Safety Relay

CZSR8001-3A1B
CZSR8001-2A2B
CZSR8001-3A1B-P
CZSR8001-2A2B-P

SIL 3
IEC61508

Please read the instruction manual carefully before using the product, and please safekeeping

⚠ Caution

- Please check whether the product type on the package according to the ordering contract;
- Read this manual carefully before installation or using. If there is something unclear, please dial technic support hotline-400 881 0780;
- Safety relays should be located in IP54 control cabinet;
- Supply voltage is 24VDC, 220VAC is forbidden;
- Users are not allowed to dismantle or repair the product otherwise it will induce malfunction.

SHANGHAI CHENZHU INSTRUMENT CO.,LTD.

Add: Building 6, 201 Minyi Road, Caohejing Hi-Tech Park
Songjiang New Industrial Park, Shanghai 201612, P.R. China
Tel : +86-21-64513350 Fax : +86-21-64846984
Email：chenzhu@chenzhu-inst.com
http://www.chenzhu-inst.com

Summarize

CZSR8000 series safety relay are mainly used for safety control loops, connecting safety sensors(such as E-STOP pushbuttons, safety gates, two-hand control buttons, light beam devices etc.) and motion controllers of mechanical equipments(such as safety PLC, contactors etc). When safety sensors detected the signal like dangerous fault of equipment, malfunction of operator or stop command issued by operators, safety relay will process these signals and transfer the information to motion controllers and cut the power source of mechanical equipment, so that equipment will go into a safe state and protect safety of personnel and equipment.

CZSR8001 is suitable for E-STOP pushbuttons input, safety gates control switch input, and PNP light beam device input. It can choose single or dual channel operation, manual or automatic reset, with function of short circuit monitoring between channels.

Specification

Power:

Supply voltage: 24V DC/AC
Voltage tolerance: 0.85～1.1
AC frequency: 50Hz～60Hz
Current consumption: ⩽90mA(24V DC)
⩽180mA(24V AC)

Input:

Input current: ⩽50mA(24V DC)
Cable resistance: ⩽15Ω
Input devices: E-STOP pushbuttons, safety gates, PNP light beam devices

Output:

Number of contacts: 3NO+1NC、2NO+2NC
Contact material: AgSnO2+0.2μmAu
Contact type: forces guide
External contact fuse protection: 10A gL/gG NEOZED(NO)
6A gL/gG NEOZED(NC)
Utilisation category in accordance with EN60947-5-1: AC-15, 5A/230V; DC-13, 5A/24V

Times:

Switch-on delay:
with automatic reset, E-STOP operation: ⩽300ms
with automatic reset, power-on delay: ⩽300ms
with manual reset, manual reset: ⩽150ms
Delay-on de-energisation:
with E-STOP: ⩽30ms
with power failure: ⩽100ms
Recovery time:
After E-STOP: ⩽30ms
After power failure: ⩽100ms
Supply interruption before de-energisation: 20ms

Environmental Characteristics

EMC: in accordance with EN 60947，EN 61000-6-2，EN 61000-6-4
Vibration frequency: 10～55Hz
Vibration amplitude: 0.35mm
Clearance and creepage: in accordance with EN 60947-1
Overvoltage category: III
Pollution degree: 2
Protection type: IP20
Rated insulation voltage: 250V AC
Rated impulse voltage: 6000V(1.2/50us)
Dielectric strength: 1500V AC,1min
Ambient temperature: -20℃～+60℃
Storage temperature: -40℃～+85℃
Relative humidity: 10%～90%
Mechanical endurance: over 10^7 times

Safety-related characteristic data

Performance level(PL): PLe — in accordance with EN IS0 13849
Category(Cat): Cat.4 — in accordance with EN 954-1
Mission time(TM): 20 years — in accordance with EN IS0 13849
Diagnostic coverage(DC/DCavg): 99% — in accordance with EN IS0 13849
Safety integrity level(SIL): SIL3 — in accordance with IEC61508,IEC62061
Hardware fault tolerant(HFT): 1 — in accordance with IEC61508,IEC62061
Safe failure fraction(SFF): 99% — in accordance with IEC61508,IEC62061
Average frequency of dangerous failure(PFHd): 3.09E-10/h — in accordance with IEC61508,IEC62061
Stop category: 0 — in accordance with EN60204-1
B10d:

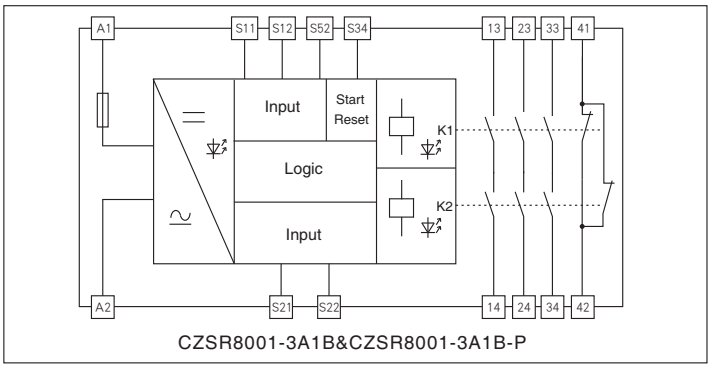
DC-13, Rated voltage(Ue)=24V:

