



北京平和
Bei Jing Ping He



T series product catalogue

Isolated Safety Barriers
Signal Isolator



25.02d



ABOUT BEIJING PINGHE

BeiJing Pinghe Chuangye Technology Development Co.Ltd, was founded in January 2004, is a national high-tech enterprise dedicated to R&D, production and sales of signal interface modules. Our products such as isolated safety barriers, signal isolators and safety relays etc. are widely used in nuclear power, aerospace, petrochemical, metallurgical, energy and environmental protection, shipbuilding, biomedicine industries; So far, more than 8 million pieces run stable in domestic and foreign markets out excellent quality and outstanding service have been highly recognized and praised by a vast number of partners.



PCB planar transformer

Safety isolation withstand voltage more 3000V

Anti-surge function

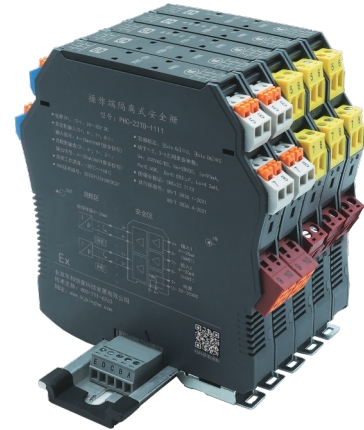
I_{max}: 10kA(8/20μs)/line

Power bus supply

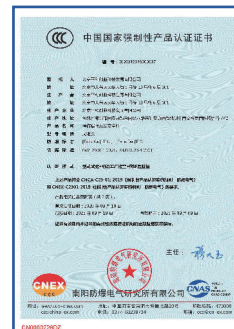
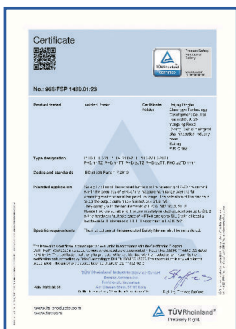
Save time on montage and power connection

HART® or ModBus-RTU® transmission

Isolated safety barrier with analog input-output and digital signal output, based on RS-485 and ModBus-RTU bus protocol transmits HART signal without loss



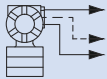
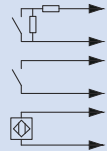
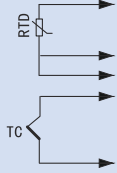
- National High-Tech Enterprise
- Zhongguancun High-Tech Enterprise
- Beijing "Specialized" Small and Medium-sized enterprise
- Beijing new technology and new products(service) certificate
- China pharmaceutical equipment industry association member
- National supervision and inspection of product quality stable and qualified enterprises
- Member of China Instrument Society
- Member of China Instrument Society
- TÜV functional safety certification
- ATEX ex-proof certification
- IECEx ex-proof quality management system certification
- EU CE certification
- Electromagnetic compatibility certification by FCC
- ISO 9001、ISO 14001、ISO 45001 management system certification
- National ex-proof electrical product certification
- Explosion-proof products CCC mandatory certification



Information maybe revised without prior notice

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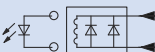
Isolated Safety Barrier at Detection Side

Field instruments	Type	Model	Dangerous side input signal	Safety side output signal	Number of channels	Page
	AI	PHD-11TD-21	2 or 3-wire transmitter or current source	Active 4~20mA	1 input and 1 output	9
		PHD-11TD-21.2	2 or 3-wire transmitter or current source	Active or passive 4~20mA	1 input and 1 output	9
		PHD-12TD-211	2 or 3-wire transmitter or current source	Active 4~20mA	1 input and 2 outputs	10
		PHD-12TD-211.2	2 or 3-wire transmitter or current source	Passive 4~20mA	1 input and 2 outputs	10
		PHD-22TD-2121	2 or 3-wire transmitter or current source	Active 4~20mA	2 inputs and 2 outputs	11
		PHD-22TD-2121.2	2 or 3-wire transmitter or current source	Active or passive 4~20mA	2 inputs and 2 outputs	11
	DI	PHD-11TF-27	Contact and NAMUR proximity switch	Relay +alarm(optional)	1 input and 1 output	12
		PHD-12TF-277	Contact and NAMUR proximity switch	Relay	1 input and 2 outputs	13
		PHD-22TF-2727	Contact and NAMUR proximity switch	Relay	2 inputs and 2 outputs	13
		PHD-44TF-27	Contact and NAMUR proximity switch	Relay	4 inputs and 4 outputs	14
		PHD-11TF-28	Contact and NAMUR proximity switch	Transistor +alarm(optional)	1 input and 1 output	15
		PHD-12TF-288	Contact and NAMUR proximity switch	Transistor	1 input and 2 outputs	16
		PHD-22TF-2828	Contact and NAMUR proximity switch	Transistor	2 inputs and 2 outputs	16
		PHD-11TF-29	Contact and NAMUR proximity switch	Transistor(resistor)	1 input and 1 output	17
		PHD-12TF-299	Contact and NAMUR proximity switch	Transistor(resistor)	1 input and 2 outputs	18
	RTD, TC	PHD-11TZ-*1	RTD	4~20mA	1 input and 1 output	19
		PHD-12TZ-*11	RTD	4~20mA	1 input and 2 outputs	19
		PHD-11TZ-46	RTD Pt100	RTD 1:1	1 input and 1 output	20
		PHD-12TZ-466	RTD Pt100	RTD 1:1	1 input and 2 outputs	21
		PHD-12TZ-461	RTD Pt100	RTD 1:1 and 4~20mA	1 input and 2 outputs	23
		PHD-22TZ-*1*1	RTD	4~20mA	2 inputs and 2 outputs	23
		PHD-11TT-*1	TC	4~20mA	1 input and 1 output	24
		PHD-12TT-*11	TC	4~20mA	1 input and 2 outputs	24
		PHD-11TT-*8	TC	TC 1:1	1 input and 1 output	25
		PHD-22TT-*1*1	TC	4~20mA	2 inputs and 2 outputs	26
	RS-485/232	PHD-11TC-11	RS-232	RS-232	1 input and 1 output	27
		PHD-11TC-22	RS-485 full-duplex	RS-485 full-duplex	1 input and 1 output	28
		PHD-11TC-33*	RS-485 half-duplex	RS-485 half-duplex	1 input and 1 output	29
		PHD-11TC-33M	RS-485 half-duplex	RS-485 half-duplex	1 input and 1 output	30
		PHD-11TC-13M	RS-232	RS-485 half-duplex	1 input and 1 output	31
		PHD-11TC-31M	RS-485 half-duplex	RS-232	1 input and 1 output	32
	PI	PHD-11TP-1*	Frequency signal	DC signal	1 input and 1 output	33
		PHD-12TP-1**	Frequency signal	DC signal	1 input and 2 outputs	33
		PHD-11TP-1*M	Frequency signal	DC signal+alarm	1 input and 1 output	34
		PHD-12TP-1**M	Frequency signal	DC signal+alarm	1 input and 2 outputs	34
		PHD-11TP-13	Frequency signal, Provided power 12V	Frequency 1:1	1 input and 1 output	35
		PHD-11TP-23	Frequency signal, Provided power 24V	Frequency 1:1	1 input and 1 output	35
		PHD-22TP-1313	Frequency signal, Provided power 12V	Frequency 1:1	2 inputs and 2 outputs	36
		PHD-22TP-2323	Frequency signal, Provided power 24V	Frequency 1:1	2 inputs and 2 outputs	36
	VTI	PHD-11TM-11	-20V~-0.5V	-20V~-0.5V	1 input and 1 output	37
		PHD-11TM-21	-10V~+10V	-10V~+10V	1 input and 1 output	38

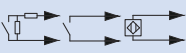
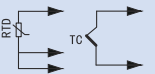
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Field instruments	Type	Model	Dangerous side input signal	Safety side output signal	Number of channels	Page
	FDI	PHD-11TN-11	0~40mA	0~40mA	1 input and 1 output	39
		PHD-22TN-1111	0~40mA	0~40mA	2 inputs and 2 outputs	39

Isolated Safety Barrier at Operating Side

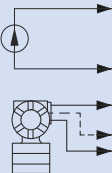
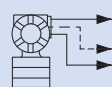
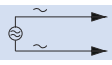
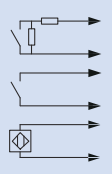
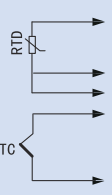
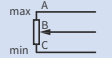
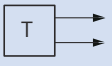
Field instruments	Type	Model	Dangerous side input signal	Safety side output signal	Number of channels	Page
	AO	PHC-11TD-11	4~20mA(HART digital signal)	4~20mA(HART digital signal)	1 input and 1 output	40
		PHC-12TD-111	4~20mA(HART digital signal)	4~20mA(HART digital signal)	1 input and 2 outputs	40
		PHC-22TD-1111	4~20mA(HART digital signal)	4~20mA(HART digital signal)	2 inputs and 2 outputs	41
	DO	PHC-11TF-13	Contact and logic level	Switch output driving 12V/35mA	1 input and 1 output	42
		PHC-11TF-14	Contact and logic level	Switch output driving 12V/45mA	1 input and 1 output	42
		PHC-11TF-16	Contact and logic level	Switch output driving 12V/60mA	1 input and 1 output	42
		PHC-11TF-33	Contact-controlled DC voltage(Loop Powered)	Switch output driving 12V/35mA	1 input and 1 output	43
		PHC-22TF-3333	Contact-controlled DC voltage(Loop Powered)	Switch output driving 12V/35mA	2 inputs and 2 outputs	43
		PHC-11TF-34	Contact-controlled DC voltage(Loop Powered)	Switch output driving 12V/45mA	1 input and 1 output	44
		PHC-22TF-3434	Contact-controlled DC voltage(Loop Powered)	Switch output driving 12V/45mA	2 inputs and 2 outputs	44
		PHC-11TF-36	Contact-controlled DC voltage(Loop Powered)	Switch output driving 12V/60mA	1 input and 1 output	45
		PHC-22TF-3636	Contact-controlled DC voltage(Loop Powered)	Switch output driving 12V/60mA	2 inputs and 2 outputs	45

Surge Protection Type Isolated Safety Barrier

Field instruments	Type	Model	Dangerous side input signal	Safety side output signal	Number of channels	Page
	AI	PHD-11TD-21+	Two or three-wire transmitter or current source (HART digital signal)	4~20mA (HART digital signal)	1 input and 1 output	46
		PHD-12TD-211+	Two or three-wire transmitter or current source (HART digital signal)	4~20mA (HART digital signal)	1 input and 2 outputs	46
	DI	PHD-11TF-27+	Contact and NAMUR proximity switch	Relay+alarm(optional)	1 input and 1 output	47
		PHD-12TF-277+	Contact and NAMUR proximity switch	Relay	1 input and 2 outputs	48
		PHD-11TF-28+	Contact and NAMUR proximity switch	Transistor+alarm(optional)	1 input and 1 output	49
		PHD-12TF-288+	Contact and NAMUR proximity switch	Transistor	1 input and 2 outputs	50
	RTD、TC	PHD-11TZ-*1+	RTD	4~20mA	1 input and 1 output	51
		PHD-12TZ-*11+	RTD	4~20mA	1 input and 2 outputs	51
		PHD-11TZ-46+	RTD Pt100	RTD 1:1	1 input and 1 output	52
		PHD-12TZ-466+	RTD Pt100	RTD 1:1	1 input and 2 outputs	53
		PHD-11TT-*1+	TC	4~20mA	1 input and 1 output	54
		PHD-12TT-*11+	TC	4~20mA	1 input and 2 outputs	54
		PHD-11TT-*8+	TC	TC 1:1	1 input and 1 output	55
	RS-485/232	PHD-11TC-33+	RS-485 half-duplex	RS-485 half-duplex	1 input and 1 output	56
	AO	PHC-11TD-11+	4~20mA(HART digital signal)	4~20mA(HART digital signal)	1 input and 1 output	57

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Signal Isolator

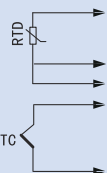
Field instruments	Type	Model	Input signal	Output signal	Number of channels	Page
	AO	PHG-11TD-11-C	4~20mA(HART digital signal)	4~20mA(HART digital signal)	1 input and 1 output	58
		PHG-12TD-111-C	4~20mA(HART digital signal)	4~20mA(HART digital signal)	1 input and 2 outputs	58
		PHG-11TD series	DC signal	DC signal	1 input and 1 output	59
		PHG-12TD series	DC signal	DC signal	1 input and 2 outputs	59
		PHG-22TD series	DC signal	DC signal	2 inputs and 2 outputs	60
		PHG-33TD series	DC signal	DC signal	3 inputs and 3 outputs	61
		PHG-13TD series	2 or 3-wire transmitter 4~20mA or DC signal	DC signal	1 input and 3 outputs	62
		PHG-14TD series	2 or 3-wire transmitter 4~20mA or DC signal	DC signal	1 input and 4 outputs	62
		PHG-11TE series	2 or 3-wire transmitter or current source 4~20mA	DC signal	1 input and 1 output	63
		PHG-12TE series	2 or 3-wire transmitter or current source 4~20mA	DC signal	1 input and 2 outputs	63
		PHG-22TE series	2 or 3-wire transmitter or current source 4~20mA	DC signal	2 inputs and 2 outputs	64
		PHG-11ND-11	4~20mA	4~20mA	1 input and 1 output	65
		PHG-22ND-1111	4~20mA	4~20mA	2 inputs and 2 outputs	65
		PHG-11ND-12	4~20mA	2 wire 4~20mA	1 input and 1 output	66
		PHG-22ND-1212	4~20mA	2 wire 4~20mA	2 inputs and 2 outputs	66
		PHG-11NE-52	2 wire transmitter	2 wire 4~20mA	1 input and 1 output	67
		PHG-22NE-5252	2 wire transmitter	2 wire 4~20mA	2 inputs and 2 outputs	67
	AC	PHG-11TA series	AC signal	DC signal	1 input and 1 output	68
		PHG-12TA series	AC signal	DC signal	1 input and 2 outputs	68
	DI	PHG-11TF-27	Contact and NAMUR proximity switch	Relay+alarm(optional)	1 input and 1 output	69
		PHG-12TF-277	Contact and NAMUR proximity switch	Relay	1 input and 2 outputs	70
		PHG-22TF-2727	Contact and NAMUR proximity switch	Relay	2 inputs and 2 outputs	70
		PHG-11TF-28	Contact and NAMUR proximity switch	Transistor+alarm(optional)	1 input and 1 output	71
		PHG-12TF-288	Contact and NAMUR proximity switch	Transistor	1 input and 2 outputs	72
		PHG-22TF-2828	Contact and NAMUR proximity switch	Transistor	2 inputs and 2 outputs	72
	RTD、TC	PHG-11TZ series	RTD	DC signal	1 input and 1 output	73
		PHG-12TZ series	RTD	DC signal	1 input and 2 outputs	73
		PHG-22TZ series	RTD	DC signal	2 inputs and 2 outputs	74
		PHG-11TZ-46	RTD Pt100	RTD 1:1	1 input and 1 output	75
		PHG-12TZ-466	RTD Pt100	RTD 1:1	1 input and 2 outputs	76
		PHG-12TZ-461	RTD Pt100	RTD 1:1 and 4~20mA	1 input and 2 outputs	77
		PHG-11TT series	TC	DC signal	1 input and 1 output	78
		PHG-12TT series	TC	DC signal	1 input and 2 outputs	78
		PHG-22TT series	TC	DC signal	2 inputs and 2 outputs	79
		PHG-11TT-*8	TC	TC 1:1	1 input and 1 output	80
	POT	PHG-11TH series	Potentiometer	DC signal	1 input and 1 output	81
		PHG-12TH series	Potentiometer	DC signal	1 input and 2 outputs	81
	RS-485/232	PHG-11TC-11	RS-232	RS-232	1 input and 1 output	82
		PHG-11TC-22	RS-485 full-duplex	RS-485 full-duplex	1 input and 1 output	83
		PHG-11TC-33*	RS-485 half-duplex	RS-485 half-duplex	1 input and 1 output	84
		PHG-11TC-33M	RS-485 half-duplex	RS-485 half-duplex	1 input and 1 output	85
		PHG-11TC-13M	RS-232	RS-485 half-duplex	1 input and 1 output	86
		PHG-11TC-31M	RS-485 half-duplex	RS-232	1 input and 1 output	87

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Signal Isolator

Field instruments	Type	Model	Input signal	Output signal	Number of channels	Page
	PI	PHG-11TP series	Frequency signal	DC signal	1 input and 1 output	88
		PHG-12TP series	Frequency signal	DC signal	1 input and 2 outputs	89
		PHG-11TP-13	Frequency signal, Provided power 12V	Frequency 1:1	1 input and 1 output	90
		PHG-11TP-13	Frequency signal, Provided power 24V	Frequency 1:1	1 input and 2 outputs	91

Surge Protection Type Signal Isolators

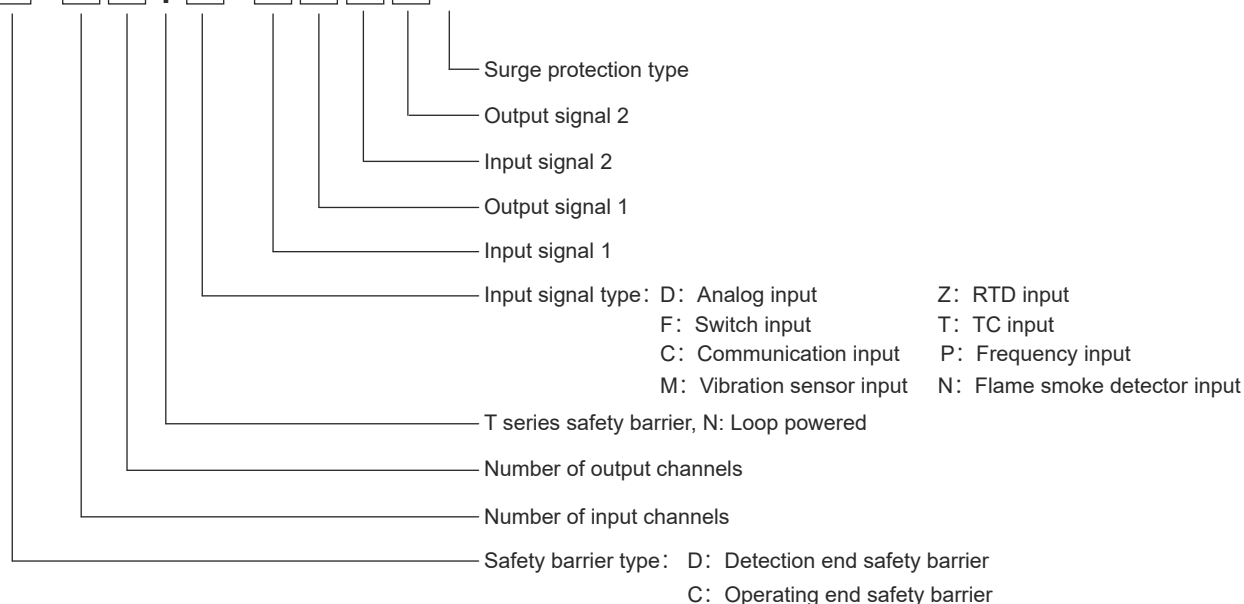
Field instruments	Type	Model	Input signal	Output signal	Number of channels	Page
	AI	PHG-11TE + series	2 or 3-wire transmitter or current source 4~20mA	DC signal	1 input and 1 output	92
		PHG-12TE + series	2 or 3-wire transmitter or current source 4~20mA	DC signal	1 input and 1 output	92
	DI	PHG-11TF-27 +	Contact and NAMUR proximity switch	Relay+alarm(optional)	1 input and 1 output	93
		PHG-12TF-277 +	Contact and NAMUR proximity switch	Relay	1 input and 2 outputs	94
		PHG-11TF-28 +	Contact and NAMUR proximity switch	Transistor+alarm(optional)	1 input and 1 output	95
		PHG-12TF-288 +	Contact and NAMUR proximity switch	Transistor	1 input and 2 outputs	96
	RTD、TC	PHG-11TZ+ series	RTD	DC signal	1 input and 1 output	97
		PHG-12TZ+ series	RTD	DC signal	1 input and 2 outputs	97
		PHG-11TZ-46 +	RTD Pt100	RTD Pt100	1 input and 1 output	98
		PHG-12TZ-466 +	RTD Pt100	RTD Pt100	1 input and 2 outputs	99
		PHG-11TT+ series	TC	DC signal	1 input and 1 output	100
		PHG-12TT+ series	TC	DC signal	1 input and 2 outputs	100
		PHG-11TT-*8 +	TC	TC 1:1	1 input and 1 output	101
	RS-485	PHG-11TC-33+	RS-485 half-duplex	RS-485 half-duplex	1 input and 1 output	102

◎ Attachment

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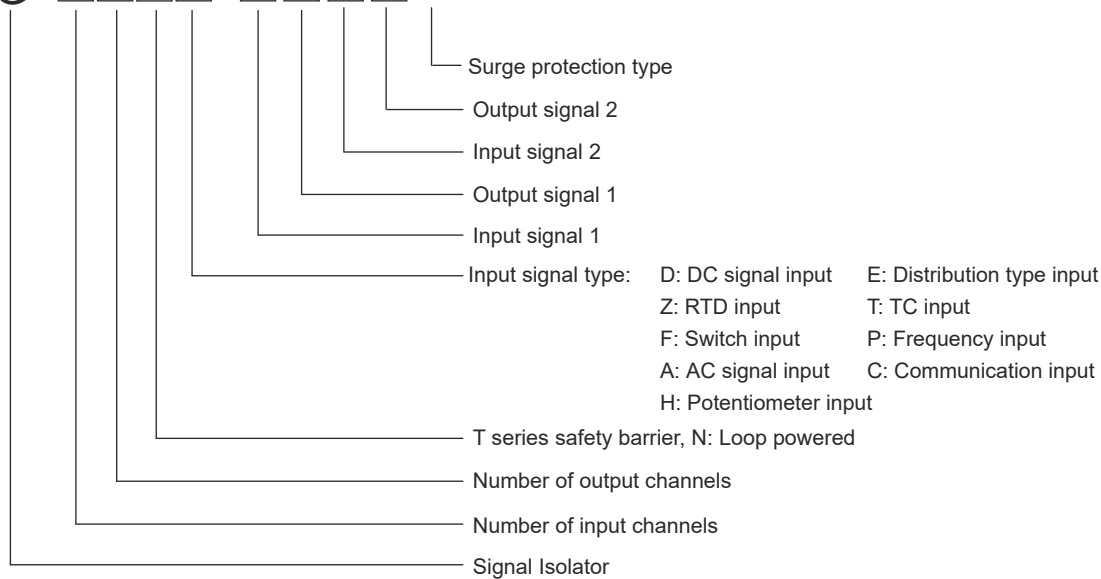
T series isolated safety barrier specifications, models and codes

PH□-□□T□-□□□□+



T series signal Isolator specifications, models and codes

PHG-□□□□-□□□□+



T series isolated safety barrier specifications, models and codes

Field instruments	Type	Input Output	Codes in models	The code represents the specific signal type
	Analog input AI	Input signal	2	Two or three-wire transmitter or current source (HART digital signal)
		Output signal	1	Active 4~20mA (HART digital signal)
			1.2	Passive 4~20mA (HART digital signal), or universal type
	Switch input DI	Input signal	2	Switch contacts, proximity switches
		Output signal	7	Relay output
			8	Transistor output
			9	Transistor output(resistance)
	RTD input	Input signal	1	G53(-50~150°C)
			2	Cu50(-50~150°C)
			4	Pt100(-200~850°C)
			6	Pt1000(-200~850°C)
			7	Ni1000(-60~250°C)
		Output signal	1	4~20mA
	TC input	Input signal	6	RTD 1:1 output
			1	K (-200~1370°C)
			2	S (-50~1760°C)
			3	E (-140~1000°C)
			4	J (-160~1200°C)
			5	B (250~1800°C)
			6	T (-200~400°C)
			7	R (-50~1760°C)
		Output signal	8	N (-200~1300°C)
			1	4~20mA
	Communication input RS485/232	Input signal	8	TC 1:1 output
			1	RS232
		Output signal	2	RS485 full duplex
			3	RS485 half duplex
			M	M: Switchable voltage
	Frequency input PI	Input signal	*	Ppower distribution A: 5V; B: 6V; C: 12V; F: 24V; H: customize
			1	Frequency quantity≤100KHz, Power distribution 12V input
		Output signal	2	Frequency quantity≤100KHz, Power distribution 24V input
			1	DC output
			3	Frequency 1:1 output
			M	Relay output alarm
	Vibration sensor input VTI	Input signal	*	1: 4~20mA; 2: 0~20mA; 4: 0~10V; 5: 1~5V; 6: 0~5V; 7: ±10V
			1	-20V~-0.5V
		Output signal	2	-10V~+10V
	Flame smoke detector input FDI	Input signal	1	1:1 output
		Output signal	1	0~40mA
	Analog output AO	Input signal	1	0~40mA
		Output signal	1	4~20mA(HART digital signal)
	Switch output DO	Input signal	1	4~20mA(HART digital signal)
			1	4~20mA(HART digital signal)
		Output signal	1	Contacts and logic levels
			3	Contact control DC voltage (loop powered)
			3	UE/ IE=12V/35mA
		Output signal	4	UE/ IE=12V/45mA
			6	UE/ IE=12V/60mA

Analogue Input Isolated Safety Barrier

PHD-11TD-21

1 input and 1 output(Active)

PHD-11TD-21.2

1 input and 1 output(Universal)

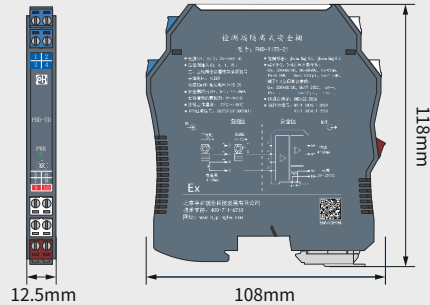
Input: two or three-wire transmitter or current source(HART digital signal)

Output: 4~20mA (HART digital signal)



国家防爆

中国合格评定



Overview

The analog input isolated safety barrier provides isolated power supply for two - and three wire transmitters in hazardous areas. The 4~20mA signal generated by the transmitter or current source is transmitted from the hazardous area to the safe area output, thereby driving the load in the safe area. For two - or three wire transmitters or current source signals, this safety barrier supports bidirectional communication of the Hart digital signal superimposed on the 4~20mA signal and has a wire breakage alarm function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Two or three-wire transmitter or current source(HART digital signal)

Transmitter distribution voltage: The open circuit voltage is $\leq 28V$, and the output voltage is $\geq 15.5V$ when the circuit is 20mA

Output in safe area:

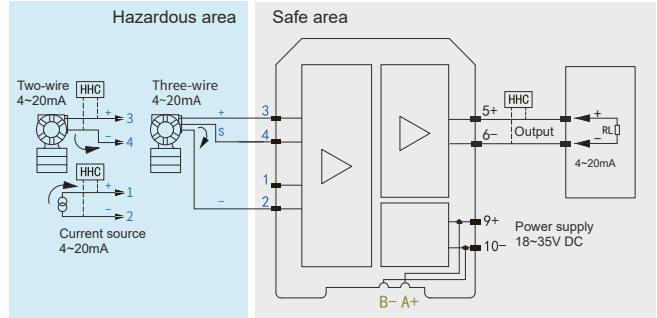
Output signal: Active 4~20mA(HART digital signal)
Passive 4~20mA(HART digital signal) optional
Output load: When outputting 20mA, 0~500 Ω (customizable)
Optional voltage output type, load resistance $R_L \geq 330k\Omega$

Basic parameters:

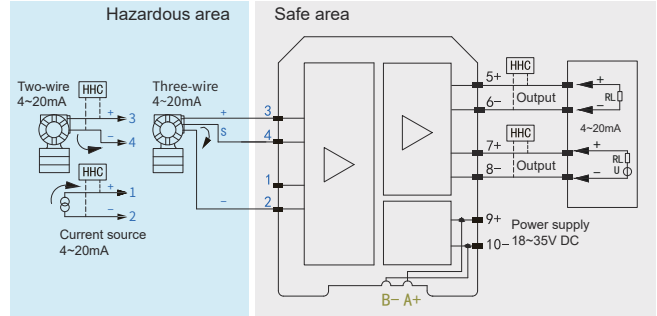
Supply voltage: 18~35V DC
Power consumption: $\leq 65mA$ (When 24V power supply, 20mA output)
LED indicator: Green—power indicator
Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)
Response time: 2ms to reach 90% of the final value
Temperature drift: 0.005%F.S/ $^{\circ}C$
Temperature parameters: Working temperature: $-20^{\circ}C \sim +60^{\circ}C$
Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$
Relative humidity: 10%~95% RH no condensation
Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq 3000V$ AC/min)
between power supply and non-intrinsically safe side ($\geq 1500V$ AC/min)
Insulation resistance: $\geq 100M\Omega$ (between input/output/power supply)
EMC: According to IEC 61326-1(GB/T 18268), IEC 61326-3-1
Wire requirements: Cross-section $\geq 0.5mm^2$
Insulation strength $\geq 500V$
Applicable field equipments: Two, three-wire (HART) transmitter or current source (HART) signal
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

Active Output: PHD-11TD-21



Universal type output: PHD-11TD-21.2



Note: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Safety certification

Functional safety certification: SIL3 according to IEC 61508 standards
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 3-2, 3-4: $U_m: 250V$ AC/DC $U_o=28V$ DC $I_o=93mA$
 $P_o=0.65W$ $C_o=0.083\mu F$ $L_o=4.2mH$
Terminal 1-2: $U_m: 250V$ AC/DC $U_o=7.2V$ DC $I_o=---$
 $P_o=---$ $C_o=12\mu F$ $L_o=---$
Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Analogue Input Isolated Safety Barrier

PHD-12TD-211

1 input and 2 outputs(Active)

PHD-12TD-211.2

1 input and 2 outputs(Passive)

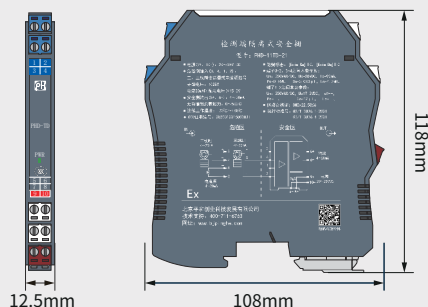
Input: two or three-wire transmitter or
current source(HART digital signal)

Output: 4~20mA (HART digital signal)



国家防爆

中国合格评定



Overview

The analog input isolated safety barrier provides isolated power supply for two - and three wire transmitters in hazardous areas. The 4~20mA signal generated by the transmitter or current source is transmitted from the hazardous area to the safe area output, thereby driving the load in the safe area. For two - or three wire transmitters or current source signals, this safety barrier supports bidirectional communication of the Hart digital signal superimposed on the 4~20mA signal and has a wire breakage alarm function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Two or three-wire transmitter
or current source(HART digital signal)

Transmitter distribution voltage: The open circuit voltage is $\leq 28V$,
and the output voltage is $\geq 15.5V$ when the circuit is 20mA

Output in safe area:

Output signal: Active 4~20mA(HART digital signal)
Passive 4~20mA(HART digital signal)

Output load: When outputting 20mA, 0~500 Ω (customizable)
Optional voltage output type, load resistance $R_L \geq 330k\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 95mA$ (When 24V power supply, 20mA output)

LED indicator: Green—power indicator

Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)

Response time: 2ms to reach 90% of the final value

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

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

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and
non-intrinsically safe side ($\geq 3000V$ AC/min)
between power supply and non-intrinsically
safe side ($\geq 1500V$ AC/min)

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

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

Wire requirements: Cross-section $\geq 0.5mm^2$

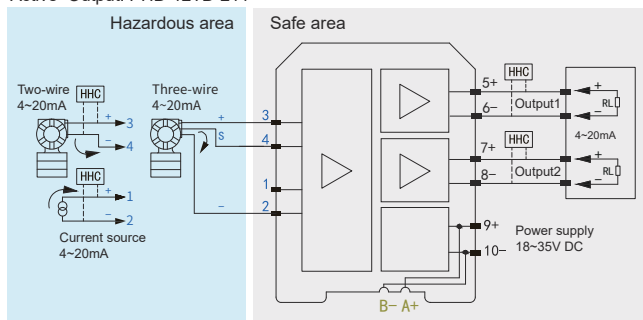
Insulation strength $\geq 500V$

Applicable field equipments: Two, three-wire (HART) transmitter
or current source (HART) signal

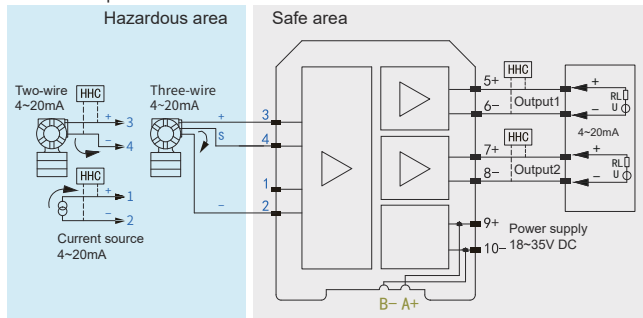
Installation place: Installed in a safe zone, it can be connected to
intrinsic safety instruments in hazardous areas
up to Zone 0, IIC, Zone 20, and IIIC

Connection wiring

Active Output: PHD-12TD-211



Passive Output: PHD-12TD-211.2



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Safety certification

Functional safety certification: SIL3 according to IEC 61508 standards

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 3-2, 3-4: U_m : 250V AC/DC U_o =28V DC I_o =93mA

P_o =0.65W C_o =0.083 μF L_o =4.2mH

Terminal 1-2: U_m : 250V AC/DC U_o =7.2V DC I_o =---

P_o =--- C_o =12 μF L_o =---

Certification body: CQST(China National Quality Supervision and
Test Centre for Explosion Protected Electrical Products)

Analogue Input Isolated Safety Barrier

PHD-22TD-2121

2 inputs and 2 outputs(Active)

PHD-22TD-2121.2

2 inputs and 2 outputs(Passive)

Input: two or three-wire transmitter or
current source(HART digital signal)
Output: 4~20mA (HART digital signal)

SIL3
IEC 61508

IEC 61508

IEC **IECEx**

Ex

CNEX

CCC

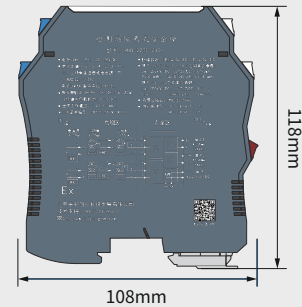
CCS

国家防爆

中国合格评定



17.5mm



108mm

118mm

Overview

The analog input isolated safety barrier provides isolated power supply for two - and three wire transmitters in hazardous areas. The 4~20mA signal generated by the transmitter or current source is transmitted from the hazardous area to the safe area output, thereby driving the load in the safe area. For two - or three wire transmitters or current source signals, this safety barrier supports bidirectional communication of the Hart digital signal superimposed on the 4~20mA signal and has a wire breakage alarm function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Two or three-wire transmitter
or current source(HART digital signal)

Transmitter distribution voltage: The open circuit voltage is $\leq 28V$,
and the output voltage is $\geq 15.5V$ when the circuit is 20mA

Output in safe area:

Output signal: Active 4~20mA(HART digital signal)
Passive 4~20mA(HART digital signal) optional

Output load: When outputting 20mA, 0~500 Ω (customizable)
Optional voltage output type, load resistance $R_L \geq 330k\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 130mA$ (24V power supply, 20mA output)

LED indicator: Green—power indicator

Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)

Response time: 2ms to reach 90% of the final value

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

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

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and
non-intrinsically safe side ($\geq 3000V$ AC/min)
between power supply and non-intrinsically
safe side ($\geq 1500V$ AC/min)

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

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

Wire requirements: Cross-section $\geq 0.5mm^2$

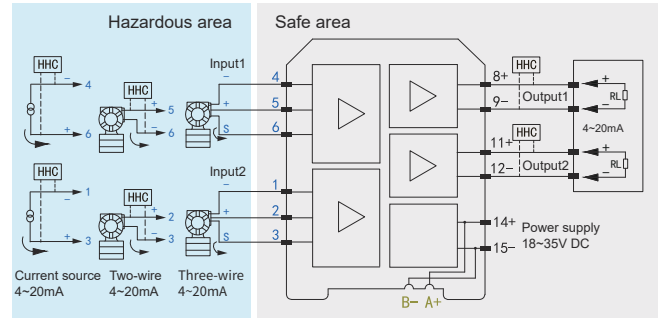
Insulation strength $\geq 500V$

Applicable field equipments: Two, three-wire (HART) transmitter
or current source (HART) signal

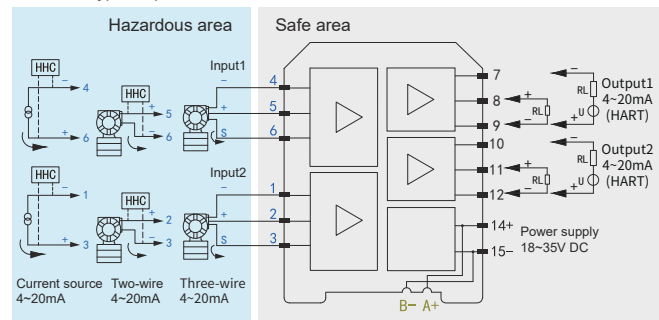
Installation place: Installed in a safe zone, it can be connected to
intrinsic safety instruments in hazardous areas
up to Zone 0, IIC, Zone 20, and IIIC

Connection wiring

Active Output: PHD-22TD-2121



Universal type output: PHD-22TD-2121.2



Note: The power supply of the power rail is an optional function. Users need to
specify the power supply mode when ordering. Please refer to "Annex".

Safe certification

Functional safety certification: SIL3 according to IEC 61508 standards

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 2-3, 2-1: U_m : 250V AC/DC U_o =28V DC I_o =93mA

5-6, 5-4 P_o =0.65W C_o =0.083 μF L_o =4.2mH

Terminals 1-3, 4-6: U_m : 250V AC/DC U_o =7.2V DC I_o =---

P_o =--- C_o =12 μF L_o =---

Certification body: CQST(China National Quality Supervision and
Test Centre for Explosion Protected Electrical Products)

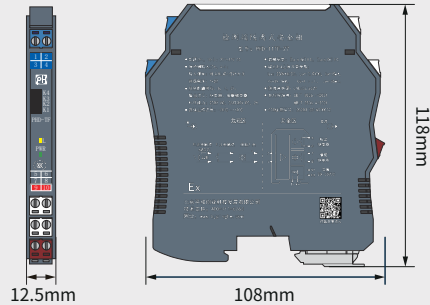
Digital Input Isolated Safety Barrier

PHD-11TF-27

1 input and 1 output

Input: Contact and NAMUR proximity switch

Output: Relay+alarm(optional)



Overview

The isolated safety barrier with switch input relay outputs, which isolates and transmits input signals from switch contacts or proximity switches in hazardous areas to the safety zone with output relay through the safety barrier. Line fault detection is achieved through a separate relay output and displayed on the top LED of the module. The dial switch of the module is used to set input and output in-phase or reverse control, as well as to enable or disable the line fault detection alarm indication function.

