NPEXA-K01

Temperature Input Safety Barrier

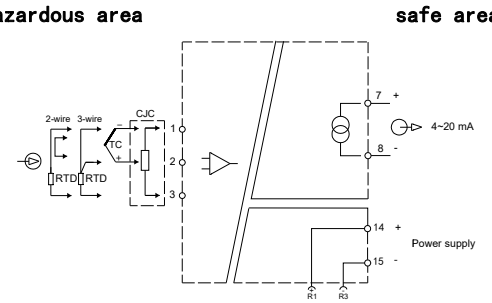
➔ Introductions

Temperature input safety barrier, it converts the thermocouple or thermal resistance signals from a hazardous area into current signals to a safe area by isolation.
The input, output, and power supply are galvanically isolated from each other. It needs an independent power supply. It has the function of on-line fault self-diagnosis.

➔ Parameters

Explosive-proof grade	[Ex ia Ga] ⅡC
Power supply	
Connection type	Terminals (14+, 15-)
Rated voltage	20 V DC～30 V DC (Reverse power protection)
Input	
Signal type	TC: K, E, S, B, J, T, R, N RTD: Pt100, Cu100, Cu50
Line resistance	≤ 20 Ω per line (RTD)
Output	
Signal type	4 mA～20 mA
Load resistance	≤ 500 Ω
Transmission characteristics (20 ℃±2 ℃)	
K/E/J/N/T	Range < 300 ℃: ± 0.3 ℃
	Range ≥ 300 ℃: ± 0.1% F.S
S/B/R	Range < 500 ℃: ± 0.5 ℃
	Range ≥ 500 ℃: ± 0.1% F.S
Pt100/Cu100/Cu50/	Range < 100 ℃: ± 0.1 ℃
	Range ≥ 100 ℃: ± 0.1% F.S
Temperature drift	30ppm/℃
Response time	≤ 800 ms
Cold junction compensation accuracy	± 1 ℃
Cold junction compensation range	−20 ℃ ～ +60 ℃
Electromagnetic compatibility	Accordance to IEC 61326-3-1
Electrical isolation	
Dielectric strength (1 mA leakage current, 1 minute test time)	
≥ 3000 V AC	intrinsically safe side / non-intrinsically safe side)
≥ 1500 V AC	non-intrinsically safe side / non-intrinsically safe side)
Insulation coordination	≥100 MΩ(Input/Output/Power supply)
Parameters certified by National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation (NEPSI):	
U_m	250 V
Certified Ex parameters	**Terminals 1, 2, 3**
U_o	7.3 V
I_o	16 mA
P_o	30 mW
C_o	7 μF
L_o	97 mH
Ambient conditions	
Operation temperature	−20 ℃～+60 ℃
Relative humidity	10% RH～90% RH(40 ℃)
Atmosphere pressure	80 kPa～106 kPa
Storage temperature	−40 ℃～+80 ℃
Dimension	17.8 mm × 110 mm × 115 mm
Protection degree	IP 20
Power dissipation	≤ 1.1 W (24 V DC, full-load output)

➔ Wiring diagram



❍ When the thermocouple input, compensation conductor should be directly connected to the input terminals, do not connect other material lead, otherwise will cause measurement error.

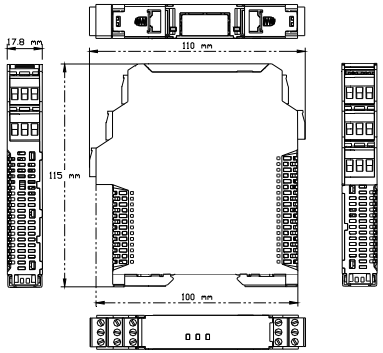
➔ Status

Status	Output	Description
Normal	3.84 ~ 20.16 mA	——
TC input OC	3 mA	Input line fault
RTD input SC or OC		
CJC fault		
$T_{measure} < T_{Low} - \Delta T$	3.2 mA	Lower than the set range limit
$T_{measure} > T_{High} + \Delta T$	21.7 mA	Above than the set range limit