Rated current(Ie)	5A	2A	1A
Cycles	300,000	2,000,000	7,000,000

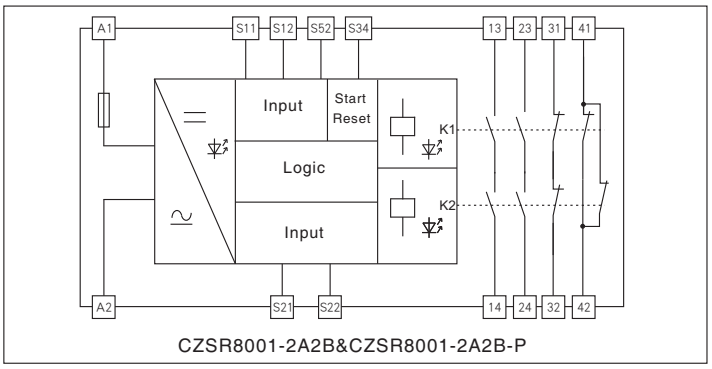
AC-15, Rated voltage(Ue)=230V:

Rated current(Ie)	5A	3A	1A
Cycles	200,000	230,000	380,000

Block diagram

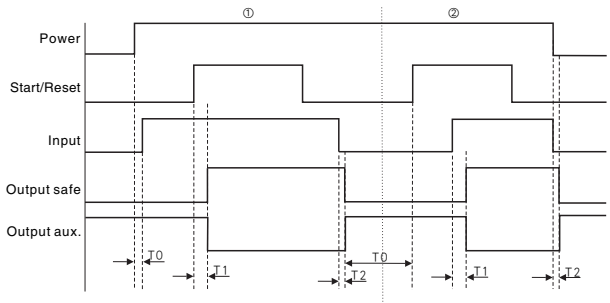


CZSR8001-3A1B&CZSR8001-3A1B-P



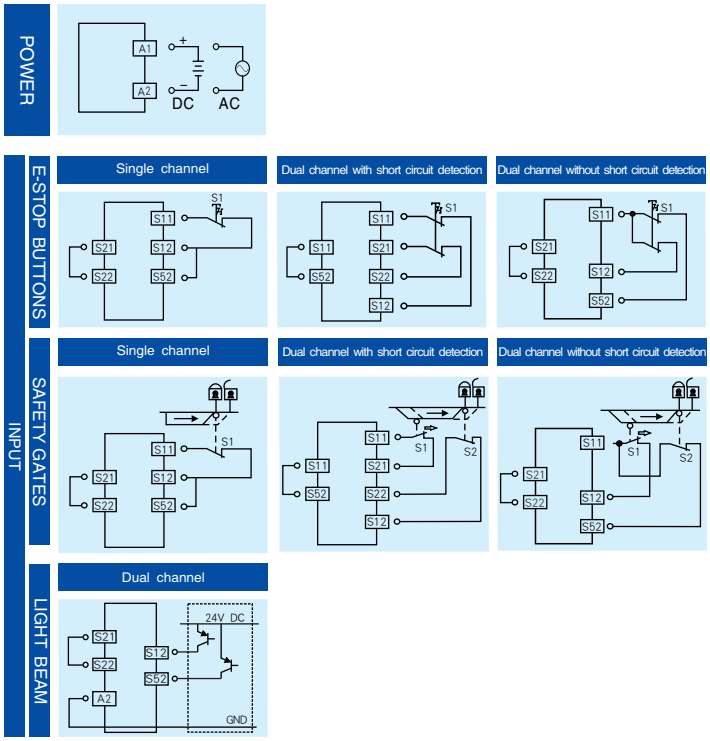
CZSR8001-2A2B&CZSR8001-2A2B-P

Timing diagram

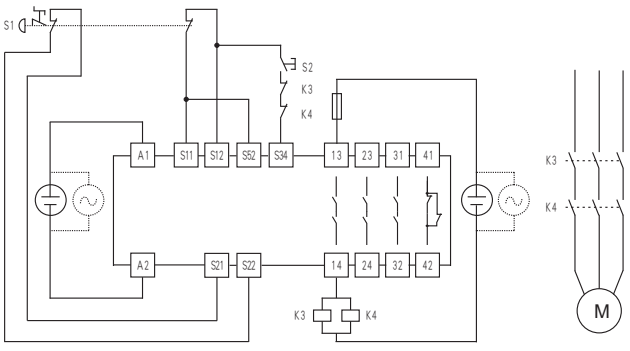


Notes:
(1)This timing diagram is under manual reset mode. Under automatic reset mode, start/Reset is always high level;
(2)Part ① shows input circuit be closed early than reset circuit.
Part ② shows reset circuit be closed early than input circuit.
(3)T1:Switch-on delay time, T2:Delay-on de-energisation time
T0:Recovery time

