ELCO
INDUSTRIAL AUTOMATION

Safety products

- Safety light curtain
- Safety laser scanner
- Safety relay module
- Safety lock & Safety switch

SAFETY 2025.05 V1.1

Safety Product

Safety Of Machinery 01

Safety Light Curtain 10

With IEC TYPE4 and TYPE2 categories, non-contact protection system, a variety of specifications and protection levels, avariety of resolutions optional, used to protect fingers, palms, ankles and human torso, and area protection and access protection, it uses a transmitter and receiver 2-piece structure, without independent controller.

Safety Light Curtain SE4 11
Safety Light Curtain SC4 17
Safety Light Curtain SC4D30 22
Safety Light Curtain SC2 25
Safety Light Curtain ST2 29
Safety Light Curtain STF2 32
Safety Light Curtain STL2 35

Safety Laser Scanner 38

Safety laser scanner provides flexible and versatile area protection in the workplace, and its compact product provides safety functions in a single device and integrated interface to the safe bus system, simplifying complex customer needs. Suitable for hand, arm and complete personal protection, according to IEC 61508-SIL2 standard certification.

Safety Laser Scanner ASL10 39
Obstacle Avoidance & Measurement Laser Radar ASL300 46

Safety Relay Module 52

Comprehensive monitoring module for monitoring safety light curtain, safety area laser scanning, scram button, safety pad and more. Applicable to the control of all dangerous movements.

Emergency Stop Module-SR22 53
Cascade Safety Relay Module-emergency Stop Module SR22M 55
Cascade Expansion Module SR22E 58
Cascade Safety Relay Module-time Independent Module SR22T 61
Cascade Safety Relay Module-time Independent Module SR22TE 64
Cascade Safety Relay Module-two-handed Module SR22H 67

Safety Lock & Safety Switch 71

Mechanical safety locks are an additional option to ensure safety door monitoring for personnel and process protection.
Safety latches A complete solution including safety switches, handles and latches.

Safety Lock SL100 71
Safety Lock SL110 77
Safety Lock SRL110 83
Safety Switch SW100 94
Safety Switch SRW50 99
Safety Switch SRW48 103
Emergency Stop Button SE30 107

ELCO provides high quality industrial safety products for the industrial automation industry, and provides a full range of technical services in safety assessment training, machinery risk assessment, safety system design, and equipment safety modification.

Introduction to Mechanical Safety

Machines and systems are increasingly powerful and complex - today's machine operators and maintainers are surrounded by complex, multi-layered technology. In general, it is becoming increasingly difficult to detect potential hazards and thus less likely than ever to eliminate them before an accident or injury occurs. Therefore, mechanical safety becomes more and more important and becomes an indispensable element of mechanical construction.

In addition to the ethical obligation to protect and maintain the health of employees, the topic of machine safety is also a matter of financial awareness for employers and machine operators. Every accident in the workplace incurs costs and costs of costs. Accountability checks and explanations occupy the time of many parts of the company, all the way up to company executives.

Our goal is to produce safety sensors and controls that support cost-effective integration with a wide range of conceptual machinery and systems, providing effective personnel protection in accordance with international safety standards without hindering the production workflow in the process.

There are different concepts about the safety and protection of machinery in the workplace in various countries and regions of the world, and the differences in the need and assessment of the safety concept result in different safety responsibilities and legal consequences. That is, if the machinery is manufactured in another country, the applicable laws and regulations always operate in the country of the machinery.

Machinery safety protection

1. Directives,laws and standards

Eu Safe Work Directive: The Safe Work Framework Directive 89/391/EC contains minimum requirements and general basic principles relating to the prevention of work hazards, safety and health protection, minimization and elimination of risk and accident factors.

Important EU directives in the field of safety at work

Directive of European Union
Work Safety Framework Directive 89/391/EEC
Directive 89/655/EEC for the use of Work equipment, as amended by 95/63/EC
Directive 89/665/EEC as amended by 2001/45/EC

Eu Machinery Safety Directive: 2006/42/EC

The Safety of Machinery Directive 98/37/EC provides for a uniform level of safety of machinery in order to ensure the free circulation and distribution of articles in the European economy; This applies to machinery and machinery manufacturers and distributors. The new Machinery Directive 2006/42/EC replaces the currently valid EC Machinery Directive 98/37/EC.

Work equipment use instructions: 89/655 EEC

Directive 89/655/EEC on the Use of Work Equipment, supplemented by Directive 95/63EC, contains the minimum safety and health protection requirements for the use of work equipment.
Applicable to machine operators (employers), Section ll includes the following eight articles:
Article3 General Liability specifies the employer's responsibilities and basic requirements to ensure the safety and health protection of the work equipment provided
Article4 Working Device rules
Article4a Inspection of work equipment
The employer shall ensure that work equipment is initially inspected in accordance with national laws and regulations prior to initial use and after each re-installation.
Article5 Special hazards of work equipment
Article5a Ergonomics and health protection in the workplace
Article6 Alert the operator
Article7 Operator training
Article8 Operator consultation and participation

Industrial Safety and Health Act:

In line with the Industrial Safety and Health Act, Directive 89/655/EEC,Directive 95/63/EC and other work safety Directives.

Obligations of the machinery manufacturer:

As a machinery manufacturer, the Machinery Directive should be followed, among other requirements; Therefore, the "Major Health and Safety requirements" of the Machinery Directive should be followed.
Plan for overall safety early in the design process. Use standard procedures or mechanical procedures listed in Appendix IV of the Machinery Directive to obtain a declaration of conformance. Write mechanical technical documentation, especially all design documentation related to safety. Operation guide in the official language of the country in which the machine is used is provided with the product. At the same time, the original language operation guide is provided. Complete the declaration of conformance and mark the CE mark on the machine and safety components.

Standard: Standards are agreements between various stakeholders (manufacturers, users, authorities, and governments). Contrary to popular belief, standards are not prepared or recognized by governments or officials. The standard describes the state of the art in its preparatory phase. For hundreds of years, national standards to global standards have changed. Depending on where the machine or product is used, there will be differences in the applicable legal provisions and the corresponding standards. The right choice of the standards used allows machinery manufacturers to be consistent with legal requirements.

ISO (International Organization for Standardization):

ISO is a worldwide federation of standardization organizations from 157 countries. ISO prepares and publishes international standards for non-electrical technologies.

IEC (International Electrotechnical Commission):

The International Electrotechnical Commission (IEC) is an international organization that prepares and publishes international standards in the fields of electrical technology (e.g., electronics, communications, electromagnetic compatibility, power generation) and related technologies.

CEN (European committee for standardization):

CEN is a standardization organization for the EU, EFTA member States and future EU member States. CEN prepares European standards for the Non-electrical sector (EN). To avoid trade barriers arising from differences in standards, consultations are held between CEN and ISO. CEN uses a voting procedure to decide whether to adopt an ISO standard and publish it as a European standard.

CENELEC (European Committee for Electrical Standards):

CENELEC is an electrical technical field body similar to CEN, responsible for the preparation and publication of European electrical technical field standards (EN). Similar to CEN and ISO, CENELEC is increasingly adopting IEC standards and their numbering systems.

The hierarchical structure of European standard machinery safety

European safety standards can be divided into basic safety standards (A standards), group safety standards (B1 standards and B2 standards) and technical standards for specific machinery (C standards). Design principles and basic concepts of the A standards, such as EN ISO 12100-1, EN ISO 12100-2 and EN ISO 14121, It's the connection point of all the machinery. Guidance for determining risk with mechanical connections can be found here. Risk prevention and built-in safety provide the means even before the machine begins production. The B1 standard describes general safety elements and provides solutions for them, such as the design of fences, or requiring insertion speeds to calculate safety distances for safety curtains or multi-beam safety sensors. C standards describe the significant hazards of a particular Machine or machine type, the particular risks, and the means of mitigating such risks. If A mechanical type has a problem with criterion C, it is preferred to either criterion B or A. For machines under planning, if there are additional hazards not mentioned in Standard C, or if there is no specific standard C corresponding to them, then the risk should be reduced according to Standard A and B.

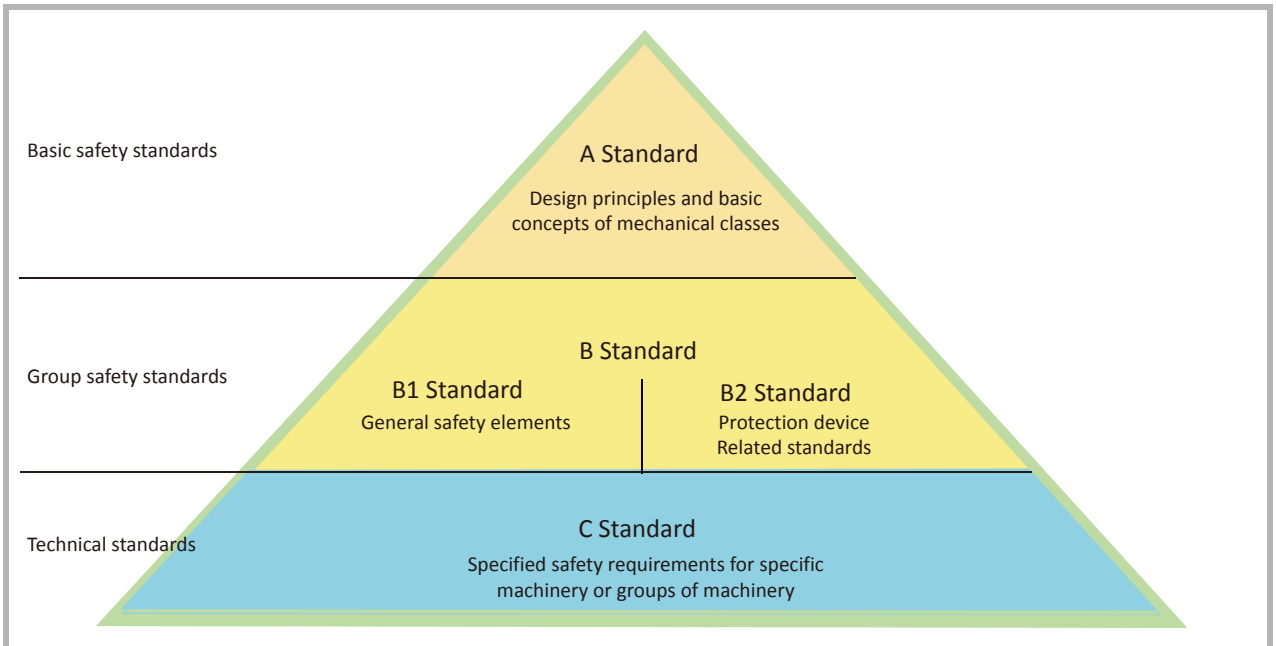


Fig.2.2.3-1 The hierarchical architecture of the European standards system

2. Risk assessment

Carry out risk assessment for all hazards. This process should take into account all hazards and risks and should be repeated until there are no remaining risks or the remaining risks are within an acceptable range. ISO 14121 "Safety of machinery - Principles of risk assessment" describes an iterative approach to risk analysis, risk assessment and risk minimization to achieve the required safety of machinery. Current specific machinery standards, such as type CEN standards must be given priority.

· Stipulate the limits and proper use of the machine
· Identify possible hazards and dangerous places
· Identify each identified hazard and hazardous site while considering foreseeable operator negligence and error of operation
· Assess each individual risk and determine whether it needs to be reduced.

Validity of EN 954-1

EN ISO 13849-1 "Safety of machinery - Safety components related to control systems -Part 1: general design principles" Like EN 954-1, EN ISO 13849-1 (SRP/CS) is concerned with safety components in its field of application. It establishes the categories of EN954-1 and includes the SRP /CS specific requirements for programmable electronic systems. For EN ISO 13849-1, in addition to being qualitatively close to EN954-1, the number of safety functions is also included. EN ISO 13849-1 specifies performance levels (PL) to classify them according to different safety capabilities. The five PLs(a,b,c,d,e) represent the average probability of a hazardous failure per hour.

Performance class (PL) according to EN ISO 13849-1

Performance level (PL)	Probability of a hazardous failure per hour [1/h]
a	$\geq 10^{-5} \sim < 10^{-4}$
b	$\geq 3 \times 10^{-6} \sim < 10^{-5}$
c	$\geq 10^{-6} \sim 3x < 10^{-6}$
d	$\geq 10^{-7} \sim < 10^{-6}$
e	$\geq 10^{-8} \sim < 10^{-7}$

Assess the required performance level (PLr)

A risk assessment should be carried out and documented so that the PL r required for each safety function of safety-related control systems and the standard Practical Annex A provide quantitative procedures for assessing risk and identifying that the PLr and the same risk parameters as in EN 954-1 are applicable to assess risk.

Risk parameter

S The severity of the potential injury
S1 Minor (usually reversible) injuries
S2 Serious injury (usually irreversible injury including death)
F frequency and/or duration of exposure to hazard
F1 is rare to infrequent and/or occurs for short periods of time
F2 is frequent to persistent and/or occurs for a long time
P Avoid danger or limit the likelihood of injury
P1 can be avoided under certain conditions
P2 is almost inevitable

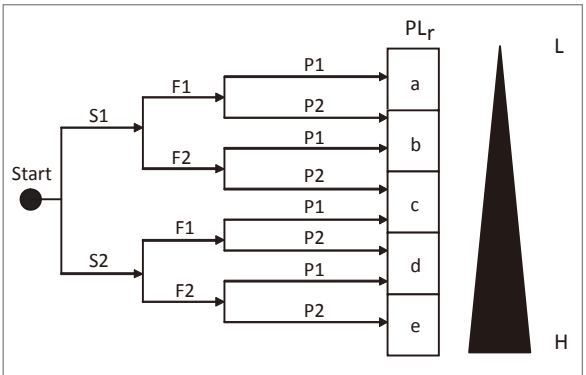


Fig.2.4.2-1Identify the risk map for each safety function PLr (From ENISO 13849-1)

Legend	
Start	Impact assessment starting point for risk minimization
L	Low impact on risk minimization
H	High impact on risk minimization
PLr	Low impact on risk minimization

Identify the level of performance achieved

The following safety-related parameters are required to identify the performance class of the device/device:
EN ISO 13849-1

Parameters	Meaning
Categories (Cat.)	The categories (B, 1, 2, 3, 4) are constructed as the basis for the identified PL
PL	Performance level (a, b, c, d, e)
$MTTF_d$	The average time to a hazardous failure
B_{10d}	Pneumatic or electric mechanical device wear, with 10% randomly selected number of non-hazardous fault operation cycles. (The average time to a hazardous failure.)
DC	Range of diagnosis
CCF	Common causes of failure
T_M	Estimated service life (continuous operation time)

Other parameters that should be considered are the effects of operational factors, such as the required speed and/or the experimental speed of the safety function at the time of the resulting PL.

3. Reduce risk

The international standard EN ISO 12100-1 "Safety of machinery - basic concepts and general principles for design", provides detailed assistance in hazard identification, describing the risks that designers must consider, including design principles, safety structures and methods of risk minimization.
EN ISO 12100-1 recommends that machinery designers take the following steps to reduce risk.

Safety design

Residual risks should be eliminated or minimized wherever possible (integrating safety in machine design and manufacturing)

Safety measures

Safety precautions to reduce operator hazards, including instruments, equipment, warning devices, clothing or personal protective equipment.
Protection: Such as guardrail, adjustable guardrail interlocking device is to prevent exposure to dangerous obstacles.
Warning device: Signs, signal lights, and warning barriers warn individuals when they are approaching, in contact with, or in a hazardous environment.
Equipment: Such as Safety light curtain, safety area scanning, two-handed control, safety pad, etc. are equipment systems to detect and prevent inadvertent exposure to hazards.

- a Safe shutdown: It is the use of conventional mechanical motion stop for safety protection purposes. It is implemented by devices that contain safety stop circuits or switches.
- b Secure connection: Safety equipment is bounded between the machine control unit and the machine. It is the ultimate switching device for the machine before danger occurs. In order to eliminate or reduce the risk, the movement of the machine is stopped when the Output Switching Device (OSSD) is in the OFF state.
- c Safe output: Safety equipment provides safety output to make the machine play the role of safe shutdown. The output signal switching device provides 2 solid state relays or 2 normally open contact outputs. The safety module with OSSD can provide relay output for various loads. Output types generally have automatic mode and manual mode.

Safety protection equipment requirements

In order to avoid the occurrence of machine hazards, safety protection equipment must have a high level of integrity and reliability.Refer to the following methods:

Troubleshooting:	The design reduces the possibility of failure and avoids the occurrence of emergency safety failure. Designers can reduce or eliminate predictable failures or shortcomings by selecting components, changing design options, or changing design and size.
Redundancy:	Safety equipment USUALLY has DOUBLE components or double loops providing THE SAME function in case of a component or circuit failure along the way. This ensures that a failure along the way does not prevent a safe shutdown.
Self test:	The safety self-test device can electrically ensure the work of each circuit element in the safety equipment, redundant spare devices, and ensure the normal work of the control elements between the machinery and the safety device. That is to ensure that the occurrence of emergency failure of safety equipment is detected by itself, and the safety protection system interacts with each other.

Safety circuit requirements: A typical safety stop loop contains two normally open points of the mechanical contact relay, which is monitored for the occurrence of faults that cause loss of the safety function.It has the following basic characteristics:

Mechanical safety contact:	Mechanical linkage contact structure, if there is a set of contacts do not move, other contacts can not move. The connection status of the contacts requires the monitoring of the external device monitoring loop.
External equipment monitoring:	The state of the external circuit controlled by the safety device. If an abnormal condition is detected, the safety device will issue a shutdown action.

4. Secure distance calculation (universal)

Safety distance calculated according to ISO 13855/EN999 and IEC TS 62046

The minimum distance from the dangerous operating point of the nearest machinery to the "stop-trigger" protection must be calculated using the following formula:

S = (KxT) + C

S The minimum safe distance from the next operating point to the detection point (protection area) of the protection device, in millimeters;

Regardless of the calculated value, a minimum safe distance of 100mm must be respected (“S”)

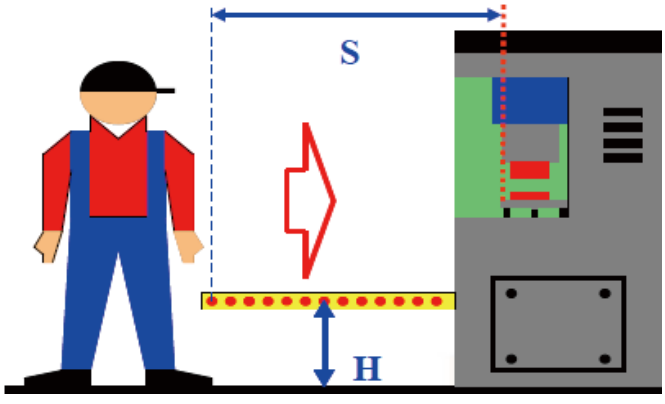
K Approach velocity, mm/s, extrapolated from the approach velocity data of the body parts

speed (Lower limbs) K = 1600 mm/s

speed (Upper limbs) K = 2000 mm/s

T Stop time of the whole system in seconds (protection response time + interface response time + machine stop time) (IEC TS 62046 requires 10% more than the determined stop time to allow for possible aging)

C Additional distance in 1 millimeter; This additional distance is due to the fact that the body part can be closer to the working point within a certain distance depending on the resolution of the protection device before it is detected by the protection device



Safety services

Sustainable machine safety begins with a professional safety system plan, from design, to operation, covering the entire life cycle of the machine.

ELCO the following safety services are available for you:

Machine risk assessment:

Comprehensive analysis of existing risks, assessment of the number and level of risks, tailored safety solutions.

