



**I-7018(R) M-7018(R)**  
8-ch Thermocouple Input Module

### Introduction

The I-7018/M-7018 is an 8-channel Analog Input module that provides current, voltage, and thermocouple input. The I-7018R/M-7018R is an upgraded version with enhanced protection against overvoltage of up to 240 Vrms, making it suitable for harsh environments. It also has an open thermocouple detection feature. Both versions have 4 kV ESD protection and 3000 VDC intra-module isolation. The M-7018 and M-7018R have the same specifications as the I-7018 and I-7018R, but with additional support for the Modbus RTU and DCON protocols.

### System Specifications

Model	I-7018	I-7018R
	M-7018	M-7018R
<b>CPU Module</b>		
Watchdog Timer	Module, Communication (Programmable)	
<b>Isolation</b>		
Intra-module Isolation	3000 VDC	
<b>EMS Protection</b>		
EFT (IEC 61000-4-4)	±4 kV for Power Line	
ESD (IEC 61000-4-2)	±4 kV Contact for Each Terminal	
Surge (IEC 61000-4-5)	±0.5 kV for Power Line	
<b>LED Indicatorson</b>		
Status	1 x Power and Communication	
<b>COM Ports</b>		
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	I-7000: DCON M-7000: Modbus RTU, DCON	
<b>Power</b>		
Reverse Polarity Protection	Yes	
Input Range	+10 ~ +30 VDC	
Consumption	1.0 W	
<b>Mechanical</b>		
Dimensions (mm)	76 x 120 x 42 (W x L x H)	
Installation	DIN-Rail Mounting	
<b>Environment</b>		
Operating Temperature	-25 ~ +75 °C	
Storage Temperature	-40 ~ +85 °C	
Humidity	10 ~ 95% RH, Non-condensing	

### Features

- I-7018
  - 8 Differential, or 6 Differential and 2 Single-ended Analog Inputs
- I-7018R and M-7018R
  - 8 Differential Analog Inputs
  - High Over-voltage Input Protection
  - High Common Voltage Protection
- Current, Voltage, and Thermocouple Inputs
- Built-in Dual Watchdog



### Thermocouple Type

Type Code	Thermocouple Type	Temperature Range
0E	J	-210 ~ +760°C
0F	K	-270 ~ +1372°C
10	T	-270 ~ +400°C
11	E	-270 ~ +1000°C
12	R	0 ~ +1768°C
13	S	0 ~ +1768°C
14	B	0 ~ +1820°C
15	N	-270 ~ +1300°C
16	C	0 ~ +2320°C
17	L	-200 ~ +800°C
18	M	-200 ~ +100°C
19	L2DIN43710	-200 ~ +900°C

### I/O Specifications

Model	I-7018	I-7018R
	M-7018	M-7018R
<b>Analog Input</b>		
Channels	6 Differential and 2 Single-ended 8 Differential	8 Differential
Type	Voltage, Current, Thermocouple	
Sensor Types	Thermocouple	J, K, T, E, R, S, B, N, C
Range	Voltage	±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V
	Current	±20 mA, 0 ~ +20 mA, +4 ~ +20 mA (requires an optional external 125 Ω resistor)
Resolution	16-bit	
Accuracy	0.1% of FSR	
Sampling Rate	10 Hz (Total)	
Input Impedance	> 400 kΩ	
Common Voltage Protection	25 VDC	200 VDC
Individual Channel Configuration	-	(*Note1) (*Note2)
Overvoltage Protection	±120 VDC	240 Vrms
Open Wire Detection (For Thermocouple Only)	-	(*Note3)

