



## I-87019ZW-G

8-channel Universal Analog Input Module with High Overvoltage Protection

### Introduction

The I-87019ZW 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 I-87019ZW also supports voltage and current inputs. The voltage input range can be from  $\pm 15$  mV to  $\pm 10$  V, and the current input range can be either  $+4 \sim +20$  mA,  $0 \sim +20$  mA, or  $\pm 20$  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  $+4 \sim +20$  mA inputs.

### System Specifications

Communication		
Interface	RS-485	
Format	N, 8, 1; N, 8, 2; E, 8, 1; O, 8, 1	
Baud Rate	1200 to 115200 bps	
Protocol	DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicators	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	-	
Isolation		
Intra-module Isolation, Field-to-Logic	3000 Vdc	
EMS Protection		
ESD (IEC 61000-4-2)	$\pm 4$ kV Contact for each Terminal $\pm 8$ kV Air for Random Point	
Power		
Power Consumption	1.4 W	
Mechanical		
Dimensions (L x W x H)	I-87019ZW	114 mm x 30.5 mm x 86 mm
	DB-1820	78 mm x 65 mm x 22 mm
	DN-1822	96 mm x 103 mm x 27 mm
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

### 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
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



### Applications

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

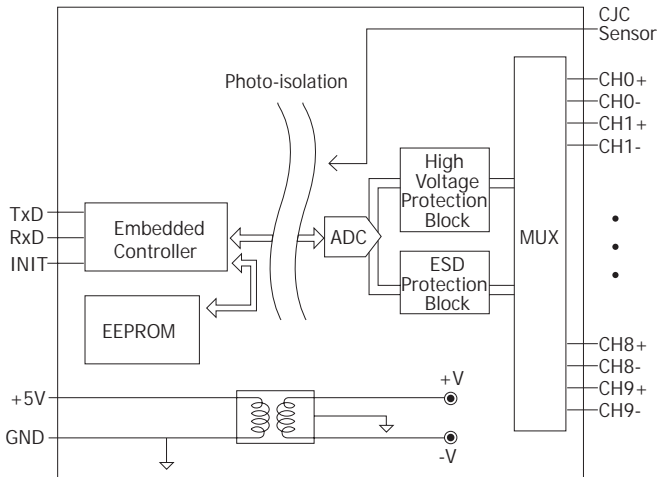
### I/O Specifications

Analog Input	
Channels	10
Wiring	Differential
Sensor Type	$\pm 15$ mV, $\pm 50$ mV, $\pm 100$ mV, $\pm 150$ mV, $\pm 500$ mV, $\pm 1$ VDC, $\pm 2.5$ VDC, $\pm 5$ VDC, $\pm 10$ VDC -20 mA $\sim$ +20 mA, $0 \sim +20$ mA, $+4 \sim +20$ mA (Jumper Selectable) Thermocouple Type: (J, K, T, E, R, S, B, N, C, L, M, and LDIN43710)
Resolution	16-bit
Accuracy	$\pm 0.1\%$ of FSR
Sampling Rate	10 Hz (Total)
Zero Drift	$\pm 20$ $\mu$ V/°C
Span Drift	$\pm 25$ ppm/°C
Common Mode Rejection	86 dB
Normal Mode Rejection	100 dB
Input Impedance	Voltage Input: $>400$ k $\Omega$ , Current Input: 125 $\Omega$
Individual Channel Configuration	Yes
Open Wire Detection	Yes, (Software Selectable)
Overvoltage Protection	240 V <sub>rms</sub>

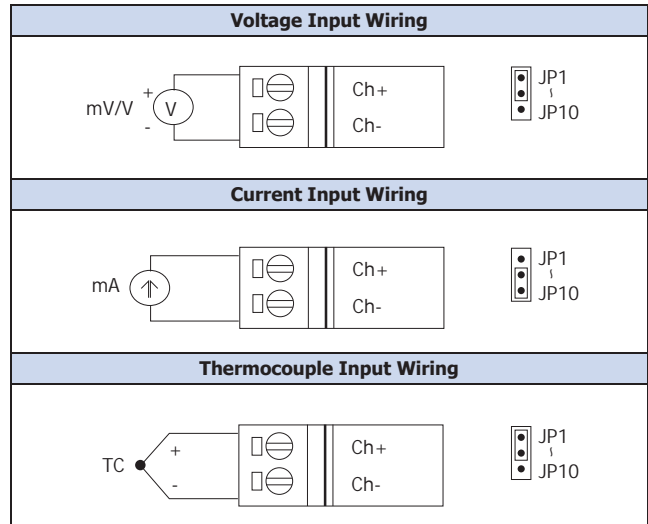
### Thermocouple Type

Type Code	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	LDIN43710	-200 to +900°C