Verification and validation of safety functions:

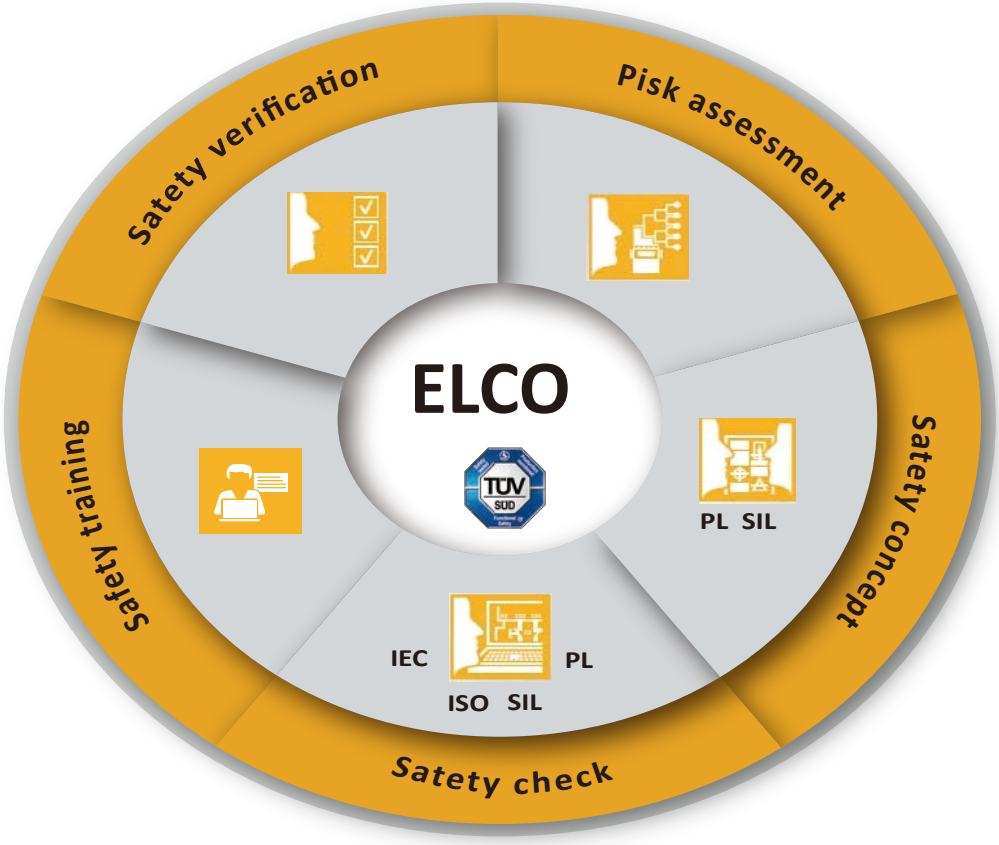
Verify the correctness and integrity of the design, verify through functional testing and fault simulation, and ensure the correct way to implement the safety function.

Safety check:

Check the function of safety device, check the safety hidden trouble, provide the safety inspection report to upgrade/renovate the machine.

Safety training:

Introduction of safety concept, introduction of machine instruction/standard, guide safety product real-time and application.

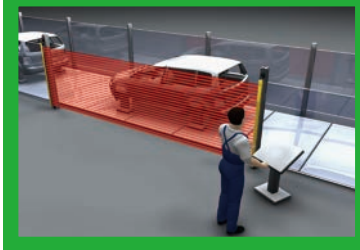


<< Safety Product

Safety light curtain

ELCO provide a complete series of safety light curtain products, with IEC TYPE4 and TYPE2 categories, non-contact protection system, multi-clock gauge guard height, multiple resolutions optional, used to protect fingers, palms, ankles and human torso, and area protection and channel entry protection, its transmitter and receiver 2-piece structure, No need for a separate controller.

Application: Machine tool, automobile, logistics, printing/packaging, injection molding machinery, woodworking machinery and other industries.



Safety Light Curtain SE4

Product Description

- TYPE4, SIL 3
- The maximum detection Range can reach 16 m
- The resolution can be 14 mm,30 mm, 50 mm detection accuracy
- External cascading scheme optional
- Optical synchronization, simplified wiring and improved installation efficiency
- Unique vibration reduction design, good vibration resistance
- Excellent anti-light interference and EMC characteristics
- High Protection degree: IP65

Model Selection Table

Model	Function	Resolution	Height1	Height2	Range
SE4P14-150	Transmitter + Receiver	14	120	145	Max. 10 m
SE4P14-200	Transmitter + Receiver	14	200	225	Max. 10 m
SE4P14-300	Transmitter + Receiver	14	280	305	Max. 10 m
SE4P14-450	Transmitter + Receiver	14	440	465	Max. 10 m
SE4P14-600	Transmitter + Receiver	14	600	625	Max. 10 m
SE4P14-750	Transmitter + Receiver	14	760	785	Max. 10 m
SE4P14-900	Transmitter + Receiver	14	920	945	Max. 10 m
SE4P14-1000	Transmitter + Receiver	14	1000	1025	Max. 10 m
SE4P30-150	Transmitter + Receiver	30	120	145	Max. 10 m
SE4P30-200	Transmitter + Receiver	30	200	225	Max. 10 m
SE4P30-300	Transmitter + Receiver	30	280	305	Max. 10 m
SE4P30-450	Transmitter + Receiver	30	440	465	Max. 10 m
SE4P30-600	Transmitter + Receiver	30	600	625	Max. 10 m
SE4P30-750	Transmitter + Receiver	30	760	785	Max. 10 m
SE4P30-900	Transmitter + Receiver	30	920	945	Max. 10 m
SE4P30-1050	Transmitter + Receiver	30	1080	1105	Max. 10 m
SE4P30-1200	Transmitter + Receiver	30	1160	1185	Max. 10 m
SE4P30-1350	Transmitter + Receiver	30	1320	1345	Max. 10 m
SE4P30-1500	Transmitter + Receiver	30	1480	1505	Max. 10 m
SE4P30-1650	Transmitter + Receiver	30	1640	1665	Max. 10 m
SE4P30-1700	Transmitter + Receiver	30	1720	1745	Max. 10 m
SE4P50-150	Transmitter + Receiver	50	120	145	Max. 10 m
SE4P50-200	Transmitter + Receiver	50	200	225	Max. 10 m
SE4P50-300	Transmitter + Receiver	50	280	305	Max. 10 m
SE4P50-450	Transmitter + Receiver	50	440	465	Max. 10 m
SE4P50-600	Transmitter + Receiver	50	600	625	Max. 10 m
SE4P50-750	Transmitter + Receiver	50	760	785	Max. 10 m
SE4P50-900	Transmitter + Receiver	50	920	945	Max. 10 m
SE4P50-1050	Transmitter + Receiver	50	1080	1105	Max. 10 m
SE4P50-1200	Transmitter + Receiver	50	1160	1185	Max. 10 m
SE4P50-1350	Transmitter + Receiver	50	1320	1345	Max. 10 m
SE4P50-1500	Transmitter + Receiver	50	1480	1505	Max. 10 m
SE4P50-1650	Transmitter + Receiver	50	1640	1665	Max. 10 m
SE4P50-1800	Transmitter + Receiver	50	1800	1825	Max. 10 m

Notes: Height1-Protective field height. Height2-Product overall height.

Model Selection Table

Model	Function	Resolution	Height1	Height2	Range
SE4P14-150L	Transmitter + Receiver	14	120	145	Max. 16 m
SE4P14-200L	Transmitter + Receiver	14	200	225	Max. 16 m
SE4P14-300L	Transmitter + Receiver	14	280	305	Max. 16 m
SE4P14-450L	Transmitter + Receiver	14	440	465	Max. 16 m
SE4P14-600L	Transmitter + Receiver	14	600	625	Max. 16 m
SE4P14-750L	Transmitter + Receiver	14	760	785	Max. 16 m
SE4P14-900L	Transmitter + Receiver	14	920	945	Max. 16 m
SE4P14-1000L	Transmitter + Receiver	14	1000	1025	Max. 16 m
SE4P30-150L	Transmitter + Receiver	30	120	145	Max. 16 m
SE4P30-200L	Transmitter + Receiver	30	200	225	Max. 16 m
SE4P30-300L	Transmitter + Receiver	30	280	305	Max. 16 m
SE4P30-450L	Transmitter + Receiver	30	440	465	Max. 16 m
SE4P30-600L	Transmitter + Receiver	30	600	625	Max. 16 m
SE4P30-750L	Transmitter + Receiver	30	760	785	Max. 16 m
SE4P30-900L	Transmitter + Receiver	30	920	945	Max. 16 m
SE4P30-1050L	Transmitter + Receiver	30	1080	1105	Max. 16 m
SE4P30-1200L	Transmitter + Receiver	30	1160	1185	Max. 16 m
SE4P30-1350L	Transmitter + Receiver	30	1320	1345	Max. 16 m
SE4P30-1500L	Transmitter + Receiver	30	1480	1505	Max. 16 m
SE4P30-1650L	Transmitter + Receiver	30	1640	1665	Max. 16 m
SE4P30-1700L	Transmitter + Receiver	30	1720	1745	Max. 16 m
SE4P50-150L	Transmitter + Receiver	50	120	145	Max. 16 m
SE4P50-200L	Transmitter + Receiver	50	200	225	Max. 16 m
SE4P50-300L	Transmitter + Receiver	50	280	305	Max. 16 m
SE4P50-450L	Transmitter + Receiver	50	440	465	Max. 16 m
SE4P50-600L	Transmitter + Receiver	50	600	625	Max. 16 m
SE4P50-750L	Transmitter + Receiver	50	760	785	Max. 16 m
SE4P50-900L	Transmitter + Receiver	50	920	945	Max. 16 m
SE4P50-1050L	Transmitter + Receiver	50	1080	1105	Max. 16 m
SE4P50-1200L	Transmitter + Receiver	50	1160	1185	Max. 16 m
SE4P50-1350L	Transmitter + Receiver	50	1320	1345	Max. 16 m
SE4P50-1500L	Transmitter + Receiver	50	1480	1505	Max. 16 m
SE4P50-1650L	Transmitter + Receiver	50	1640	1665	Max. 16 m
SE4P50-1800L	Transmitter + Receiver	50	1800	1825	Max. 16 m

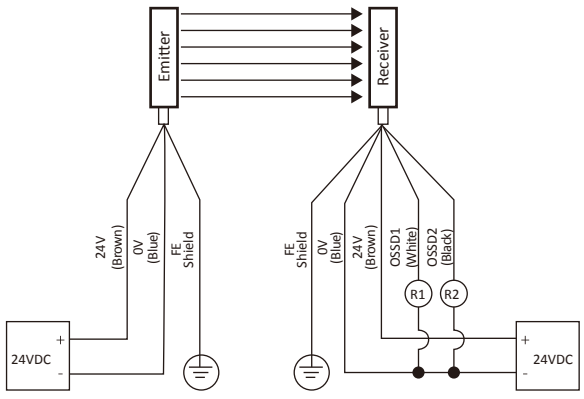
Notes: Height1-Protective field height. Height2-Product overall height.

Safety Light Curtain SE4

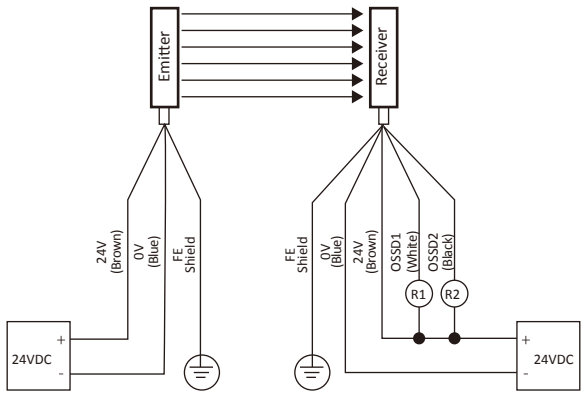
Technical Parameters

European standard	EN 61496-1:2020 EN 61496-2:2020 EN61508-1~4:2020 ENISO13849-1:2023 ENISO 13849-2:2012
International standard	IEC 61496-1:2020 IEC61496-2:2020 IEC61508-1~4:2010 ISO 13849-1:2023
Chinese standard	GB4584
Safety level	Type4, SIL3, Category4, Ple
MTTFd	157~557 year uncertain, please see model details
Emission light source	Infrared LED (Central wavelength 850nm)
Optical axis spacing	10 mm / 20 mm / 40 mm
Resolution	14 mm / 30 mm / 50 mm
Protective field height	(Number of beams-1)*Optical axis spacing (mm)
Detection Range	A: 0 ... 10 M / B: 0 ... 16 M
Operating temperature	-10 ... +55 °C (Smooth surface without condensation)
Ambient temperature	-40 ... +70 °C
Operating humidity	35%RH~85%RH
Ambient humidity	35%RH~95%RH
Anti-optical interference	Incandescent lamp: 3000 lux; Fluorescence: 3000 lux; Sunlight: 10,000 lux
Vibration resistance	Frequency 10 ... 55 Hz, amplitude 0.35±0.05 mm, X, Y and Z direction 20 times each
Impulse resistance	Acceleration 10 g, pulse duration 16 ms , X, Y and Z direction 1000 times each
Section size	34 x 28 mm
Working voltage	24 V DC±20%
Working current	Transmitter: < 200mA Receiver: < 200 mA (No-load)
Response time	4 ... 18 ms (Increase ordecrease with the number of beams)
Safety output	PNP transistor output x 2; ON state, load current ≤ 100 mA,
	Output voltage ≥ Vcc-2 V; OFF state, leakage current ≤ 1 mA,
	Residual voltage ≤ 1 V (excluding the effect of wire extension)
	NPN transistor output x 2; ON state, load current ≤ 100 mA,
	Output voltage ≤ 2 V; OFF state, leakage current ≤ 1 mA,
	Residual voltage ≤ 2 V (excluding the effect of wire extension)
Start time	< 3s
Detection function	Power-on self-test, real-time self-test during the working process
Protection Circuit	Over voltage and over current protection, Output short circuit protection

Electrical Connection Diagram

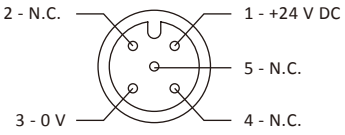


PNP Wiring



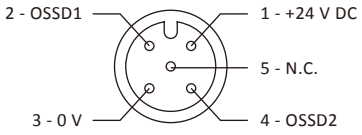
NPN Wiring

Electrical Connection Diagram



Transmitter

Pin	Color	Function
1	brown	+24V DC
2	white	N.C.
3	blue	0V
4	black	N.C.
5	grey	N.C.



Receiver

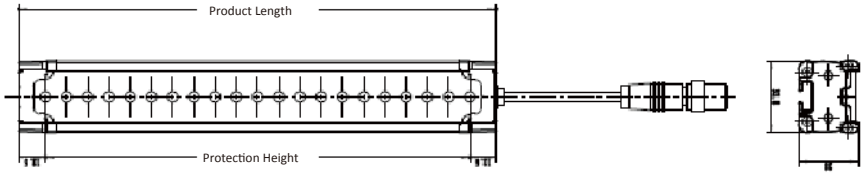
Pin	Color	Function
1	brown	+24V DC
2	white	OSSD1
3	blue	0V
4	black	OSSD2
5	grey	N.C.

Installation Method

Front and side integrated installation

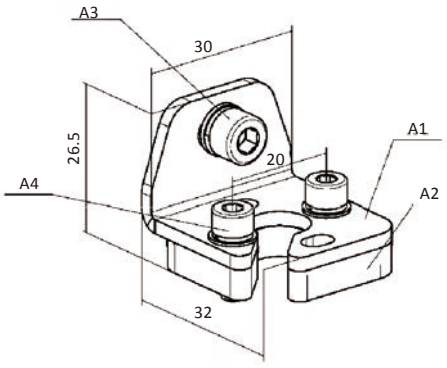
Installation method of tube mounting bracket mode

Raster Size Diagram



Mounting Bracket Size Diagram

Front and side mounting brackets (BT - VC)



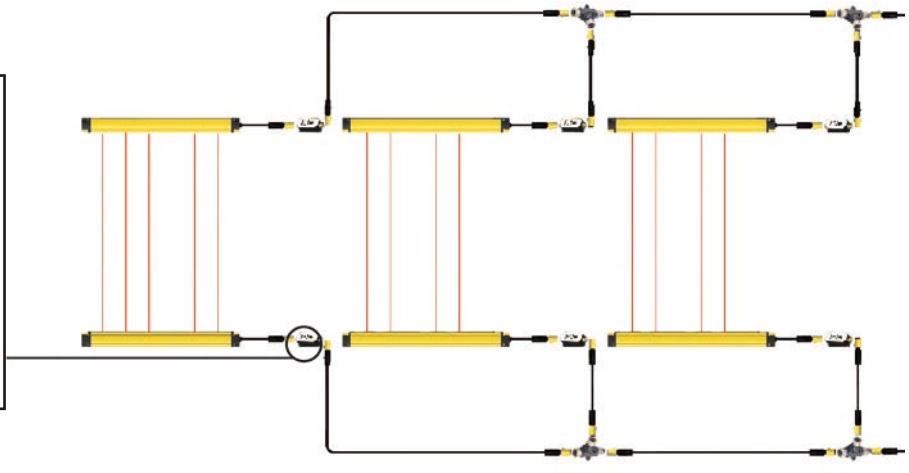
Installation Accessories (Optional)

Connection cable	Transmitter, Receiver: CO-M12-2000E-5GF, 2 m, PVC, M12, 5pin
	Transmitter, Receiver: CO-M12-5000E-5GF, 5 m, PVC, M12, 5 pin
	Transmitter, Receiver: CO-M12-10000E-5GF, 10 m, PVC, M12, 5 pin
	Transmitter, Receiver: CO-M12-15000E-5GF, 15 m, PVC, M12, 5 pin
	Transmitter, Receiver: CO-M12-20000E-5GF, 20 m, PVC, M12, 5 pin
	Transmitter, Receiver: CO-M12-25000E-5GF, 25 m, PVC, M12, 5pin
	Transmitter, Receiver: CO-M12-30000E-5GF, 30 m, PVC, M12, 5 pin
	Transmitter, Receiver: CO-M12-35000E-5GF, 35 m, PVC, M12, 5 pin
	Transmitter, Receiver: CO-M12-40000E-5GF, 40 m, PVC, M12, 5 pin
Bracket	BT - VC, 1 piece
	BT - VCS, 1 set, contains 4 pieces

Cascade Scheme

The cascade uses a split design, on the basis of the SE4 safety grating,
add an external cascade controller, after configuration, it can be used in cascade.

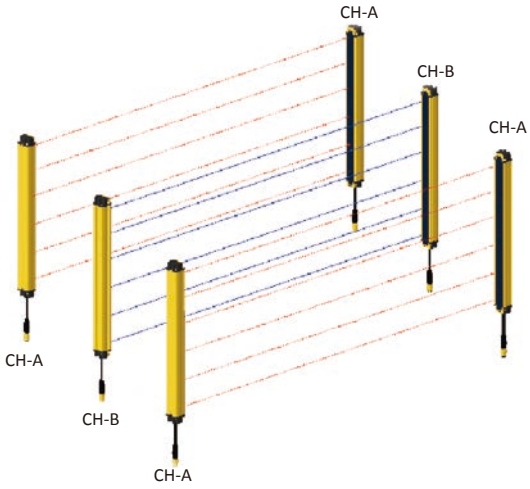
Cascade controller



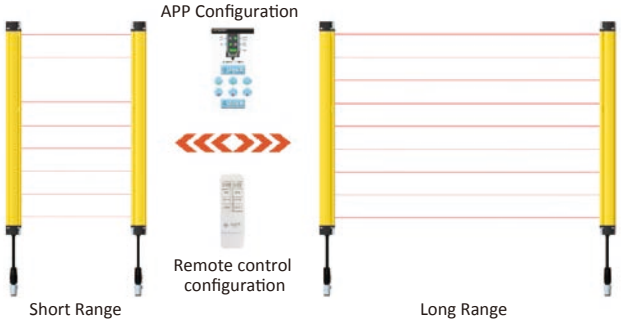
Fully support large and complex scenes, unified scheduling protection, and establish a reliable protection network.

Flexible Configuration

The optical communication channel contains A and B dual-band, which effectively avoids the problem of homologous optical interference between devices.

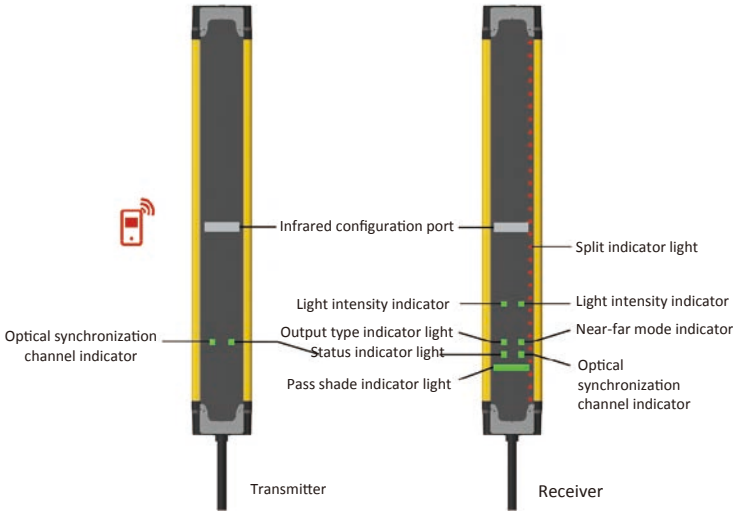


According to the actual scene, the grating far and near range mode is selected, and the sensitivity is freely adjusted to escort the safety production.