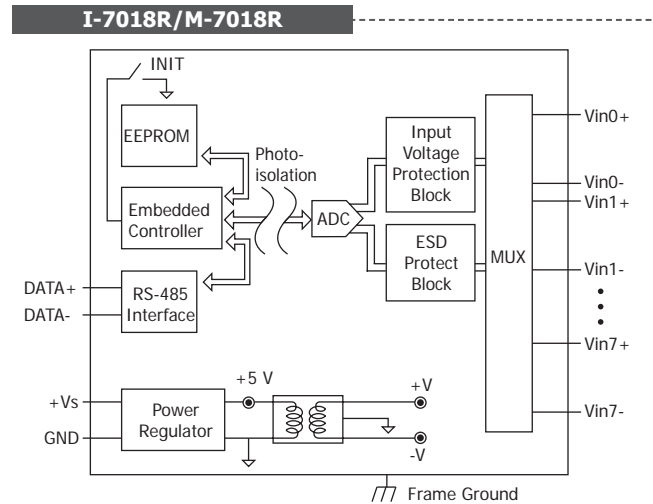
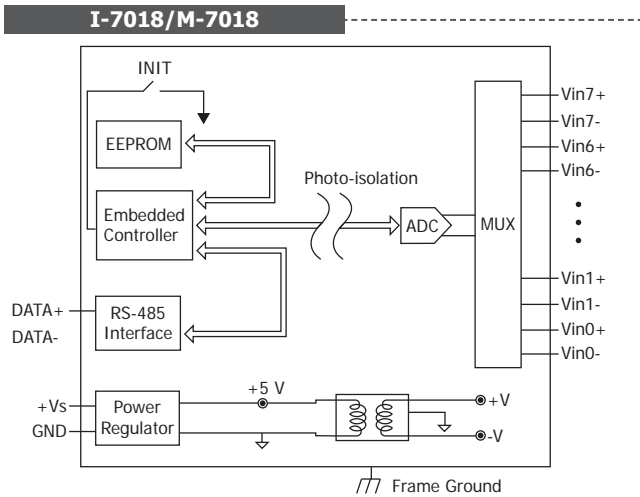
**Note:** ICP DAS recommends using the I-7018Z/I-7019Z module for highly-accurate thermocouple measurement, which features automatic cold-junction compensation for each channel, ensuring consistent and stable temperature output.

Note1: Firmware version B4.2 or later.

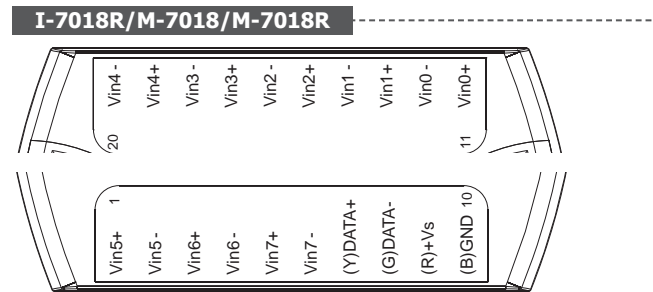
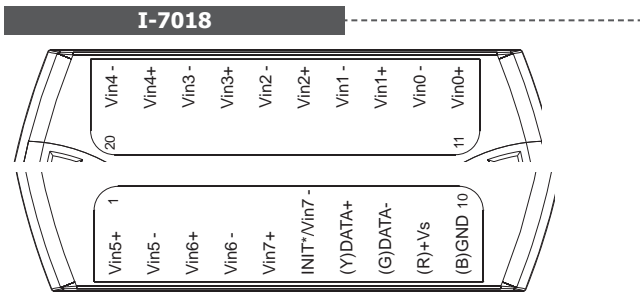
Note2: Firmware version B4.5 or later.

Note3: **Software Selectable.** Firmware version B4.5 or later.

