C Series
Dual Channel Switch Input
Relay Output Isolated Safety Barrier

Nanjing New Power Electric Co., Ltd.

➔ Introductions

This isolated safety barrier converts switch or proximity detector signals (dry contact or NAMUR) from a hazardous area into relay signals to a safe area. DIN rail power supply function can be selected in ordering. Operation mode, the input circuit fault detection function can be set with the DIP switch on the front side.

The input, output, and power supply are galvanically isolated from each other. This modularization apparatus was designed with various kinds of advantages, for instance, high reliability and fast response, etc. It can be interfaced with all kinds of device and DCS, PLC and other systems.

➔ Parameters

Explosive-proof grade: [Ex ia Ga] IIC

Power supply:

Connection type: Terminals (9+, 10-) or DIN rail connector

Rated voltage: 18 V DC ~ 60 V DC (Recommended voltage: 24 V DC)

Input (1, 2; 3, 4):

Input signal: Dry contact or NAMUR

Switching point: Input signal > 2.1 mA, signal "1"
Input signal < 1.2 mA, signal "0"

Input resistance: 1 kΩ

Short-circuit current: Approx. 8.5 mA

Open-circuit voltage: Approx. 8.5 V

LFD function:

Input current ≤ 80 μA: Line breakage, output relay de-energized

Input current ≥ 6 mA: Short-circuit, output relay de-energized

Output (5, 6; 7, 8):

Output signal: Relay contact (normally open)

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

Response time: < 20 ms

Transmission characteristics:

Relay mechanical life: > 10^5 switching cycles

Switch frequency: < 10 Hz

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):

Um: 250 V

Terminals 1, 2: Terminals 3, 4:

U_o: 10.5 V I_o: 11.3 mA P_o: 29.7 mW C_o: 0.97 μF L_o: 100 mH

Ambient conditions:

Operation temperature: −20 ℃ ~ +60 ℃

Relative humidity: 10% RH ~ 90% RH (40 ℃)

Atmosphere pressure: 80 kPa ~ 106 kPa

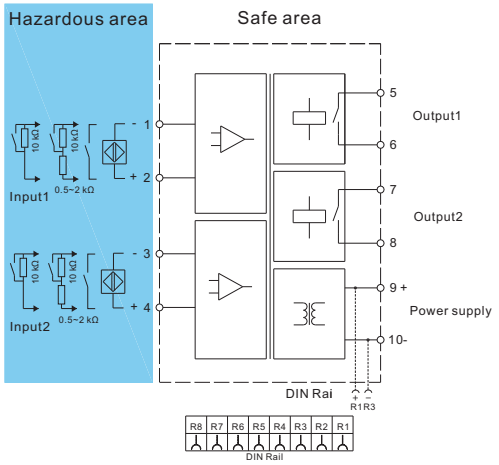
Storage temperature: −40 ℃ ~ +80 ℃

Power dissipation: ≤1.0 W

➔ Support model type

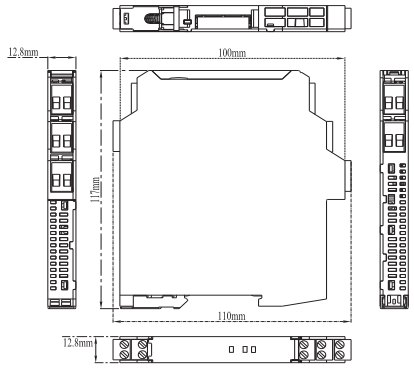
Model number	Double input, double output	Power supply	
		Terminals	DIN rail
NPEXA-C5D111	■	■	
NPEXA-C5D111PB	■	■	■

➔ Wiring diagram

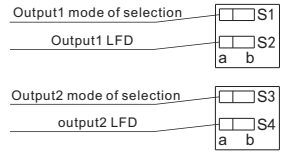


➔ Dimension

Width × Height × Depth: 12.8 mm × 110 mm × 117 mm



➔ DIP switch settings

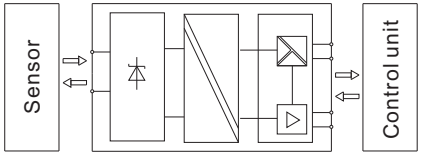


The position of DIP switch has been preset correctly before delivery, please do not change it without necessary.