The product is equipped with standard infrared Settings, PNP/NPN output mode is set by one key, compatible with all kinds of equipment, eliminating the trouble of selection, and ready to use.

Beam split display, quick identification of shading, misalignment area.
Visual display of light intensity, equipment status at a glance.



Safety Light Curtain SC4

Product Description

- Robust Painted aluminium housing
- TYPE4
- Multiple specifications series 150 ... 1800 mm
- EDM function optional
- Automatic/manual reset function optional
- Anti-interference function
- 7-segment LED displays operation status

SC4 Model Selection Table (Automatic/manual reset)

Model	Function	Resolution	Protective field height	Range
SC4P14-150E	Transmitter + Receiver	14	150 mm	0.2 ... 6 m
SC4P14-300E	Transmitter + Receiver	14	300 mm	0.2 ... 6 m
SC4P14-450E	Transmitter + Receiver	14	450 mm	0.2 ... 6 m
SC4P14-600E	Transmitter + Receiver	14	600 mm	0.2 ... 6 m
SC4P14-750E	Transmitter + Receiver	14	750 mm	0.2 ... 6 m
SC4P14-900E	Transmitter + Receiver	14	900 mm	0.2 ... 6 m
SC4P14-1050E	Transmitter + Receiver	14	1050 mm	0.2 ... 6 m
SC4P14-1200E	Transmitter + Receiver	14	1200 mm	0.2 ... 6 m
SC4P14-1350E	Transmitter + Receiver	14	1350 mm	0.2 ... 6 m
SC4P14-1500E	Transmitter + Receiver	14	1500 mm	0.2 ... 6 m
SC4P14-1650E	Transmitter + Receiver	14	1650 mm	0.2 ... 6 m
SC4P14-1800E	Transmitter + Receiver	14	1800 mm	0.2 ... 6 m
SC4P30-150E	Transmitter + Receiver	30	150 mm	0.2 ... 19 m
SC4P30-300E	Transmitter + Receiver	30	300 mm	0.2 ... 19 m
SC4P30-450E	Transmitter + Receiver	30	450 mm	0.2 ... 19 m
SC4P30-600E	Transmitter + Receiver	30	600 mm	0.2 ... 19 m
SC4P30-750E	Transmitter + Receiver	30	750 mm	0.2 ... 19 m
SC4P30-900E	Transmitter + Receiver	30	900 mm	0.2 ... 19 m
SC4P30-1050E	Transmitter + Receiver	30	1050 mm	0.2 ... 19 m
SC4P30-1200E	Transmitter + Receiver	30	1200 mm	0.2 ... 19 m
SC4P30-1350E	Transmitter + Receiver	30	1350 mm	0.2 ... 19 m
SC4P30-1500E	Transmitter + Receiver	30	1500 mm	0.2 ... 19 m
SC4P30-1650E	Transmitter + Receiver	30	1650 mm	0.2 ... 19 m
SC4P30-1800E	Transmitter + Receiver	30	1800 mm	0.2 ... 19 m

SC4 Model Selection Table (Automatic reset)

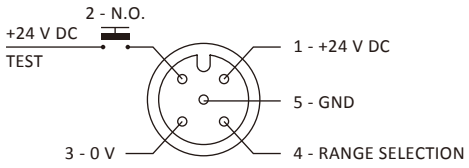
Model	Function	Resolution	Protective field height	Range
SC4P14-150	Transmitter + Receiver	14	150 mm	0.2 ... 6 m
SC4P14-300	Transmitter + Receiver	14	300 mm	0.2 ... 6 m
SC4P14-450	Transmitter + Receiver	14	450 mm	0.2 ... 6 m
SC4P14-600	Transmitter + Receiver	14	600 mm	0.2 ... 6 m
SC4P14-750	Transmitter + Receiver	14	750 mm	0.2 ... 6 m
SC4P14-900	Transmitter + Receiver	14	900 mm	0.2 ... 6 m
SC4P14-1050	Transmitter + Receiver	14	1050 mm	0.2 ... 6 m
SC4P14-1200	Transmitter + Receiver	14	1200 mm	0.2 ... 6 m
SC4P14-1350	Transmitter + Receiver	14	1350 mm	0.2 ... 6 m
SC4P14-1500	Transmitter + Receiver	14	1500 mm	0.2 ... 6 m
SC4P14-1650	Transmitter + Receiver	14	1650 mm	0.2 ... 6 m
SC4P14-1800	Transmitter + Receiver	14	1800 mm	0.2 ... 6 m
SC4P30-150	Transmitter + Receiver	30	150 mm	0.2 ... 19 m
SC4P30-300	Transmitter + Receiver	30	300 mm	0.2 ... 19 m
SC4P30-450	Transmitter + Receiver	30	450 mm	0.2 ... 19 m
SC4P30-600	Transmitter + Receiver	30	600 mm	0.2 ... 19 m
SC4P30-750	Transmitter + Receiver	30	750 mm	0.2 ... 19 m
SC4P30-900	Transmitter + Receiver	30	900 mm	0.2 ... 19 m
SC4P30-1050	Transmitter + Receiver	30	1050 mm	0.2 ... 19 m
SC4P30-1200	Transmitter + Receiver	30	1200 mm	0.2 ... 19 m
SC4P30-1350	Transmitter + Receiver	30	1350 mm	0.2 ... 19 m
SC4P30-1500	Transmitter + Receiver	30	1500 mm	0.2 ... 19 m
SC4P30-1650	Transmitter + Receiver	30	1650 mm	0.2 ... 19 m
SC4P30-1800	Transmitter + Receiver	30	1800 mm	0.2 ... 19 m

Technical Parameters

Safety classification	Conforms to Type4 as defined by EN, IEC 61496-1/pr IEC 61496-2
Response time	SC4P14: 11 ... 50 ms; SC4P30: 11 ... 28 ms
Operating distance	0.2 ... 19 m
Supply voltage	+24 V DC (±20%)
Consumption	SC4P14: Max. 2.5 W (Transmitter); Max. 4 W (Receiver)
	SC4P30: Max. 2.5 W (Transmitter); Max. 3.5 W (Receiver)
Output mode	2 × PNP, Max. 0.5 A
Connection method	M12, 5 pin (Transmitter); M12, 8 pin (Receiver)
Connection cable length	Max. 50 m
Protection degree	IP65
Ambient temperature	0 ... +55 °C
Storage temperature	-25 ... +70 °C
Size	Cross section: 32.3 × 36.9 mm
Vibrations	Width 0.35 mm Frequency 10 ... 55 Hz, 20 sweep per axis, 1 octave/min (EN60068-2-6)
Shock resistance	16 ms (10 G) 1,000 shocks per axis (EN60068-2-29)
Housing material	Painted aluminium (Yellow RAL 1003)
Front side material	PMMA
Caps materia	PC MAKROLON
Weight	1.3 kg/m

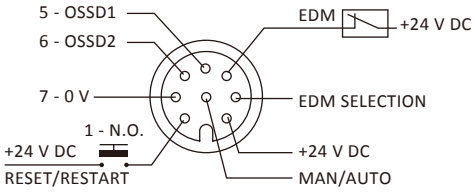
Electrical Connection Diagram

Automatic/manual reset



Transmitter

Pin	Color	Function
1	brown	+24 V DC
2	white	TEST
3	blue	0 V
4	black	RANGE SELECTION
5	grey	GND

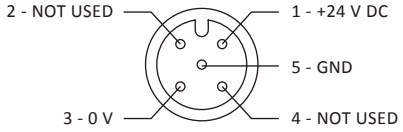


Receiver

Pin	Color	Function
1	white	RESET/RESTART
2	brown	+24 V DC
3	green	EDM SELECTION
4	yellow	EDM
5	grey	OSSD1
6	pink	OSSD2
7	blue	0 V
8	red	MANUAL/AUTOMATIC SELECTION

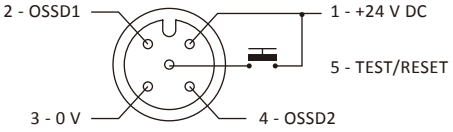
Note: Pin 8 and pin 6 connected together are suitable for manual reset
Pin 8 and pin 5 connected together are suitable for automatic reset

Automatic l reset



Transmitter

Pin	Color	Function
1	brown	+24 V DC
2	white	N.C.
3	blue	0V
4	black	N.C.
5	grey	GND

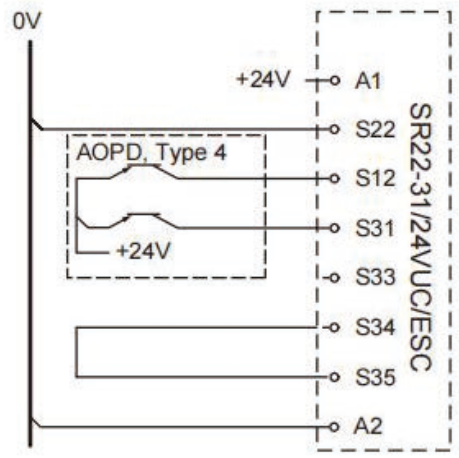


Receiver

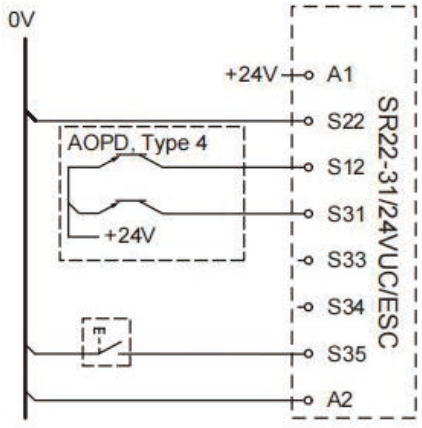
Pin	Color	Function
1	brown	+24 V DC
2	white	OSSD1
3	blue	0 V
4	black	OSSD2
5	grey	TEST/RESET

Electrical Connection Diagram

Automatic/manual reset



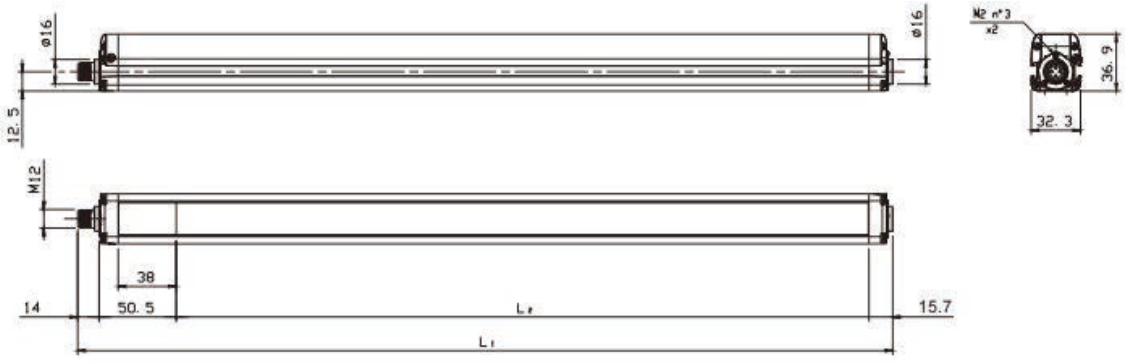
Automatic Start



Monitored Start

Mechanical Diagram

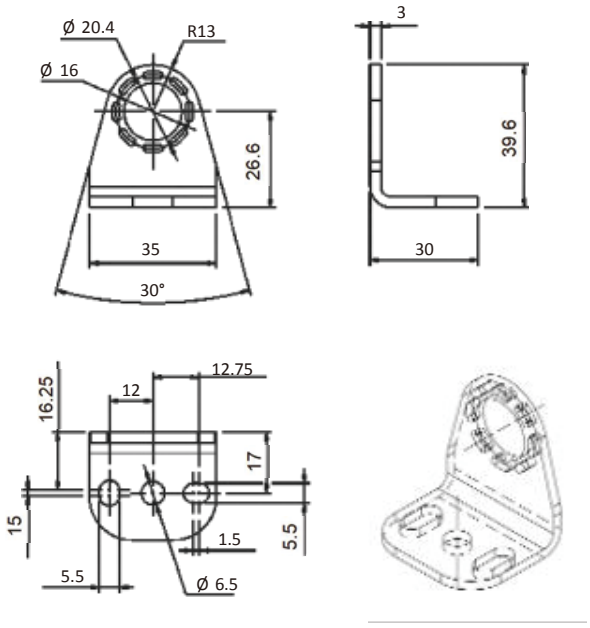
SC Series



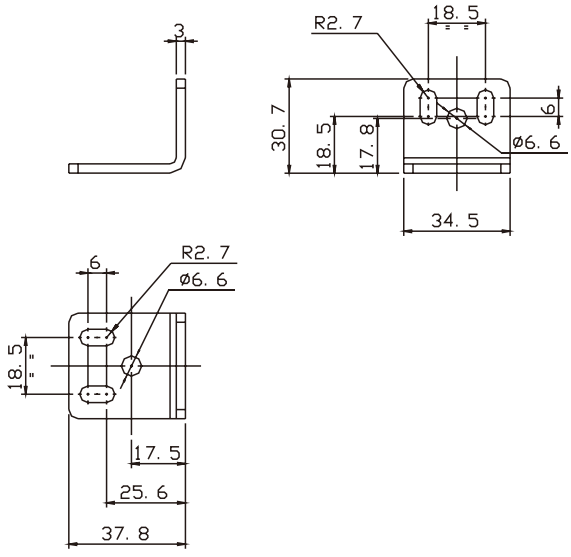
L2 = Protective field height
L1 = L2 + 14 mm + 50.5 mm + 15.7 mm

Accessories

360°Rotationbracketsizediagram



Mountingbracketsizediagram



Accessories

	Type	Description
Bracket	ST-K4ROT	Top-Bottom rotating fixing brackets (4 pc kit)
	ST-KSTD	Angled fixing brackets (4 pc kit)
	ST-K4AV	Anti-vibration supports (4 pc kit)
Cable, 5-core, for transmitter and receiver (Automatic reset)		
	CB-M12-3000E-5GF	M12 5-pin (straight plug) with 3m cable
	CB-M12-5000E-5GF	M12 5-pin (straight plug) with 5m cable
	CB-M12-10000E-5GF	M12 5-pin (straight plug) with 10m cable
	CB-M12-15000E-5GF	M12 5-pin (straight plug) with 15m cable
	CB-M12-25000E-5GF	M12 5-pin (straight plug) with 25m cable
Cable, 8-core, for receiver (Automatic / Manual reset)		
	CB-M12-3000E-8GF	M12 8-pin (straight plug) with 3m cable
	CB-M12-5000E-8GF	M12 8-pin (straight plug) with 5m cable
	CB-M12-10000E-8GF	M12 8-pin (straight plug) with 10m cable
	CB-M12-15000E-8GF	M12 8-pin (straight plug) with 15m cable
	CB-M12-25000E-8GF	M12 8-pin (straight plug) with 25m cable

Safety Light Curtain SC4D30

Product Description

- Robust Painted aluminium housing
- TYPE4
- Multiple specifications series 150...1800mm
- EDM function optional
- Automatic/manual reset function optional
- LED shows the operation status of the light curtain

Level 4 Safety Light Curtain
Model Selection Table (Automatic + Manual Reset)

Model	Function	Protective field height	Resolution	Range
SC4D30-150E	Transmitter + Receiver	150 mm	30 mm	Max. 20 m
SC4D30-300E	Transmitter + Receiver	300 mm	30 mm	Max. 20 m
SC4D30-450E	Transmitter + Receiver	450 mm	30 mm	Max. 20 m
SC4D30-600E	Transmitter + Receiver	600 mm	30 mm	Max. 20 m
SC4D30-750E	Transmitter + Receiver	750 mm	30 mm	Max. 20 m
SC4D30-900E	Transmitter + Receiver	900 mm	30 mm	Max. 20 m

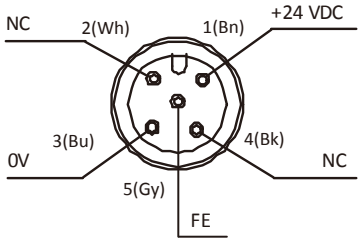
Technical Parameters

Applications	Hand level protection
Resolution	30 mm
Operating distance	0.2-20 m
Protective field height	150 / 300 / 450 / 600 / 750 / 900 mm
Synchronization	Optical synchronization between the transmitter and receiver
Supply voltage	24 V DC±20%
Maximum current consumption	Transmitter -100 mA; Receiver -200 mA
Maximum current load	500 mA
Response time	150 mm (9 ms) / 300 mm (11 ms)
	450 mm (13 ms) / 600 mm (16 ms)
	750 mm (18 ms) / 900 mm (21 ms)
Ambient temperature	-10 ... +55 °C
Storage temperature	-25 ... +70 °C
Protection degree	IP65

Safety Light Curtain SC4D30

Electrical Connection Diagram

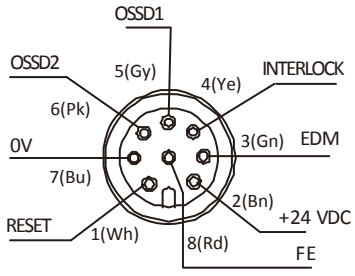
Transmitter (TX)



Pin	Transmitter	Color
1	24VDC	brown
2	NC	white
3	0V	blue
4	NC	black
5	PE Function grounding, shielding	gray

Notes:
Follow the rules for the use of the equipment!
• This product can only be put into operation by professionals.
• Please use this product only for its proper purpose.

