



I-7018Z

M-7018Z

10-channel Thermocouple Input Module

Features

- 10-channel Analog Input
- Temperature Output Consistency
- Stable Temperature Output in the Field
- Current, Voltage and Thermocouple Input
- Overvoltage Protection of up to 240 Vrms
- Individual Channel Configuration
- Open Thermocouple Detection
- 4 kV ESD Protection
- 3000 Vdc Intra-module Isolation
- Dual Watchdog



Introduction

The I-7018Z/M-7018Z is a 10-channel universal Analog Input module with an RS-485 interface that is especially designed for extremely accurate thermocouple measurement and features automatic cold-junction compensation for each channel to ensure temperature output consistency and stable temperature output in the field. The innovative design of the enhanced model ensures that thermocouple measurement is more accurate than with the earlier design. Besides the thermocouple inputs, the I-7018Z/M-7018Z also supports voltage and current input. The voltage input range can be from ± 15 mV to ± 2.5 V. Up to 10 different types of Analog Input can be connected to a single module. Overvoltage protection of up to 240 Vrms is provided. The module also features per-channel open wire detection for the thermocouple and $+4 \sim +20$ mA input channels. The M-7018Z provides additional support for both the Modbus RTU and DCON protocols, which can be configured via software, and all hardware specifications are the same as the I-7018Z.

System Specifications

Model	I-7018Z	M-7018Z	
Communication			
Interface	RS-485		
Bias Resistor	No (Usually supplied by the RS-485 Master. Alternatively, add a tM-SG4 or SG-785.)		
Format	(N, 8, 1) (N, 8, 2) (E, 8, 1) (O, 8, 1)		
Baud Rate	1200 to 115200 bps		
Protocol	DCON	Modbus RTU, DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)		
LED Indicators/Display			
System LED Indicator	Yes, 1 as Power/Communication Indicator		
I/O LED Indicators	-		
7-segment LED Display	-		
Isolation			
Intra-module Isolation, Field-to-Logic	3000 Vdc		
EMS Protection			
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal		
EFT (IEC 61000-4-4)	±4 kV to Power		
Surge (IEC 61000-4-5)	±0.5 kV for Power Line		
Power			
Reverse Polarity Protection	Yes		
Input Range	+10 ~ +30 VDC		
Consumption	1.0 W		
Mechanical			
Dimensions (W x L x H)	I-7018Z	73 mm x 116 mm x 34 mm	
	M-7018Z		
	DB-1820		65 mm x 78 mm x 22 mm
	DN-1822		103 mm x 96 mm x 27 mm
	DN-1823	103 mm x 100 mm x 27 mm	
Installation	DIN-Rail or Wall Mounting		
Environment			
Operating Temperature	-25 to +75°C		
Storage Temperature	-40 to +85°C		
Humidity	10 to 95% RH, Non-condensing		

Applications

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

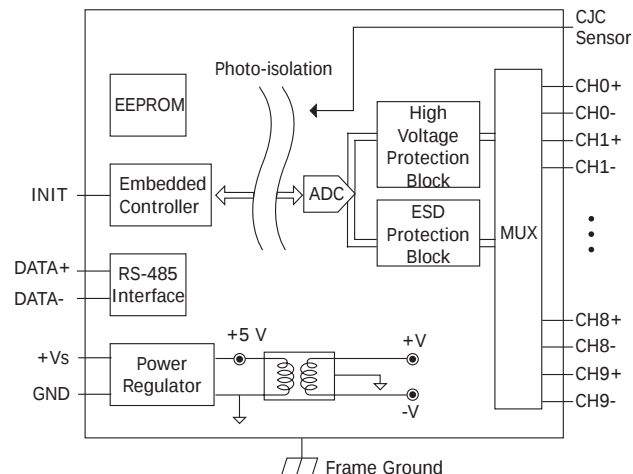
I/O Specifications

Model	I-7018Z	M-7018Z
Analog Input		
Channels	10	
Wiring	Differential	
Sensor Type	Thermocouple	J, K, T, E, R, S, B, N, C, L, M, $L_{DIN43710}$
	Voltage	± 1.5 mV, ± 50 mV, ± 100 mV, ± 500 mV, ± 1 V, ± 2.5 V
	Current	± 20 mA, $0 \sim 20$ mA, $4 \sim 20$ mA (requires an optional external 125 Ω resistor)
Resolution	16-bit	
Accuracy	$\pm 0.1\%$ of FSR	
Sampling Rate	10 Hz (Total)	
Input Impedance	> 400 k Ω	
Common Voltage Protection	± 200 Vdc	
Individual Channel Configuration	Yes	
Overvoltage Protection	240 Vrms	
Open Wire Detection (for thermocouple only)	Yes	
Temperature Output Consistency	Yes	
Stable Temperature Output in the Field	Yes	

