



# NPEXA-K51(1)

## Switch Input Isolated Safety Barrier

### → Introductions

This type of isolated safety barrier transmits digital signals (dry contact or proximity switch) from hazardous area to safe area. Operation mode, output 2 function and input circuit fault detection function can be set with the DIP switch on the front side.

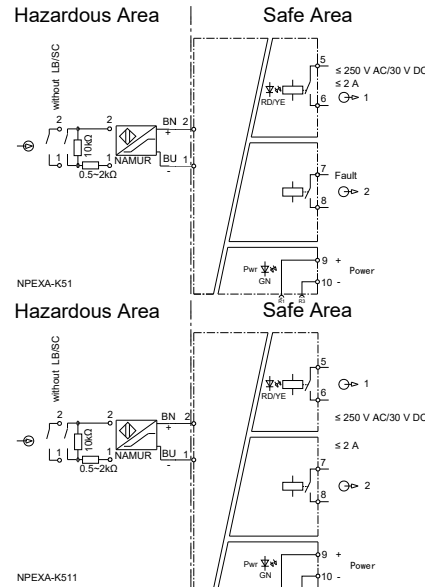
The input, output, and power supply are galvanically isolated from each other.

This apparatus was designed to be analogue circuits with various kinds of advantages, for instance, high reliability and quick step response etc. It can be interfaced with all kinds of instruments and DCS, PLC and other equipment.

### → Parameters

<b>Explosive-proof grade</b>		
<b>Power supply (9+,10-)</b>	20 V DC ~ 30 V DC	
<b>Input (1-, 2+)</b>	Dry contact or NAMUR	
Signal type	Input signal > 2.1 mA, signal "1"	
Switching trigger point	Input signal < 1.2 mA, signal "0"	
Input resistance	1 kΩ	
Short-circuit current	Approx. 9 mA	
Open-circuit voltage	Approx. 9.2 V	
<b>LFD function</b>	Line breakage, output relay de-energized	
Input current ≤ 80μA	Short-circuit, output relay de-energized	
Input current ≥ 6mA		
<b>Output (5, 6; 7, 8)</b>	Relay (normally open)	
Signal type	2A / 250 V AC, 2A / 30 V DC	
Load capacity	< 20 ms	
Energized/de-energized delay		
<b>Transmission characteristics</b>	> 10 <sup>5</sup> switching cycles	
Relay mechanical life	< 10 Hz	
Switch frequency	Accordance to IEC 61326-3-1	
<b>Electromagnetic compatibility</b>		
<b>Electrical isolation</b>	Dielectric strength	
	≥ 2500 V AC (Input/Output/Power supply, 1 mA leakage current, 1 minute)	
Insulation coordination	≥ 100 MΩ (Input/Output/Power supply)	
<b>Certificate NO.</b>	TÜV 16 ATEX 7982	
	IECEX TUR16.0060	
U <sub>m</sub>	250 V	
<b>Certified Ex parameters</b>	<b>Terminals 1, 2</b>	<b>NPEXA-K511</b>
U <sub>o</sub>	NPEXA-K51	NPEXA-K511
I <sub>o</sub>	10.5 V	10.5 V
P <sub>o</sub>	11.3 mA	11.3 mA
C <sub>o</sub>	29.7 mW	29.7 mW
L <sub>o</sub>	0.644 μF	0.644 μF
	78.8 mH	35.255 mH
<b>Ambient conditions</b>	Operation temperature	
	-20°C ~ +60°C	
Relative humidity	10%RH ~ 90%RH (40°C)	
Atmosphere pressure	80kPa ~ 106kPa	
Storage temperature	-40°C ~ +80°C	
<b>Dimension</b>	12.8 mm × 100 mm × 115 mm	
<b>Protection degree</b>	IP 20	
<b>Power dissipation</b>	≤ 1.0 W (24V DC)	

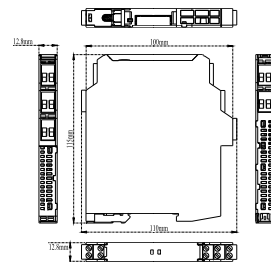
### → Wiring diagram



○ DIN rail supply function is selectable at ordering.

### → Dimension

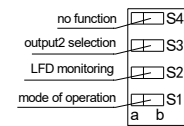
Width × height × depth: 12.8 mm × 100 mm × 115 mm



### → Light indication

- **PWR:** Green power indicator, it remains illuminated at the presence of the supply voltage;
- **OUT:** Two color status indicators (red or yellow). When there is input signal fault (short circuit or line breakage), the indicator turns to red and glitters. When output circuit is energized, the indicators turns to yellow, and when output circuit is de-energized, the indicator turns off.

### → DIP switch settings

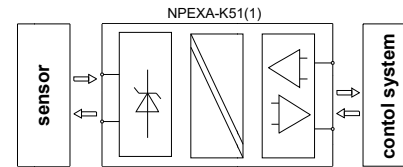


The position of DIP switch has been preset correctly before delivery, please do not change it without necessary.

DIP switch	Position	Function
S1	a	reverse mode of output1 inactive
S1	b	reverse mode of output1 active
S2	a	LFD on
S2	b	LFD off
S3	a	output2 switching state like output1
S3	b	fault signal output

### → 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 device used in potentially explosive atmospheres to protect intrinsically safe circuit 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.



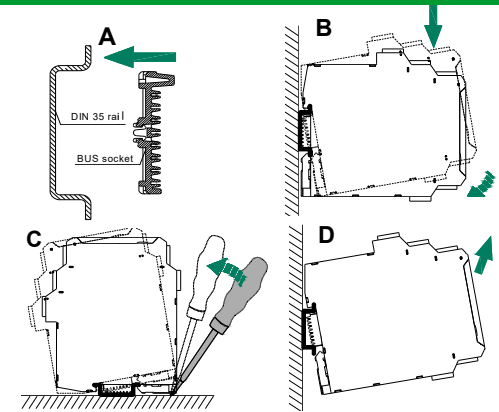
This apparatus transfers the input switching signal from hazardous area and outputs relay contacts to safe area by isolation and amplification. The output signals are transmitted to analogue inputs on the process control system/control system, and reflect the apparatus status by the LED indicators on the front side.

Output2 can be switched as LFD function by DIP switched S2, customer can choose whether disable it. And apparatus detects input current to protect the system.

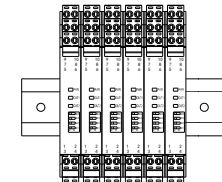
When input current ≤ 80 μA, considers the input line breakdown, the apparatus enters into safe function state, the output relay de-energized;  
 If 80 μA < input current < 1.2 mA, considers the input is "0";  
 If 2.1 mA < input current < 6 mA, considers the input is "1";  
 If input current ≥ 6 mA, considers the input circuit short-circuit, the apparatus enters into safe function state, the output relay de-energized.

### → Installation

- The apparatus can be mounted on a 35 mm standard rail corresponding to DIN IEC 60715, they must be snapped onto the rail, and never slanted or tipped to the side.
- Installation and removing steps are as follows:
  - Snap the BUS socket on to the DIN 35 rail as figure A;
  - Snap metal lock onto mounting rail, then rotate the safety barrier as arrow shown in 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.
  - Pry the metal lock off the rail with screwdriver as arrow shown, pull outward the springs, and rotate the safety barrier.
  - Remove the safety barrier as arrow shows.



- In order to facilitate the heat of the apparatus, Please mounted it vertically if possible.



Vertically installation

### → Attention

- The Safety Barriers was constructed in protection degree IP20 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 conform 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.