NOTE: $\Delta T = (T_{High} - T_{Low}) \times 1\%$

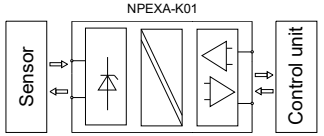
➔ Dimension

Width × height × depth: 17.8 mm × 110 mm × 115 mm



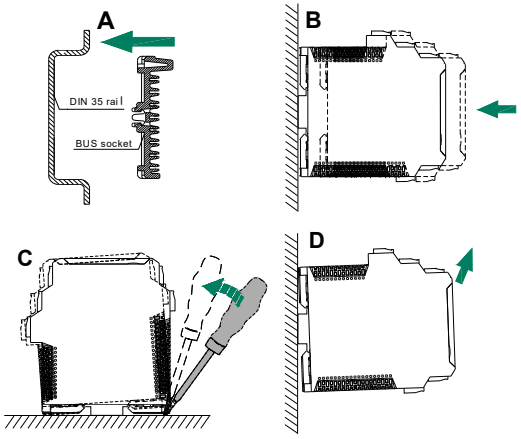
➔ Applications

This apparatus is used for transmitting signals between field devices and a process control system/control system. It is suitable for the connection of field devices used in potentially explosive atmospheres to protect intrinsically safe circuits of hazardous area by current and voltage limitation, and established an electromagnetic separation between the potentially explosive atmospheres and the safe areas in a system.
The apparatus can convert the thermocouple or thermal resistance signals into current signals, and then transmit the output signal to the connected process control system.

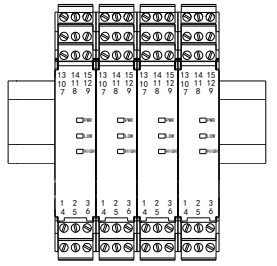


➔ Installation

❍ The apparatus can be installed on the DIN 35 mm standard rail which is corresponding to DIN IEC 60715. The must be snapped onto the rail, and never slanted or tipped to the side.
❍ Installation and disassembly steps are shown in following figures:



A. Snap the BUS socket on the DIN 35 rail, as figure A;
B. Snap metal lock onto mounting rail, then rotate the safety barrier, as figure B, press down the safety barrier onto mounting rail, make sure that the BUS connector pins of safety barrier and BUS socket are in close contact;
C. Pry the metal lock off the rail with screwdriver as arrow shown, pull outward the springs, and rotate the safety barrier;
D. Remove the safety barrier as arrow shows.
❍ In order to facilitate the heat of the apparatus, Please mounted it vertically if possible.



Vertically installation

➔ Light indication

❍ **PWR**: Power indicator light shows green, it means power supply OK.

Low	High	Status
Off	Off	Normal
On	On	Initialization fault
On	Off	Lower than the set range limit
Off	On	Above than the set range limit
1Hz flash	1Hz flash	Input SC or OC
2Hz flash	2Hz flash	Internal fault

➔ Attention

❍ The current Input Isolated Safety Barriers was constructed in protection degree IP 20 and must therefore be protected from undesirable ambient conditions (water, small foreign objects). It is suitable for installed in control room or high density field cabinet, convenient for installation and displacement.
❍ The devices were designed for use in pollution degree 2 and overvoltage category III as per IEC/EN 60664-1. If used in areas with higher pollution degree, the devices need to be protected accordingly.
❍ Installation position shall not be affected by strong mechanical vibration, impact and electromagnetic induction from signal terminal and power supply, should conformity with the requirements on electromagnetic interference resistance of products in Class 3 industrial field atmosphere stipulated in IEC 61000-4, and the atmosphere shall be free from gases that are corrosive to metal and plastic components.
❍ The apparatus may only be operated, maintained and decommissioned by competent according with the instruction manual, and it must be installed, connected and adjusted in non-hazardous area.
❍ If faults cannot be eliminated, the apparatus must be taken out of operation and protected from being placed in service again inadvertently. Devices must only be repaired directly by the manufacturer. Tampering with the apparatus is dangerous and therefore forbidden.
❍ The operator must strictly comply with the relevant local safety standards and guidelines.

➔ Supplements

❍ If there is any content difference between the specification and the website or sample, the instructions shall prevail. We reserve the rights to change or update the product information without prior noticing the users.