



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
CPU Module		
Watchdog Timer	Module, Communication (Programmable)	
Isolation		
Intra-module Isolation	3000 VDC	
EMS Protection		
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	
LED Indicatorson		
Status	1 x Power and Communication	
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	I-7000: DCON M-7000: Modbus RTU, DCON	
Power		
Reverse Polarity Protection	Yes	
Input Range	+10 ~ +30 VDC	
Consumption	1.0 W	
Mechanical		
Dimensions (mm)	76 x 120 x 42 (W x L x H)	
Installation	DIN-Rail Mounting	
Environment		
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 to +760°C
0F	K	-270 to +1372°C
10	T	-270 to +400°C
11	E	-270 to +1000°C
12	R	0 to +1768°C
13	S	0 to +1768°C
14	B	0 to +1820°C
15	N	-270 to +1300°C
16	C	0 to +2320°C
17	L	-200 to +800°C
18	M	-200 to +100°C
19	L2DIN43710	-200 to +900°C

I/O Specifications

Model	I-7018	I-7018R
	M-7018	M-7018R
Analog Input		
Channels	8 Differential	6 Differential and 2 Single-ended
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)
Overvoltage Protection	±120 VDC	240 Vrms
Open Wire Detection (For Thermocouple Only)	-	(*Note3)

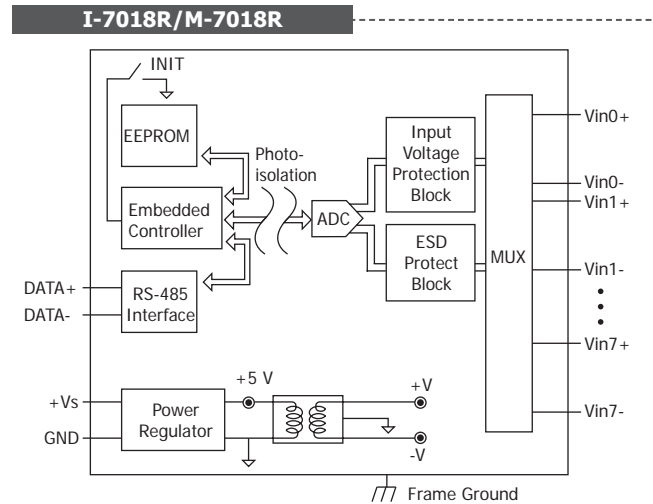
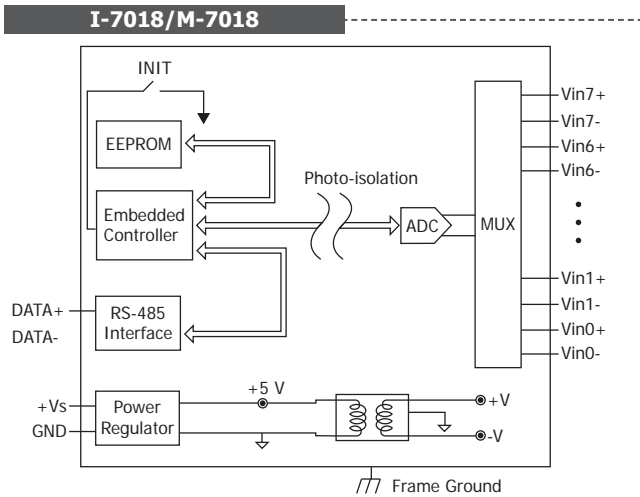
Note: ICP DAS recommends using the I-7018Z/I-7019Z module for highly-accurate thermocouple measurement, which features automatic cold-junction compensation for each channel, ensuring consistent and stable temperature output.

Note1: Firmware version B4.2 or later.

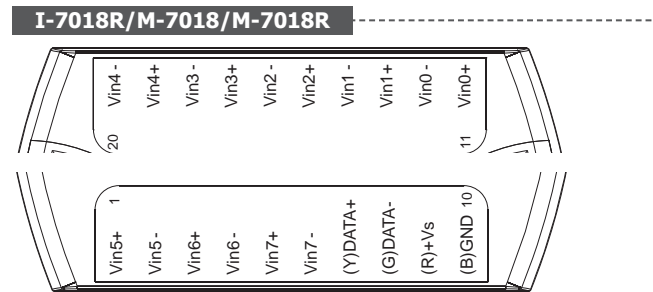
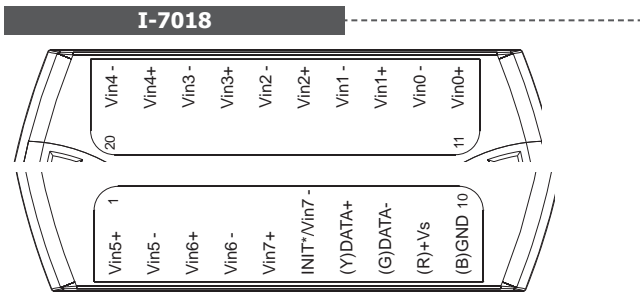
Note2: Firmware version B4.5 or later.

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

Internal I/O Structure



Pin Assignments



Wire Connections

I-7018/I-7018R/M-7018/M-7018R	
Analog Input Channels 0 to 5	
Requires an Optional External 125 Ω Resistor	
I-7018	
Analog Input Channels 6 and 7	
<p>8-channel Differential Mode</p> <p>JP1 ●●●●</p>	<p>INIT* Mode</p> <p>JP1 ●●●●</p>
Requires an Optional External 125 Ω Resistor	
<p>8-channel Differential Mode</p> <p>JP1 ●●●●</p>	<p>INIT* Mode</p> <p>JP1 ●●●●</p>

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

Ordering Information

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

Accessories

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