

H Series Current Output Isolated Safety Barrier



→ Introductions

This isolated safety barrier converts the current signals from a safe area into current or voltage signals to a hazardous area. It allows transmission of HART communication signals. It is used to control field apparatus such as electrical convertor or valve positioner in the field areas.

The input, output, and power supply are galvanically isolated from each other. The main advantages of the isolated safety barrier are fast response, low dissipation and temperature stability. The LFD function of output short-circuit/line-break can be closed by the DIP switch on the front side.

→ Parameters

Explosive-proof grade: [Ex ia Ga] IIC

Power supply (13, 14):

Rated voltage: 18 V DC ~ 32 V DC (Recommended voltage: 24 V DC)

Input (8, 9; 11, 12):

Input signal: 0(4) ~ 20 mA; 0 ~ 10 mA (Please see the product label for details)

Input voltage drop: < 1.2 V

Output (1, 2; 4, 5):

Output current: 0(4) ~ 20 mA; 0 ~ 10 mA

Output voltage: 0(1) ~ 5 V; 0 ~ 10 V

Other signal types is required special customization, please see the product label for details.

Load resistance:

0(4) ~ 20 mA: ≤ 800 Ω; 0 ~ 10 mA: ≤ 1.6 kΩ

0(1) ~ 5 V: ≥ 1 MΩ; 0 ~ 10 V: ≥ 2 MΩ

Other load resistance is required special customization, please see the product label for details.

Transmission characteristics:

Accuracy: ± 0.1% F.S. (25 °C ± 2 °C)

Response time: ≤ 2 ms

Temperature drift: 0.005%F.S./°C

Electromagnetic compatibility: According to IEC 61326-3-1

Dielectric strength (1 mA leakage current, 1 minute test time):

≥ 2500 V AC (intrinsically safe side / non-intrinsically safe side)

≥ 500 V AC (non-intrinsically safe side / non-intrinsically safe side)

Insulation resistance: ≥ 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

Terminals 1, 2; 4, 5:

U₀: 28 V I₀: 93 mA P₀: 651 mW C₀: 0.08 μF L₀: 4 mH

Ambient conditions:

Operation temperature: -20 °C ~ +60 °C

Relative humidity: 10% RH ~ 90% RH (40 °C)

Atmosphere pressure: 80 kPa ~ 106 kPa

Storage temperature: -40 °C ~ +80 °C

Power dissipation:

≤ 1.5 W (24 V DC, single output)

≤ 2 W (24 V DC, double output)

Degree of protection: IP 20

→ Model rules

NPEXB-HM3 D X X

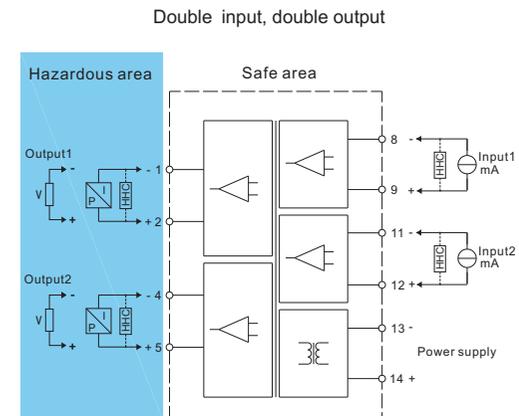
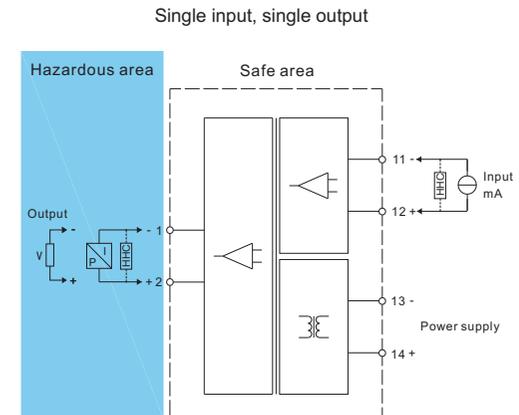
The second output signal ^{note}
Default: null
The first output signal ^{note}
Double channel
Default: Single channel

NOTE : Output signal

Number	Output signal
1	4 mA ~ 20 mA
2	1 V ~ 5 V
3	0 mA ~ 10 mA
4	0 V ~ 5 V
5	0 V ~ 10 V
6	0 mA ~ 20 mA
X	User customized signal type

- When the current input signal is 4 ~ 20 mA, the output signal only can select 4 ~ 20 mA or 1 ~ 5 V.
- When the current input signal is 0 ~ 20 mA or 0 ~ 10 mA, the output signal only can select 0 ~ 20 mA or 0 ~ 10 V or 0 ~ 5 V or 0 ~ 10 mA.

