



### Features

- 10-channel Analog Input
- Individual Channel Configuration
- Open Thermocouple Detection
- Temperature Output Consistency
- Stable Temperature Output in the Field
- 240 V<sub>rms</sub> Overvoltage Protection
- Jumper Selectable Voltage or Current Input
- 4 kV ESD Protection
- Dual Watchdog
- 3000 V<sub>dc</sub> Intra-module Isolation, Field to Logic
- Dual Watchdog
- Wide Operating Temperature Range: -25 ~ +75°C



### Introduction

The M-7019Z is a 10-channel universal analog input module with an RS-485 interface that is 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 from +/-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 V<sub>rms</sub> is provided. The module also features per-channel open wire detection for thermocouple and 4 ~ 20 mA inputs.

### System Specifications

Models	M-7019Z	
<b>Communication</b>		
Interface	RS-485	
Format	(N, 8, 1) (N, 8, 2) (E, 8, 1) (O, 8, 1)	
Baud Rate	1200 ~ 115200 bps	
Protocol	Modbus RTU, DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
<b>LED Indicator/Display</b>		
System LED Indicator	Yes, 1 LED as Power/Communication Indicator	
I/O LED Indicator	-	
7-Segment LED Display	-	
<b>Isolation</b>		
Intra-Module Isolation, Field-to-Logic	3000 V <sub>dc</sub>	
<b>EMS Protection</b>		
ESD (IEC 61000-4-2)	+/-4 kV	
EFT (IEC 61000-4-4)	+/-4 kV	
<b>Power</b>		
Reverse Polarity Protection	Yes	
Input Voltage Range	+10 V <sub>dc</sub> ~ +30 V <sub>dc</sub>	
Power Consumption	1.8 W	
<b>Mechanical</b>		
Dimensions (W x L x H)	M-87019Z	34 mm x 116 mm x 73 mm
	DB-1820	22 mm x 78 mm x 65 mm
	DN-1822	27 mm x 96 mm x 103 mm
Installation	DIN-Rail or Wall Mounting	
<b>Environment</b>		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-40 ~ +85°C	
Humidity	10 ~ 95% RH, Non-condensing	

### Applications

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

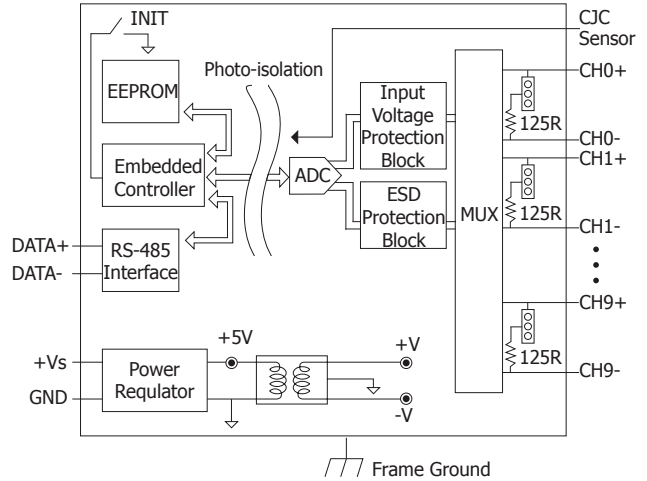
### I/O Specifications

Models	M-7019Z	
<b>Analog Input</b>		
Channels	10	
Wiring	Differential	
Sensor Type	Thermocouple	J, K, T, E, R, S, B, N, C, L, M, L <sub>D</sub> IN43710
	Voltage	+/-15 mV, +/-50 mV, +/-100 mV, +/-150 mV, +/-500 mV, +/-1 V, +/-2.5 V, +/-5 V, +/-10 V
	Current	+/-20 mA, 0 ~ 20 mA, 4 ~ 20 mA (Jumper selectable)
Resolution	16-bit	
Accuracy	0.1%	
Sampling Rate	10 Hz	
Input Impedance	Voltage	2 MΩ
	Current	125 Ω
	Thermocouple	> 400 kΩ
Common Voltage Protection	+/-200 V <sub>dc</sub>	
Individual Channel Configuration	Yes	
Overvoltage Protection	240 V <sub>rms</sub>	
Open Wire Detection (for thermocouple only)	Yes	
Temperature Outputs Consistency	Yes	
Stable Temperature Output in the Field	Yes	

