



I-87018PW

8-channel Thermocouple Input Module with High Overvoltage Protection

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, $0 \sim +20$ mA, $+4 \sim +20$ mA or ± 20 mA, and thermocouples of type J, K, T, E, R, S, B, N, C, L, M, and LDIN43710. 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 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	16 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 (L x W x H)	I-87018PW 114 mm x 30 mm x 85 mm CN-1824 83 mm x 29 mm x 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 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 to +75°C



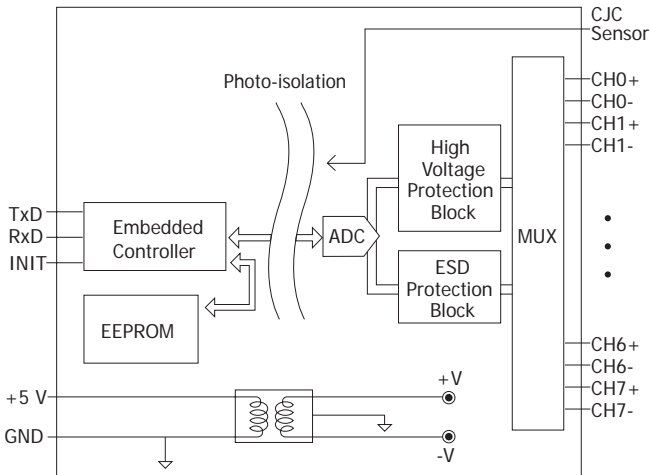
I/O Specifications

Analog Input	
Channels	8
Wiring	Differential
Sensor Type	± 15 mV, ± 50 mV, ± 100 mV, ± 500 mV, ± 1 VDC, ± 2.5 VDC ± 20 mA, $0 \sim +20$ mA, $+4 \sim +20$ mA (Requires Optional External 125 Ω Resistor) Thermocouple Type: (J, K, T, E, R, S, B, N, C, L, M, and LDIN43710)
Temperature Output Consistency	Yes
Stable Temperature Output in the Field	Yes
Resolution	16-bit
Accuracy	$\pm 0.1\%$ of FSR
Sampling Rate	10 Hz (Total)
-3dB Bandwidth	15.7 Hz
Zero Drift	± 0.5 μ V/ $^{\circ}$ C
Span Drift	± 25 ppm/ $^{\circ}$ C
Common Mode Rejection	150 dB
Normal Mode Rejection	100 dB
Input Impedance	>400 k Ω
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	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
LDIN43710	-200 to +900°C

Internal I/O Structure



Wire Connections

Voltage Input Wiring

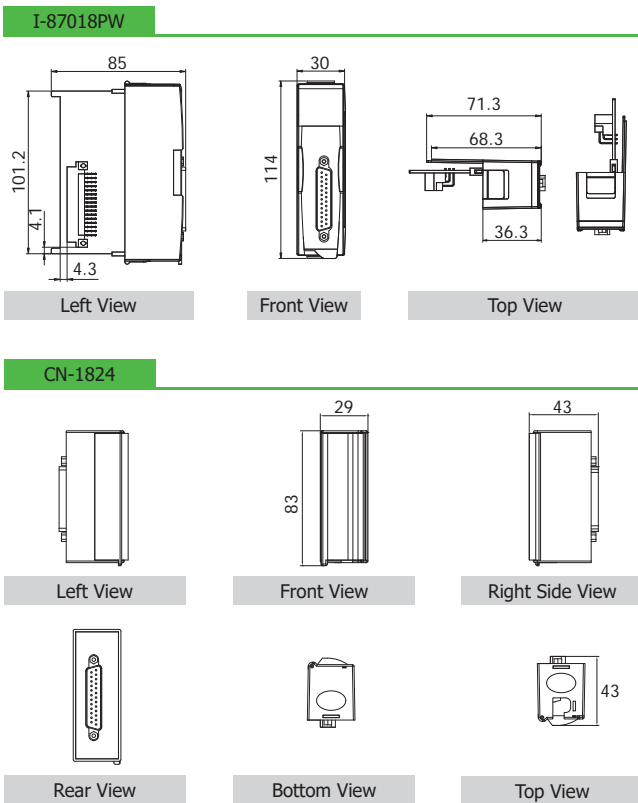
Current Input Wiring

125 Ω

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

Thermocouple Input Wiring

Dimensions (Units: mm)



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	Pin Assignment Name
CH0+	CH 0+
CH0-	CH 0-
CH1+	CH 1+
CH1-	CH 1-
CH2+	CH 2+
CH2-	CH 2-
CH3+	CH 3+
CH3-	CH 3-
CH4+	CH 4+
CH4-	CH 4-
CH5+	CH 5+
CH5-	CH 5-
CH6+	CH 6+
CH6-	CH 6-
CH7+	CH 7+
CH7-	CH 7-
AGND	AGND
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.
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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