Thermocouple Types

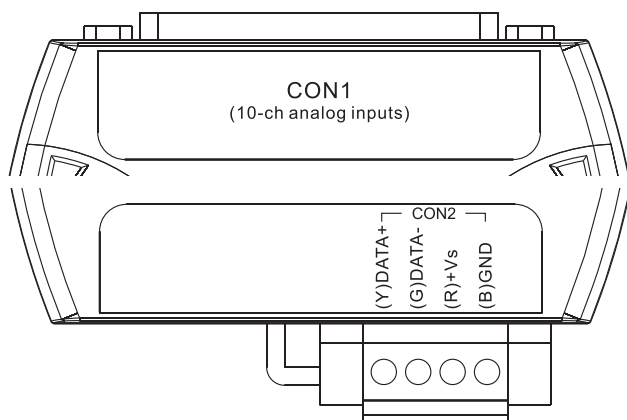
Type Code	Thermocouple Type	Temperature Range
0E	Type J	-210 to +760°C
0F	Type K	-270 to +1372°C
10	Type T	-270 to +400°C
11	Type E	-270 to +1000°C
12	Type R	0 to +1768°C
13	Type S	0 to +1768°C
14	Type B	0 to +1820°C
15	Type N	-270 to +1300°C
16	Type C	0 to +2320°C
17	Type L	-200 to +800°C
18	Type M	-200 to +100°C
19	Type L _{DIN43710}	-200 to +900°C

Internal I/O Structure



Pin Assignments

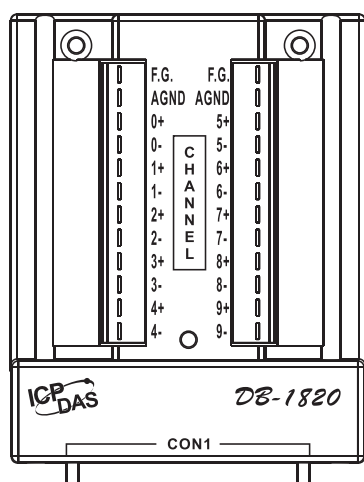
I-7018Z/M-7018Z



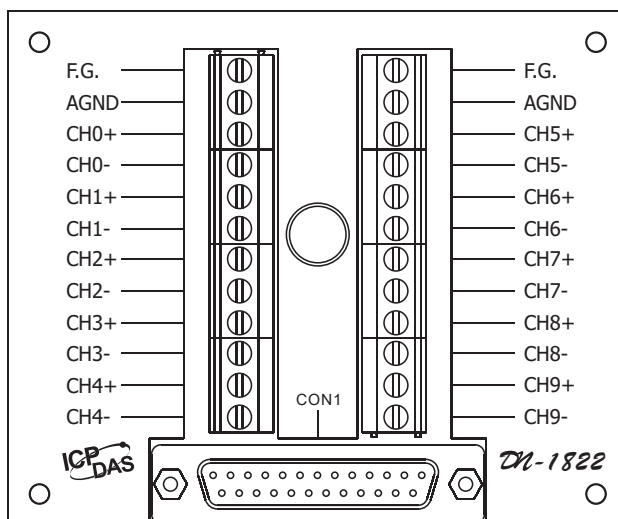
CON1			
Pin Assignment	Terminal	No.	Pin Assignment
+5V	01	14	AGND
CJC	02	15	CH 0+
CH 0-	03	16	CH 1+
CH 1-	04	17	CH 2+
CH 2-	05	18	CH 3+
CH 3-	06	19	CH 4+
CH 4-	07	20	CH 5+
CH 5-	08	21	CH 6+
CH 6-	09	22	CH 7+
CH 7-	10	23	CH 8+
CH 8-	11	24	CH 9+
CH 9-	12	25	N.C.
N.C.	13	Shield	F.G.