Receiver (RX)



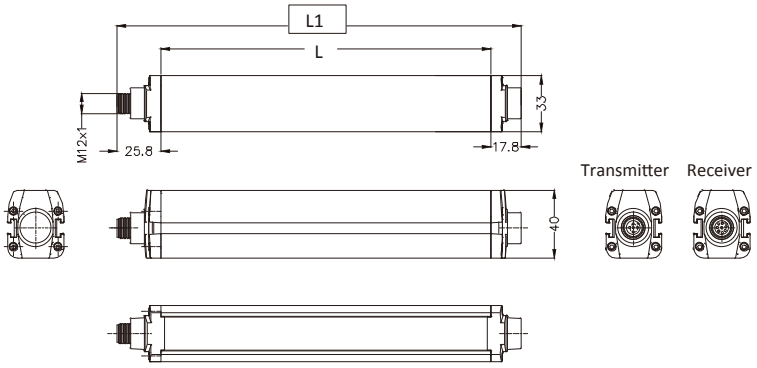
Pin	Receiver	Color
1	Reset, interlock status valid, high valid	white
2	24 V DC	brown
3	External Device Monitoring (EDM) control input: 24 V DC: NOT EDM 0V: With EDM and closed feedback loop High resistance: with EDM and disconnected feedback loop	green
4	Interlocking device control input: 24V: with interlocking OSSD1: without interlocking	yellow
5	OSSD1 safety switch output	gray
6	OSSD2 safety switch output	pink
7	0V	blue
8	PE Function grounding, shielding	red

Display

Transmitter LED	Display	Notes
1	Green light always bright	Power on the device
	Shut down	Power off the device

Receiver LED	Display	Notes
1	Green light always bright	OSSD open
2	Red light always bright	OSSD close
3	Yellow light always bright	OSSD close, Interlock lock state
4	7 LED display digital, 1 green light always bright	Signal strength 1~10 A
	7 LED display code, the rest of the lights go out	Error

Mechanical Diagram



No.	Height	L(mm)	L1(mm)
1	150	193.7	237.3
2	300	343.8	387.4
3	450	493.9	537.5
4	600	644	687.6
5	750	794	837.7
6	900	944	987.7

Accessories (Cable/safety Relay Optional)

Connection cable

Transmitter: CO-M12-2000E-5GF, 2 m	Receiver: CO-M12-2000E-8GF, 2 m
Transmitter: CO-M12-5000E-5GF, 5 m	Receiver: CO-M12-5000E-8GF, 5 m
Transmitter: CO-M12-10000E-5GF, 10 m	Receiver: CO-M12-10000E-8GF, 10 m
Transmitter: CO-M12-15000E-5GF, 15 m	Receiver: CO-M12-15000E-8GF, 15 m
Transmitter: CO-M12-25000E-5GF, 25 m	Receiver: CO-M12-25000E-8GF, 25 m

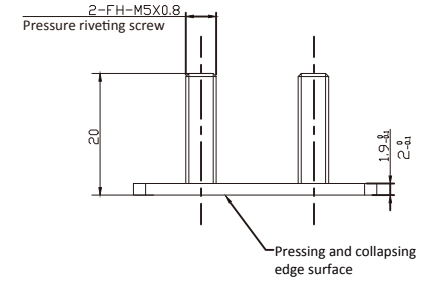
Safety relay module: SR22-31/24VUC/ESC

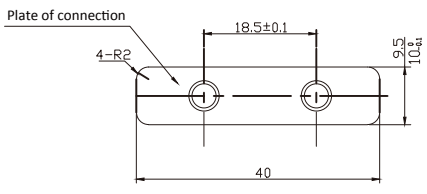
Accessories (Support Frame Standard)

Mounting bracket (Fixed type): SCB-FM1 (Standard)

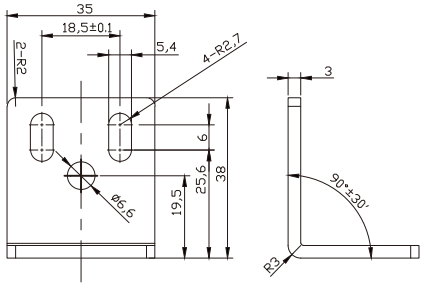
Mounting bracket (SCB-FM1)

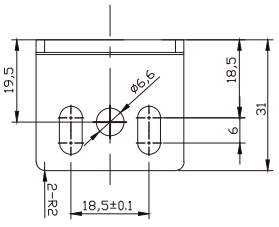
Connecting plate group





Right Angle bracket





Safety Light Curtain SC2

Product Description

- Robust Painted aluminium housing
- TYPE2
- Multiple specifications series 150 ... 1800 mm
- EDM function optional
- Automatic/manual reset function optional
- Anti-interference function
- 7-segment LED displays operation status

SC2 Model Selection Table (Automatic reset)

Type	Function	Protective field height	Resolution	Range
SC2P30-150	Transmitter + Receiver	150 mm	30	0.2 ... 19 m
SC2P30-300	Transmitter + Receiver	300 mm	30	0.2 ... 19 m
SC2P30-450	Transmitter + Receiver	450 mm	30	0.2 ... 19 m
SC2P30-600	Transmitter + Receiver	600 mm	30	0.2 ... 19 m
SC2P30-750	Transmitter + Receiver	750 mm	30	0.2 ... 19 m
SC2P30-900	Transmitter + Receiver	900 mm	30	0.2 ... 19 m
SC2P30-1050	Transmitter + Receiver	1050 mm	30	0.2 ... 19 m
SC2P30-1200	Transmitter + Receiver	1200 mm	30	0.2 ... 19 m
SC2P30-1350	Transmitter + Receiver	1350 mm	30	0.2 ... 19 m
SC2P30-1500	Transmitter + Receiver	1500 mm	30	0.2 ... 19 m
SC2P30-1650	Transmitter + Receiver	1650 mm	30	0.2 ... 19 m
SC2P30-1800	Transmitter + Receiver	1800 mm	30	0.2 ... 19 m
SC2P50-300	Transmitter + Receiver	300 mm	50	0.2 ... 19 m
SC2P50-450	Transmitter + Receiver	450 mm	50	0.2 ... 19 m
SC2P50-600	Transmitter + Receiver	600 mm	50	0.2 ... 19 m
SC2P50-750	Transmitter + Receiver	750 mm	50	0.2 ... 19 m
SC2P50-900	Transmitter + Receiver	900 mm	50	0.2 ... 19 m
SC2P50-1050	Transmitter + Receiver	1050 mm	50	0.2 ... 19 m
SC2P50-1200	Transmitter + Receiver	1200 mm	50	0.2 ... 19 m
SC2P50-1350	Transmitter + Receiver	1350 mm	50	0.2 ... 19 m
SC2P50-1500	Transmitter + Receiver	1500 mm	50	0.2 ... 19 m
SC2P50-1650	Transmitter + Receiver	1650 mm	50	0.2 ... 19 m
SC2P50-1800	Transmitter + Receiver	1800 mm	50	0.2 ... 19 m
SC2P90-300	Transmitter + Receiver	300 mm	90	0.2 ... 19 m
SC2P90-450	Transmitter + Receiver	450 mm	90	0.2 ... 19 m
SC2P90-600	Transmitter + Receiver	600 mm	90	0.2 ... 19 m
SC2P90-750	Transmitter + Receiver	750 mm	90	0.2 ... 19 m
SC2P90-900	Transmitter + Receiver	900 mm	90	0.2 ... 19 m
SC2P90-1050	Transmitter + Receiver	1050 mm	90	0.2 ... 19 m
SC2P90-1200	Transmitter + Receiver	1200 mm	90	0.2 ... 19 m
SC2P90-1350	Transmitter + Receiver	1350 mm	90	0.2 ... 19 m
SC2P90-1500	Transmitter + Receiver	1500 mm	90	0.2 ... 19 m
SC2P90-1650	Transmitter + Receiver	1650 mm	90	0.2 ... 19 m
SC2P90-1800	Transmitter + Receiver	1800 mm	90	0.2 ... 19 m

SC2 Model Selection Table (Automatic/manual reset)

Type	Function	Protective field height	Resolution	Range
SC2P30-150E	Transmitter + Receiver	150 mm	30	0.2 ... 19 m
SC2P30-300E	Transmitter + Receiver	300 mm	30	0.2 ... 19 m
SC2P30-450E	Transmitter + Receiver	450 mm	30	0.2 ... 19 m
SC2P30-600E	Transmitter + Receiver	600 mm	30	0.2 ... 19 m
SC2P30-750E	Transmitter + Receiver	750 mm	30	0.2 ... 19 m
SC2P30-900E	Transmitter + Receiver	900 mm	30	0.2 ... 19 m
SC2P30-1050E	Transmitter + Receiver	1050 mm	30	0.2 ... 19 m
SC2P30-1200E	Transmitter + Receiver	1200 mm	30	0.2 ... 19 m
SC2P30-1350E	Transmitter + Receiver	1350 mm	30	0.2 ... 19 m
SC2P30-1500E	Transmitter + Receiver	1500 mm	30	0.2 ... 19 m
SC2P30-1650E	Transmitter + Receiver	1650 mm	30	0.2 ... 19 m
SC2P30-1800E	Transmitter + Receiver	1800 mm	30	0.2 ... 19 m
SC2P50-300E	Transmitter + Receiver	300 mm	50	0.2 ... 19 m
SC2P50-450E	Transmitter + Receiver	450 mm	50	0.2 ... 19 m
SC2P50-600E	Transmitter + Receiver	600 mm	50	0.2 ... 19 m
SC2P50-750E	Transmitter + Receiver	750 mm	50	0.2 ... 19 m
SC2P50-900E	Transmitter + Receiver	900 mm	50	0.2 ... 19 m
SC2P50-1050E	Transmitter + Receiver	1050 mm	50	0.2 ... 19 m
SC2P50-1200E	Transmitter + Receiver	1200 mm	50	0.2 ... 19 m
SC2P50-1350E	Transmitter + Receiver	1350 mm	50	0.2 ... 19 m
SC2P50-1500E	Transmitter + Receiver	1500 mm	50	0.2 ... 19 m
SC2P50-1650E	Transmitter + Receiver	1650 mm	50	0.2 ... 19 m
SC2P50-1800E	Transmitter + Receiver	1800 mm	50	0.2 ... 19 m
SC2P90-300E	Transmitter + Receiver	300 mm	90	0.2 ... 19 m
SC2P90-450E	Transmitter + Receiver	450 mm	90	0.2 ... 19 m
SC2P90-600E	Transmitter + Receiver	600 mm	90	0.2 ... 19 m
SC2P90-750E	Transmitter + Receiver	750 mm	90	0.2 ... 19 m
SC2P90-900E	Transmitter + Receiver	900 mm	90	0.2 ... 19 m
SC2P90-1050E	Transmitter + Receiver	1050 mm	90	0.2 ... 19 m
SC2P90-1200E	Transmitter + Receiver	1200 mm	90	0.2 ... 19 m
SC2P90-1350E	Transmitter + Receiver	1350 mm	90	0.2 ... 19 m
SC2P90-1500E	Transmitter + Receiver	1500 mm	90	0.2 ... 19 m
SC2P90-1650E	Transmitter + Receiver	1650 mm	90	0.2 ... 19 m
SC2P90-1800E	Transmitter + Receiver	1800 mm	90	0.2 ... 19 m

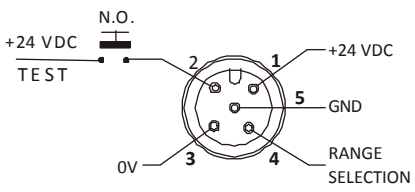
Technical Parameters

Safety classification	Complying with type 2 of IEC/EN61496;
	Complying with SIL2 of IEC 61508
Response time	9 ... 24 ms
Operating distance	0.2 ... 19 m
Supply voltage	+24 V DC (±20%)
Consumption	Max. 2 W (Transmitter); Max. 3 W (Receiver)
Output mode	2 × PNP; Max. 0.5 A
Connection	M12, 5 pin(Transmitter); M12, 8 pin (Receiver)
Connection cable length	Max. 50 m
Protection degree	IP65
Ambient temperature	0 ... +55 °C
Storage temperature	-25 ... +70 °C
Size Cross section	32.3 × 36.9 mm
Vibrations	Width 0.35 mm Frequency 10-55 Hz, 20 sweep per axis, 1 octave/min (EN60068-2-6)
Shock resistance	16 ms (10 G) 1,000 shocks per axis (EN60068-2-29)
Housing material	Painted aluminium (Yellow RAL 1003)
Front side material	PMMA
Caps material	PC MAKROLON
Weight	1.3 kg/m

Electrical Connection Diagram

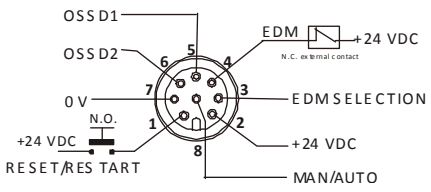
Automatic/manual reset

Transmitter



Pin	Color	Function
1	brown	+24V DC
2	white	TEST
3	blue	0V
4	black	RANGE SELECTION
5	grey	GND

Receiver



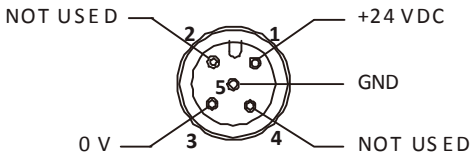
Pin	Color	Function
1	white	RESET/RESTART
2	brown	+24V DC
3	green	EDM SELECTION
4	yellow	EDM
5	grey	OSSD1
6	pink	OSSD2
7	blue	0V
8	red	MANUAL/AUTOMATIC SELECTION

Notes:
Pin 8 and pin 6 connected together are suitable for manual reset
Pin 8 and pin 5 connected together are suitable for automatic reset

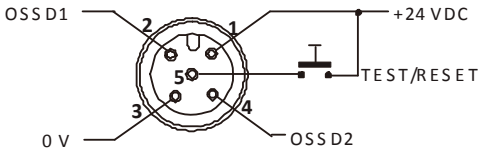
Electrical Connection Diagram

Automatic reset

Transmitter



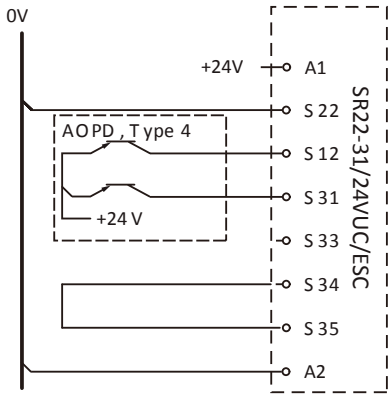
Receiver



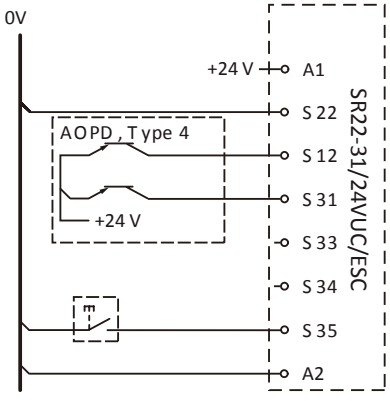
Pin	Color	Function
1	brown	+24 V DC
2	white	N.C.
3	blue	0 V
4	black	N.C.
5	grey	GND

Pin	Color	Function
1	brown	+24V DC
2	white	OSSD1
3	blue	0V
4	black	OSSD2
5	grey	TEST/RESET

Electrical Connection Diagram Of Safety Relay



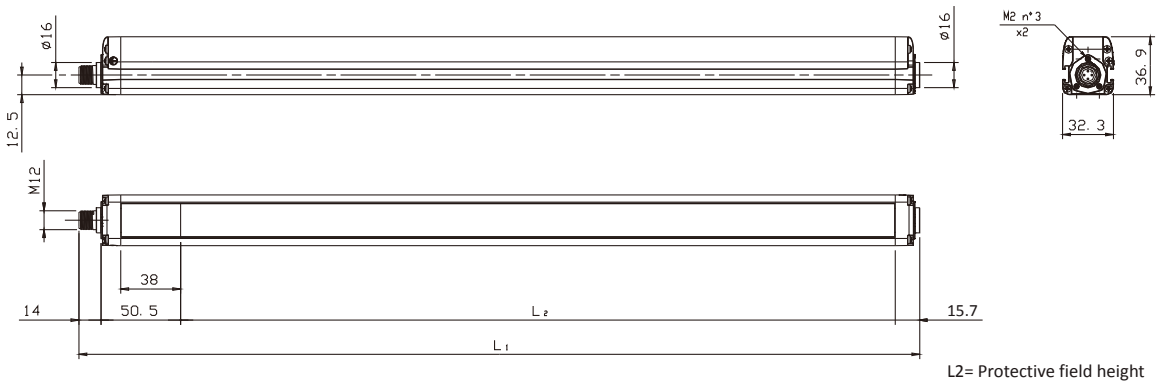
Automatic Start



Monitored Start

Mechanical Diagram

SC Series

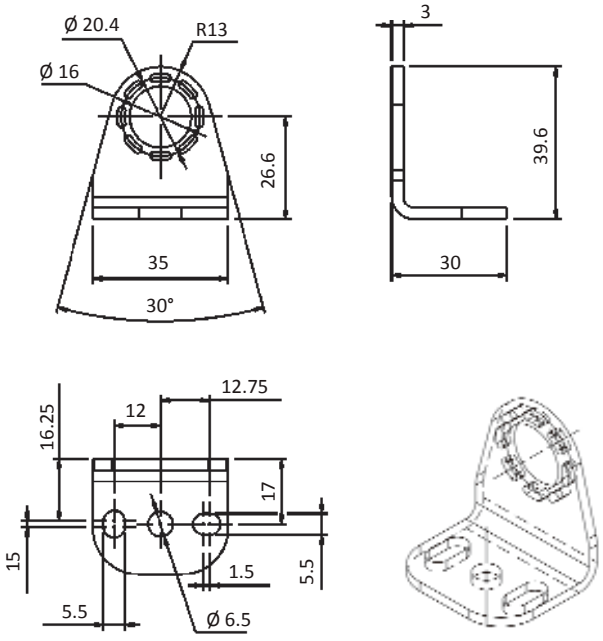


L2= Protective field height

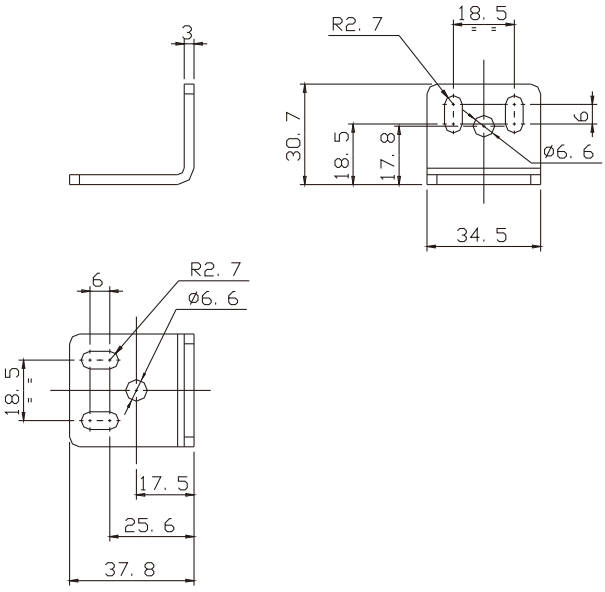
L1= L2+14mm+50.5mm+15.7mm

Accessories

360° Rotation bracket size diagram



Mounting bracket size diagram



Accessories

	Type	Description
Bracket	ST-K4ROT	Top-Bottom rotating fixing brackets (4 pc kit)
	ST-KSTD	Angled fixing brackets (4 pc kit)
	ST-K4AV	Anti-vibration supports (4 pc kit)
Cable, 5-core, for transmitter and receiver (Automatic reset)		
	CB-M12-3000E-5GF	M12 5-pin (straight plug) with 3m cable
	CB-M12-5000E-5GF	M12 5-pin (straight plug) with 5m cable
	CB-M12-10000E-5GF	M12 5-pin (straight plug) with 10m cable
	CB-M12-15000E-5GF	M12 5-pin (straight plug) with 15m cable
	CB-M12-25000E-5GF	M12 5-pin (straight plug) with 25m cable
Cable, 8-core, for receiver (Automatic / Manual reset)		
	CB-M12-3000E-8GF	M12 8-pin (straight plug) with 3m cable
	CB-M12-5000E-8GF	M12 8-pin (straight plug) with 5m cable
	CB-M12-10000E-8GF	M12 8-pin (straight plug) with 10m cable
	CB-M12-15000E-8GF	M12 8-pin (straight plug) with 15m cable
	CB-M12-25000E-8GF	M12 8-pin (straight plug) with 25m cable

Safety Light Curtain ST2

Product Description

- Robust Painted aluminium housing
- TYPE 2
- Multiple specifications series 150... 1800mm
- Fast response time
- Automatic reset function
- Special optical communication system, strong anti-interference ability

Model Selection Table

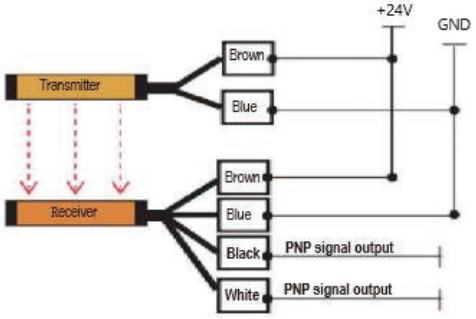
Type	Function	Protective field height	Product overall height	Resolution	Optical axis quantity	Range
ST2P30-150	Transmitter + Receiver	140	184	30	8	0 ... 6 m
ST2P30-200	Transmitter + Receiver	180	224	30	10	0 ... 6 m
ST2P30-300	Transmitter + Receiver	300	344	30	16	0 ... 6 m
ST2P30-450	Transmitter + Receiver	460	504	30	24	0 ... 6 m
ST2P30-600	Transmitter + Receiver	580	624	30	30	0 ... 6 m
ST2P30-750	Transmitter + Receiver	740	784	30	38	0 ... 6 m
ST2P30-900	Transmitter + Receiver	900	944	30	46	0 ... 6 m
ST2P30-1050	Transmitter + Receiver	1060	1104	30	54	0 ... 6 m
ST2P30-1200	Transmitter + Receiver	1180	1224	30	60	0 ... 6 m
ST2P30-1350	Transmitter + Receiver	1340	1384	30	68	0 ... 6 m
ST2P30-1500	Transmitter + Receiver	1500	1544	30	76	0 ... 6 m
ST2P30-1650	Transmitter + Receiver	1660	1704	30	84	0 ... 6 m
ST2P30-1800	Transmitter + Receiver	1780	1824	30	90	0 ... 6 m
ST2P50-150	Transmitter + Receiver	160	184	50	5	0 ... 6 m
ST2P50-200	Transmitter + Receiver	200	264	50	6	0 ... 6 m
ST2P50-300	Transmitter + Receiver	280	344	50	8	0 ... 6 m
ST2P50-450	Transmitter + Receiver	450	504	50	12	0 ... 6 m
ST2P50-500	Transmitter + Receiver	520	584	50	14	0 ... 6 m
ST2P50-600	Transmitter + Receiver	600	664	50	16	0 ... 6 m
ST2P50-750	Transmitter + Receiver	760	824	50	20	0 ... 6 m
ST2P50-900	Transmitter + Receiver	920	984	50	24	0 ... 6 m
ST2P50-1050	Transmitter + Receiver	1080	1144	50	28	0 ... 6 m
ST2P50-1200	Transmitter + Receiver	1240	1304	50	32	0 ... 6 m
ST2P50-1350	Transmitter + Receiver	1320	1384	50	34	0 ... 6 m
ST2P50-1500	Transmitter + Receiver	1480	1544	50	38	0 ... 6 m
ST2P50-1650	Transmitter + Receiver	1640	1704	50	42	0 ... 6 m
ST2P50-1800	Transmitter + Receiver	1800	1864	50	46	0 ... 6 m

