

ESR Series Safety Relay Module



Product introduction

The ESR series safety relay module meet PLe level of ISO 13849-1, is suitable for monitor of various signal (include emergency stop, safety door switch, safety light curtain and two hand button) in industrial sites with high safety requirements. Support 2NO+1NC and 3NO+1NC output, can choose to monitor manual reset and automatic reset.

Product feature

- Design according to ISO13849-1 (category 3, PLe).
- Relay output: 2NO or 3NO, and 1 NC 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 diagnoses.
- Detectable terminal for easy maintenance.
- Standard 35mm width guide mounting design.

Safety Relay Module

Product parameter

Standard level	
Reference standard	ISO 13849-1 (Category 4/Pl e)
Safety level	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 door or emergency stop button (ESRS type)
Input synchronization	Unlimited S1 is in the front of S2
Safety output	2 normally open passive contacts, 1 normally closed passive contacts; Three normally open passive contacts and one normally closed passive contact;
B10 data	Rated load: 400,000 times; Low load: 2 million times
Contact capacity	AC15:5A/250V; DC13:6A/24V
Electric lifetime	≥10 times (1NO: 5A250VAC, resistive load, 1s on 9s off)
Mechanical lifetime	≥10 million times
Environment	
Vibration resistance	Frequency 10Hz~55Hz, amplitude 0.35±0.05mm, 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 Rail
Wire size	0.2~2.5mm ²
Hardware size	117×100.6×22.5

Model selection

Product series

ESR

Input type



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Output method

3A1B

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E

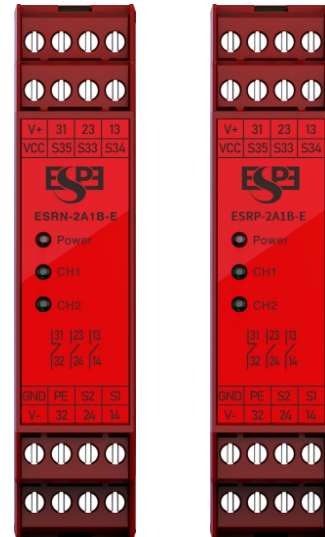
N: Dual channel NPN input
P: Dual channel PNP input
S: dual channel safety door switch, emergency stop

2A1B: 2 normally open, 1 normally close
3A1B: 3 normally open, 1 normally close

Panel function

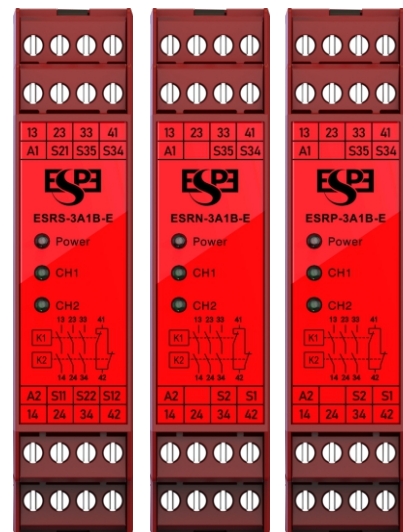
ESR(N/P)-2A1B-E

- 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.
- V+/1-: terminal for inputting power.
- VCC/GND: terminal of power output.
- PE: protective ground terminal.
- S1: NPN/ PNP input 1 terminal.
- S2: NPN/ PNP input 2 terminal.
- S33/S34: connect with S33, S34 for automatic reset.
- S3/S35: connect with S33, S35 for manual reset.
- 13/14, 23/24: terminal for 2 safety output (NO).
- 31/32: terminal for 1 auxiliary output (NC).