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

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Switching rate: <10Hz

Input/output characteristics:

On site input current: >2.1mA, the output is closed, indicating ON

When <1.2mA, the output is open circuit, indicating OFF

Output normally "Open"/"Closed" contact conversion control:

When dial switch K1 is at "ON" side, the relay output is "Normally closed".

When dial switch K1 is at "OFF" side, the relay output is "Normally open".

When dial switch K2 is at "ON" side, the circuit selects indicating red light LFD alarm function.

Output in safe area:

Output signal: Relay and alarm relay (optional)

Contact capacity: 250VAC/2A, 30VDC/2A

when subjected to resistive loads

Response time: 20ms

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <30mA(24V power supply, when the relay contacts close)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

Temperature parameters: Working temperature: -20°C ~ +60°C,
Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

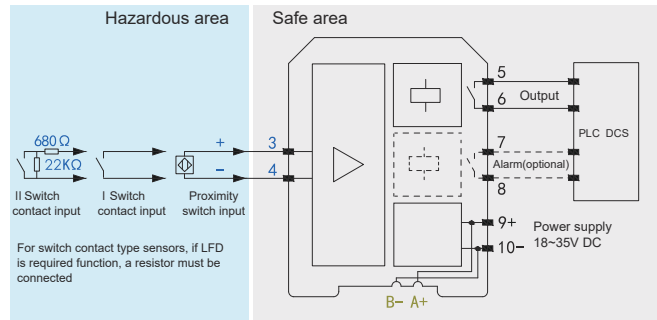
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

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: The power supply of the power rail is an optional function. Users need to specify the power supply mode when ordering. Please refer to "Annex".

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current >7mA, short circuit alarm (SC); On site input current <0.1mA, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a 22kΩ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

Safe certification

Functional safety certification: SIL3 according to IEC 61508 standards

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 Um: 250V AC/DC Uo=10.5V DC Io=15mA

Po=39.4mW Co=1.7μF Lo=165mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Digital Input Isolated Safety Barrier

PHD-12TF-277
PHD-22TF-2727

1 input and 2 output
2 input and 2 outputs

Input: Contact and NAMUR proximity switch

Output: Relay

SIL3
IEC 61508

EXPLOSION-PROOF
TYPE

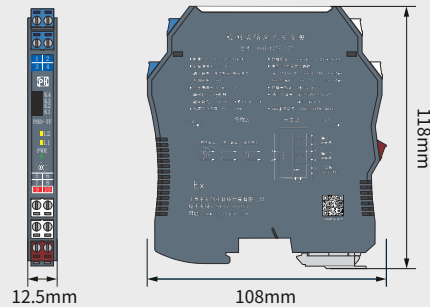
IEC IECEx

Ex

CNEX

CCC

CCS



Overview

The isolated safety barrier with switch input relay outputs, which isolates and transmits input signals from switch contacts or proximity switches in hazardous areas to the safety zone with output relay through the safety barrier. Line fault detection is achieved through LED on the top of the module. The dial switch of the module is used to set input and output in-phase or reverse control, as well as to enable or disable the line fault detection alarm indication function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Switching rate: <10Hz

Input/output characteristics:

On site input current: >2.1mA, the output is closed, indicating ON

When <1.2mA, the output is open circuit, indicating OFF

Output normally "Open"/"Closed" contact conversion control:

When dial switch K1, K3 is at "ON" side, the relay output is "Normally closed".

When dial switch K1, K3 is at "OFF" side, the relay output is "Normally open".

When dial switch K2, K4 is at "ON" side, the circuit selects indicating red light LFD alarm function.

Output in safe area:

Output signal: Relay

Contact capacity: 250V AC/2A, 30V DC/2A

when subjected to resistive loads

Response time: 20ms

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: 24V power supply, when the relay contacts close

<30mA(PHD-12TF-277)

<40mA(PHD-22TF-2727)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

Temperature parameters: Working temperature: -20°C ~ +60°C,

Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

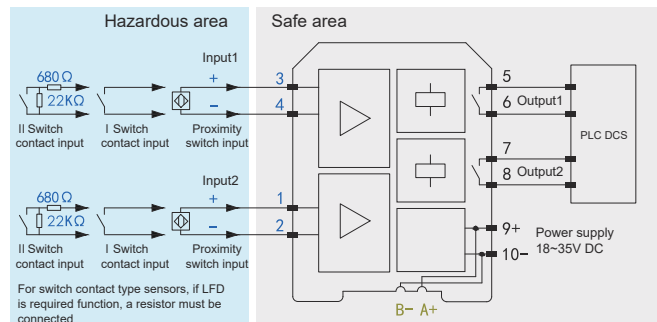
Wire requirements: Cross-section ≥0.5mm²;

Insulation strength ≥500V

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

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-12TF-277 does not include input part 2

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current >7mA, short circuit alarm (SC); On site input current <0.1mA, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a 22k Ω resistor should be connected in parallel at both ends of the switch, and a 680 Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

Safe certification

Functional safety certification: SIL3 according to IEC 61508 standards

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, 1-2 Um: 250V AC/DC Uo=10.5V DC Io=15mA

Po=39.4mW Co=1.7μF Lo=165mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

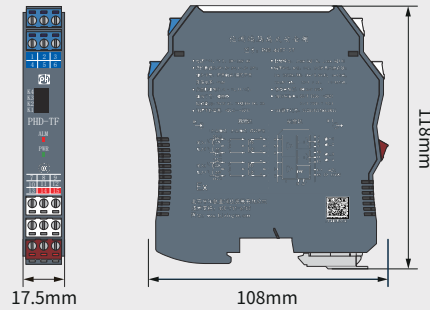
Digital Input Isolated Safety Barrier

PHD-44TF-27

4 inputs and 4 outputs

Input: Contact and NAMUR proximity switch

Output: Relay



Overview

The isolated safety barrier with switch input relay outputs, which isolates and transmits input signals from switch contacts or proximity switches in hazardous areas to the safety zone with output relay through the safety barrier. Line fault detection function is indicated by LEDs on the top of the module. The dial switch of the module is used to set input and output in-phase or reverse control.

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

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Input frequency range: $\leq 10\text{kHz}$

Input/output characteristics:

On site input current: $> 2.1\text{mA}$, the output is closed, indicating ON

When $< 1.2\text{mA}$, the output is open circuit, indicating OFF

Switched control between inverted phase and normal phase of

Output normally "Open"/"Closed" contact conversion control:

When dial switch K1-K4 is at "ON" side, the relay output is "Normally closed"

When dial switch K1-K4 is at "OFF" side, the relay output is "Normally open"

Output in safe area:

Output signal: Relay

Contact capacity: 250V AC/2A, 30V DC/2A

when subjected to resistive loads

Response time: 20ms

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 85\text{mA}$ (24V power supply, when the relay contacts close)

LED indicator: Green: Power indicator

Red: LFD indication, line fault alarm

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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

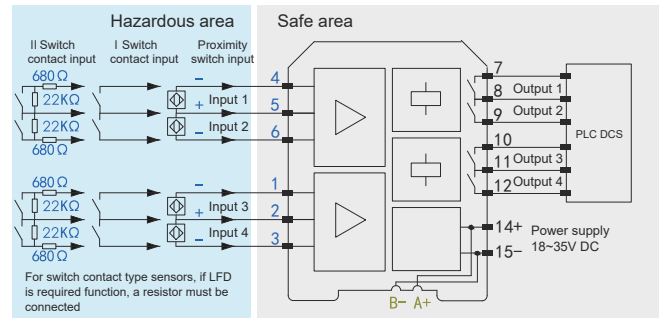
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$;

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

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: The power supply of the power rail is an optional function. Users need to specify the power supply mode when ordering. Please refer to "Annex".

Line Fault Detection (LFD)

Fault alarm detection is turned on by default, and any alarm is indicated by the red LED on the top. On site input current $> 7\text{mA}$, short circuit alarm (SC); On site input current $< 0.1\text{mA}$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22\text{k}\Omega$ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

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 5-4, 5-6 U_m : 250V AC/DC U_o : 10.5V DC I_o : 15mA

2-1, 2-3 P_o : 39.4mW C_o : 1.7 μF L_o : 165mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Digital Input Isolated Safety Barrier

PHD-11TF-28

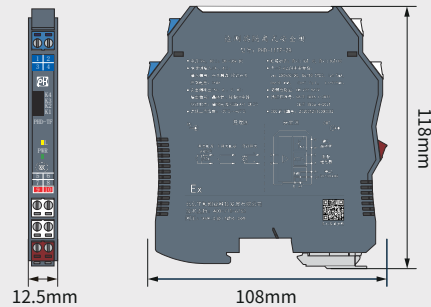
1 input and 1 output

Input: Contact and NAMUR proximity switch

Output: Transistor+alarm(optional)



國家防暴



Overview

The isolated safety barrier with switch input transistor output, which isolates and transmits input signals from switch contacts or proximity switches in hazardous areas to the safety zone with output transistor through the safety barrier. Line fault detection is achieved through LED on the top of the module. The dial switch of the module is used to set input and output in-phase or reverse control, as well as to enable or disable the line fault detection alarm indication function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Input frequency range: $\leq 5\text{kHz}$

Input/output characteristics:

On site input current: $>2.1\text{mA}$, the output is closed, indicating ON;

When $<1.2\text{mA}$, the output is open circuit, indicating OFF

Switched control between inverted phase and normal phase of outputs e-c: When the dial switch K1 is at "ON", the transistor output e-c are in inverted phase

When the dial switch K1 is at "OFF", the transistor output e-c are in normal phase

When the K2 is at "ON", the circuit will select the red light LFD indication alarm function

When the K2 is at "OFF", the circuit will select the green light LFD indication alarm function

Output in safe area:

Output signal: Transistor and alarm relay (optional)

Output characteristic: NPN type transistor emitter or collector open circuit output

Drive capability: Output current $\leq 20\text{mA}$ ($1.2\text{k}\Omega$), maximum internal current 100mA , equipped with short-circuit current protection

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: $<30\text{mA}$ (24V power supply, when the transistor is conducting)

LED indicator: Green: Power indicator

Yellow: Output transistor in normal working state

Red: LFD indication, line fault alarm

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: $10\%\sim 95\%\text{ RH}$ no condensation

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

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

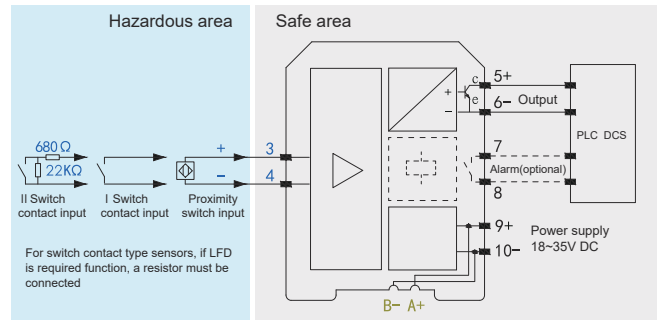
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$;

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

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

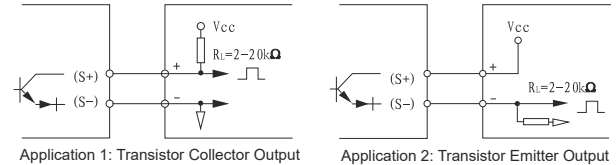


Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Note:



Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current $>7\text{mA}$, short circuit alarm (SC); On site input current $<0.1\text{mA}$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22\text{k}\Omega$ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

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 Um: 250V AC/DC Uo: 10.5V DC Io: 15mA Po: 39.4mW Co: $1.7\mu\text{F}$ Lo: 165mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Digital Input Isolated Safety Barrier

PHD-12TF-288

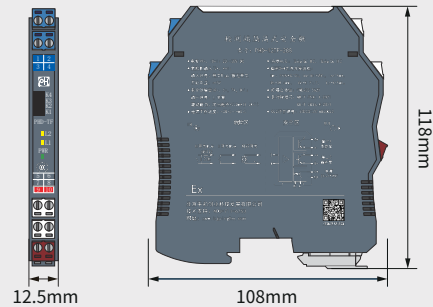
1 input and 2 outputs

PHD-22TF-2828

2 inputs and 2 outputs

Input: Contact and NAMUR proximity switch

Output: Transistor



Overview

The isolated safety barrier with switch input transistor output, which isolates and transmits input signals from switch contacts or proximity switches in hazardous areas to the safety zone with output transistor through the safety barrier. Line fault detection is achieved through LED on the top of the module. The dial switch of the module is used to set input and output in-phase or reverse control, as well as to enable or disable the line fault detection alarm indication function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Input frequency range: $\leq 5\text{kHz}$

Input/output characteristics:

On site input current: $> 2.1\text{mA}$, the output is closed, indicating ON

When $< 1.2\text{mA}$, the output is open circuit, indicating OFF

Switched control between inverted phase and normal phase of outputs e-c: When the dial switch K1, K3 is at "ON", the transistor output e-c are in inverted phase

When the dial switch K1, K3 is at "OFF", the transistor output e-c are in normal phase

When the K2, K4 is at "ON", the circuit will select the red light LFD indication alarm function

Output in safe area:

Output signal: Transistor

Output characteristic: NPN type transistor emitter or collector open circuit output

Drive capability: Output current $\leq 20\text{mA}$ ($1.2\text{k}\Omega$), maximum internal current 100mA , equipped with short-circuit current protection

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: 24V power supply, transistor on
 $\leq 50\text{mA}$ (PHD-12TF-288)
 $\leq 55\text{mA}$ (PHD-22TF-2828)

LED indicator: Green: Power indicator

Yellow: Output transistor in normal working state

Red: LFD indication, line fault alarm

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: $10\%\sim 95\%$ RH no condensation

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

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

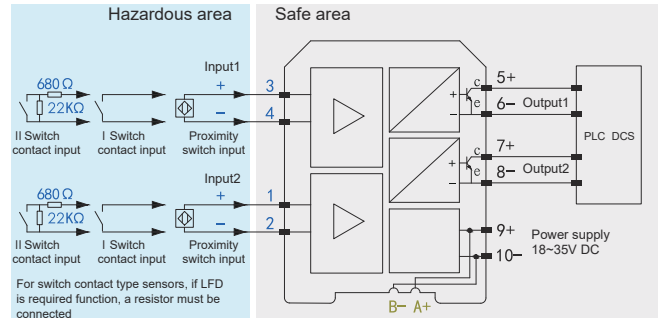
EMC: According to IEC 61326-1(GB/T 18268), IEC 61326-3-1

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$
Insulation strength $\geq 500\text{V}$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

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



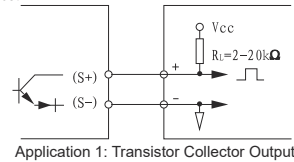
Note: 1. PHD-12TF-288 does not include input 2 part.

2. The power supply of the power rail is an optional function.

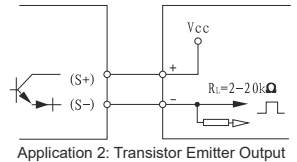
Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Note:



Application 1: Transistor Collector Output



Application 2: Transistor Emitter Output

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current $> 7\text{mA}$, short circuit alarm (SC); On site input current $< 0.1\text{mA}$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22\text{k}\Omega$ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

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, 1-2: $U_m: 250\text{V AC/DC}$ $U_o: 10.5\text{V DC}$ $I_o: 15\text{mA}$

$P_o: 39.4\text{mW}$ $C_o: 1.7\mu\text{F}$ $L_o: 165\text{mH}$

Certification body: CQST (China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Information maybe revised without prior notice



北京平和
Bei Jing Ping He

Digital Input Isolated Safety Barrier

PHD-11TF-29

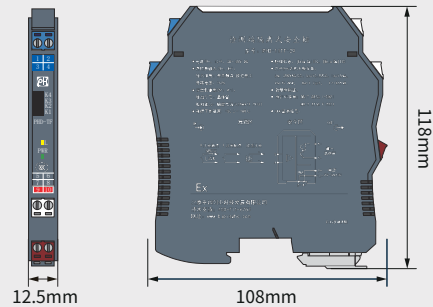
1 input and 1 output

Input: Contact and NAMUR proximity switch

Output: Transistor (resistor)



国家防爆



Overview

Switching input transistor output Isolated safety barriers transmit input signals from switching contacts or proximity switches in the hazardous area through the safety barriers in isolation to the safe area with transistor outputs. The input controls a passive transistor output with resistive characteristics. The output has four defined states: short-circuit alarm resistance $\leq 240 \Omega$, 1-signal $1.4k\Omega \leq$ resistance value $\leq 1.6k\Omega$, 0-signal $13k\Omega \leq$ resistance value $\leq 14k\Omega$, and broken alarm resistance $> 100k\Omega$. This output characteristic reacts to the line state on the signal line. The dip switches of the module are used to set the input and output in the same direction or reverse control, as well as to set the line fault alarm indication function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Switching rate : $\leq 5kHz$

Input/output characteristics:

On site input current: $> 2.1mA$, the output is closed, indicating ON;

When $< 1.2mA$, the output is open circuit, indicating OFF

Input state transition and alarm switch:

When dial switch K1 is at "ON" side, the output state is opposite to the input state

When dial switch K1 is at "OFF" side, the output state is consistent with the input state.

When dial switch K2 is at "ON" side, the circuit selects indicating red light LFD alarm function.

The dial switch K3 and K4 have no effect for the time being

Output in safe area:

Output signal: Transistor (resistor)

Output characteristics: When the external power supply voltage is 8V, the short-circuit alarm resistance is $\leq 240\Omega$, 1- signal $1.4k\Omega \leq$ resistance $\leq 1.6k\Omega$, 0- signal $13k\Omega \leq$ resistance $\leq 14k\Omega$, Open circuit alarm resistance $> 100k\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 30mA$ (24V DC power supply, when the transistor is conducting)

LED indicator: Green: Power indicator

Yellow: Normal working state

Red: LFD indication, line fault alarm

Temperature parameters: Working temperature: $-20^{\circ}C \sim +60^{\circ}C$,

Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq 3000V$ AC/min); between power supply and non-intrinsically safe side ($\geq 1500V$ AC/min)

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

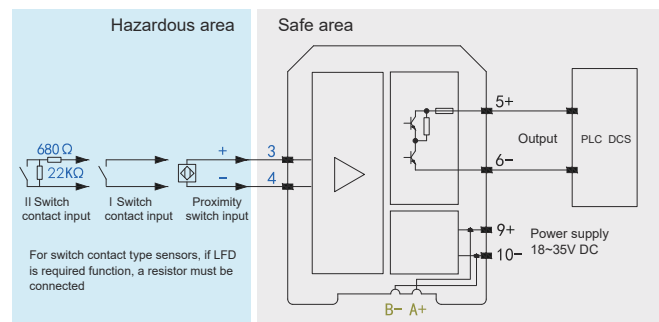
EMC: According to IEC 61326-1(GB/T 18268), IEC 61326-3-1

Wire requirements: Cross-section $\geq 0.5mm^2$; Insulation strength $\geq 500V$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

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: The power supply of the power rail is an optional function. Users need to specify the power supply mode when ordering. Please refer to "Annex".

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current $> 7mA$, short circuit alarm (SC); On site input current $< 0.1mA$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22k\Omega$ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

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 Um: 250V AC/DC Uo=10.5V DC Io=15mA

Po=39.4mW Co=1.7μF Lo=165mH

Certification body: CQST (China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Digital Input Isolated Safety Barrier

PHD-12TF-299

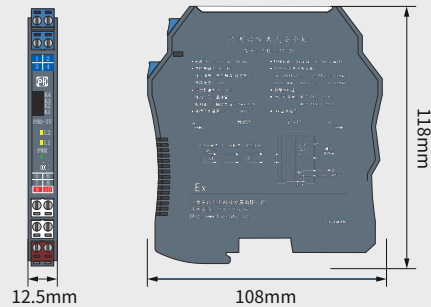
1 input and 2 outputs

PHD-22TF-2929

2 inputs and 2 outputs

Input: Contact and NAMUR proximity switch

Output: Transistor (resistor)



Overview

Switching input transistor output Isolated safety barriers transmit input signals from switching contacts or proximity switches in the hazardous area through the safety barriers in isolation to the safe area with transistor outputs. The input controls a passive transistor output with resistive characteristics. The output has four defined states: short-circuit alarm resistance $\leq 240\ \Omega$, 1-signal $1.4\text{k}\Omega \leq$ resistance value $\leq 1.6\text{k}\Omega$, 0-signal $13\text{k}\Omega \leq$ resistance value $\leq 14\text{k}\Omega$, and broken alarm resistance $> 100\text{k}\Omega$. This output characteristic reacts to the line state on the signal line. The dip switches of the module are used to set the input and output in the same direction or reverse control, as well as to set the line fault alarm indication function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Switching rate : $\leq 5\text{kHz}$

Input/output characteristics:

On site input current: $> 2.1\text{mA}$, the output is closed, indicating ON;

When $< 1.2\text{mA}$, the output is open circuit, indicating OFF

Input state transition and alarm switch:

When dial switch K1 and K3 is at "ON" side, the output state is opposite to the input state

When dial switch K1 and K3 is at "OFF" side, the output state is consistent with the input state.

When dial switch K2 and K4 is at "ON" side, the circuit selects indicating red light LFD alarm function.

Output in safe area:

Output signal: Transistor (resistor)

Output characteristics: When the external power supply voltage is 8V, the short-circuit alarm resistance is $\leq 240\ \Omega$, 1- signal $1.4\text{k}\Omega \leq$ resistance $\leq 1.6\text{k}\Omega$, 0- signal $13\text{k}\Omega \leq$ resistance $\leq 14\text{k}\Omega$, Open circuit alarm resistance $> 100\text{k}\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: 24V power supply, when the transistor is turned on
 $\leq 50\text{mA}$ (PHD-12TF-299)
 $\leq 55\text{mA}$ (PHD-22TF-2929)

LED indicator: Green: Power indicator

Yellow: Normal working state

Red: LFD indication, line fault alarm

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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

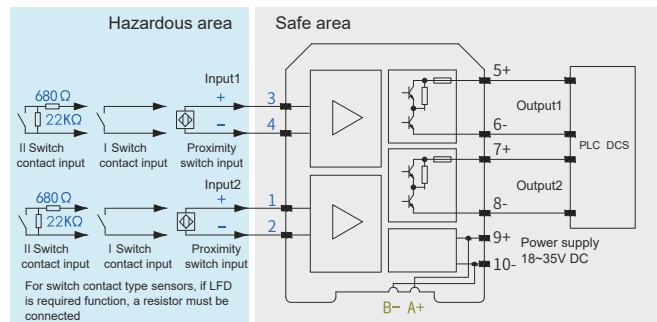
EMC: According to IEC 61326-1(GB/T 18268), IEC 61326-3-1

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$; Insulation strength $\geq 500\text{V}$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

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-12TF-299 does not contain output 2.

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current $> 7\text{mA}$, short circuit alarm (SC); On site input current $< 0.1\text{mA}$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22\text{k}\ \Omega$ resistor should be connected in parallel at both ends of the switch, and a $680\ \Omega$ resistor should be connected in series (as shown in the wiring diagram for switch contact II).

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, 1-2 Um: 250V AC/DC Uo=10.5V DC Io=15mA

Po=39.4mW Co=1.7 μF Lo=165mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

RTD input isolated safety barrier

PHD-11TZ-*1

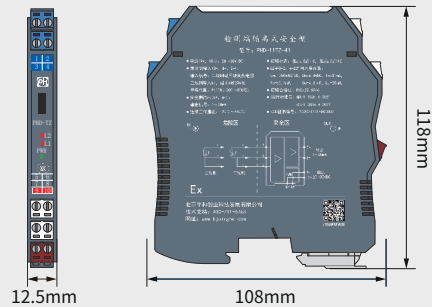
1 input 1 output

PHD-12TZ-*11

1 input 2 outputs

Input: RTD

Output: 4~20mA



Overview

The RTD input isolation safety barrier can convert the two wire or three wire thermistor (RTD) signals in hazardous areas into 4~20mA current signals and output them to the safety zone. It can be intelligently configured, and the actual range of the thermal resistance 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 thermistor, 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: RTD 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: Corresponding measurement range of thermal resistance
Measurement range: Users make their own configuration when ordering, and indicate it at the tail number or otherwise.

Safety side output:

Output signal: 4~20mA

Load capacity: 0~500Ω(customizable)

Optional voltage output type, load resistance $R_L \geq 330k\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: When 24VDC power supply, 20mA output
≤40mA (PHD-11TZ-*1)
≤70mA (PHD-12TZ-*11)

LED indicator: Green: Power indicator

Low range alarm yellow light on, high range alarm red 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 300ms

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq 3000V$ AC/min); between power supply and non-intrinsically safe side ($\geq 1500V$ AC/min)

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

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

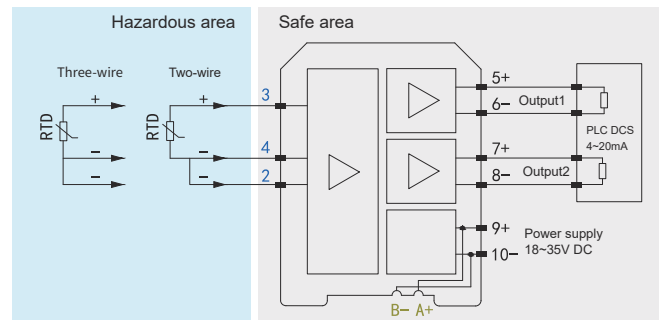
Wire requirements: Cross-section $\geq 0.5mm^2$ Insulation strength $\geq 500V$

Applicable field equipments: Two wire or three wire thermistors

G53, Cu50, Pt100, Pt1000, Ni1000

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-11TZ - * 1 does not include output part 2

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

3. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

4. When inputting a two-wire RTD, safety barrier terminals 4 and 2 must be short circuited

Input signal type and range table

Code	Model	Measurement range	Minimum range	Conversion accuracy
1	G53	-50~150°C	20°C	0.2°C/0.1%
2	Cu50	-50~150°C	20°C	0.2°C/0.1%
4	Pt100	-200~850°C	20°C	0.2°C/0.1%
6	Pt1000	-200~850°C	20°C	0.2°C/0.1%
7	Ni1000	-60~250°C	20°C	0.2°C/0.1%

Safe certification

Functional safety certification: SIL2 according to IEC 61508 standards

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 3-2, 4-2 Um=250V AC/DC Uo=8.4V DC Io=31mA

Po=65.1mW Co=4.8μF Lo=20mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

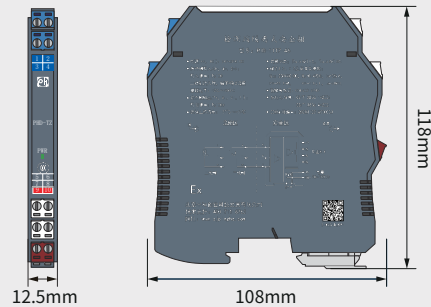
RTD input isolated safety barrier

PHD-11TZ-46

1 input 1 output

Input: RTD Pt100

Output: RTD 1:1



Overview

Thermal resistor input isolated safety barriers can transmit the two-wire or three-wire thermal resistor (RTD)Pt100 signal in the dangerous area to the safe area 1: 1.

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

Specifications

Input in hazardous area:

Input signal: RTD Pt100 signal

Measurement range: -150°C~850°C

Safety side output:

Output signal: RTD Pt100 signal (input signal 1:1)

Excitation current: 0.1~3mA

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: ≤40mA (when 24VDC power supply)

LED indicator: Green: Power indicator

Output accuracy: 0.1% F.S

Temperature drift: 0.01% F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C
storage temperature:-40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

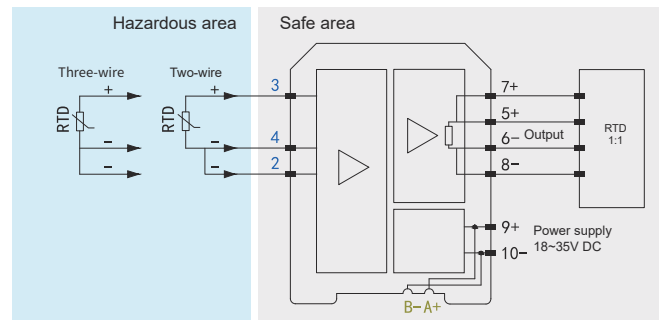
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Two wire or three wire RTD Pt100

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

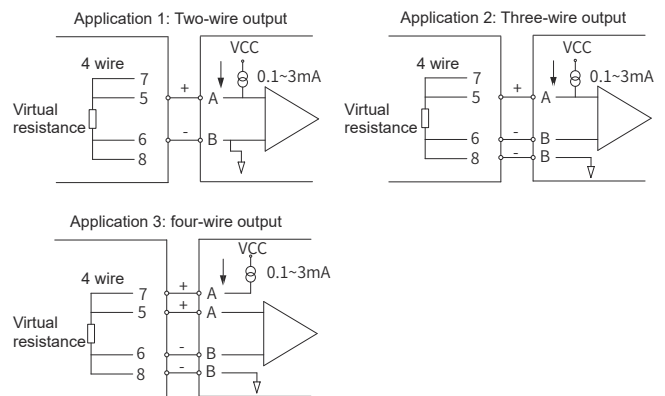
Connection wiring



Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.
Please refer to "Annex".

2. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible
3. When inputting a two-wire RTD, safety barrier terminals 4 and 2 must be short circuited



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 3-2、4-2 Um: 250V AC/DC Uo=8.4V DC Io=31mA

Po=65.1mW Co=4.8μF Lo=20mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

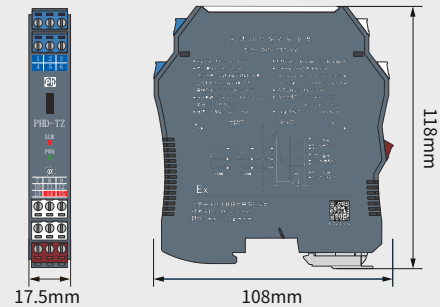
RTD input isolated safety barrier

PHD-12TZ-466

1 input 2 outputs

Input: RTD Pt100

Output: RTD 1:1



Overview

The thermistor input isolation safety barrier can convert the Pt100 signals of two wire and three wire thermistors (RTDs) in hazardous areas into a 1:1 signal of the thermistor and transmit it to the safety zone. It can be intelligently configured, and the actual range of the thermal resistance 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.

Specifications

Input in hazardous area:

Input signal: RTD Pt100 signal

Measurement range: -200°C~850°C

Safety side output:

Output signal: RTD Pt100 signal (input signal 1:1)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: ≤55mA (when 24VDC power supply)

LED indicator: Green: Power indicator

Short circuit alarm: ALM red light stays on for a long time

Open circuit alarm: ALM red light flashing

Output accuracy: 0.1% F.S

Temperature drift: 0.01% F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

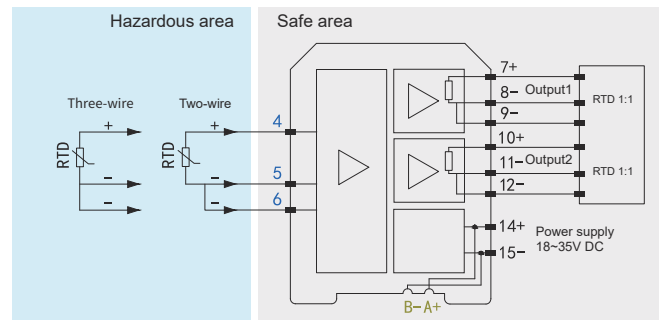
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Two wire or three wire RTD Pt100

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

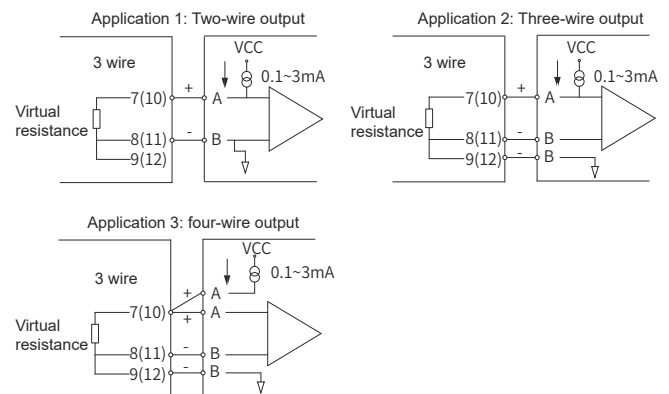


Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering. Please refer to "Annex".

2. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

3. When inputting a two-wire RTD, safety barrier terminals 6 and 5 must be short circuited



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 4-6, 5-6 Um: 250V AC/DC Uo=8.4V DC Io=31mA

Po=65.1mW Co=4.8μF Lo=20mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

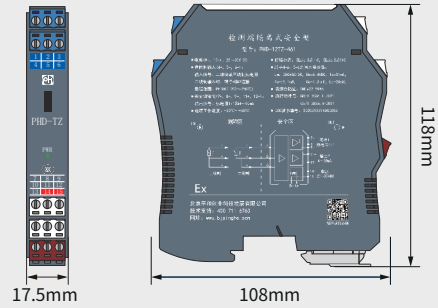
RTD input isolated safety barrier

PHD-12TZ-461

1 input 2 outputs

Input: RTD Pt100

Output : one output with RTD 1:1
one output with 4~20mA



Overview

The thermistor input isolation safety barrier can convert the Pt100 signals of two wire and three wire thermistors (RTDs) in hazardous areas into one output with 1:1 RTD signal and one output with 4~20mA signal to the safety zone. It can be intelligently configured, and the actual range of the thermal resistance can be set through computer software.

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

Specifications

Input in hazardous area:

Input signal: RTD Pt100 signal

Measurement range: -150°C~850°C

Safety side output:

Output signal: one output with RTD Pt100(input signal 1:1)
one output with 4~20mA signal

Load capacity: 0~500 Ω (can customize)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: ≤76mA

(when 24VDC power supply, output 20mA)

LED indicator: Green: Power indicator

Output accuracy: 0.1% F.S

Temperature drift: 0.01% F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C
storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

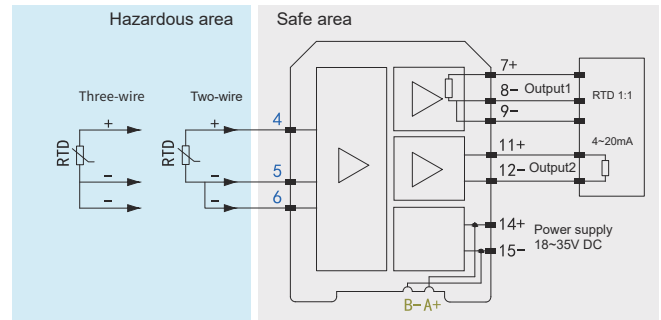
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Two wire or three wire RTD Pt100

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

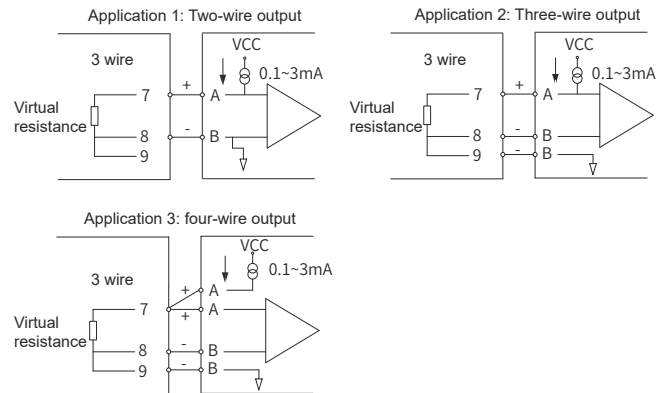


Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

- When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible
- When inputting a two-wire RTD, safety barrier terminals 6 and 5 must be short circuited



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 4-6, 5-6 Um: 250V AC/DC Uo=8.4V DC Io=31mA

Po=65.1mW Co=4.8μF Lo=20mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

RTD input isolated safety barrier

PHD-22TZ-*1*1

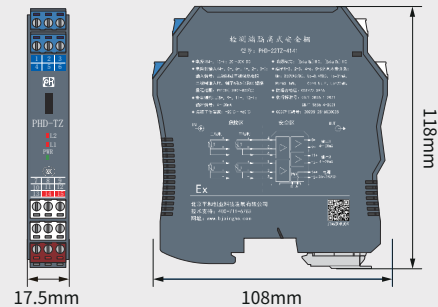
2 inputs 2 outputs

Input: RTD

Output: 4~20mA



国家防爆



Overview

The RTD input isolation safety barrier can convert the two wire or three wire thermistor (RTD) signals in hazardous areas into 4-20mA current signals and output them to the safety zone. It can be intelligently configured, and the actual range of the thermal resistance 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 thermistor, 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: RTD 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: Corresponding measurement range of thermal resistance

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

Safety side output:

Output signal: 4~20mA

Load capacity: 0~500Ω(customizable)

Optional voltage output type,
load resistance $R_L \geq 330k\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 90mA$ When 24VDC power supply, 20mA output

LED indicator: Green: Power indicator

Low range alarm yellow light on, high range alarm red 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 300ms

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq 3000V$ AC/min); between power supply and non-intrinsically safe side ($\geq 1500V$ AC/min)

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

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

MTBF: 100000h

Wire requirements: Cross-section $\geq 0.5mm^2$

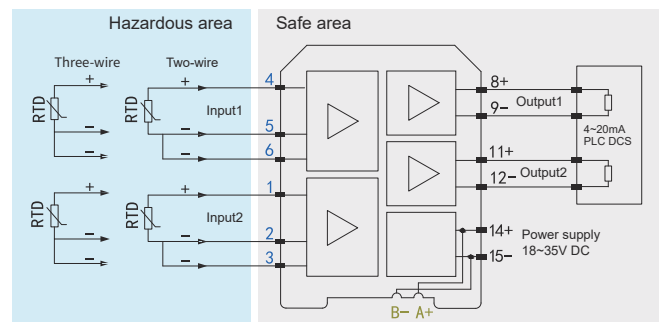
Insulation strength $\geq 500V$

Applicable field equipments: Two wire or three wire thermistors

G53, Cu50, Pt100, Pt1000, Ni1000

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. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

2. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

3. When inputting a two-wire RTD, safety barrier terminals 5 and 6(2 and 3) must be short circuited

Input signal type and range table				
Code	Model	Measurement range	Minimum range	Conversion accuracy
1	G53	-50~150°C	20°C	0.2°C/0.1%
2	Cu50	-50~150°C	20°C	0.2°C/0.1%
4	Pt100	-200~850°C	20°C	0.2°C/0.1%
6	Pt1000	-200~850°C	20°C	0.2°C/0.1%
7	Ni1000	-60~250°C	20°C	0.2°C/0.1%

Safe certification

Functional safety certification: SIL2 according to IEC 61508 standards

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 1-3, 2-3, 4-6, 5-6

U_m : 250V AC/DC U_o : 8.4V DC I_o : 31mA

P_o : 65.1mW C_o : 4.8μF L_o : 20mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

TC input isolated safety barrier

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

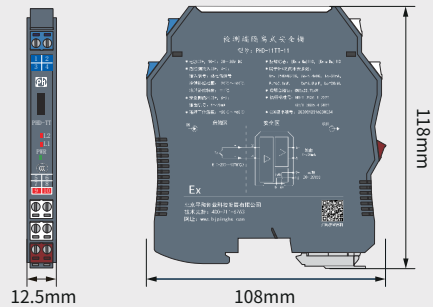
1 input 1 output
1 input 2 outputs

Input : TC

Output : 4~20mA



国家防爆



Overview

Thermocouple input isolation safety barrier 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 junction 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 junction compensation: $\pm 1^{\circ}\text{C}$

Compensation range $-20^{\circ}\text{C}\sim+60^{\circ}\text{C}$

Safety side output:

Output signal: 4~20mA

L capacity: 0~500 Ω (customizable)

Optional voltage output type, load resistance $R_L \geq 330\text{k}\Omega$

Basic parameters:

Supply voltage: 18~35V 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 300ms

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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

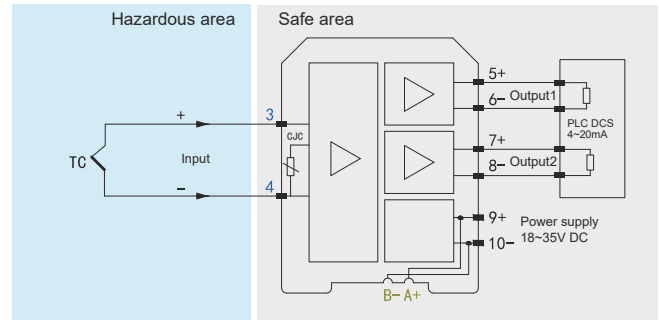
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

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 supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "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%

Safe certification

Functional safety certification: SIL2 according to IEC 61508 standards

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)

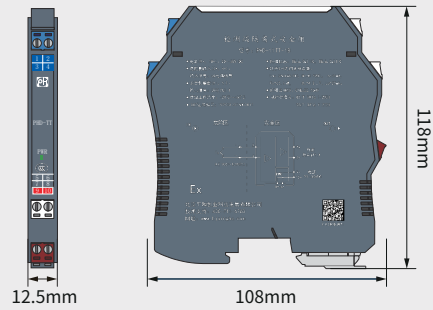
TC input isolated safety barrier

PHD-11TT-*8

1 input 1 output

Input: TC

Output: TC 1:1



Overview

The thermocouple input isolation safety barrier can transmit the millivolt signal from thermocouple (TC) in the dangerous area to the safe area in 1: 1.

