



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 $4 \sim +20$ mA, $0 \sim +20$ 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_{rms} 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 ~ 115200 bps
Protocol	DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicator/Display	
System LED Indicator	1 LED as Power/Communication Indicator
I/O LED Indicator	-
Isolation	
Intra-Module Isolation, Field-to-Logic	3000 V _{dc}
EMS Protection	
ESD (IEC 61000-4-2)	4 kV Contact for Each Terminal 8 kV Air for Random Point
Power	
Power Consumption	1.4 W
Mechanical	
Dimensions (W x L x H)	I-87019ZW 30 mm x 86 mm x 114 mm
	DB-1820 22 mm x 78 mm x 65 mm
	DN-1822 27 mm x 96 mm x 103 mm
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +85°C
Humidity	10 ~ 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_{rms} Overvoltage Protection
- Jumper Selectable Voltage or Current Input
- 4 kV ESD Protection
- Dual Watchdog
- 3000 V_{dc} Intra-module Isolation, Field-to-Logic
- RoHS Compliant
- Wide Operating Temperature Range: -25 ~ +75°C



Applications

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

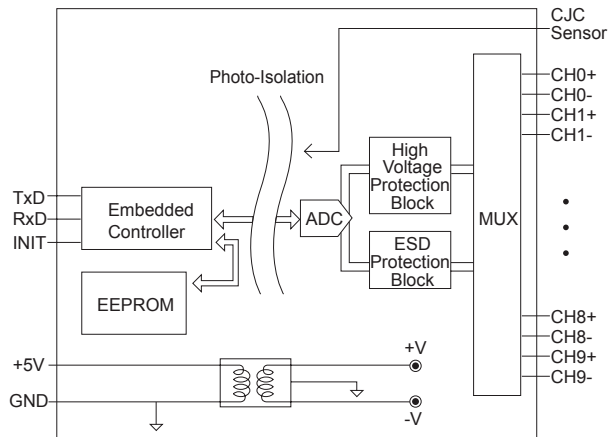
I/O Specifications

Analog Input	
Channels	10
Wiring	Differential
Sensor Type	± 15 mV, ± 50 mV, ± 100 mV, ± 150 mV ± 500 mV, ± 1 V _{dc} , ± 2.5 V _{dc} , ± 5 V _{dc} , ± 10 V _{dc} -20 mA ~ $+20$ 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 L _{DN43710})
Resolution	16-bit
Accuracy	$\pm 0.1\%$ of FSR
Sampling Rate	10 Hz (Total)
Zero Drift	± 20 μ V/°C
Span Drift	± 25 ppm/°C
Common Mode Rejection	86 dB
Normal Mode Rejection	100 dB
Input Impedance	Voltage Input: >400 k Ω , Current Input: 125 Ω
Individual Channel Configuration	Yes
Open Wire Detection	Yes, (Software Selectable)
Overvoltage Protection	240 V _{rms}

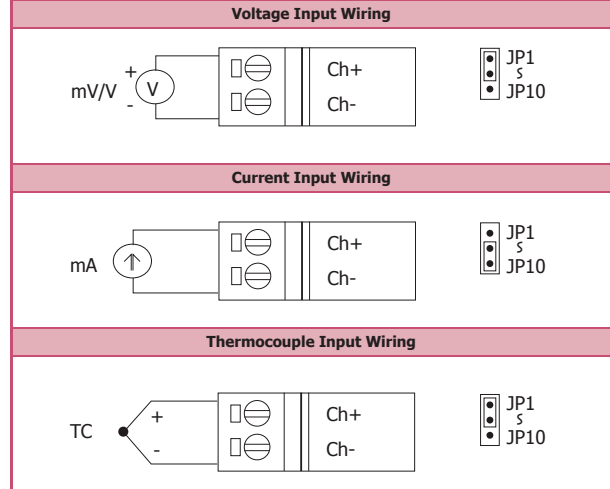
Thermocouple type

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
14	B	0 ~ +1820
15	N	-270 ~ +1300
16	C	0 ~ +2320
17	L	-200 ~ +800
18	M	-200 ~ +100
19	L _{DN43710}	-200 ~ +900