Technical Parameters

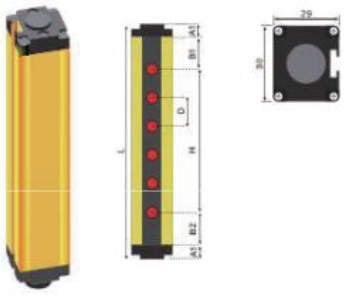
Series of products	General purpose type
Cross section	29 × 30 mm
Resolution	30 mm (20 mm Optical axis spacing) / 50 mm (40mm Optical axis spacing)
Optical axis quantity	4, 6, 8, 10 ... 256
Protective field height	Optical axis spacing * (Optical axis quantity-1)
Operating distance	0.2 ... 6 m
Supply voltage	24 V±10%
Consumption	3 ... 8 W
Response time	≤ 10 ms
Resistance of insulation	≥ 100 MΩ
Output mode	PNP
Ambient temperature	-10 ... +55 °C
Storage temperature	-40 ... +70 °C
Ambient humidity	35%RH-85%RH
Resistance to light interference	10000 Lux
Light curtain form	Type of projectile, optical synchronization and line synchronization optional
Protection degree	IP65
Safety classification	CE / FCC / EMC / REACH / SIL3 / TYPE2
Circuit protection	Reverse connection protection / output short circuit protection

Electrical Connection Diagram

Optical synchronization



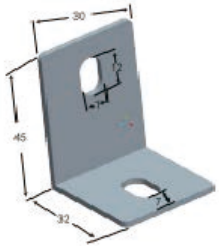
Mechanical Diagram



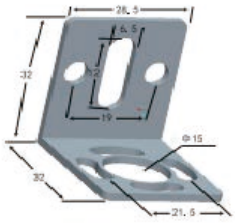
A1: End cover

B1: Upper blind spot	A1=12 mm
B2: Lower blind spot	B1=1/2 Optical axis spacing
D: Optical axis spacing	B2=1/2 Optical axis spacing
H: Protective field height	H=(Optical axis quantity-1) * Optical axis spacing
L: Product overall height	L= Optical axis quantity * Optical axis spacing +24mm

Accessories



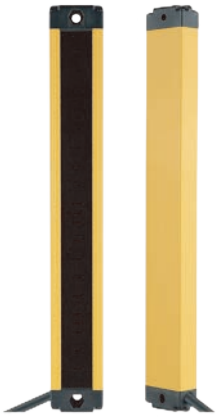
BT-L
Side mounted bracket



BT-E
Upper and lower mounted bracket

	Type	Description
Bracket	BT-LS (Set)	Side mounted bracket, (4 pc kit)
	BT-ES (Set)	Upper and lower mounted bracket, (4 pc kit)
Cable, for transmitter	CT-M12-2000E-2GF	M12, 2-pin, 2m, Aviationplug
	CT-M12-3000E-2GF	M12, 2-pin, 3 m, Aviation plug
	CT-M12-5000E-2GF	M12, 2-pin, 5 m, Aviation plug
	CT-M12-10000E-2GF	M12, 2-pin, 10 m, Aviation plug
	CT-M12-15000E-2GF	M12, 2-pin, 15 m, Aviation plug
	CT-M12-25000E-2GF	M12, 2-pin, 25 m, Aviation plug
Cable, for receiver		
	CT-M12-2000E-4GF	M12, 4-pin, 2 m, Aviation plug
	CT-M12-3000E-4GF	M12, 4-pin, 3 m, Aviation plug
	CT-M12-5000E-4GF	M12, 4-pin, 5 m, Aviation plug
	CT-M12-10000E-4GF	M12, 4-pin, 10 m, Aviation plug
	CT-M12-15000E-4GF	M12, 4-pin, 15 m, Aviation plug
	CT-M12-25000E-4GF	M12, 4-pin, 25 m, Aviation plug

Safety Light Curtain STF2



Product Description

- Robust Painted aluminium housing
- TYPE 2
- Thin front light, can be installed in narrow space
- No blind zone design
- Excellent synchronous scanning algorithm, high reliability
- Easy installation

Model Selection Table

Type	Function	Protective field height	Product overall height	Resolution	Optical axis quantity	Range
STF2P14-70	Transmitter + Receiver	70	105	14	8	Max. 3 m
STF2P14-110	Transmitter + Receiver	110	145	14	12	Max. 3 m
STF2P14-150	Transmitter + Receiver	150	185	14	16	Max. 3 m
STF2P14-200	Transmitter + Receiver	190	225	14	20	Max. 3 m
STF2P14-230	Transmitter + Receiver	230	265	14	24	Max. 3 m
STF2P14-270	Transmitter + Receiver	270	305	14	28	Max. 3 m
STF2P14-300	Transmitter + Receiver	290	325	14	30	Max. 3 m
STF2P14-310	Transmitter + Receiver	310	345	14	32	Max. 3 m
STF2P14-350	Transmitter + Receiver	350	385	14	36	Max. 3 m
STF2P14-400	Transmitter + Receiver	390	425	14	40	Max. 3 m
STF2P14-450	Transmitter + Receiver	450	486	14	46	Max. 3 m
STF2P14-500	Transmitter + Receiver	490	526	14	50	Max. 3 m
STF2P14- 550	Transmitter + Receiver	550	586	14	56	Max. 3 m
STF2P14-600	Transmitter + Receiver	590	626	14	60	Max. 3 m
STF2P30-150	Transmitter + Receiver	60	105	30	4	Max. 3 m
STF2P30-200	Transmitter + Receiver	140	185	30	8	Max. 3 m
STF2P30-220	Transmitter + Receiver	220	265	30	12	Max. 3 m
STF2P30-300	Transmitter + Receiver	300	345	30	16	Max. 3 m
STF2P30-350	Transmitter + Receiver	340	385	30	18	Max. 3 m
STF2P30-400	Transmitter + Receiver	380	425	30	20	Max. 3 m
STF2P30- 450	Transmitter + Receiver	460	505	30	24	Max. 3 m
STF2P30- 500	Transmitter + Receiver	500	545	30	26	Max. 3 m
STF2P30-600	Transmitter + Receiver	580	625	30	30	Max. 3 m
STF2P30-700	Transmitter + Receiver	700	745	30	36	Max. 3 m
STF2P30-750	Transmitter + Receiver	740	785	30	38	Max. 3 m
STF2P30-900	Transmitter + Receiver	900	946	30	46	Max. 3 m
STF2P30-1050	Transmitter + Receiver	1060	1106	30	54	Max. 3 m
STF2P30-1200	Transmitter + Receiver	1180	1226	30	60	Max. 3 m
STF2P30-1350	Transmitter + Receiver	1340	1386	30	68	Max. 3 m

Safety Light Curtain STF2

Model Selection Table

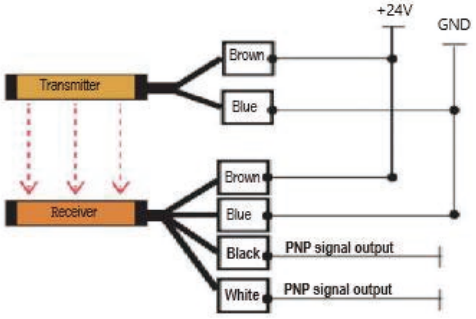
Type	Function	Protective field height	Product overall height	Resolution	Optical axis quantity	Range
STF2P50-150	Transmitter + Receiver	120	185	50	4	Max. 3 m
STF2P50-200	Transmitter + Receiver	200	265	50	6	Max. 3 m
STF2P50-300	Transmitter + Receiver	280	345	50	8	Max. 3 m
STF2P50-350	Transmitter + Receiver	360	425	50	10	Max. 3 m
STF2P50-450	Transmitter + Receiver	440	505	50	12	Max. 3 m
STF2P50-500	Transmitter + Receiver	520	585	50	14	Max. 3 m
STF2P50-600	Transmitter + Receiver	600	665	50	16	Max. 3 m
STF2P50-750	Transmitter + Receiver	760	825	50	20	Max. 3 m
STF2P50-900	Transmitter + Receiver	920	985	50	24	Max. 3 m
STF2P50-1050	Transmitter + Receiver	1080	1145	50	28	Max. 3 m
STF2P50-1200	Transmitter + Receiver	1160	1225	50	30	Max. 3 m
STF2P50-1350	Transmitter + Receiver	1320	1385	50	34	Max. 3 m
STF2P50-1500	Transmitter + Receiver	1480	1545	50	38	Max. 3 m

Technical Parameters

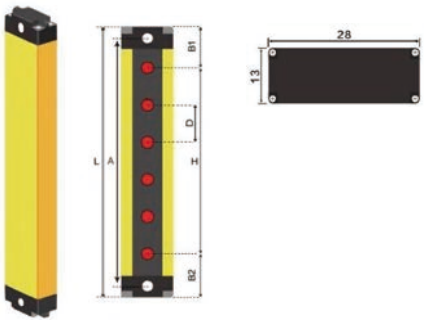
Series of products	Front ultra thin
Cross section	13 × 28 mm
Resolution	14 mm (10 mm) / 30 mm (20 mm) / 50 mm (40 mm) (Optical axis spacing)
Optical axis quantity	4, 6, 8, 10 ... 256
Protective field height	Optical axis spacing * (Optical axis quantity-1)
Operating distance	0.2 ... 3 m
Supply voltage	24 V±10%
Consumption	3 ... 8 W
Response time	≤ 10 ms
Resistance of insulation	≥ 100 MΩ
Output mode	PNP
Ambient temperature	-10 ... +55 °C
Storage temperature	-40 ... +70 °C
Ambient humidity	35%RH-85%RH
Resistance to light interference	10000 Lux
Light curtain form	Type of projectile, optical synchronization and line synchronization optional
Protection degree	IP65
Safety classification	CE / FCC / EMC / REACH / SIL3 / TYPE2
Circuit protection	Reverse connection protection / output short circuit protection

Electrical Connection Diagram

Optical synchronization



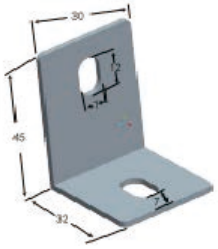
Mechanical Diagram



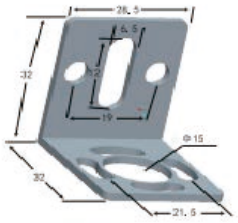
B1 : Upper blind spot
B2: Lower blind spot
D : Optical axis spacing
H : Protective field height
L : Product overall height

B1 = 1/2 Optical axis spacing + 13 mm
B2 = 1/2 Optical axis spacing + 13 mm
L = Optical axis quantity * Optical axis spacing + 26 mm
A = L-12 mm

Accessories



BT-L
Side mounted bracket



BT-E
Upper and lower mounted bracket

	Type	Description
Bracket	BT-LS (Set)	Side mounted bracket, (4 pc kit)
	BT-ES (Set)	Upper and lower mounted bracket, (4 pc kit)
Cable, for transmitter	CT-M12-2000E-2GF	M12, 2-pin, 2m, Aviationplug
	CT-M12-3000E-2GF	M12, 2-pin, 3 m, Aviation plug
	CT-M12-5000E-2GF	M12, 2-pin, 5 m, Aviation plug
	CT-M12-10000E-2GF	M12, 2-pin, 10 m, Aviation plug
	CT-M12-15000E-2GF	M12, 2-pin, 15 m, Aviation plug
	CT-M12-25000E-2GF	M12, 2-pin, 25 m, Aviation plug
Cable, for receiver		
	CT-M12-2000E-4GF	M12, 4-pin, 2 m, Aviation plug
	CT-M12-3000E-4GF	M12, 4-pin, 3 m, Aviation plug
	CT-M12-5000E-4GF	M12, 4-pin, 5 m, Aviation plug
	CT-M12-10000E-4GF	M12, 4-pin, 10 m, Aviation plug
	CT-M12-15000E-4GF	M12, 4-pin, 15 m, Aviation plug
	CT-M12-25000E-4GF	M12, 4-pin, 25 m, Aviation plug

Safety Light Curtain STL2

Product Description

- Robust Painted aluminium housing
- TYPE 2
- Thin side light, can be installed in narrow space
- No blind zone design
- Excellent synchronous scanning algorithm, high reliability
- Easy installation

Model Selection Table

Type	Function	Protective field height	Product overall height	Resolution	Optical axis quantity	Range
STL2P14-70	Transmitter + Receiver	70	105	14	8	Max. 3 m
STL2P14-110	Transmitter + Receiver	110	145	14	12	Max. 3 m
STL2P14-150	Transmitter + Receiver	150	185	14	16	Max. 3 m
STL2P14-200	Transmitter + Receiver	190	225	14	20	Max. 3 m
STL2P14-230	Transmitter + Receiver	230	265	14	24	Max. 3 m
STL2P14-270	Transmitter + Receiver	270	305	14	28	Max. 3 m
STL2P14-300	Transmitter + Receiver	290	325	14	30	Max. 3 m
STL2P14-310	Transmitter + Receiver	310	345	14	32	Max. 3 m
STL2P14-350	Transmitter + Receiver	350	385	14	36	Max. 3 m
STL2P14-400	Transmitter + Receiver	390	425	14	40	Max. 3 m
STL2P14-450	Transmitter + Receiver	450	486	14	46	Max. 3 m
STL2P14-500	Transmitter + Receiver	490	526	14	50	Max. 3 m
STL2P14-550	Transmitter + Receiver	550	586	14	56	Max. 3 m
STL2P14-600	Transmitter + Receiver	590	626	14	60	Max. 3 m
STL2P30-150	Transmitter + Receiver	60	105	30	4	Max. 3 m
STL2P30-200	Transmitter + Receiver	140	185	30	8	Max. 3 m
STL2P30-220	Transmitter + Receiver	220	265	30	12	Max. 3 m
STL2P30-300	Transmitter + Receiver	300	345	30	16	Max. 3 m
STL2P30-350	Transmitter + Receiver	340	385	30	18	Max. 3 m
STL2P30-400	Transmitter + Receiver	380	425	30	20	Max. 3 m
STL2P30- 450	Transmitter + Receiver	460	505	30	24	Max. 3 m
STL2P30- 500	Transmitter + Receiver	500	545	30	26	Max. 3 m
STL2P30-600	Transmitter + Receiver	580	625	30	30	Max. 3 m
STL2P30-700	Transmitter + Receiver	700	745	30	36	Max. 3 m
STL2P30-750	Transmitter + Receiver	740	785	30	38	Max. 3 m
STL2P30-900	Transmitter + Receiver	900	946	30	46	Max. 3 m
STL2P30-1050	Transmitter + Receiver	1060	1106	30	54	Max. 3 m
STL2P30-1200	Transmitter + Receiver	1180	1226	30	60	Max. 3 m
STL2P30-1350	Transmitter + Receiver	1340	1386	30	68	Max. 3 m

Model Selection Table

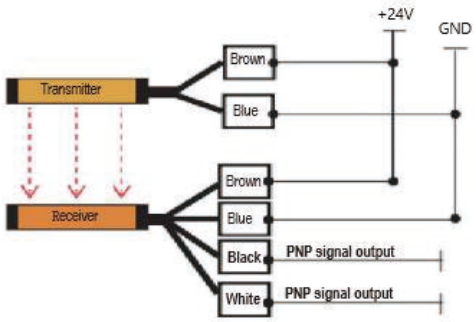
Type	Function	Protective field height	Product overall height	Resolution	Optical axis quantity	Range
STL2P50-150	Transmitter + Receiver	120	185	50	4	Max. 3 m
STL2P50-200	Transmitter + Receiver	200	265	50	6	Max. 3 m
STL2P50-300	Transmitter + Receiver	280	345	50	8	Max. 3 m
STL2P50-350	Transmitter + Receiver	360	425	50	10	Max. 3 m
STL2P50-450	Transmitter + Receiver	440	505	50	12	Max. 3 m
STL2P50-500	Transmitter + Receiver	520	585	50	14	Max. 3 m
STL2P50-600	Transmitter + Receiver	600	665	50	16	Max. 3 m
STL2P50-750	Transmitter + Receiver	760	825	50	20	Max. 3 m
STL2P50-900	Transmitter + Receiver	920	985	50	24	Max. 3 m
STL2P50-1050	Transmitter + Receiver	1080	1145	50	28	Max. 3 m
STL2P50-1200	Transmitter + Receiver	1160	1225	50	30	Max. 3 m
STL2P50-1350	Transmitter + Receiver	1320	1385	50	34	Max. 3 m
STL2P50-1500	Transmitter + Receiver	1480	1545	50	38	Max. 3 m

Technical Parameters

Series of products	Side ultra thin
Cross section	16 × 29 mm
Resolution	14 mm (10 mm) / 30 mm (20 mm) / 50 mm (40 mm) (Optical axis spacing)
Optical axis quantity	4, 6, 8, 10 ... 256
Protective field height	Optical axis spacing * (Optical axis quantity-1)
Operating distance	0.2 ... 3 m
Supply voltage	24 V±10%
Consumption	3 ... 8 W
Response time	≤ 10 ms
Resistance of insulation	≥ 100 MΩ
Output mode	PNP
Ambient temperature	-10 ... +55 °C
Storage temperature	-40 ... +70 °C
Ambient humidity	35%RH-85%RH
Resistance to light interference	10000 Lux
Light curtain form	Type of projectile, optical synchronization and line synchronization optional
Protection degree	IP65
Safety classification	CE / FCC / EMC / REACH / SIL3 / TYPE2
Circuit protection	Reverse connection protection / output short circuit protection

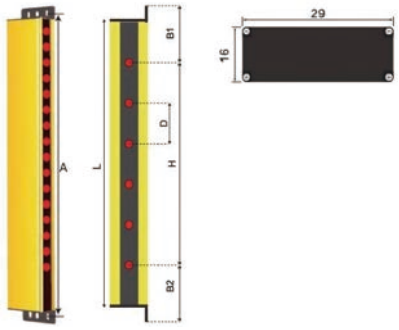
Electrical Connection Diagram

Optical synchronization



Safety Light Curtain STL2

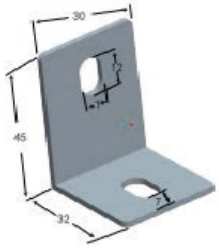
Mechanical Diagram



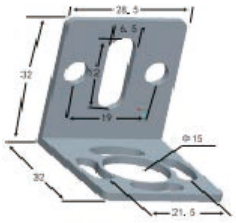
B1 : Upper blind spot
B2: Lower blind spot
D : Optical axis spacing
H : Protective field height
L : Product overall height

B1 = 1/2 Optical axis spacing + 13 mm
B2 = 1/2 Optical axis spacing + 13 mm
L = Optical axis quantity * Optical axis spacing + 21 mm
A = L-7 mm

Accessories



BT-L
Side mounted bracket



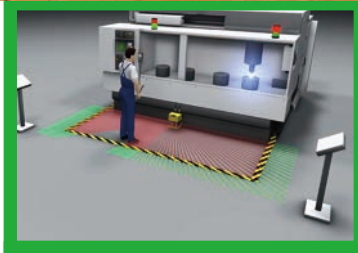
BT-E
Upper and lower mounted bracket

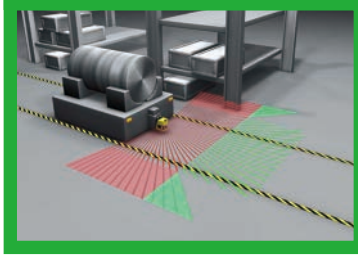
	Type	Description
Bracket	BT-LS (Set)	Side mounted bracket, (4 pc kit)
	BT-ES (Set)	Upper and lower mounted bracket, (4 pc kit)
Cable, for transmitter	CT-M12-2000E-2GF	M12, 2-pin, 2m, Aviationplug
	CT-M12-3000E-2GF	M12, 2-pin, 3 m, Aviation plug
	CT-M12-5000E-2GF	M12, 2-pin, 5 m, Aviation plug
	CT-M12-10000E-2GF	M12, 2-pin, 10 m, Aviation plug
	CT-M12-15000E-2GF	M12, 2-pin, 15 m, Aviation plug
	CT-M12-25000E-2GF	M12, 2-pin, 25 m, Aviation plug
Cable, for receiver		
	CT-M12-2000E-4GF	M12, 4-pin, 2 m, Aviation plug
	CT-M12-3000E-4GF	M12, 4-pin, 3 m, Aviation plug
	CT-M12-5000E-4GF	M12, 4-pin, 5 m, Aviation plug
	CT-M12-10000E-4GF	M12, 4-pin, 10 m, Aviation plug
	CT-M12-15000E-4GF	M12, 4-pin, 15 m, Aviation plug
	CT-M12-25000E-4GF	M12, 4-pin, 25 m, Aviation plug

<< Safety Product

Safety Laser Scanner

ELCO offers flexible and versatile workplace area protection with a compact product structure that provides safety functions in only one device and safety bus system integrated interface to simplify complex customer requirements. It has independent alarm (Max. 20 m) and safety zone protection (3.5 m, 5.5 m etc), which are used in pairs, up to 2 groups of programmable safety zone protection, and the two groups of areas can be switched. Suitable for hand, arm and complete personal protection, in line with IEC61508-SIL2 standard certification. It is applied to the protection of open and unobstructed large area dangerous areas, the protection of AGV / RGV automatic navigation vehicle dangerous areas, and the protection of access passage dangerous areas.





