



## tm-AD5

5-channel Isolated Analog Input Module with High Voltage Protection

### Introduction

The tm-AD5 is an analog input module that includes 5 differential analog input channels and provides a programmable input range on all analog inputs (+/- 500 mV, +/- 1 V, +/- 2.5 V, +/- 5 V, +/- 10 V). It provides a high overvoltage protection of 120 V<sub>DC</sub>. The sampling rate of the tm-AD5 is adjustable and is available in either fast or normal mode and It also provides 4 kV ESD protection as well as 2500 V<sub>rms</sub> intra-module isolation.

### Applications

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

### System Specifications

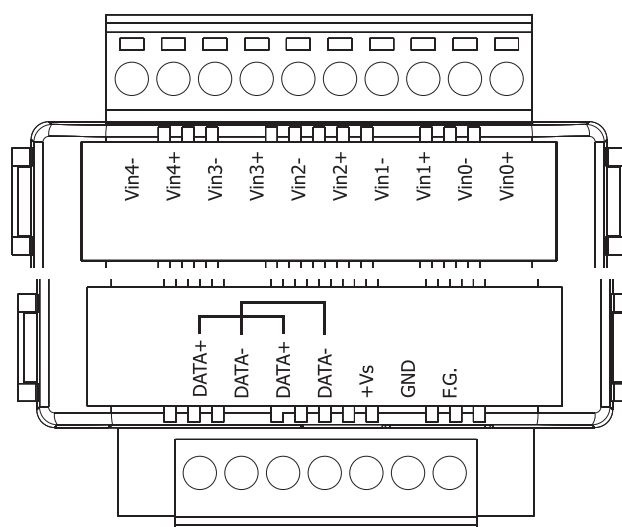
| Communication                          |                                                               |
|----------------------------------------|---------------------------------------------------------------|
| Interface                              | RS-485                                                        |
| 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                                               |
| Power Requirements                     |                                                               |
| Reverse Polarity Protection            | Yes                                                           |
| Powered from Terminal Block            | Yes, 10 ~ 30 V <sub>DC</sub>                                  |
| Consumption                            | 1 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                                   |

### Features

- 5-channel Differential Inputs
- Voltage Inputs
- 120 V<sub>DC</sub> Overvoltage Protection
- Resolution: 14/12 bits
- Adjustable Sampling Rate
- 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 ~ +75°C



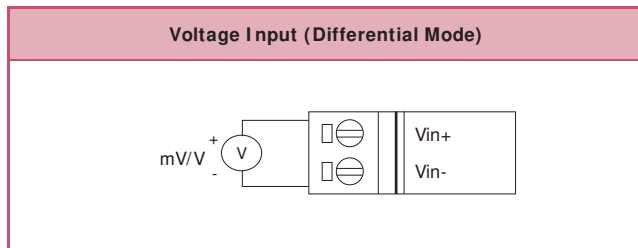
### Pin Assignments



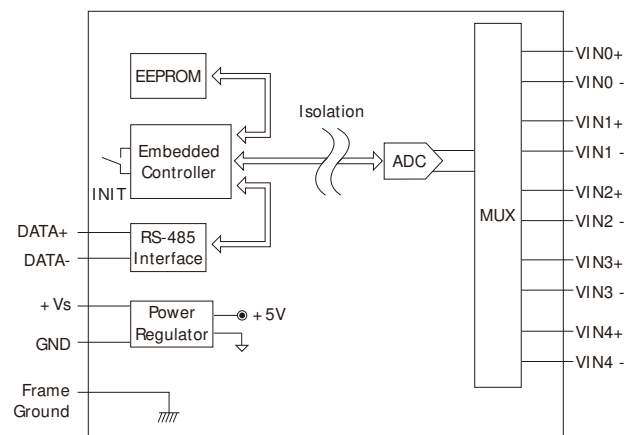
### I / O Specifications

| Analog Input           |             |                                       |
|------------------------|-------------|---------------------------------------|
| Input Channels         |             | 5 Differential                        |
| Type                   |             | +/- 1 V, +/- 2.5 V, +/- 5 V, +/- 10 V |
| Resolution             | Normal Mode | 14-bit                                |
|                        | Fast Mode   | 12-bit                                |
| Sampling Rate          | Normal Mode | 10 Hz total                           |
|                        | Fast Mode   | 200 Hz total                          |
| Accuracy               | Normal Mode | +/-0.1%                               |
|                        | Fast Mode   | +/-0.5%                               |
| Zero Drift             |             | +/-20 uV/°C                           |
| Span Drift             |             | +/-25 ppm/°C                          |
| Input Impedance        |             | 20 MΩ                                 |
| Overvoltage Protection |             | 120 V <sub>DC</sub>                   |

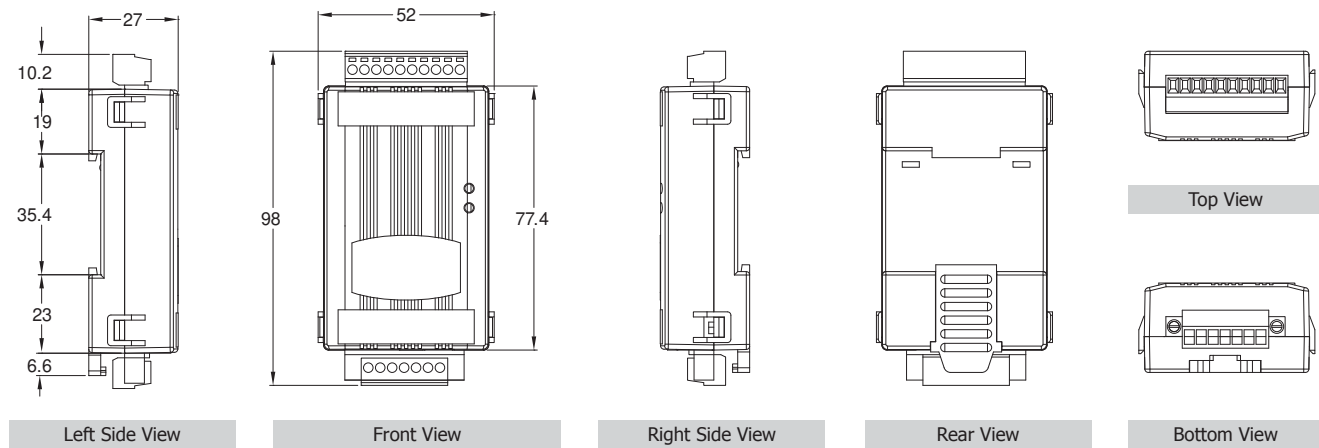
## Wire Connections



## Block Diagram



## Dimensions (Units: mm)



## Ordering Information

|           |                                                                             |
|-----------|-----------------------------------------------------------------------------|
| tM-AD5 CR | 5-channel Isolation Analog Input Module with High Voltage Protection (RoHS) |
|-----------|-----------------------------------------------------------------------------|

## Related Products

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

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Tiny RS-485 Remote I/O Modules

tM-AD5