DIP Switch	Position	Function
S1	a	Output1 normal mode
S1	b	Output1 inverted mode
S2	a	Output1 LFD on
S2	b	Output1 LFD off
S3	a	Output2 normal mode
S3	b	Output2 inverted mode
S4	a	Output2 LFD on
S4	b	Output2 LFD off

➔ 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 dry contact or NAMUR signals into delay signals, it reflects the apparatus status by the LED indicators on the front side.

The apparatus detects input current to protect the system.

Input current ≤ 80 μA, considers the line breakdown, the output relay de-energized;

80 μA < input current < 1.2 mA, considers the input is “0”;

2.1 mA < input current < 6 mA, considers the input is “1”;

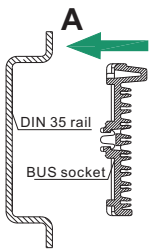
Input current ≥ 6 mA, considers the input circuit is short-circuit, the output relay de-energized.

➔ BUS Specification

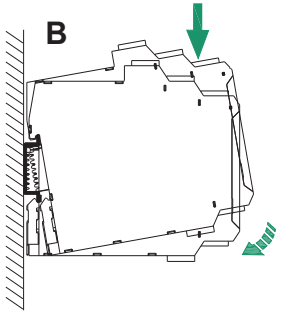
BUS	Electrical Characteristics
Current	Max. 8 A
Voltage (UL/IEC)	1.6 kV
Operation temperature	−40 ℃ ~ +80 ℃

➔ Installation

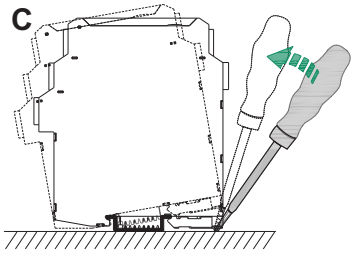
- ❍ The apparatus can be installed on the DIN 35 mm standard rail which is corresponding to DIN IEC 60715. The must be snapped onto the rail, and never slanted or tipped to the side.
- ❍ Installation and disassembly steps are shown in following figures:



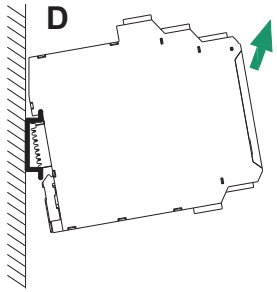
A. Snap the BUS socket on the DIN 35 rail, as figure A;



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.
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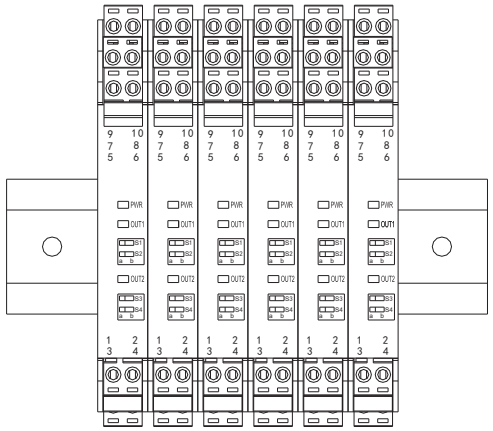

Vertically installation

➔ Light indication

- ❍ **PWR**: Power indicator light shows green, it means work normally.
- ❍ **OUT1**、**OUT2**: Bi-color LED
  Red LED flashing: Input short-circuit or linebreakage;
  Yellow LED ON: The relay is energized;
  Yellow LED OFF: The relay is de-energized.

➔ 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.