Application: automobile, logistics, metallurgy, port, rubber machinery and other industries.

Safety Laser Scanner - ASL10

Product Description

- Robust Painted aluminium housing
- Compact size design
- Safety Range 5.5 m
- Scanning range up to 0-275°
- Multiple set of programmable regions
- Dynamic masking function
- Excellent anti-dust interference function
- Adapted special software, intuitive user interface, easy to edit

Applicable industries: automotive and parts, logistics, 3C, robotics, printing / packaging and other industries

Technical Parameters

General Data	
Type	ASL10-3E ASL10-5E
Common data	
Type (EN61496-1)	3
PL (EN ISO 13849-1)	d
SIL (IEC 61508)	2
Detection Data	
Detection performance	30 / 40 / 50 / 70 / 150 mm selectable
Angular resolution	0.1 °
Safe area working scope	3 m, 5.5 m
Warning zone max. operating range	40 m
Set the maximum number of safe zones	1
Set the maximum number of alarm areas	2
Maximum detection angle	275 °
Range of tolerance	100 mm
Electrical Data	
Power supply (VDD)	24 V DC±20%
Current of output	Max. 0.25 A / Each OSSD
Output capacitive load	2.2 uF @ Max 24 V DC
Input load current	6 … 15 mA
Input saturation voltage	> 15 V
Input capacitive load	22 uF
Mechanical and environmental data	
Ambient temperature	-10 … +50 °C
Storage temperature	-20 … +70 °C
Humidity	15 … 95 % (no condensation)
Protection degree	IP 65 (EN 60529)
Input / output configuration data	
Connector	M12 8 pin
Safety output (OSSDs)	1 x 2
Configurable input	0
Configurable output	0
Configurable input / output	3
High speed input (100 kHz)	N/A
Configurable I/O total	5

Technical Parameters

Configurable Parameters	
Response time	
Master machine	Shortest: 62 ms; Longest: 482 ms
Any other slave machine	10 ms
Connector	M12 8 pin
Maximum number of region sets for any activation order (*1):	
1 safety area	3
1 safety area + 1 alarm area	2
1 safety area + 2 alarm area	N/A
2 safety area	N/A
2 safety area + 1 alarm area	N/A
2 safety area + 2 alarm area	N/A
3 safety area	N/A
The largest region for a particular activation order	6
Number of sets (1 safety area) (*2)	
The region set inputs the switching time	Shortest: 30 ms; Longest: 5000 ms
Function	
Manual / automatic restart	Yes
Reset (power restart)	Yes
Overall shielding (unidirectional or bidirectional)	Yes
Locally masked, the first pair of OSSD is dynamic	Yes
Point of reference	Yes
Forced invalidation	Yes (*3)
Shield lamp	Yes (*3)
Shield enable	Yes (*3)
Cleaning window alarm	Yes
General fault alarm	Yes
Stop	Yes
Advanced measurement data	Yes (*4)
Maximum angular resolution of the measured data	0.1 °
Applications	
Horizontal static	Yes
Vertical static	Yes
Moving (Simple AGV)	Yes
Moving (Medium complexity level AGV)	N/A

Notes:

(*1) Maximum number of region set switches that can be achieved when all inputs are used for region set switching. Using 8 input or encoder speed measurements, 70 region sets (the maximum number) can be reached.

(*2) Only 1 safety area, up to 3 zones in any activation order. There can be up to six when only some allowed activation orders are adopted. See the manual and GUI (Graphical User Interface) for more details.

(*3) The forced invalidations input, shielded enable input, and shielded lamp output of SLS-SAx are mutually exclusive.

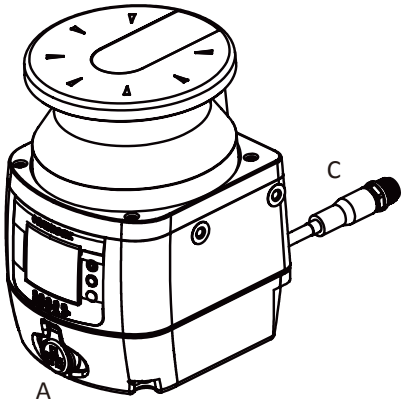
(*4) Programmable connectors are used on the front of the device.

Technical Parameters

Optional input and output			
Input / Output	signal	ASL10	
	signal	8 pin	
Multiple Input	Reset	yes	
	Restart	yes	
	Reset / Restart	yes	
	Area switch 1	yes	
	Area switch 2	yes	
	Area switch 3	yes	
	Area switch 4	N/A	
	Area switch 5	N/A	
	Shield enable 1	yes	To activate masking, two masking inputs must be used
	Shield 11	yes	
	Shield 12	yes	
	Forced invalidation 11	yes	
	Forced invalidation 12	yes	
	Shield enable 2	N/A	
	Shield 21	N/A	To activate masking, two masking inputs must be used
	Shield 22	N/A	
	Forced invalidation 21	N/A	
	Forced invalidation 22	N/A	
Multiple Output	Alamm 1	yes	
	Alamm 2	yes	
	Shield lamp 1	yes	It can be used with shielding function
	Shield lamp 2	N/A	
	Forced invalidation state 1	yes	
	Forced invalidation state 2	N/A	
	Warning 1	yes	Cleaning window alarm
	Warning 2	yes	General fault alarm
OSSD	OSSD 11	yes	
	OSSD 12	yes	
	OSSD 21	N/A	
	OSSD 22	N/A	
	OSSD 31	N/A	
	OSSD 32	N/A	

Connection Method

ASL10



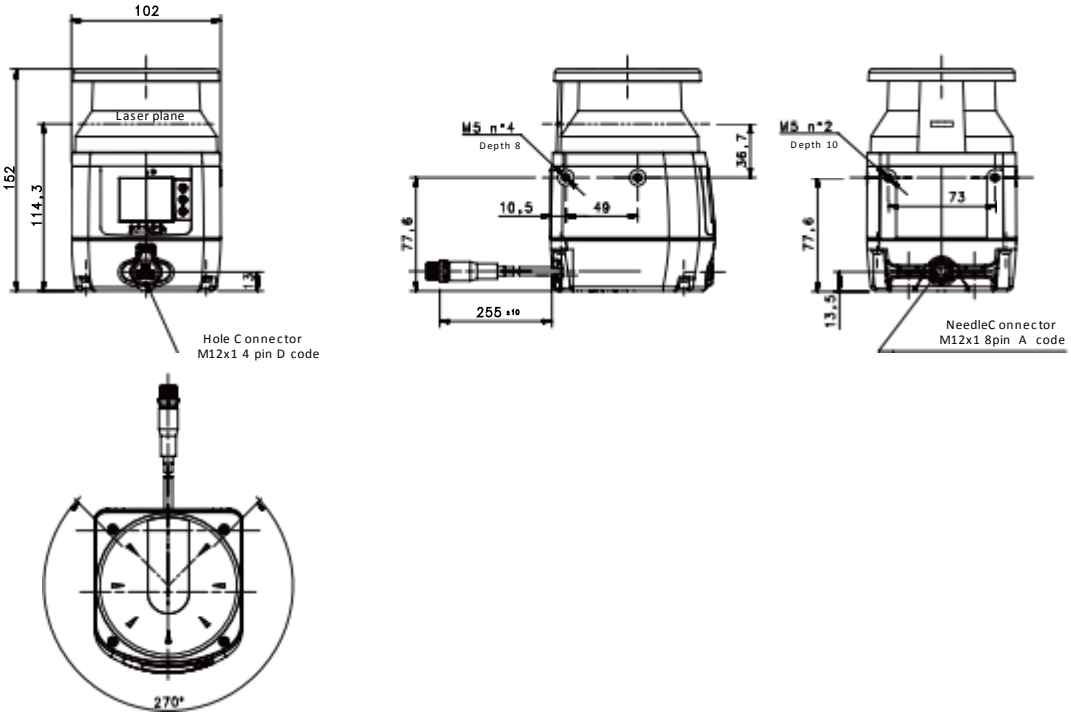
Connector	ASL10
A M12 4 pin (hole)	Ethernet
C M12 8 pin (needle)	Power and digital I/O

Technical Parameters

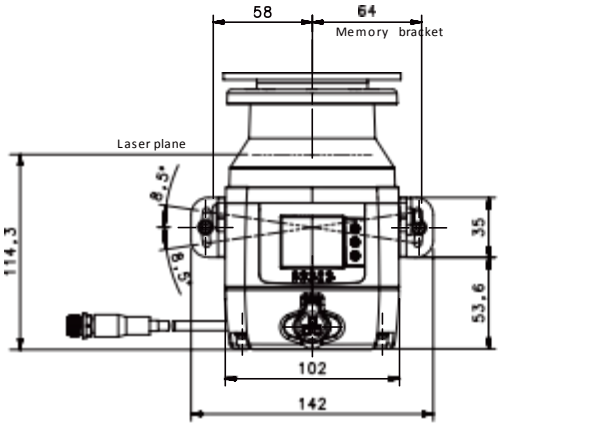
		Connector (M12, 8 pin)		
	Signal	Description	Color	Pin
Power supply	Power supply	24 V DC	brown	2
	GND_ISO	0 V	blue	7
Input / Output	Multiple input / Output	Selectable through a graphical user interface	white	1
	Multiple InputOutput(*)	Selectable through a graphical user interface	green	3
	Multiple inputoutput(*)	Selectable through a graphical user interface	yellow	4
Safety output	OSSD11	Safety output	gray	5
	OSSD12	Safety output	pink	6
Other	PE	Functional grounding	red	8

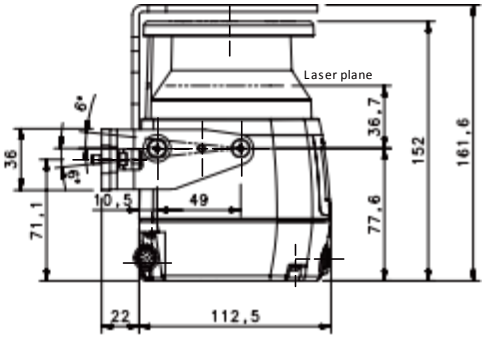
Notes: (*) only Multiple Input

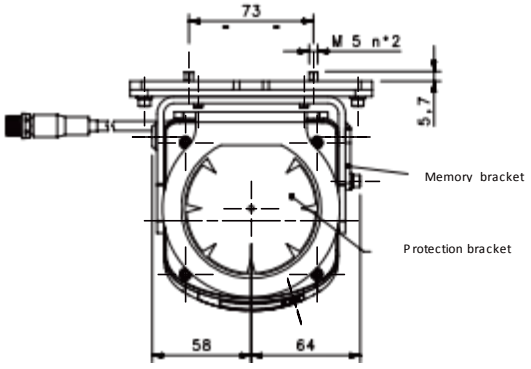
Size Diagram



Size Diagram







Fixed
N°2 hole M5
Depth 6 mm
Hole spacing 73mm

Model Selection Table

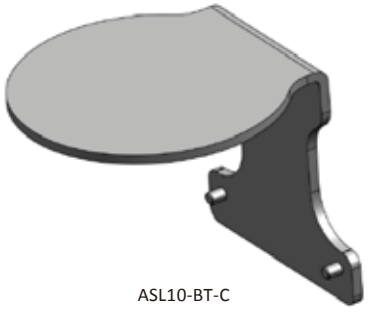
Type	Description
ASL10-3E	Single machine type 3 m
ASL10-5E	Single machine type 5.5 m

Accessories

ASL10	
	Bracket
Complete bracket system	ASL10-BT-A
Slope adjustment bracket system	ASL10-BT-B
Top protection bracket	ASL10-BT-C
Unit of safety	
Unit of safety	SR22-31/24VUC/ESC
Maintenance parts	
Replaceable window	ASL10-W
Memory component M12 8/12 pin	ASL10-0812
Memory component M12 17/8 pin	ASL10-1708
Spray bottle liquid cleaner(1 lt)	ASL10-CLEANER
Cleaning cloth (22 x 22 cm), 100 pieces	ASL10-CLOTH

ASL10-BT-A

ASL10-BT-B



ASL10-BT-C

Accessories

	Type	One side	The other side	length
Main cable	CB-M12-8A-PUR-20	8pin (needle)	Scattered line	2 m
	CB-M12-8A-PUR-30			3 m
	CB-M12-8A-PUR-50			5 m
	CB-M12-8A-PUR-100			10 m
	CB-M12-8A-PUR-150			15 m
	CB-M12-8A-PUR-250			25 m

Notes

As soon as human activity is detected in a safe or alarm area, the LASER SCANNER will display a color graphic to indicate the notification, so that the shutdown action can be taken or an alarm signal can be activated.
The 11 corner areas can show the direction of the detected person and indicate by different colors whether it is within the safe area (red) or the alarm area (yellow).

Display Icons	Name	Description
 Run	The "open ”state	The device is operating normally (OSSD operating status). No human activity was detected in the safety and alarm area. (Accept configuration)
 Alarm	An alarm that intrudes into an alarm area	The equipment is operating normally. The device has detected human activity in the alarm area. (Accept configuration)
 Stop	Intrude into the “close” state of a safe area	The device is operating normally (OSSD stop state). The device has detected human activity in the secure area. (Accept configuration)
 Reference	The"close”state of the reference point	The device detects the reference point moving. The display area in the direction of the moving reference point is blue.

LED	Symbol	Definition	Color	Meaning	Output status
1		Safety area 1 Object detection (OSSD 11/12)	Green	No object was detected	OSSD Close
			Red	Detecting an object	OSSD Open
2		Safety area 2 Object detection (OSSD 21/22)	Green	No object was detected	OSSD Close
			Red	Detecting an object	OSSD Open
3		Safety area 3 Object detection or Alarm area 2 Object detection	Yellow	Detecting an object	OSSD Close Alarm 2 ON/OFF (as in Settings)
			Close	No object was detected	OSSD Open The alarm 2 output depends on the alarm function configuration
4		Alarm area 1 Object detection	Yellow	An object has been detected in alarm area 1	The alarm 1 output depends on the alarm function configuration
				No object was detected in alarm area 1	The alarm 1 output depends on the alarm function configuration
5		Interlock	Close	No object was detected in the safe area Device waiting for manual restart (LED1 red)	OSSD Close
			Yellow	No object was detected in the safe area The device is enabled (LED1 green)	OSSD Open
				The object is detected in the safe area The device is off (LED1 red)	OSSD Close

Obstacle Avoidance & Measurement Laser Radar ASL300

Product Description

- Compact size
- Scanning Range: max. 40 m
- Large scanning range: 0-270°
- No blind area, reliable detection near the window
- Excellent anti-light interference performance
- Multi-user monitoring, 4 customers can access the configuration software at the same time

Model Selection Table

Categories	Type	Radius of detection@70% reflectivity	Output form	Deviation of measurement	Angular resolution
Obstacle avoidance	ASL300-15	15 m	PNP/NPN	±3 cm@1sigma	0.3°@30 Hz
	ASL300-25	25 m	PNP/NPN	±3 cm@1sigma	0.3°@30 Hz
	ASL300H-40	40 m	PNP/NPN	±3 cm@1sigma	0.3°@30 Hz
Measurement	AML300-15	15 m	Ethernet UDP	±3 cm@1sigma	0.15°@20 Hz
	AML300-25	25 m	Ethernet UDP	±3 cm@1sigma	0.15°@20 Hz
	AML300H-40	40 m	Ethernet UDP	±3 cm@1sigma	0.15°@20 Hz

Technical Parameters

Electrical and mechanical parameters		
Voltage of operation	DC 9 ... 28 V	
Power-on startup time	Typical value 10 s	
Consumption	< 2 W (No load at the output)	
Output	PNP / NPN Optional (Standard PNP)	
Dimensions of form	52 × 52 × 70 mm	
Length of cable	Standard 1 m	
Ambient temperature	Work: -10 ... +50 °C (No frost on the window)	
	Storage: -40 ... +70 °C	
Ambient humidity	Work: 35%RH ~ 85%RH; Storage: 35%RH ~ 95%RH	
Resistance to light interference	80000Lux	
Shock resistance	Acceleration 10g; Pulse duration: 16ms; Number of collisions: three axes, 1000±10 per axis	
Resistance to vibration Frequency10 Hz ~ 55 Hz Amplitude	0.35±0.05 mm; Number of scans: 20 for each XYZ axis	
Protection degree	IP65	
EMC	EMI	EN61326-1: 2013
		EN55011: 2009+A1: 2010
	EMS	EN61326-1: 2013
		EN61000-4-2: 2009
		EN61000-4-3: 2006+A1: 2009+A2: 2010
		EN61000-4-4: 2004+A1: 2010
		EN61000-4-6: 2014
		EN61000-4-8: 2010

Obstacle Avoidance & Measurement Laser Radar ASL300

Technical Parameters

Parameter of measurement	
Radius of detection	15 m@70%reflectivity
Scanning range Angle	270°
Angular resolution	Default 0.3°@30 Hz, Support 0.3°@20 / 25 / 30 Hz / 40 Hz
Range deviation	±3 cm (Typical value) ①
Precision of repetition	±6 mm@1 sigma②
Scan the plane Angle	Pitch of pitch±0.6°; Roll over±0.5°

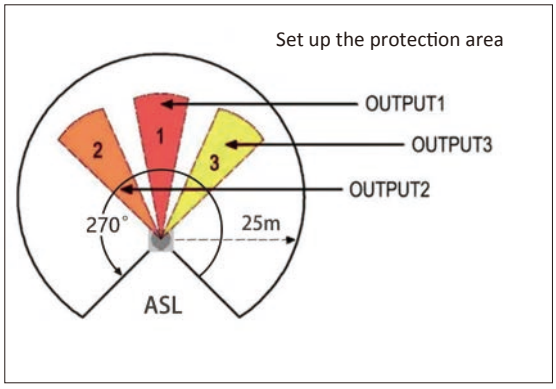
Configurable functionality

Defense area configuration

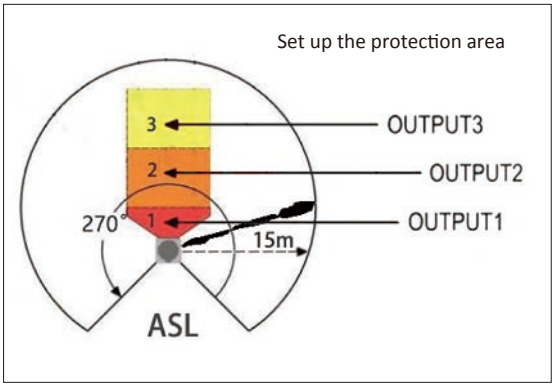
The user can configure the defense area of YB to the desired shape through the configuration software

Response time 67 ms (2 scans) ~ 536 ms (16 scans), default 67 ms Area group switching 4 sets of external input signals (INPUT1, INPUT2, INPUT3, INPUT4) to achieve switching of 16 region groups

Mode Of Work



The protection area Figure 1



The protection area Figure 2

Protection area correspondence table

Logo	Meaning	Description
1	Protection zone 1	When an obstacle is detected, OUTPUT1 enters the OFF state
2	Protection zone 2	When an obstacle is detected, OUTPUT2 enters the OFF state
3	Protection zone 3	When an obstacle is detected, OUTPUT2 enters the OFF state

Measurement Type Technical Parameters

Electrical and mechanical parameters		
Voltage of operation	DC 9 ... 28 V	
Power-on startup time	Typical value 10 s	
Consumption	< 2 W (No load at the output)	
Output	Ethernet UDP protocol output	
Dimensions of form	52 × 52 × 70 mm	
Length of cable	Standard 1 m	
Ambient temperature	Work: -10 ... +50 °C (No frost on the window)	
	Storage: -40 ... +70 °C	
Ambient humidity	Work: 35%RH~85%RH, Storage: 35%RH~95%RH	
Resistance to light interference	80000 Lux	
Shock resistance	Acceleration 10 g; Pulse duration: 16 ms; Number of collisions: three axes, 1000±10 per axis	
Resistance to vibration Frequency10 Hz ~ 55 Hz Amplitude	0.35±0.05 mm; Number of scans: 20 for each XYZ axis	
Protection degree	IP65	
EMC	EMI	EN61326-1: 2013
		EN55011: 2009+A1: 2010
	EMS	EN61326-1: 2013
		EN61000-4-2: 2009
		EN61000-4-3: 2006+A1:2009+A2: 2010
		EN61000-4-4: 2004+A1:2010
		EN61000-4-6: 2014
		EN61000-4-8: 2010
Parameter of measurement		
Radius of detection	15 m@70%reflectivity	
Scanning range Angle	270°	
Angular resolution	Default 0.15°@20 Hz,	
	Support (0.15°, 0.2°, 0.25°, 0.3°, 0.33°, 0.5°) @20 Hz;	
	Support (0.2°, 0.25°, 0.3°, 0.33°, 0.5°) @25 Hz;	
	(0.25°, 0.3°, 0.33°, 0.5°) @28/30 Hz; (0.33°, 0.5°) @40 Hz (0.5°) @50 Hz	
	Quickly adjust the adaptation	
Range deviation	±3 cm (Typical value) ①	
Precision of repetition	±6 mm@1 sigma②	
Scan the plane Angle	Pitch of pitch±0.6°; Roll over±0.5°	

Notes:

①The measurement error of different reflectivity materials is controlled at ±3 cm (typical value), factory test method: Three kinds of specimens (black velvet cloth, white paper, reflective paste) were placed at different angles and the same Range (59 cm) on the automatic tooling of the whole machine inspection.