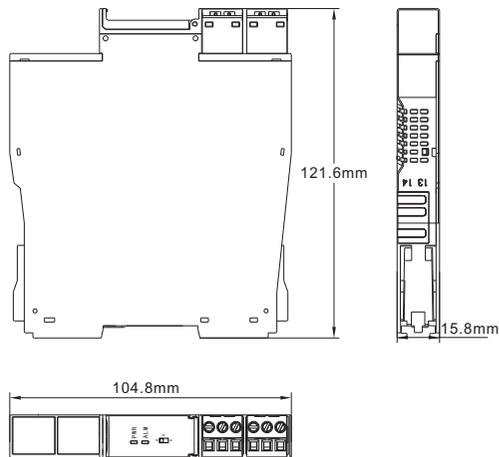
→ Wiring diagram



- Line Failure state: When the output load resistance was detected less than 80Ω, the output is in the fault of short circuit. When the output load resistance was detected more than 6000Ω, the output is in the fault of line breakage. If the output is in the fault, the input current value is limited to within 1mA and the output current value is limited to 3mA.
- Handheld HART communicator (HHC) can not be used in both the hazardous area and safe area at the same time.
- Handheld HART communicator used in a hazardous area must be authorized by explosion-proof certification body.

→ Dimension

Width × Height × Depth: 15.8 mm × 121.6 mm × 104.8 mm



○ NOTE: Double channel products only include PWR LED.

→ DIP switch settings



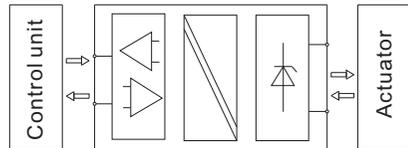
State	Function
a	The LFD function of output short-circuit/line-break off
b	The LFD function of output short-circuit/line-break on

○ NOTE: Only the single channel products have the function of DIP switch settings.

→ Applications

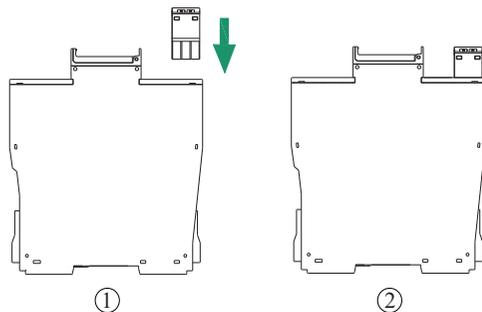
This apparatus is used for transmitting signals between field devices and process control system. It can be used to connect field equipment which is installed in potentially explosive gas environment, and protect the intrinsically safe equipment in a hazardous area by limiting current and limiting voltage.

The apparatus can convert the current signals into current or voltage signals, and then transmit the output signal to the connected process control system.



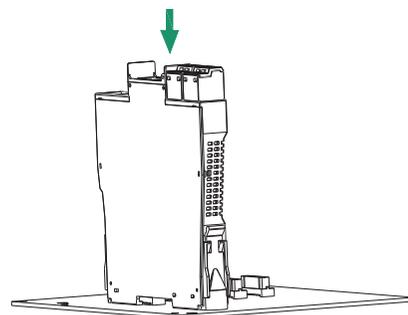
→ Connection

○ Through plug-in connectors, the apparatus can be used to connect equipment which is installed in the hazardous area. The main apparatus is directly snapped onto the backplane.



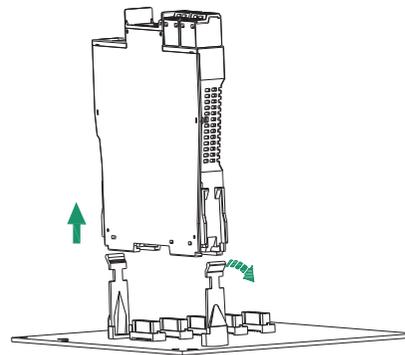
→ Installation

○ The apparatus can be snapped onto the backplane, and it can be hot-plugged without any tools.
○ Installation steps are as follows:

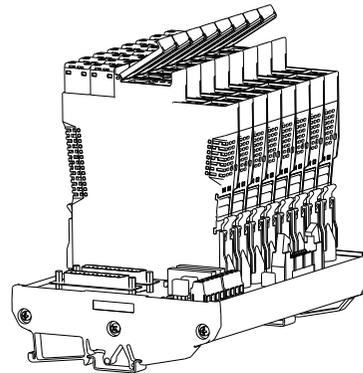


Install the apparatus, make the both sides of the apparatus aim at the slot of the backplans, press down the apparatus onto the backplans as the direction of the arrow.

○ Removing steps are as follows:



Pull the slot of the backplans outward, and remove the apparatus as arrow shows .



Installation

→ Light indication

- PWR: Power indicator light shows green, it means work normally.
- ALM: Fault detection indicator light shows red;
 - ① LFD OFF: The fault detection indicator light is off;
 - ② LFD ON:
 - The fault detection indicator light is off during normal operation;
 - The fault detection indicator light remains bright when the output line breakage or short circuit.

→ Attention

- Isolated Safety Barriers degree of protection is IP 20 and must be protected from undesirable ambient conditions (waterproofing, small foreign objects). It is suitable for installation in the control room or high density field cabinet, DIN 35 mm installation is 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; the atmosphere shall be free from gases that are corrosive to metal and plastic components.
- The apparatus must be installed, connected and adjusted by qualified personnel in non-hazardous area according with the instruction manual.
- The operator must strictly comply with the relevant local safety standards and guidelines.

→ Supplementary instructions

- Our company reserves the right to change the product information without prior notification to the user. If the contents of the description are different from website or sample, this description shall prevail.