25-pin Female D-Sub Connector

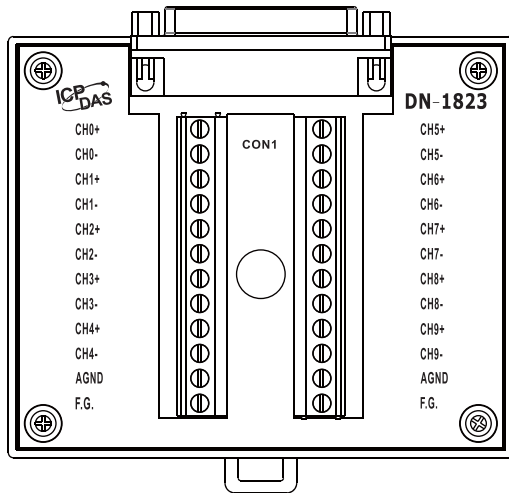
DB-1820



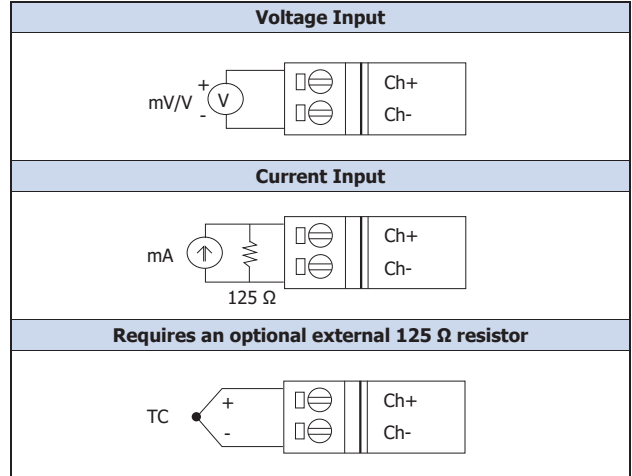
DN-1822



DN-1823

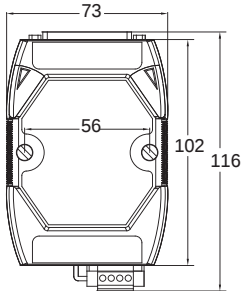


Wire Connections

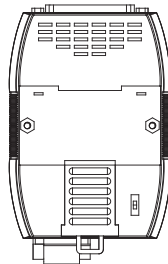


Dimensions (Units: mm)

