



## Analog Input

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



### 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 +/-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.

### Applications

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

### 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 Type: (J, K, T, E, R, S, B, N, C, L, M, and L <sub>DIN43710</sub> )
Resolution	16-bit
Sampling Rate	10 Samples/Second (Total)
Accuracy	+/- 0.1%
Zero Drift	+/- 20 µV/°C
Span Drift	+/- 25 ppm/°C
Common Mode Rejection	86 dB
Normal Mode Rejection	100 dB
Input Impedance	Voltage Input: >400 kΩ, Current Input: 125 Ω
Individual Channel Configuration	Yes
Overvoltage Protection	240 V <sub>rms</sub>
Open Thermocouple Detection	Yes, (Software Selectable)
ESD Protection	+/- 4 kV, Contact for Each Terminal
Intra-module Isolation, Field-to-Logic	3000 V <sub>dc</sub>

### System Specifications

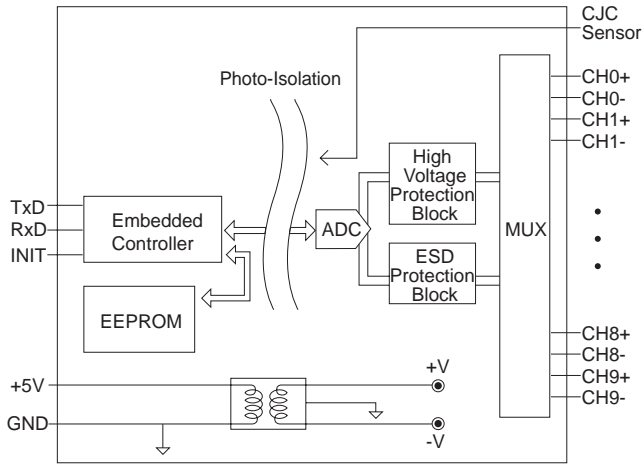
Interface		
Interface	RS-485	
Format	N, 8, 1; N, 8, 2; E, 8, 1; O, 8, 1	
Baud Rate	1200 ~ 115200 bps	
Watchdog		
Dual Watchdog	Yes, Module (1.6 seconds) and Communication (Programmable)	
LED Display	1 LED as Power/Communication Indicator	
Power		
Power Consumption	Maximum: 1.4 W	
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +85 °C	
Humidity	10 ~ 90% RH, Non-condensing	
Dimensions	I-87019ZW	30 mm x 86 mm x 114 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)

### Thermocouple type

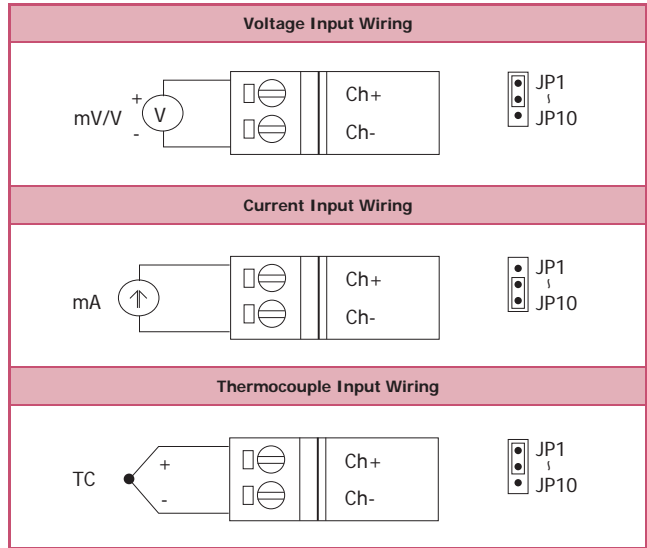
Type Code	Type	Temperature Range °C
0E	J	-210 ~ +760
0F	K	-270 ~ +1372
10	T	-270 ~ +400
11	E	-270 ~ +1000
12	R	0 ~ +1768
13	S	0 ~ +1768

Type Code	Type	Temperature Range °C
14	B	0 ~ +1820
15	N	-270 ~ +1300
16	C	0 ~ +2320
17	L	-200 ~ +800
18	M	-200 ~ +100
19	L <sub>DIN43710</sub>	-200 ~ +900

