

# C Series Dual Channel Current Input Isolated Safety Barrier



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### → Introductions

This isolated safety barrier detects loop current and converts it from a hazardous area into current or voltage signals to a safe area, and also provides transmitters with power in the hazardous area. DIN rail power supply function can be selected in ordering. It allows transmission of HART communication signals.

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.

### → Parameters

**Explosive-proof grade:** [Ex ia Ga] IIC

#### Power supply:

Connection type: Terminals (14+, 15-) or DIN rail connector  
 Rated voltage: 18 V DC ~ 60 V DC (Recommended voltage: 24 V DC)

#### Input (1, 2, 3; 4, 5, 6):

Input signal: 0(4) ~ 20 mA, 0 ~ 10 mA; (Please see the product label for details)  
 Input resistance: approx. 75 Ω  
 Over current/voltage protection

#### Available voltage:

open-circuit voltage ≤ 26 V, voltage: ≥ 15.5 V at 20 mA

#### Output (7, 8, 9; 10, 11, 12):

Sink mode: 4 ~ 20 mA  
 Output current: 0(4) ~ 20 mA; 0 ~ 10 mA  
 Output voltage: 0(1) ~ 5 V; 0 ~ 10 V

#### Load resistance:

Sink mode:  $R_L \leq [(U-3)/0.02] \Omega$  U: Loop power supply  
 0(4) ~ 20 mA: ≤ 500 Ω; 0 ~ 10 mA: ≤ 1 kΩ  
 0(1) ~ 5 V: ≥ 1 MΩ; 0 ~ 10 V: ≥ 2 MΩ

#### Transmission characteristics:

Accuracy: ± 0.1% F.S. (25 °C ± 2 °C)

#### Min. controllable current: 10µA

#### Response time: ≤ 2 ms

#### Settling time: ≤ 20 ms

#### Temperature drift: 30 ppm/°C

#### Electromagnetic compatibility: Accordance to IEC 61326-3-1

#### 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 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; Terminals 4, 5:
- $U_o$ : 5 V  $C_o$ : 70 µF
- Terminals 2, 3; Terminals 5, 6:
- $U_i$ : 28 V  $I_i$ : 93 mA  $P_o$ : 651 mW  $C_o$ : 0.058 µF  $L_o$ : 2.8 mH

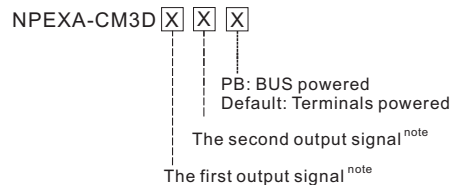
#### Ambient conditions:

- 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:

2.5 W (24 V DC, double output)

#### → Model rules



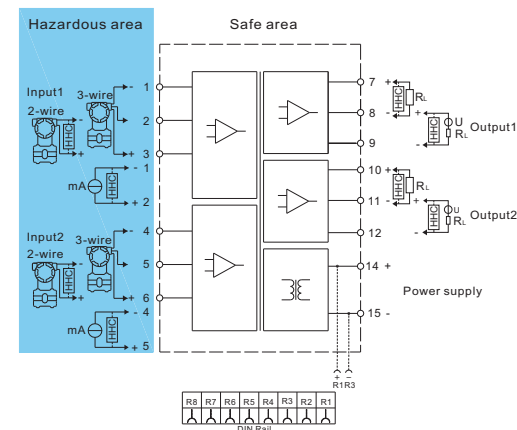
#### NOTE : Output signal

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

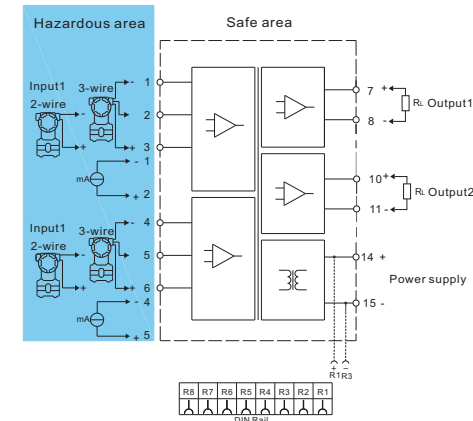
- When the current input signal is 4 ~ 20 mA, the output signal only can select 4 ~ 20 mA or 1 ~ 5 V.
- When the current input signal is 0 ~ 20 mA or 0 ~ 10 mA, the output signal only can select 0 ~ 20 mA or 0 ~ 10 V or 0 ~ 5 V or 0 ~ 10 mA.
- Before purchasing products, please contact us to confirm the selection.

