



## M-7018-16

16-ch Thermocouple Input Module

### Features

- 16 Differential Analog Inputs
- Current, Voltage, and Thermocouple Inputs
- Adjustable CJC offset
- Open Thermocouple Detection
- Built-in Dual Watchdog



### Introduction

The M-7018-16 is an analog input module that includes 16 differential analog input channels. The voltage input range can be from  $\pm 15$  mV to  $\pm 2.5$  V, the current input range can be either +4 to +20 mA, 0 to +20 mA, or  $\pm 20$  mA, and types J, K, T, E, R, S, B, N, C, L, M, LDIN43710 thermocouple can be used for the thermocouple input. Overvoltage protection of up to 30 VDC is provided. The module also features per-channel open wire detection for the thermocouple input types, and provides 4 kV ESD protection as well as 3000 VDC intra-module isolation.

### System Specifications

CPU Module		
Watchdog Timer	Module, Communication (Programmable)	
Isolation		
Intra-module Isolation	3000 VDC	
EMS Protection		
EFT (IEC 61000-4-4)	$\pm 4$ kV to Power	
ESD (IEC 61000-4-2)	$\pm 4$ kV Contact for Each Terminal	
Surge (IEC 61000-4-5)	$\pm 2$ kV for Power Line	
LED Indicators		
Status	1 x Power and Communication	
Analog Input		
Channels	16 Differential	
Type	Voltage Current Thermocouple	
Sensor Type	Thermocouple J, K, T, E, R, S, B, N, C	
Range	Voltage	$\pm 15$ mV, $\pm 50$ mV, $\pm 100$ mV, $\pm 500$ mV, $\pm 1$ V, $\pm 2.5$ V
	Current	$\pm 20$ mA, 0 ~ +20 mA, +4 ~ +20 mA (requires an optional external 125 $\Omega$ resistor)
Resolution	16-bit	
Accuracy	$\pm 0.1\%$ of FSR	
Sampling Rate	10 Hz (Total)	
Input Impedance	> 400 k $\Omega$	
Common Voltage Protection	25 VDC	
Overvoltage Protection	$\pm 30$ VDC	
Open Wire Detection	For Thermocouple Only	
COM Ports		
ESD (IEC 61000-4-2)	1 x RS-485	
Baud Rate	1200 ~ 115200 bps	
Data Format	(N, 8, 1) (N, 8, 2) (E, 8, 1) (O, 8, 1)	
Protocol	Modbus RTU, DCON	

Power	
Reverse Polarity Protection	Yes
Input Range	+10 ~ +30 VDC
Consumption	0.5 W
Mechanical	
Dimensions (mm)	76 x 120 x 42 (W x L x H)
Installation	DIN-Rail Mounting
Environment	
Operating Temperature	-25 ~ +75 $^{\circ}$ C
Storage Temperature	-40 ~ +85 $^{\circ}$ C
Humidity	10 ~ 95% RH, Non-condensing

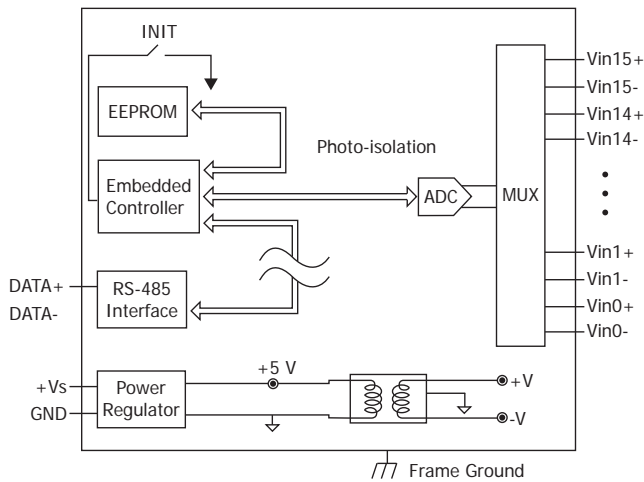
### Applications

- Building Automation
- Factory Automation
- Machine Automation
- Remote Maintenance
- Remote Diagnosis
- Testing Equipment

