I-87018PW

8-channel Thermocouple Input Module with
High Overvoltage Protection

Features

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

Introduction

The I-87018PW is an 8-channel thermocouple input module. The analog input range is software selectable and supports +/-15 mV, +/-100 mV, +/-500 mV, +/-1 V, +/-2.5 V, 0 ~ +20 mA, +4 ~ +20 mA or +/-20 mA, and thermocouples of type J, K, T, E, R, S, B, N, C, L, M, and $L_{DIN43710}$. It features automatic cold-junction compensation for each channel, and supports open thermocouple detection.

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 ~ 115200 bps
Protocol		DCON
Dual Watchdog		Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display		
System LED Indicator		1 LED as Power/Communication Indicator
I/O LED Indicator		16 LEDs as High/Low Alarm Signals
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		0.7 W
Mechanical		
Dimensions (W x L x H)	I-87018PW	30 mm x 85 mm x 115 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

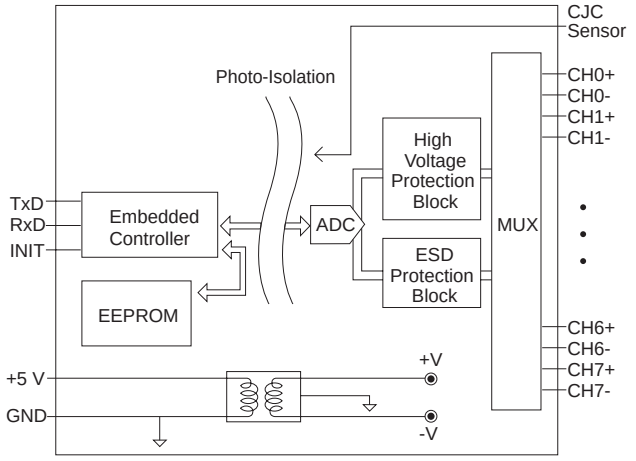
I/O Specifications

Analog Input	
Channels	8
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)
	Thermocouple Type: (J, K, T, E, R, S, B, N, C, L, M, and $L_{DIN43710}$)
Temperature Output Consistency	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 Configurable	Yes
Open Wire Detection	Yes
Overvoltage Protection	240 Vrms
CN-1824	
Wire Strip Length	4 ~ 5 mm
Wire Range	16 ~ 24 AWG

Thermocouple type

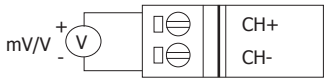
Type	Range°C
J	-210 ~ +760
K	-270 ~ +1372
T	-270 ~ +400
E	-270 ~ +1000
R	0 ~ +1768
S	0 ~ +1768
B	0 ~ +1820
N	-270 ~ 1300
C	0 ~ 2320
L	-200 ~ +800
M	-200 ~ +100
$L_{DIN43710}$	-200 ~ +900

Internal I/O Structure

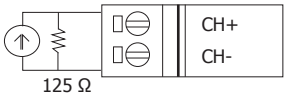


Wire Connections

Voltage Input Wiring

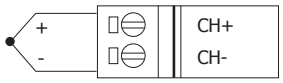


Current Input Wiring



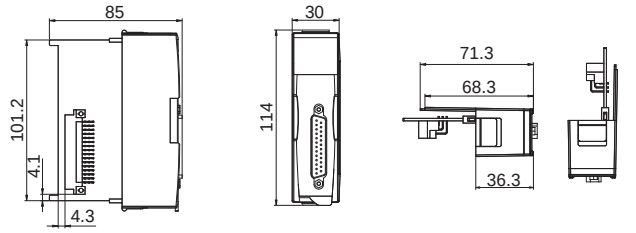
Note: When connecting to a current source, an optional external 125 Ω resistor is required.

Thermocouple Input Wiring



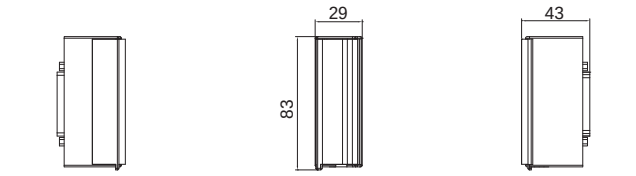
Dimensions (Units: mm)

I-87018PW

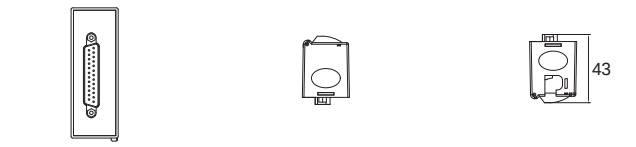


Left Side View | Front View | Top View

CN-1824



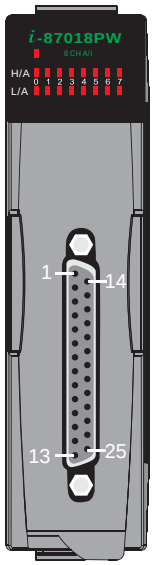
Left Side View | Front View | Right Side View



Rear View | Bottom View | Top View

Pin Assignments

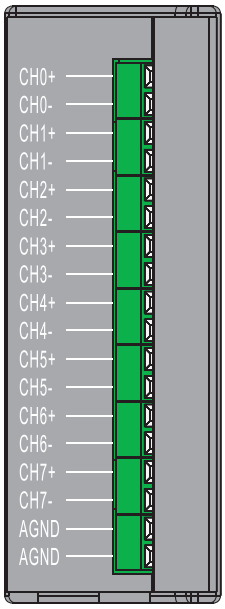
I-87018PW



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

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-87018PW-G CR	8-channel Thermocouple Input Module (Gray Cover) (RoHS). Includes the I-87018PW Module and a CN-1824 Daughter Board.

Accessories

 125Ω, 0.1% DIP Resistors	use for current type of I-87017/I-87018 series
 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