Wiring diagrams



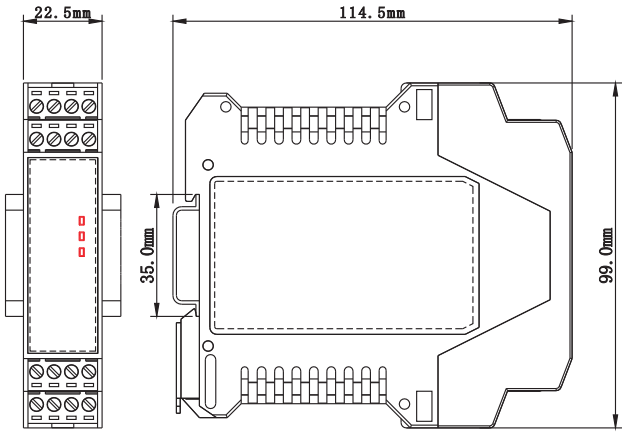
Typical application



- Dual channel E-stop button input
- Short circuit monitoring between channels
- Manual reset
- With output contacts feedback
- Suitable for highest safety level 4

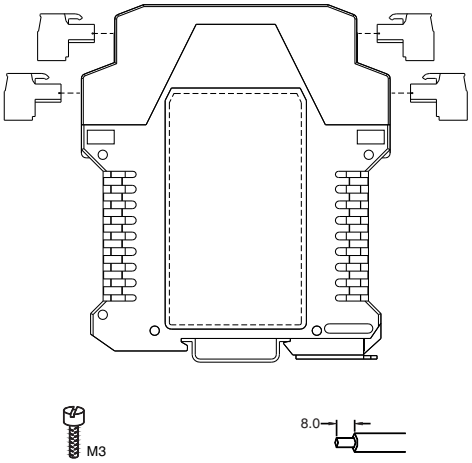
Dimensions

114.5mm×99.0mm×22.5mm



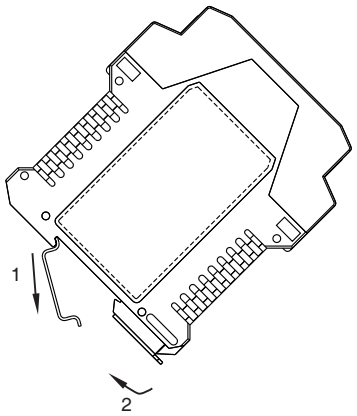
Connections

(1) This safety relay adopts wiring with removable terminal block;
(2) The minimum flexible copper cross section area of input side wire should be 0.5 mm^2, and minimum of output side wire should be 1 mm^2;
(3) A length of 8mm bare wire is locked by the M3 bolt;
(4) Output contacts must provide enough fuse protection connection;
(5) Copper wire must withstand minimum ambient temperature 75℃;
(6) Terminal screws may cause wrong operation, fever and so on, so please tightening the torque according to the rules:
Terminal screws tightening torque: 0.5Nm.



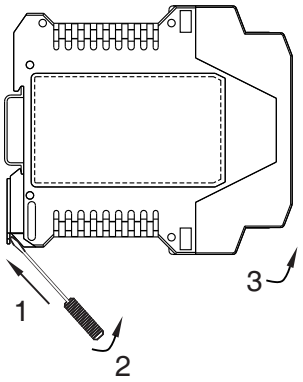
Installation

The safety relay should be located in a control cabinet with better than IP54, at the same time, should comply with related requirements in IEC 60204-1.
CZSR8000 series safety relay is designed for mounting on 35mm DIN guide rail.
Installation according to the following steps:
(1)Make the upside of the safety relay locked into the guide rail;
(2)Push the downside of the safety relay in the rail.



Disassembly

(1).Insert a screwdriver (its edge length≤6mm)into the downside metal lock of the barrier;
(2).Push the screwdriver upwards,then prize the metal lock downwards;
(3).Take the barrier out of the guide rail.



Maintenance

(1)Please check the safety function of safety relay periodically, make sure the safety function execute properly, and there is no sign of any components or circuit changed or bypass;
(2)Please comply with related safety requirements. Be sure to operate according to our user manual, otherwise may cause fatal accidents or person and property loss;
(3)Every product has been tested strictly before leaving factory. If users find any abnormality in the module, please contact the nearest agent or our technical hot-line;
(4)In 5 years from the delivery date, we will repair or replace it without payment, if the product works improperly during normal operation.