



M-7019Z

10-channel Universal Analog Input Module

Introduction

The M-7019Z is a 10-channel universal analog input module with an RS-485 interface that is a specially 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 M-7019Z also supports voltage and current inputs. The voltage input range can be form +/-15 mV to +/-10 V, and the current input range can be either 4 ~ 20 mA, 0 ~ 20 mA, or +/- 20 mA. Up to 10 analog inputs of different types 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 thermocouple and 4 ~ 20 mA inputs.

I/O Specifications

Analog Input	
Input Channels	10 (Differential)
Input Type	+/- 15 mV, +/- 50 mV, +/- 100 mV, +/- 150 mV, +/- 500 mV, +/- 1 V, +/- 2.5 V, +/- 5 V, +/- 10 V, -20 mA ~ +20 mA, 0 ~ 20 mA, 4 ~ 20 mA (Jumper Selectable) Thermocouple (J, K, T, E, R, S, B, N, C, L, M, and $L_{DIN43710}$)
Resolution	16-bit
Sampling Rate	10 Samples/Second
Accuracy	+/-0.1% of F.S.R.
Zero Drift	+/-20 μ V/ $^{\circ}$ C
Span Drift	+/-25 ppm/ $^{\circ}$ C
Bandwidth	15.7 Hz
Common Mode Rejection	86 dB Min.
Normal Mode Rejection	100 dB
Input Impedance	Voltage Input: >400 k Ω , Current Input: 125 Ω
Individual Channel Configuration	Yes
Overvoltage Protection	240 Vrms
Open Thermocouple Detection	Yes, (Software Selectable)
ESD Protection	+/-4 kV Contact for Each Terminal
Intra-module Isolation, Field-to-Logic	3000 Vdc

Thermocouple Type

Type Code	Thermocouple Type	Temperature Range
0E	Type J	-210 $^{\circ}$ C ~ +760 $^{\circ}$ C
0F	Type K	-270 $^{\circ}$ C ~ +1372 $^{\circ}$ C
10	Type T	-270 $^{\circ}$ C ~ +400 $^{\circ}$ C
11	Type E	-270 $^{\circ}$ C ~ +1000 $^{\circ}$ C
12	Type R	0 $^{\circ}$ C ~ +1768 $^{\circ}$ C
13	Type S	0 $^{\circ}$ C ~ +1768 $^{\circ}$ C

Analog Input

Features

- 10-channel Analog Input
- Individual Channel Configuration
- Open Thermocouple Detection
- Temperature Output Consistency
- Stable Temperature Output in the Field
- 240Vrms Overvoltage Protection
- Jumper Selectable Voltage or Current Input
- 4 kV ESD Protection
- Dual Watchdog
- 3000 Vdc Intra-module Isolation, Field to Logic
- Wide Operating Temperature Range: -25 $^{\circ}$ C ~ +75 $^{\circ}$ C
- RoHS Compliant



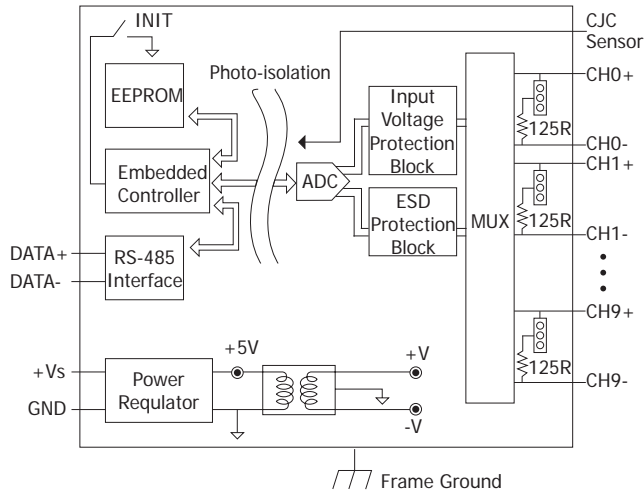
Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.

