



Analog Input

2

RS-485 Remote I/O Modules



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 $+4 \sim +20$ 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 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 (W x L x H)	I-87019PW 30 mm x 86 mm x 114 mm CN-1824 29 mm x 43 mm x 83 mm
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +85°C
Humidity	10 ~ 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 V_{rms} 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 ~ +75°C



Applications

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

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 $\sim +20$ 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 L _{DIN43710})
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

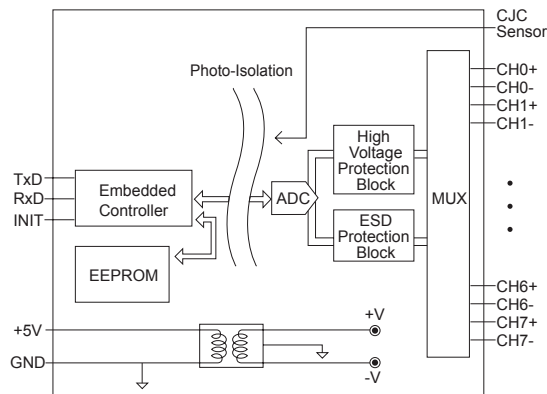
Type Code	Type	Temperature Range°C
0E	J	-210 ~ +760
0F	K	-270 ~ +1372
10	T	-270 ~ +400
11	E	-270 ~ +1000
12	R	0 ~ +1768
13	S	0 ~ +1768
14	B	0 ~ +1820
15	N	-270 ~ +1300
16	C	0 ~ +2320
17	L	-200 ~ +800
18	M	-200 ~ +100
19	L _{DIN43710}	-200 ~ +900

1

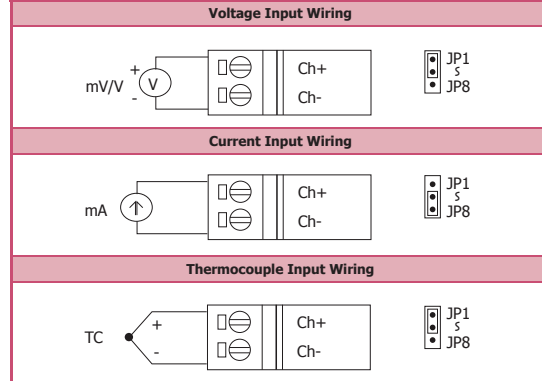
I-87KW Series

I-87019PW

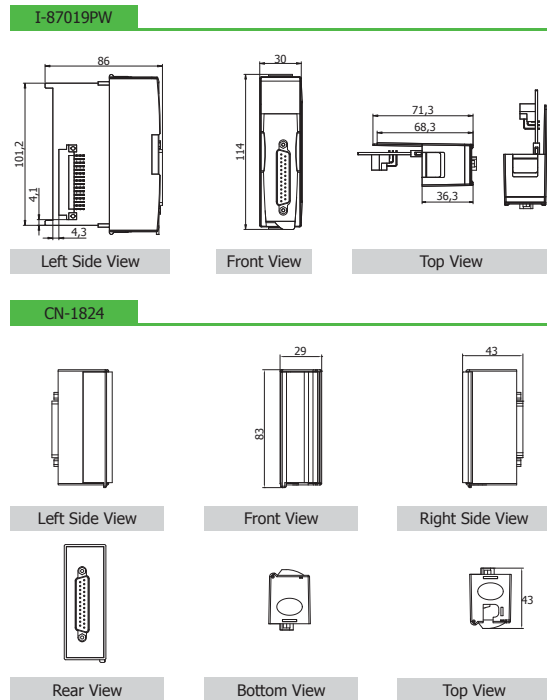
Internal I/O Structure



Wire Connections



Dimensions (Units: mm)



Pin Assignments

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	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

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 Inputs

2 RS-485 Remote I/O Modules

1 I-87KW Series

I-87019PW