Thermistor Introduction

A thermistor is a type of resistor whose resistance varies significantly with temperature, more so than in standard resistors. The word is a portmanteau of thermal and resistor. Thermistors are widely used as inrush current limiters, temperature sensors, self-resetting overcurrent protectors, and self-regulating heating elements.

Thermistors differ from resistance temperature detectors (RTD) in that the material used in a thermistor is generally a ceramic or polymer, while RTDs use pure metals. The temperature response is also different; RTDs are useful over larger temperature ranges, while thermistors typically achieve a higher precision within a limited temperature range (usually -90 °C ~ 130 °C).

Applications

Thermistor Input Module (Industrial Grade)

<table>
<thead>
<tr>
<th>Model Name</th>
<th>I-7005</th>
<th>M-7005</th>
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<tbody>
<tr>
<td>Pictures</td>
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<td><img src="image2.png" alt="Pictures" /></td>
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Thermistor Input

- Channel: 8
- Wiring: Differential
- Sensor Type: Procon 51-A5, Polwell U, YSI L100, YSI L300, YSI L1000, YSI B250, YSI B3000, YSI B5000, YSI B6000, YSI B10000, YSI H10000, YSI H30000, User-defined
- Resolution: 16-bit
- Accuracy: ±0.1%
- Sampling Rate: 8 Hz
- Individual Channel Configuration: Yes
- Overvoltage Protection: 120 V
- Open Wire Detection: Yes
- Resistance Measurement: 200 KΩ Max.

Digital Output

- Channel: 6
- Type: Open Collector
- Sink/Source (NPN/PNP): Sink
- Load Voltage: +1.5 ~ 50 V
- Max. Load Current: 650 mA/Channel
- Overvoltage Protection: 60 V
- Overload Protection: 1.4 A (with short-circuit protection)
- Power-on Value: Yes
- Safe Value: Yes
- System
  - Dual Watchdog: Yes
  - ESD (IEC 61000-4-2): ±4 kV
  - EFT (IEC 61000-4-4): ±4 kV
  - Intra-Module Isolation, Field-to-Logic: 3000 VDC
  - Power Input: 10 ~ 30 VDC
  - Power Consumption: 1.3 W

Internal I/O Structure

Pin Assignments

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## Transmitter Input Module (General Grade)

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<td>Model Name</td>
<td>I-7014D</td>
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### Transmitter Input

- **Channel**: 1
- **Wiring**: Differential
- **Sensor Type**: +/- 150 mV, +/- 500 mV, +/- 1V, +/- 5 V, +/- 10 V, +/- 20 mA
- **Resolution**: 16-bit
- **Accuracy**: +/- 0.05%
- **Sampling Rate**: 10 Hz
- **Input Impedance**: Voltage: 20 kΩ Current: 125 μA
- **Isolated Loop Power**: 15 Vdc, 30 mA
- **Overvoltage Protection**: +/- 15 V
- **Open Wire Detection**: -

### Digital Input

- **Channel**: 1
- **Contact**: Dry
- **Sink/Source (MNP/PNPN)**: Source
- **On Voltage Level**: Close to GND
- **Off Voltage Level**: Open
- **Counter (50 Hz, 16-bit)**: Yes
- **Input Impedance**: 3 kΩ
- **Overvoltage Protection**: +/- 30 V
- **Safe Value**: Yes

### Digital Output

- **Channel**: 2
- **Type**: Open Collector
- **Sink/Source (MNP/PNPN)**: Sink
- **Load Voltage**: +/-3.5 ~ 50 Vdc
- **Max. Load Current**: 30 mA/Channel
- **Power-on Value**: Yes
- **Safe Value**: Yes
- **System**: Dual Watchdog
- **ESD (IEC 61000-4-2)**: -
- **EFT (IEC 61000-4-4)**: -
- **Intra-Module Isolation, Field-to-Logic**: 3000 Vdc
- **Power Input**: 10 ~ 30 Vdc
- **Power Consumption**: 1.9 W

### Internal I/O Structure

- **LED Module**
- **EEPROM**
- **Embedded Controller**
- **RS-485 Interface**
- **Photo-Isolation**
- **Power Regulator**

### Pin Assignments

- **Power**: +15Vout
- **Input**: Pin+, Pin-
- **Counter**: 50 Hz, 16-bit
- **Digital Output**: Sink/Source (NPN/PNP)
- **Digital Input**: Sink/Source (NPN/PNP)
- **Power-on Value**: Yes
- **Safe Value**: Yes

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