



## Tiny RS-485 Remote I/O Modules



### Introduction

tM-TH8 is 8 channels module used for measuring temperature by the thermistor. It supports many kinds of thermistors and user-defined types by specifying the Steinhart coefficients to add other thermistors, if necessary. Adding 2500 V<sub>rms</sub> intra-module isolation and overvoltage protection for thermistor on tM-TH8 makes itself running with higher reliability.

### Applications

- Industrial Automation
- Industrial Machinery
- Building Automation
- Food and Beverage Systems
- Semiconductor Fabrication
- Control Systems

### System Specifications

| Communication                          |                                                               |
|----------------------------------------|---------------------------------------------------------------|
| Interface                              | RS-485                                                        |
| Format                                 | (N, 8, 1), (N, 8, 2), (O, 8, 1), (E, 8, 1)                    |
| Baud Rate                              | 1200 ~ 115200 bps                                             |
| Protocol                               | DCON, Modbus/RTU, Modbus/ASCII                                |
| Dual Watchdog                          | Yes, Module (2.3 seconds), Communication (Programmable)       |
| LED Indicators                         |                                                               |
| Power                                  | 1 LED as Power Indicator                                      |
| Isolation                              |                                                               |
| Intra-module Isolation, Field-to-Logic | 2500 V <sub>dc</sub>                                          |
| EMS Protection                         |                                                               |
| ESD (IEC 61000-4-2)                    | ±4 kV Contact for Each Terminal<br>±8 kV Air for Random Point |
| EFT (IEC 61000-4-4)                    | ±4 kV for Power                                               |
| Surge (IEC 61000-4-5)                  | ±3 kV for Power                                               |
| Power Requirements                     |                                                               |
| Reverse Polarity Protection            | Yes                                                           |
| Powered from Terminal Block            | Yes, 10 ~ 30 V <sub>dc</sub>                                  |
| Consumption                            | 0.6 W Max.                                                    |
| Mechanical                             |                                                               |
| Dimensions (W x L x H)                 | 52 mm x 98 mm x 27 mm                                         |
| Installation                           | DIN-Rail Mounting                                             |
| Environment                            |                                                               |
| Operating Temperature                  | -25 ~ +75 °C                                                  |
| Storage Temperature                    | -30 ~ +75 °C                                                  |
| Humidity                               | 10 ~ 95% RH, Non-condensing                                   |

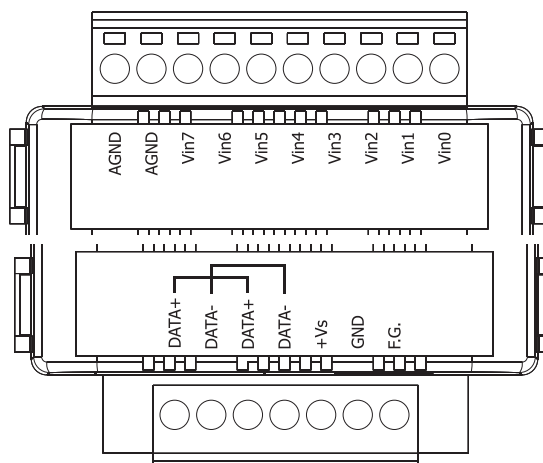
### Analog Input

#### Features

- 8-channel
- Thermistor Inputs
- 120 V<sub>dc</sub> Overvoltage Protection
- Resolution: 16 bits
- User-Defined
- 4 kV ESD and EFT Protection
- 3 kV Surge Protection
- Dual Watchdog
- 2500 V<sub>dc</sub> Intra-module Isolation
- Cost-effective
- Wide Operating Temperature Range: -25 °C ~ +75 °C



