Input Module User’s Manual

Carefully read this instruction manual before using any of these products.

Thermocouple Module (TCM-3010)

PT Module (PTM-3010)

Voltage Module (VIM-3010)

4-20mA Module (AIM-3010)

Pulse Input Cable (PIC-3150)

In this manual, the modules listed above are collectively referred to as (an / the) "Input Modules(s)" and RTR-505 / TR-55i as the "Data Logger".

T&D Corporation

http://www.tandd.com/

817-1 Shimadachi Matsumoto, Nagano 390-0852 JAPAN

Fax:+81-263-40-3152

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Cautions about using Input Modules

The following items should be strictly obeyed for the safe usage of these products, and for protecting yourself and other people from bodily harm and/or damage to property. Before using any of these products, please read the following carefully and fully understand the contents.

- Do not connect any of the Input Modules in this manual to any Data Logger other than RTR-505 / TR-55i.
- Do not take apart, repair or modify an Input Module.
- Use Input Modules only in an environment where the ambient temperature is from -40 to 80°C and the humidity is 90%RH (no condensation) or less.
- For information about handling sensors and their necessary operating environments, see the User’s Manual included with the sensor.
- Do not use or store Input Modules in places such as listed below. It may result in malfunction or unexpected accidents.
- Areas exposed to direct sunlight
- In water or areas exposed to water
- Areas exposed to organic solvents and corrosive gas
- Areas exposed to strong magnetic fields
- Areas exposed to static electricity
- Areas near fire or exposed to excessive heat
- Areas exposed to excessive dust or smoke
- The sensor connection of Input Modules is not water resistant; make sure not to get wet.
- Do not use alcohol to clean Input Modules. If an Input Module gets dirty, wipe it with a soft cloth dipped in water and tightly wrung out.
- Do not drop or expose an Input Module to a strong impact.
- Do not use an Input Module on the human body.
- Store Input Modules out of the reach of children.
- If any smoke, strange smells or sounds are emitted from an Input Module, immediately stop using.
- When making "Adjustment Settings" using the software, the adjustment values will be saved to the Input Module. Therefore, when an Input Module is replaced, it is necessary to re-make any desired adjustment settings to be written into the newly connected module.

Connecting the Sensor

1. Check the sensor type and the polarity (plus and minus signs).
2. Insert the sensor connector, aligning as shown on the Input Module.
3. Make sure to correctly connect the lead wires according to the diagram shown on the terminal block, and securely tighten the screws to the terminal block.
4. If the sensor is broken or unconnected, the message “Err” will appear on the LCD screen of the Data Logger.
5. If any smoke, strange smells or sounds are emitted from an Input Module, immediately stop using.

Thermocouple Module (TCM-3010)
Voltage Module (VIM-3010)

- **Materials:** Poly carbonate | Vinyl Coated Electrical Wire

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage Range</td>
<td>0 to 999mV</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01mV, up to 20mV: 0.1mV, up to 999mV: 1mV</td>
</tr>
<tr>
<td>Measurement Accuracy</td>
<td>±(0.5 mV + 0.3 % rdg) [10 to 40 °C]</td>
</tr>
</tbody>
</table>

- **CAUTION:**
  - It is not possible to measure negative voltage with this module.
  - When the signal source output impedance is high, a gain error will occur due to the change in input impedance.
  - For details about the preheat function, see the User's Manual that comes with the software you are using.

Connecting the Sensor

1. Using a screwdriver or tweezers, while pressing down on the terminal button, insert the wire into the hole.

2. Also when removing, gently pull the wire out of the hole while pressing down on the terminal button.

Example of Sensor Connection

![](image1)

Pulse Input Cable (PIC-3150)

- **Materials:** M3.5 Crimp Terminal | Vinyl Coated Electrical Wire

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Pulse Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>Non voltage Contact Input</td>
</tr>
<tr>
<td>Detection Voltage</td>
<td>0.5V or less, Hi: 2.5V or more</td>
</tr>
<tr>
<td>Chattering Filter</td>
<td>Select either Low or High</td>
</tr>
<tr>
<td>High Level Pulse Width</td>
<td>50μs or more, Chattering Filter OFF: 110μs or more</td>
</tr>
<tr>
<td>Low Level Pulse Width</td>
<td>10μs or more, Chattering Filter OFF: 110μs or more</td>
</tr>
<tr>
<td>Maximum Count</td>
<td>61439</td>
</tr>
<tr>
<td>Input Impedance</td>
<td>Approx. 100kΩ pull up</td>
</tr>
</tbody>
</table>

- **CAUTION:**
  - The specifications listed above are for the RTR-505 / TR-55i being connected to this pulse input cable.
  - When connecting the cable to the measurement object, make sure to check the terminal polarity (RD +, BK -) in order to wire properly.

4-20mA Module (AIM-3010)

- **Materials:** Poly carbonate | Vinyl Coated Electrical Wire

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>4-20mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Current Range</td>
<td>0 to 20mA</td>
</tr>
<tr>
<td>Measurement Resolution</td>
<td>±0.05mA</td>
</tr>
<tr>
<td>Measurement Accuracy</td>
<td>±(0.1mA + 0.3 % rdg) [-40 to 10 °C / 40 to 80 °C]</td>
</tr>
<tr>
<td>Input Resistance</td>
<td>100Ω ±20%</td>
</tr>
<tr>
<td>Sensor Connection</td>
<td>Cable Insertion Connection: Plus(+) 2 Parallel Terminals, Minus(-) 2 Parallel Terminals</td>
</tr>
<tr>
<td>Compatible Wires</td>
<td>Single wire: 0.32mm² (AWG22), 0.12mm or more in diameter</td>
</tr>
<tr>
<td>Strip length</td>
<td>9 to 10mm</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>Temperature: -40 to 80 °C / Humidity: 95%RH or less (no condensation)</td>
</tr>
</tbody>
</table>

- **CAUTION:**
  - Do not apply electric current exceeding the input current range. Doing so may damage the Input Module, causing heat or fire to occur.

Connecting the Sensor

1. Using a screwdriver or tweezers, while pressing down on the terminal button, insert the wire into the hole.

2. Also when removing, gently pull the wire out of the hole while pressing down on the terminal button.

Example of Sensor Connection

![](image2)