

ESR series

Safety relay module

The ESR safety relay module meets the PLe safety requirements of EN/ISO 13849-1 and is suitable for monitoring various signals in industrial sites with high safety requirements, including scram button, safety door switch, safety light curtain signal and two-hand button; can provide 2 normally open 1 normally closed /3 normally open 1 normal close output, can choose to monitor manual reset and automatic reset.

Features of product:

- Designed in accordance with EN/ISO 13849-1 (Category 4, PLe)
- Relay output :2 or 3 normally open contacts, 1 normally closed auxiliary contact.
- Manual reset and automatic reset options.
- The internal circuit has cross fault monitoring.
- Self-check function redundant circuit design.
- Input overvoltage and overcurrent protection.
- Power supply anti-reverse connection protection design.
- Indicator display with visualized status is easy for the diagnosis of operational status.
- Detachable terminal for easy maintenance.
- Standard 35mm width guide mounting design.



Technical data

Standard level

Reference standard	EN/ISO 13849-1
Safety level	EN/ISO 13849-1 category 4

Electric parameter

Power supply	DC24V±10%
Power consumption	<3W
Response time	<20ms
Suction buffer time	<50ms
Power-on restart time	<1s
Protective circuit	Input power overvoltage and overcurrent protection Anti reverse-connection protection
Safety input	Double NPN normally closed input (ESRN model), double PNP normally closed input (ESRP model), double-channel safety door or emergency stop button (ESRS model)
Input synchronously	S1 is always before S2
Safety output	2 circuit normally open dry contact, 1 circuit normally closed dry contact 3 circuit normally open dry contact, 1 circuit normally closed dry contact
Contact rating	AC15: 5A/250V DC13: 6A/24V
Electric lifespan	≥10,000 times
Mechanical lifespan	≥10 millions times

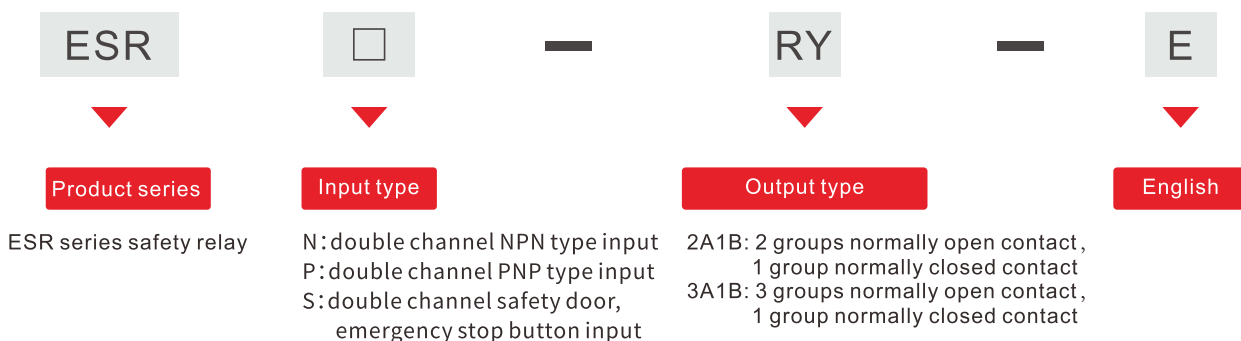
Environment

Vibration resistance	Frequency 10Hz~55Hz, amplitude 0.35±0.05mm, 20 times each at X, Y, Z direction
Shock resistance	Acceleration 10g, pulse duration 16ms, 1000 times each at X, Y, Z direction
Operational temperature	-10~+55°C
Storage temperature	-40~+85°C
Protection level	Housing protection/ terminal protection: IP40/IP20

Installation/ structure

Installation	35mm DIN navigation
Traverse size	0.2~2.5mm ²
size (mm)	117×100.6×22.5

Explanation of safety relay model (for example: ESR□-2A1B-□)



