

M-7019Z

10-ch Universal AI Module

Features

- 10 Analog Inputs
- Provides Stable and Consistent Temperature Output
- Jumper Selectable Voltage or Current Input
- High Over-voltage Input Protection
- High Common Voltage Protection
- Individual Channel Configuration
- Open Thermocouple Detection
- Built-in Dual Watchdog

Introduction

The M-7019Z 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 M-7019Z also supports voltage and current input. The voltage input range can be from ±15 mV to ±10 V, and the current input range can be set to either +4 ~ +20 mA, 0 ~ +20 mA, or ±20 mA. 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 thermocouple and +4 ~ +20 mA input channels.

Applications

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

System Specifications

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
LED Indicators		
Status		1 x Power and Communication
COM Ports		
Ports		1 x RS-485
Baud Rate		1200 ~ 115200 bps
Data Format		(N, 8, 1), (N, 8, 2), (E, 8, 1), (O, 8, 1)
Protocol		Modbus RTU, DCON
Power		
Reverse Polarity Protection		Yes
Input Range		+10 ~ +30 VDC
Consumption		1.8 W
Mechanical		
Dimensions (mm)	M-7019Z	73 x 116 x 34 (W x L x H)
	DB-1820	65 x 78 x 22 (W x L x D)
	DN-1822	103 x 96 x 27 (W x L x D)
	DN-1823	103 x 100 x 27 (W x L x D)
Installation		DIN-Rail Mounting

I/O Specifications

Analog Input		
Channels		10 Differential
Type		Voltage, Current, Thermocouple
Sensor Types	Thermocouple	J, K, T, E, R, S, B, N, C, L, M, LDIN43710
Range	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% of FSR
Sampling Rate		10 Hz (Total)
Input Impedance	Voltage	2 MΩ
	Current	125 Ω
	Thermocouple	> 400 kΩ
Common Voltage Protection		±200 VDC
Overvoltage Protection		240 Vrms
Individual Channel Configuration		Yes
Open Wire Detection		For Thermocouple (Software Selectable) and 4 ~ 20 mA

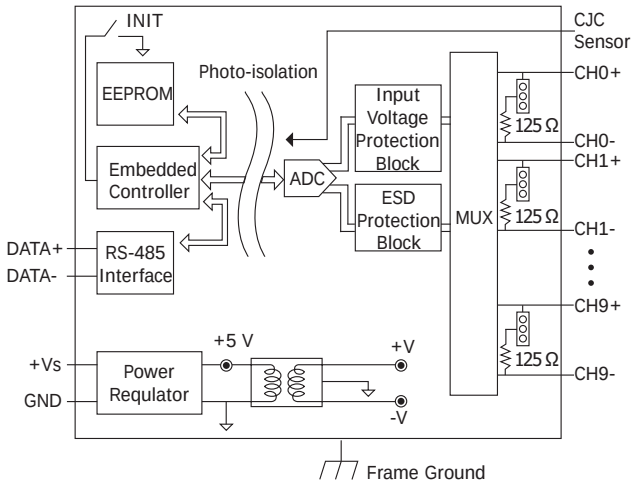
Environment	
Operating Temperature	-25 ~ +75 °C
Storage Temperature	-40 ~ +85 °C
Humidity	10 ~ 95% RH, Non-condensing

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Thermocouple Types

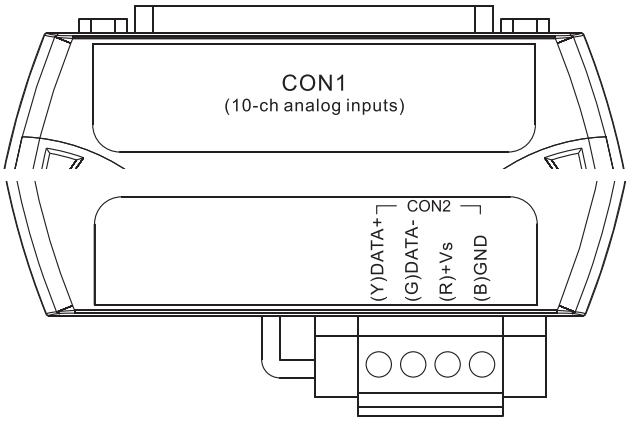
Type Code	Thermocouple Type	Temperature Range
0E	Type J	-210 to +760°C
0F	Type K	-270 to +1372°C
10	Type T	-270 to +400°C
11	Type E	-270 to +1000°C
12	Type R	0 to +1768°C
13	Type S	0 to +1768°C
14	Type B	0 to +1820°C
15	Type N	-270 to +1300°C
16	Type C	0 to +2320°C
17	Type L	-200 to +800°C
18	Type M	-200 to +100°C
19	Type LDIN43710	-200 to +900°C