### Internal I/O Structure

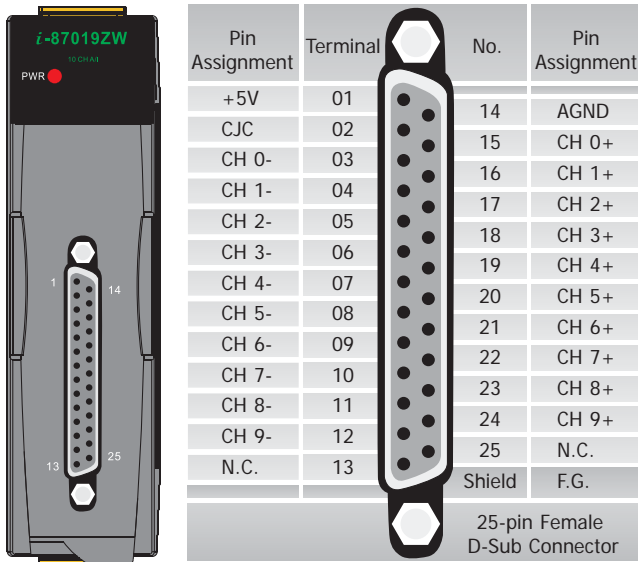


### Wire Connections

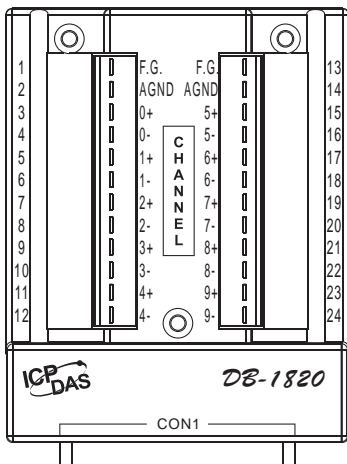


### Pin Assignments

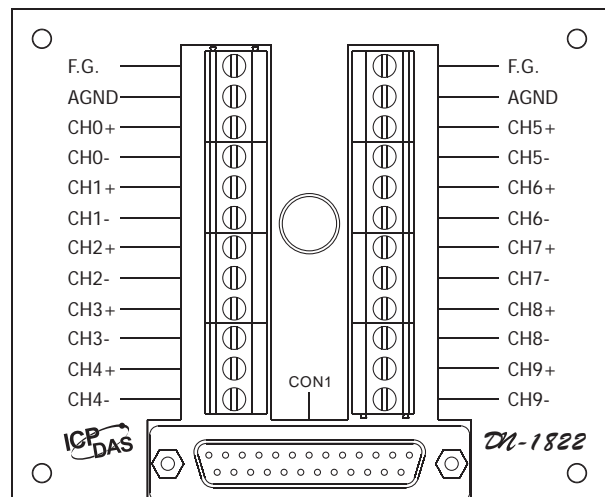
I-87019ZW



DB-1820



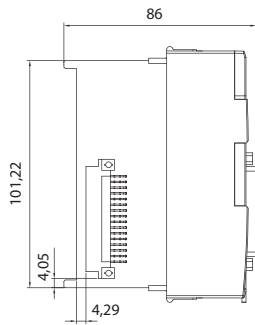
DN-1822



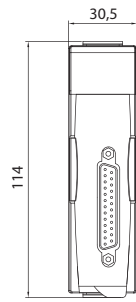
Dimensions (Units: mm)

RS-485 Remote I/O Modules

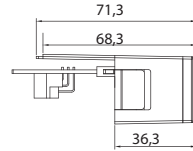
I-87019ZW



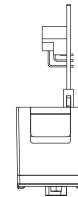
Left Side View



Front View

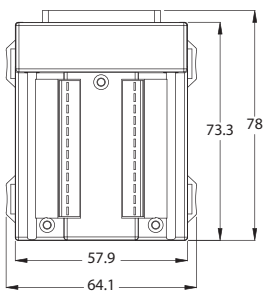


Top View

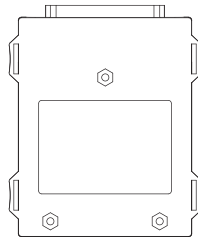


Top View

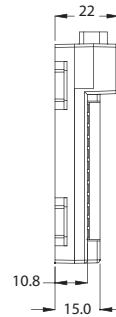
DB-1820



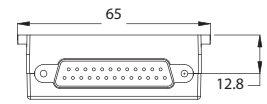
Front View



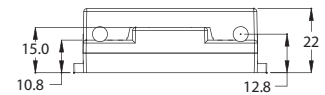
Rear View



Left Side View



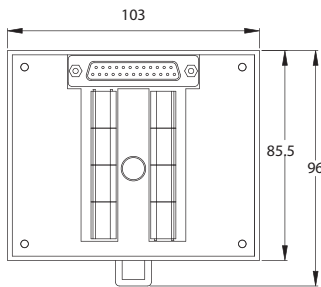
Top View



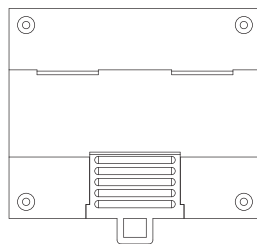
Bottom View

I-87KW Series

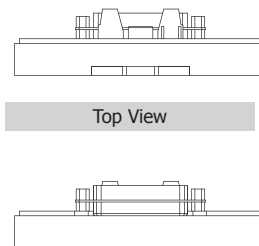
DN-1822



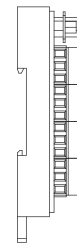
Front View



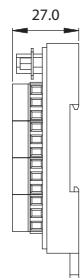
Rear View



Bottom View



Left Side View




Right Side View


I-87019ZW

### Ordering Information

I-87019ZW-G/S CR	10-channel Universal Analog Input Module (Gray Cover) (RoHS), Includes the I-87019ZW Module and a DB-1820 Daughter Board
I-87019ZW-G/S2 CR	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




**I-87019ZW-G/S CR** = I-87019ZW Connects DB-1820 Directly



**I-87019ZW-G/S2 CR** = I-87019ZW Connect DN-1822 Directly

### Suggested Accessories

 <p>CD-2518D</p>	25F-25M 1.8m cable with DIN-Rail Mounting for the DB-1820 (RoHS)
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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)