

# Digital Input Isolated Safety Barrier

PHD-12TF-277

1 input and 2 output

PHD-22TF-2727

2 input and 2 outputs

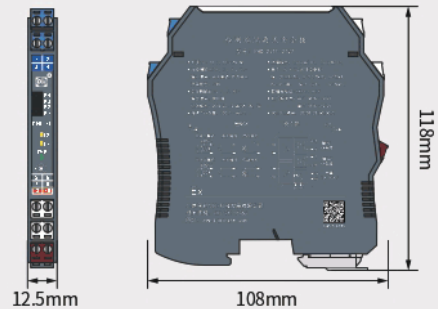
Input: Switch contacts/proximity switches

Output: Relay



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## Overview

The isolated safety barrier with switch input relay outputs, which isolates and transmits input signals from switch contacts or proximity switches in hazardous areas to the safety zone with output relay through the safety barrier. Line fault detection is achieved through LED on the top of the module. The dial switch of the module is used to set input and output in-phase or reverse control, as well as to enable or disable the line fault detection alarm indication function. This product requires independent power supply, with isolated power supply, input, and output terminals.

## Specifications

### Input in hazardous area:

Input signal: Switch contacts/proximity switches

The supply voltage of the sensor: About 8V

Switching rate: <10Hz

### Input/output characteristics:

On site input current: >2.1mA, the output is closed, indicating ON

When <1.2mA, the output is open circuit, indicating OFF

Output normally "Open"/"Closed" contact conversion control:

When dial switch K1, K3 is at "ON" side, the relay output is "Normally closed".

When dial switch K1, K3 is at "OFF" side, the relay output is "Normally open".

When dial switch K2, K4 is at "ON" side, the circuit selects indicating red light LFD alarm function.

### Output in safe area:

Output signal: Relay

Contact capacity: 250VAC/2A, 30VDC/2A  
when subjected to resistive loads

Response time: 20ms

### Basic parameters:

Supply voltage: 20~35V DC

Power consumption: 24V power supply, when the relay contacts close

<30mA (PHD-12TF-277)

<40mA (PHD-22TF-2727)

LED indicator: Green: Power indicator

Yellow: Output relay in normal working state

Red: LFD indication, line fault alarm

Temperature parameters: Working temperature: -20°C ~ +60°C,

Storage temperature: -40°C ~ +80°C

Relative humidity: 10%~95% RH no condensation

Insulation strength: Between intrinsically safe side and non-intrinsically safe side (≥3000VAC/min); between power supply and non-intrinsically safe side (≥1500VAC/min)

Insulation resistance: ≥100MΩ (between input/output/power supply)

EMC: According to IEC 61326-1(GB/T 18268), IEC 61326-3-1

MTBF: 100000h

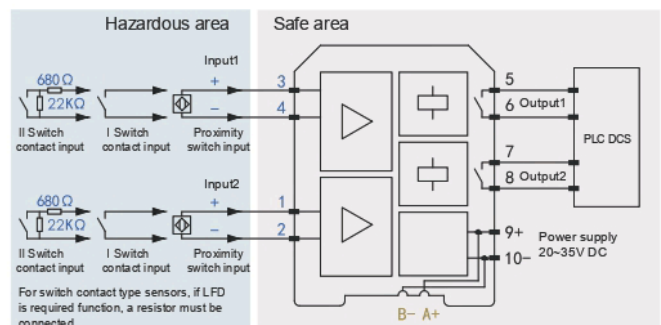
Wire requirements: Horizontal cutting surface ≥0.5mm²;

Insulation strength ≥500V

Applicable field equipments: Field equipment such as dry contacts or NAMUR type proximity switch inputs that comply with DIN19234 standard

Installation place: Installed in a safe zone, it can be connected to intrinsic safety instruments in hazardous areas up to Zone 0, IIC, Zone 20, and IIIC

## Connection wiring



Note: 1. PHD-12TF-277 does not include input part 2

2. The power supply of the power rail is an optional function.

Users need to specify the power supply mode when ordering.

Please refer to attachment on page 89.

## Line Fault Detection (LFD)

Users can select the "ON" side of the switch at the top of the module to enable fault detection function and indicate an alarm through the red LED light. On site input current > 7mA, short circuit alarm (SC); On site input current < 0.1mA, open circuit alarm (LB). If the switch contact input requires fault detection function (wire breakage, short circuit), a 22k Ω resistor should be connected in parallel at both ends of the switch, and a 680 Ω resistor should be connected in series (as shown in the wiring diagram for switch contact II).

## Intrinsically safe certification

Functional safety certification: SIL3 according to IEC 61508 standards

Explosion proof mark: [Ex ia Ga] IIC [Ex ia Da] IIIC

Explosion-proof standard: GB/T 3836.1-2021 GB/T 3836.4-2021

Terminals 3-4, 1-2 Um: 250V AC/DC Uo=10.5V DC Io=15mA

Po=39.4mW Co=1.7μF Lo=165mH

Certification body: CQST (China National Quality Supervision and Test Centre for Explosion Protected Electrical Products)