

ESR Series Safety Relay Module



Product Introduction

The ESR series safety relay module meets PLe level of ISO 13849-1. It is suitable for monitoring various signals (include emergency stop, safety door switch, safety light curtain and two-hand button) in industrial sites with high requirements. Support 3NO+1NC output. Manual reset and automatic reset that are monitored are optional.

Product Feature

- Designed according to ISO 13849-1 (Category 4, PL e).
- Relay output: 3NO and 1NC auxiliary contact.
- Optional manual reset and automatic reset.
- Internal circuit with cross-diagnose monitoring.
- Self-diagnose and redundant circuit design.
- Input overvoltage protection.
- Power supply reverse polarity protection.
- Visualized status indicator for easy diagnosis.
- Detectable terminal for easy maintenance.
- Standard 35mm DIN rail for mounting design.

Safety Relay Module

Product Parameter

Standard Level	
Reference Standard	ISO 13849-1 (Category 4/ PL e)
Safety Level	ISO 13849-1 (Category 4/ PL e)
Electric Parameter	
Power Supply	DC24V±10%
Consumption	<3W
Response Time	<20ms
Suction Buffer Time	<100ms
Power-on Restart Time	<1s
Protective Circuit	Input power overvoltage protection, anti-reverse protection
Safety Input	Double NPN normally closed input (ESRN Type); Double PNP normally closed input (ESRP Type); Dual loop door or emergency stop button (ESRS Type);
Input Synchronization	Unlimited S1 is in the front of S2
Safety Output	3 normally open passive contacts, and 1 normally close passive contact;
B10 Data	Rated load: 400,000 times; Low load: 2,000,000 times;
Contact Capacity	AC15:5A/250V; DC13:6A/24V
Electric Lifetime	≥ 100,000 times (1NO: 5A250VAC, resistive load, 1s on 9s off)
Mechanical Lifetime	≥ 10 million times
Environment	
Vibration Resistance	Frequency 10Hz~55Hz, amplitude 0.35 ± 0.05 mm, X, Y and Z direction 20 times each
Impact Resistance	Acceleration 10g, pulse duration 16ms, X, Y and Z direction 1000 times each
Working Temperature	-25~+60°C
Storage Temperature	-40~+85°C
Protection Level	Shell/terminal protection: IP40/IP20
Installation/ Structure	
Mounting	35mm DIN rail
Wire Size	0.2~2.5mm ²
Hardware Size	117mm x 100.6mm x 22.5mm

Model Selection (e.g.:ESR□-3A1B-E)

Product Series

ESR

Input Type



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Output Method

3A1B

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E

N: Dual channel NPN input
P: Dual channel PNP input
S: dual channel safety door switch, emergency stop