The deviation between the center value of each material and the real Range was within ±3cm, and the maximum difference between the three materials was within 3 cm.

②Measurement and statistics of 10% black flannel cloth 600mm position.

Obstacle Avoidance & Measurement Laser Radar ASL300

Electrical Connection Diagram

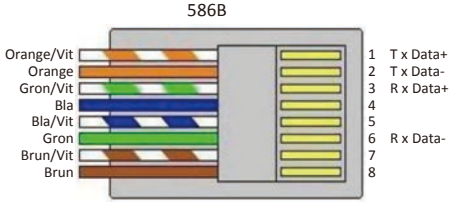
Obstacle avoidance Type:

Cable color signal relationship table

Color	Signal	Description
blue	OV	Power supply
brown	24V	
yellow/green	PE	
red/blue	COM	Area group switching signal input of the common end, when the input signal is PNP logic, COM connect 0V; When the input signal is NPN logic, COM is connected to 24V
pink	INPUT1	The region group selects the signal, and the switching between the region groups is realized by the change of the input signal of INPUT1, INPUT2, INPUT3, and INPUT4
green	INPUT2	
gray	INPUT3	
red	INPUT4	
black	OUTPUT1	Three independent PNP(NPN) outputs PNP transistor output; ON state, load current ≤100mA, output voltage ≥ Vcc-2V; In OFF state, leakage current ≤1mA, residual voltage ≤ 1V(excluding the influence of wire extension); NPN transistor output, ON state, load current ≤100mA, output voltage ≤2V; In OFF state, leakage current ≤1mA, residual voltage ≤2V(excluding the influence of wire extension); When there is no object in the protection area, it is in the ON state. It's in the OFF state when there's an object.
white	OUTPUT2	
purple	OUTPUT3	
gray/pink	OK	Independent PNP(NPN) output, fault state output OFF, no fault in the ON state

Measurement Type:

Network port cable color signal relationship table



Cable color signal relationship table

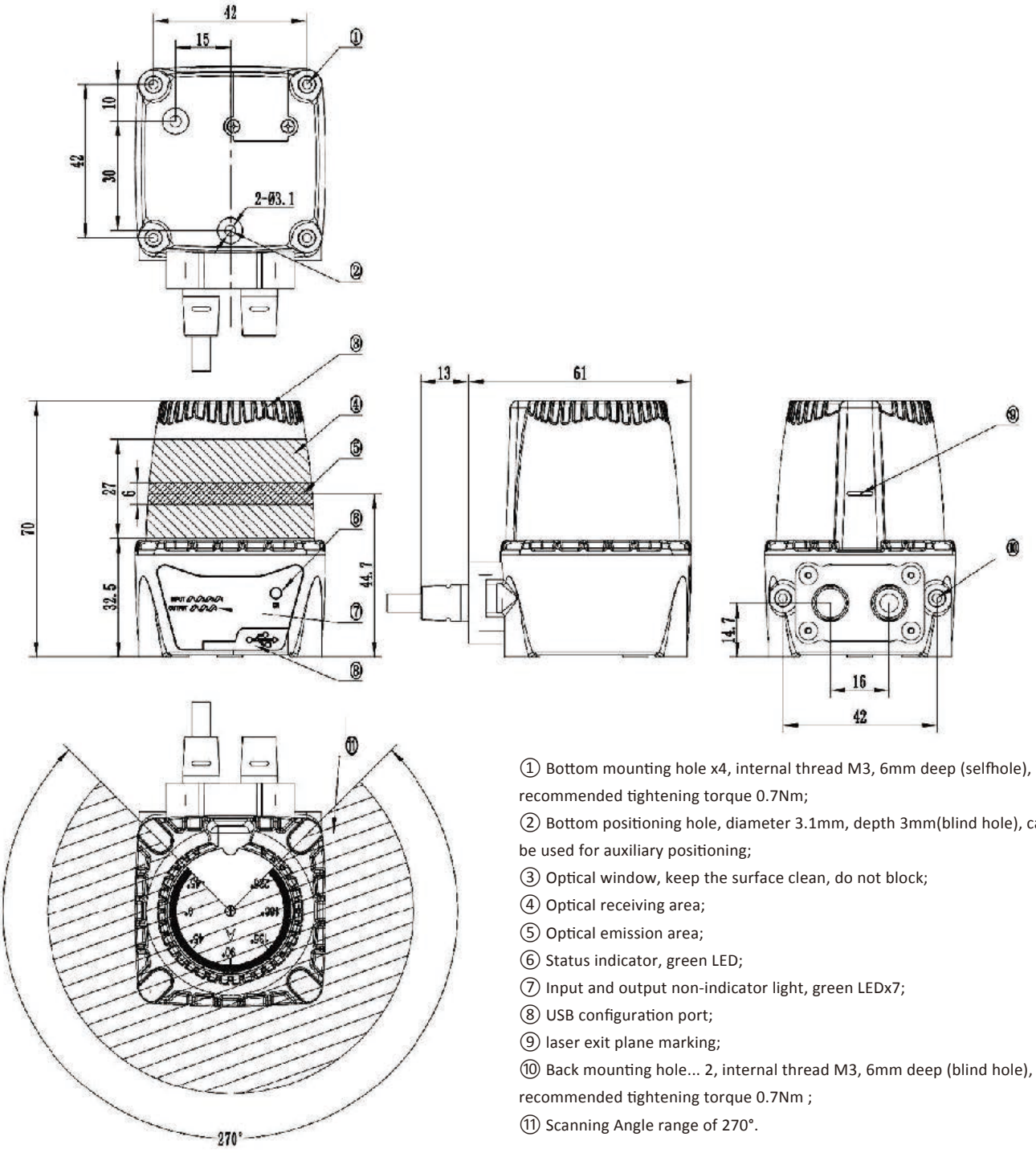
Color	Signal
Orange white	T X +
Orange	T X -
Greenish white	R X +
Green	R X -

Power supply cable color signal relationship table

Color	Signal
Brown	24 V
Blue	0 V

Size Diagram

Obstacle avoidance Type

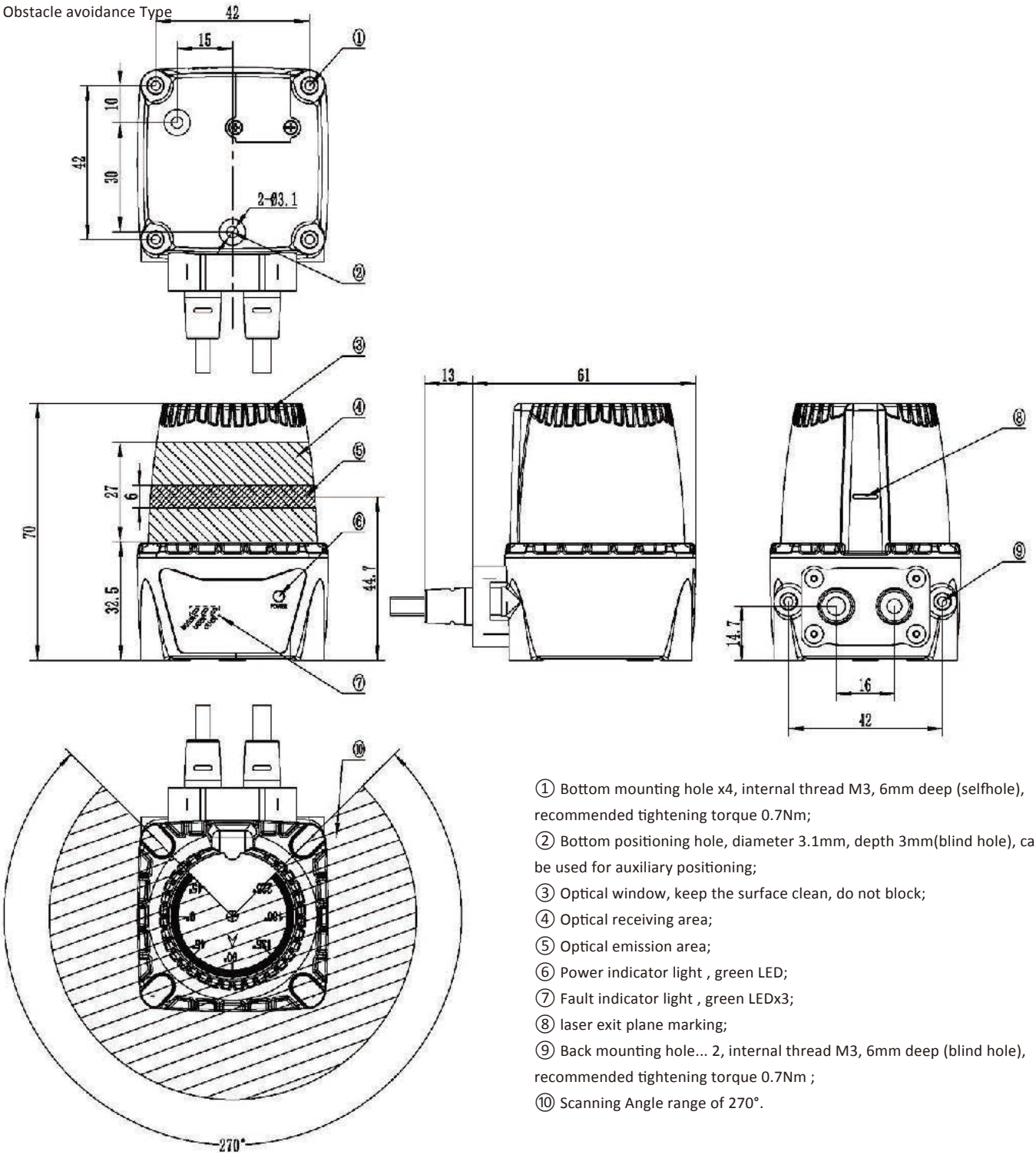


① Bottom mounting hole x4, internal thread M3, 6mm deep (selfhole), recommended tightening torque 0.7Nm;
② Bottom positioning hole, diameter 3.1mm, depth 3mm(blind hole), can be used for auxiliary positioning;
③ Optical window, keep the surface clean, do not block;
④ Optical receiving area;
⑤ Optical emission area;
⑥ Status indicator, green LED;
⑦ Input and output non-indicator light, green LEDx7;
⑧ USB configuration port;
⑨ laser exit plane marking;
⑩ Back mounting hole... 2, internal thread M3, 6mm deep (blind hole), recommended tightening torque 0.7Nm ;
⑪ Scanning Angle range of 270°.

Obstacle Avoidance & Measurement Laser Radar ASL300

Size Diagram

Obstacle avoidance Type



① Bottom mounting hole x4, internal thread M3, 6mm deep (selfhole), recommended tightening torque 0.7Nm;
② Bottom positioning hole, diameter 3.1mm, depth 3mm(blind hole), can be used for auxiliary positioning;
③ Optical window, keep the surface clean, do not block;
④ Optical receiving area;
⑤ Optical emission area;
⑥ Power indicator light , green LED;
⑦ Fault indicator light , green LEDx3;
⑧ laser exit plane marking;
⑨ Back mounting hole... 2, internal thread M3, 6mm deep (blind hole), recommended tightening torque 0.7Nm ;
⑩ Scanning Angle range of 270°.

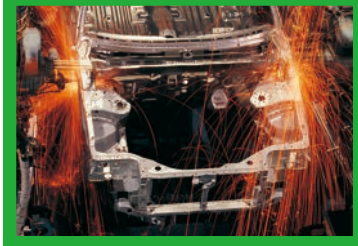
<< Safety Product

Safety Laser Scanner

ELCO offers a comprehensive range of monitoring modules to monitor Safety light curtains, laser scanning of safety areas, emergency stop buttons, safety pads, and more. SR series safety relay module can connect the output of photoelectric safety products, such as Safety light curtain, safety laser area scanning, etc., to the safety circuit of the equipment control system. It has the characteristics of high reliability and long service life. It is suitable for the control of all dangerous movements.

SR series safety relay modules have a variety of coil voltages(24V AC/DC,110V AC,220V AC) and a variety of output contact forms optional, automatic/manual reset function optional, (1 N.O + 1 N.C, 2 N.O, 3 N.O + 1 N.C, 4 N.O, 5 N.O + 1 N.C, 3 N.O) and channel interaction monitoring function, etc.

Application: Automobile, metallurgy, port, wind power, rail transportation, printing/packaging and other industries.



Emergency Stop Module-SR22

Product Description

- Single and dual channel input is optional
- LED shows working status, channel 1, channel 2
- Automatic manual reset is optional
- Channel interaction monitoring function
- External loop monitoring function
- Dimensions of form: 22.5 × 99 × 114.5 mm
- Suitable for safety light curtain, emergency stop button, safety door monitoring and so on.

Model Selection Table

Type	Notes	Supply voltage	Input channel	Safety output	Auxiliary output
SR22-11/24VUC/ESC	Emergency-Stop Module	24 V DC/AC	2	1	1
SR22-20/24VUC/ESC	Emergency-Stop Module	24 V DC/AC	2	2	0
SR22-31/24VUC/ESC	Emergency-Stop Module	24 V DC/AC	2	3	1
SR22-40/24VUC/ESC	Emergency-Stop Module	24 V DC/AC	2	4	0

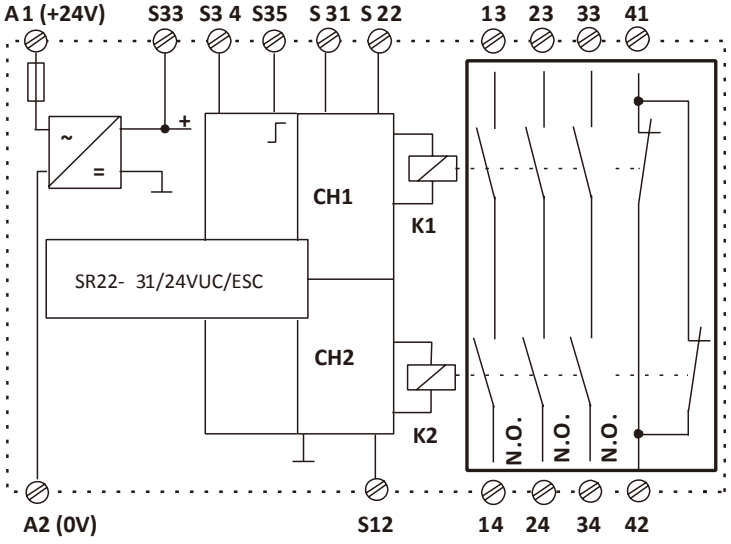
Technical Parameters

Conforms to the categores defined by EN IS0 13849 and EN 954-1		4
Compliance with EN ISO 13849-1 performance level (PL)		PL e
Supply voltage UB		24 V AC/DC ± 20%
B10d		DC 13: 10 million switch cycles; AC 15: 1.4 million switch cycles
Stop category		Class 0 stop, in accordance with IEC 60204-1
Average frequency of a dangerous failure of the safety function (PFHd)		2.0×10^{-8}
Power consumption		3 W
The external safety of the power supply circuit 200 mA Delay action		200 mA Delay action
Output contact		3 NO+1NC
Contact switching current	Resistive load:	3 A Max. external insurance 3 A
	240 V AC (AC-15)	Rated at 1.5 A, external insurance 2.5 A
	240 V DC (DC-13)	Rated at 1.5 A, external insurance 1.5 A
Contact switching capability		1x105 times (1NO: 6 A 30 V DC, Resistive load, 85°C, 1 s switch on 9 s switch off)
Mechanical life		1x105 times (1NO: 6 A 250 V DC, Resistive load, 85°C, 1 s switch on 9 s switch off)
Turn off (on) delay - start manually		10 million switch cycles
Off (on) Delay (auto start)		30 ms
Release time (rated voltage)		≤20 ms
Time window for signal sequence monitoring		20 ms
S12, S22 and S31 control voltage/current		24 V DC/40 mA
Maximum input curent		100 mA
Allowable input wire resistance		<30 Ω
Operating temperature		0 ... +55 ° C
Storage temperature		- 25 ... +70 ° C
Over voltage level Class III determination voltage 300 V AC according to VDE 0110		Part 1
Vibration		10 Hz ... 55 Hz 1.5 mm dual vibration
Pollution level		2
Anti-interference strength		EN 61496-1: 2005 4 type
Protection level		Protection level Enclosure protection class IP40, temminal protection class IP20

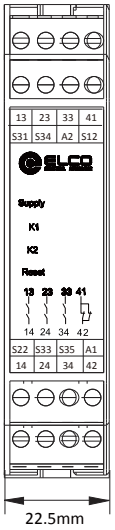
Technical Parameters

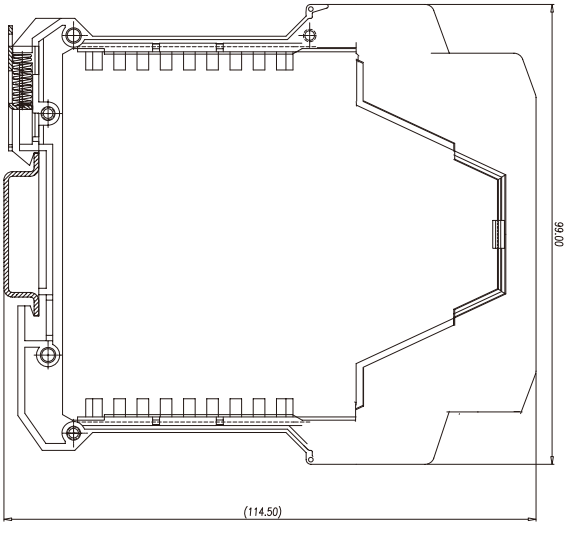
Cable size	Flexible, 0.2 ... 2.5 mm², Single core
	Flexible, 0.25 ... 2.5 mm², Single core, casing with wire
	Flexible, 0 5 ... 2.5 mm², Double core, casing with wire
	Flexible, 0 .25 ... 2.5 mm², Double core, casing with wire
	Flexible, 0.2 ... 1.5 mm², Double core
	Flexible, 0.2 ... 1.0 mm², Double core, casing with wire
Weight	About 170 g