Internal I/O Structure



Pin Assignments

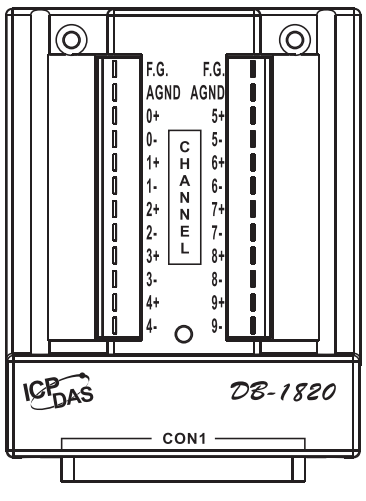
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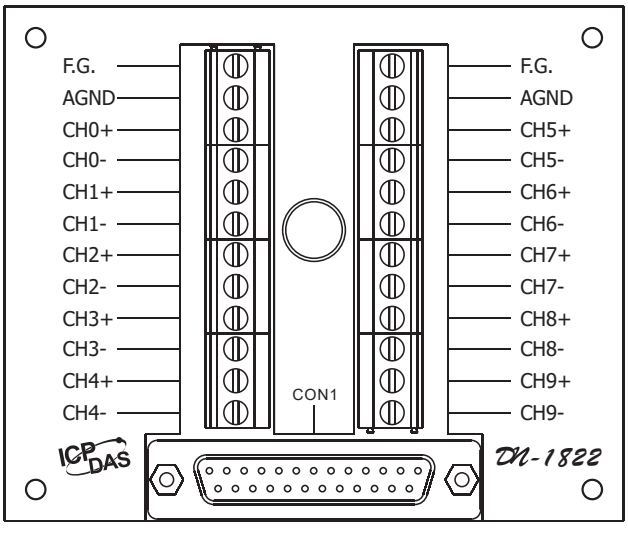
CON1			
Pin Assignment	**Terminal No.**		**Pin Assignment**
+5V	01	14	AGND
CJC	02	15	CH 0+
CH 0 -	03	16	CH 1+
CH 1 -	04	17	CH 2+
CH 2 -	05	18	CH 3+
CH 3 -	06	19	CH 4+
CH 4 -	07	20	CH 5+
CH 5 -	08	21	CH 6+
CH 6 -	09	22	CH 7+
CH 7 -	10	23	CH 8+
CH 8 -	11	24	CH 9+
CH 9 -	12	25	N.C.
N.C.	13	Shield	F.G.

