tr>
<tr>
<td>Dielectric strength</td>
<td>500 VAC for 1 min (1-mA sensing current between insulated circuits)</td>
</tr>
<tr>
<td>Noise immunity</td>
<td>Power supply normal: ±600 V for 10 minutes with a pulse width of 100 ns to 1 μs</td>
</tr>
<tr>
<td></td>
<td>Power supply common: ±1,500 V for 10 minutes with a pulse width of 100 ns to 1 μs</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>10 to 55 Hz, 1.5-mm double amplitude</td>
</tr>
<tr>
<td>Shock resistance</td>
<td>Malfunction: 200 m/s² (approx. 20G)</td>
</tr>
<tr>
<td></td>
<td>Destruction: 300 m/s² (approx. 30G)</td>
</tr>
<tr>
<td>Mounting strength</td>
<td>No damage when 50 N (approx. 5 kgf) pull load was applied for 10 s in all directions (10 N min. (approx. 1 kgf) in the DIN Track direction)</td>
</tr>
<tr>
<td>Terminal strength</td>
<td>No damage when 50 N (approx. 5 kgf) pull load was applied for 10 s</td>
</tr>
<tr>
<td>Screw tightening torque</td>
<td>0.6 to 1.18 N • m (6 to 12 kgf • cm)</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>Operating: 0°C to 55°C (with no icing or condensation)</td>
</tr>
<tr>
<td></td>
<td>Storage: -20°C to 65°C (with no icing or condensation)</td>
</tr>
<tr>
<td>Ambient humidity</td>
<td>Operating: 35% to 85%</td>
</tr>
<tr>
<td>Weight</td>
<td>8-point model: Approx. 135 g max.</td>
</tr>
<tr>
<td></td>
<td>16-point model: Approx. 170 g max.</td>
</tr>
</tbody>
</table>

**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 Module and the current consumption of the load connected to the output Remote Module.

### Nomenclature

DRT1-ID08 (-1)
DRT1-ID16 (-1)

---

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## Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Color</th>
<th>Display</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>Green</td>
<td>Lit</td>
<td>The Module is normal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashes</td>
<td>No node number has been set.</td>
</tr>
<tr>
<td>Red</td>
<td></td>
<td>Lit</td>
<td>The Module has a fatal error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashes</td>
<td>The Module has a nonfatal error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>---</td>
<td>Not lit</td>
</tr>
<tr>
<td>NS</td>
<td>Green</td>
<td>Lit</td>
<td>The communications path is complete.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashes</td>
<td>The communications path is incomplete.</td>
</tr>
<tr>
<td>Red</td>
<td></td>
<td>Lit</td>
<td>A nonfatal communications error has occurred.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashes</td>
<td>A fatal communications error has occurred.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>---</td>
<td>Not lit</td>
</tr>
<tr>
<td>0 to 15</td>
<td>Yellow</td>
<td>Lit</td>
<td>The corresponding I/O signal is ON.</td>
</tr>
<tr>
<td>(see note)</td>
<td></td>
<td>---</td>
<td>Not lit</td>
</tr>
</tbody>
</table>

**Note:** The DRT1-ID08 does not have indicators 8 to 15.

### Baud Rate Settings

<table>
<thead>
<tr>
<th>Baud Rate</th>
<th>Pin 8</th>
<th>Pin 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>125,000 bps</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>250,000 bps</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>500,000 bps</td>
<td>ON</td>
<td>OFF</td>
</tr>
</tbody>
</table>

**Note:**
1. Setting both pins 7 and 8 to ON is not allowed.
2. Pins 7 and 8 are factory-set to OFF.

### Output HOLD/CLEAR Mode

<table>
<thead>
<tr>
<th>Mode</th>
<th>Pin 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOLD</td>
<td>ON</td>
</tr>
<tr>
<td>CLEAR</td>
<td>OFF</td>
</tr>
</tbody>
</table>

**Note:**
1. Pin 9 is NC.
2. Pin 10 of the DRT1-ID08 or DRT1-ID16 is not used.
3. Pin 10 is factory-set to OFF.
## Node Number Settings