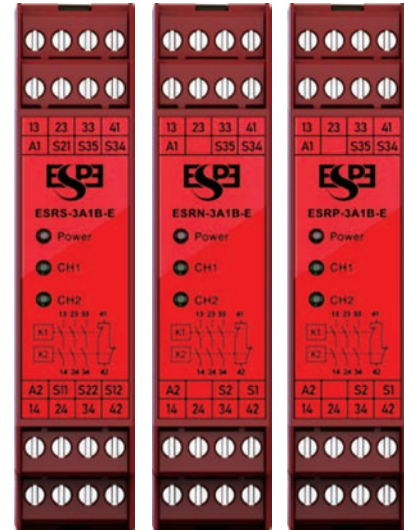
3A1B: 3NO+1NC

E: English

Panel Function

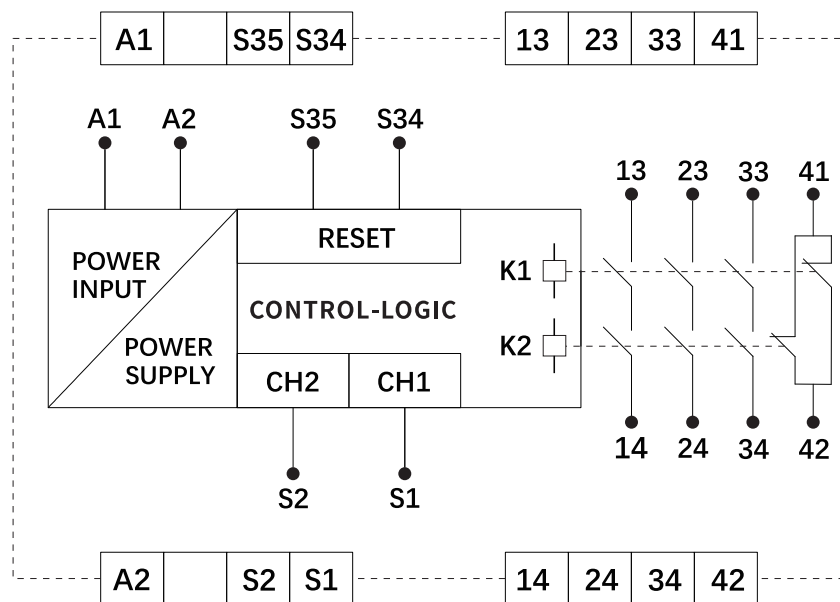
ESR(P/N/S)-3A1B-E

- Power: power indicator, ON when supply power.
- CH1: channel 1 indicate that relay 1 is on when work, off when release.
- CH2: channel 2 indicates that relay 2 is on when work, off when release.
- A1/A2: terminal for inputting power.
- S1: NPN/ PNP input 1 terminal.
- S2: NPN/ PNP input 2 terminal.
- S11/S12: door switch (emergency stop) signal 1 input terminal.
- S21/S22: door switch (emergency stop) signal 2 input terminal.
- S34/S35: optional automatic reset or monitored manual reset.
- 13/14, 23/24:3 safety output (NO) terminal.
- 41/42: 1 auxiliary (NC) terminal.