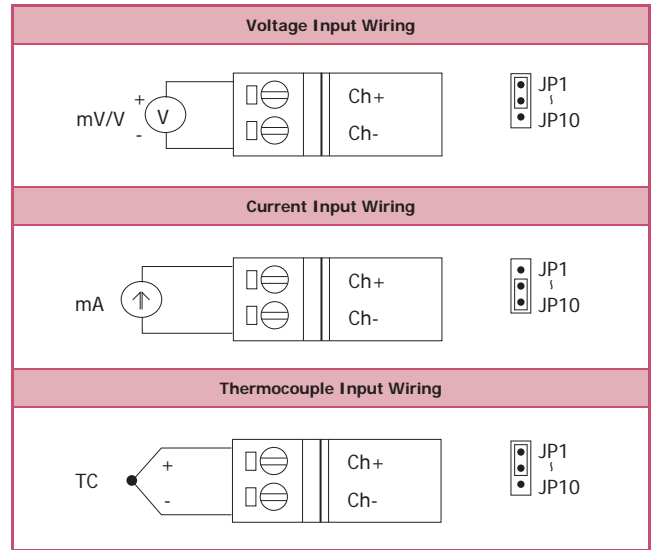
System Specifications

Interface		
Interface	RS-485	
Format	N, 8, 1; N, 8, 2; E, 8, 1; O, 8, 1	
Baud Rate	1200 ~ 115200 bps	
Watchdog		
Dual Watchdog	Yes, Module (1.6 seconds) and Communication (Programmable)	
LED Display	1 LED as Power/Communication Indicator	
Power		
Input Voltage Range	+10 Vdc ~ +30 Vdc	
Power Consumption	Maximum: 1.8 W	
Environment		
Operating Temperature	-25 $^{\circ}$ C ~ +75 $^{\circ}$ C	
Storage Temperature	-40 $^{\circ}$ C ~ +85 $^{\circ}$ C	
Humidity	10 ~ 90% RH, Non-condensing	
Dimensions	M-87019Z	34 mm x 116 mm x 73 mm (W x L x H)
	DB-1820	22 mm x 78 mm x 65 mm (W x L x H)
	DN-1822	27 mm x 96 mm x 103 mm (W x L x H)

Internal I/O Structure

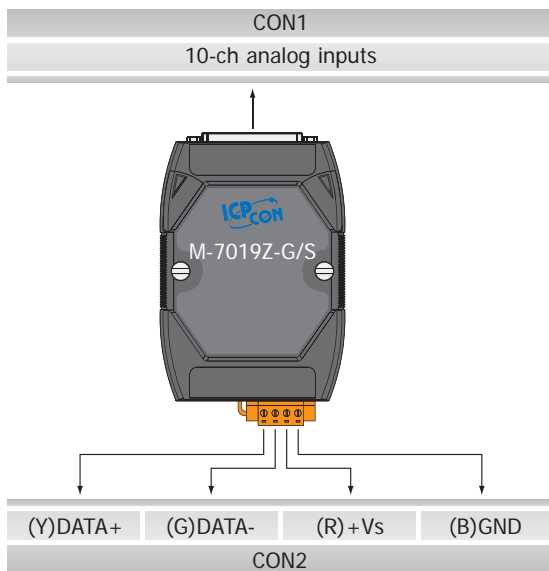


Wire Connections



Pin Assignments

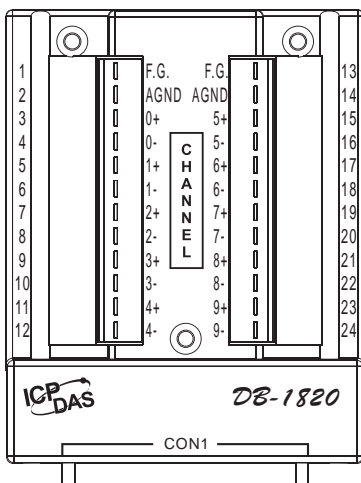
M-7019Z



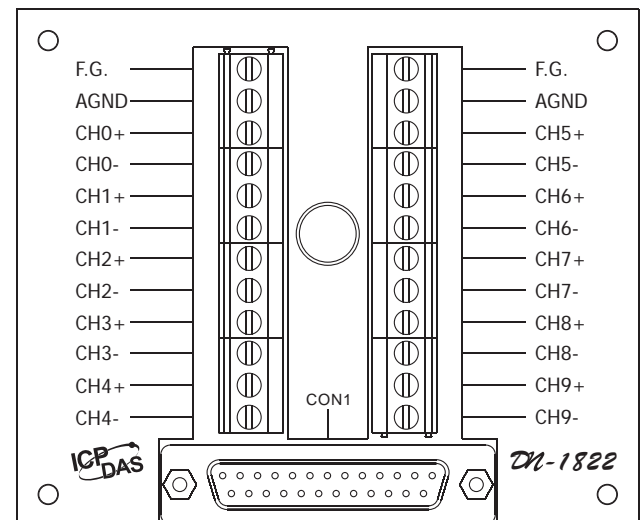
CON1			
Pin Assignment	Terminal	No.	Pin Assignment
+5V	01	14	AGND
CJC	02	15	CH 0+
CH 0-	03	16	CH 1+
CH 1-	04	17	CH 2+
CH 2-	05	18	CH 3+
CH 3-	06	19	CH 4+
CH 4-	07	20	CH 5+
CH 5-	08	21	CH 6+
CH 6-	09	22	CH 7+
CH 7-	10	23	CH 8+
CH 8-	11	24	CH 9+
CH 9-	12	25	N.C.
N.C.	13		F.G.
		Shield	