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

Specifications

Input in hazardous area:

Input signal: K, S, E, J, B, T, R, N thermocouple signals

Signal range: -20~80mV.

Safety side output:

Output signal: TC signal(input signal 1: 1)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: ≤40mA(When 24V power supply)

LED indicator: Green: Power indicator

Output accuracy: 0.05%F.S

Response time: Reaching 90% of the final value within 300ms

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C
storage temperature:-40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

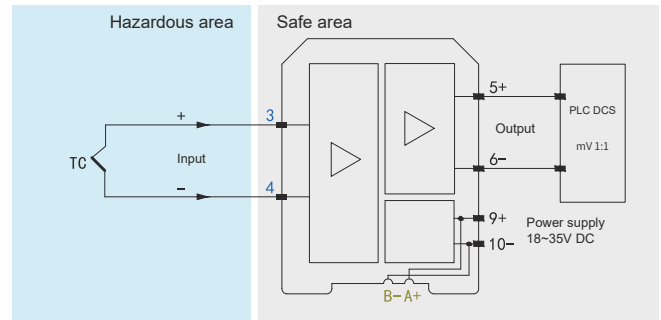
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

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: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

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: Um: 250V AC/DC Uo=8.4V DC Io=31mA

Po=65.1mW Co=4.8μF Lo=20mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

PHD-22TT-*1*1

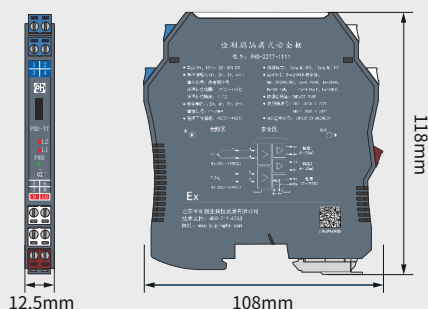
2 inputs 2 outputs

Input : TC

Output : 4~20mA



国家防爆



Overview

Thermocouple input isolation safety barrier 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 junction 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 junction compensation: $\pm 1^{\circ}\text{C}$

Compensation range $-20^{\circ}\text{C}\sim+60^{\circ}\text{C}$

Safety side output:

Output signal: 4~20mA

Load capacity: 0~500 Ω (customizable)

Optional voltage output type, load resistance $R_L \geq 330\text{k}\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 90\text{mA}$ (When 24V power supply, 20mA output)

LED indicator: Green: Power indicator

Low range alarm yellow light on, high range alarm red 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 300ms

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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

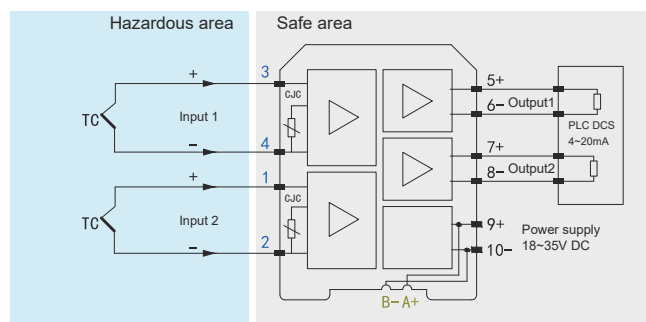
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

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: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "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 $^{\circ}\text{C}/0.1\%$

Safe certification

Functional safety certification: SIL2 according to IEC 61508 standards

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 1-2, 3-4: 250V AC/DC $U_0=8.4\text{V DC}$ $I_0=31\text{mA}$

$P_0=65.1\text{mW}$ $C_0=4.8\mu\text{F}$ $L_0=20\text{mH}$

Certification body: CQST(China National Quality Supervision and

Test Centre for Explosion Protected Electrical Products)

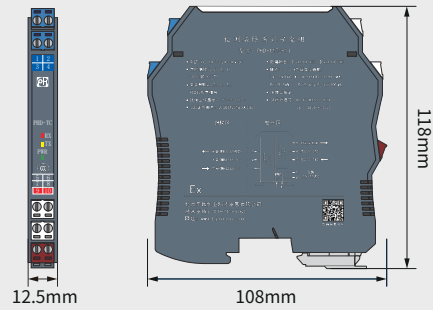
Communication signal input isolated safety barrier

PHD-11TC-11

1 input 1 output

Input : RS-232 digital signal

Output : RS-232 digital signal



Overview

The communication signal of PHD-11TC-11 is input into the isolated safety barrier, which can realize the two-way communication of RS-232 digital signal in the dangerous area and the safe area. This product needs independent power supply, and the power supply, input and output are isolated.

Specifications

Input in hazardous area:

Input signal: RS-232 digital signal

Safety side output:

Output signal: RS-232 digital signal

Transmission delay: $\leq 10\mu s$

Transmission rate: $\leq 56 kbps$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 40mA$ (24VDC power supply)

LED indicator:

Green: Power indicator

Yellow: Signal transmission from safety zone to hazardous zone

Red: Signal transmission from hazardous zone to safety zone

Receiving and transmitting switching time: $\geq 20ms$

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

storage temperature: $-40^{\circ}C \sim +80^{\circ}C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq 3000V$ AC/min); between power supply and non-intrinsically safe side ($\geq 1500V$ AC/min)

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

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

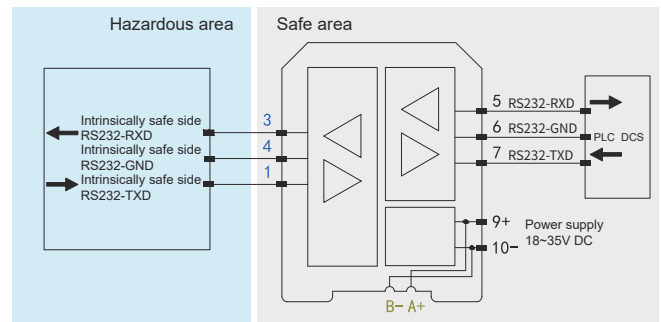
Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Communication interface device with RS-232

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: The power supply of the power rail is an optional function. Users need to specify the power supply mode when ordering. Please refer to "Annex".

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 1-3-4: Um: 250V AC/DC Uo=15V DC Io=8.5mA

Po=31.9mW Co=0.41μF Lo=100mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

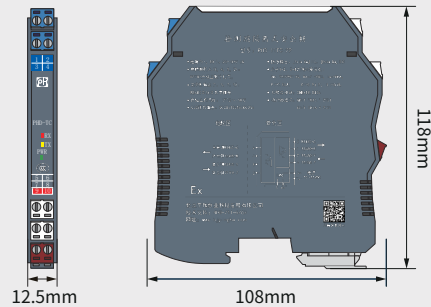
Communication signal input isolated safety barrier

PHD-11TC-22

1 input 1 output

Input: RS-485 full duplex digital signal

Output: RS-485 full duplex digital signal



Overview

The communication signal of PHD-11TC-11 is input into the isolated safety barrier, which can realize the two-way communication of RS-485 Full Duplex digital signal in the dangerous area and the safe area.

This product needs independent power supply, and the power supply, input and output are isolated.

Specifications

Input in hazardous area:

Input signal: RS-485 full duplex digital signal

Safety side output:

Output signal: RS-485 full duplex digital signal

Transmission delay : $\leq 10\mu\text{s}$

Transmission rate: $\leq 115.2\text{kbps}$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 30\text{mA}$ (24VDC power supply)

LED indicator:

Green: Power indicator

Yellow: Signal transmission from safety zone to hazardous zone

Red: Signal transmission from hazardous zone to safety zone

Receiving and transmitting switching time: $\geq 20\text{ms}$

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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

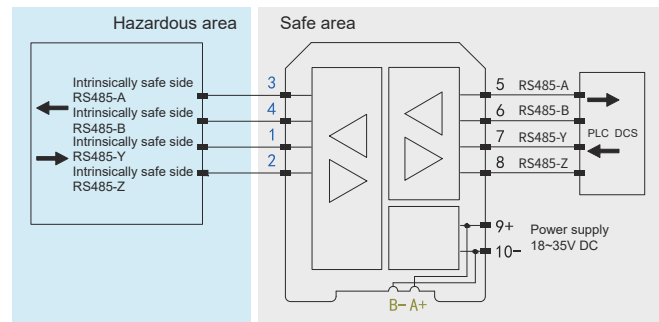
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Communication interface device with RS-485 full duplex digital signal

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: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.
Please refer to "Annex".

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 1-2, 3-4: $U_m: 250\text{V AC/DC}$ $U_o=7.7\text{V DC}$ $I_o=80\text{mA}$

$P_o=0.15\text{W}$ $C_o=6.9\mu\text{F}$ $L_o=5\text{mH}$

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

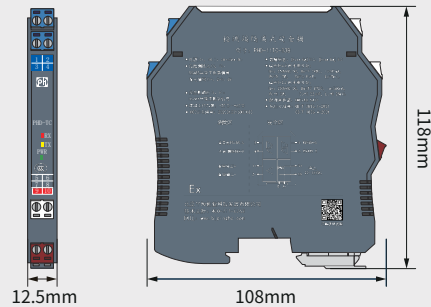
Communication signal input isolated safety barrier

PHD-11TC-33*

1 input 1 output

Input: RS-485 half duplex digital signal

Output: RS-485 half duplex digital signal



Overview

The communication signal of PHD-11TC-33* is input into the isolated safety barrier, which can realize the two-way communication of RS-485 Half Duplex digital signal in the dangerous area and the safe area. This product needs independent power supply, and the power supply, input and output are isolated.

Code	Distribution voltage and current
No code	No distribution power
A	5V
B	6V
C	12V
F	24V
H	User defined

Specifications

Input in hazardous area:

Input signal: RS-485 half duplex digital signal

Distribution voltage: 5V、6V、12V、24V

Safety side output:

Output signal: RS-485 half duplex digital signal

Transmission delay: $\leq 10\mu s$

Transmission rate: $\leq 115.2\text{kbps}$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 170\text{mA}$ (24V power supply, 5V/200mA power distribution.)

LED indicator:

Green: Power indicator

Yellow: Signal transmission from safety zone to hazardous zone

Red: Signal transmission from hazardous zone to safety zone

Receiving and transmitting switching time: $\geq 20\text{ms}$

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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

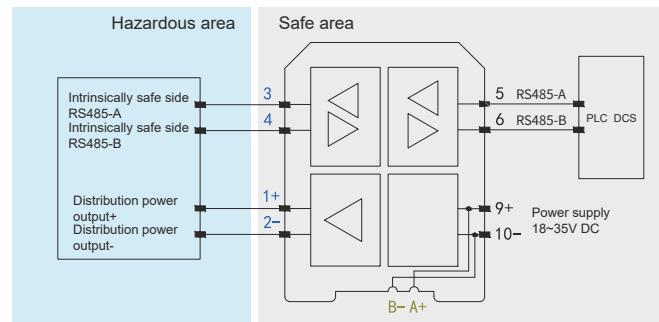
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Communication interface device with RS-485 half duplex

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: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

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 1-2: U_m : 250V AC/DC U_o : 17.8V DC I_o : 260mA

P_o : 1.2W C_o : 0.22 μF L_o : 0.25mH

Terminals 3-4: U_m : 250V AC/DC U_o : 7.7V DC I_o : 80mA

P_o : 0.15W C_o : 6.9 μF L_o : 5mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Communication signal input isolated safety barrier

PHD-11TC-33M

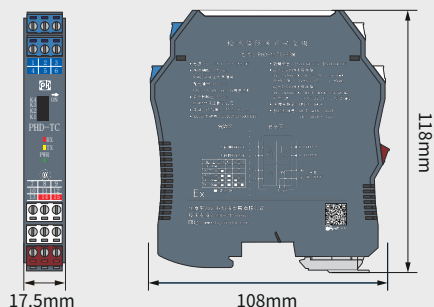
1 input 1 output

Input: RS-485 half duplex digital signal

Output: RS-485 half duplex digital signal



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Overview

The communication signal of PHD-11TC-33M is input into the isolated safety barrier, which can realize the two-way communication of RS-485 Half Duplex digital signal in the dangerous area and the safe area. The circuit provides power distribution for on-site instruments. The voltage value can be switched through the top dial switch. The specific operation method is shown in the chart below. This product needs independent power supply, and the power supply, input and output are isolated.

Distribution power	K1	K2	K3	K4
12V/50mA				
9V/50mA	■			
8V/50mA	■	■		
6V/100mA	■	■	■	
5V/100mA	■	■	■	■

■ ON

Specifications

Input in hazardous area:

Input signal: RS-485 half duplex digital signal

Distribution voltage: 5V、6V、8V、9V、12V

Safety side output:

Output signal: RS-485 half duplex digital signal

Transmission delay : ≤10μs

Transmission rate: ≤1.2kbps~56kbps

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: ≤150mA (24V power supply, 6V/100mA power distribution.)

LED indicator:

Green: Power indicator

Yellow: Signal transmission from safety zone to hazardous zone

Red: Signal transmission from hazardous zone to safety zone

Receiving and transmitting switching time: ≥20ms

Temperature parameters: Working temperature: -20℃~+60℃

storage temperature: -40℃~+80℃

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

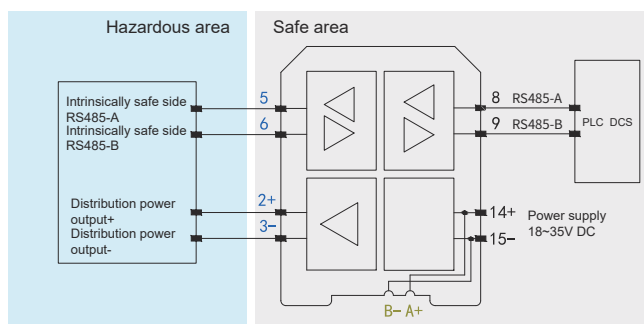
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Communication interface device with RS-485 half duplex digital signal

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

Schematic diagram



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

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 2-3: Um: 250V AC/DC Uo=23.1V DC Io=187mA

Po=1.08W Co=0.1μF Lo=0.8mH

Terminals 5-6: Um: 250V AC/DC Uo=7.7V DC Io=80mA

Po=0.15W Co=6.9μF Lo=5mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

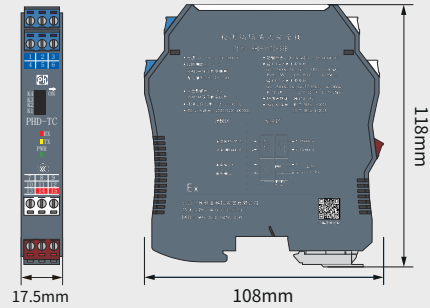
Communication signal input isolated safety barrier

PHD-11TC-13M

1 input 1 output

Input: RS-232 digital signal

Output: RS-485 half duplex digital signal



Overview

PHD-11TC-13M communication signal input isolated safety barrier can convert RS-232 digital signals in hazardous areas into RS-485 half duplex digital signals and transmit them to the safe area. The circuit provides power distribution for field instruments. The voltage value can be switched through the top dip switch. The specific operation method is shown in the chart below.

Distribution power	K1	K2	K3	K4
12V/50mA				
9V/50mA	■			
8V/50mA	■	■		
6V/100mA	■	■	■	
5V/100mA	■	■	■	■

■ ON

Specifications

Input in hazardous area:

Input signal: RS-232 digital signal

Distribution voltage: Providing power supply for field instruments
5V, 6V, 8V, 9V, 12V

Safety side output:

Output signal: RS-485 half duplex digital signal

Transmission delay: $\leq 10\mu s$

Transmission rate: $\leq 1.2\text{kbps} \sim 56\text{kbps}$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 170\text{mA}$ (24V power supply, 6V/100mA power distribution.)

LED indicator:

Green: Power indicator

Yellow: Transmitting signal from safety to hazardous area

Red: Transmitting signal from hazardous to safety area

Receiving and transmitting switching time: $\geq 20\text{ms}$

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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

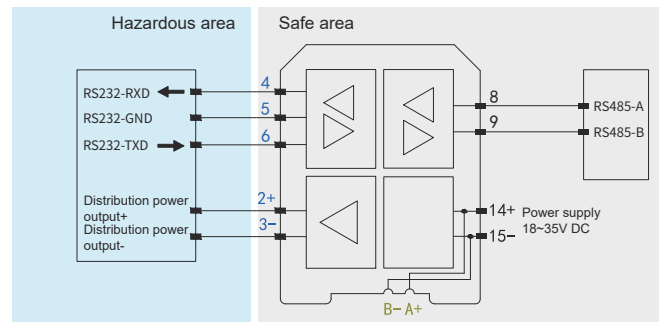
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Communication interface device with RS-232

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: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.
Please refer to "Annex".

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 2-3: U_m : 250V AC/DC U_o =23.1V DC I_o =187mA

P_o =1.08W C_o =0.1 μ F L_o =0.8mH

Terminals 4-5-6: U_m : 250V AC/DC U_o =15V DC I_o =8.5mA

P_o =31.9mW C_o =0.41 μ F L_o =100mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

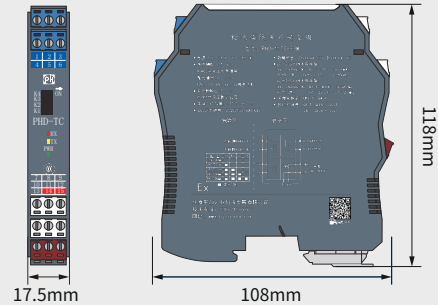
Communication signal input isolated safety barrier

PHD-11TC-31M

1 input 1 output

Input: RS-485 half duplex digital signal

Output: RS-232 digital signal



Overview

PHD-11TC-31M communication signal input isolated safety barrier can convert RS-485 half duplex digital signals in hazardous areas into RS-232 digital signals and transmit them to the safe area. The circuit provides power distribution for field instruments. The voltage value can be switched via the DIP switch at the top. The specific operation method is shown in the chart below.

Distribution power	K1	K2	K3	K4
12V/50mA				
9V/50mA	■			
8V/50mA	■	■		
6V/100mA	■	■	■	
5V/100mA	■	■	■	■

■ ON

Specifications

Input in hazardous area:

Input signal: RS-485 half duplex digital signal

Distribution voltage: Providing power supply for field instruments
5V, 6V, 8V, 9V, 12V

Safety side output:

Output signal: RS-232 digital signal

Transmission delay : $\leq 10\mu\text{s}$

Transmission rate: $\leq 1.2\text{kbps} \sim 56\text{kbps}$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 170\text{mA}$ (24V power supply, 6V/100mA power distribution.)

LED indicator:

Green: Power indicator

Yellow: transmitting signal from safe to hazardous area

Red: transmitting signal from hazardous to safe area

Receiving and transmitting switching time: $\geq 20\text{ms}$

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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

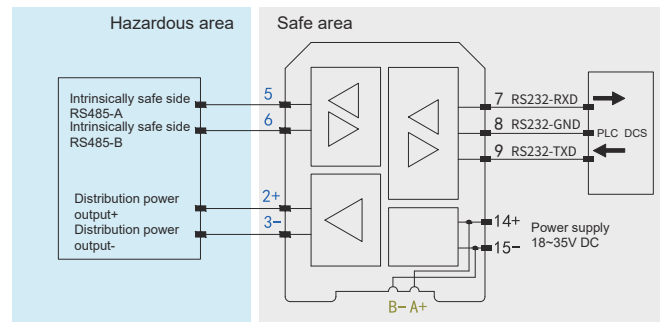
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Communication interface device with RS-485 half duplex digital signal

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

Schematic diagram



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

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 2-3: Um: 250V AC/DC Uo=23.1V DC Io=187mA

Po=1.08W Co=0.1 μF Lo=0.8mH

Terminals 5-6: Um: 250V AC/DC Uo=7.7V DC Io=80mA

Po=0.15W Co=6.9 μF Lo=5mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Frequency signal input isolated safety barrier

PHD-11TP-1*

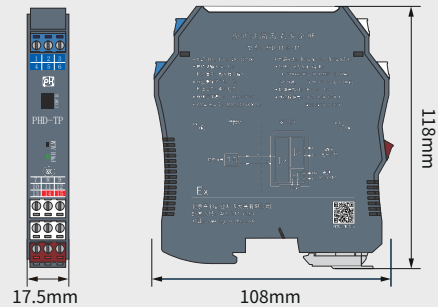
1 input 1 output

PHD-12TP-1**

1 input 2 outputs

Input: Frequency signal

Output: DC signal



Overview

Frequency input signal isolator, convert the frequency signal at the input end into a DC signal output to safety barrier according to the range set by the user.

This product needs independent power supply, and the power supply, input and output are isolated between each other.

"*" represents the output signal type, and the specific model is represented by a code (see "Specifications, models and codes" for details).

Specifications

Input in hazardous area:

Frequency signal input: Input frequency: 0.1Hz~100kHz

Maximum allowable input voltage: 30Vp-p

Minimum input level: $\sim$ 2V, (2Hz~100kHz)

$\square$ 2V, (0.1Hz~100kHz)

Safety side output:

Output signal: DC signal(See output parameters for details)

Current output load resistance: $\leq$ 350 Ω

Voltage output load resistance: $\geq$ 1k Ω

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq$ 65mA (24V power supply, 20mA output)

Minimum range: 50Hz

Impulse width: $\geq$ 2 μ s

Output accuracy: 0.1%F.S

Temperature drift: 0.01%F.S/ $^{\circ}$ C

For details on the input signal fault detection function, refer to the applicable manual

Temperature parameters: Working temperature: -20 $^{\circ}$ C~+60 $^{\circ}$ C

Storage temperature: -40 $^{\circ}$ C~+80 $^{\circ}$ C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq$ 2500V AC/min); between power supply and non-intrinsically safe side ($\geq$ 1500V AC/min)

Insulation resistance: $\geq$ 100M Ω (between input/output/power supply)

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

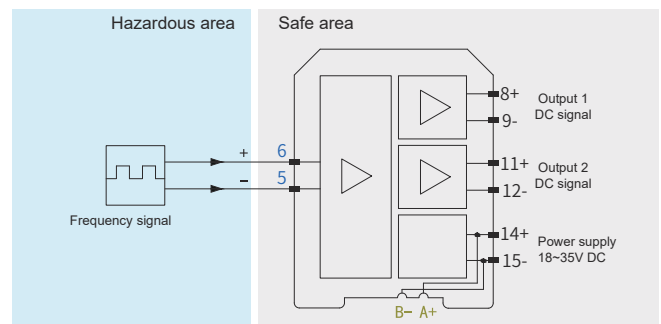
Wire requirements: Cross-section $\geq$ 0.5mm²

Insulation strength $\geq$ 500V

Applicable field equipments: Level pulse signal

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-11TP-11 does not include output part 2

2、The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

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

Terminals5-6 Um: 250V AC/DC Uo=14V DC Io=8mA

Po=28mW Co=0.73 μ F Lo=150mH

Certification body: Shanghai Inspection and Testing Institute of Instruments and Automation Systems (SITIIAS)

Specifications, models and codes

PHD-1□TP-1□□		Code	Input parameters
Number of input channels		1	0.1~100kHz
Number of output channels		Code	Output parameters
T series isolated safety barrier		1	4~20mA
Frequency signal input		2	0~20mA
Input parameters		4	0~10V
Output parameters 1		5	1~5V
Output parameters 2		6	0~5V
		7	$\pm$ 10V
		8	Customized parameters

Frequency signal input isolated safety barrier

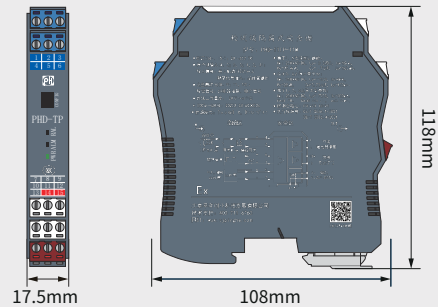
PHD-11TP-1*M
PHD-12TP-1**M

1 input 1 output

1 input 2 outputs

Input: Frequency signal

Output: DC signal+alarm



Overview

Frequency input signal isolator, convert the frequency signal at the input end into a DC signal output to safety barrier according to the range set by the user, it also has a relay alarm output. This product needs independent power supply, and the power supply, input and output are isolated.

"**" represents the output signal type, and the specific model is represented by a code (see "Specifications, models and codes" for details).

Specifications

Input in hazardous area:

Signal type

- 1) three wire PNP/NPN sensor input:
Sensor distribution(2+, 1S, 3-): 14V, Current: $\leq 20\text{mA}$
Input frequency: 0.1Hz~100kHz
- 2) Frequency signal input:
Input frequency: 0.1Hz~100kHz
Maximum allowable input voltage: 30Vp-p
Minimum input level: $\sim 2\text{V}$, (2Hz~100kHz)
 $\sim 2\text{V}$, (0.1Hz~100kHz)
- 3) Proximity switch, dry contact switch input:
Distribution voltage(4+, 5-)≈8V
Short-circuit current(4+, 5-)>7mA
Input frequency: 0.1Hz~100kHz

Safety side output:

Output signal: DC signal(Output parameters)

Current output load resistance: $\leq 350\Omega$

Voltage output load resistance: $\geq 1\text{k}\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 85\text{mA}$ (24V power supply, 20mA output)

Minimum range: 50Hz

Impulse width: $\geq 2\mu\text{s}$

Output accuracy: 0.1%F.S

Temperature drift: 0.01%F.S/°C

For details on the input signal fault detection function, refer to the applicable manual

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq 2500\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

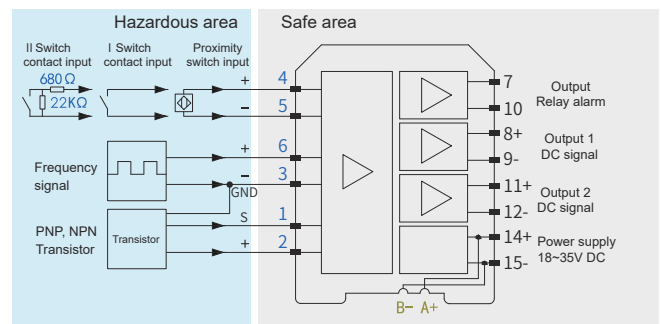
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: According to DIN9234 NAMUR proximity switches, dry contacts etc. field instruments

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-11TP-11M does not include output part 2

2、The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

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 4-5 Um: 250V AC/DC Uo=10.5V DC Io=14mA

Po=37mW Co=2.4μF Lo=165mH

Terminals 3-6 Um: 250V AC/DC Uo=14V DC Io=8mA

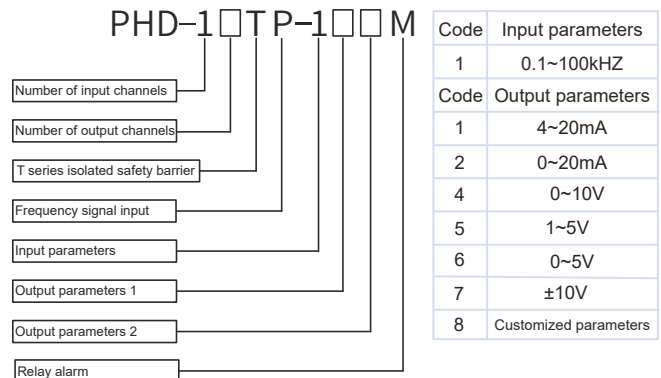
Po=28mW Co=0.73μF Lo=150mH

Terminals 1-2-3 Um: 250V AC/DC Uo=17.5V DC Io=330mA

Po=1.4W Co=0.375μF Lo=0.22mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Specifications, models and codes



Frequency signal input isolated safety barrier

PHD-11TP-13

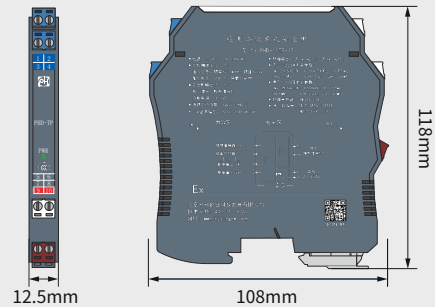
1 input 1 output(Distribution power12V)

PHD-11TP-23

1 input 1 output(Distribution power24V)

Input: Frequency signal

Output: Frequency signal 1: 1



Overview

The frequency signal is input into the isolated safety barrier, which can realize the 1: 1 transmission of the frequency signal of the instrument in the dangerous area to the safe area, and provide the isolated power supply (12V or 24V) for the field instrument in the dangerous area. This product needs independent power supply, and the power supply, input and output are isolated between each other.

Specifications

Input in hazardous area:

Input signal: Frequency $\leq 100\text{kHz}$, amplitude $\leq 12\text{V}$, duty cycle $\geq 20\%$,
high-level $\geq 4\text{V}$, low-level $\leq 1\text{V}$ (PHD-11TP-13)
Frequency $\leq 100\text{kHz}$, amplitude $\leq 24\text{V}$, duty cycle $\geq 20\%$,
high-level $\geq 4\text{V}$, low-level $\leq 1\text{V}$ (PHD-11TP-23)

Distribution voltage: Open circuit voltage $\leq 13\text{V}$, distribution voltage $\geq 8.5\text{V}$
when loaded with 25mA (PHD-11TP-13)
Open circuit voltage $\leq 25\text{V}$, distribution voltage $\geq 16\text{V}$
when loaded with 25mA (PHD-11TP-23)

Safety side output:

Output signal: Frequency signal 1: 1

Signal range: Signal low-level $\leq 0.5\text{V}$

Signal high level $\geq 10\text{V}$ (PHD-11TP-13)

Signal high level $\geq 20\text{V}$ (PHD-11TP-23)

Drive current: $\leq 15\text{mA}$, load resistance $\geq 1\text{k}\Omega$

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: When powered by 24VDC and output at 12V level
 $\leq 50\text{mA}$ (PHD-11TP-13)
 $\leq 70\text{mA}$ (PHD-11TP-23)

LED indicator: Green: Power indicator

Receiving and transmitting switching time: $\geq 20\text{ms}$

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: $10\%\sim 95\%$ RH no condensation

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

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

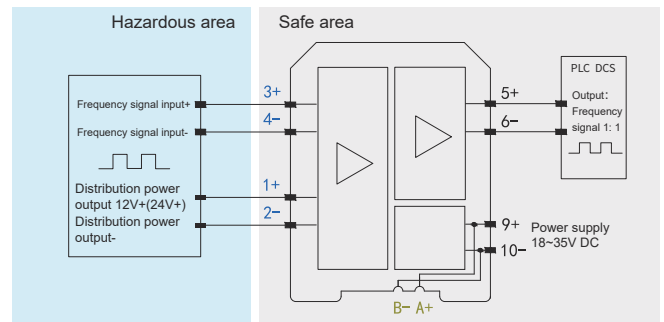
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Frequency measuring equipment

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: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

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

TPHD-11TP-13:

Terminals1-2 Um: 250V AC/DC Uo= 14.7V DC Io= 207mA
Po= 0.76W Co= $0.5\mu\text{F}$ Lo= 0.56mH

Terminals3-4 Um: 250V AC/DC Uo= 8V DC Io= 2.5mA
Po= 5mW Co= $5.9\mu\text{F}$ Lo= 100mH

PHD-11TP-23:

Terminals1-2 Um: 250V AC/DC Uo= 28V DC Io= 93mA
Po= 0.65W Co= $0.05\mu\text{F}$ Lo= 2.4mH

Terminals3-4 Um: 250V AC/DC Uo= 8V DC Io= 2.5mA
Po= 5mW Co= $5.9\mu\text{F}$ Lo= 100mH

Certification body: CQST(China National Quality Supervision and
Test Centre for Explosion Protected Electrical Products)

Frequency signal input isolated safety barrier

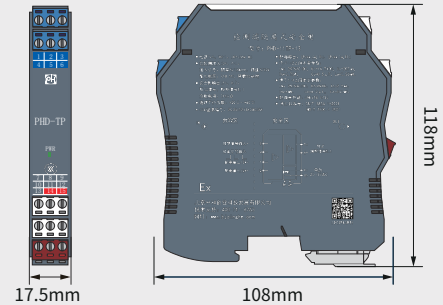
PHD-22TP-1313
PHD-22TP-2323

2 inputs 2 outputs(Distribution power12V)

2 inputs 2 outputs(Distribution power24V)

Input: Frequency signal

Output: Frequency signal 1: 1



Overview

The frequency signal is input into the isolated safety barrier, which can realize the 1: 1 transmission of the frequency signal of the instrument in the dangerous area to the safe area, and provide the isolated power supply (12V or 24V) for the field instrument in the dangerous area. This product needs independent power supply, and the power supply, input and output are isolated between each other.

Specifications

Input in hazardous area:

Input signal: Frequency $\leq 100\text{kHz}$, amplitude $\leq 12\text{V}$, duty cycle $\geq 20\%$,
high-level $\geq 4\text{V}$, low-level $\leq 1\text{V}$ (PHD-22TP-1313)
Frequency $\leq 100\text{kHz}$, amplitude $\leq 24\text{V}$, duty cycle $\geq 20\%$,
high-level $\geq 4\text{V}$, low-level $\leq 1\text{V}$ (PHD-22TP-2323)

Distribution voltage: Open circuit voltage $\leq 13\text{V}$, distribution voltage $\geq 8.5\text{V}$
when loaded with 25mA (PHD-22TP-1313)
Open circuit voltage $\leq 25\text{V}$, distribution voltage $\geq 16\text{V}$
when loaded with 25mA (PHD-22TP-2323)

Safety side output:

Output signal: Frequency signal 1: 1

Signal range: Signal low-level $\leq 0.5\text{V}$

Signal high level $\geq 10\text{V}$ (PHD-22TP-1313)

Signal high level $\geq 20\text{V}$ (PHD-22TP-2323)

Drive current: $\leq 15\text{mA}$, load resistance $\geq 1\text{k}\Omega$

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: When powered by 24VDC and output at 12V level
 $\leq 80\text{mA}$ (PHD-22TP-1313)
 $\leq 100\text{mA}$ (PHD-22TP-2323)

LED indicator: Green: Power indicator

Receiving and transmitting switching time: $\geq 20\text{ms}$

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: $10\%\sim 95\%$ RH no condensation

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

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

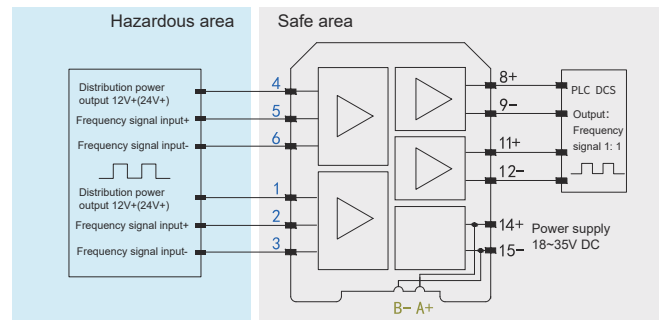
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Frequency measuring equipment

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: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.
Please refer to "Annex".