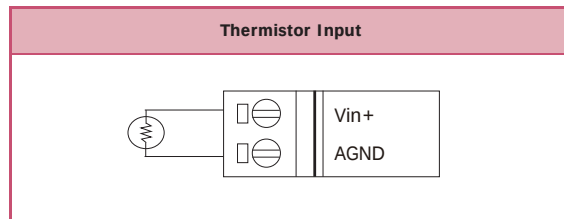
### Pin Assignments



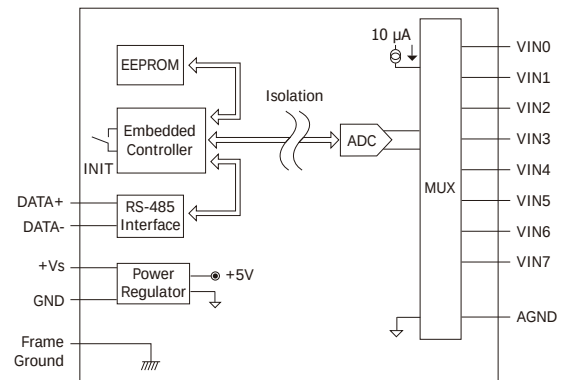
### I/O Specifications

| Analog Input           |                                                                                                                                                      |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Channels         | 8                                                                                                                                                    |
| Type                   | Thermistor                                                                                                                                           |
| Thermistor Type        | Precon ST-A3, Fenwell U, YSI L100, YSI L300, YSI L1000, YSI B2252, YSI B3000, YSI B5000, YSI B6000, YSI B10000, YSI H10000, YSI H30000, User-defined |
| Resolution             | 16-bit                                                                                                                                               |
| Sampling Rate          | 8 Hz total                                                                                                                                           |
| Accuracy               | ±/-0.5%                                                                                                                                              |
| Zero Drift             | ±/-20 uV/°C                                                                                                                                          |
| Span Drift             | ±/-25 ppm/°C                                                                                                                                         |
| Overvoltage Protection | 120 V <sub>dc</sub>                                                                                                                                  |
| Open Wire Detection    | Yes                                                                                                                                                  |

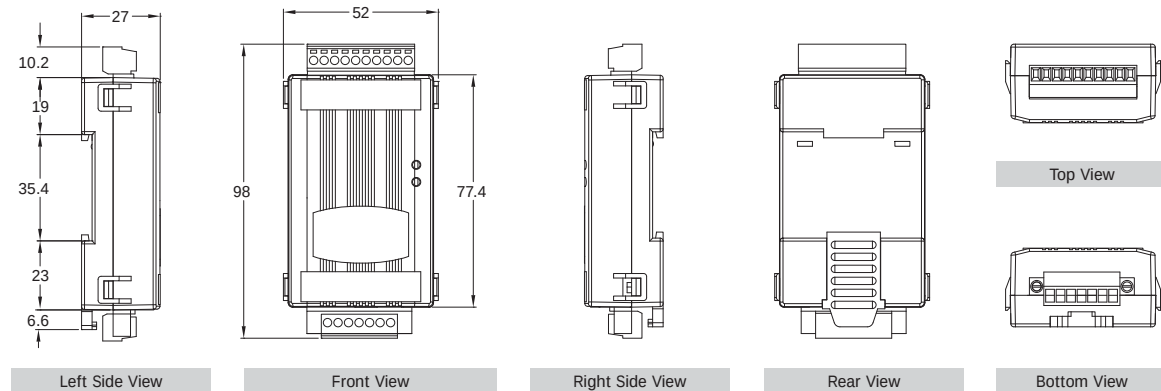
## Wire Connections



## Block Diagram



### 📐 Dimensions (Units: mm)



## Ordering Information

|           |                                                                                |
|-----------|--------------------------------------------------------------------------------|
| tm-TH8 CR | 8-channel Isolation Thermidtor Input Module with High Voltage Protection(RoHS) |
|-----------|--------------------------------------------------------------------------------|

## Related Products

|                                                                                     |             |                                            |                                                                                     |              |                                                           |
|-------------------------------------------------------------------------------------|-------------|--------------------------------------------|-------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------|
|  | tM-7561 CR  | Isolated USB to RS-485 Converter (RoHS)    |  | tM-7510U CR  | Isolated RS-485 Repeater (RoHS)                           |
|  | tM-7520U CR | Isolated RS-232 to RS-485 Converter (RoHS) |  | MDR-20-24 CR | 24W Single Output Industrial DIN Rail Power Supply (RoHS) |