



## I-87005W

8-channel Thermistor Input and 8-channel Digital Output Module

### Introduction

The I-87005W module is used for measuring temperature using a thermistor. The module supports a wide range of thermistors, and features individual channel configuration, which means that eight of the input channels can be individually configured for different kinds of thermistor. In addition, the I-87005W also provides 8 digital output channels that can be used for alarm output, and supports user-defined thermistor types, which can be added by specifying the Steinhart coefficients, if necessary. The inclusion of 3000 VDC intra-module isolation and overvoltage protection for the thermistors on the I-87005W ensures that the module operates at a higher reliability.

### Features

- Thermistor Input
- Individual Channel Configuration
- Open Wire Detection
- 8-channel Digital Output for Alarm Output
- 3000 Vdc Intra-module Isolation
- Overvoltage Protection for Thermistor Input
- User-defined Thermistor Types
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



### Applications

- Temperature Measurement
- Environment Monitoring
- Tunnel Monitoring
- Building Monitoring

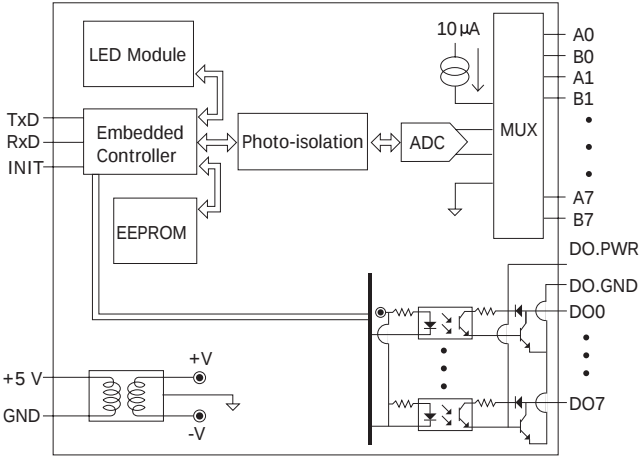
### System Specifications

| Communication                          |                                                         |
|----------------------------------------|---------------------------------------------------------|
| Interface                              | RS-485                                                  |
| Format                                 | N, 8, 1                                                 |
| Baud Rate                              | 1200 to 115200 bps                                      |
| Protocol                               | DCON                                                    |
| Dual Watchdog                          | Yes, Module (1.6 Seconds), Communication (Programmable) |
| LED Indicators/Display                 |                                                         |
| System LED Indicators                  | Yes, 1 as Power/Communication Indicator                 |
| I/O LED Indicators                     | 16 as High/Low Alarm Signals                            |
| Isolation                              |                                                         |
| Intra-module Isolation, Field-to-Logic | 3000 Vdc                                                |
| EMS Protection                         |                                                         |
| ESD (IEC 61000-4-2)                    | ±4 kV Contact for each Terminal                         |
|                                        | ±8 kV Air for Random Point                              |
| Power                                  |                                                         |
| Power Consumption                      | 0.7 W Max.                                              |
| Mechanical                             |                                                         |
| Dimensions (L x W x H)                 | 114 mm x 30 mm x 95 mm                                  |
| Environment                            |                                                         |
| Operating Temperature                  | -25 to +75°C                                            |
| Storage Temperature                    | -40 to +85°C                                            |
| Humidity                               | 10 to 95% RH, Non-condensing                            |