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

PHD-22TP-1313:

Terminals1-3、4-6 $U_m: 250\text{V AC/DC}$ $U_o=14.7\text{V DC}$ $I_o=207\text{mA}$
 $P_o=0.76\text{W}$ $C_o=0.5\mu\text{F}$ $L_o=0.56\text{mH}$

Terminals2-3、5-6 $U_m: 250\text{V AC/DC}$ $U_o=8\text{V DC}$ $I_o=2.5\text{mA}$
 $P_o=5\text{mW}$ $C_o=5.9\mu\text{F}$ $L_o=100\text{mH}$

PHD-22TP-2323:

Terminals1-3、4-6 $U_m: 250\text{V AC/DC}$ $U_o=28\text{V DC}$ $I_o=93\text{mA}$
 $P_o=0.65\text{W}$ $C_o=0.05\mu\text{F}$ $L_o=2.4\text{mH}$

Terminals2-3、5-6 $U_m: 250\text{V AC/DC}$ $U_o=8\text{V DC}$ $I_o=2.5\text{mA}$
 $P_o=5\text{mW}$ $C_o=5.9\mu\text{F}$ $L_o=100\text{mH}$

Certification body: CQST(China National Quality Supervision and
Test Centre for Explosion Protected Electrical Products)

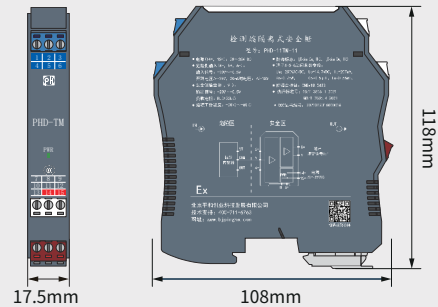
Vibration sensor input isolated safety barrier

PHD-11TM-11

1 input 1 output

Input: -20V~-0.5V

Output: -20V~-0.5V



Overview

The vibration sensor signal is input into the isolated safety barrier, which can realize the 1: 1 isolated transmission of the negative voltage signal output by the vibration sensor in the dangerous area to the safe area, and can transmit AC and DC signals respectively, which has high anti-interference function. The circuit provides isolated power supply for the field instruments.

This product needs independent power supply, and the power supply, input and output are isolated.

Specifications

Input in hazardous area:

Input signal: -20V~-0.5V

Distribution voltage: Open circuit voltage >-25V and 20mA: ≤-18V

Safety side output:

Output signal: -20V~-0.5V

Load resistance: $R_L \geq 20k\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: ≤60mA (24VDC power supply, when 20mA)

LED indicator : Green—Power indicator

DC transmission accuracy: $< \pm 50mV$

AC transmission accuracy: 0Hz~1kHz, $\pm 1\%$

1kHz~10kHz, $-2\% \sim +1\%$

10kHz~20kHz, $-5\% \sim +1\%$

Phase response: Less than 10 μs is equivalent to

-0.72° 200Hz

-2° 600Hz

-3.6° 1kHz

-36° 10kHz

-72° 20kHz

Voltage bandwidth (-3dB): ≥40kHz

Temperature drift: 0.01%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

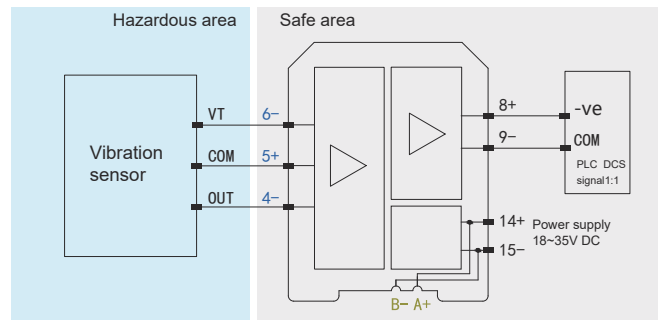
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Vibration sensor, negative voltage generator

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: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

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 4-5-6 Um: 250V AC/DC Uo=26.5V DC Io=93mA

Po=617mW Co=0.073μF Lo=4.1mH

Certification body: SITIIAS

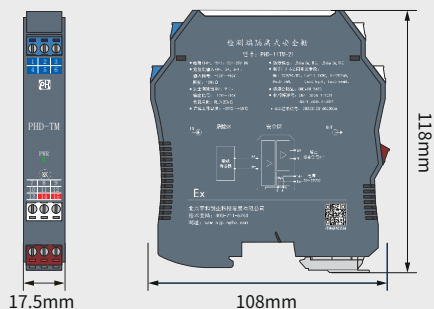
Vibration sensor input isolated safety barrier

PHD-11TM-21

1 input 1 output

Input: -10V~+10V

Output: -10V~+10V



Overview

The vibration sensor signal is input into the isolated safety barrier, which can realize the 1: 1 isolated transmission of the negative voltage signal output by the vibration sensor in the dangerous area to the safe area, and can transmit AC and DC signals respectively, which has high anti-interference function.

This product needs independent power supply, and the power supply, input and output are isolated.

Specifications

Input in hazardous area:

Input signal: -10V~+10V

Impedance: 100kΩ

Safety side output:

Output signal: -10V~+10V

Load resistance: $R_L \geq 20k\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 35mA$ (24VDC power supply)

LED indicator : Green—Power indicator

DC transmission accuracy: $< 0.2\%F.S$

AC transmission accuracy: 0Hz~600Hz, $\pm 0.2\%F.S$
600Hz~10kHz, $-1.5\% \sim +0.2\%$

Phase response: Less than $10 \mu s$ is equivalent to

-0.72°	200Hz
-2°	600Hz
-3.6°	1kHz
-36°	10kHz

Voltage bandwidth (-3dB): $\geq 40kHz$

Temperature drift: 0.01%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C
storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq 3000V AC/min$); between power supply and non-intrinsically safe side ($\geq 1500V AC/min$)

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

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

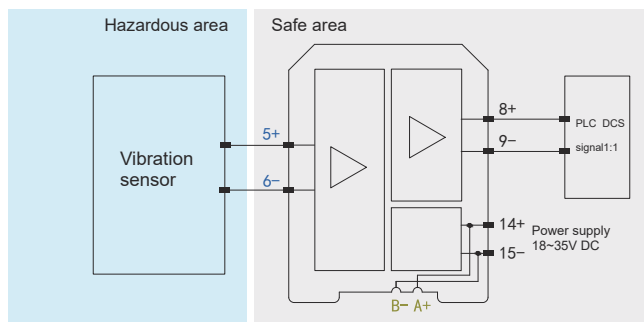
Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Vibration sensor, negative voltage generator

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: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

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 5-6 Um: 250V AC/DC Uo=1.2V DC Io=0.2mA

Po=0.06mW Co=100μF Lo=100mH

Certification body: SITIIAS

Flame and smoke detector input isolation safety barrier

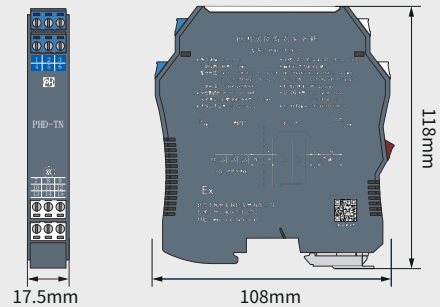
PHD-11TN-11
PHD-22TN-1111

1 input 1 output

2 inputs 2 outputs

Input: 0~40mA

Output: 0~40mA



Overview

The isolated safety barriers with flame and smoke detectors input signals, which can provide isolation power for flame detectors in hazardous areas. The flame detector generates 0-40mA signals from the hazardous area and transmits them to the safe area, playing a smoke alarm role. This product adopts output loop power supply and is suitable for DCS/PLC systems with loop power supply. This product does not require independent power supply, and the input and output terminals are isolated.

Specifications

Input in hazardous area:

Input signal: 0~40mA

Distribution voltage: $U_o \geq U_i - (280 + R_L) I$, $U_i \leq 24V$

$U_o \geq 18 - (280 + R_L) I$, $U_i > 24V$

Short circuit current: $\leq 65mA$ (24VDC power supply)

Safety side output:

Output signal: 0~40mA

Basic parameters:

Signal power supply: 20~35V DC

Transmission accuracy: 0.2%F.S

Response time: Reaching 90% of the final value within 2ms

Temperature drift: 0.01%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically

safe side ($\geq 3000V$ AC/min); between power supply

and non-intrinsically safe side ($\geq 1500V$ AC/min)

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

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

Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

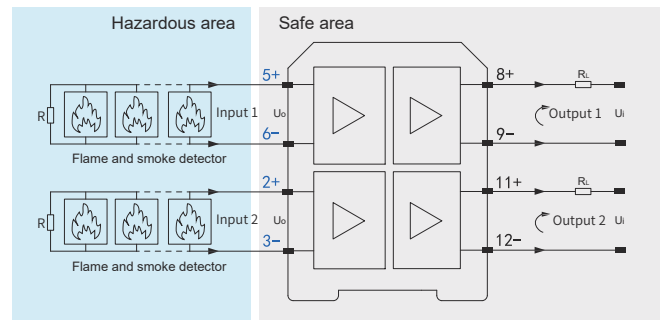
Applicable field equipments: Flame and smoke detector

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: PHD-11TN-11 does not include input 2 and output 2 parts

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 5-6, 2-3 U_m : 250V AC/DC U_o : 25.2V DC I_o : 93mA

P_o : 586mW C_o : 0.083μF L_o : 4.2mH

Certification body: CQST (China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Analogue Output Isolated Safety Barrier

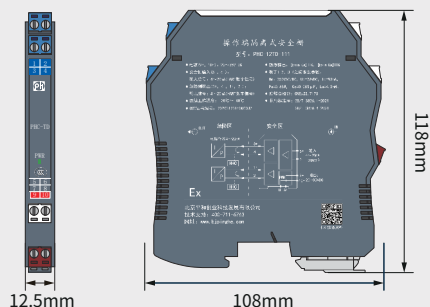
PHC-11TD-11
PHC-12TD-111

1 input 1 output

1 input 2 outputs

Input: 4~20mA (HART digital signal)

Output: 4~20mA (HART digital signal)



Overview

The analog output isolated safety barrier can realize the isolated transmission of 4~20mA signals from the instruments in the safe area to the dangerous area, drive the valve positioner, electric/pneumatic converter and other equipment on site, and support the bidirectional transmission of HART digital signals. This product needs independent power supply, and the power supply, input and output are isolated.

Specifications

Input in hazardous area:

Input signal: 4~20mA (HART digital signal)

Safety side output:

Output signal: 4~20mA (HART digital signal)

Load resistance: When outputting 20mA, 0~800 Ω (customizable)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: 24V power supply, 20mA output

≤50mA(PHC-11TD-11)

≤80mA(PHC-12TD-111)

LED indicator: Green: Power indicator

Output accuracy: 0.1%FS (Typical value: 0.05%FS)

Response time: Reaching 90% of the final value within 2ms

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C
storage temperature:-40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100M Ω (between input/output/power supply)

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

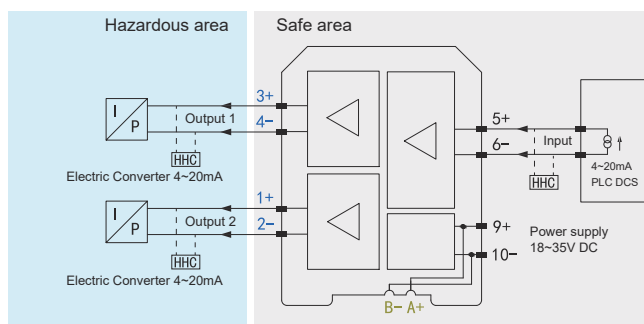
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Valve positioner, electric/pneumatic converter

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 IIC

Connection wiring



Note: 1. PHC-11TD-11 does not contain output 2.

2. The power supply of the power rail is an optional function. Users need to specify the power supply mode when ordering. Please refer to "Annex".

Safe certification

Functional safety certification: SIL2 according to IEC 61508 standards

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 1-2, 3-4: Um: 250V AC/DC Uo=28V DC Io=93mA

Po=0.65W Co=0.083 μ F Lo=4.2mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Analogue Output Isolated Safety Barrier

PHC-22TD-1111

2 inputs 2 outputs

Input: 4~20mA (HART digital signal)

Output: 4~20mA (HART digital signal)

SIL3
IEC 61508

PROFIBUS DP
COMPLIANT

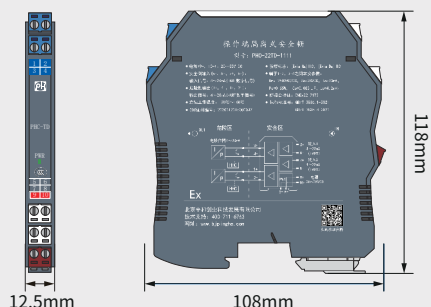
IEC
IECEx

Ex

CNEX
国家防爆

CCC

CCS
中国合格评定



Overview

The analog output isolated safety barrier can realize the isolated transmission of 4~20mA signals from the instruments in the safe area to the dangerous area, drive the valve positioner, electric/pneumatic converter and other equipment on site, and support the bidirectional transmission of HART digital signals. This product needs independent power supply, and the power supply, input and output are isolated.

Specifications

Input in safe area:

Input signal: 4~20mA (HART digital signal)

Output in hazardous area:

Output signal: 4~20mA (HART digital signal)

Load resistance: When outputting 20mA, 0~800Ω (customizable)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: ≤90mA(power supply, 20mA output)

LED indicator: Green: Power indicator

Output accuracy: 0.1%FS (Typical value: 0.05%F.S)

Response time: Reaching 90% of the final value within 2ms

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C
storage temperature:-40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

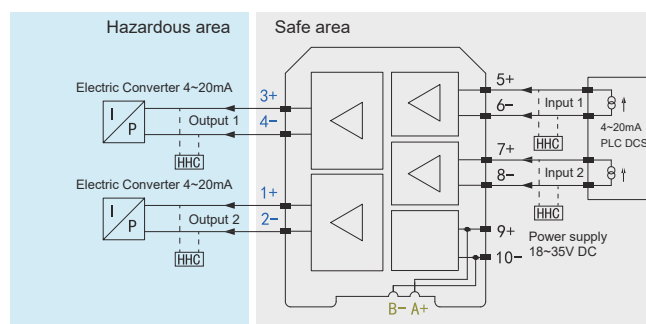
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Valve positioner, electric/pneumatic converter

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: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Safe certification

Functional safety certification: SIL3 according to IEC 61508 standards

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 1-2, 3-4: Um: 250V AC/DC Uo=28V DC Io=93mA

Po=0.65W Co=0.083μF Lo=4.2mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Digital Output Isolated Safety Barrier

PHC-11TF-13	1 input 1 output(35mA output)
PHC-11TF-14	1 input 1 output(45mA output)
PHC-11TF-16	1 input 1 output(60mA output)

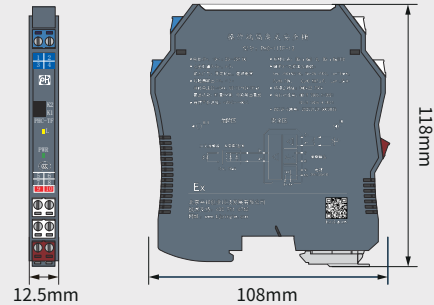
Input: Switch contacts, logic levels

Output: Switch output driving 12V, 35mA/45mA/60mA



国家防爆

CCS



Overview

The switching output isolated safety barrier drives the on-site intrinsically safe equipment in the hazardous area through the contact switch and logic level signal control in the safe area. Thereby controlling solenoid valves, sound and light alarms, etc. The signal status indicator light is set in red and yellow colors, the alarm displays red, and the output solenoid valve and other working tasks display yellow.

This product needs to be powered independently, and the power supply, input and output terminals are isolated between each other.

Specifications

Input in safe area:

Input signal: Switch contact, logic level

Output in hazardous area:

Open circuit voltage: 22V~24V DC, UE/IE=12V

35mA(PHC-11TF-13)

45mA(PHC-11TF-14)

60mA(PHC-11TF-16)

Inversion function: K1 is set to the ON side, and the circuit output is inverted

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: 24V power supply

≤70mA(PHC-11TF-13, 12V/35mA power distribution)

≤80mA(PHC-11TF-14, 12V/45mA power distribution)

≤100mA(PHC-11TF-16, 12V/60mA power distribution)

LED indicator: Green——Power indicator

Yellow——Output relay in normal working state

Alarm relay function: When dial switch K2 is at "ON" side, circuit selection alarm function

Load resistance <50Ω, short circuit alarm (SC)

Load resistance >10kΩ, open circuit alarm (LB)

Characteristic response time of alarm relay:

Response time: 20ms

Driving capacity: 250V AC/2A, 30V DC/2A resistive load

Load type: Resistive load

Temperature parameters: Working temperature: -20°C~+60°C
storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

Wire requirements: Cross-section ≥0.5mm²

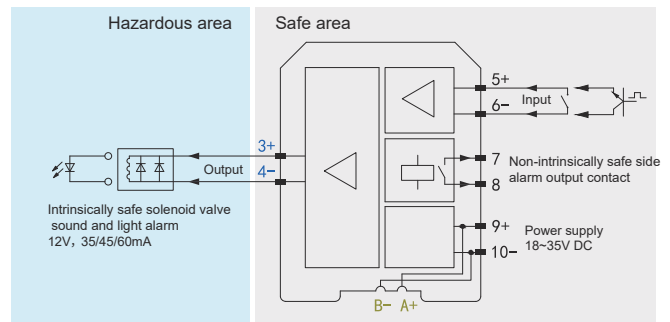
Insulation strength ≥500V

Applicable field equipments:

Audible and visual alarm, intrinsically safe solenoid valve

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: The power supply of the power rail is an optional function. Users need to specify the power supply mode when ordering. Please refer to "Annex".

Safe certification

Functional safety certification: SIL2 according to IEC 61508 standards

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

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

PHC-11TF-13:

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

Terminals 3-4 Um: 250V AC/DC Uo=25.2V DC Io=85mA

Po=0.535W Co=0.107μF Lo=6mH

PHC-11TF-14:

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

Terminals 3-4 Um: 250V AC/DC Uo=25.2V DC Io=115mA

Po=0.73W Co=0.107μF Lo=1.5mH

PHC-11TF-16:

Explosion-proof mark: [Ex ia Ga] IIB [Ex ia Da] IIIC

Terminals 3-4 Um: 250V AC/DC Uo=25.2V DC Io=170mA

Po=1.07W Co=0.82μF Lo=4mH

Information maybe revised without prior notice



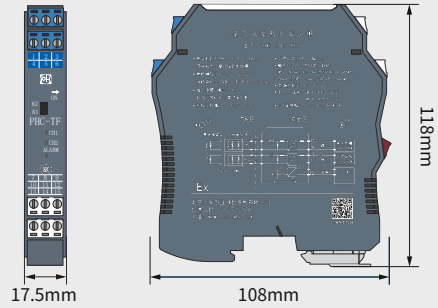
Digital Output Isolated Safety Barrier(Loop Powered)

PHC-11TF-33
PHC-22TF-3333

1 input 1 output
2 inputs 2 outputs

Input: Contact-controlled DC voltage

Output: Switch output driving 12V/35mA



Overview

The 12V/35mA switch output isolating safety barrier transmits power from the safe area to the hazardous area through contact switch control, driving intrinsically safe field devices such as solenoid valves and audible/visual alarms. The input side in the safe area is connected to the power supply via contacts.

Specifications

Input in safe area:

Input signal: Contact-controlled DC voltage

Controlled power supply: 20~35V DC

Output in hazardous area:

Output signal: Switch output driving 12V/35mA

Open-circuit output voltage: 22V~24V

Alarm Relay Function: Set the dip switch K1 (K2) to the "ON" side, and select the alarm function for the channel - (channel 2) circuit

Short-circuit alarm (SC) when load resistance < 50Ω

Open-circuit alarm (LB) when load resistance > 10kΩ

Alarm Relay Characteristics: Response time: ≤ 20ms

Driving capacity: 250V AC/2A, 30V DC/2A

Load type: Resistive load

Basic parameters:

LED indicators: CH (channel indicator)

ALARM (alarm indicator)

Temperature parameters: Working temperature: -20°C~+60°C

storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

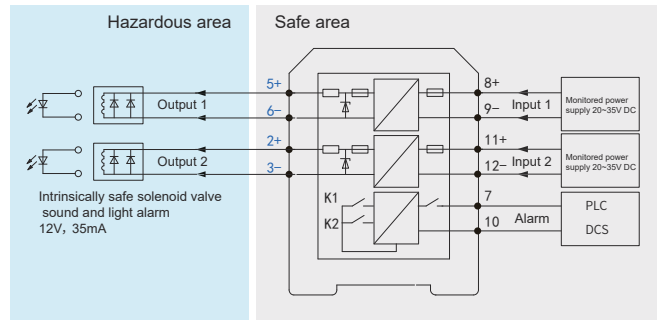
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Audible/visual alarms, intrinsically safe solenoid valves

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: PHC-11TF-33 does not include input 2 and output 2 parts.

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 2-3, 5-6 Um: 250V AC/DC Uo=25.2V DC Io=85mA

Po=0.535W Co=0.107μF Lo=5mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

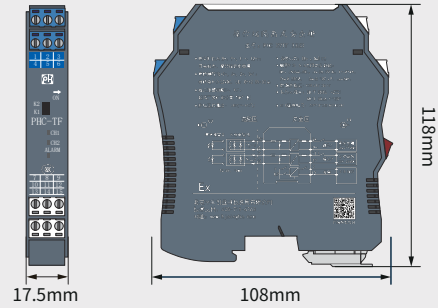
Digital Output Isolated Safety Barrier(Loop Powered)

PHC-11TF-34
PHC-22TF-3434

1 input 1 output
2 inputs 2 outputs

Input: Contact-controlled DC voltage

Output: Switch output driving 12V/45mA



Overview

The 12V/45mA switch output isolating safety barrier transmits power from the safe area to the hazardous area through contact switch control, driving intrinsically safe field devices such as solenoid valves and audible/visual alarms. The input side in the safe area is connected to the power supply via contacts.

Specifications

Input in safe area:

Input signal: Contact-controlled DC voltage

Controlled power supply: 20~35V DC

Output in hazardous area:

Output signal: Switch output driving 12V/45mA

Open-circuit output voltage: 22V~24V

Alarm Relay Function: Set the dip switch K1 (K2) to the "ON" side, and select the alarm function for the channel - (channel 2) circuit

Short-circuit alarm (SC) when load resistance < 50Ω

Open-circuit alarm (LB) when load resistance > 10kΩ

Alarm Relay Characteristics: Response time: ≤ 20ms

Driving capacity: 250V AC/2A, 30V DC/2A

Load type: Resistive load

Basic parameters:

LED indicators: CH (channel indicator)

ALARM (alarm indicator)

Temperature parameters: Working temperature: -20°C~+60°C

storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

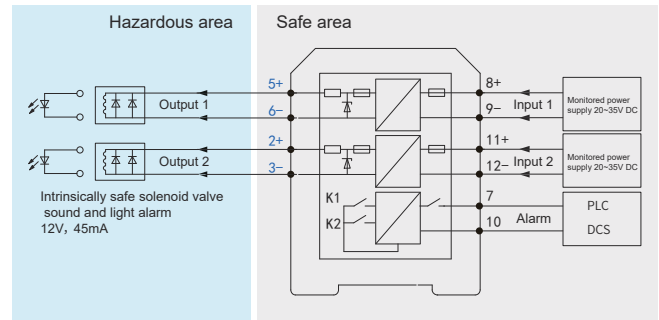
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Audible/visual alarms, intrinsically safe solenoid valves

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: PHC-11TF-34 does not include input 2 and output 2 parts.

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 2-3, 5-6 Um: 250V AC/DC Uo=25.2V DC Io=115mA

Po=0.73W Co=0.107μF Lo=1.5mH

Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Digital Output Isolated Safety Barrier(Loop Powered)

PHC-11TF-36

1 input 1 output

PHC-22TF-3636

2 inputs 2 outputs

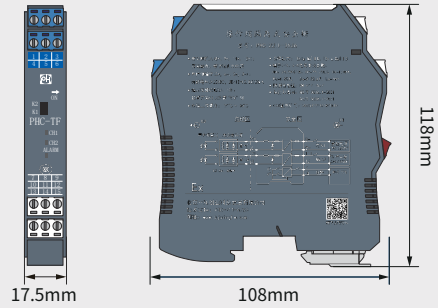
Input: Contact-controlled DC voltage

Output: Switch output driving 12V/35mA



国家防爆

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Overview

The 12V/60mA switch output isolating safety barrier transmits power from the safe area to the hazardous area through contact switch control, driving intrinsically safe field devices such as solenoid valves and audible/visual alarms. The input side in the safe area is connected to the power supply via contacts.

Specifications

Input in safe area:

Input signal: Contact-controlled DC voltage

Controlled power supply: 20~35V DC

Output in hazardous area:

Output signal: Switch output driving 12V/60mA

Open-circuit output voltage: 22V~24V

Alarm Relay Function: Set the dip switch K1 (K2) to the "ON" side, and select the alarm function for the channel - (channel 2) circuit

Short-circuit alarm (SC) when load resistance < 50Ω

Open-circuit alarm (LB) when load resistance > 10kΩ

Alarm Relay Characteristics: Response time: ≤ 20ms

Driving capacity: 250V AC/2A, 30V DC/2A

Load type: Resistive load

Basic parameters:

LED indicators: CH (channel indicator)

ALARM (alarm indicator)

Temperature parameters: Working temperature: -20°C~+60°C

storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

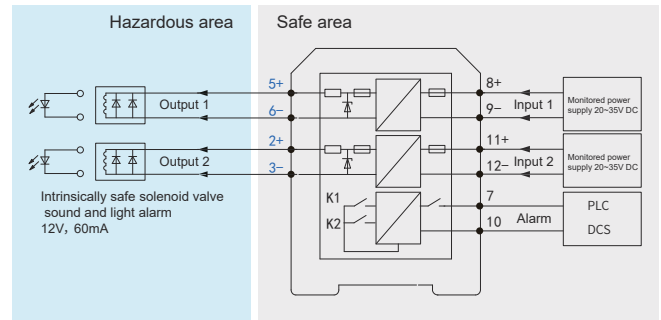
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Audible/visual alarms, intrinsically safe solenoid valves

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: PHC-11TF-36 does not include input 2 and output 2 parts.

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 2-3, 5-6 Um: 250V AC/DC Uo=25.2V DC Io=170mA

Po=1.07W Co=0.82μF Lo=4mH

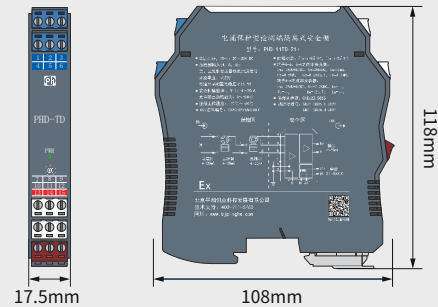
Certification body: CQST(China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)

Surge Protection Type Analogue Input Isolated Safety Barrier

PHD-11TD-21+
PHD-12TD-211+

1 input 1 output
1 input 2 outputs

Input: two or three-wire transmitter or
current source(HART digital signal)
Output: 4~20mA (HART digital signal)



Overview

The analog input isolated safety barrier with surge protection function provides isolated power supply for two - and three wire transmitters in hazardous areas. The 4~20mA signal generated by the transmitter or current source is transmitted from the hazardous area to the safe area output, thereby driving the load in the safe area. For two-or three wire transmitters or current source signals, this safety barrier supports bidirectional communication of the Hart digital signal superimposed on the 4~20mA signal and has a wire breakage alarm function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Two or three-wire transmitter
or current source(HART digital signal)

Transmitter distribution voltage: The open circuit voltage is $\leq 28V$,
and the output voltage is $\geq 15.5V$ when the circuit is 20mA

Output in safe area:

Output signal: 4~20mA(HART digital signal)

Output load: When outputting 20mA, 0~500 Ω (customizable)

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: When 24V power supply, 20mA output
 $\leq 65mA$ (PHD-11TD-21)
 $\leq 95mA$ (PHD-12TD-211)

LED indicator: Green——power indicator

Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)

Response time: 2ms to reach 90% of the final value

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

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

Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and
non-intrinsically safe side ($\geq 3000V$ AC/min)
between power supply and non-intrinsically
safe side ($\geq 1500V$ AC/min)

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

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

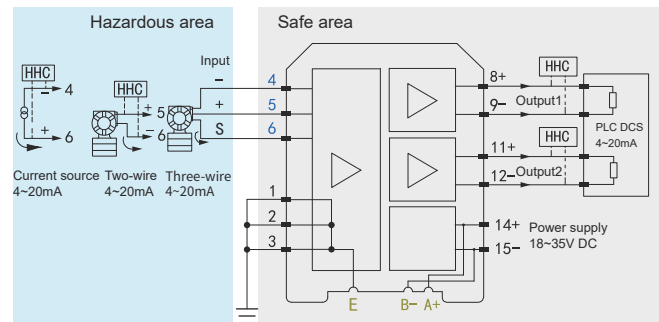
Wire requirements: Cross-section $\geq 0.5mm^2$;

Insulation strength $\geq 500V$

Applicable field equipments: Two, three-wire (HART) transmitter
or current source (HART) signal

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 IIC

Connection wiring



Note: 1. PHD-11TD-21+ does not include output 2 part.

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.
Please refer to "Annex".

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 5-6,5-4 U_m : 250V AC/DC $U_o=28V$ DC $I_o=93mA$

$P_o=0.65W$ $C_o=0.083\mu F$ $L_o=4.2mH$

Terminals 4-6 U_m : 250V AC/DC $U_o=7.2V$ DC $I_o=---$

$P_o=---$ $C_o=12\mu F$ $L_o=---$

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

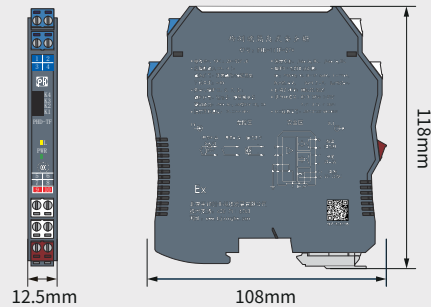
Surge Protection Type Digital Input Isolated Safety Barrier

PHD-11TF-27+

1 input 1 output

Input: Contact and NAMUR proximity switch

Output: Relay+alarm(optional)



Overview

The isolated safety barrier with surge protection function of switch input relay outputs, which isolates and transmits input signals from switch contacts or proximity switches in hazardous areas to of the safety zone with output relay through the safety barrier. Line fault detection is achieved through a separate relay output and displayed on the top LED of the module. The dial switch of the module is used to set input and output in-phase or reverse control, as well as to enable or disable the line fault detection alarm indication function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Switching rate: <10Hz

Input/output characteristics:

On site input current: >2.1mA, the output is closed, indicating ON

When<1.2mA, the output is open circuit, indicating OFF

Output normally "Open"/"Closed" contact conversion control:

When dial switch K1 is at "ON" side, the relay output is "Normally closed".

When dial switch K1 is at "OFF" side, the relay output is "Normally open".

When dial switch K2 is at "ON" side, the circuit selects indicating red light LFD alarm function.

Output in safe area:

Output signal: Relay and alarm relay (optional)

Drive capability: 250VAC/2A, 30VDC/2A
when subjected to resistive loads

Response time: 20ms

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016
(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <30mA(24V power supply,
when the relay contacts close)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

Temperature parameters: Working temperature: -20°C ~ +60°C,
Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically
safe side ($\geq 3000V$ AC/min); between power supply
and non-intrinsically safe side ($\geq 1500V$ AC/min)

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

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

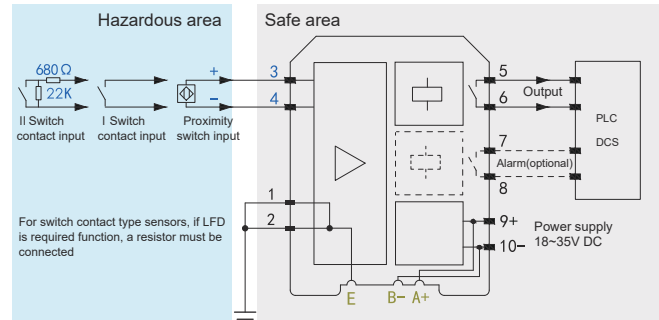
Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500W$

Applicable field equipments: Field equipment such as dry contacts
or NAMUR type proximity switch inputs
that comply with DIN19234 standard

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: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current>7mA, short circuit alarm (SC); On site input current<0.1mA, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a 22k Ω resistor should be connected in parallel at both ends of the switch, and a 680 Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

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 : 10.5V DC I_o : 15mA
 P_o : 39.4mW C_o : 1.7 μF L_o : 165mH

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

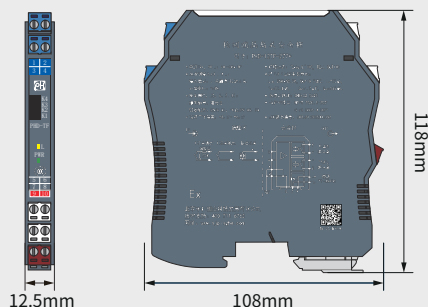
Surge Protection Type Digital Input Isolated Safety Barrier

PHD-12TF-277+

1 input 2 outputs

Input: Contact and NAMUR proximity switch

Output: Relay



Overview

The isolated safety barrier with surge protection function of switch input relay outputs, which isolates and transmits input signals from switch contacts or proximity switches in hazardous areas to of the safety zone with output relay through the safety barrier. Line fault detection is achieved through a separate relay output and displayed on the top LED of the module. The dial switch of the module is used to set input and output in-phase or reverse control, as well as to enable or disable the line fault detection alarm indication function. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Switching rate: <10Hz

Input/output characteristics:

On site input current: >2.1mA, the output is closed, indicating ON

When<1.2mA, the output is open circuit, indicating OFF

Output normally "Open"/"Closed" contact conversion control:

When dial switch K1、K3 is at "ON" side, the relay output is "Normally closed"

When dial switch K1、K3 is at "OFF" side, the relay output is "Normally open"

When dial switch K2、K4 is at "ON" side, the circuit selects indicating red light LFD alarm function

Output in safe area:

Output signal: Relay

Drive capability: 250VAC/2A, 30VDC/2A
when subjected to resistive loads

Response time: 20ms

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016
(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <40mA(24V power supply,
when the relay contacts close)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

Temperature parameters: Working temperature: -20°C ~ +60°C,
Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically
safe side ($\geq 3000V$ AC/min); between power supply
and non-intrinsically safe side ($\geq 1500V$ AC/min)

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

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

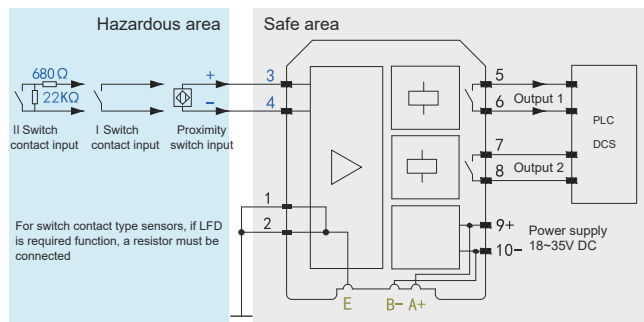
Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500W$

Applicable field equipments: Field equipment such as dry contacts
or NAMUR type proximity switch inputs
that comply with DIN19234 standard

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 IIC

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current>7mA, short circuit alarm (SC); On site input current<0.1mA, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a 22k Ω resistor should be connected in parallel at both ends of the switch, and a 680 Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

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 =10.5V DC I_o =15mA

P_o =39.4mW C_o =1.7 μ F L_o =165mH

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

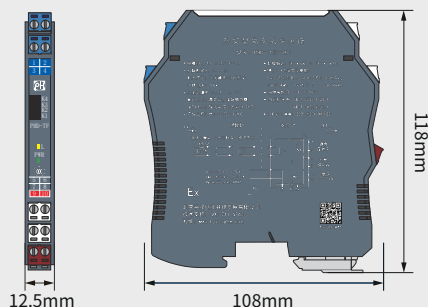
Surge Protection Type Digital Input Isolated Safety Barrier

PHD-11TF-28+

1 input 1 output

Input: Contact and NAMUR proximity switch

Output: Transistor+Alarm(optional)



Overview

The isolated safety barrier with surge protection function of switch input transistor output, which isolates and transmits input signals from switch contacts or proximity switches in hazardous areas to of the safety zone with output transistor through the safety barrier. Line fault detection is achieved through LED on the top of the module.

The dial switch of the module is used to set input and output in-phase or reverse control, as well as to enable or disable the line fault detection alarm indication function.

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

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Input frequency range: $\leq 5\text{kHz}$

Input/output characteristics:

On site input current: $>2.1\text{mA}$, the output is closed, indicating ON;

When $<1.2\text{mA}$, the output is open circuit, indicating OFF

Switched control between inverted phase and normal phase of

outputs e-c: When the dial switch K1 is at "ON", the transistor

output e-c are in inverted phase

When the dial switch K1 is at "OFF", the transistor

output e-c are in normal phase

When the K2 is at "ON", the circuit will select the red

light LFD indication alarm function

Output in safe area:

Output signal: Transistor and alarm relay (optional)

Output characteristic: NPN type transistor emitter or collector open circuit output

Drive capability: Output current $\leq 20\text{mA}$ ($1.2\text{k}\Omega$), maximum internal current 100mA , equipped with short-circuit current protection

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/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: $<40\text{mA}$ (24V power supply, when the transistor is conducting)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

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: $10\%\sim 95\%\text{ RH}$ no condensation

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

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

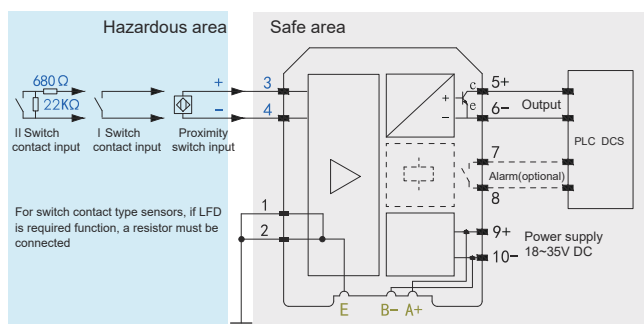
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$;

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

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

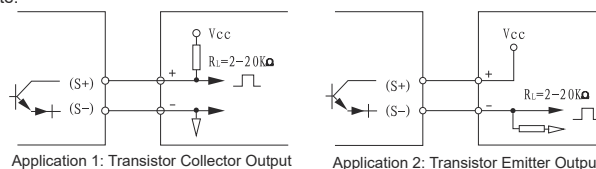


Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Note:



Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current $>7\text{mA}$, short circuit alarm (SC); On site input current $<0.1\text{mA}$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22\text{k}\Omega$ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

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 : 10.5V DC I_o : 15mA

P_o : 39.4mW C_o : $1.7\mu\text{F}$ L_o : 165mH

Certification body: CQST(China National Quality Supervision and

Test Centre for Explosion Protected Electrical Products)

Beijing lightning protection products testing center

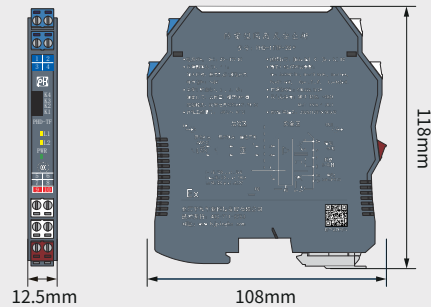
Surge Protection Type Digital Input Isolated Safety Barrier

PHD-12TF-288+

1 input 2 outputs

Input: Contact and NAMUR proximity switch

Output: Transistor



Overview

The isolated safety barrier with surge protection function of switch input transistor output, which isolates and transmits input signals from switch contacts or proximity switches in hazardous areas to of the safety zone with output transistor through the safety barrier. Line fault detection is achieved through LED on the top of the module.

