



Analog Input



I-87018ZW

10-channel Thermocouple Input Module with High Overvoltage Protection

Introduction

The "Z" version is another milestone in the development of I-87018 and a testament to excellence by ICP DAS R&D team. I-87018ZW is specifically designed for extremely accurate thermocouple measurement. It features automatic compensation for each channel. Current input and voltage input are supported. Another feature is that ten of its input channels can individually be configured with different kinds of analog input. I-87018ZW also got open thermocouple detection and many protection mechanisms.

Applications

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

System Specifications

Communication	
Interface	RS-485
Format	N, 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)	±4 kV Contact for each Terminal ±8 kV Air for Random Point
Power	
Power Consumption	1.3 W
Mechanical	
Dimensions (L × W × H)	I-87018ZW 114 mm × 30.5 mm × 86 mm
	DB-1820 78 mm × 65 mm × 22 mm
	DN-1822 96 mm × 103 mm × 27 mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing
DB-1820	
Wire strip length	4 ~ 5 mm
Wire Range	16 ~ 24 AWG

Features

- Current Input, Voltage Input and Thermocouple Input
- 240 Vrms Overvoltage Protection
- Individual Channel Configuration
- Open Thermocouple Detection
- Temperature outputs consistency
- Stable temperature output in the field
- 4 kV ESD Protection
- 3000 VDC Intra-module Isolation
- 3750 Vrms Photo Isolation
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C



I/O Specifications

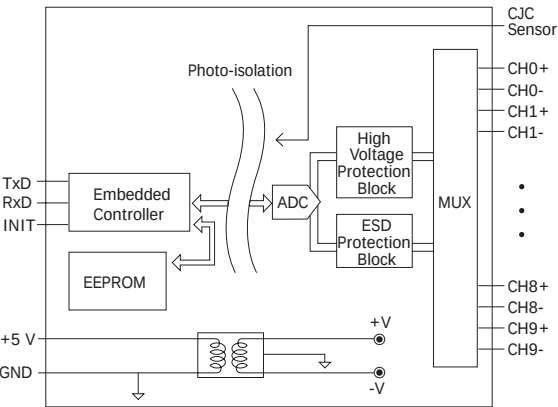
Analog Input	
Channels	10
Wiring	Differential
Sensor Type	±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 VDC, ±2.5 VDC
	±20 mA, 0 ~ +20 mA, +4 ~ +20 mA (Requires Optional External 125 Ω Resistor)
Temperature outputs consistency	Thermocouple (J, K, T, E, R, S, B, N, C, L, M, L-DIN43710)
	Yes
Stable Temperature Output in the Field	Yes
Resolution	16-bit
Accuracy	±0.1% of FSR
Sampling Rate	10 Hz (Total)
-3dB Bandwidth	15.7 Hz
Zero Drift	±0.5 μV/°C
Span Drift	±25 ppm/°C
Common Mode Rejection	150 dB
Normal Mode Rejection	100 dB
Input Impedance	>400 kΩ
Individual Channel Configuration	Yes
Open Wire Detection	Yes
Overvoltage Protection	240 Vrms

Thermocouple type

Type	Temperature Range
J	-210 to +760°C
K	-270 to +1372°C
T	-270 to +400°C
E	-270 to +1000°C
R	0 to +1768°C
S	0 to +1768°C
B	0 to +1820°C
N	-270 to 1300°C
C	0 to +2320°C
L	-200 to +800°C
M	-200 to +100°C
L-DIN43710	-200 to +900°C

I-87018ZW

Internal I/O Structure



Wire Connections

Voltage Input Wiring

Current Input Wiring

Note: When connecting to a current source, an optional external 125 Ω resistor is required.