EFP Series

ESE Series

ESN Series

ESQC Series

ELG Series

EB13 Series

EB15 Series

ESA Series

ESP Series

EFB Series

ESF Series

ESCL Series

ESCF Series

ESCH Series

ESCC Series

ESR Series

EDL-R1 Series

EPL Series

EPS Series

EPC Series

EPM Series

EPK Series

EDS-R Series

EDS-L Series

EMB-M01

F27X Series

Panel function

ESR(N/P)-2A1B-E

- Power: power indicator, lights when normally power on.
- CH1: Channel 1 indicates that relay 1 is lit when operated and extinguished when released.
- CH2: Channel 2 indicates that relay 2 is lit when operated and extinguished when released.
- V+/V-: power input terminal.
- VCC/GND: power output terminal.
- Pe: protective ground terminal.
- S1: light curtain has the input of signal 1 terminal.
- S2: light curtain has the input of signal 2 terminal.
- S33/S34: connect S33、S34 choose automatic reset.
- S33/S35: connect S33、S35 choose manual reset.
- 13/14、23/24: two circuits safety output (NO) terminal.
- 31/32: one circuit auxiliary output (NC) terminal.



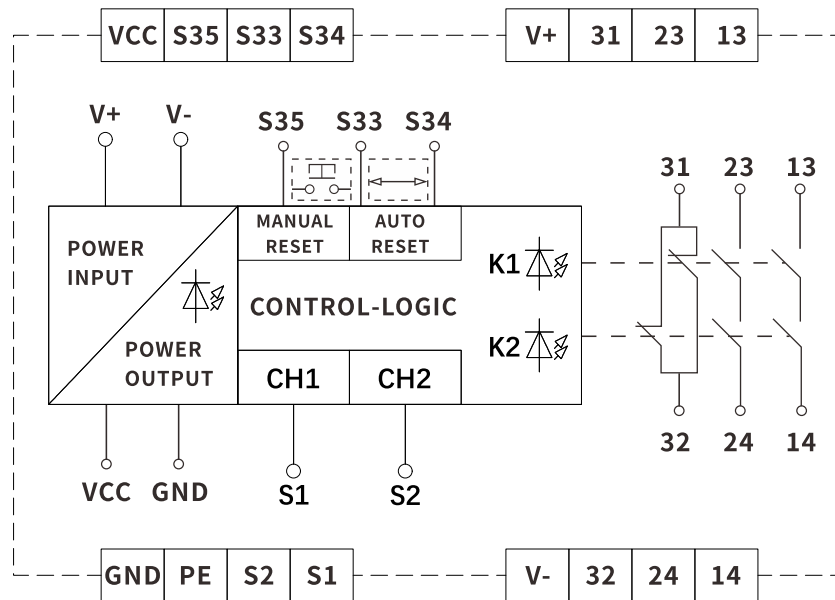
ESR(P/N/S)-3A1B-E

- Power: power indicator, lights when normally power on.
- CH1: Channel 1 indicates that relay 1 is lit when operated and extinguished when released.
- CH2: Channel 2 indicates that relay 2 is lit when operated and extinguished when released.
- A1/A2: power input terminal.
- S1: light curtain output signal 1 terminal.
- S2: light curtain output signal 2 terminal.
- S11/S12: safety door or emergency stop supervision in put signal 1 terminal.
- S21/S22: safety door or emergency stop supervision in put signal 2 terminal.
- S34/S35: choose automatic reset or supervised manual reset
- 13/14、23/24、33/34: 3 circuits safety output (NO) terminal.
- 41/42: one circuit auxiliary output (NC) terminal.