The dial switch of the module is used to set input and output in-phase or reverse control, as well as to enable or disable the line fault detection alarm indication function.

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

Specifications

Input in hazardous area:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Input frequency range: $\leq 5\text{kHz}$

Input/output characteristics:

On site input current: $>2.1\text{mA}$, the output is closed, indicating ON;

When $<1.2\text{mA}$, the output is open circuit, indicating OFF

Switched control between inverted phase and normal phase of outputs e-c: When the dial switch K1,K3 is at "ON", the transistor output e-c are in inverted phase

When the dial switch K1,K3 is at "OFF", the transistor output e-c are in normal phase

When the K2,K4 is at "ON", the circuit will select the red light LFD indication alarm function

Output in safe area:

Output signal: Transistor

Output characteristic: NPN type transistor emitter or collector open circuit output

Drive capability: Output current $\leq 20\text{mA}$ ($1.2\text{k}\Omega$), maximum internal current 100mA , equipped with short-circuit current protection

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/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: $<50\text{mA}$ (24V power supply, when the transistor is conducting)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

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: $10\%\sim 95\%$ RH no condensation

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

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

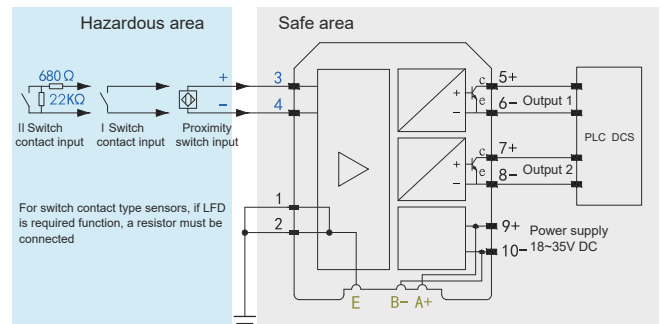
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

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

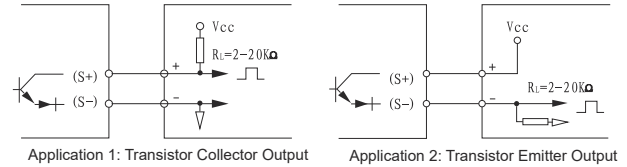


Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Note:



Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current $>7\text{mA}$, short circuit alarm (SC); On site input current $<0.1\text{mA}$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22\text{k}\Omega$ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

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 : 10.5V DC I_o : 15mA

P_o : 39.4mW C_o : $1.7\mu\text{F}$ L_o : 165mH

Certification body: CQST(China National Quality Supervision and

Test Centre for Explosion Protected Electrical Products)

Beijing lightning protection products testing center

Information maybe revised without prior notice

Surge Protection Type RTD input isolated safety barrier

PHD-11TZ-*1+

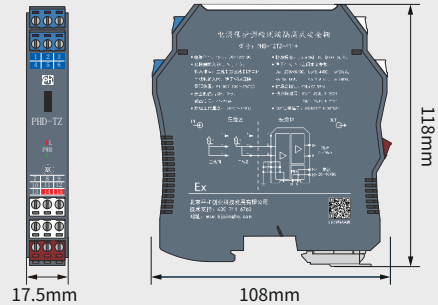
1 input and 1 output

PHD-12TZ-*11+

1 input and 2 outputs

Input: RTD

Output: 4~20mA



Overview

The RTD input isolation safety barrier with surge protection function can convert the two wire or three wire thermistor (RTD) signals in hazardous areas into 4~20mA current signals and output them to the safety zone. It can be intelligently configured, and the actual range of the thermal resistance 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 thermistor, 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: RTD 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: Corresponding measurement range of thermal resistance

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

Safety side output:

Output signal: 4~20mA

Load capacity: 0~500Ω(customizable)

Surge protection features:

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

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

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

According to standards: GB/T 18802.21-2016

(equivalent to IEC 61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: When 24VDC power supply, 20mA output
 $\leq 40mA$ (PHD-11TZ-*1+)
 $\leq 70mA$ (PHD-12TZ-*11+)

LED indicator: Green: Power indicator

Low range alarm yellow light on, high range alarm red 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 300ms

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq 3000V$ AC/min); between power supply and non-intrinsically safe side ($\geq 1500V$ AC/min)

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

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

Wire requirements: Cross-section $\geq 0.5mm^2$

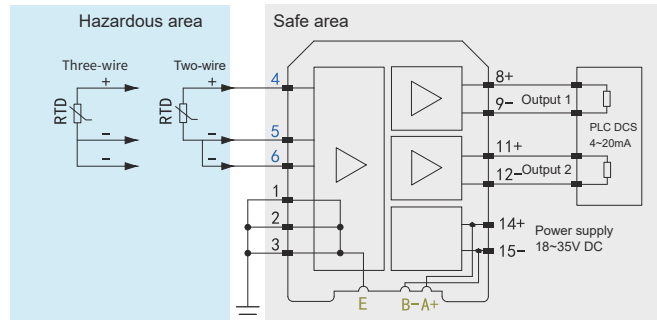
Insulation strength $\geq 500W$

Applicable field equipments: Two wire or three wire thermistors

G53, Cu50, Pt100, Pt1000, Ni1000

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-11TZ - * 1+ does not include output part 2

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering. Please refer to "Annex".

3. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

4. When inputting a two-wire RTD, safety barrier terminals 4 and 2 must be short circuited

Input signal type and range table

Code	Model	Measurement range	Minimum range	Conversion accuracy
1	G53	-50~150°C	20°C	0.2°C/0.1%
2	Cu50	-50~150°C	20°C	0.2°C/0.1%
4	Pt100	-200~850°C	20°C	0.2°C/0.1%
6	Pt1000	-200~850°C	20°C	0.2°C/0.1%
7	Ni1000	-60~250°C	20°C	0.2°C/0.1%

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 4-6, 5-6 U_m : 250V AC/DC U_o =8.4V DC I_o =31mA

P_o =65.1mW C_o =4.8μF L_o =20mH

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

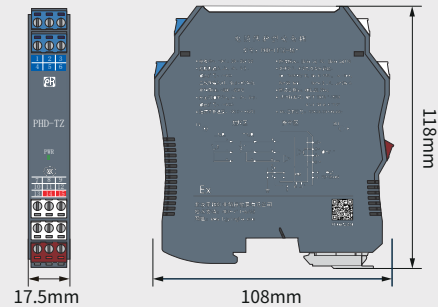
Surge Protection Type RTD input isolated safety barrier

PHD-11TZ-46+

1 input and 1 output

Input: Two-wire or three-wire RTD Pt100 signal

Output: RTD 1:1 Pt100 signal



Overview

Thermal resistor input isolated safety barriers with surge protection function can transmit the two-wire or three-wire thermal resistor (RTD) Pt100 signal in the hazardous area to the safe area 1:1. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: Two wire or three wire Pt100 signal

Measurement range: $-150^{\circ}\text{C}\sim 850^{\circ}\text{C}$

Safety side output:

Output signal: RTD Pt100 signal

Excitation current: $0.1\sim 3\text{mA}$

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/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 40\text{mA}$ (when 24VDC power supply)

LED indicator: Green: Power indicator

Output accuracy: 0.1% F.S

Temperature drift: 0.01% 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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

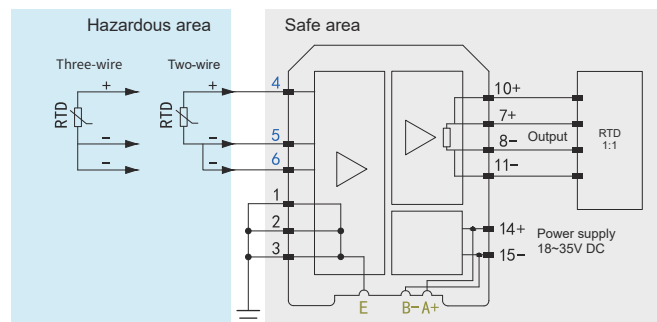
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Two wire or three wire RTD Pt100

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

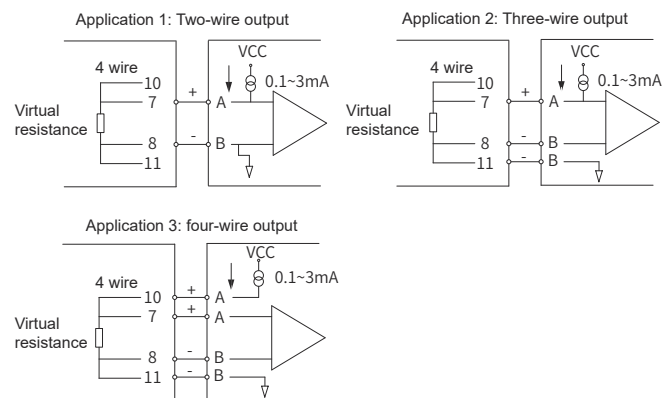


Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

- When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible
- When inputting a two-wire RTD, safety barrier terminals 4 and 2 must be short circuited



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 4-6, 5-6 U_m : 250V AC/DC U_o =8.4V DC I_o =31mA

P_o =65.1mW C_o =4.8 μ F L_o =20mH

Certification body: CQST(China National Quality Supervision and

Test Centre for Explosion Protected Electrical Products)

Beijing lightning protection products testing center

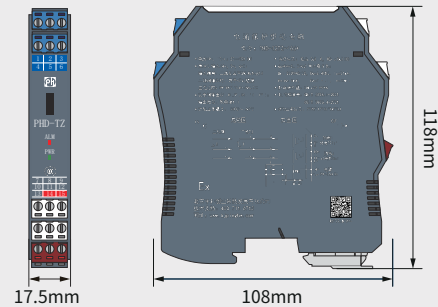
Surge Protection Type RTD input isolated safety barrier

PHD-12TZ-466+

1 input 2 outputs

Input: RTD Pt100

Output: RTD 1:1



Overview

The thermistor input isolation safety barrier with surge protection function can convert the Pt100 signals of two wire and three wire thermistors (RTDs) in hazardous areas into a 1:1 signal of the thermistor and transmit it to the safety zone. It can be intelligently configured, and the actual range of the thermal resistance 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.

Specifications

Input in hazardous area:

Input signal: RTD Pt100 signal

Measurement range: -200°C~850°C

Safety side output:

Output signal: RTD Pt100 signal(input signal 1:1)

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016
(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: ≤55mA (when 24VDC power supply)

LED indicator: Green: Power indicator

Short circuit alarm: ALM red light stays on for a long time

Open circuit alarm: ALM red light flashing

Output accuracy: 0.1% F.S

Temperature drift: 0.01% F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C
storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

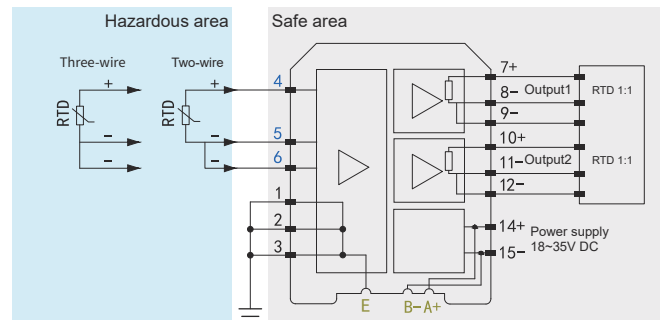
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Two wire or three wire RTD Pt100

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



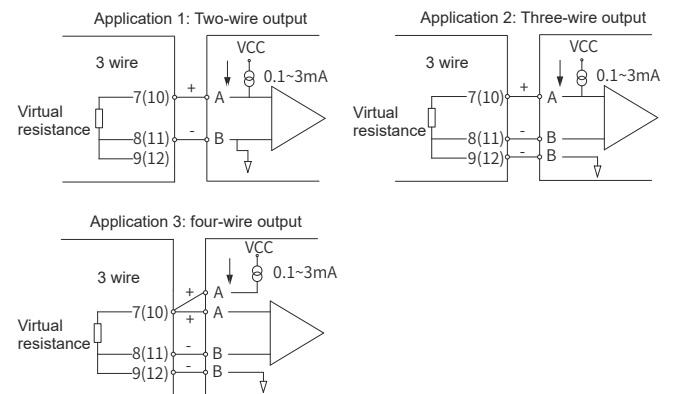
Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

2. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

3. When inputting a two-wire RTD, safety barrier terminals 6 and 5 must be short circuited



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 4-6, 5-6 Um: 250V AC/DC Uo=8.4V DC Io=31mA

Po=65.1mW Co=4.8μF Lo=20mH

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

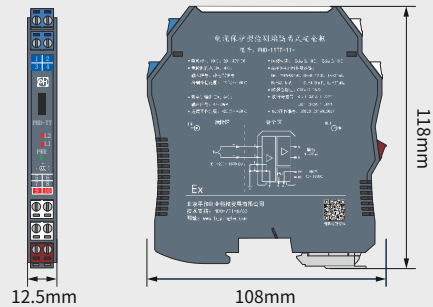
TC input isolated safety barrier

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

1 input 1 output
1 input 2 outputs

Input : TC

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 junction 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 junction compensation: $\pm 1^{\circ}\text{C}$

Compensation range: $-20^{\circ}\text{C}\sim+60^{\circ}\text{C}$

Safety side output:

Output signal: 4~20mA

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 IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V 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 300ms

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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

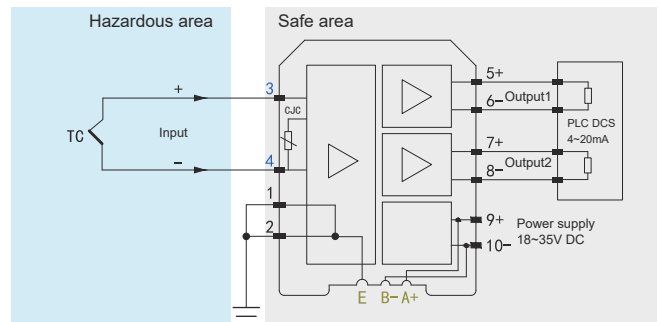
Wire requirements: Horizontal cutting surface $\geq 0.5\text{mm}^2$

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 IIC

Connection wiring



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

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "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 $U_o=8.4\text{V DC}$ $I_o=31\text{mA}$

$P_o=65.1\text{mW}$ $C_o=4.8\mu\text{F}$ $L_o=20\text{mH}$

Certification body: CQST(China National Quality Supervision and

Test Centre for Explosion Protected Electrical Products)

Beijing lightning protection products testing center

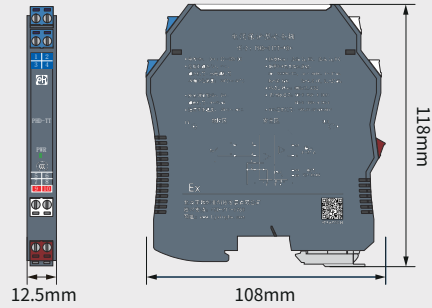
TC input isolated safety barrier

PHD-11TT-*8+

1 input 1 output

Input: TC

Output: TC 1:1



Overview

The thermocouple input isolation safety barrier with surge protection function can transmit the millivolt signal from thermocouple (TC) in the hazardous area to the safe area in 1: 1. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input in hazardous area:

Input signal: K, S, E, J, B, T, R, N thermocouple signals

Signal range: -20~80mV.

Safety side output:

Output signal: TC 1: 1

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016
(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 40mA$ (When 24V power supply)

LED indicator: Green: Power indicator

Output accuracy: 0.05%F.S

Response time: Reaching 90% of the final value within 300ms

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C
storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side ($\geq 3000V$ AC/min); between power supply and non-intrinsically safe side ($\geq 1500V$ AC/min)

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

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

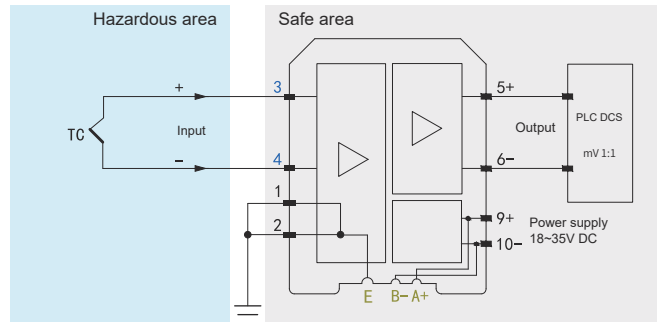
Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500W$

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: The power supply of the power rail is an optional function. Users need to specify the power supply mode when ordering. Please refer to "Annex".

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 $I_o=31mA$

$P_o=65.1mW$ $C_o=4.8\mu F$ $L_o=20mH$

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

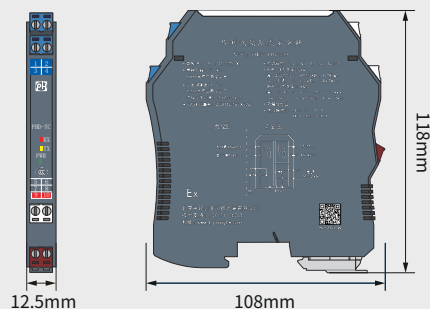
Communication signal input isolated safety barrier

PHD-11TC-33+

1 input 1 output

Input: RS-485 Half Duplex Digital Signal

Output: RS-485 Half Duplex Digital Signal



Overview

The communication signal of PHD-11TC-33+ with surge protection function is input into the isolated safety barrier, which can realize the two-way communication of RS-485 Half Duplex digital signal in the dangerous area and the safe area.

This product needs independent power supply, and the power supply, input and output are isolated.

Specifications

Input in hazardous area:

Input signal: RS-485 Half Duplex Digital Signal

Safety side output:

Output signal: RS-485 Half Duplex Digital Signal

Transmission delay: $\leq 10\mu\text{s}$

Transmission rate: $\leq 115.2\text{kbps}$

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/T18802.21-2016
(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 40\text{mA}$ (24V power supply)

LED indicator:

Green: Power indicator

Yellow: Signal transmission from safety zone to hazardous zone

Red: Signal transmission from hazardous zone to safety zone

Receiving and transmitting switching time: $\geq 20\text{ms}$

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 ($\geq 3000\text{V AC/min}$); between power supply and non-intrinsically safe side ($\geq 1500\text{V AC/min}$)

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

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

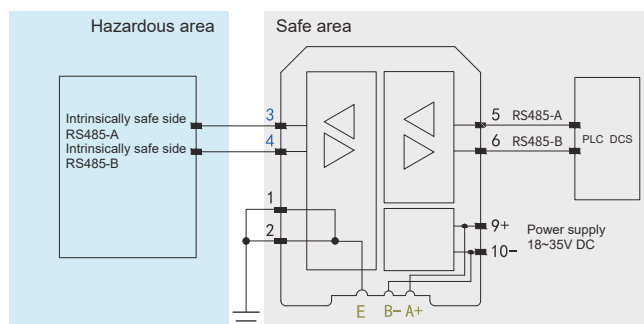
Insulation strength $\geq 500\text{V}$

Applicable field equipments: Communication interface device with

RS-485 Half Duplex Digital Signal

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: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

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 $U_o=7.7\text{V DC}$ $I_o=80\text{mA}$

$P_o=0.15\text{W}$ $C_o=6.9\mu\text{F}$ $L_o=5\text{mH}$

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

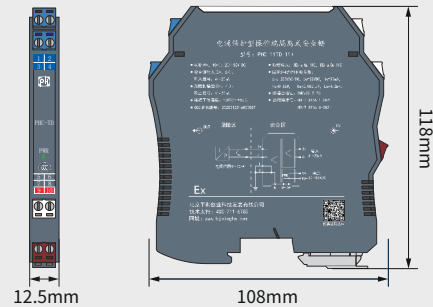
AO Isolated Safety Barrier with surge protection function

PHC-11TD-11⁺

1 input 1 output

Input: 4~20mA (HART digital signal)

Output: 4~20mA (HART digital signal)



Overview

The analog output isolated safety barrier with surge protection function can realize the isolated transmission of 4~20mA signals from the instruments in the safe area to the hazardous area, drive the valve positioner, electric/pneumatic converter and other equipment on site, and support the bidirectional transmission of HART digital signals with wirebreak alarm function. This product needs independent power supply, and the power supply, input and output are isolated.

Specifications

Input in hazardous area:

Input signal: 4~20mA (HART digital signal)

Safety side output:

Output signal: 4~20mA (HART digital signal)

Load resistance: When outputting 20mA, 0~500Ω (customizable)

Drive current: ≤15mA, load resistance >1kΩ

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016
(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: ≤50mA(24V power supply, 20mA output)

LED indicator: Green: Power indicator

Output accuracy: 0.1%FS (Typical value: 0.05%FS)

Response time: Reaching 90% of the final value within 2ms

Temperature drift: 0.005%FS/°C

Temperature parameters: Working temperature: -20°C~+60°C
storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000V AC/min); between power supply and non-intrinsically safe side (≥1500V AC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

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

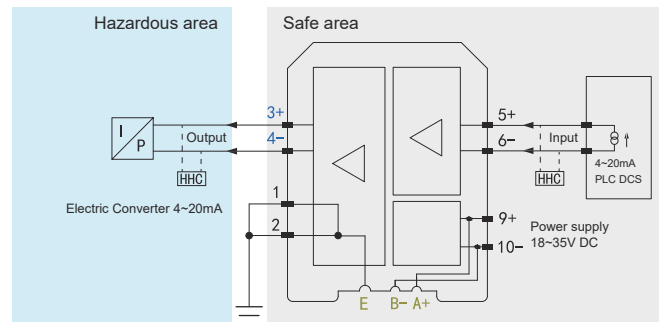
Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500W

Applicable field equipments: Valve positioner, electric/pneumatic converter

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: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

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 =28V DC I_o =93mA

P_o =0.65W C_o =0.083μF L_o =4.2mH

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

Analogue output signal isolators

PHG-11TD-11-C

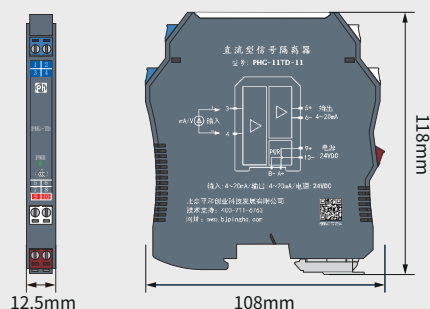
1 input 1 output

PHG-22TD-1111-C

2 inputs 2 outputs

Input: 4~20mA(HART digital signal)

Output: 4~20mA(HART digital signal)



Overview

Analog output signal isolator can isolate and convert 4~20mA signals into 4~20mA signal output. The input and output parameters can be customized according to user needs, Supports HART communication. This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: 4~20mA, HART digital signal(optional)

Input resistance: $\leq 100\Omega$

Output:

Output signal: 4~20mA, HART digital signal(optional)

Load Resistance: $\leq 800\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $< 0.8W$ (PHG-11TD-11-C)
 $< 1.8W$ (PHG-22TD-1111-C)

LED indicator: Green——power indicator

Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)

Response time: 5ms to reach 90% of the final value

Temperature drift: 0.005%F.S/°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: $\geq 2000V$ AC/min (input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

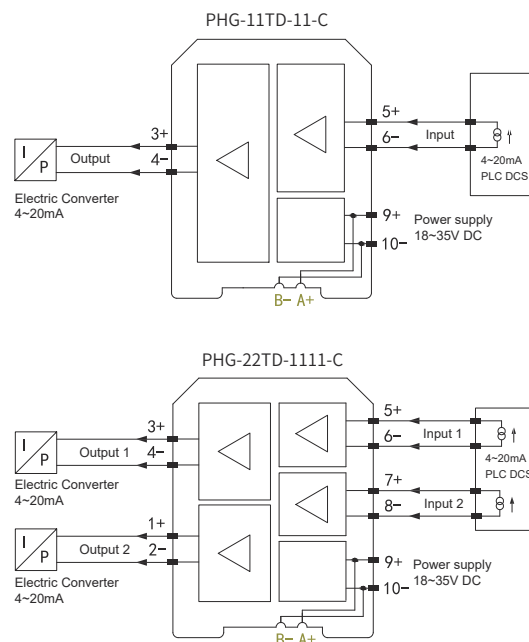
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500V$

Applicable field equipments: valve positioner, electrical converter

Connection wiring



Note: HART function optional selection: add ".HART" after the model number

The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Analogue input (output) signal isolators

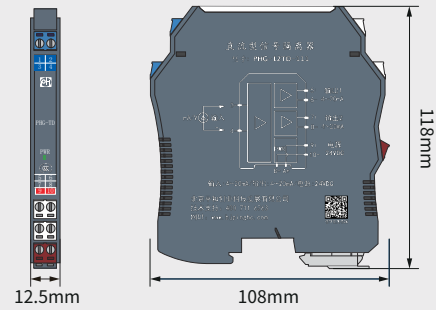
PHG-11TD series PHG-12TD series

Input: DC signal

Output: DC signal

1 input 1 output

1 input 2 outputs



Overview

Analogue input signal isolator can isolate and convert current or voltage signals into current or voltage signal output. The input and output parameters can be customized according to user needs. This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: DC signal(current/voltage)

Input resistance: Voltage type $\geq 100k\Omega$
Current type $\leq 100\Omega$

Output:

Output signal: DC signal(current/voltage)

Load Resistance: Current load resistance $\leq 500\Omega$
Voltage load resistance $< 5mA$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption:

PHG-11TD series: Current output $< 0.6W$; Voltage output $< 0.5W$

PHG-12TD series: Current output $< 1.2W$; Voltage output $< 0.5W$

LED indicator: Green——power indicator

Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)

Response time: 5ms to reach 90% of the final value

Temperature drift: 0.005%F.S/°C

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

Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)
(between input/output/power supply)

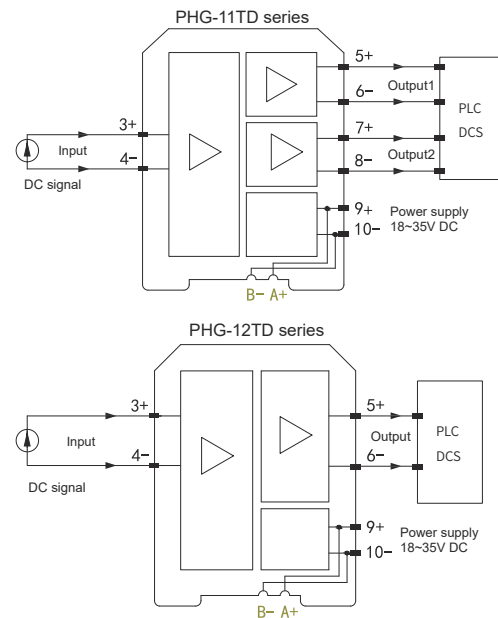
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Current source, voltage source

Connection wiring



Note: The power supply of the power rail is an optional function. Users need to specify the power supply mode when ordering. Please refer to "Annex".

Specifications, models and codes

PHG-1□TD-□□□		Input and output parameter definitions	
Code	Parameters	Code	Parameters
1	4~20mA	1	4~20mA
3	0~5V	3	0~5V
4	0~10V	4	0~10V
5	1~5V	5	1~5V
6	0~75mV	6	0~75mV
7	$\pm 10V$	7	$\pm 10V$
8	Customized parameters	8	Customized parameters

For example: one input and two outputs, 4-20mA input, two outputs 4-20mA, 24V power supply, model should be: PHG-12TD-111

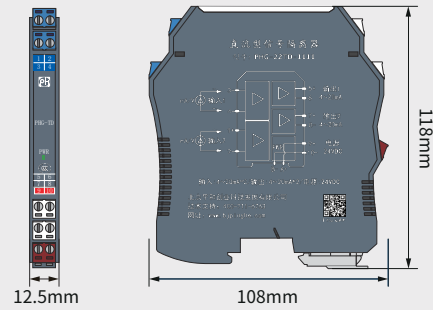
Analogue input (output) signal isolators

PHG-22TD series

2 inputs 2 outputs

Input: DC signal

Output: DC signal



Overview

PHG-22TD series analog input signal isolator can isolate and convert current or voltage signals into current or voltage signal output. The input and output parameters can be customized according to user needs.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: DC signal(current/voltage)

Input resistance: Voltage type $\geq 100k\Omega$
Current type $\leq 100\Omega$

Output:

Output signal: DC signal(current/voltage)

Load Resistance: Current load resistance $\leq 500\Omega$
Voltage load resistance $< 5mA$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 1.6W$
Voltage output $< 1W$

LED indicator: Green——power indicator

Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)

Response time: 5ms to reach 90% of the final value

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C ~ +60°C

Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

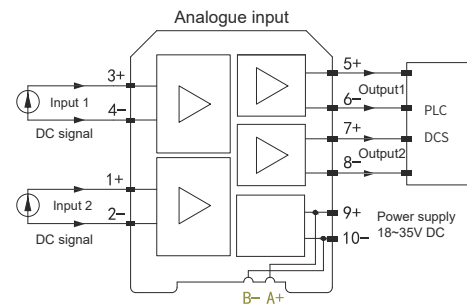
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Current source, voltage source

Connection wiring



Note: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Specifications, models and codes

PHG-22TD-□□□□		Input and output parameter definitions	
Code	Parameters	Code	Parameters
1	4~20mA	7	$\pm 10V$
3	0~5V	8	Customized parameters
4	0~10V		
5	1~5V		
6	0~75mV		

For example: two inputs and two outputs, two inputs with 4-20mA, two outputs 4-20mA, 24V power supply, model should be: PHG-22TD-1111

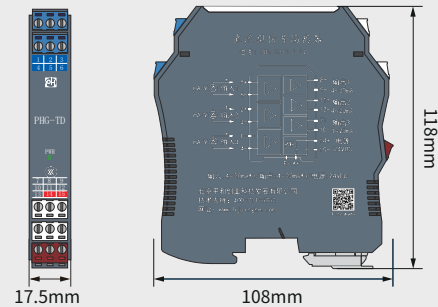
Analogue input (output) signal isolators

PHG-33TD series

3 inputs 3 outputs

Input: DC signal

Output: DC signal



Overview

PHG-33TD series analog input signal isolator can isolate and convert current or voltage signals into current or voltage signal output. The input and output parameters can be customized according to user needs.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: DC signal(current/voltage)

Input resistance: Voltage type $\geq 100k\Omega$
Current type $\leq 100\Omega$

Output:

Output signal: DC signal(current/voltage)

Load Resistance: Current load resistance $\leq 500\Omega$
Voltage load resistance $< 5mA$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 2W$
Voltage output $< 1.2W$

LED indicator: Green——power indicator

Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)

Response time: 5ms to reach 90% of the final value

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

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

Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

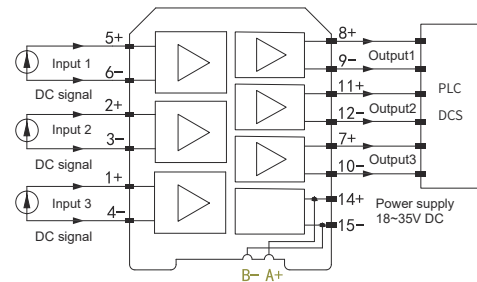
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

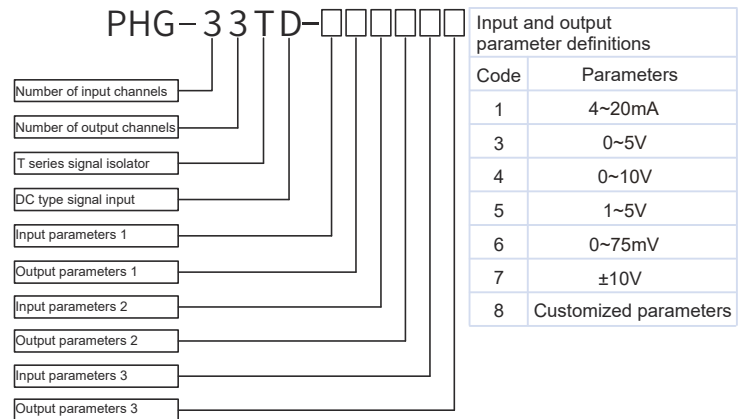
Applicable field equipments: Current source, voltage source

Connection wiring



Note: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Specifications, models and codes



For example: 3 inputs and 3 outputs, 3 inputs with 4-20mA, 3 outputs 4-20mA, 24V power supply, model should be: PHG-33TD-111111

Analogue input signal isolators

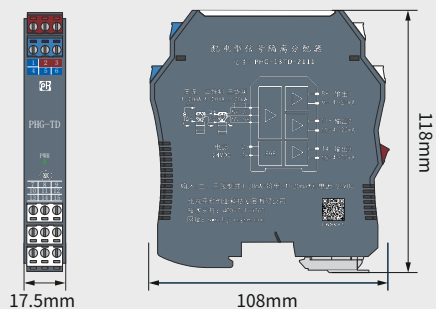
PHG-13TD series PHG-14TD series

1 input 3 outputs

1 input 4 outputs

Input: 2 or 3 wire transmitter 4~20mA or DC signal

Output: DC signal



Overview

Analog input signal isolator, can isolate and convert two or three wire 4~20mA or DC signals into current or voltage signals for output. Input and output parameters can be customized according to user needs. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input:

Input signal: 2 wire, 3 wire transmitter 4~20mA or

DC signal (current/voltage)

Input resistance: Voltage type $\geq 100k\Omega$

Current type $\leq 100\Omega$

Output:

Output signal: DC signal(current/voltage)

Load Resistance: Current load resistance $\leq 500\Omega$

Voltage load resistance $< 5mA$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 2.2W$; Voltage output $< 1W$

(PHG-13TD series)

Current output $< 2.6W$; Voltage output $< 1W$

(PHG-14TD series)

LED indicator: Green—power indicator

Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)

Response time: 5ms to reach 90% of the final value

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C ~ +60°C

Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

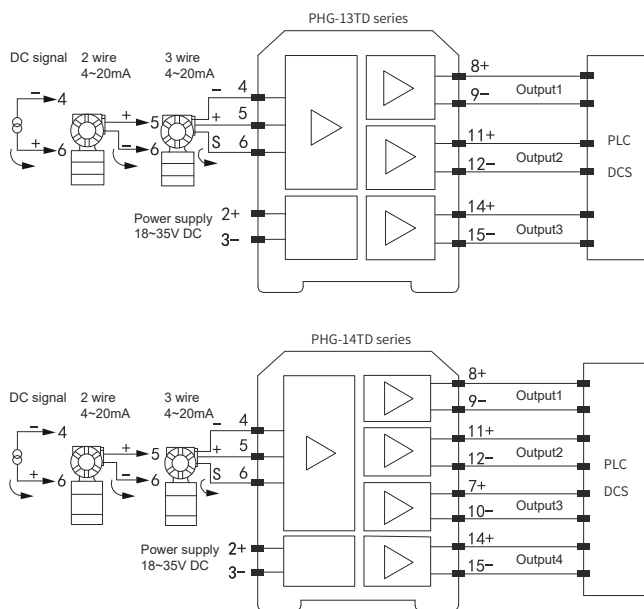
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: 2 wire, 3 wire transmitters or current and voltage sources

Connection wiring



Specifications, models and codes

PHG-1□TD-□□□□□□		Input and output parameter definitions	
Code	Parameters	Code	Parameters
1	4~20mA	3	0~5V
2	2 wire, 3 wire transmitter or 4~20mA(Input)	4	0~10V
3	0~5V	5	1~5V
4	0~10V	6	0~75mV
5	1~5V	7	$\pm 10V$
6	0~75mV	8	Customized parameters
7	$\pm 10V$		
8	Customized parameters		

For example: 1 input and 3 outputs, 4~20mA input, 3 outputs 4~20mA, 24V power supply, model should be: PHG-13TD-1111

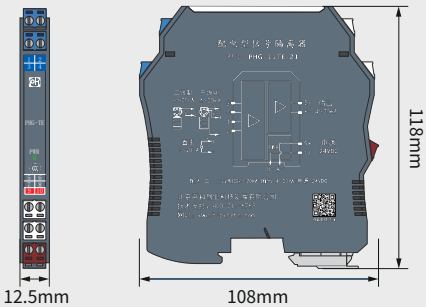
1 input 4 outputs, 4~20mA input, four 4~20mA outputs, 24V power supply, model: PHG-14TD-11111

Analogue input signal isolators

PHG-11TE series PHG-12TE series

1 input 1 output
1 input 2 outputs

Input: 2 or 3 wire transmitter or current source 4~20mA
Output: DC signal



Overview

The analog input signal isolator can isolate and convert two- or three-wire 4~20mA or current source signals into current or voltage signal output. The input and output parameters can be customized according to user needs. 4~20mA output with HART Communication Support. This product requires independent power supply, the power supply, input and output terminals are isolated between each other.