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

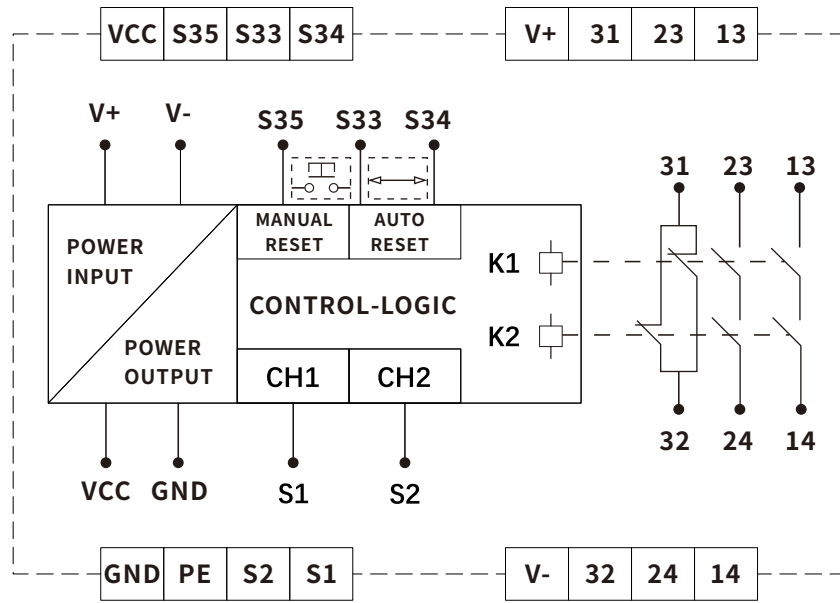
- Power: power indicator, ON when supply power.
- CH1: Channel 1 indicate that relay 1 is on when work, off when release.
- CH2: Channel 2 indicates that relay 2 is on when work, off when release.
- A1/A2: terminal for inputting power.
- S1: NPN/ PNP input 1 terminal.
- S2: NPN/ PNP input 2 terminal.
- S11/S12: door switch/emergency stop monitoring input signal 1 terminal.
- S11/S12: door switch/emergency stop monitoring input signal 2 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.



