I-87019PW-G

8-channel Universal Analog Input Module with High Overvoltage Protection

Introduction

The I-87019PW is a 8-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-87019PW also supports voltage and current inputs. The voltage input range can be form ±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 Vrms 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

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 Indictors		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-87019PW	114 mm × 30 mm × 86 mm
	CN-1824	83 mm × 29 mm × 43 mm
Environment		
Operating Temperature		-25 to +75°C
Storage Temperature		-40 to +85°C
Humidity		10 to 95% RH, Non-condensing

Features

- 8-channel Analog Input
- Individual Channel Configuration
- Open Thermocouple Detection
- Temperature Output Consistency
- Stable Temperature Output in the Field
- 240 Vrms Overvoltage Protection
- Jumper Selectable Voltage or Current Input
- 4 kV ESD Protection
- Dual Watchdog
- 3000 VDC Intra-module Isolation, Field-to-Logic
- RoHS Compliant
- Wide Operating Temperature Range: -25 to +75°C

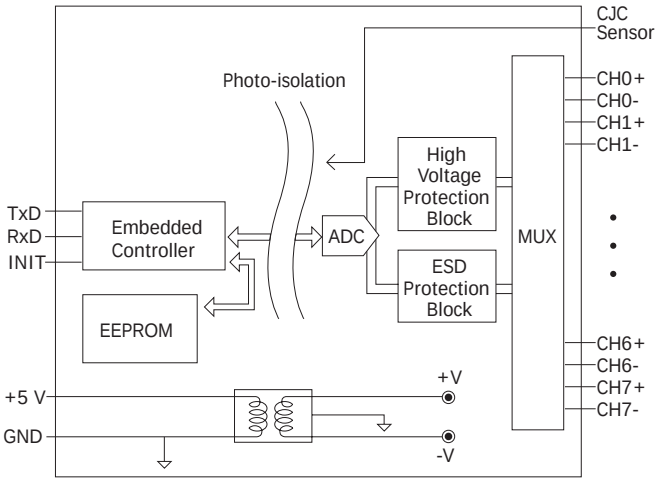
I/O Specifications

Analog Input	
Channels	8
Wiring	Differential
Sensor Type	±15 mV, ±50 mV, ±100 mV, ±150 mV, ±500 mV, ±1 VDC , ±2.5 VDC , ±5 VDC ,±10 VDC
	-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 LDIN43710)
Resolution	16-bit
Accuracy	±0.1% of FSR
Sampling Rate	10 Hz (Total)
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
Open Wire Detection	Yes, (Software Selectable)
Overvoltage Protection	240 Vrms
Common Voltage Protection	±200 VDC
Overcurrent Protection	Yes, 50 mA at 110 VDC
Virtual Channel to Channel Isolation	Yes, 400 VDC

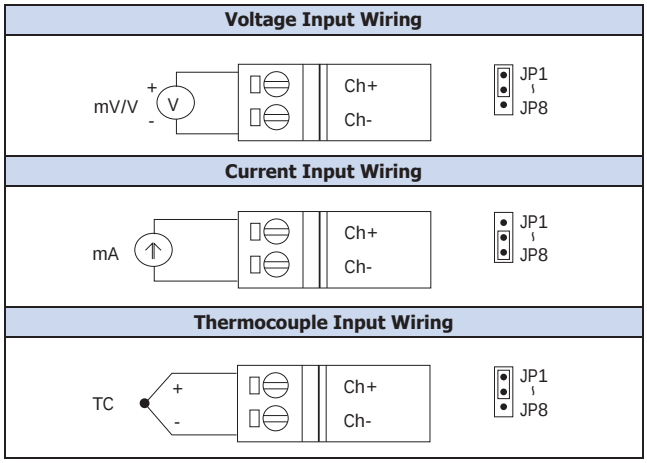
Thermocouple Type

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

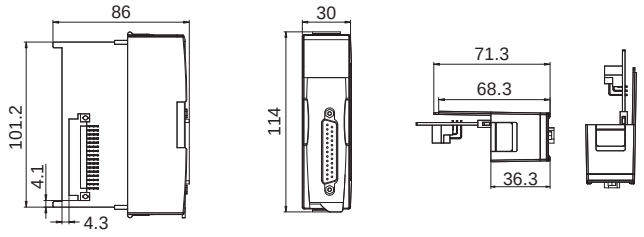


Wire Connections



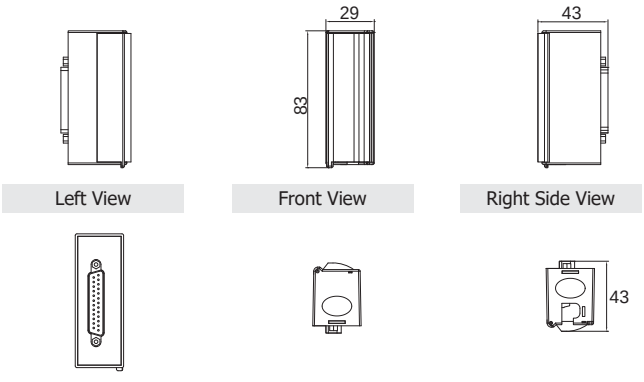
Dimensions (Units: mm)

I-87019PW



Left View | Front View | Top View

CN-1824

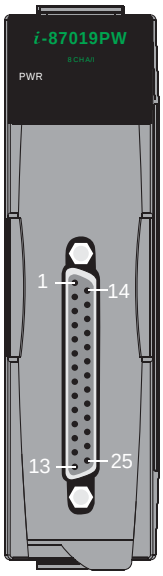


Left View | Front View | Right Side View

Rear View | Bottom View | Top View

Pin Assignments

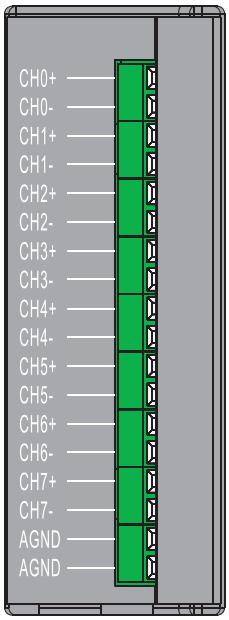
I-87019PW



Pin Assignment	Terminal No.		Pin Assignment
+5 V	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	N.C.
N.C.	11	24	N.C.
N.C.	12	25	N.C.
N.C.	13	Shield	F.G.

25-pin Female D-Sub Connector

CN-1824



Pin Assignment Name
CH 0+
CH 0-
CH 1+
CH 1-
CH 2+
CH 2-
CH 3+
CH 3-
CH 4+
CH 4-
CH 5+
CH 5-
CH 6+
CH 6-
CH 7+
CH 7-
AGND
AGND

Ordering Information

I-87019PW-G CR	8-channel Universal Analog Input Module (Gray Cover) (RoHS) Includes the I-87019PW Module and a CN-1824 Daughter Board.

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 Input