Specifications

Input:

Input signal: 2 or 3 wire transmitter or current source 4~20mA
Distribution voltage: $\geq 18V$
Input resistance: $\leq 100\Omega$

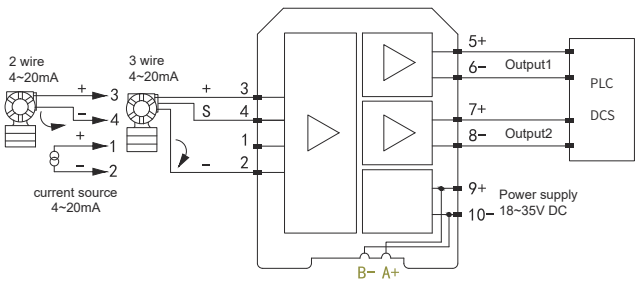
Output:

Output signal: DC signal(current/voltage)
4~20mA output with HART Communication Support
Load Resistance: Current load resistance $\leq 500\Omega$
Voltage load resistance $< 5mA$

Basic parameters:

Supply voltage: 18~35V DC
Power consumption: Current output $<1.3W$; Voltage output $<1W$
(PHG-11TE series)
Current output $<1.8W$; Voltage output $<1W$
(PHG-12TE series)
LED indicator: Green——power indicator
Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)
Response time: 5ms to reach 90% of the final value
Temperature drift: 0.005%F.S/ $^{\circ}C$
Temperature parameters: Working temperature: $-20^{\circ}C \sim +60^{\circ}C$
Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$
Relative humidity: 10%~95% RH no condensation
Insulation strength: $\geq 2000V$ AC/min (input/output/power supply)
Insulation resistance: $100M\Omega$ (500V DC)
(between input/output/power supply)
EMC: GB/T 18268 (IEC 61326-1)
Wire requirements: Cross section $\geq 0.5mm^2$
Insulation strength $\geq 500V$
Applicable field equipments: Two or three-wire transmitter or current source

Connection wiring



Note: 1. PHG-11TE series does not include the output 2 part
2. The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Specifications, models and codes

PHG-1□TE-2□□		Code	Input parameters
Number of input channels		2	2 wire, 3 wire transmitter or 4~20mA
Number of output channels		8	Customized parameters
T series signal isolator		Code	Output parameters
Distribution power signal input		1	4~20mA
Input parameters		2	2 wire 4~20mA
Output parameters 1		3	0~5V
Output parameters 2		4	0~10V
		5	1~5V
		6	0~75mV
		7	$\pm 10V$
		8	Customized parameters

For example: 1 input and 1 output, 2 or 3-wire 4~20mA(HART) input, 4~20mA(HART) output, 24V power supply, model should be: PHG-11TE-21.HART

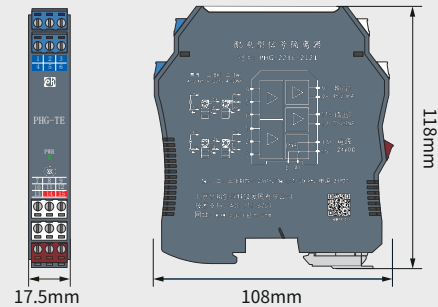
Analogue input signal isolators

PHG-22TE series

2 input 2 outputs

Input: 2 or 3 wire transmitter or current source 4~20mA

Output: DC signal



Overview

The analog input signal isolator can isolate and convert two- or three-wire 4~20mA or current source signals into current or voltage signal output. The input and output parameters can be customized according to user needs. 4~20mA output with HART Communication Support. This product requires independent power supply, the power supply, input and output terminals are isolated between each other.

Specifications

Input:

Input signal: 2 or 3 wire transmitter or current source 4~20mA

Distribution voltage: $\geq 18V$

Input resistance: $\leq 100\Omega$

Output:

Output signal: DC signal(current/voltage)

4~20mA output with HART Communication Support

Load Resistance: Current load resistance $\leq 500\Omega$

Voltage load resistance $< 5mA$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 2.6W$

Voltage output $< 1.3W$

LED indicator: Green—power indicator

Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)

Response time: 5ms to reach 90% of the final value

Temperature drift: 0.005%F.S/°C

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

Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (input/output/power supply)

Insulation resistance: 100M Ω (500V DC)

(between input/output/power supply)

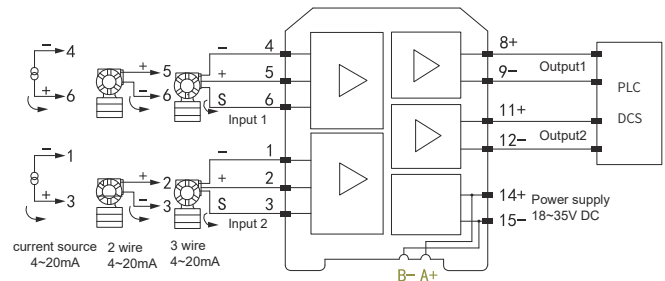
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Two or three-wire transmitter or current source

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Specifications, models and codes

PHG-22TE-2□2□		Code	Input parameters
Number of input channels		2	2 wire, 3 wire transmitter or 4~20mA
Number of output channels		8	Customized parameters
T series signal isolator		Code	Output parameters
Distribution power signal input		1	4~20mA
Input parameters 1		2	2 wire 4~20mA
Output parameters 1		3	0~5V
Input parameters 1		4	0~10V
Output parameters 2		5	1~5V
		6	0~75mV
		7	$\pm 10V$
		8	Customized parameters

For example: 2 inputs and 2 outputs, 2 channels 2 or 3-wire 4~20mA(HART) inputs, 2 channels 4~20mA(HART) outputs, 24V power supply, model should be: PHG-22TE-2121.HART

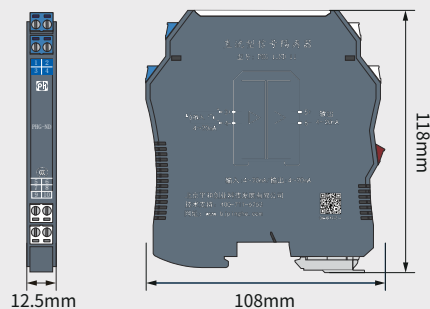
Analogue input signal isolators(Loop powered)

PHG-11ND-11
PHG-22ND-1111

1 input 1 output
2 inputs 2 outputs

Input: 4~20mA

Output: 4~20mA



Overview

DC signal isolator, the circuit obtains power energy from the signal input end, isolates and converts the 4~20mA current signal at the input end into a 4~20mA current signal and sends it to the output end. This product does not require an independent power supply, and the input and output are isolated.

Specifications

Input:

Input signal: 4~20mA

Signal voltage: $\geq 12 \sim 30V$ DC

Output:

Output signal: 4~20mA

Load Resistance: $R_L \leq (U_i - 6)/0.02$

Basic parameters:

Output accuracy: 0.2%F.S

Response time: 10ms

Temperature drift: 0.01%F.S/°C

Temperature parameters: Working temperature: $-20^\circ C \sim +60^\circ C$

Storage temperature: $-40^\circ C \sim +80^\circ C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 1500V$ AC/min (input/output)

Insulation resistance: 100M Ω (500V DC)

(between input/output)

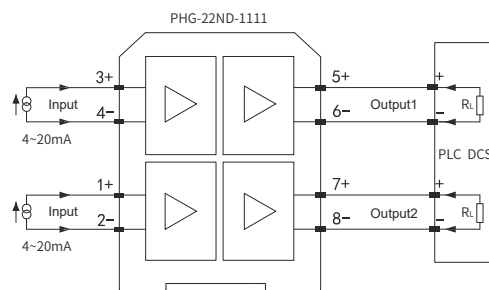
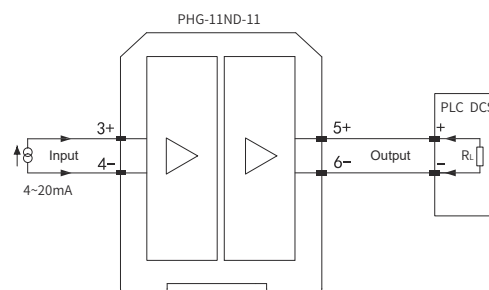
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Current source

Connection wiring



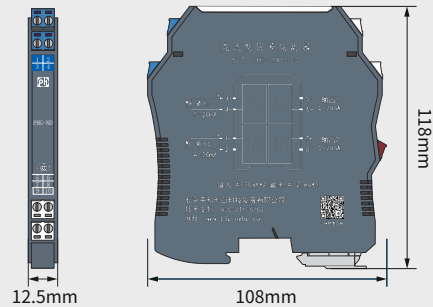
Analogue input signal isolators(Loop powered)

PHG-11ND-12 PHG-22ND-1212

1 input 1 output
2 inputs 2 outputs

Input: 4~20mA

Output: 2 wire 4~20mA



Overview

DC signal isolator, the circuit obtains power energy from the signal output end, isolates and converts the 4~20mA current signal at the input end into a 4~20mA current signal to the two-wire interface at the output end.

This product does not require an independent power supply, and the input and output are isolated.

Specifications

Input:

Input signal: 4~20mA

Output:

Output signal: 2 wire 4~20mA

Signal voltage: 12~30V DC

Load Resistance: $R_L \leq (U_i - 6)/0.02$

Basic parameters:

Output accuracy: 0.2%F.S

Response time: 10ms

Temperature drift: 0.01%F.S/°C

Temperature parameters: Working temperature: -20°C ~ +60°C

Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 1500V$ AC/min (input/output)

Insulation resistance: 100M Ω (500V DC)
(between input/output)

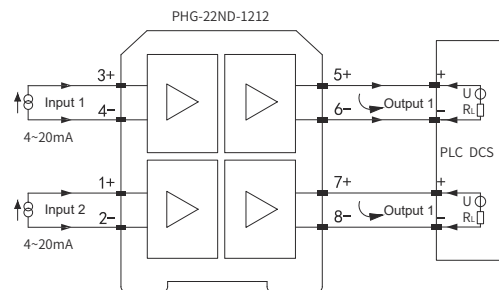
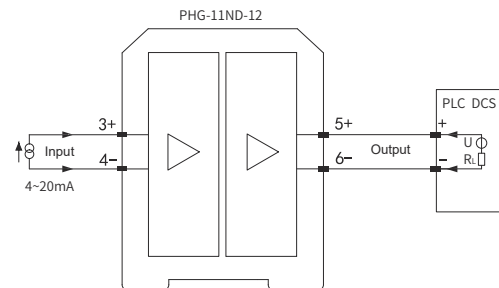
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Current source

Connection wiring



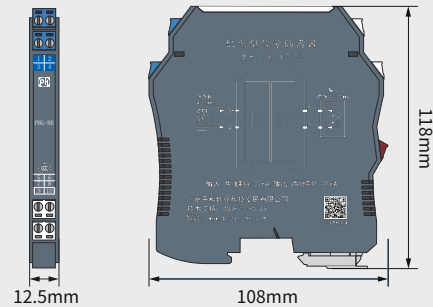
Analogue input signal isolators(Loop powered)

PHG-11NE-52
PHG-22NE-5252

1 input 1 output
2 inputs 2 outputs

Input: 2 wire 4~20mA

Output: 2 wire 4~20mA



Overview

Distribution power signal isolator, the circuit obtains power energy from the signal output end, isolates and converts the two-wire 4~20mA current signal at the input end into a 4~20mA current signal to the two-wire interface at the output end.

This product does not require an independent power supply, and the input and output are isolated.

Specifications

Input:

Input signal: 2 wire 4~20mA

Distribution voltage: $U_d \geq U_e - R_L \times 0.02 - 6$

Output:

Output signal: 2 wire 4~20mA

Signal voltage: 12~30V DC

Load Resistance: $R_L \leq (U_i - 6) / 0.02$

Basic parameters:

Output accuracy: 0.2%F.S

Response time: 10ms

Temperature drift: 0.01%F.S/°C

Temperature parameters: Working temperature: -20°C ~ +60°C

Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 1500V$ AC/min (input/output)

Insulation resistance: 100MΩ (500V DC)

(between input/output)

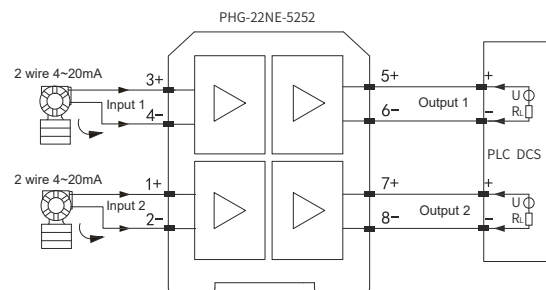
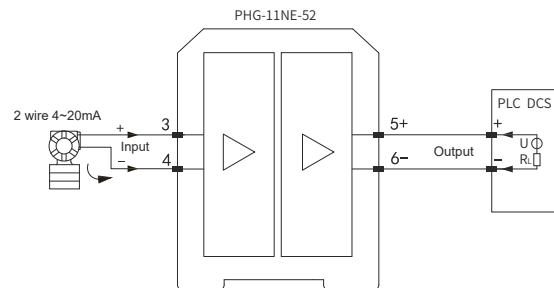
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Two-wire transmitter

Connection wiring



AC signal input power transmitter

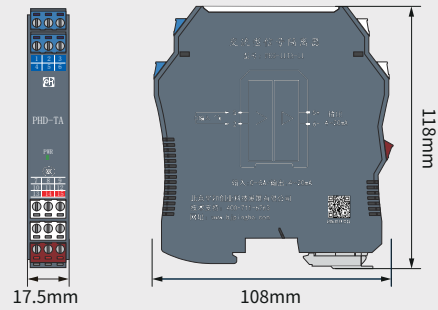
PHG-11TA series PHG-12TA series

Input: AC signal

Output: DC signal

1 input 1 output

1 input 2 outputs



Overview

The power transmitter with AC signal input, the AC signal is input, and the DC signal is output after isolation.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: AC signal

Input resistance: Voltage type $\geq 100k\Omega$
Current type $\leq 1\Omega$

Output:

Output signal: DC signal

Load Resistance: Current load resistance $\leq 500\Omega$
Voltage load resistance $< 5mA$

Basic parameters:

Supply voltage: 20~35V DC

Power consumption: Current output $< 1W$
Voltage output $< 0.7W$

Output accuracy: 0.2%F.S

Response time: 1s

Temperature drift: 0.02%F.S/°C

Temperature parameters: Working temperature: -20°C ~ +60°C
Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 1500V$ AC/min (between input/output/power supply)

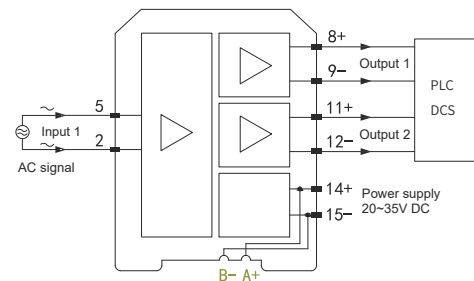
Insulation resistance: 100M Ω (500V DC)
(between input/output/power supply)

EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$
Insulation strength $\geq 500V$

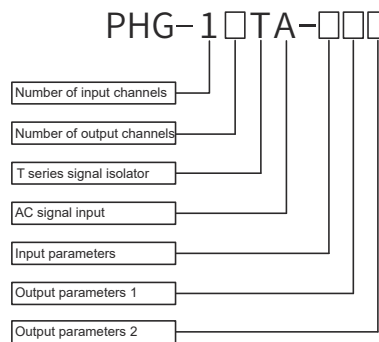
Applicable field equipments: Current source

Connection wiring



- Note: 1. PHG-11TA series does not include the output 2 part
2. The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Specifications, models and codes



Output parameter definitions	
Code	Parameters
1	0~5A AC
2	0~1A AC
3	0~265V AC
4	0~100V AC
5	0~500V AC
8	Customized parameters

Output parameter definitions	
Code	Parameters
1	4~20mA
3	0~5V
4	0~10V
5	1~5V
7	$\pm 10V$
8	Customized parameters

For example: one input and one output, 0~5A AC signal input, 4~20mA DC signal output, 24V power supply, model should be: PHG-11TA-11

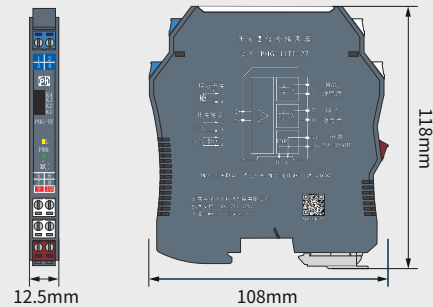
Digital Input Signal Isolators

PHG-11TF-27

1 input and 1 output

Input: Contact and NAMUR proximity switch

Output: Relay+alarm(optional)



Overview

The switching input relay output signal isolator converts the input signal of the switch contact or proximity switch into a relay output through isolation. Line fault detection is through a separate relay output and displayed by an LED light on the top of the module. The switch of the module is used to select the phase of the channel and whether the line fault detection function is required.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Switching rate: <10Hz

Input/output characteristics:

On site input current: >2.1mA, the output is closed, indicating ON

When <1.2mA, the output is open circuit, indicating OFF

Output normally "Open"/"Closed" contact conversion control:

When dial switch K1 is at "ON" side, the relay output is "Normally closed".

When dial switch K1 is at "OFF" side, the relay output is "Normally open".

When dial switch K2 is at "ON" side, the circuit selects indicating red light LFD alarm function.

Output:

Output signal: Relay and alarm relay (optional)

Drive capability: 250V AC/2A, 30V DC/2A
when subjected to resistive loads

Response time: 20ms

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <1W(24V power supply, when the relay contacts close)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

Temperature parameters: Working temperature: -20°C ~ +60°C,

Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: ≥2000V AC/min (between input/output/power supply)

Insulation resistance: 100MΩ (500 V DC) (between input/output/power supply)

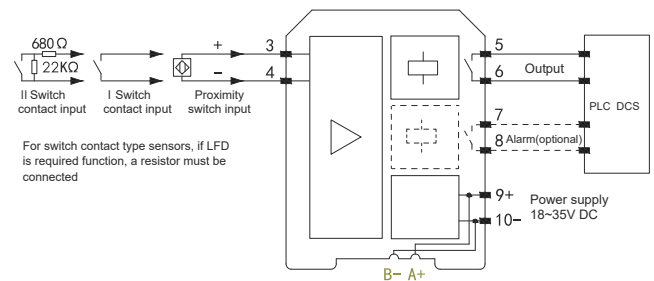
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Field equipment such as dry contacts
or NAMUR type proximity switch inputs
that comply with DIN19234 standard

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current>7mA, short circuit alarm (SC); On site input current<0.1mA, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a 22k Ω resistor should be connected in parallel at both ends of the switch, and a 680 Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

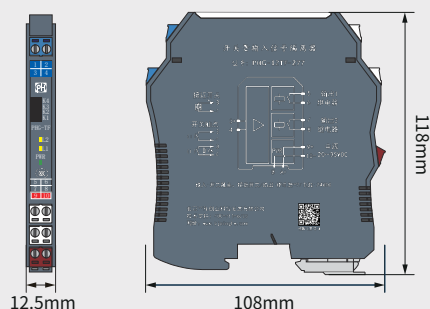
PHG-12TF-277 PHG-22TF-2727

1 input and 2 outputs

2 input and 2 outputs

Input: Contact and NAMUR proximity switch

Output: Relay



Overview

The switching input relay output signal isolator converts the input signal of the switch contact or proximity switch into a relay output through isolation. Line fault detection is through a separate relay output and displayed by an LED light on the top of the module. The switch of the module is used to select the phase of the channel and whether the line fault detection function is required.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Switching rate: <10Hz

Input/output characteristics:

On site input current: >2.1mA, the output is closed, indicating ON

When <1.2mA, the output is open circuit, indicating OFF

Output normally "Open"/"Closed" contact conversion control:

When dial switch K1,K3 is at "ON" side, the relay output is "Normally closed".

When dial switch K1,K3 is at "OFF" side, the relay output is "Normally open".

When dial switch K2,K4 is at "ON" side, the circuit selects indicating red light LFD alarm function.

Output:

Output signal: Relay

Drive capability: 250V AC/2A, 30V DC/2A

when subjected to resistive loads

Response time: 20ms

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: 24V power supply, when the relay contacts close

<1W(PHG-12TF-277)

<1.5(PHG-22TF-2727)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

Temperature parameters: Working temperature: -20°C ~ +60°C,

Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: ≥2000V AC/min (between input/output/power supply)

Insulation resistance: 100MΩ (500 V DC) (between input/output/power supply)

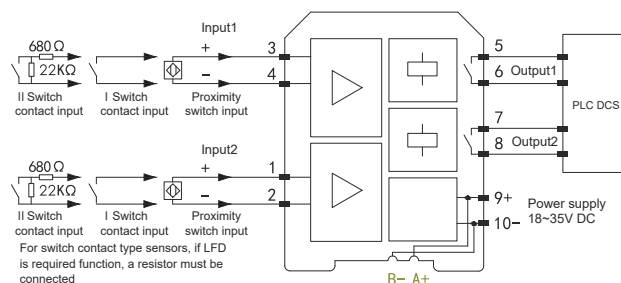
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

Connection wiring



Note: 1. PHG-12TF-277 does not contain input 2 part

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current > 7mA, short circuit alarm (SC); On site input current < 0.1mA, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a 22k Ω resistor should be connected in parallel at both ends of the switch, and a 680 Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

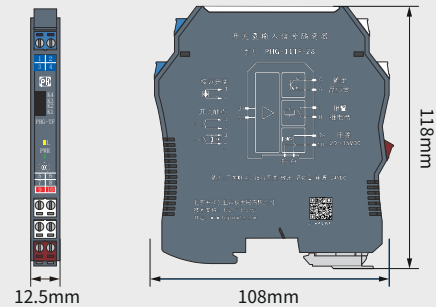
Digital Input Signal Isolators

PHG-11TF-28

1 input and 1 output

Input: Contact and NAMUR proximity switch

Output: Transistor+alarm(optional)



Overview

The switching input transistor output signal isolator converts the input signal of the switch contact or proximity switch into a transistor output through isolation. Line faults are detected via a separate relay output (optional) and displayed via LED lights on the top of the module. The switch of the module is used to select the phase of the channel and whether the line fault detection function is required.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Input frequency range: $\leq 5\text{kHz}$

Input/output characteristics:

On site input current: $>2.1\text{mA}$, the output is closed, indicating ON;

When $<1.2\text{mA}$, the output is open circuit, indicating OFF

Switched control between inverted phase and normal phase of outputs e-c: When the dial switch K1 is at "ON", the transistor output e-c are in inverted phase

When the dial switch K1 is at "OFF", the transistor output e-c are in normal phase

When the K2 is at "ON", the circuit will select the red light LFD indication alarm function

Output:

Output signal: Transistor and alarm relay (optional)

Output characteristic: NPN type transistor emitter or collector open circuit output

Drive capability: Output current $\leq 20\text{mA}$ ($1.2\text{k}\Omega$), maximum internal current 100mA , equipped with short-circuit current protection

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: $<1\text{W}$ (24V power supply, when the transistor is conducting)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

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: $10\%\sim 95\%$ RH no condensation

Insulation strength: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: $100\text{M}\Omega$ (500 V DC) (between input/output/power supply)

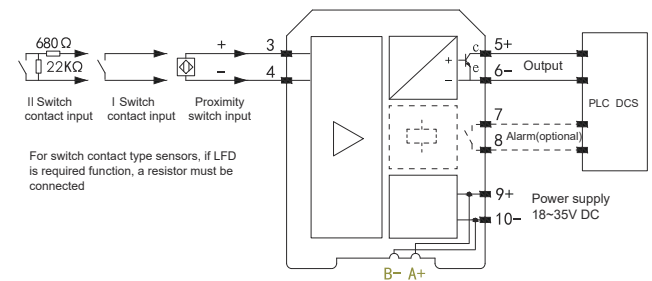
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

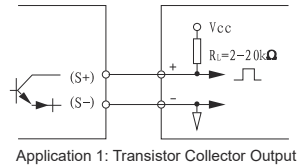
Connection wiring



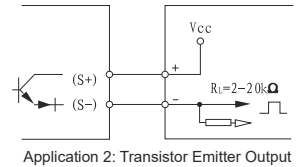
Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".



Application 1: Transistor Collector Output



Application 2: Transistor Emitter Output

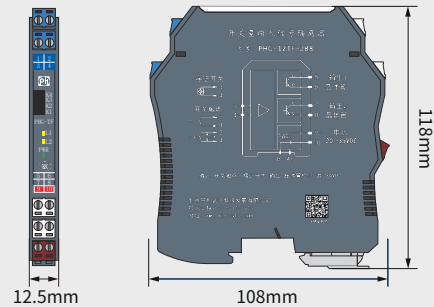
Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current $>7\text{mA}$, short circuit alarm (SC); On site input current $<0.1\text{mA}$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22\text{k}\Omega$ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

PHG-12TF-288 1 input and 2 outputs
PHG-22TF-2828 2 inputs and 2 outputs

Input: Contact and NAMUR proximity switch

Output: Transistor



Overview

The switching input transistor output signal isolator converts the input signal from the switch contact or proximity switch into a transistor output through isolation. The line fault detection function is displayed by the LED light on the top of the module. The switch of the module is used to select the phase of the channel and whether the line fault detection function is required.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Input frequency range: $\leq 5\text{kHz}$

Input/output characteristics:

On site input current: $> 2.1\text{mA}$, the output is closed, indicating ON

When $< 1.2\text{mA}$, the output is open circuit, indicating OFF

Switched control between inverted phase and normal phase of

outputs e-c: When the dial switch K1, K3 is at "ON", the transistor output e-c are in inverted phase

When the dial switch K1 K3 is at "OFF", the transistor output e-c are in normal phase

When the K2, K4 is at "ON", the circuit will select the red light LFD indication alarm function

Output:

Output signal: Transistor

Output characteristic: NPN type transistor emitter or collector open circuit output

Drive capability: Output current $\leq 20\text{mA}$ ($1.2\text{k}\Omega$), maximum internal current 100mA , equipped with short-circuit current protection

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: 24V power supply, when the transistor is conducting

$< 1.2\text{W}$ (PHG-12TF-288)

$< 1.3\text{W}$ (PHG-22TF-2828)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

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: $10\%\sim 95\%$ RH no condensation

Insulation strength: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: $100\text{M}\Omega$ (500V DC) (between input/output/power supply)

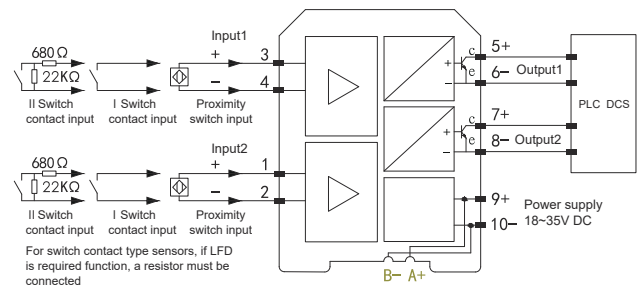
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

Connection wiring



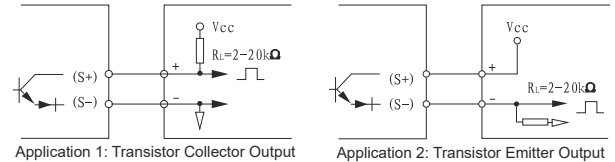
Note: 1. PHG-12TF-288 does not include input 2 part.

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Note:



Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current $> 7\text{mA}$, short circuit alarm (SC); On site input current $< 0.1\text{mA}$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22\text{k}\Omega$ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

RTD input temperature converter

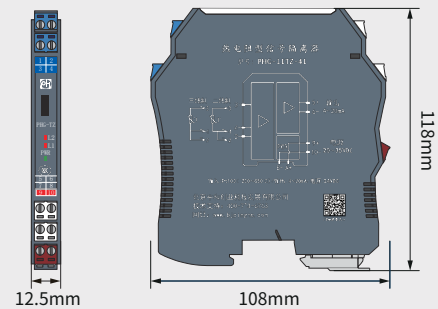
PHG-11TZ series PHG-12TZ series

Input: RTD

Output: DC signal

1 input 1 output

1 input 2 outputs



Overview

RTD input temperature transmitter can isolate and convert the thermal resistor (RTD) signal into a DC signal, which is used to drive the load. Intelligent configuration is possible, and the actual range of the thermal resistance can be set through computer software. It has the function of disconnection alarm and out-of-range alarm function.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: RTD 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: Corresponding measurement range of thermal resistance

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

Excitation current: 800 μ A

Output:

Output signal: DC signal (current/voltage)

Load capacity: Current load resistance $\leq 500\Omega$ (customizable)

Voltage load resistance $< 5\text{mA}$ (customizable)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 0.8\text{W}$; voltage output $< 0.6\text{W}$ (PHG-11TZ series)

Current output $< 1.2\text{W}$; voltage output $< 0.6\text{W}$ (PHG-12TZ series)

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 300ms

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: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: 100M Ω (500 V DC)

(between input/output/power supply)

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

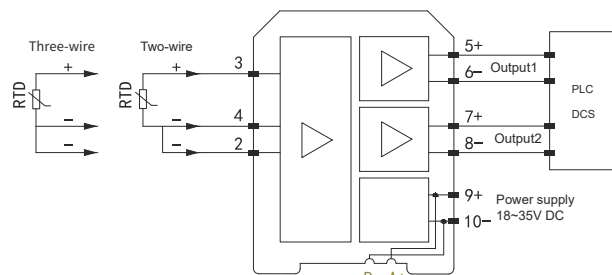
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Two wire or three wire RTD

G53, Cu50, Pt100, Pt1000, Ni1000

Connection wiring



Note: 1. PHG-11TZ - * 1 does not include output part 2

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

3. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

4. When inputting a two-wire RTD, safety barrier terminals 4 and 2 must be short circuited

Specifications, models and codes

Input signal type and range table				
Code	Model	Measurement range	Minimum range	Conversion accuracy
1	G53	-50~150 $^{\circ}\text{C}$	20 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}/0.1\%$
2	Cu50	-50~150 $^{\circ}\text{C}$	20 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}/0.1\%$
4	Pt100	-200~850 $^{\circ}\text{C}$	20 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}/0.1\%$
6	Pt1000	-200~850 $^{\circ}\text{C}$	20 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}/0.1\%$
7	Ni1000	-60~250 $^{\circ}\text{C}$	20 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}/0.1\%$

PHG-1 TZ-		Output parameter definitions	
		Code	Parameters
Number of input channels		1	4~20mA
		2	0~20mA
Number of output channels		3	0~5V
		4	0~10V
T series signal isolator		5	1~5V
		6	0~75mV
RTD signal input		7	±10V
		8	Customized parameters
		Input parameters	
		Output parameters 1	
		Output parameters 2	

For example: one input and one output, thermal resistor Pt100 input, 4~20mA output, 24V power supply, model PHG-11TZ-41

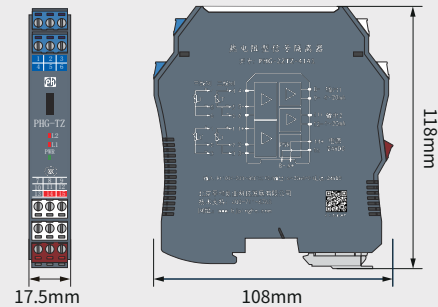
RTD input temperature converter

PHG-22TZ series

2 inputs 2 outputs

Input: RTD

Output: DC signal



Overview

RTD input temperature transmitter can isolate and convert the thermal resistor (RTD) signal into a DC signal, which is used to drive the load. Intelligent configuration is possible, and the actual range of the thermal resistance can be set through computer software. It has the function of disconnection alarm and out-of-range alarm function. This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: RTD 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: Corresponding measurement range of thermal resistance
Measurement range: Users make their own configuration when ordering, and indicate it at the tail number or otherwise.

Excitation current: 800 μ A

Output:

Output signal: DC signal (current/voltage)

Load capacity: Current load resistance $\leq 500\Omega$ (customizable)
Voltage load resistance $< 5\text{mA}$ (customizable)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 1.8\text{W}$
Voltage output $< 1\text{W}$

LED indicator: Green: Power indicator

Low range alarm yellow light on, high range alarm red 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 300ms

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: $\geq 2000\text{V AC/min}$ (between input/output/power supply)
Insulation resistance: 100M Ω (500 V DC)
(between input/output/power supply)

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

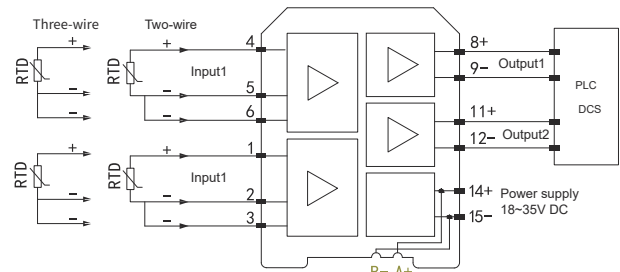
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Two wire or three wire RTD

G53, Cu50, Pt100, Pt1000, Ni1000

Connection wiring



Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

2. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

3. When inputting a two-wire RTD, safety barrier terminals 5 and 6(2 and 3) must be short circuited

Specifications, models and codes

Input signal type and range table				
Code	Model	Measurement range	Minimum range	Conversion accuracy
1	G53	-50~150 $^{\circ}\text{C}$	20 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}$ /0.1%
2	Cu50	-50~150 $^{\circ}\text{C}$	20 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}$ /0.1%
4	Pt100	-200~850 $^{\circ}\text{C}$	20 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}$ /0.1%
6	Pt1000	-200~850 $^{\circ}\text{C}$	20 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}$ /0.1%
7	Ni1000	-60~250 $^{\circ}\text{C}$	20 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}$ /0.1%

Output parameter definitions	
Code	Parameters
1	4~20mA
2	0~20mA
3	0~5V
4	0~10V
5	1~5V
6	0~75mV
7	$\pm 10\text{V}$
8	Customized parameters

For example: 2 inputs and 2 outputs, 2 channels thermal resistor Pt100 input, 2 channels 4~20mA output, 24V power supply, model is PHG-22TZ-4141

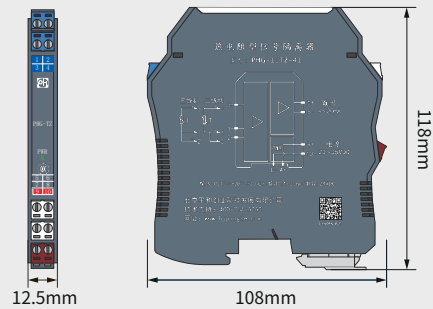
RTD input temperature converter

PHG-11TZ-46

1 input 1 output

Input: RTD Pt100

Output: RTD 1:1



Overview

RTD input temperature converter can transmit the thermal resistance (RTD) Pt100 signal 1:1 to the output for driving the load. This product requires independent power supply, and the power supply, input and output are isolated.

Specifications

Input:

Input signal: RTD Pt100 signal

Measurement range: -150°C~850°C

Output:

Output signal: RTD Pt100 signal(input signal 1:1)

Excitation current: 0.1~3mA

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: < 0.9W (when 24VDC power supply)

LED indicator: Green——Power indicator

Output accuracy: 0.1%F.S

Temperature drift: 0.01%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature:-40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: ≥2000V AC/min (between input/output/power supply)

Insulation resistance: ≥100MΩ (500 V DC)

(between input/output/power supply)

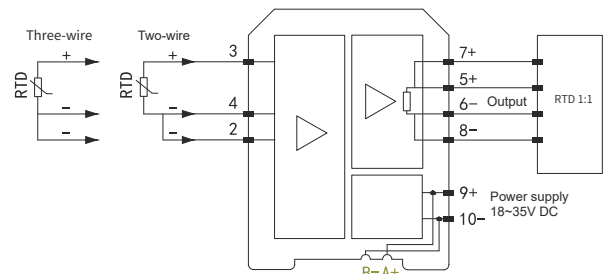
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Two wire or three wire RTD Pt100

Connection wiring



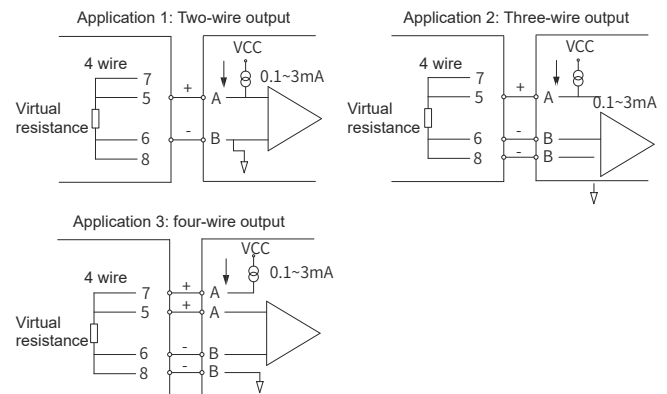
Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

2. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

3. When inputting a two-wire RTD, safety barrier terminals 4 and 2 must be short circuited



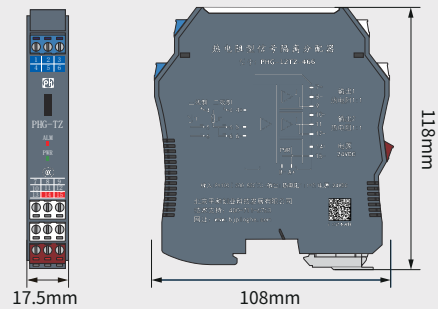
RTD input temperature converter

PHG-12TZ-466

1 input 2 outputs

Input: RTD Pt100

Output: RTD 1:1



Overview

Thermal resistor input temperature converter can transmit and output the thermal resistor (RTD) Pt100 signal at 1:1 for driving the load. Intelligent configuration is possible, and the actual range of the thermal resistance can be set through computer software. It has the function of disconnection alarm and out-of-range alarm function. This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: RTD Pt100 signal

Signal range: Corresponding measurement range of thermal resistance

Measurement range: -200°C~850°C

Output:

Output signal: RTD Pt100 signal(input signal 1:1)

Load capacity: 0~500 Ω (customizable)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <1.4W (when 24VDC power supply)

LED indicator: Green——Power indicator

Short circuit alarm: ALM red light stays on for a long time

Open circuit alarm: ALM red light flashing

Output accuracy: 0.1%F.S

Temperature drift: 0.01%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature:-40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500 V DC)

(between input/output/power supply)

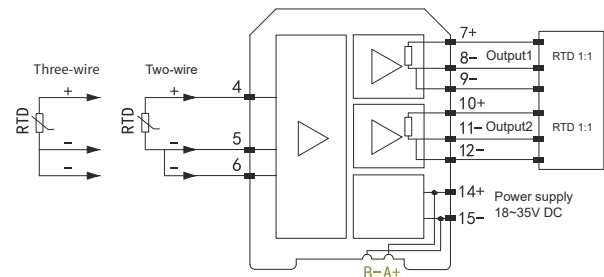
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Two wire or three wire RTD Pt100

Connection wiring



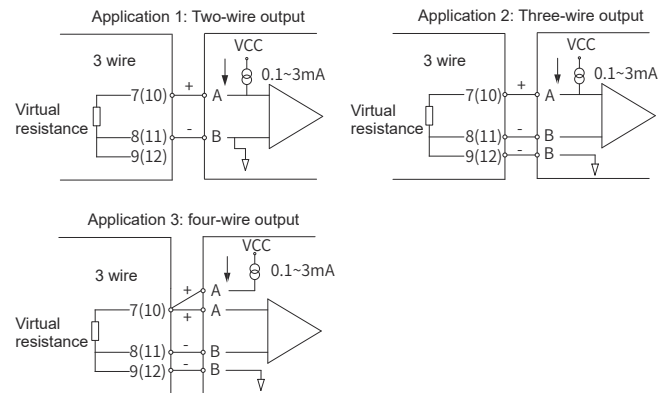
Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

2. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

3. When inputting a two-wire RTD, safety barrier terminals 6 and 5 must be short circuited



RTD input temperature converter

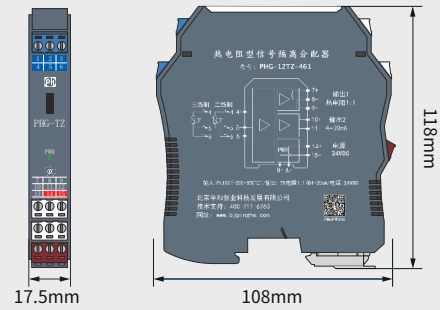
PHG-12TZ-461

1 input 2 outputs

Input: RTD Pt100

Output: One channel RTD Pt100

One channel 4~20mA



Overview

The thermal resistance input temperature converter can isolate and convert the thermal resistance (RTD) signal to output a 1:1 correspond signal and a 4~20mA signal for driving the load. Intelligent configuration is possible, and the actual range of the thermal resistance can be set through computer software.