### Thermocouple Type

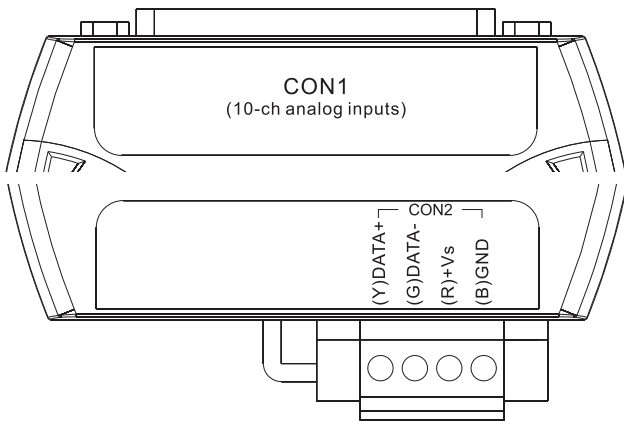
Type Code	Thermocouple Type	Temperature Range
0E	Type J	-210 ~ +760°C
0F	Type K	-270 ~ +1372°C
10	Type T	-270 ~ +400°C
11	Type E	-270 ~ +1000°C
12	Type R	0 ~ +1768°C
13	Type S	0 ~ +1768°C
14	Type B	0 ~ +1820°C
15	Type N	-270 ~ +1300°C
16	Type C	0 ~ +2320°C
17	Type L	-200 ~ +800°C
18	Type M	-200 ~ +100°C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

### Internal I/O Structure



### Pin Assignments

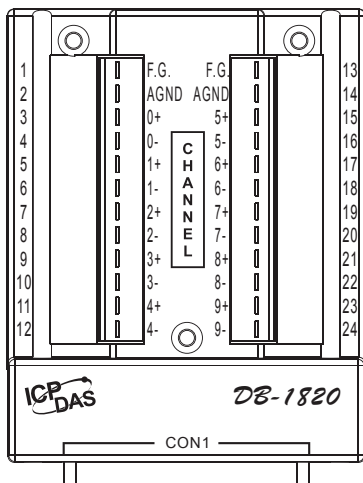
#### M-7019Z



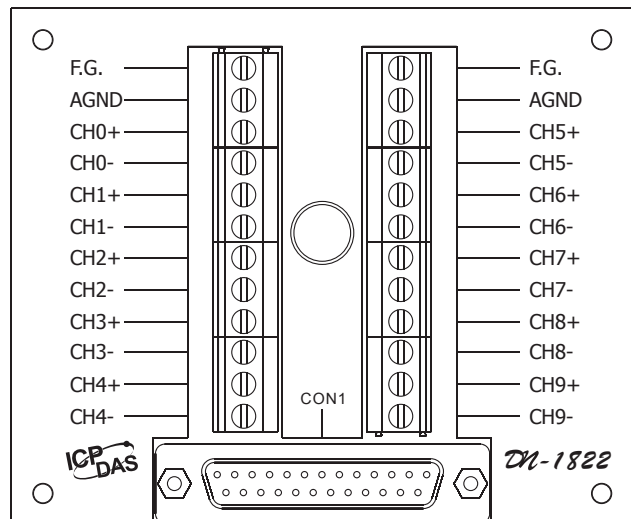
CON1			
Pin Assignment	Terminal	No.	Pin Assignment
+5V	01	14	AGND
CJC	02	15	CH 0+
CH 0-	03	16	CH 1+
CH 1-	04	17	CH 2+
CH 2-	05	18	CH 3+
CH 3-	06	19	CH 4+
CH 4-	07	20	CH 5+
CH 5-	08	21	CH 6+
CH 6-	09	22	CH 7+
CH 7-	10	23	CH 8+
CH 8-	11	24	CH 9+
CH 9-	12	25	N.C.
N.C.	13	Shield	F.G.

25-pin Female D-Sub Connector

#### DB-1820



#### DN-1822



**Wire Connections**

Voltage Input Wire Connection	
Current Input Wire Connection	
Thermocouple Input Wire Connection	

**Dimensions (Units: mm)**

**M-7019Z**

Front View      Rear View      Left Side View      Right Side View      Bottom View

**DB-1820**

Front View      Rear View      Left Side View      Bottom View

**DN-1822**

Front View      Rear View      Bottom View      Left Side View      Right Side View

RS-485 Remote I/O Modules

I-7000 and M-7000 Modules