25-pin Female D-Sub Connector

DB-1820



DN-1822

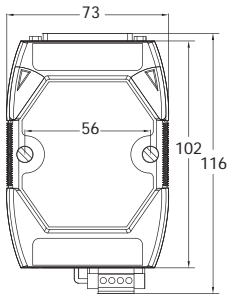


Dimensions (Units: mm)

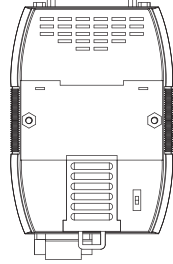
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RS-485 Remote I/O Modules

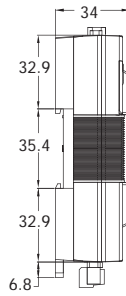
M-7019Z



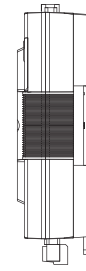
Front View



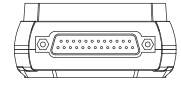
Rear View



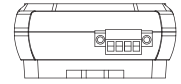
Left Side View



Right Side View

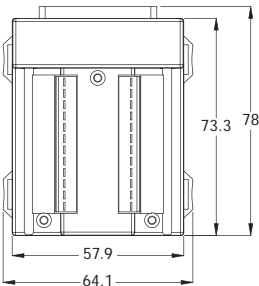


Top View

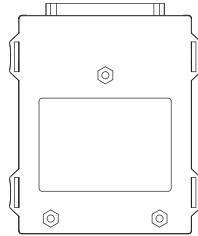


Bottom View

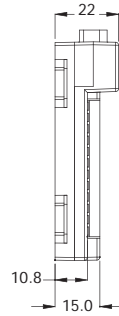
DB-1820



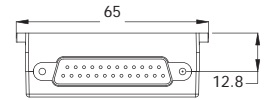
Front View



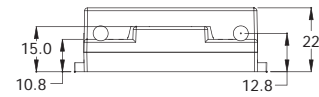
Rear View



Left Side View



Top View

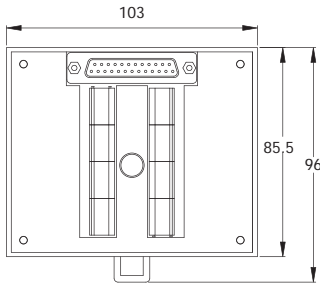


Bottom View

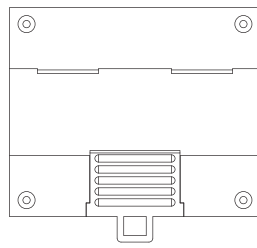
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I-7000 Series (DCON Protocol)

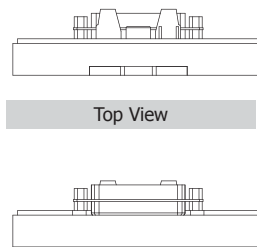
DN-1822



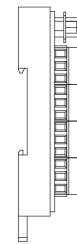
Front View



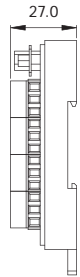
Rear View



Top View



Left Side View





Right Side View




M-7019Z






Ordering Information

M-7019Z-G/S CR	10-channel Universal Analog Input Module (Gray Cover) (RoHS), Includes the M-7019Z module and a DB-1820 Daughter Board
M-7019Z-G/S2 CR	10-channel Universal Analog Input Module (Gray Cover) (RoHS), Includes the M-7019Z module, a DN-1822 Daughter Board and a 1.8 m Cable

 <p>Front Rear</p> <p>M-7019Z-G/S = DB-1820 Connects to the M-7019Z Directly</p>	 <p>M-7019Z-G/S2 = DN-1822 Connects to the M-7019Z Directly</p>
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Suggested Accessories

	CD-2518D CR	25F-25M 1.8 m Cable with DIN-Rail Mount for the DB-1820 (RoHS)
	CD-25015 CR	25F-25M 15 cm Cable with DIN-Rail Mount for the DB-1820 (RoHS)
	4PAPP-006-G CR	Plastic Rack (RoHS)

 <p>M-7019Z-G/S + CD-25015 + 4PAPP-006-G</p>	 <p>CD-25015 15 cm Cable + DB-1820</p>  <p>4PAPP-006-G</p>	 <p>M-7019Z-G/S + CD-2518D</p>	 <p>CD-2518D 1.8 m Cable + DB-1820</p>
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Related Products

Converters	USB, RS-232, Fiber Optical to RS-485 Converters and Repeaters
Power Supply	24 Vdc Power Supply
Relay Module	External Relay Modules for 87000 DO Modules
Learning Kit	Beginners Learning Kit
Application Books	Application Books Designed for Our Products
Data Logger Software	User Friendly Data Logger Software (free)