This product requires independent power supply, and the power supply, input and output are isolated.

Specifications

Input:

Input signal: RTD Pt100 signal

Measurement range: -150℃~850℃

Output:

Output signal: one output with RTD Pt100(input signal 1:1)

one output with 4~20mA signa

Load capacity: 0~500Ω(customizable)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <1.9W(when 24V DC power supply, at 20mA output)

LED indicator: Green——Power indicator

Output accuracy: 0.1%F.S

Temperature drift: 0.01%F.S/℃

Temperature parameters: Working temperature: -20℃~+60℃

Storage temperature: -40℃~+80℃

Relative humidity: 10%~95% RH no condensation

Insulation strength: ≥2000V AC/min (between input/output/power supply)

Insulation resistance: ≥100MΩ (500V DC)

(between input/output/power supply)

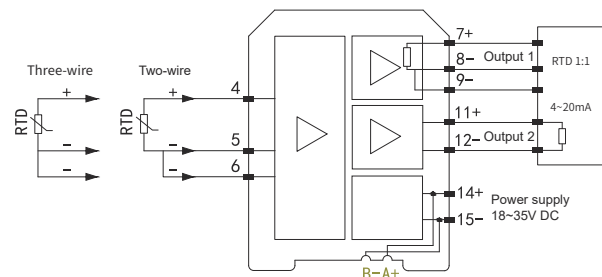
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

Applicable field equipments: Two wire or three wire RTD Pt100

Connection wiring



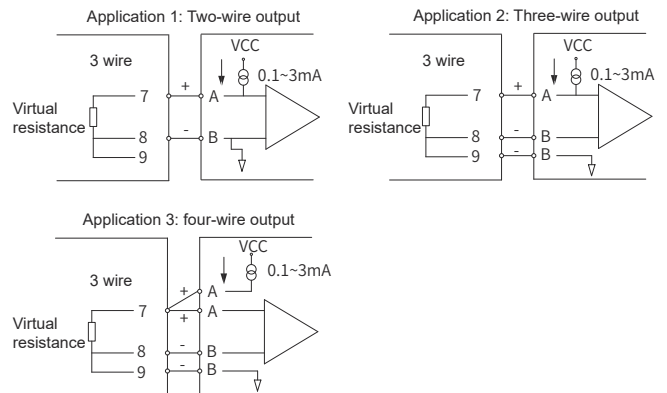
Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

2. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

3. When inputting a two-wire RTD, safety barrier terminals 5 and 6 must be short circuited



TC input temperature converter

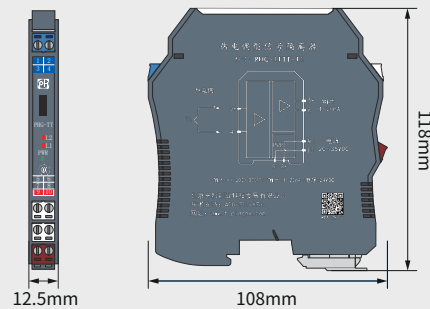
PHG-11TT series PHG-12TT series

Input: TC

Output: DC signal

1 input 1 output

1 input 2 outputs



Overview

Thermocouple input temperature transmitter can isolate and convert the DC signal from the thermocouple (TC) into a DC signal. This product has a built-in cold junction compensation function and can be configured intelligently. The actual range of the thermocouple can be set through computer software. It has the function of disconnection alarm and out-of-range alarm function.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

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 junction compensation: $\pm 1^{\circ}\text{C}$

Compensation range $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$

Output:

Output signal: DC signal (current/voltage)

Load resistance: Current load resistance $\leq 500\Omega$ (customizable)

Voltage load resistance $< 5\text{mA}$ (customizable)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 0.8\text{W}$; voltage output $< 0.6\text{W}$ (PHG-11TT series)

Current output $< 1.2\text{W}$; voltage output $< 0.6\text{W}$ (PHG-12TT series)

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 300ms

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

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: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: $100\text{M}\Omega$ (500V DC)

(between input/output/power supply)

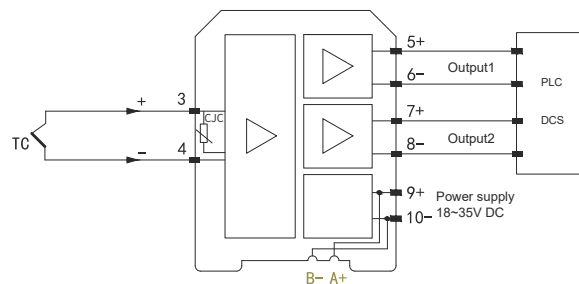
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

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

Connection wiring



Note: 1. PHG-11TT does not include output part 2

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering. Please refer to "Annex".

Specifications, models and codes

Input signal type and range table				
Code	Model	Measurement range	Minimum range	Conversion accuracy
1	K	-200~1370°C	50°C	0.5°C/0.1%
2	S	-50~1760°C	500°C	1.5°C/0.1%
3	E	-140~1000°C	50°C	0.5°C/0.1%
4	J	-160~1200°C	50°C	0.5°C/0.1%
5	B	250~1800°C	500°C	1.5°C/0.1%
6	T	-200~400°C	50°C	0.5°C/0.1%
7	R	-50~1760°C	500°C	1.5°C/0.1%
8	N	-200~1300°C	50°C	0.5°C/0.1%

PHG-11TT-□□□□		Output parameter definitions	
Code	Parameters	Code	Parameters
1	4~20mA	1	4~20mA
2	0~20mA	2	0~20mA
3	0~5V	3	0~5V
4	0~10V	4	0~10V
5	1~5V	5	1~5V
6	0~75mV	6	0~75mV
7	$\pm 10\text{V}$	7	$\pm 10\text{V}$
8	Customized parameters	8	Customized parameters

For example: one input and one output, thermocouple K (-200~1370°C) input, 4-20mA output, 24V power supply: Model: PHG-11TT-11

Information maybe revised without prior notice

Tel: 010-61252352/61259872/61252312
E-mail: linsen@bjpinghe.com

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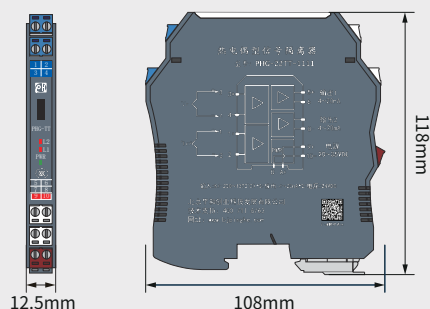
TC input temperature converter

PHG-22TT series

2 inputs 2 outputs

Input: TC

Output: DC signal



Overview

Thermocouple input temperature transmitter can isolate and convert the DC signal from the thermocouple (TC) into a DC signal. This product has a built-in cold junction compensation function and can be configured intelligently. The actual range of the thermocouple can be set through computer software. It has the function of disconnection alarm and out-of-range alarm function.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

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 junction compensation: $\pm 1^{\circ}\text{C}$

Compensation range $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$

Output:

Output signal: DC signal (current/voltage)

Load resistance: Current load resistance $\leq 500\Omega$ ((customizable)

Voltage load resistance $< 5\text{mA}$ ((customizable)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 1.8\text{W}$; voltage output $< 1\text{W}$

LED indicator: Green: Power indicator

Low range alarm yellow light on, high range alarm red 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 300ms

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

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: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: $100\text{M}\Omega$ (500V DC)

(between input/output/power supply)

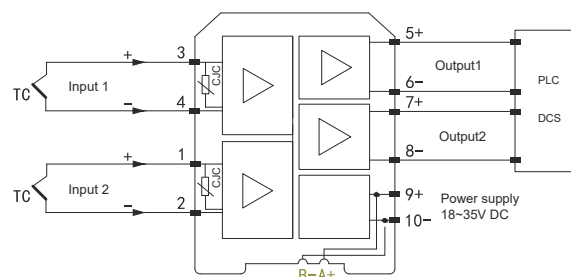
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

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

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Specifications, models and codes

Input signal type and range table				
Code	Model	Measurement range	Minimum range	Conversion accuracy
1	K	-200~1370°C	50°C	0.5°C/0.1%
2	S	-50~1760°C	500°C	1.5°C/0.1%
3	E	-140~1000°C	50°C	0.5°C/0.1%
4	J	-160~1200°C	50°C	0.5°C/0.1%
5	B	250~1800°C	500°C	1.5°C/0.1%
6	T	-200~400°C	50°C	0.5°C/0.1%
7	R	-50~1760°C	500°C	1.5°C/0.1%
8	N	-200~1300°C	50°C	0.5°C/0.1%

PHG-22TT-□□□□

Number of input channels

Number of output channels

T series signal isolator

TC signal input

Input parameters 1

Output parameters 1

Input parameters 2

Output parameters 2

Output parameter definitions

Code	Parameters
1	4~20mA
2	0~20mA
3	0~5V
4	0~10V
5	1~5V
6	0~75mV
7	$\pm 10\text{V}$
8	Customized parameters

For example: two inputs and two outputs, two thermocouple K (-200~1370°C) inputs, two 4~20mA outputs, 24V power supply, model: PHG-22TT-1111

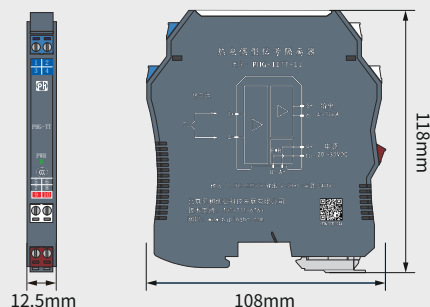
TC input temperature converter

PHG-11TT-*8

1 input 1 output

Input: TC

Output: TC 1:1



Overview

PHG-11TT-*8 series thermocouple input temperature converter can output the millivolt signal sent by the thermocouple (TC) at a ratio of 1:1.

This product needs to be powered independently, and the power supply, input and output terminals are isolated between each other.

Specifications

Input:

Input signal: K, S, E, J, B, T, R, N TC signals

Signal range: -20~80mV

Output:

Output signal: TC(input signal 1:1)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <0.8W(when powered by 24V DC)

LED indicator: Green——Power indicator

Output accuracy: 0.05%F.S

Response time: Reaching 90% of the final value within 300ms

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: ≥2000V AC/min (between input/output/power supply)

Insulation resistance: ≥100MΩ (500V DC)

(between input/output/power supply)

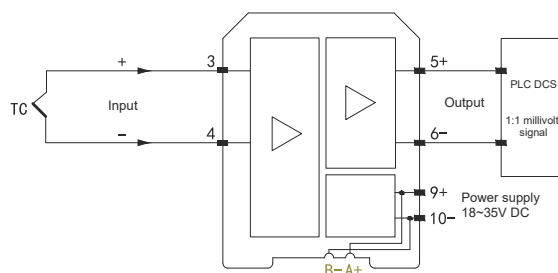
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section ≥0.5mm²

Insulation strength ≥500V

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

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

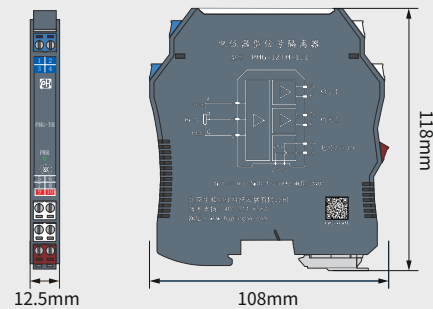
Please refer to "Annex".

Potentiometer input signal isolators

PHG-11TH series PHG-12TH series

1 input 1 output
1 input 2 outputs

Input: Potentiometer signal
Output: DC signal



Overview

The potentiometer input signal isolator can isolate and convert the potentiometer signal into a DC signal output. The conversion circuit sends the 2.5V voltage to the input potentiometer, and the potentiometer then transmits the partial pressure back to the circuit. This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Three-wire potentiometer

Output:

Output signal: DC signal(current/voltage)

Load resistance: Current load resistance $\leq 500\Omega$ (customizable)
Voltage load resistance $< 5\text{mA}$ (customizable)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 0.8\text{W}$, voltage output $< 0.5\text{W}$
(PHG-11TH series)
Current output $< 1.3\text{W}$, voltage output $< 0.5\text{W}$
(PHG-12TH series)

LED indicator: Green——Power indicator

Output accuracy: $\pm 0.1\% \text{F.S}$

Response time: Reaching 90% of the final value within 300ms

Temperature drift: $0.01\% \text{F.S}/^\circ\text{C}$

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: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: $\geq 100\text{M}\Omega$ (500V DC)
(between input/output/power supply)

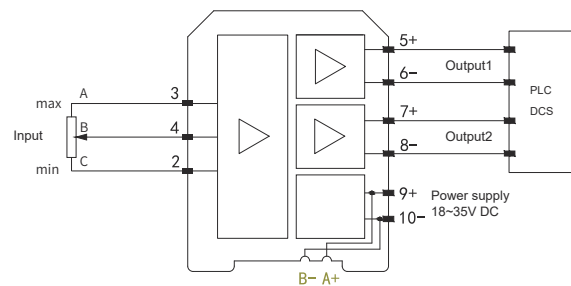
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Three-wire potentiometer

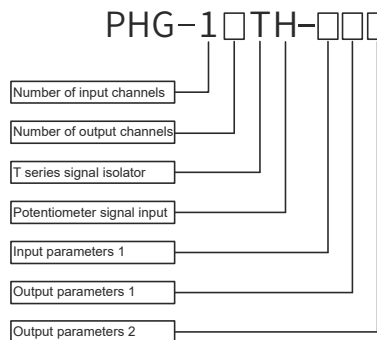
Connection wiring



- Note: 1. PHG-11TH series does not include the output 2 part
2. The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Specifications, models and codes

Input parameter definitions		Output parameter definitions	
Code	Parameters	Code	Parameters
1	0~1k Ω	1	4~20mA
4	0~2k Ω	2	0~20mA
5	0~5k Ω	3	0~5V
7	0~10k Ω	4	0~10V
8	Customized parameters	5	1~5V
		6	0~75mV
		7	$\pm 10\text{V}$
		8	Customized parameters



For example: one input and two outputs, potentiometer signal 0~5k Ω input, two 4~20mA outputs, 24V power supply, model: PHG-12TH-511

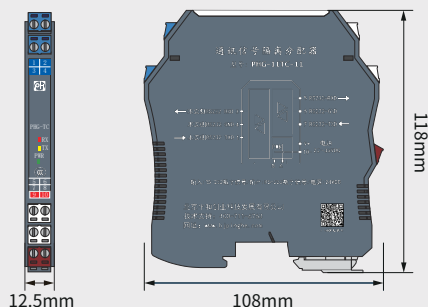
Communication signal input signal isolators

PHG-11TC-11

1 input 1 output

Input: RS-232 digital signal

Output: RS-232 digital signal



Overview

PHG-11TC-11 communication signal input signal isolator can realize two-way communication of RS-232 digital signals on site and in the control room.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: RS-232 digital signal

Output:

Output signal: RS-232 digital signal

Transmission delay: $\leq 10\mu s$

Transmission rate: $\leq 56 kbps$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 1.5W$ (24VDC power supply)

LED indicator: Green: Power indicator

Yellow: The control room transmits signals to the on site

Red: transmit signals from the site to the control room

Receiving and transmitting switching time: $\geq 20ms$

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

Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

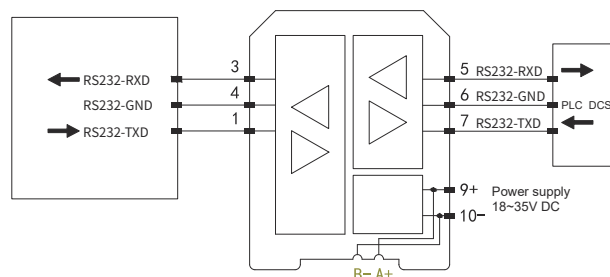
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Communication interface device with RS-232

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

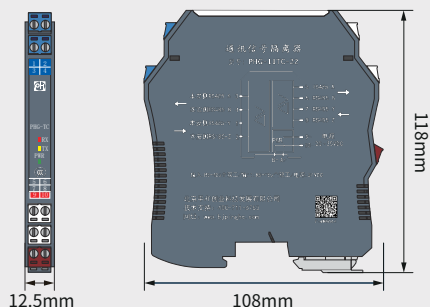
Communication signal input signal isolators

PHG-11TC-22

1 input 1 output

Input: RS-485 full duplex digital signal

Output: RS-485 full duplex digital signal



Overview

The communication signal of PHG-11TC-22 is communication input signal signal isolator, which can realize the two-way communication of RS-485 Full Duplex digital signal onsite and in the control room. This product needs independent power supply, and the power supply, input and output are isolated.

Specifications

Input:

Input signal: RS-485 full duplex digital signal

Output:

Output signal: RS-485 full duplex digital signal

Transmission delay: $\leq 10\mu s$

Transmission rate: $\leq 115.2kbps$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 1.5W$ (24VDC power supply)

LED indicator: Green: Power indicator

Yellow: The control room transmits signals to the on site

Red: transmitting signals from the site to the control room

Receiving and transmitting switching time: $\geq 20ms$

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

Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

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

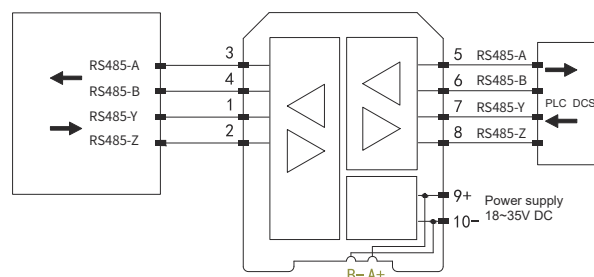
Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Communication interface device with

RS-485 Full Duplex

Connection wiring



Note: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

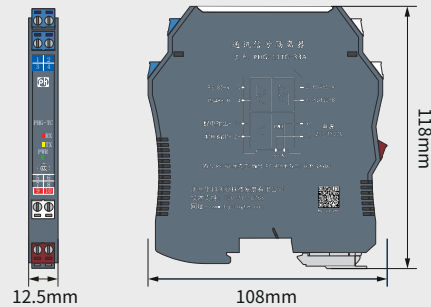
Communication signal input signal isolators

PHG-11TC-33*

1 input 1 output

Input: RS-485 half duplex digital signal

Output: RS-485 half duplex digital signal



Overview

PHG-11TC-33* communication signal input signal isolator can realize two-way communication of RS-485 half-duplex digital signals in the control room and on-site. The circuit provides power distribution for on-site instruments (as shown in the table below).

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Code	Distribution voltage, current
No	No distribution power
A	5V
B	6V
C	12V
F	24V
H	Cutomizable

Specifications

Input:

Input signal: RS-485 half duplex digital signal

Output:

Output signal: RS-485 half duplex digital signal

Transmission delay: $\leq 10\mu s$

Transmission rate: $\leq 115.2\text{kbps}$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 4W$ (24V power supply, 5V/200mA power distribution)

LED indicator: Green: Power indicator

Yellow: The control room transmits signals to the on site

Red: transmitting signals from the site to the control room

Receiving and transmitting switching time: $\geq 20\text{ms}$

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: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

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

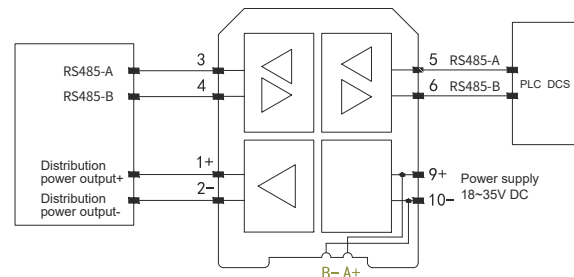
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500V$

Applicable field equipments: Communication interface device with

RS-485 Half Duplex

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

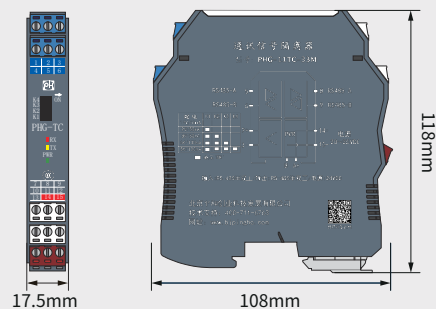
Communication signal input signal isolators

PHG-11TC-33M

1 input 1 output

Input: RS-485 half duplex digital signal

Output: RS-485 half duplex digital signal



Overview

The PHG-11TC-33M is signal isolator with communication signal, which can realize the two-way communication of RS-485 Half Duplex digital signal in the onsite and control room. The circuit provides power distribution for on-site instruments. The voltage value can be switched through the top dial switch. The specific operation method is shown in the chart below.

This product needs independent power supply, and the power supply, input and output are isolated.

Distribution power	K1	K2	K3	K4
12V/50mA				
9V/50mA	■			
8V/50mA	■	■		
6V/100mA	■	■	■	
5V/100mA	■	■	■	■

■ ON

Specifications

Input:

Input signal: RS-485 half duplex digital signal

Distribution voltage:

Provide power distribution for field instruments: 5V, 6V, 8V, 9V, 12V

Output:

Output signal: RS-485 half duplex digital signal

Transmission delay: $\leq 10\mu s$

Transmission rate: $\leq 1.2\text{kbps} \sim 56\text{kbps}$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 3.6\text{W}$ (24V power supply, 6V/100mA power distribution)

LED indicator: Green: Power indicator

Yellow: The control room transmits signals to the on site

Red: transmitting signals from the site to the control room

Receiving and transmitting switching time: $\geq 20\text{ms}$

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: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: $\geq 100\text{M}\Omega$ (500V DC)

(between input/output/power supply)

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

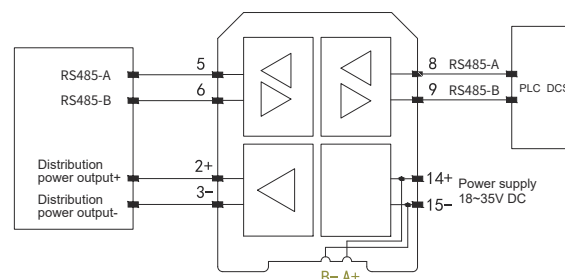
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Communication interface device with

RS-485 half duplex

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

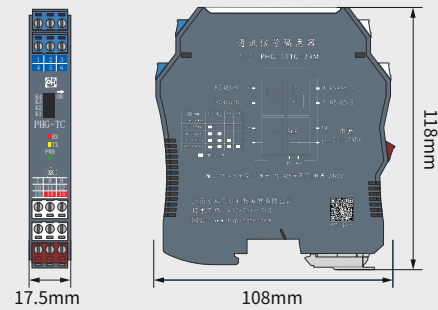
Frequency signal input signal isolators

PHG-11TC-13M

1 input 1 output

Input: RS-232 digital signal

Output: RS-485 half duplex digital signal



Overview

PHG-11TC-13M communication signal input signal isolator can convert field side RS-232 digital signals into RS-485 half duplex digital signals and transmits to the control room; the circuit provides power distribution for field instruments. The voltage value can be switched via the DIP switch at the top. The specific operation method is shown in the chart below.

This product needs independent power supply, and the power supply, input and output are isolated.

Distribution power	K1	K2	K3	K4
12V/50mA				
9V/50mA	■			
8V/50mA	■	■		
6V/100mA	■	■	■	
5V/100mA	■	■	■	■

■ ON

Specifications

Input:

Input signal: RS-232 digital signal

Distribution voltage:

Provide power distribution for field instruments: 5V, 6V, 8V, 9V, 12V

Output:

Output signal: RS-485 half duplex digital signal

Transmission delay: $\leq 10\mu s$

Transmission rate: $\leq 1.2\text{kbps} \sim 56\text{kbps}$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 4W$ (24V power supply, 6V/100mA power distribution)

LED indicator: Green: Power indicator

Yellow: The control room transmits signals to the on site

Red: transmitting signals from the site to the control room

Receiving and transmitting switching time: $\geq 20ms$

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

Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

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

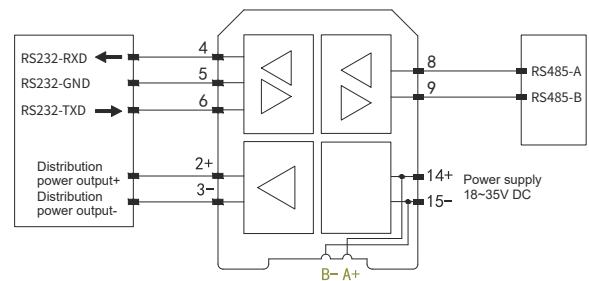
Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Communication interface device with

RS-232

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

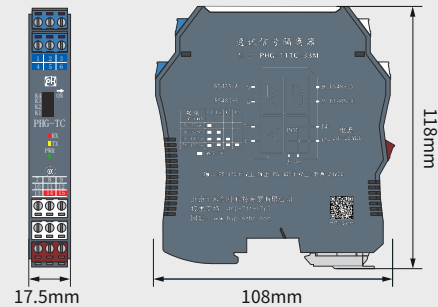
Communication signal input signal isolators

PHG-11TC-31M

1 input 1 output

Input: RS-485 half duplex digital signal

Output: RS-232 digital signal



Overview

PHG-11TC-31M communication signal input signal isolator can convert field side RS-485 half duplex digital signals into RS-232 digital signals and transmits to the control room; the circuit provides power distribution for field instruments. The voltage value can be switched via the DIP switch at the top. The specific operation method is shown in the chart below.

This product needs independent power supply, and the power supply, input and output are isolated.

Distribution power	K1	K2	K3	K4
12V/50mA				
9V/50mA	■			
8V/50mA	■	■		
6V/100mA	■	■	■	
5V/100mA	■	■	■	■

■ ON

Specifications

Input:

Input signal: RS-485 half duplex digital signal

Distribution voltage:

Provide power distribution for field instruments: 5V, 6V, 8V, 9V, 12V

Output:

Output signal: RS-232 digital signal

Transmission delay: $\leq 10\mu s$

Transmission rate: $\leq 1.2\text{kbps} \sim 56\text{kbps}$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 4W$ (24V power supply, 6V/100mA power distribution)

LED indicator: Green: Power indicator

Yellow: The control room transmits signals to the on site

Red: transmitting signals from the site to the control room

Receiving and transmitting switching time: $\geq 20ms$

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

Storage temperature: $-40^{\circ}C \sim +80^{\circ}C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

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

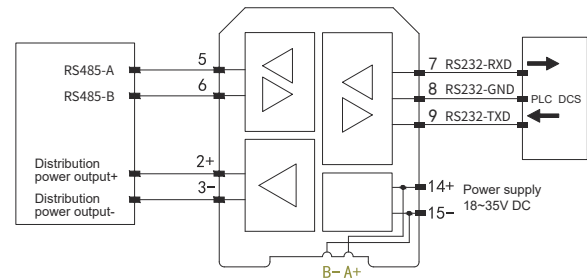
Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Communication interface device with

RS-485 Half Duplex

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

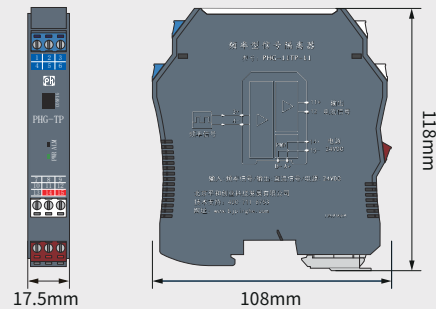
Frequency signal input signal isolators

PHG-11TP series

1 input 1 output

Input: Frequency signal

Output: DC signal



Overview

Frequency input signal isolator: PHG-11TP series, convert the frequency signal at the input end into a DC signal output according to the range set by the user.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

"*" represents the output signal type, and the specific model is represented by a code (see "Specifications, models and codes" for details).

Specifications

Input:

Frequency signal input: Input frequency: 0.1Hz~100kHz

Maximum allowable input voltage: 30Vp-p

Minimum input level: $\square$ 2V, (2Hz~100kHz)
2V, (0.1Hz~100kHz)

Output:

Output signal: DC signal

Current output load resistance: $\leq 350\Omega$

Voltage output load resistance: $\geq 1k\Omega$

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $\leq 1W$ (24V power supply, 20mA output)

Impulse width: $\geq 2\mu s$

Output accuracy: 0.1%F.S

Temperature drift: 0.01%F.S/°C

For details on the input signal fault detection function, refer to the applicable manual

LED indicator:

ALM yellow light: When the input signal exceeds the alarm high limit value (including the deadzone value), the indicator lights up

ALM red light: When the input signal is below the alarm lower limit value (including the deadzone value), the indicator lights up

ALM yellow light, all red lights are on: Input signal failure

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (input/output/power supply)

Insulation resistance: 100M Ω (500VDC)

(between input/output/power supply)

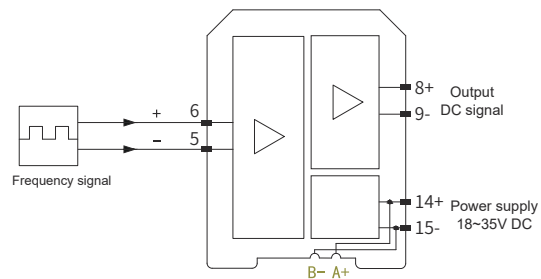
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Level impulse signal

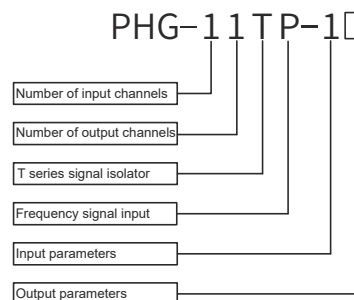
Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Specifications, models and codes



Code	Input parameters
1	0.1~100kHz
Code	Output parameters
1	4~20mA
2	0~20mA
4	0~10V
5	1~5V
6	0~5V
7	$\pm 10V$
8	Customized parameters

Information maybe revised without prior notice

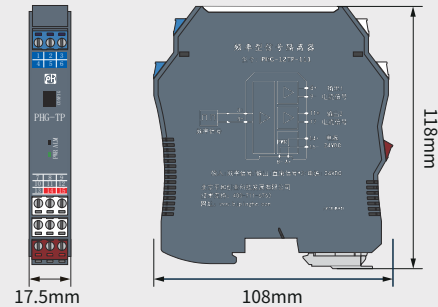
Frequency signal input signal isolators

PHG-12TP series

1 input 2 outputs

Input: Frequency signal

Output: DC signal



Frequency input signal isolator: PHG-12TP series, convert the frequency signal at the input end into a DC signal output according to the range set by the user.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Frequency signal input: Input frequency: 0.1Hz~100kHz
Maximum allowable input voltage: 30Vp-p
Minimum input level: $\sim$ 2V, (2Hz~100kHz)
 $\square$ 2V, (0.1Hz~100kHz)

Output:

Output signal: DC signal
Current output load resistance: $\leq 350\Omega$
Voltage output load resistance: $\geq 1k\Omega$

Basic parameters:

Supply voltage: 18~35V DC
Power consumption: $\leq 1.5W$ (24V power supply, 20mA output)
Impulse width: $\geq 2\mu s$
Output accuracy: 0.1%F.S
Temperature drift: 0.01%F.S/°C
For details on the input signal fault detection function, refer to the applicable manual
LED indicator:

ALM yellow light: When the input signal exceeds the alarm high limit value (including the deadzone value), the indicator lights up

ALM red light: When the input signal is below the alarm lower limit value (including the deadzone value), the indicator lights up

ALM yellow light, all red lights are on: Input signal failure

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (input/output/power supply)

Insulation resistance: 100M Ω (500V DC)

(between input/output/power supply)

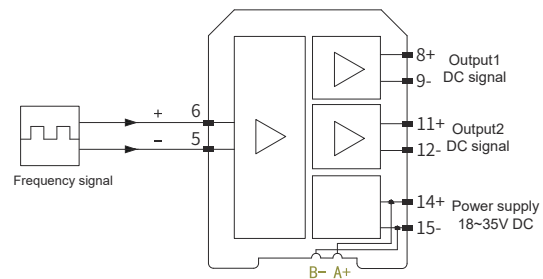
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Level impulse signal

Connection wiring



Note: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Specifications, models and codes

PHG-12TP-1□□		Code	Input parameters
Number of input channels	1	1	0.1~100kHz
Number of output channels	2	Code	Output parameters
T series signal isolator	1	1	4~20mA
Frequency signal input	2	2	0~20mA
Input parameters	4	4	0~10V
Output parameters1	5	5	1~5V
Output parameters2	6	6	0~5V
	7	7	$\pm 10V$
	8	8	Customized parameters

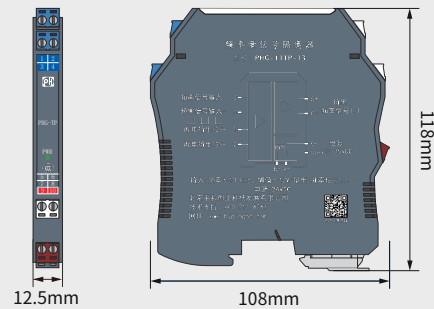
Frequency signal input signal isolators

PHG-11TP-13

1 input 1 output

Input: Frequency signal

Output: Frequency signal 1:1 (12V distribute)



Overview

Frequency input signal isolator: PHG-11TP-13, outputs frequency signals from the input channel and provides 12V isolated distribution power to instruments on the output end.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Frequency $\leq 100\text{kHz}$, amplitude $\leq 12\text{V}$, duty cycle $\geq 20\%$,
high-level $\geq 4\text{V}$, low-level $\leq 1\text{V}$

Distribution voltage: Open circuit voltage $\leq 13\text{V}$, distribution voltage $\geq 8.5\text{V}$
when loaded with 25mA

Output:

Output signal: Frequency 1: 1 output

Signal range: Signal low-level $\leq 0.5\text{V}$

Signal high level $\geq 10\text{V}$

Drive current: $\leq 15\text{mA}$, load resistance $\geq 1\text{k}\Omega$

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: $\leq 1\text{W}$

When powered by 24V DC and output at 12V level

LED indicator: Green: Power indicator

Receiving and transmitting switching time: $\geq 20\text{ms}$

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: $10\%\sim 95\%$ RH no condensation

Insulation strength: $\geq 2000\text{V AC/min}$ (input/output/power supply)

Insulation resistance: $100\text{M}\Omega$ (500V DC)

(between input/output/power supply)

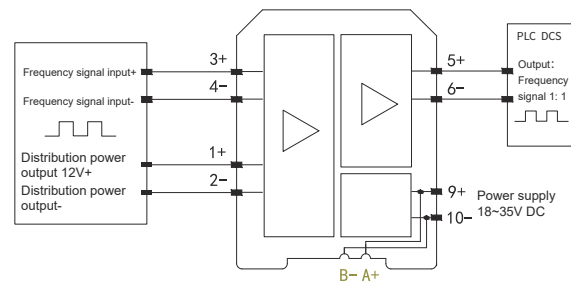
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Frequency measuring equipment

Connection wiring



Note: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

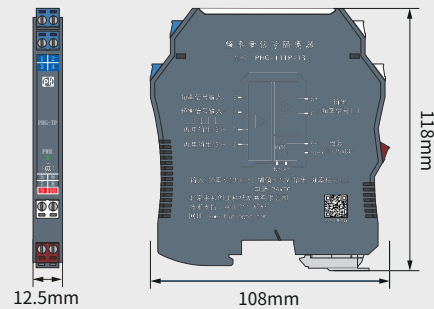
Frequency signal input signal isolators

PHG-11TP-23

1 input 1 output

Input: Frequency signal

Output: Frequency signal 1:1 (24V distribute)



Overview

Frequency input signal isolator: PHG-11TP-23, outputs frequency signals from the input channel and provides 24V isolated distribution power to instruments on the output end.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Frequency $\leq 100\text{kHz}$, amplitude $\leq 12\text{V}$, duty cycle $\geq 20\%$,
high-level $\geq 4\text{V}$, low-level $\leq 1\text{V}$

Distribution voltage: Open circuit voltage $\leq 25\text{V}$, distribution voltage $\geq 16\text{V}$
when loaded with 25mA

Output:

Output signal: Frequency 1: 1 output

Signal range: Signal low-level $\leq 0.5\text{V}$

Signal high level $\geq 10\text{V}$

Drive current: $\leq 15\text{mA}$, load resistance $\geq 1\text{k}\Omega$

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: $\leq 1.7\text{W}$

When powered by 24VDC and output at 24V level

LED indicator: Green: Power indicator

Receiving and transmitting switching time: $\geq 20\text{ms}$

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: $10\%\sim 95\%$ RH no condensation

Insulation strength: $\geq 2000\text{V AC/min}$ (input/output/power supply)

Insulation resistance: $100\text{M}\Omega$ (500V DC)

(between input/output/power supply)

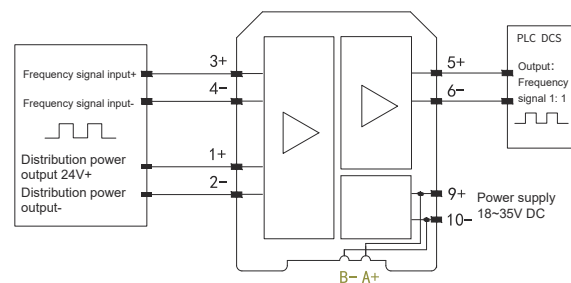
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Frequency equipments

Connection wiring



Note: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Surge Protection Type Analogue Input Signal Isolators

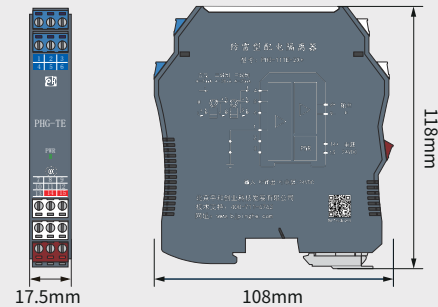
PHG-11TE⁺ series PHG-12TE⁺ series

1 input 1 output

1 input 1 outputs

Input: 2 or 3-wire transmitter or current source 4~20mA

Output: DC signal



Overview

The surge protection analog input signal isolator can convert two- or three-wire 4~20mA or current source signals into current or voltage signal output through the isolator. The output parameters can be customized according to user needs.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: 2 or 3-wire transmitter or current source 4~20mA

Distribution voltage: $\geq 18V$

Input resistance: $\leq 100\Omega$

Output:

Output signal: DC signal(current/voltage)

Load Resistance: Current load resistance $\leq 500\Omega$

Voltage load resistance $< 5mA$

Surge protection features:

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

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

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

According to standards: GB/T 18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 1.3W$; Voltage output $< 1W$
(PHG-11TE⁺ series)

Current output $< 1.8W$; Voltage output $< 1W$
(PHG-12TE⁺ series)

LED indicator: Green—power indicator

Output accuracy: 0.1%F.S (Typical value: 0.05% F.S)

Response time: 5ms to reach 90% of the final value

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: $-20^\circ C \sim +60^\circ C$

Storage temperature: $-40^\circ C \sim +80^\circ C$

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (input/output/power supply)

Insulation resistance: 100M Ω (500V DC)

(between input/output/power supply)

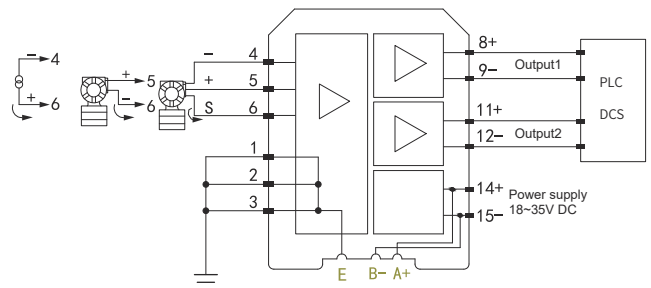
EMC: GB/T 18268 (IEC 61326-1)

Wire requirements: Cross section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Two or three-wire transmitter or current source

Connection wiring



Note: 1. PHG-11TE⁺ series does not include the output 2 part

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Specifications, models and codes

PHG-1□TE-2□□+		Code	Input parameters
Number of input channels	□	2	2 wire, 3 wire transmitter or 4~20mA
Number of output channels	□	8	Customized parameters
T series signal isolator	□		
Distribution power signal input	□		
Input parameters	□		
Output parameters 1	□		
Output parameters 2	□		
Surge protection type	□		
		Code	Output parameters
		1	4~20mA
		2	2 wire 4~20mA
		3	0~5V
		4	0~10V
		5	1~5V
		6	0~75mV
		7	$\pm 10V$
		8	Customized parameters

For example: one input and one output, two or three wire 4~20mA input, 4~20mA output, 24V power supply, model: PHG-11TE-21+

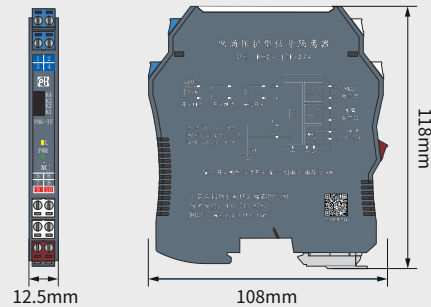
Surge Protection Type Digital Input Signal Isolators

PHG-11TF-27+

1 input 1 output

Input: Contact and NAMUR proximity switch

Output: Relay+alarm(optional)



Overview

Surge protection switch input relay output signal isolator converts the input signal of the switch contact or proximity switch into a relay output through isolation.