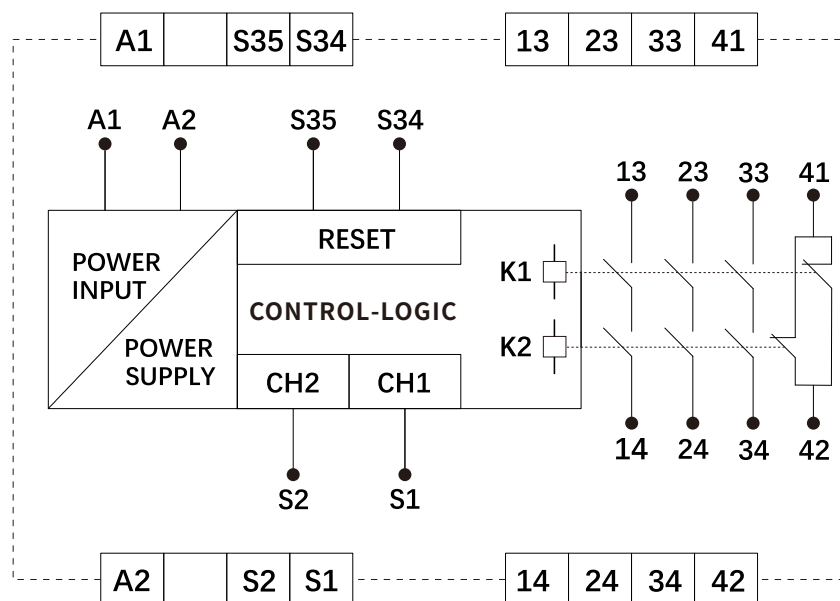
Safety Relay Module

Functional diagram

ESR(N/P)-2A1B-E

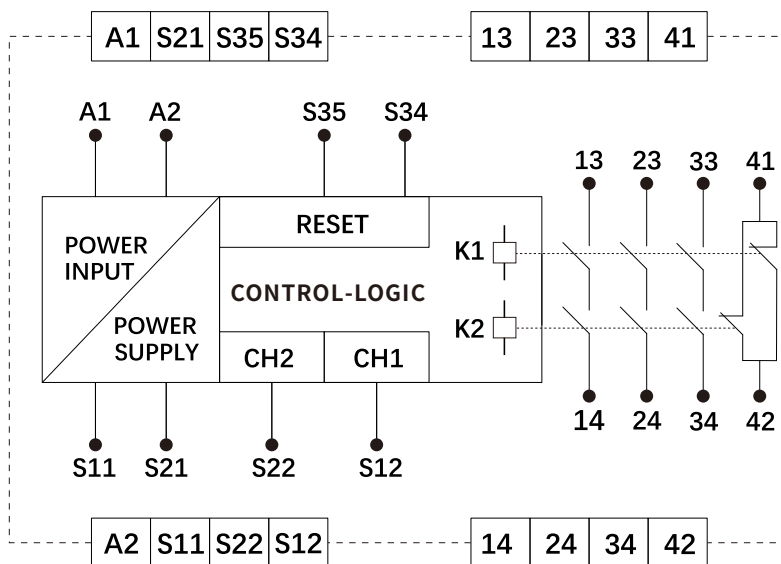


ESR(N/P)-3A1B-E



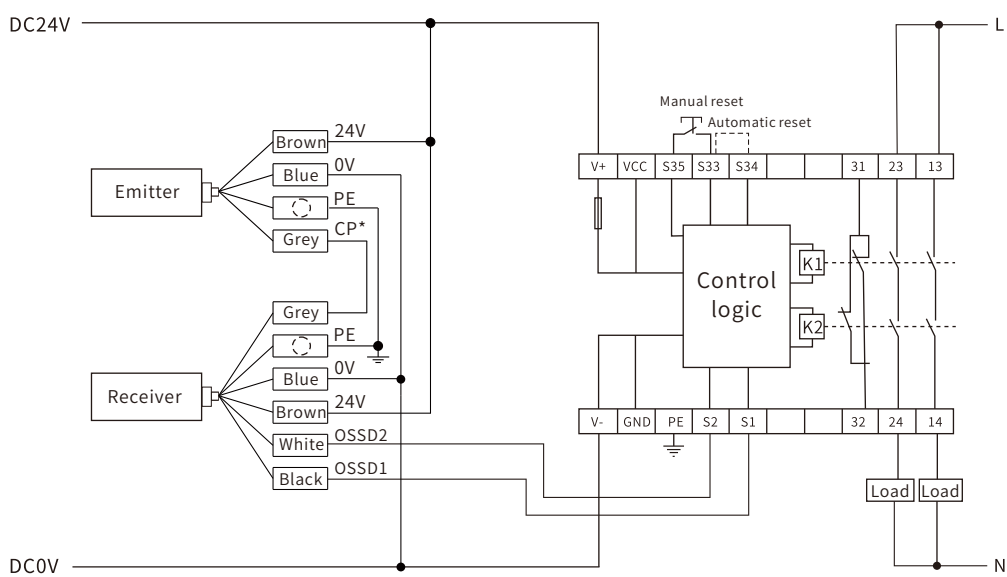
Functional diagram

ESRS-3A1B-E



Wiring diagram

ESRN/P-2A1B-E used for safety light curtain (manual reset/ automatic reset)



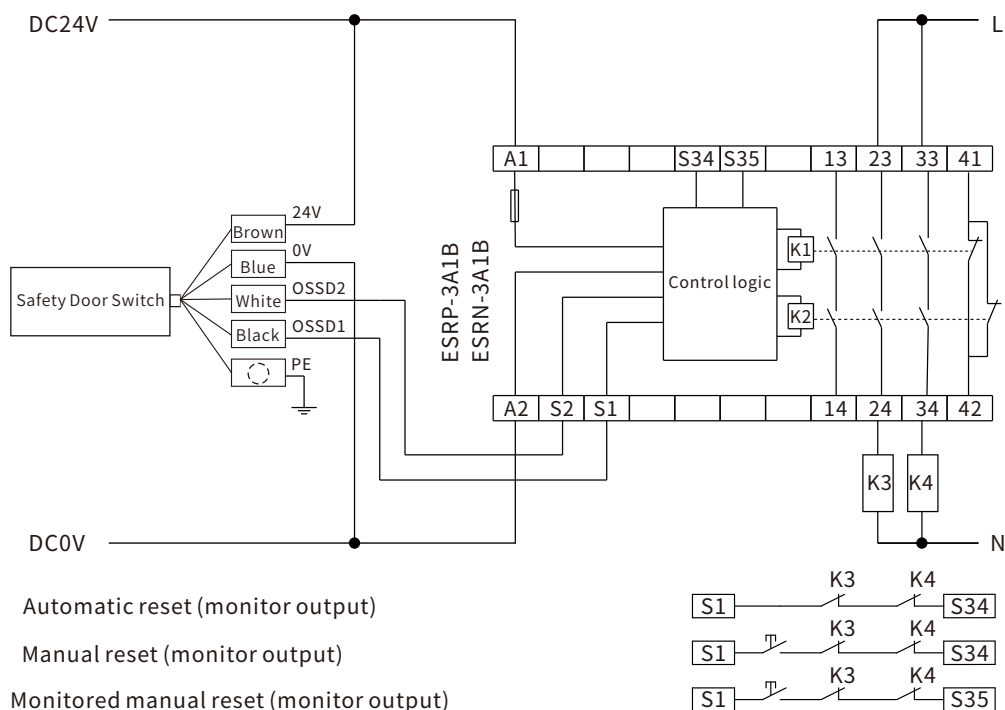
*For optical synchronization light curtain, NO CP wire (or CP wire connect with specific)

*Manual reset/ automatic reset (option)