Internal I/O Structure



Wire Connections



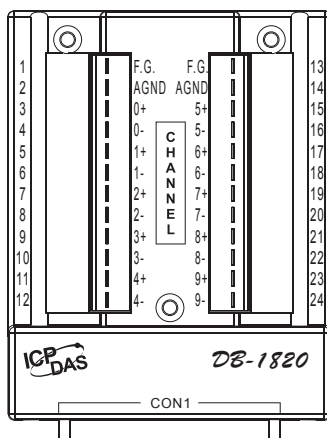
Pin Assignments

I-87019ZW

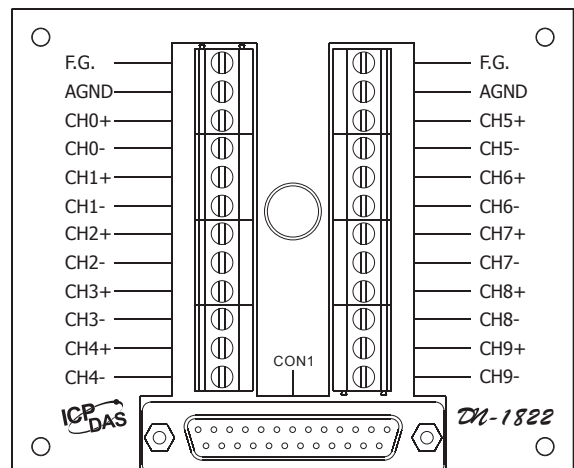
Pin Assignment	Terminal	No.	Pin Assignment
+5V	01	14	AGND
CJC	02	15	CH 0+
CH 0-	03	16	CH 1+
CH 1-	04	17	CH 2+
CH 2-	05	18	CH 3+
CH 3-	06	19	CH 4+
CH 4-	07	20	CH 5+
CH 5-	08	21	CH 6+
CH 6-	09	22	CH 7+
CH 7-	10	23	CH 8+
CH 8-	11	24	CH 9+
CH 9-	12	25	N.C.
N.C.	13	Shield	F.G.

25-pin Female D-Sub Connector

DB-1820

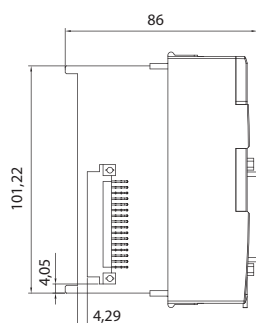


DN-1822

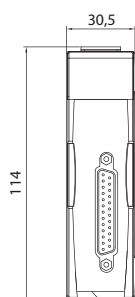


▣ Dimensions (Units: mm)

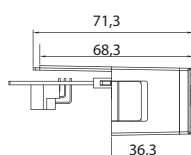
I-87019ZW



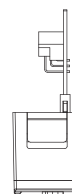
Left Side View



Front View

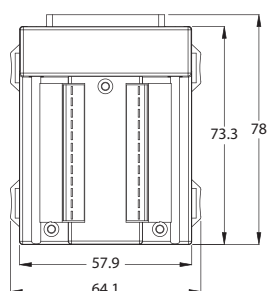


Top View

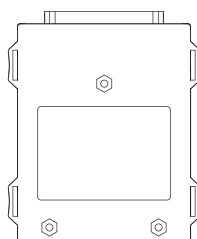


Top View

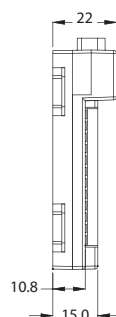
DB-1820



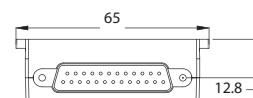
Front View



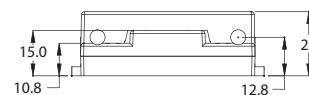
Rear View



Left Side View

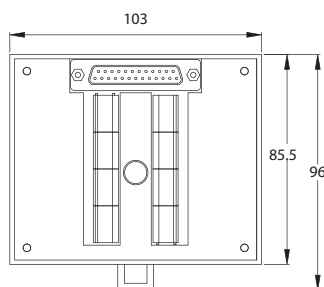


Top View

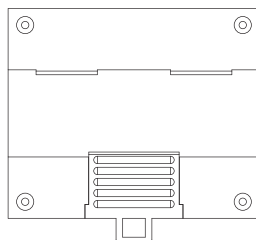


Bottom View

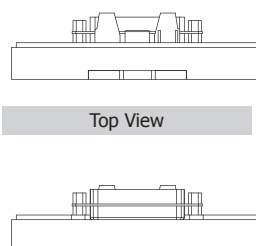
DN-1822



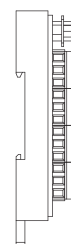
Front View



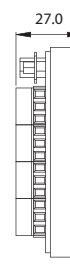
Rear View



Bottom View

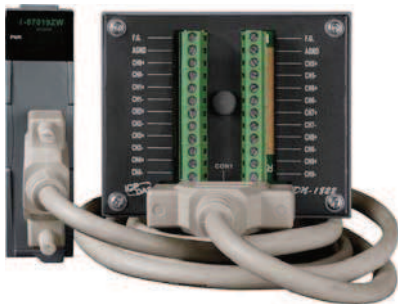


Left Side View



Right Side View

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

CD-2518D	25F-25M 1.8 m Cable with DIN-Rail Mounting for the DB-1820 (RoHS)
	
CD-2518D = 25F-25M 1.8 m Cable + DIN-Rail Mounting	
	
I-87019ZW-G/S CR + CD-2518D	

Accessories

	SG-770 CR	7 channel differential or 14 channel single-ended surge protector (RoHS)
	SG-3000 series	Signal Conditioning Modules for Thermocouple, RTD, DC Voltage, DC Current and Power Inputs