25-pin Female D-Sub Connector

DB-1820

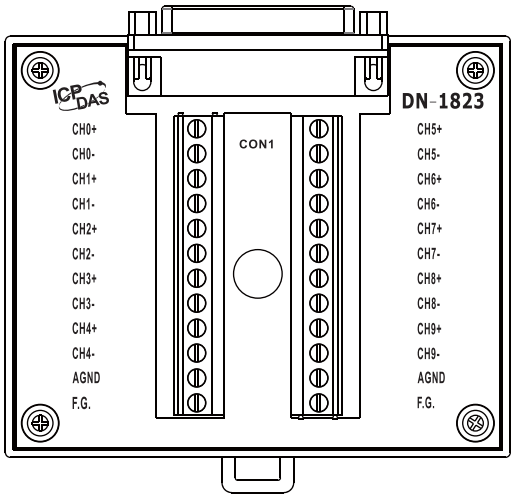


DN-1822

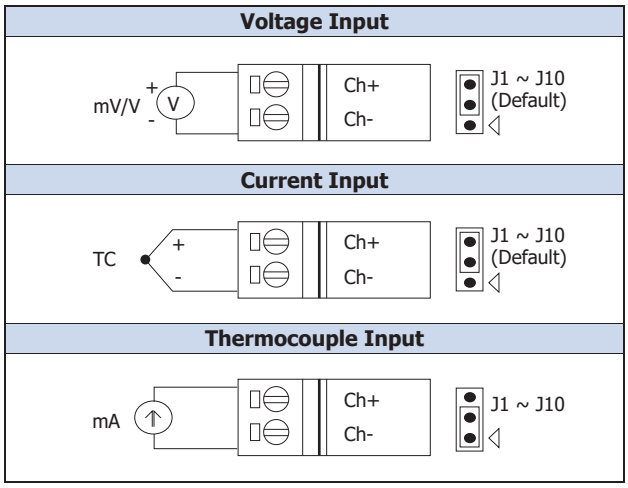


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DN-1823

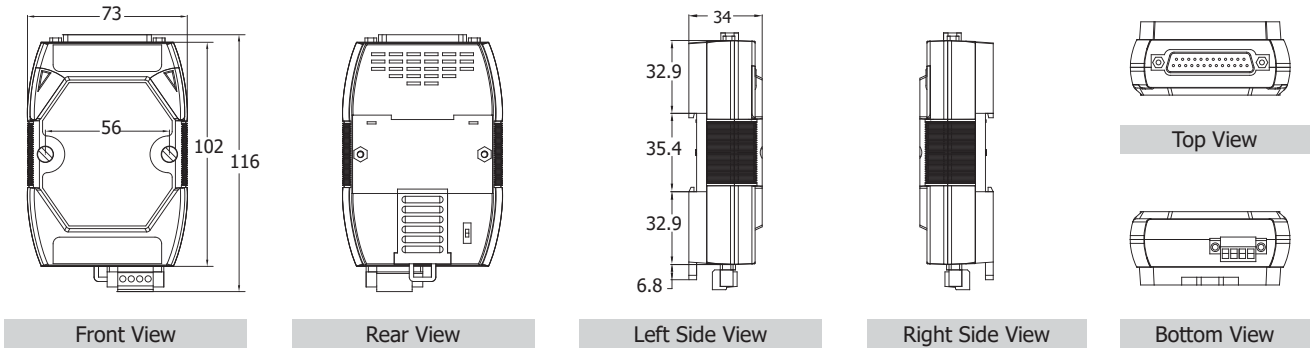


Wire Connections

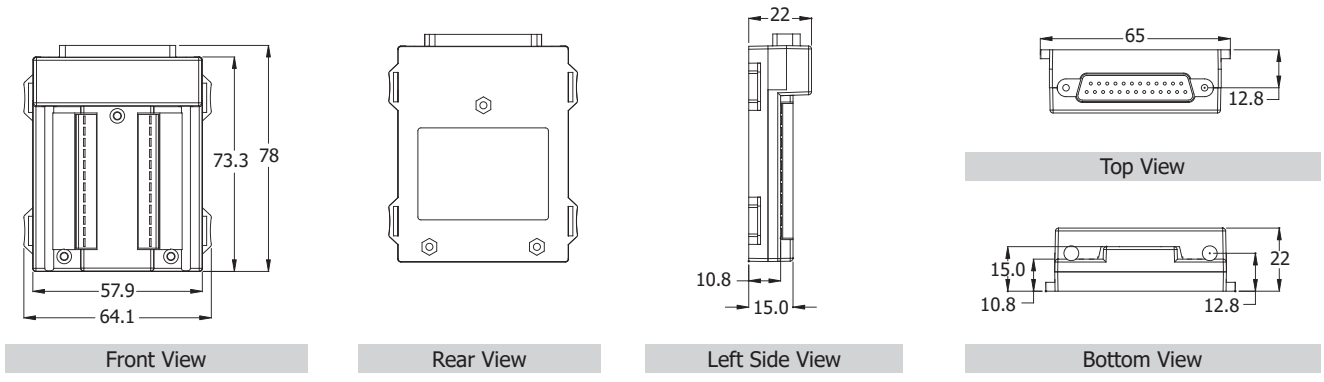


Dimensions (Units: mm)