Line fault detection is output through a separate relay and displayed by an LED light on the top of the module. The switch of the module is used to select the phase of the channel and whether the line fault detection function is required.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Switching rate: <10Hz

Input/output characteristics:

On site input current: >2.1mA, the output is closed, indicating ON

When <1.2mA, the output is open circuit, indicating OFF

Output normally "Open"/"Closed" contact conversion control:

When dial switch K1 is at "ON" side, the relay output is "Normally closed".

When dial switch K1 is at "OFF" side, the relay output is "Normally open".

When dial switch K2 is at "ON" side, the circuit selects indicating red light LFD alarm function.

Output:

Output signal: Relay and alarm relay (optional)

Drive capability: 250V AC/2A, 30V DC/2A

when subjected to resistive loads

Response time: 20ms

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <1W(when the relay contacts close)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

Temperature parameters: Working temperature: -20°C ~ +60°C,

Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: 100M Ω (500 V DC) (between input/output/power supply)

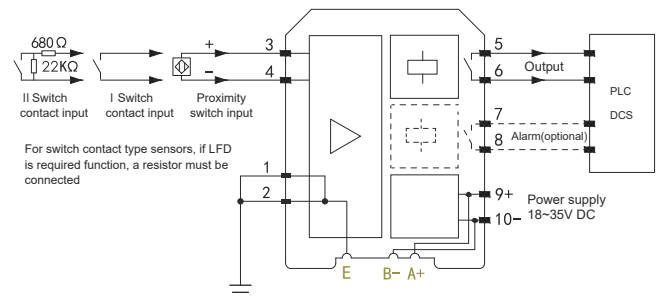
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current >7mA, short circuit alarm (SC); On site input current <0.1mA, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a 22k Ω resistor should be connected in parallel at both ends of the switch, and a 680 Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

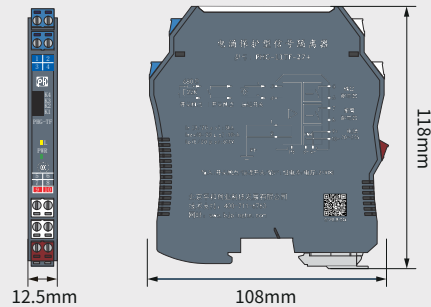
Surge Protection Type Digital Input Signal Isolators

PHG-12TF-277+

1 input 2 outputs

Input: Contact and NAMUR proximity switch

Output: Relay



Overview

Surge protection switch input relay output signal isolator converts the input signal of the switch contact or proximity switch into a relay output through isolation.

Line fault detection is output through a separate relay and displayed by an LED light on the top of the module. The switch of the module is used to select the phase of the channel and whether the line fault detection function is required.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Switching rate: <10Hz

Input/output characteristics:

On site input current: >2.1mA, the output is closed, indicating ON

When <1.2mA, the output is open circuit, indicating OFF

Output normally "Open"/"Closed" contact conversion control:

When dial switch K1, K3 is at "ON" side, the relay output is "Normally closed"

When dial switch K1, K3 is at "OFF" side, the relay output is "Normally open"

When dial switch K2, K4 is at "ON" side, the circuit selects indicating red light LFD alarm function

Output:

Output signal: Relay

Drive capability: 250V AC/2A, 30V DC/2A

when subjected to resistive loads

Response time: 20ms

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <1W(when the relay contacts close)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

Temperature parameters: Working temperature: -20°C ~ +60°C,

Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: 100M Ω (500 V DC) (between input/output/power supply)

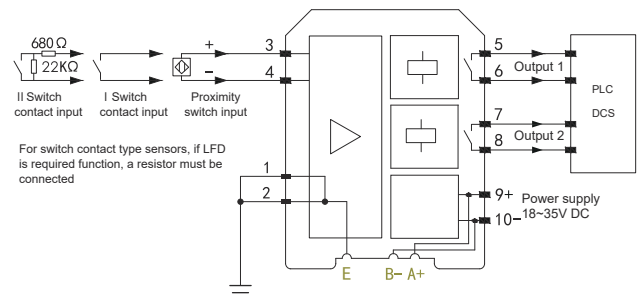
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current >7mA, short circuit alarm (SC); On site input current <0.1mA, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a 22k Ω resistor should be connected in parallel at both ends of the switch, and a 680 Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

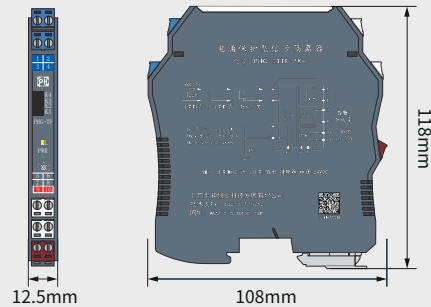
Surge Protection Type Digital Input Signal Isolators

PHG-11TF-28+

1 input and 1 output

Input: Contact and NAMUR proximity switch

Output: Transistor+alarm(optional)



Overview

Surge protection switch input transistor output signal isolator converts the input signal of the switch contact or proximity switch into a transistor output through isolation.

Line fault detection is output through a separate relay and displayed by an LED light on the top of the module. The switch of the module is used to select the phase of the channel and whether the line fault detection function is required.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Input frequency range: $\leq 5\text{kHz}$

Input/output characteristics:

On site input current: $>2.1\text{mA}$, the output is closed, indicating ON

When $<1.2\text{mA}$, the output is open circuit, indicating OFF

Switched control between inverted phase and normal phase of outputs e-c: When the dial switch K1 is at "ON", the transistor output e-c are in inverted phase

When the dial switch K1 is at "OFF", the transistor output e-c are in normal phase

When the K2 is at "ON", the circuit will select the red light LFD indication alarm function

Output:

Output signal: Transistor and alarm relay (optional)

Output characteristic: NPN type transistor emitter or collector open circuit output

Drive capability: Output current $\leq 20\text{mA}$ ($1.2\text{k}\Omega$), maximum internal current 100mA , equipped with short-circuit current protection

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/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: $<1\text{W}$ (24V power supply, when the transistor is conducting)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

Switching frequency: $<10\text{Hz}$

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: $10\%\sim 95\%$ RH no condensation

Insulation strength: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: $100\text{M}\Omega$ (500V DC) (between input/output/power supply)

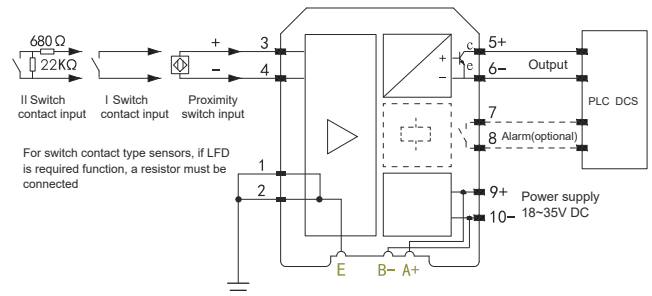
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

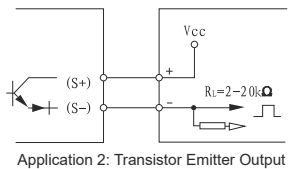
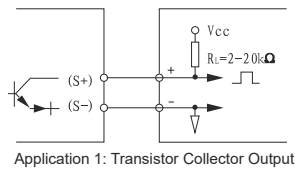
Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".



Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current $>7\text{mA}$, short circuit alarm (SC); On site input current $<0.1\text{mA}$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22\text{k}\Omega$ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

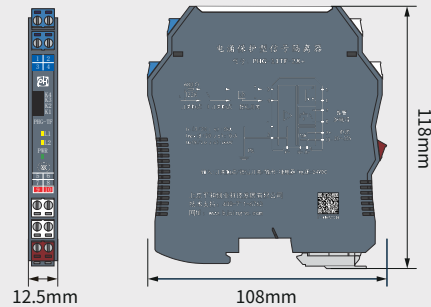
Surge Protection Type Digital Input Signal Isolators

PHG-12TF-288+

1 input and 2 outputs

Input: Contact and NAMUR proximity switch

Output: Transistor



Overview

Surge protection switch input transistor output signal isolator converts the input signal of the switch contact or proximity switch into a transistor output through isolation.

Line fault detection is output through a separate relay and displayed by an LED light on the top of the module. The switch of the module is used to select the phase of the channel and whether the line fault detection function is required.

This product needs to be powered independently, and the power supply, input and output terminals are isolated.

Specifications

Input:

Input signal: Contact and NAMUR proximity switch

The supply voltage of the sensor: About 8V

Input frequency range: $\leq 5\text{kHz}$

Input/output characteristics:

On site input current: $> 2.1\text{mA}$, the output is closed, indicating ON

When $< 1.2\text{mA}$, the output is open circuit, indicating OFF

Switched control between inverted phase and normal phase of

outputs e-c: When the dial switch K1, K3 is at "ON", the transistor output e-c are in inverted phase

When the dial switch K1, K3 is at "OFF", the transistor output e-c are in normal phase

When the K2, K4 is at "ON", the circuit will select the red light LFD indication alarm function

Output:

Output signal: Transistor

Output characteristic: NPN type transistor emitter or collector open circuit output

Drive capability: Output current $\leq 20\text{mA}$ ($1.2\text{k}\Omega$), maximum internal current 100mA , equipped with short-circuit current protection

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/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: $18\sim 35\text{V DC}$

Power consumption: $< 1.2\text{W}$ (24V power supply, when the transistor is conducting)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

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: $10\%\sim 95\%$ RH no condensation

Insulation strength: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: $100\text{M}\Omega$ (500V DC) (between input/output/power supply)

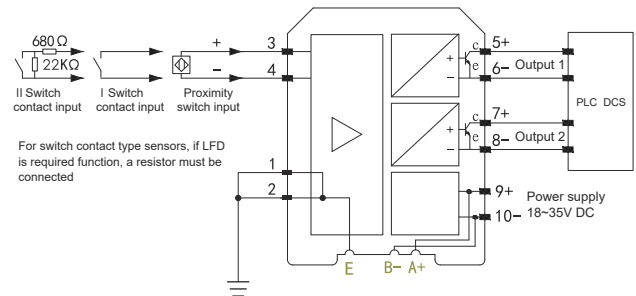
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

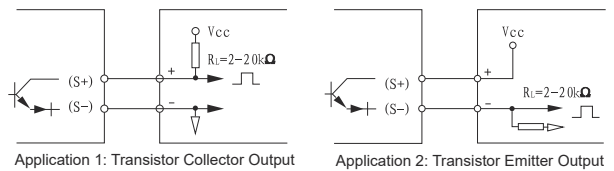
Connection wiring



Note: The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".



Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current $> 7\text{mA}$, short circuit alarm (SC); On site input current $< 0.1\text{mA}$, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a $22\text{k}\Omega$ resistor should be connected in parallel at both ends of the switch, and a 680Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

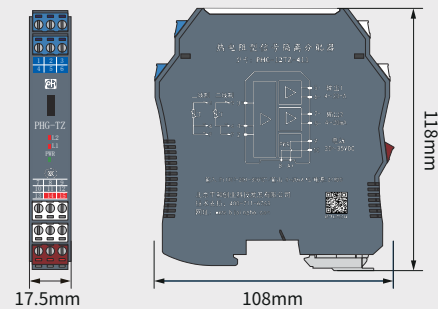
Surge Protection Type RTD input temperature converter

PHG-11TZ+ series
PHG-12TZ+ series

1 input 1 output
1 input 2 outputs

Input: RTD

Output: DC signal



Overview

The RTD input temperature converter with surge protection function can convert the two wire or three wire thermistor (RTD) signals into DC current signals. It can be intelligently configured, and the actual range of the thermal resistance 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.

Specifications

Input:

Input signal: RTD 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: Corresponding measurement range of thermal resistance

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

Excitation current: 800 μ A

Output:

Output signal: DC signal (current/voltage)

Load capacity: Current load resistance $\leq 500\Omega$ (customizable)

Voltage load resistance $< 5\text{mA}$ (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/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 0.8\text{W}$; voltage output $< 0.6\text{W}$

(PHG-11TZ+ series)

Current output $< 1.2\text{W}$; voltage output $< 0.6\text{W}$

(PHG-12TZ+ series)

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 300ms

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: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: 100M Ω (500V DC)

(between input/output/power supply)

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

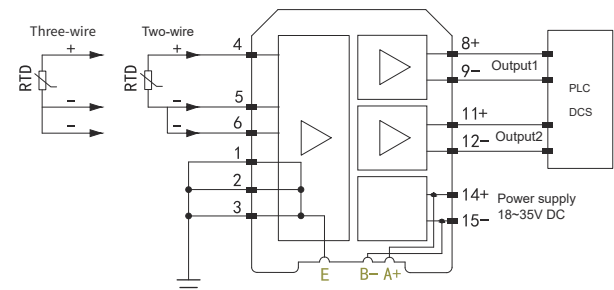
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Two wire or three wire RTD

G53, Cu50, Pt100, Pt1000, Ni1000

Connection wiring



Note: 1. PHG-11TZ - *1+ does not include output part 2

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

3. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

4. When inputting a two-wire RTD, safety barrier terminals 4 and 2 must be short circuited

Specifications, models and codes

Input signal type and range table				
Code	Model	Measurement range	Minimum range	Conversion accuracy
1	G53	$-50 \sim 150^{\circ}\text{C}$	20°C	$0.2^{\circ}\text{C}/0.1\%$
2	Cu50	$-50 \sim 150^{\circ}\text{C}$	20°C	$0.2^{\circ}\text{C}/0.1\%$
4	Pt100	$-200 \sim 850^{\circ}\text{C}$	20°C	$0.2^{\circ}\text{C}/0.1\%$
6	Pt1000	$-200 \sim 850^{\circ}\text{C}$	20°C	$0.2^{\circ}\text{C}/0.1\%$
7	Ni1000	$-60 \sim 250^{\circ}\text{C}$	20°C	$0.2^{\circ}\text{C}/0.1\%$

PHG-1□TZ-□□□+		Output parameter definitions	
Code	Parameters	Code	Parameters
1	4~20mA	1	4~20mA
2	0~20mA	2	0~20mA
3	0~5V	3	0~5V
4	0~10V	4	0~10V
5	1~5V	5	1~5V
6	0~75mV	6	0~75mV
7	$\pm 10\text{V}$	7	$\pm 10\text{V}$
8	Customized parameters	8	Customized parameters

For example: one input and one output, thermal resistor Pt100 input, 4~20mA output,

24V power supply, model PHG-11TZ-41+

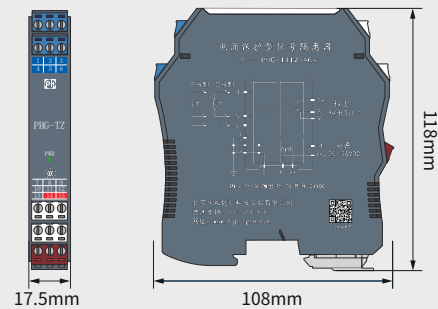
Surge Protection Type RTD input temperature converter

PHG-11TZ-46+

1 input 1 output

Input: RTD Pt100

Output: RTD 1:1



Overview

Thermal resistor input temperature converter with surge protection function can transmit the two-wire or three-wire thermal resistor (RTD)Pt100 signal and output in 1: 1, to drive the load. This product requires independent power supply, with isolated power supply, input, and output terminals.

Specifications

Input:

Input signal: RTD Pt100 signal

Signal range: Corresponding measurement range of thermal resistance

Measurement range: -150℃~850℃

Output:

Output signal: RTD Pt100 signal(Input signal 1:1)

Excitation current: 0.1~3mA

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <0.9W (when 24VDC power supply)

LED indicator: Green——Power indicator

Output accuracy: 0.1%F.S

Temperature drift: 0.01%F.S/℃

Temperature parameters: Working temperature: -20℃~+60℃

Storage temperature:-40℃~+80℃

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: 100M Ω (500V DC)

(between input/output/power supply)

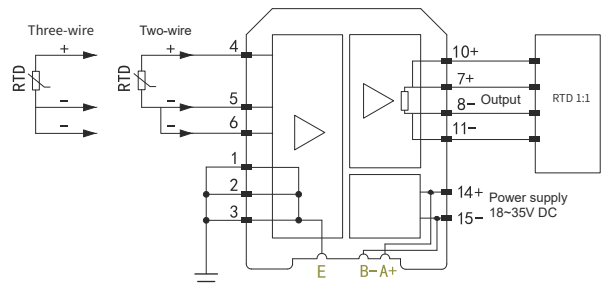
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Two wire or three wire RTD Pt100

Connection wiring



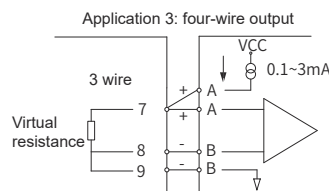
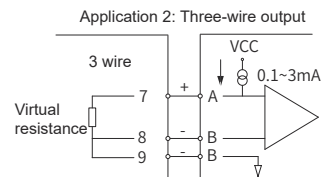
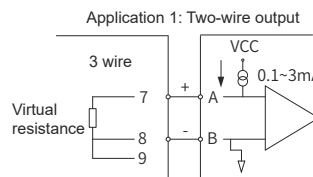
Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

2. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

3. When inputting a two-wire RTD, safety barrier terminals 5 and 6 must be short circuited



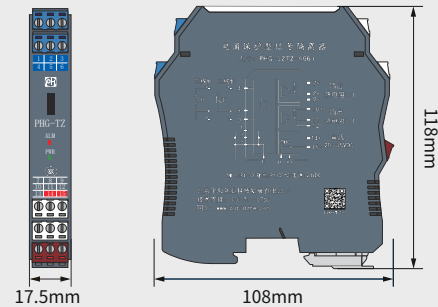
Surge Protection Type RTD input temperature converter

PHG-12TZ-466+

1 input 2 outputs

Input: RTD Pt100

Output: RTD 1:1



Overview

The thermistor input temperature converter with surge protection function can convert the Pt100 signals of two wire and three wire thermistors (RTDs) into a 1:1 signal of the thermistor. It can be intelligently configured, and the actual range of the thermal resistance can be set through computer software.

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

Specifications

Input:

Input signal: RTD Pt100 signal

Signal range: Corresponding measurement range of thermal resistance

Measurement range: -200°C~850°C

Output:

Output signal: RTD Pt100 signal(input signal 1:1)

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <1.4W (when 24VDC power supply)

LED indicator: Green——Power indicator

Short circuit alarm: ALM red light stays on for a long time

Open circuit alarm: ALM red light flashing

Output accuracy: 0.1%F.S

Temperature drift: 0.01%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature: -40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

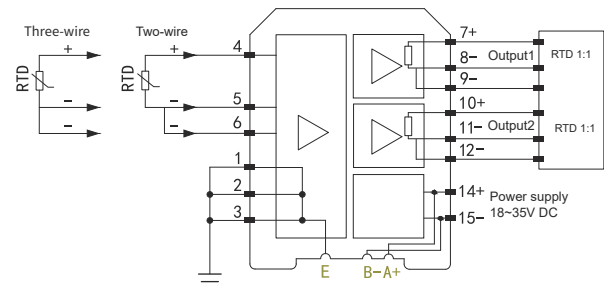
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

Applicable field equipments: Two wire or three wire RTD Pt100

Connection wiring



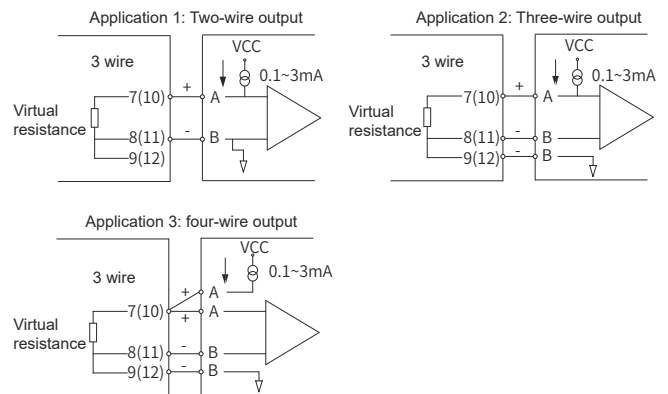
Note: 1. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

2. When inputting a three wire RTD, it is necessary to ensure that the three wires are of equal length as much as possible

3. When inputting a two-wire RTD, safety barrier terminals 6 and 5 must be short circuited



Surge protection type TC input temperature converter

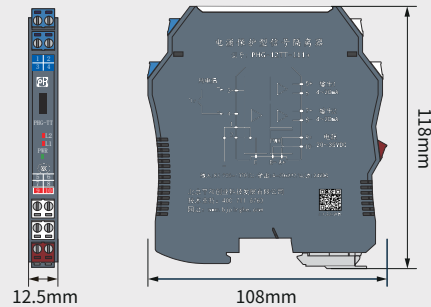
PHG-11TT+ 系列 PHG-12TT+ 系列

1 input 1 output

1 input 2 outputs

Input: TC

Output: DC signal



Overview

Thermocouple input temperature converter with surge protection function can isolate and convert thermocouple (TC) DC signals into current signals. This temperature converter has built-in cold junction 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.

Specifications

Input:

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 junction compensation: $\pm 1^{\circ}\text{C}$

Compensation range $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$

Output:

Output signal: DC signal (current/voltage)

Load capacity: Current load resistance $\leq 500\Omega$ (customizable)

Voltage load resistance $< 5\text{mA}$ (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/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: Current output $< 0.8\text{W}$; voltage output $< 0.6\text{W}$

(PHG-11TT+ series)

Current output $< 1.2\text{W}$; voltage output $< 0.6\text{W}$

(PHG-12TT+ series)

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 300ms

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: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: $100\text{M}\Omega$ (500V DC)

(between input/output/power supply)

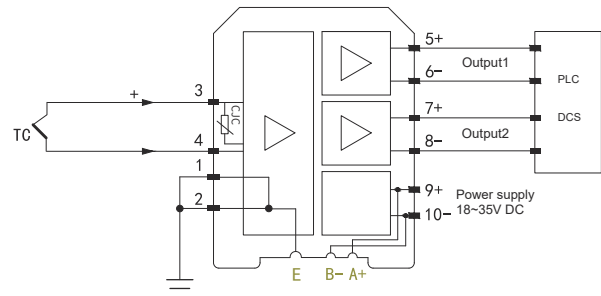
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

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

Connection wiring



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

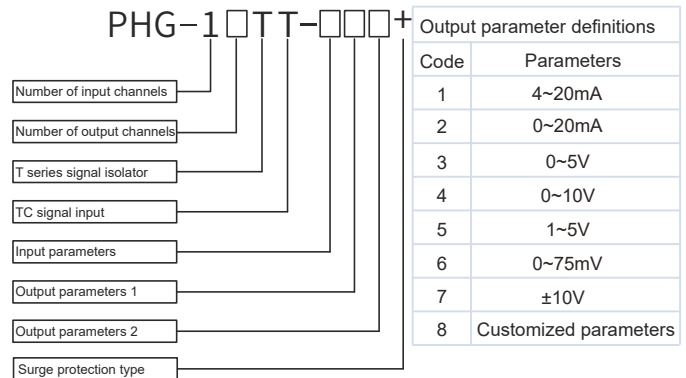
2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to "Annex".

Specifications, models and codes

Input signal type and range table				
Code	Model	Measurement range	Minimum range	Conversion accuracy
1	K	-200~1370°C	50°C	0.5°C/0.1%
2	S	-50~1760°C	500°C	1.5°C/0.1%
3	E	-140~1000°C	50°C	0.5°C/0.1%
4	J	-160~1200°C	50°C	0.5°C/0.1%
5	B	250~1800°C	500°C	1.5°C/0.1%
6	T	-200~400°C	50°C	0.5°C/0.1%
7	R	-50~1760°C	500°C	1.5°C/0.1%
8	N	-200~1300°C	50°C	0.5°C/0.1%



For example: one input and two outputs, thermocouple K (-200~1370°C) input, two 4~20mA outputs, 24V power supply, model: PHG-12TT-111+

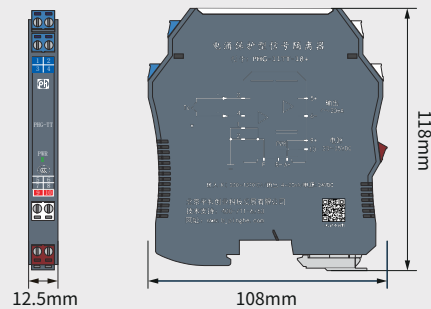
Surge protection type TC input temperature converter

PHG-11TT-*8+

1 input 1 output

Input: TC

Output: TC 1:1



Overview

The PHG-11TT-*8+ thermocouple input temperature converter with surge protection function can transmit the millivolt signal from thermocouple (TC) and output in 1: 1.

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

Specifications

Input:

Input signal: K, S, E, J, B, T, R, N thermocouple signals

Signal range: -20~80mV

Output:

Output signal: TC signal(input signal 1:1)

Surge protection features:

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

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

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

According to standards: GB/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: <0.8W(when powered by 24V DC)

LED indicator: Green——Power indicator

Output accuracy: 0.05%F.S

Response time: Reaching 90% of the final value within 300ms

Temperature drift: 0.005%F.S/°C

Temperature parameters: Working temperature: -20°C~+60°C

Storage temperature:-40°C~+80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: $\geq 2000V$ AC/min (between input/output/power supply)

Insulation resistance: $\geq 100M\Omega$ (500V DC)

(between input/output/power supply)

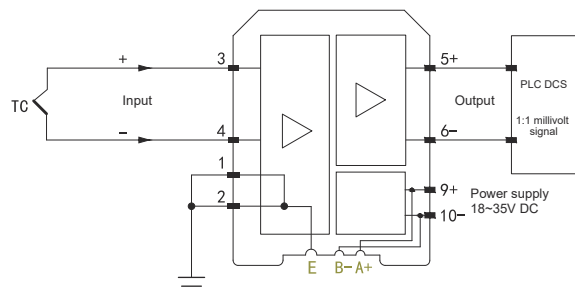
EMC: GB/T 18268(IEC 61326-3-1)

Wire requirements: Cross-section $\geq 0.5mm^2$

Insulation strength $\geq 500V$

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

Connection wiring



Note: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

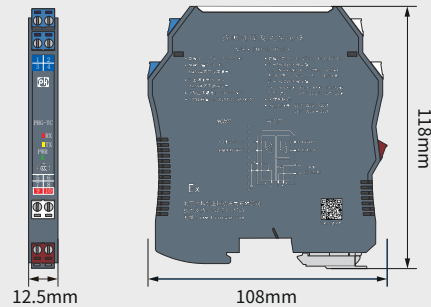
Surge protection type communication signal input signal isolator

PHG-11TC-33+

1 input 1 output

Input: RS-485 half duplex digital signal

Output: RS-485 half duplex digital signal



Overview

The communication signal of PHG-11TC-33+ is the isolated safety barrier with surge protection function, which can realize the two-way communication of RS-485 Half Duplex digital signal in the control room and on site.

This product needs independent power supply, and the power supply, input and output are isolated.

Specifications

Input:

Input signal: RS-485 Half Duplex Digital Signal

Output:

Output signal: RS-485 Half Duplex Digital Signal

Transmission delay: $\leq 10\mu\text{s}$

Transmission rate: $\leq 115.2\text{kbps}$

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/T18802.21-2016

(equivalent to IEC61643-21:2012)

Basic parameters:

Supply voltage: 18~35V DC

Power consumption: $< 0.9\text{W}$ (24V power supply)

LED indicator: Green: Power indicator

Yellow: The control room transmits signals to the on site

Red: transmitting signals from the site to the control room

Receiving and transmitting switching time: $\geq 20\text{ms}$

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: $\geq 2000\text{V AC/min}$ (between input/output/power supply)

Insulation resistance: $\geq 100\text{M}\Omega$ (500V DC)

(between input/output/power supply)

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

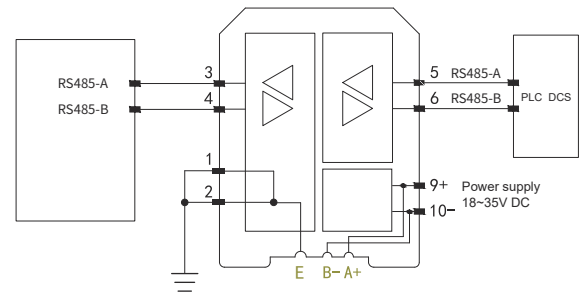
Wire requirements: Cross-section $\geq 0.5\text{mm}^2$

Insulation strength $\geq 500\text{V}$

Applicable field equipments: Communication interface device with

RS-485 Half Duplex

Connection wiring



Note: The power supply of the power rail is an optional function.
Users need to specify the power supply mode when ordering.
Please refer to "Annex".

Attachment

User manual of power rail connectors and connector ends

Overview

Beijing Pinghe T-series module can be supplied power through the bottom power rail connectors on DIN35 rail. Power rail supply adopts contact gold plating technology with double contact slots, with 1:1 concave-convex mounting and fixing, and both ends of each group can be connected with 24V DC power supply in parallel to form power rail supply mode.

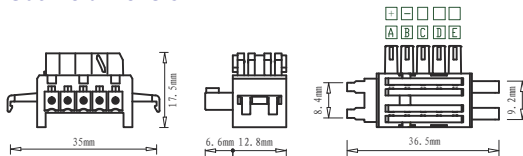
Power rail supply can simplify wiring and system expansion, reduce wiring costs, and support hot plug. At the same time, it is compatible with the transmission of RS-485 communication function, which is beneficial to the asset information and data information management of field instruments.

Basic parameter

Rated voltage	150V DC
Rated current	8A
Spacing	3.81mm
Digit capacity	5
Rated surge voltage	2500V
Wire specification	0.2~2.5mm ²

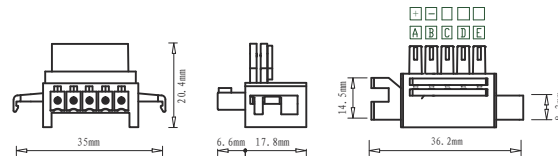


Outline dimension



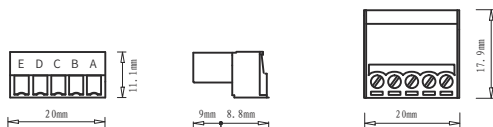
Power rail connector (applicable to 12.5mm thickness module)

Model: PH-BA



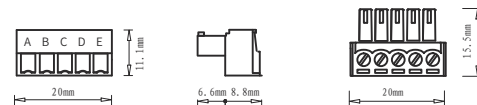
Power rail connector (applicable to 17.5mm thickness module)

Model: PH-BC



Reverse connector end of power rail
(universal used for 12.5mm and 17.5mm thickness modules)

Model: PH-BA-L



Forward connector end of power rail
(universal used for 12.5mm and 17.5mm thickness modules)

Model: PH-BA-R

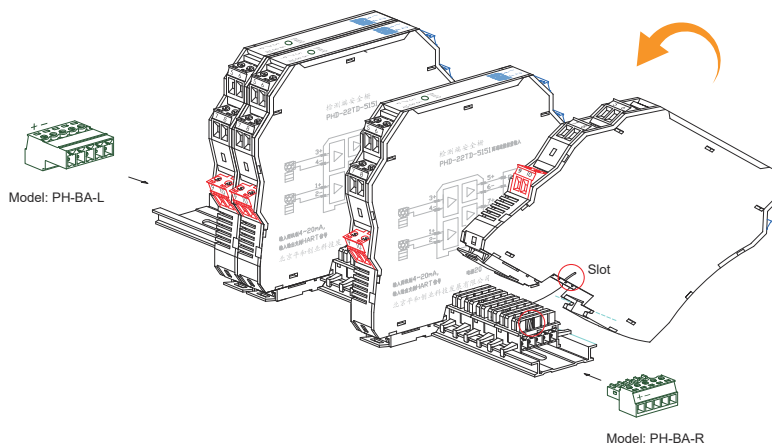
Installation instructions

- Power rail supply wiring is divided into two ways:

Method 1: The red power terminal of the first module in each group is connected to the power supply, and the rest modules can get power supply through the bottom power rail connectors, and the two ends of the power rail connectors do not need plugs to connect to the power supply.

Method 2: The bottom power rail connectors need to be used together with the power rail connector ends, to connect the power supply to the power rail connector end on one side, so that all modules can get power supply through the bottom power rail connectors.

- Each module is matched with one power rail connector in 1:1, and the power rail connectors can be combined. It is recommended to set up 8 modules, with no more than 16 pieces modules in each group.
- Each group of power rail connectors can choose to install a forward plug connector end or a reverse plug connector end on the left and right.
- The cold head or stripping length of the wire used for the power rail module is about 8mm, and it is fastened and fixed with M2 screw.
- When installing, please pay attention to that the module should correspond to the card slot of the power rail connectors.



User manual of power rail connectors and connector ends

Power supply module

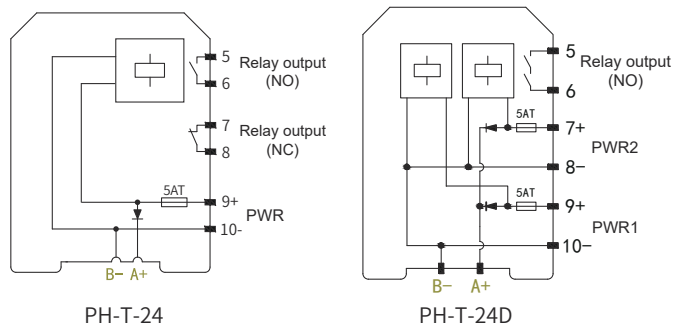
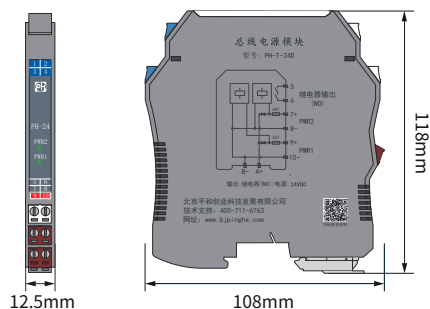
- This bus power supply module provides a stable 24V DC power supply for bus powered products and can provide a maximum current output of 4A to meet high load power requirements.
- When supplying power to safety barriers and isolators through the power module, if the power supply fails, the module triggers an alarm signal through a relay.
- Green LED light at the top of the module indicates the power state.
- PH-T-24D with redundant power supply. When one power supply fails, the system will automatically switch to the backup power supply to ensure uninterrupted power supply

Power supply:

Rated voltage	20~30V DC
Rated current	5AT/250V AC, Recommended maximum utilization rate for fuses: 80%
Power consumption	≤0.4W

Output:

Connection	Power bus
Output current	≤4A
Output voltage	Input voltage-0.8V
Alarm output	PH-T-24 relay output NO or NC contact PH-T-24D relay output NO contact
Contact load-on	30V AC/2A/cosφ≥0.7; 40V DC/2A



Terminal definition



Screw-type terminals

- 3P: Suitable for 17.5mm thickness module
2P: Suitable for 12.5mm thickness module
Isolated Safety Barrier:
Blue terminal: Intrinsically safe side
White terminal: Non intrinsically safe side
Yellow terminal: Non intrinsically safe side(SIL)
Red terminal: Power supply side

Note: The product default montage type are screw terminals, If you need to configure push-in terminals, please specify this when placing the order



Push-in type terminals

- Signal Isolator:
Blue terminal: Input
White terminal: Output
Red terminal: Power supply side
Push-in type terminals: convenient montage and disassemble, economy
50% of time Power supply terminal can be parallel connected

Pinghe Configuration Software Adapter



Model: PH-ZTGJ

Port: USB interface

Operating system: Windows 7/10 or above



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