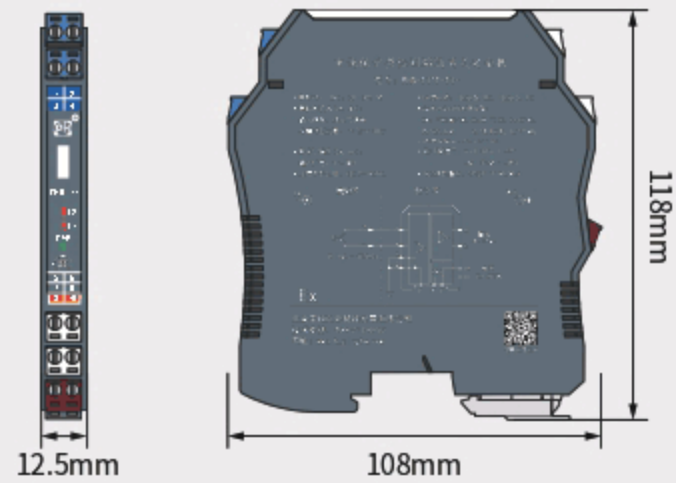


TC input isolated safety barrier

PHD-11TT-*1+
PHD-12TT-*11+

1 input 1 output
1 input 2 outputs

Input : TC signal
Output : 4~20mA



Overview

Thermocouple input isolation safety barrier with surge protection function can isolate and convert thermocouple (TC) signals in hazardous areas into 4-20mA current signals, and output them to the safety zone. This safety barrier has built-in cold end compensation and can be intelligently configured. The actual range of the thermocouple can be set through computer software. It has the functions of wire breakage alarm and out of range alarm.

This product requires independent power supply, with isolated power supply, input, and output terminals.

"*" represents the input type of the thermocouple, and the specific model is represented by a code (see "Input Signal Type and Range Table" for details).

Specifications

Input in hazardous area:

Input signal: K, S, E, J, B, T, R, N thermocouple signals (see "Input Signal Type and Range Table" for details)

Input disconnection: The default "low alarm" can be modified to "high alarm" through configuration software

Signal range: The measuring range of the corresponding thermocouple is -10~100mV

Measurement range: Users make their own configuration when ordering, and indicate it at the tail number or otherwise

Built-in cold compensation: $\pm 1^{\circ}\text{C}$ (Compensation range $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$)

Safety side output:

Output signal: 4~20mA

Output load capacity: 0~500 Ω (customizable)

Surge protection features:

Nominal discharge current $I_n(8/20\mu\text{s})$: 5kA

Voltage protection level $U_p(8/20\mu\text{s})$: 60V (line to line)

Voltage protection level $U_p(8/20\mu\text{s})$: 600V (line to ground)

According to standards: GB/T 18802.21-2016
(equivalent to IEC 61643-21:2012)

Basic parameters:

Supply voltage: 20~35V DC

Power consumption: When 24V power supply, 20mA output
 $\leq 40\text{mA}$ (PHD-11TT-*1+)
 $\leq 70\text{mA}$ (PHD-12TT-*11+)

LED indicator: Green: Power indicator

Low range alarm L1 light on, high range alarm L2 light on

Output accuracy: Please refer to the "Input Signal Type and Range Table" for details

Response time: Reaching 90% of the final value within 500ms

Temperature drift: 0.005% F.S./ $^{\circ}\text{C}$

Temperature parameters: Working temperature: $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$
storage temperature: $-40^{\circ}\text{C} \sim +80^{\circ}\text{C}$

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq 3000\text{VAC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{VAC/min}$)

Insulation resistance: $\geq 100\text{M}\Omega$ (between input/output/power supply)

EMC: According to IEC 61326-1 (GB/T 18268), IEC 61326-3-1

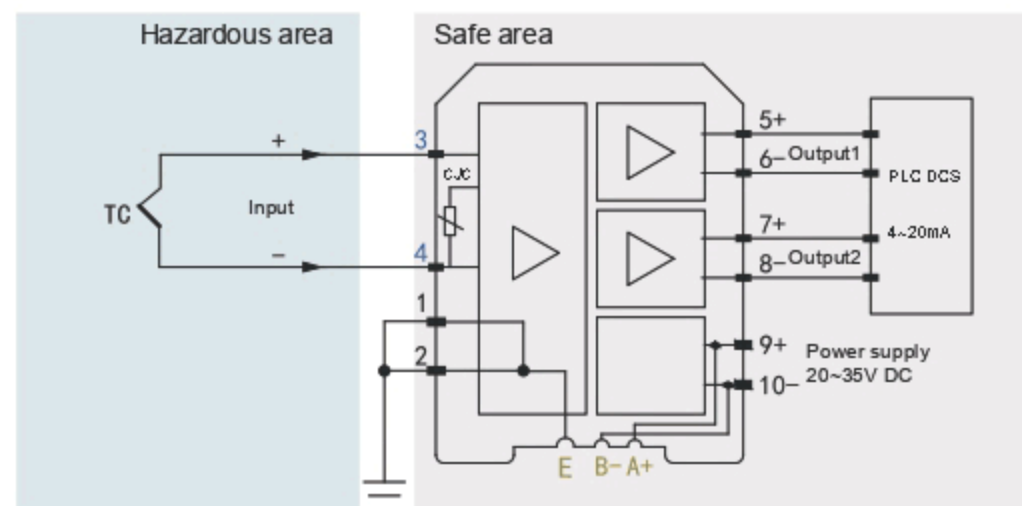
MTBF: 100000h

Wire requirements: Horizontal cutting surface $\geq 0.5\text{mm}^2$
Insulation strength $\geq 500\text{V}$

Applicable field equipments: K, S, E, J, B, T, R, N TC sensors

Installation place: Installed in a safe zone, it can be connected to intrinsic safety instruments in hazardous areas up to Zone 0, IIC, Zone 20, and IIIC

Connection wiring



Note: 1. PHD-11TT - * 1+ does not include output part 2

2. The power rail function is an optional function, and users need to specify the power supply method when placing an order

The selection of power rail connectors can refer to page 89 of the "Annex"

Input signal type and range table

Code	Model	Measurement range	Minimum range	Conversion accuracy
1	K	-200~1370 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	0.5 $^{\circ}\text{C}/0.1\%$
2	S	-50~1760 $^{\circ}\text{C}$	500 $^{\circ}\text{C}$	1.5 $^{\circ}\text{C}/0.1\%$
3	E	-140~1000 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	0.5 $^{\circ}\text{C}/0.1\%$
4	J	-160~1200 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	0.5 $^{\circ}\text{C}/0.1\%$
5	B	250~1800 $^{\circ}\text{C}$	500 $^{\circ}\text{C}$	1.5 $^{\circ}\text{C}/0.1\%$
6	T	-200~400 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	0.5 $^{\circ}\text{C}/0.1\%$
7	R	-50~1760 $^{\circ}\text{C}$	500 $^{\circ}\text{C}$	1.5 $^{\circ}\text{C}/0.1\%$
8	N	-200~1300 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	0.5 $^{\circ}\text{C}/0.1\%$

Intrinsically safe certification

Explosion proof mark: [Ex ia Ga] IIC [Ex ia Da] IIIC

Explosion-proof standard: GB/T 3836.1-2021 GB/T 3836.4-2021

Terminals 3-4: U_m : 250V AC/DC U_o : 8.4V DC I_o : 31mA

P_o : 65.1mW C_o : 4.8 μF L_o : 20mH

Certification body: CQST (China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)
Shanghai lightning protection products testing center

Information maybe revised without prior notice