### → Wiring diagram

Current input, current output



Current input, voltage output



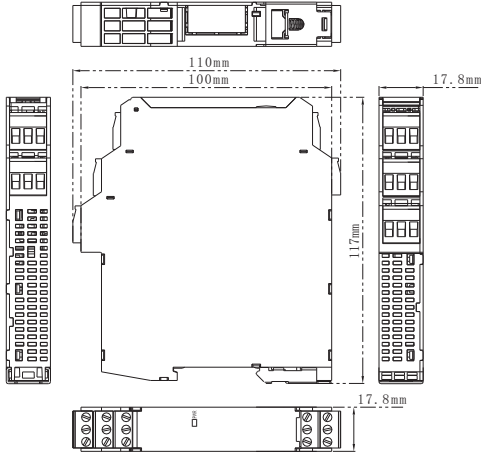
- Handheld HART communicator (HHC) can not be used in both the hazardous area and safe area at the same time.
- Handheld HART communicator used in a hazardous area must be authorized by explosion-proof certification body.
- DIN rail power supply function is selectable at ordering.

→ Output mode of input

- When the input line breakage, the output value is 0 mA.
- When the input upscale, the output follows the input, the output value is limited to 32 mA.

→ Dimension

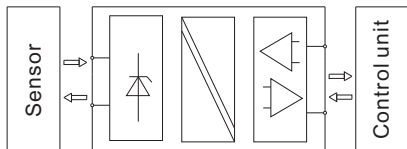
Width × Height × Depth: 17.8 mm × 110 mm × 117 mm



→ 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.

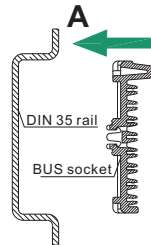


→ BUS Specification

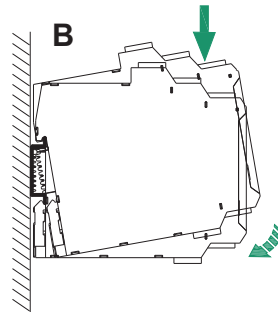
BUS	Electrical Characteristics
Current	Max. 8 A
Voltage (UL/IEC)	1.6 kV
Operation temperature	-40 °C ~ +105 °C

→ Installation

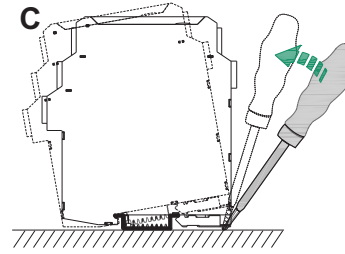
- The apparatus can be installed on the DIN 35 mm standard rail which is corresponding to DIN IEC 60715. The must be snapped onto the rail, and never slanted or tipped to the side.
- Installation and disassembly steps are shown in following figures:



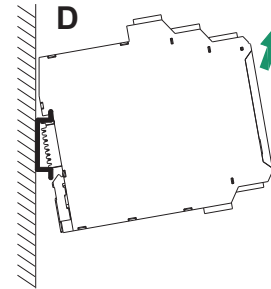
A. Snap the BUS socket on the DIN 35 rail, as figure A;



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.

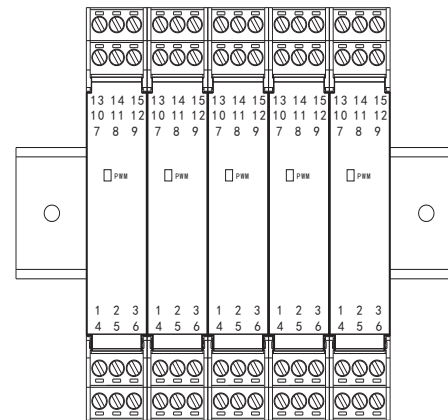


C. Pry the metal lock off the rail with screwdriver as arrow shown, pull downward the springs, and rotate the safety barrier.



D. Remove the safety barrier as arrow shows.

- As far as possible to mount it vertically, In order to dissipation the heat of the apparatus.



Vertically installation

→ Light indication

- PWR: Power indicator light shows green, it means work normally.

→ 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.