## Internal I/O Structure

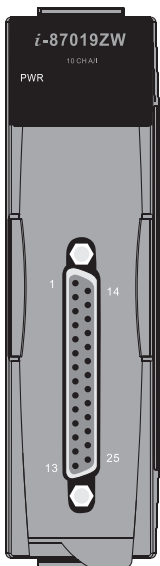


## Wire Connections



## Pin Assignments

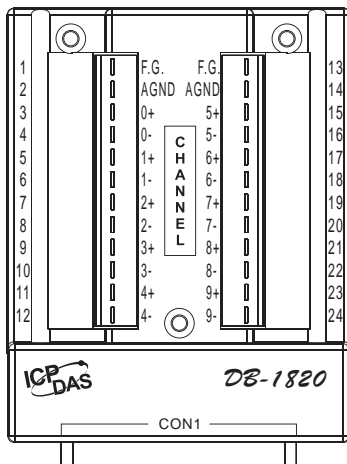
I-87019ZW



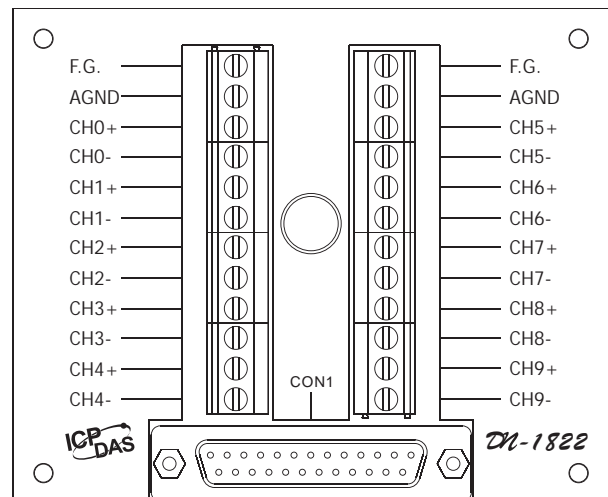
Pin Assignment	Terminal	No.	Pin Assignment
+5V	01	14	AGND
CJC	02	15	CH 0+
CH 0-	03	16	CH 1+
CH 1-	04	17	CH 2+
CH 2-	05	18	CH 3+
CH 3-	06	19	CH 4+
CH 4-	07	20	CH 5+
CH 5-	08	21	CH 6+
CH 6-	09	22	CH 7+
CH 7-	10	23	CH 8+
CH 8-	11	24	CH 9+
CH 9-	12	25	N.C.
N.C.	13	Shield	F.G.

25-pin Female D-Sub Connector

DB-1820

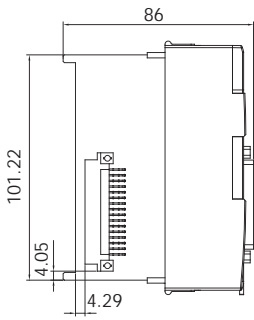


DN-1822

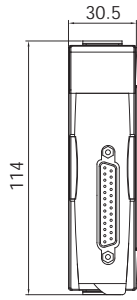


## ■ Dimensions (Units: mm)

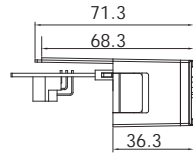
I-87019ZW



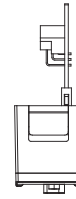
Left View



Front View

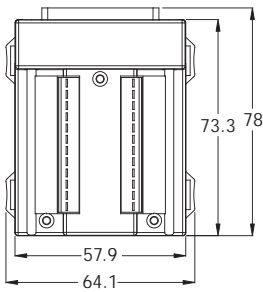


Top View

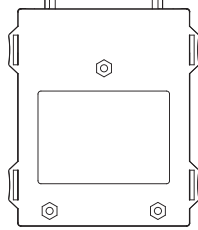


Top View

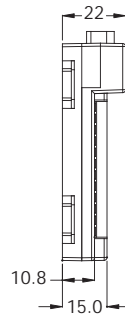
DB-1820



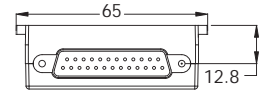
Front View



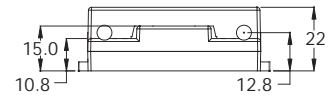
Rear View



Left View

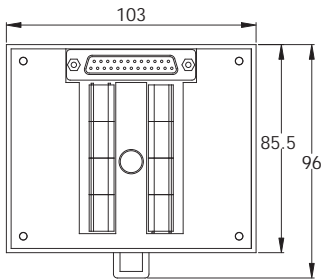


Top View

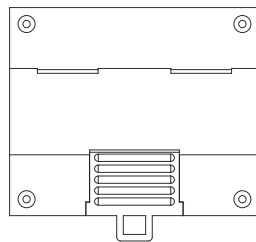


Bottom View

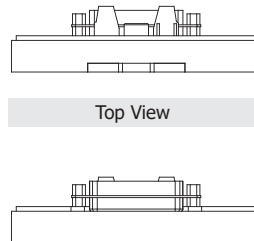
DN-1822



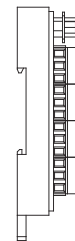
Front View



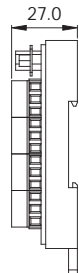
Rear View



Bottom View



Left View





Right Side View

### Ordering Information

<b>I-87019ZW-G/S CR</b>	10-channel Universal Analog Input Module (Gray Cover) (RoHS) Includes the I-87019ZW Module and a DB-1820 Daughter Board
<b>I-87019ZW-G/S2 CR</b>	10-channel Universal Analog Input Module (Gray Cover) (RoHS) Includes the I-87019ZW Module, a DN-1822 Daughter Board and a 1.8 m Cable



  

 <p data-bbox="201 674 735 701"><b>I-87019ZW-G/S CR</b> = I-87019ZW Connects DB-1820 Directly</p>	 <p data-bbox="858 674 1398 701"><b>I-87019ZW-G/S2 CR</b> = I-87019ZW Connect DN-1822 Directly</p>
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### Suggested Accessories

<b>CD-2518D</b>	25F-25M 1.8 m Cable with DIN-Rail Mounting for the DB-1820 (RoHS)
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 <p data-bbox="201 1272 735 1299"><b>CD-2518D</b> = 25F-25M 1.8 m Cable + DIN-Rail Mounting</p>	 <p data-bbox="970 1218 1283 1245"><b>I-87019ZW-G/S CR + CD-2518D</b></p>
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### Accessories

 <p data-bbox="225 1518 349 1545"><b>SG-770 CR</b></p>	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
 <p data-bbox="225 1599 349 1626"><b>SG-3000 series</b></p>	Signal Conditioning Modules for Thermocouple, RTD, DC Voltage, DC Current and Power Inputs