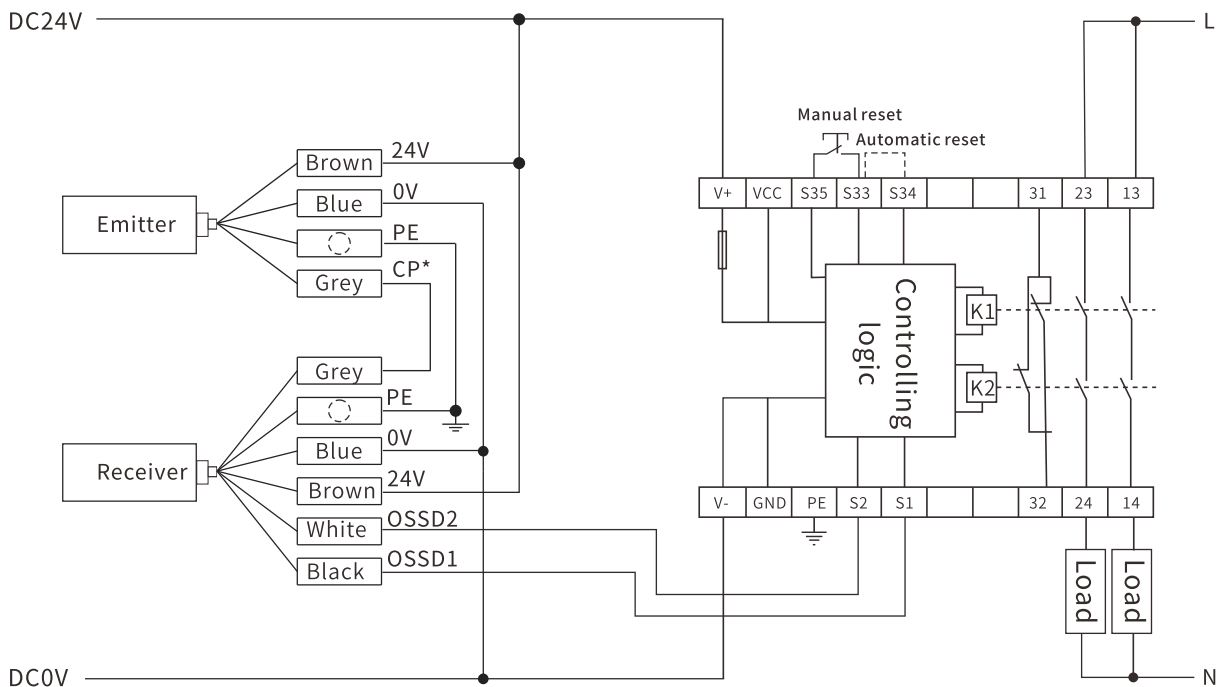
Block Diagram of Function

ESR(N/P)-2A1B



Wiring diagram

ESR-2A1B used for safety light curtain manual reset/ automatic reset wiring diagram

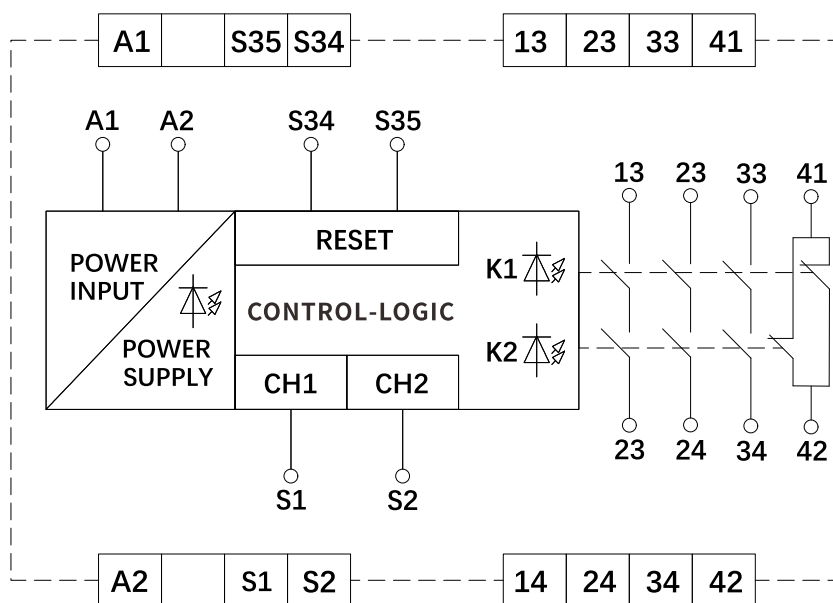


*In optical synchronization mode, no CP line or CP is connected in a specific mode.

*Manual reset/ automatic reset (select one from two)