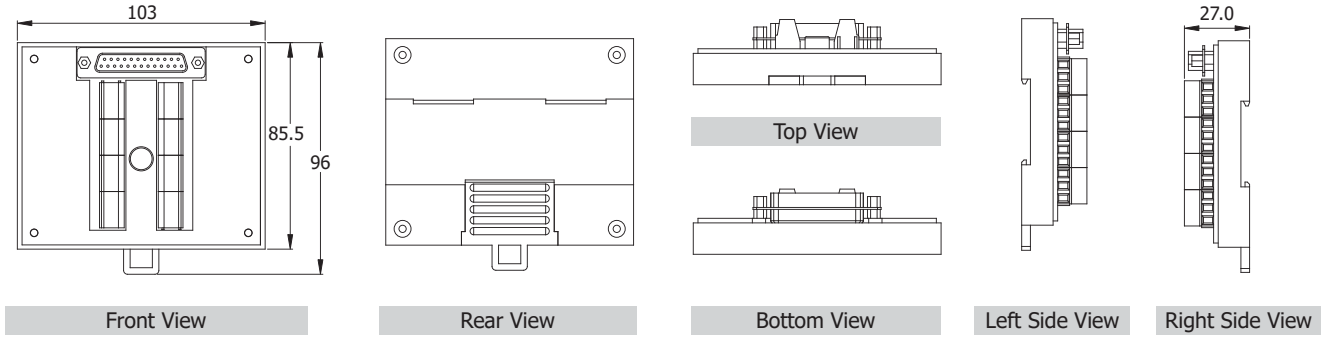
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DB-1820

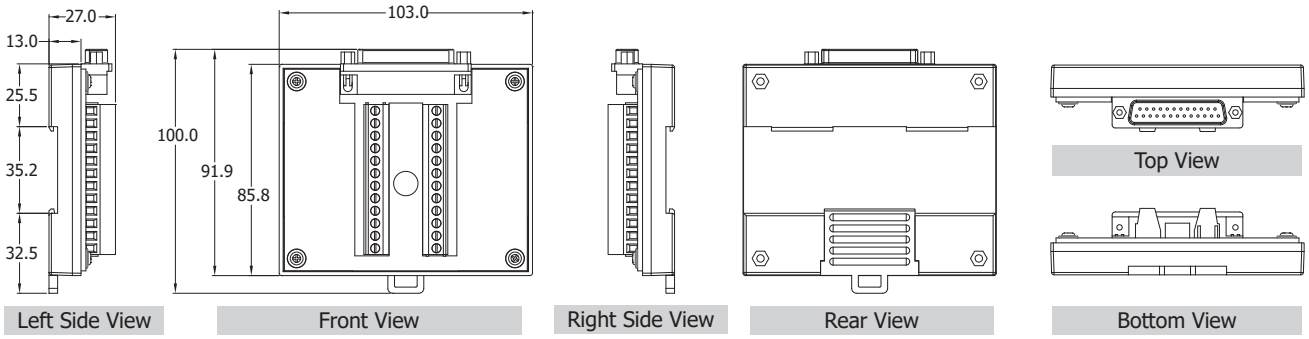


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DN-1823



Ordering Information

M-7019Z-G/S CR	10-ch Universal AI Module using DCON and Modbus Protocols (Gray Cover) (RoHS) Includes DB-1820 Daughter Board and Plastic DIN Rail (4PAPP-006-G)
M-7019Z-G/S2 CR	10-ch Universal AI Module using DCON and Modbus Protocols (Gray Cover) (RoHS) Includes DN-1822 Daughter Board, CA-252518D-1 1.8 m Cable and Plastic DIN Rail (4PAPP-006-G)
M-7019Z-G/S3 CR	10-ch Universal AI Module using DCON and Modbus Protocols (Gray Cover) (RoHS) Includes DN-1823 Daughter Board, CA-2525015D 15 cm Cable and 4PAPP-006-G

Front **Rear**



M-7019Z-G/S =
DB-1820 Connects to the M-7019Z Directly



M-7019Z-G/S2 =
DN-1822 Connects to the M-7019Z Directly



M-7019Z-G/S3 =
DN-1823 Connects to the M-7019Z Directly

Accessories

CD-2518D CR	DB25 Male to Female 1.8 m Cable (180°) and DIN-Rail Mounting Mount for the DB-1820 (RoHS)
CD-25015 CR	DB25 Male to Female 15 cm Cable (90°) and DIN-Rail Mounting Mount for the DB-1820 (RoHS)