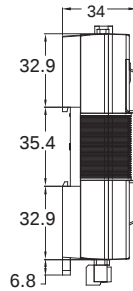
I-7018Z/M-7018Z



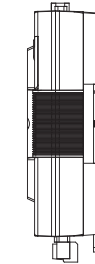
Front View



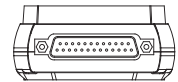
Rear View



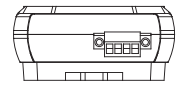
Left Side View



Right Side View

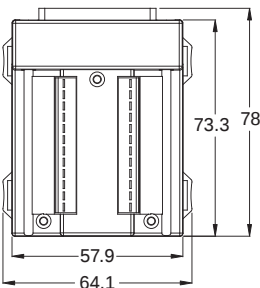


Top View

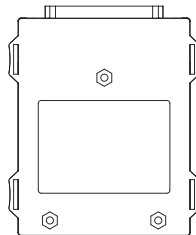


Bottom View

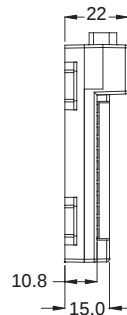
DB-1820



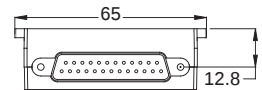
Front View



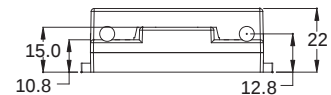
Rear View



Left Side View

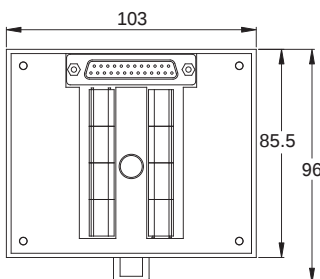


Top View

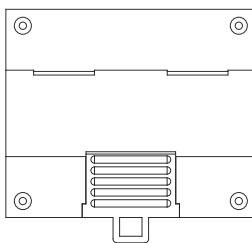


Bottom View

DN-1822



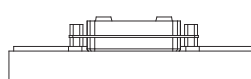
Front View



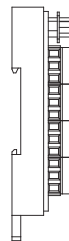
Rear View



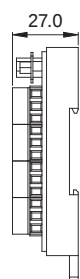
Top View



Bottom View

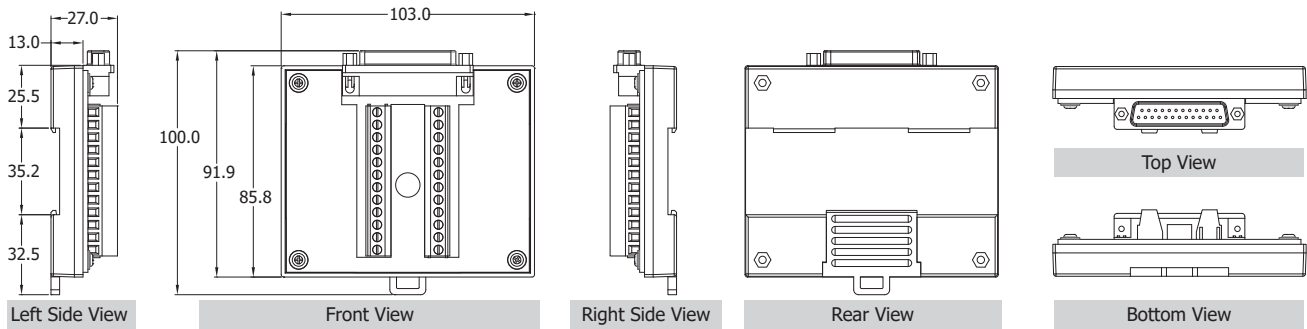


Left Side View



Right Side View

DN-1823



Ordering Information

I-7018Z-G/S CR	10-ch Thermocouple Input Module using DCON Protocol (Gray Cover) (RoHS) Includes DB-1820 Daughter Board and 4PAPP-006-G
I-7018Z-G/S2 CR	10-ch Thermocouple Input Module using DCON Protocol (Gray Cover) (RoHS) Includes DN-1822 Daughter Board, CA-252518D-1 1.8 m Cable and 4PAPP-006-G
I-7018Z-G/S3 CR	10-ch Thermocouple Input Module using DCON Protocol (Gray Cover) (RoHS) Includes DN-1823 Daughter Board, CA-2525015D 15 cm Cable and 4PAPP-006-G
M-7018Z-G/S CR	10-ch Thermocouple Input Module using DCON and Modbus Protocols (Gray Cover) (RoHS) Includes DB-1820 Daughter Board and 4PAPP-006-G
M-7018Z-G/S2 CR	10-ch Thermocouple Input Module using DCON and Modbus Protocols (Gray Cover) (RoHS) Includes DN-1822 Daughter Board, CA-252518D-1 1.8 m Cable and 4PAPP-006-G
M-7018Z-G/S3 CR	10-ch Thermocouple Input Module using the DCON and Modbus Protocols (Gray Cover) (RoHS) Includes DN-1823 Daughter Board, CA-2525015D 15 cm Cable and 4PAPP-006-G

Front I-7018Z-G/S = DB-1820 Connects to the I-7018Z Directly M-7018Z-G/S = DB-1820 Connects to the M-7018Z Directly	Rear I-7018Z-G/S2 = DN-1822 Connects to the I-7018Z Directly M-7018Z-G/S2 = DN-1822 Connects to the M-7018Z Directly	I-7018Z-G/S3 = DN-1823 Connects to the I-7018Z Directly M-7018Z-G/S3 = DN-1823 Connects to the M-7018Z Directly
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Accessories

	2AB125R	125 Ω , 0.1% DIP Resistor used for Current Type Input Modules
	CD-2518D CR	DB25 Male to Female 1.8 m Cable (180°) and DIN-Rail Mount for the DB-1820 (RoHS)
	CD-25015 CR	DB25 Male to Female 15 cm Cable (90°) and DIN-Rail Mount for the DB-1820 (RoHS)

I-7018Z-G/S + CD-25015 + 4PAPP-006-G M-7018Z-G/S + CD-25015 + 4PAPP-006-G	I-7018Z-G/S + CD-2518D M-7018Z-G/S + CD-2518D
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