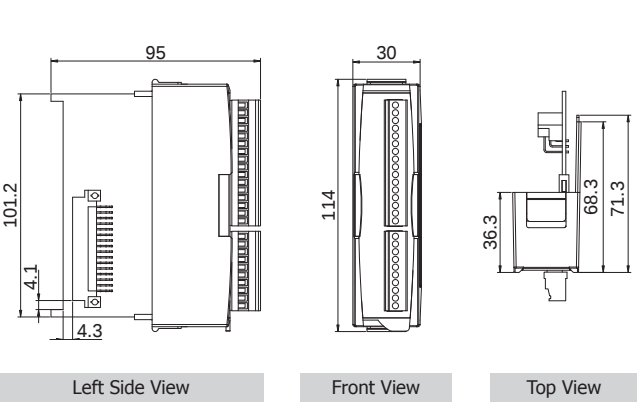
### I/O Specifications

| Thermistor Input                 |                                                                                                                                                      |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Channels                         | 8                                                                                                                                                    |
| Wiring                           | 2 Wires                                                                                                                                              |
| Sensor 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                                                                                                                                               |
| Accuracy                         | ±0.1% of FSR                                                                                                                                         |
| Sampling Rate                    | 8 Hz (Total)                                                                                                                                         |
| Zero Drift                       | ±0.5 µV/°C                                                                                                                                           |
| Span Drift                       | ±25 ppm/°C                                                                                                                                           |
| Common Mode Rejection            | 113 dB                                                                                                                                               |
| Normal Mode Rejection            | 100 dB                                                                                                                                               |
| Input Impedance                  | >1 MΩ                                                                                                                                                |
| Individual Channel Configuration | Yes                                                                                                                                                  |
| Resistance Measurement           | 200 kΩ                                                                                                                                               |
| Open Wire Detection              | Yes                                                                                                                                                  |
| Overvoltage Protection           | 120 Vdc/110 Vac                                                                                                                                      |
| Digital Output                   |                                                                                                                                                      |
| Output Channels                  | 8                                                                                                                                                    |
| Output Type                      | Isolated Open-collector                                                                                                                              |
| Maximum Load Current             | 700 mA/Channel                                                                                                                                       |
| Load Voltage                     | +5 to +50 Vdc                                                                                                                                        |
| Safe Value                       | Yes                                                                                                                                                  |
| Power-on Value                   | Yes                                                                                                                                                  |

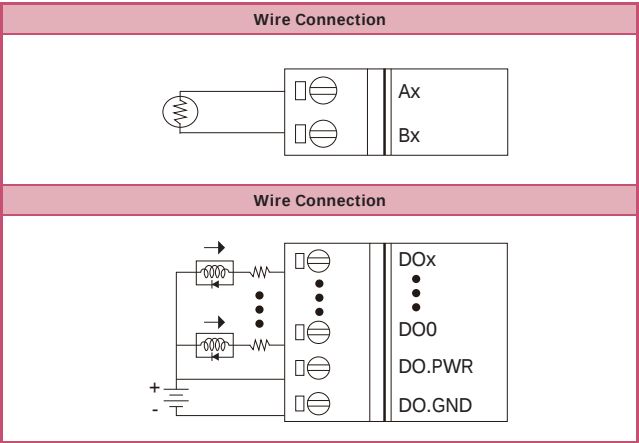
Internal I/O Structure



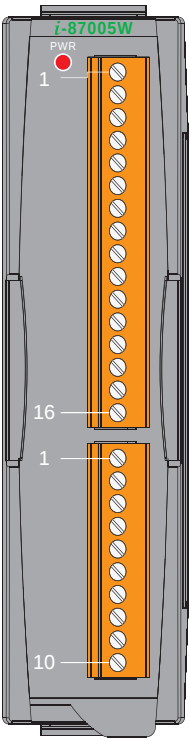
Dimensions (Units: mm)



Wire Connections



Pin Assignments



| Terminal No. | Pin Assignment |
|--------------|----------------|
| 01           | A0             |
| 02           | B0             |
| 03           | A1             |
| 04           | B1             |
| 05           | A2             |
| 06           | B2             |
| 07           | A3             |
| 08           | B3             |
| 09           | A4             |
| 10           | B4             |
| 11           | A5             |
| 12           | B5             |
| 13           | A6             |
| 14           | B6             |
| 15           | A7             |
| 16           | B7             |
| 01           | DO.PWR         |
| 02           | DO.GND         |
| 03           | DO0            |
| 04           | DO1            |
| 05           | DO2            |
| 06           | DO3            |
| 07           | DO4            |
| 08           | DO5            |
| 09           | DO6            |
| 10           | DO7            |

Ordering Information

|               |                                                                                    |
|---------------|------------------------------------------------------------------------------------|
| I-87005W-G CR | 8-channel Thermistor Input and 8-channel Digital Output Module (Gray Cover) (RoHS) |
|---------------|------------------------------------------------------------------------------------|

Accessories

|                                                                                               |                                                                          |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
|  SG-770 CR | 7-channel Differential or 14-channel Single-ended Surge Protector (RoHS) |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|