Thermocouple Input Wiring

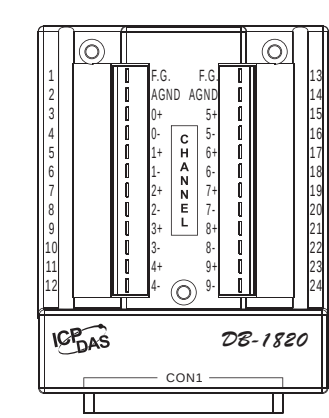
Pin Assignments

I-87018ZW

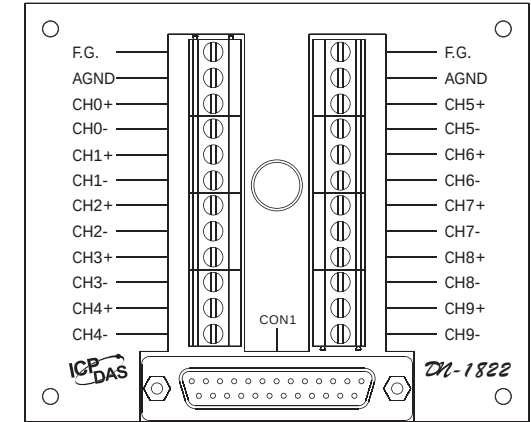
Pin Assignment	Terminal	No.	Pin Assignment
+5V	01	14	AGND
CJC	02	15	CH 0+
CH 0-	03	16	CH 1+
CH 1-	04	17	CH 2+
CH 2-	05	18	CH 3+
CH 3-	06	19	CH 4+
CH 4-	07	20	CH 5+
CH 5-	08	21	CH 6+
CH 6-	09	22	CH 7+
CH 7-	10	23	CH 8+
CH 8-	11	24	CH 9+
CH 9-	12	25	N.C.
N.C.	13	Shield	F.G.

25-pin Female D-Sub Connector

DB-1820



DN-1822



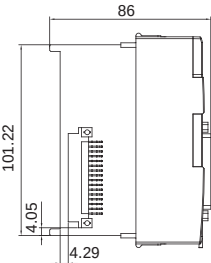
I-87018ZW



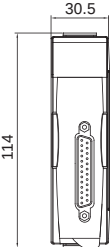
I-87KW Series

■ Dimensions (Units: mm)

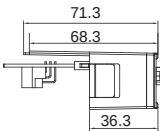
I-87018ZW



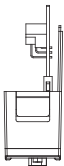
Left Side View



Front View

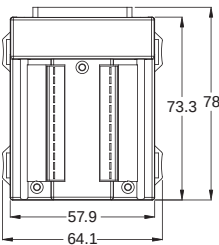


Top View

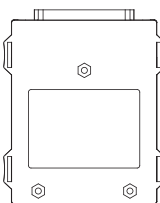


Top View

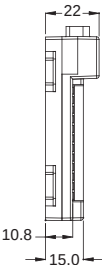
DB-1820



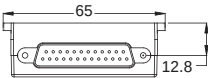
Front View



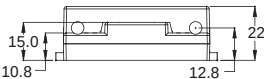
Rear View



Left Side View

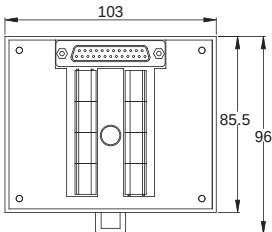


Top View

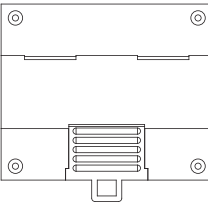


Bottom View

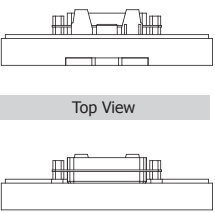
DN-1822



Front View



Rear View



Bottom View



Left Side View



Right Side View

I-87018ZW

Ordering Information

I-87018ZW-G/S CR	10-channel Thermocouple Input Module (Gray Cover) (RoHS) Include I-87018Z Module and DB-1820 Daughter Board
I-87018ZW-G/S2 CR	10-channel Thermocouple Input Module (Gray Cover) (RoHS) Include I-87018Z Module ,DN-1822 Daughter Board and 1.8 m Cable
	
I-87018ZW-G/S CR = I-87018ZW Connects DB-1820 Directly	I-87018ZW-G/S2 CR = I-87018ZW 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-87018ZW-G/S CR + CD-2518D

Accessories

 125Ω, 0.1% DIP Resistors	Resistor used for Current Type I-87017/I-87018 Series Modules
 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 Input

I-87018ZW