CD-25015



4PAPP-006-G

M-7019Z-G/S + CD-25015 + 4PAPP-006-G





CD-2518D

M-7019Z-G/S + CD-2518D

Related Products

tM-7520U CR	Tiny Isolated RS-232 to RS-485 Converter (RoHS)
tM-7561 CR	Tiny USB to Isolated RS-485 Converter with CA-USB18 Cable (RoHS)
tM-SG4 CR	RS-485 Pull-high/Pull-low and Termination Resistor Module (RoHS)

I-7514U-G 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

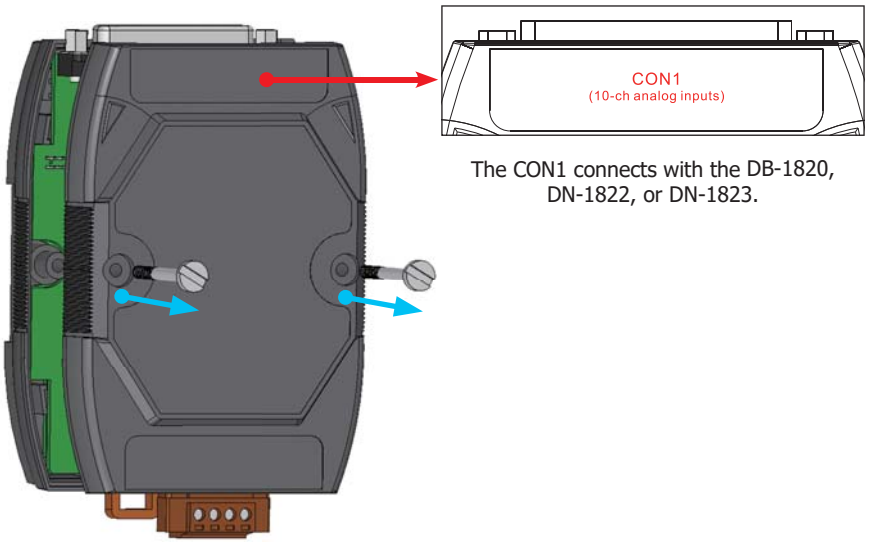
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Jumper

Notice:

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

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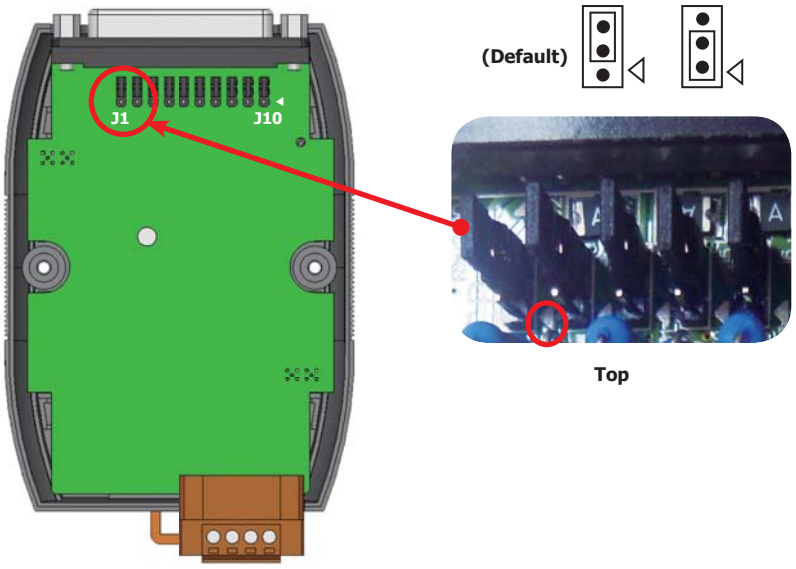


The CON1 connects with the DB-1820, DN-1822, or DN-1823.

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

Channel	CH0±	CH1±	CH2±	CH3±	CH4±	CH5±	CH6±	CH7±	CH8±	CH9±
Jumper	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10

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