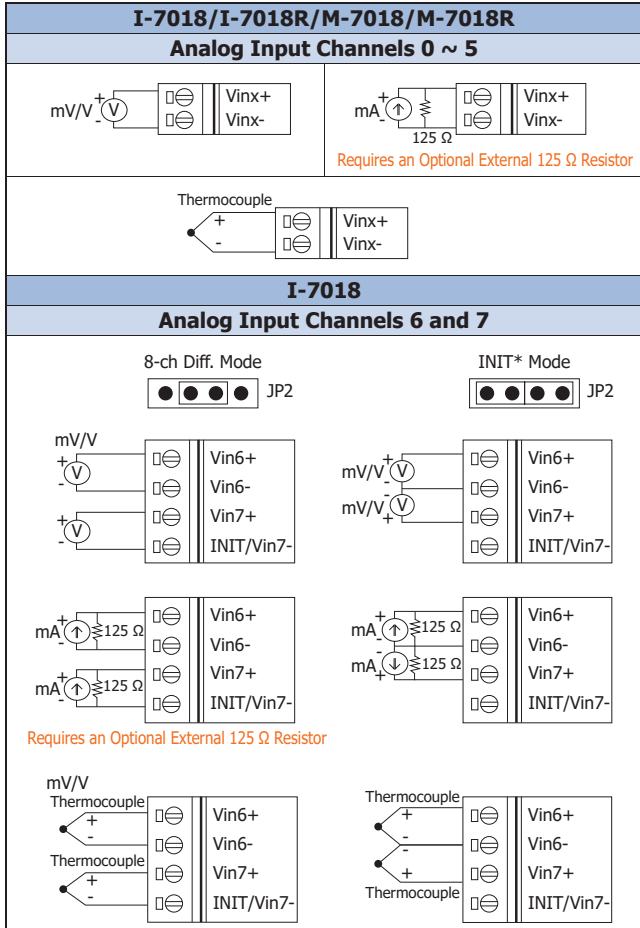
## Internal I/O Structure



## Pin Assignments



## Wire Connections



**Note:** To access the jumpers, the cover must be opened.

## Ordering Information

<b>I-7018 CR</b>	8-ch Analog Input Module using the DCON Protocol (Blue Cover) (RoHS)
<b>I-7018-G CR</b>	8-ch Analog Input Module using the DCON Protocol (Gray Cover) (RoHS)
<b>I-7018R CR</b>	8-ch Thermocouple Input Module with High Voltage Protection using DCON Protocol (Blue Cover) (RoHS)
<b>I-7018R-G CR</b>	8-ch Thermocouple Input Module with High Voltage Protection using DCON Protocol (Gray Cover) (RoHS)
<b>M-7018-G CR</b>	8-ch Thermocouple Input Module using DCON and Modbus Protocols (Gray Cover) (RoHS)
<b>M-7018R-G CR</b>	8-ch Thermocouple Input Module with High Voltage Protection using DCON and Modbus Protocols (Gray Cover) (RoHS)

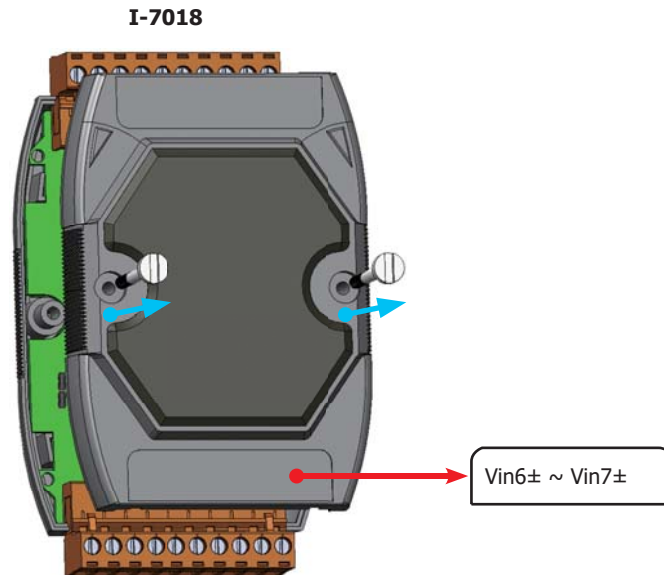
## Accessories

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

## Jumper

### Notice:

1. Remove the top cover of the module before adjusting the jumper. Additionally, some modules may have two screws on the back cover.



2. Users can locate the Jx/JPx jumpers on the board by checking the I/O labels on the cover.

<b>Channel</b>	Vin6±	Vin7±
<b>Jumper</b>	JP2	