<table>
<thead>
<tr>
<th>Node number</th>
<th>Pin 6</th>
<th>Pin 5</th>
<th>Pin 4</th>
<th>Pin 3</th>
<th>Pin 2</th>
<th>Pin 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>1</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>2</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>3</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>4</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>5</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>6</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>7</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>8</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>9</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>10</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>11</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>12</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>13</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>14</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>15</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>16</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>17</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>18</td>
<td>OFF</td>
<td>OFF</td>
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<td>OFF</td>
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</tr>
<tr>
<td>19</td>
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</tr>
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</tr>
<tr>
<td>22</td>
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</tr>
<tr>
<td>23</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
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</tr>
<tr>
<td>24</td>
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<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>25</td>
<td>OFF</td>
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<td>OFF</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>26</td>
<td>OFF</td>
<td>OFF</td>
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<td>ON</td>
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</tr>
<tr>
<td>27</td>
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<td>OFF</td>
<td>ON</td>
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</tr>
<tr>
<td>28</td>
<td>OFF</td>
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<td>OFF</td>
<td>OFF</td>
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<tr>
<td>29</td>
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<td>ON</td>
</tr>
<tr>
<td>30</td>
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<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>31</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
</tbody>
</table>

**Note:** The node number is factory-set to 0.
Dimensions

Note: All units are in millimeters unless otherwise indicated.

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

Mounting Holes
Two, 4.2 dia. or M4

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

Mounting Holes
Two, 4.2 dia. or M4
Installation

Internal Circuit Configuration

DRT1-ID08
DRT1-ID16

V
CAN L
DRAIN
CAN H
V1

Communications connector

Power supply for internal circuitry

24 VDC

DC-DC converter (insulated)

Photocoupler

Photocoupler

Photocoupler

Photocoupler

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**Wiring**

- **Input**
  DRT1-ID08, DRT1-ID16
  Three-wired Sensors (NPN Output)

- **Output**
  DRT1-OD08, DRT1-OD16
  Two-wired Sensors

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**DRT1-ID/OD**

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Terminal Arrangement and I/O Device Connection Example

- **Input**

  DRT1-ID08

- **Output**

  DRT1-OD08

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- Photoelectric sensor or proximity sensor (three-wired sensor with a built-in amplifier)
- Limit switch (two-wired sensor)
- Internal circuit power supply
- I/O power supply
- Blue (communications power supply -)

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Precautions

Refer to the DeviceNet Operation Manual (W267) before using the Module. These precautions are also for the DRT1-ID16X/OD16X.

General Safety Precautions

Wiring

Turn OFF the Module before wiring the Module and do not remove the terminal block cover or touch the terminal block while the Module is turned ON, otherwise an electric shock may occur.

Do not impose any voltage other than the rated voltage on the input terminal. Doing so may result in damage to the Module or cause the Module to malfunction.

Do not connect the Module to loads consuming a total current exceeding the rated output current of the Module. Doing so may damage the output element and a short- or open-circuit malfunction may result.

If the Module is connected to a DC inductive load, connect a diode to the Module to protect the Module from counter-electromotive voltage, otherwise the counter-electromotive voltage may damage the output element and a short- or open-circuit malfunction may result.

Do not wire power lines or high-tension lines along with or close to the lines of the DRT1-ID/OD.

Be sure that the terminal polarity is correct.

Pay the utmost attention to wire the communications path and power supply line correctly.

Correct Use

Cable Locks

Before turning on the Module, make sure that the connector of each cable connected to the Module is locked.

Do not connect or disconnect the connectors while the Module is turned ON. Doing so may cause the Module to malfunction.

Installation Environment

Do not install the Module in the following places. Doing so may result in damage to the Module or cause the Module to malfunction.

- Places with direct sunlight.
- Places with ambient temperature ranges not within 0°C to 55°C.
- Places with rapid temperature changes resulting in condensation or relative humidity ranges not within 10% to 90%.
- Places with corrosive or inflammable gas.
- Places with excessive dust, salinity, or metal powder.
- Places with vibration or shock affecting the Module.
- Places with water, oil, or chemical sprayed on the Module.

Screw Tightening Torques

Tighten all screws of the Module properly, otherwise the Module may malfunction.

- Tighten each terminal screw to a torque of 0.6 to 1.18 N•m (6.2 to 12.0 kgf•cm).
- Tighten each mounting screw to a torque of 0.6 to 0.98 N•m (6.2 to 10.0 kgf•cm) if the Module is mounted to a panel.

Cleaning

Do not use paint thinner to clean the surface, otherwise the surface will be damaged or discolored.

Handling

Do not drop the Module or shock or vibrate the Module excessively. Doing so may result in damage to the Module or cause the Module to malfunction.

Disassembling, Repairing, and Modifying

Do not disassemble, repair, or modify the Module, otherwise an electric shock may occur or the Module may malfunction.
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