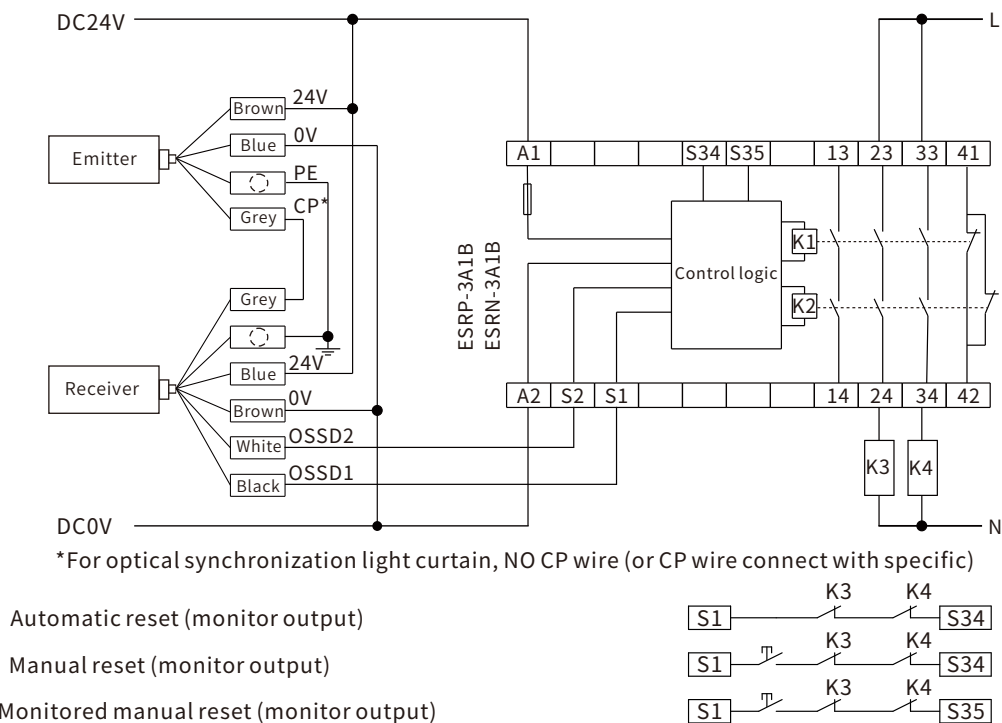
Safety Relay Module

Wiring diagram

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



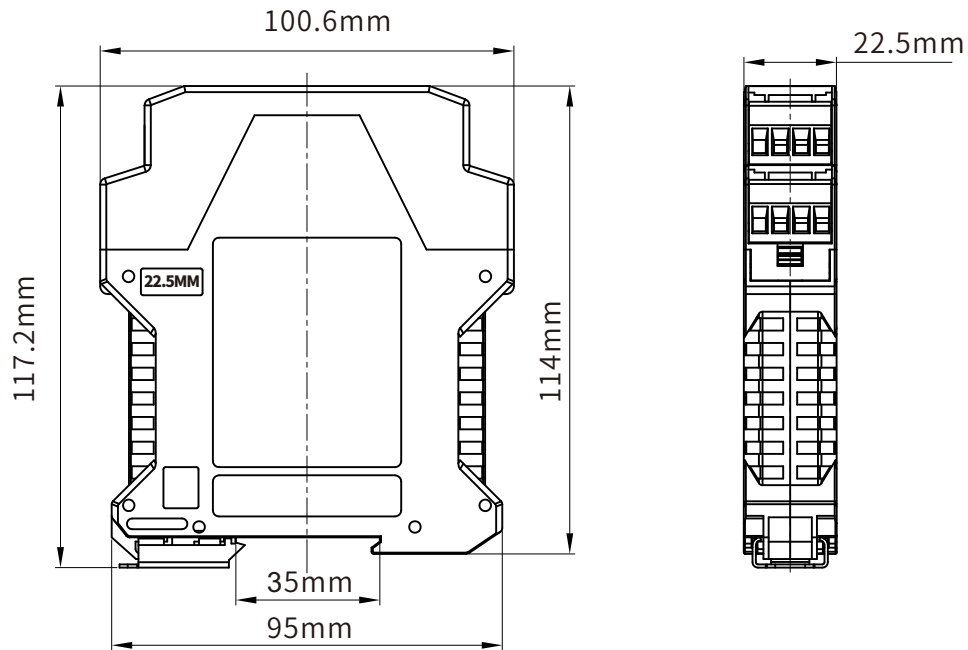
Used for safety light curtain (NPN/PNP output)





Safety Relay Module

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.