Functional Diagram

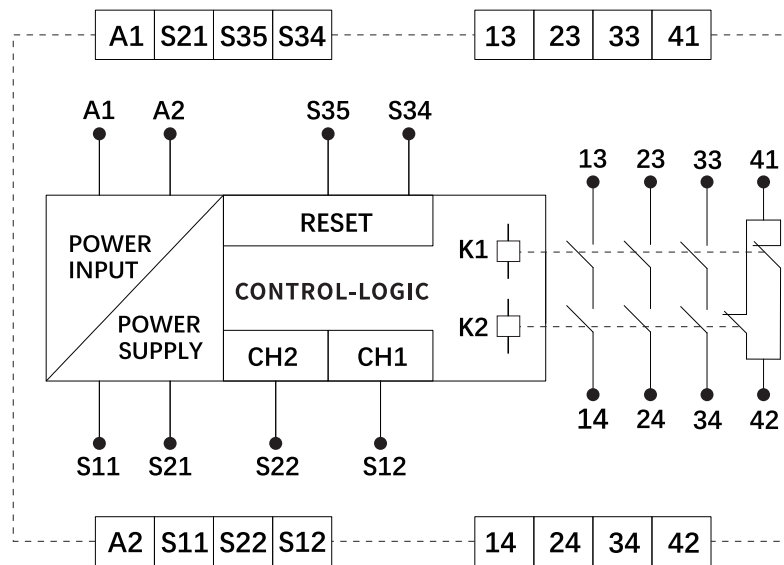
ESR(N/P)-3A1B-E



Safety Relay Module

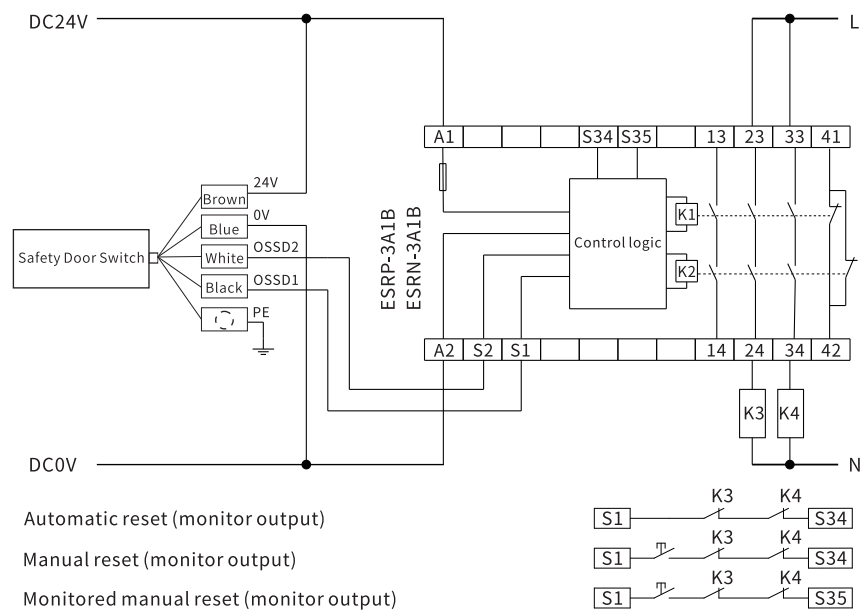
Functional Diagram

ESRS-3A1B-E



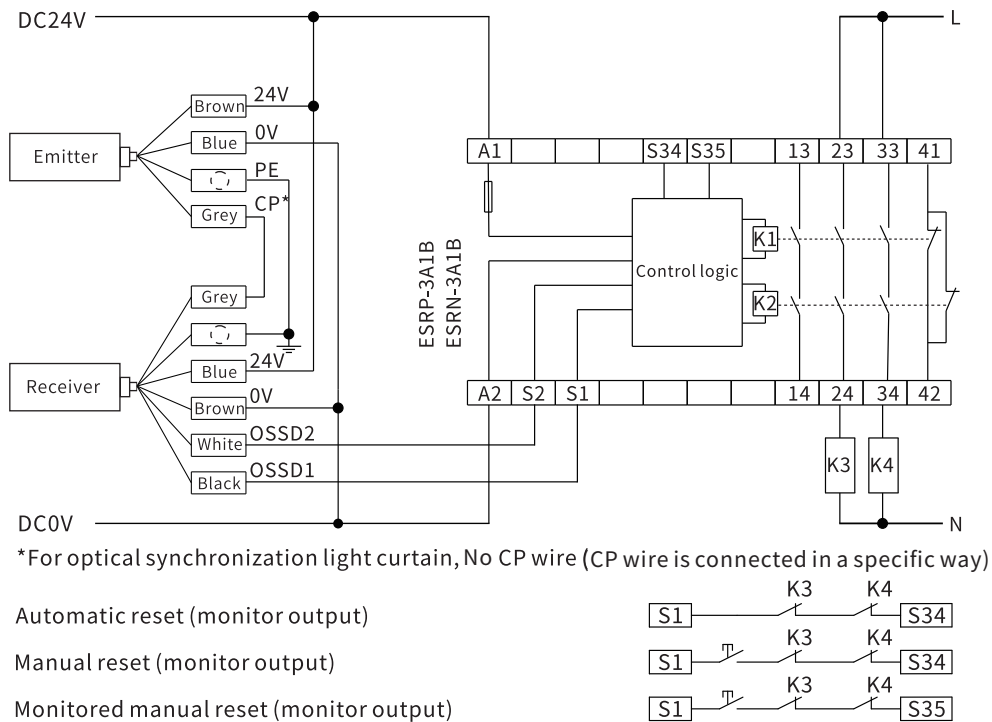
Wiring Diagram

ESR(N/P)-3A1B-E used for safety door switch (NPN/PNP output)

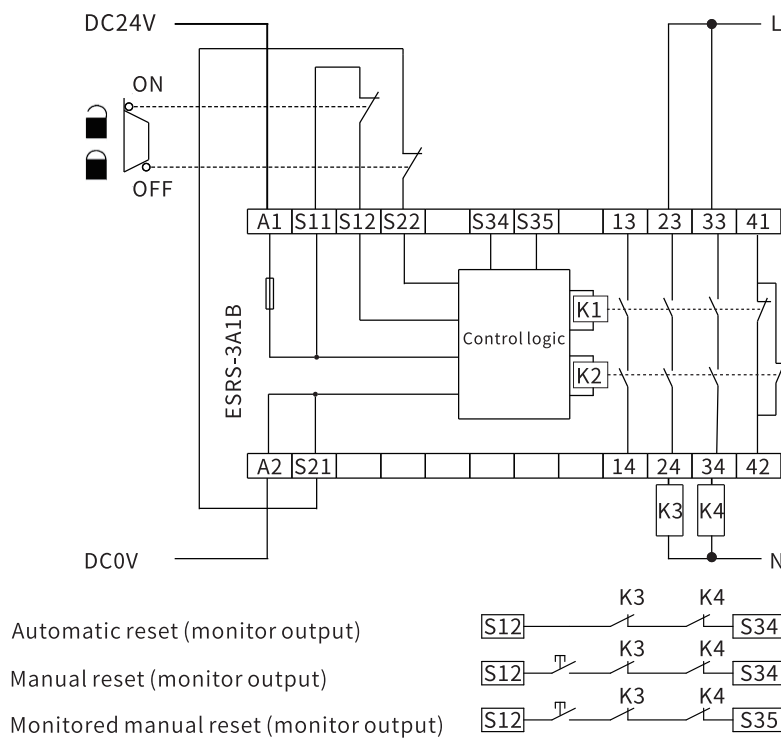


Wiring Diagram

ESR(N/P)-3A1B-E used for safety light curtain (NPN/PNP output)