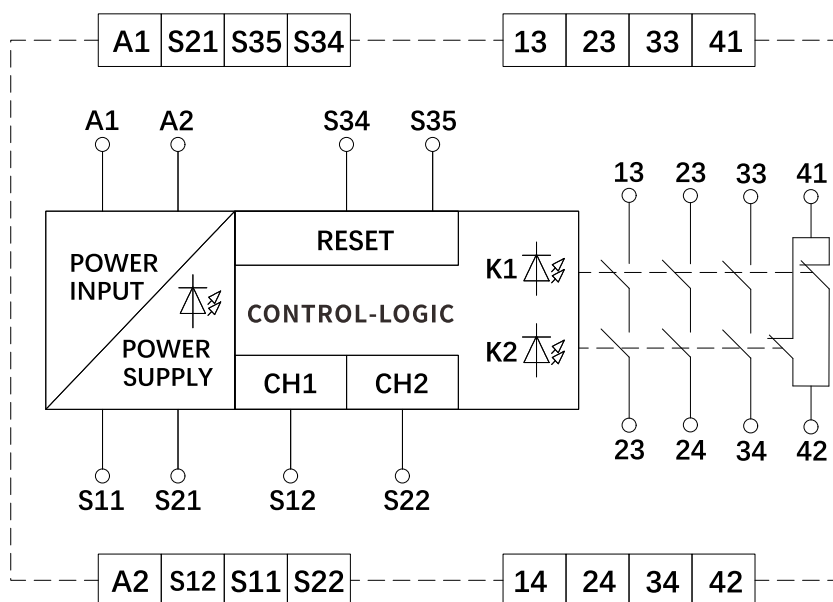
Block Diagram of Function

ESR(N/P)-3A1B

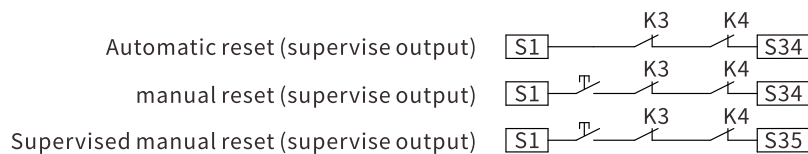
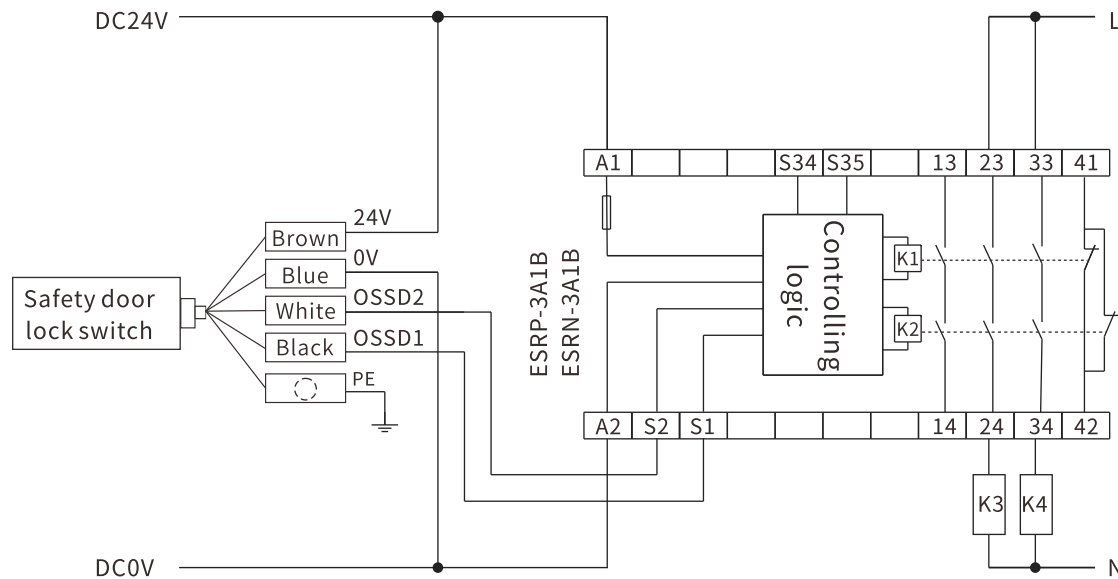