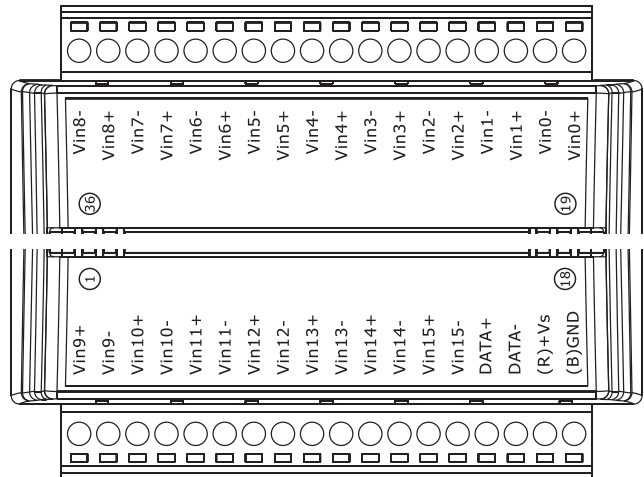
### Thermocouple Type

Type Code	Thermocouple Type	Temperature Range
0E	J	-210 to +760 $^{\circ}$ C
0F	K	-270 to +1372 $^{\circ}$ C
10	T	-270 to +400 $^{\circ}$ C
11	E	-270 to +1000 $^{\circ}$ C
12	R	0 to +1768 $^{\circ}$ C
13	S	0 to +1768 $^{\circ}$ C
14	B	0 to +1820 $^{\circ}$ C
15	N	-270 to +1300 $^{\circ}$ C
16	C	0 to +2320 $^{\circ}$ C

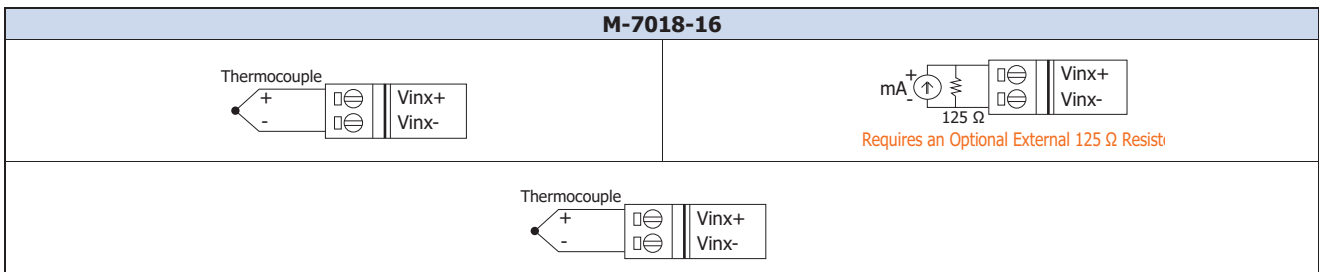
## Internal I/O Structure



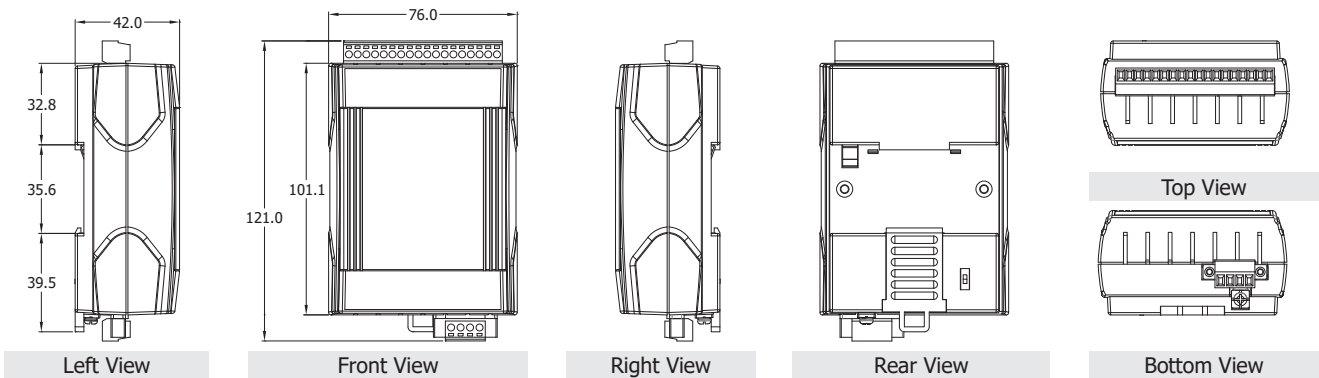
## Pin Assignments



## Wire Connections



## Dimensions (Units: mm)



## Ordering Information

<b>M-7018-16-G CR</b>	16-ch Thermocouple Input Module using DCON and Modbus Protocols (Gray Cover) (RoHS)
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## Accessories

<b>tM-7520U CR</b>	Tiny Isolated RS-232 to RS-485 Converter (RoHS)	<b>SG-770 CR</b>	7/14 channel Surge Protector (RoHS)
<b>tM-7561 CR</b>	Tiny USB to Isolated RS-485 Converter with CA-USB18 Cable (RoHS)	<b>SG-3000 Series</b>	Signal Conditioning Modules for Thermocouple, RTD, DC Voltage, DC Current and Power Input Transformers
<b>tM-SG4 CR</b>	RS-485 Pull-high/Pull-low and Termination Resistor Module (RoHS)	<b>2AB125R CR</b>	IP Resistor, 125 ohm, 0.1%, 1/4W, MF, 50 ppm/°C (1PCS) (RoHS)
<b>I-7514U CR</b>	Isolated 4-channel RS-485 Repeater/Hub/Splitter (Gray Cover) (RoHS)		