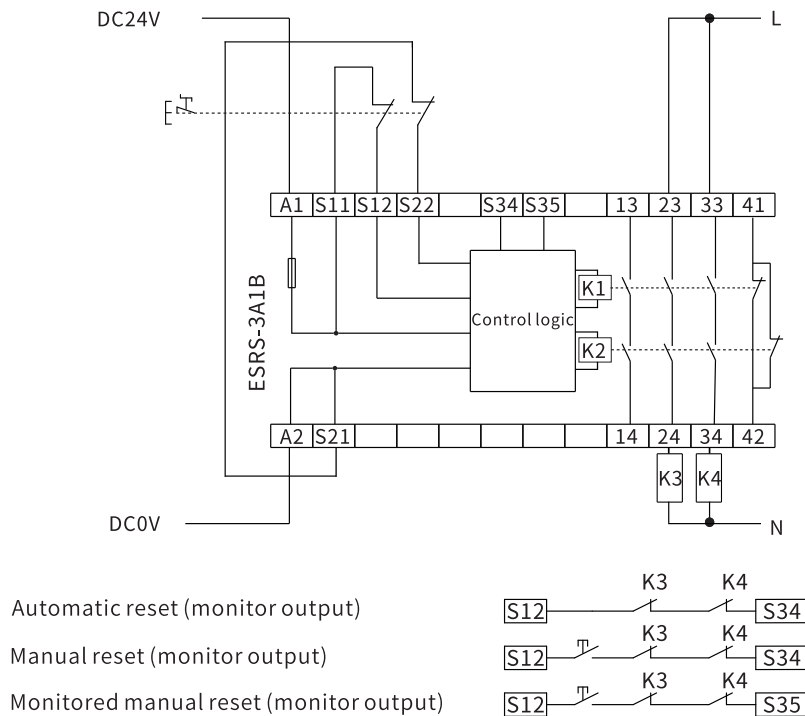
ESRS-3A1B-E used for dual channel safety door switch



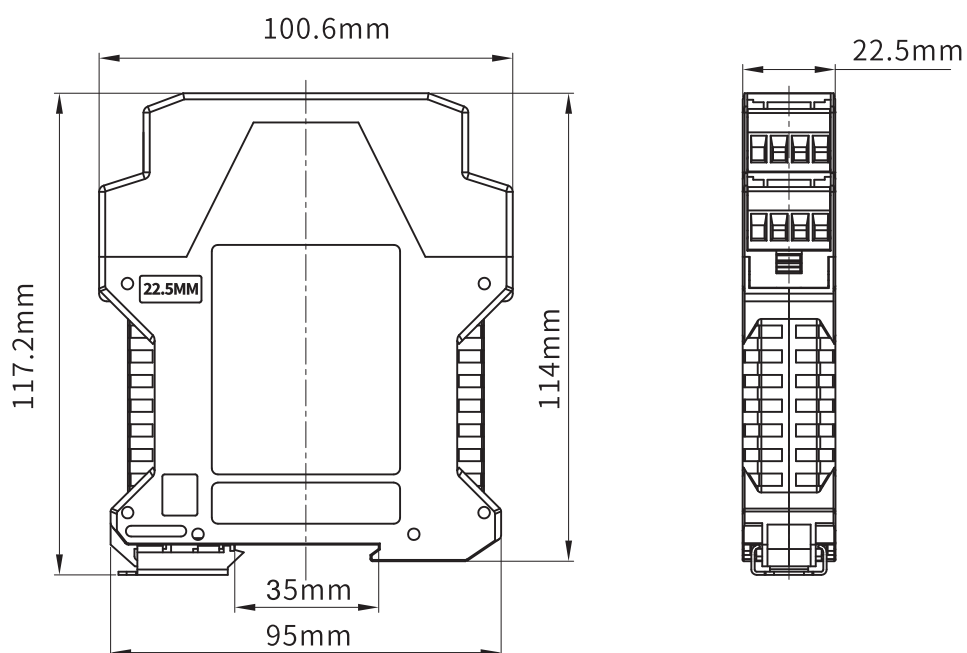
Safety Relay Module

Wiring Diagram

ESRS-3A1B-E used for emergency stop button



Product Size



Product Installation

- Cut off power of machine to ensure no dangerous voltage existing, except the lighting and spare sockets.
- Product with 35mm DIN rail for installation.
- Connect wire according to the wiring diagram of the safety relay.
- Before power on, please check if all cable rightly connected, and whether relay is fastened to the mounting rail.



Disassemble

- Please cut off power before disassembling the safety module.
- Loosen the screw or remove terminal.