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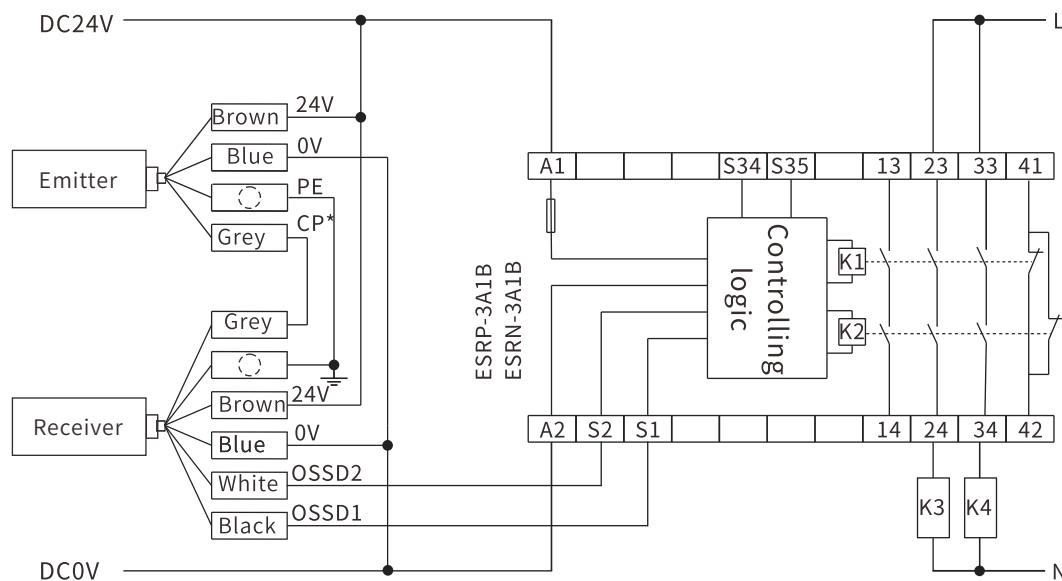
ESRS-3A1B



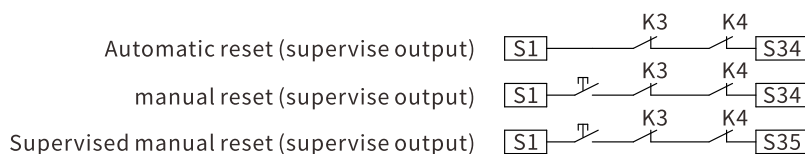
Safety relay ESR(N/P)-3A1B used for safety door lock switch (NPN/PNP type output)



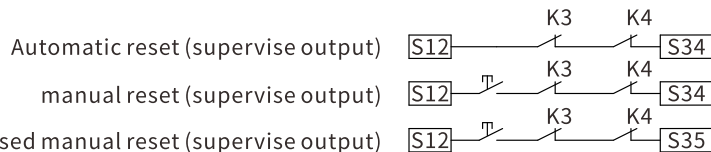
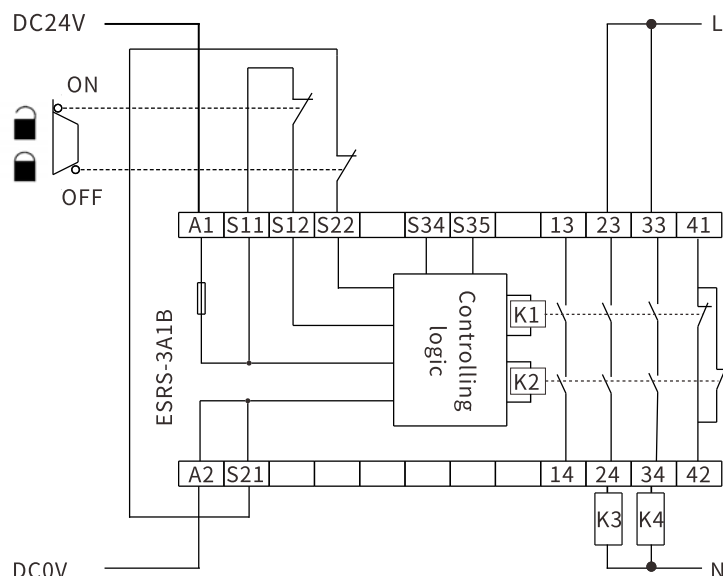
Safety relay ESR(N/P)-3A1B used for safety light curtain (NPN/PNP type output)



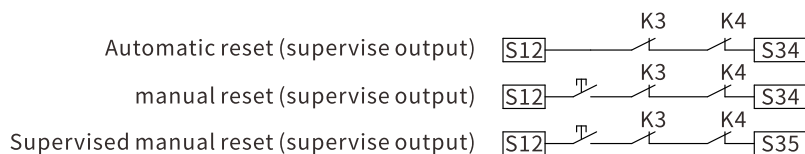
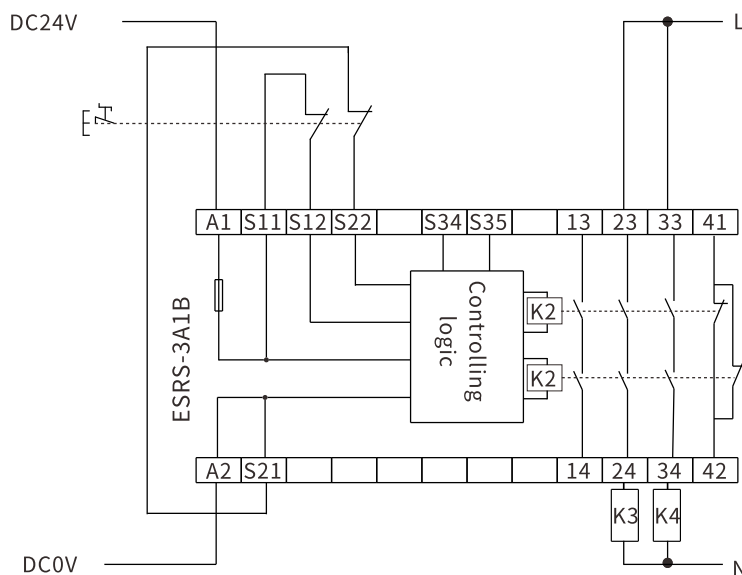
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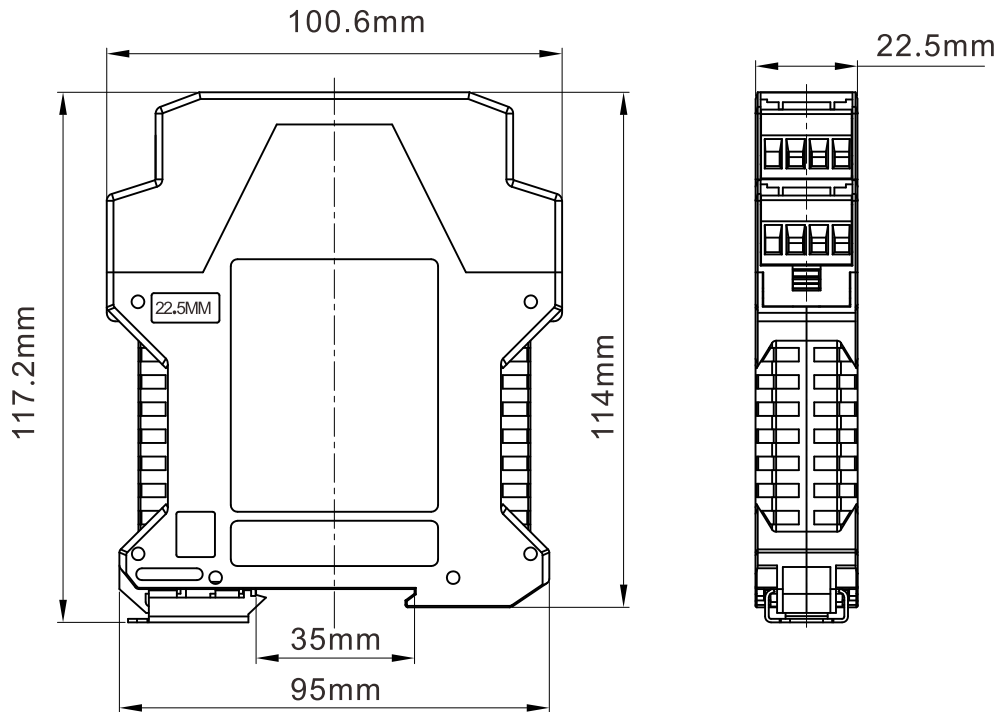
Safety relay ESRS-3A1B used for double channel safety door



Safety relay ESRS-3A1B used for emergency stop button



Product size



Suggestion for installation & Disassemble

- ◆ Cut off the power of the machine to ensure that there is no dangerous voltage inside the machine, except for lighting and spare sockets;
- ◆ The product adopts 35mm DIN rail to install and fix.
- ◆ Connect the cables according to the wiring drawing of the safety relay.
- ◆ Before powering on, check whether the cable connection is correct and whether the relay is fastened to the mounting rail.
- ◆ The power supply of the machine must be cut off before disassembling the safety module.
- ◆ Loosen the locking screw or remove the terminal.



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