Internal Structure Block Diagram



Mechanical Diagram





Cascade Safety Relay Module-emergency Stop Module SR22M

Product Description

- Safety relay cascade module- Emergency-Stop Module
- Compact design 22.5 mm
- Power supply 24 V DC
- Single/dual channel optional
- Input detection function
- Manual/automatic start
- Output contact 3NO + 1NC + 1SC, 4NO + 1SC
- Pluggable terminal
- Protection level IP65

Model Selection Table

Type	Notes	Supply voltage	Output channel	Safety output	Auxiliary output
SR22M-31/24 V DC	Safety emergency stop cascaded module	24 V DC	Single/double optional	3NO	1NC,1SC
SR22M-40/24 V DC	Safety emergency stop cascaded module	24 V DC	Single/double optional	4NO	1SC

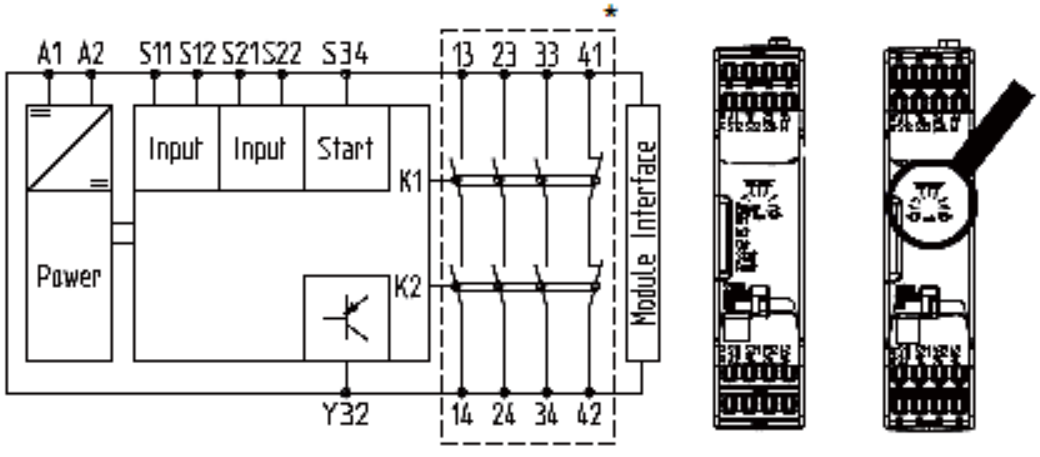
Technical Parameters

Electrical data	
Supply voltage (V)	24 - 24 V
Supply voltage type U1	DC
Power consumption DC	2.5 W
Input	
Quantity of input	2
Semiconductor output	
Quantity of semiconductor output	1
Utilization category conforms to EN 60947-1	DC-12
Relay output	
The category AC/DC1 standard is used	EN 60947-4-1
AC1 safe control voltage	240 V
AC1 safely controls the maximum current	6 A
DC1 safe control voltage	24 V
DC1 safely controls the maximum current	6 A
The category AC15/DC13 standard is used	EN 60947-5-1
AC15 safety control voltage	230 V
AC15 safely controls the maximum current	5 A
DC13 safety control voltage	24 V
Safety contact: AC, according to UL standard	240 V AC G.U. (Same polarity)
Relay contact material	AgCuNi
Other contact specifications of the relay	+ 0.2 µm Au
Environmental data	
Climate suitability criteria for use of equipment	EN 60068-2-78
The ambient temperature expressed in degrees Celsius	-10 ... +55 °C
Humidity rating	93 % r.h.40 °C
Condensation is allowed/not allowed	Not allowed
EMC up to standard ...	EN 60947-5-1, EN 61000-6-2,
	EN 61000-6-4, EN 61326-3-1
Standards against which vibration testing is performed	EN 60068-2-6

Technical Parameters

Clearance and creepage distance standards to be observed	EN 60947-1
Over voltage level	1/2
Clearance and creepage distance pollution level specification	2
Mechanical data	
Location of installation	Any
Lower part of the shell material	PC
Shell material front plate	PC
The upper part of the shell material	PC
Connection terminal	Screw type terminal
Terminal pattern	Pluggable
Height dimension	100 mm
Width dimension	22.5 mm
Depth dimension	120 mm
Net weight	185 g
Total weight	195 g
Environment	
RoHS Directive	2011/65/EC, 2015/863/EC
RoHS compliance	yes
RoHS Exception	yes
RoHS (division), in compliance with direct directives	34, 7A, 6C, 7C I
Comply with REACh standards	Contains at least one SVHC substance
Substances contained in REACh	Lead, lead oxide
Percentage of pollutants - proportion	> 0,1
CAS	7439-92-1, 1317-36-8
WEEE classifikation (08/2018)	5 devices (feed size < 50 cm)

Working Principle Diagram

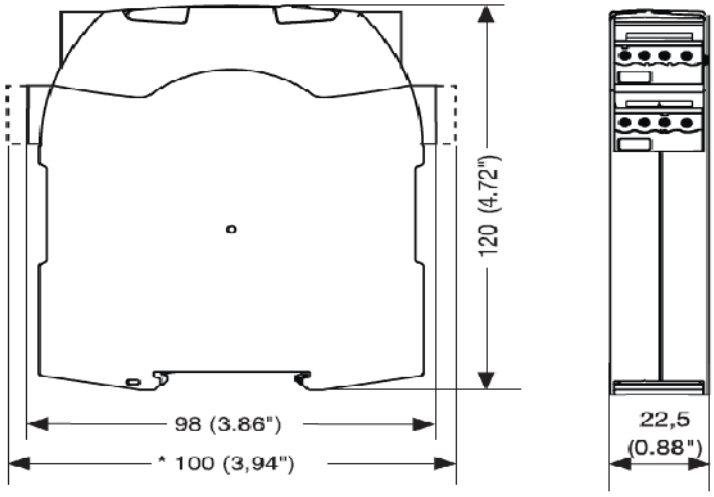


Cascade Safety Relay Module-emergency Stop Module SR22M

Mode of Work

Mode selection	Automatic / manual reset	Rising edge reset	Falling edge reset	Automatic start with self-test
No short circuit detection				
With short circuit detection				

Size Diagram



Cascade Expansion Module SR22E

Product Description

- Safety relay extension module for contact extension
- Additional voltage terminals of the power supply extension module are used to supply power to other extension modules
- Compact design 22.5 mm
- Power supply 24 V DC
- Output contact: 3NO + 1NC, 4NO, 4NO + 1NC, 5NO
- Pluggable terminal
- Protection level IP65

Model Selection Table

Type	Notes	Supply voltage	Input channel	Safety output	Auxiliary output
SR22E1-31/24VDC	Safety power supply cascaded module	24 V DC	1	3NO	1NC
SR22E1-40/24VDC	Safety power supply cascaded module	24 V DC	1	4NO	1NC
SR22E-41/24VDC	Safety expansion cascaded module	24 V DC	1	4NO	1NC
SR22E-50/24VDC	Safety expansion cascaded module	24 V DC	1	5NO	1NC

Technical Parameters

Electrical data	
Supply voltage (V)	24 - 24 V
Supply voltage type U1	DC
Power consumption DC	2 W
Input	
Quantity of input	1
Semiconductor output	
Quantity of semiconductor output	0
Relay output	
The category AC/DC1 standard is used	EN 60947-4-1
AC1 safe control voltage	240 V
AC1 safely controls the maximum current	6 A
DC1 safe control voltage	24 V
DC1 safely controls the maximum current	6 A
The category AC15/DC13 standard is used	EN 60947-5-1
AC15 safety control voltage	230 V
AC15 safely controls the maximum current	5 A
DC13 safety control voltage	24
Safety contact: AC, according to UL standard	240 V AC G.U. (Same polarity)
Relay contact material	AgCuNi
Other contact specifications of the relay	+ 0.2 µm Au
Environmental data	
Climate suitability criteria for use of equipment	EN 60068-2-78
The ambient temperature expressed in degrees Celsius	-10 ... +55 °C
Humidity rating	93 % r.h.40 °C
Condensation is allowed / not allowed	Not allowed
EMC up to standard ...	EN 60947-5-1, EN 61000-6-2, EN 61000-6-4, EN 61326-3-1
Standards against which vibration testing is performed	EN 60068-2-6

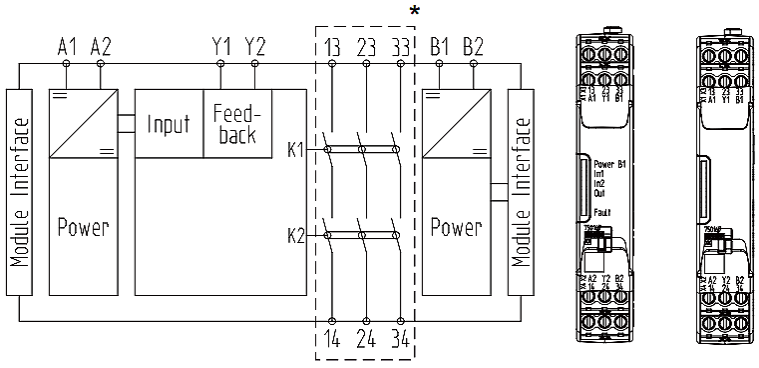
Cascade Expansion Module SR22E

Technical Parameters

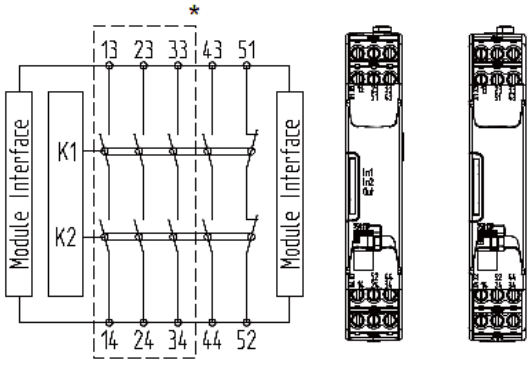
Clearance and creepage distance standards to be observed	EN 60947-1
Over voltage level	3
Clearance and creepage distance pollution level specification	2
Mechanical data	
Location of installation	Any
Lower part of the shell material	PC
Shell material front plate	PC
The upper part of the shell material	PC
Connection terminal	Screw type terminal
Terminal pattern	Pluggable
Height dimension	100 mm
Width dimension	17.5 mm
Depth dimension	120 mm
Net weight	170 g
Total weight	185 g
Environment	
RoHS Directive	2011/65/EC, 2015/863/EC
RoHS compliance	yes
RoHS Exception	yes
RoHS (division), in compliance with direct directives	34, 7A, 6C, 7C I
Comply with REACh standards	Contains at least one SVHC substance
Substances contained in REACh	Lead, lead oxide
Percentage of pollutants - proportion	> 0,1
CAS	7439-92-1, 1317-36-8
WEEE classifikation (08/2018)	5 devices (feed size < 50 cm)

Working Principle Diagram

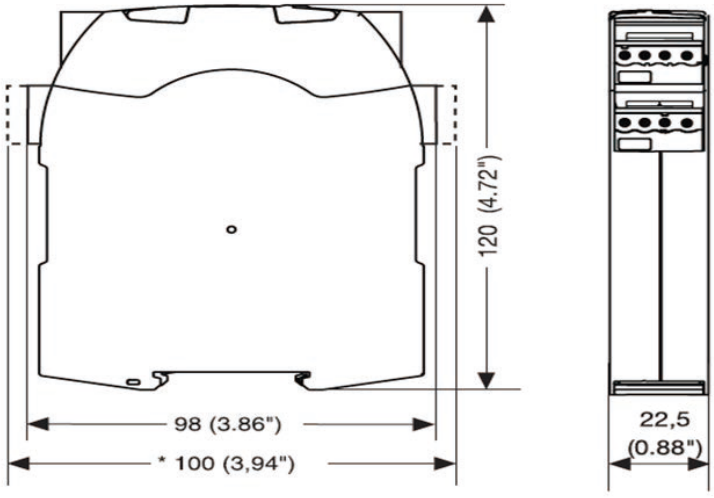
SR22-E1



SR22E



Size Diagram



Cascade Safety Relay Module-time Independent Module-SR22T

Product Description

- Safety relay cascade module- Time independent Module
- Compact design 22.5 mm
- Power supply 24 V DC
- Single / dual channel optional
- Input channel short circuit detection function
- Manual / automatic start
- Output contact: 4NO (t = 0.04-300 s) + 1SC
- Pluggable terminal
- Monitor emergency stop device, safety door, light curtain

Model Selection Table

Type	Notes	Supply voltage	Input channel	Safety output	Auxiliary output
SR22T-40/24VDC	Safety time independent cascaded module	24 V DC	2	4NO (0.4~300s)	1SC

Technical Parameters

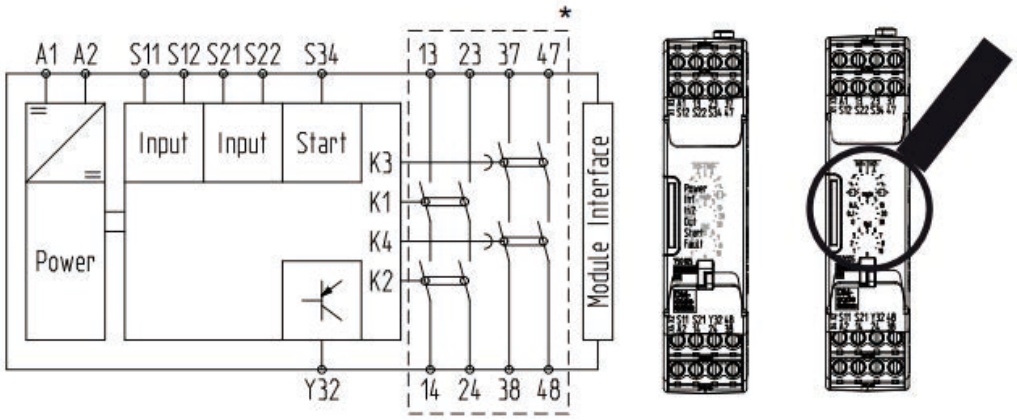
Electrical data	
Supply voltage (V)	24 - 24 V
Supply voltage type U1	DC
Power consumption DC	2 W
Input	
Quantity of input	2
Semiconductor output	
Quantity of semiconductor output	1
Utilization category conforms to EN 60947-1	DC-12
Relay output	
The category AC/DC1 standard is used	EN 60947-4-1
AC1 safe control voltage	240 V
AC1 safely controls the maximum current	6 A
DC1 safe control voltage	24 V
DC1 safely controls the maximum current	6 A
The category AC15/DC13 standard is used	EN 60947-5-1
AC15 safety control voltage	230 V
AC15 safely controls the maximum current	3 A
DC13 safety control voltage	24
Safety contact: AC, according to UL standard	240 VAC G.U. (Same polarity)
Relay contact material	AgCuNi
Other contact specifications of the relay	+ 0.2 µm Au
Environmental data	
Climate suitability criteria for use of equipment	EN 60068-2-78
The ambient temperature expressed in degrees Celsius	-10 ... +55 °C
Humidity rating	93 % r.h.40 °C
Condensation is allowed / not allowed	Not allowed
EMC up to standard ...	EN 60947-5-1, EN 61000-6-2, EN 61000-6-4, EN 61326-3-1
Standards against which vibration testing is performed	EN 60068-2-6
Clearance and creepage distance standards to be observed	EN 60947-1

Technical Parameters

Over voltage level	2
Clearance and creepage distance pollution level specification	2
Type of installation protection	IP54
Terminal protection type	IP20
Optional number	0.8, 0.4, 0.2, 0.3, 15, 1.5, 2.5, 25, 35, 0.5, 0.6, 7, 6, 3, 4, 5, 210, 150, 0.1,
	0.04, 8, 80, 90, 60, 20, 50, 30, 40, 16, 1, 2, 70, 0.7, 100, 120, 300, 200,
	140, 160, 14, 180, 3.5, 12, 240, 10
Allowable tolerances for Tv	+/-1 % + +/-20 ms
Precision of repetition	+/-1 % + +/-20 ms
Allowable tolerance in case of errors	+/-15 % + +/-20 ms
Formula for calculating the longest delay time	tv + 15 % + 20 ms
Mechanical data	
Location of installation	Any
Lower part of the shell material	PC
Shell material front plate	PC
The upper part of the shell material	PC
Connection terminal	Screw type terminal
Terminal pattern	Pluggable
Allowable cross section area of the flexible AWG conductor	24 - 12 AWG
Height dimension	100 mm
Width dimension	22.5 mm
Depth dimension	120 mm
Net weight	235 g
Total weight	245 g
Environment	
RoHS Directive	2011/65/EC, 2015/863/EC
RoHS compliance	yes
RoHS Exception	yes
RoHS (division), in compliance with direct directives	34, 7a, 6c, 7C i
Comply with REACh standards	Contains at least one SVHC substance
Substances contained in REACh	Lead, lead oxide
Percentage of pollutants - proportion	> 0,1
CAS	7439-92-1, 1317-36-8
WEEE classifikation (08/2018)	5 devices (feed size < 50 cm)
SCIP input is available	yes

Cascade Safety Relay Module-time Independent Module-SR22T

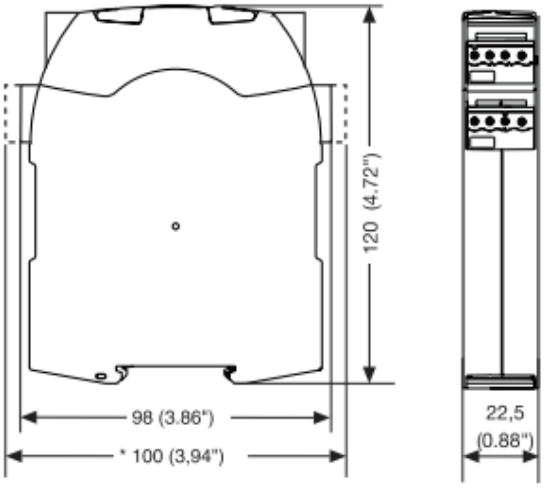
Working Principle Diagram



Mode Of Work

Mode selection	Automatic/manual reset	Rising edge reset	Falling edge reset	Automatic start with self-test
No short circuit detection				
With short circuit detection				

Size Diagram



Cascade Safety Relay Module-time Independent Module-SR22TE

Product Description

Safety cascaded time extension module, freestanding, contact block and timer relay for contact extension, connection to safety-related control elements or for safety timing functions (power on, back off, pulse).

- Compact design 22.5 mm
- Power supply 24 V DC
- Single channel optional
- Output contact: 3NO + 1NC (t = 0.04-300 s)
- Pluggable terminal
- Protection level IP65

Model Selection Table

Type	Notes	Supply voltage	Input channel	Safety output
SR22TE-31/24VDC	Safety Time independent cascaded module	24 V DC	1	3NO + 1NC (0.04~300 s)

Technical Parameters

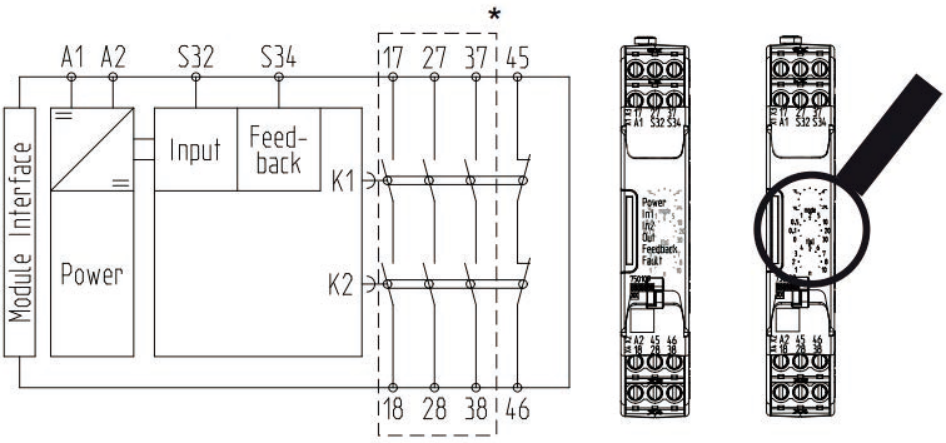
Electrical data	
Supply voltage (V)	24-24 V
Supply voltage type U1	DC
Power consumption DC	2 W
Relay output	
Quantity of relay auxiliary contacts	1
The category AC/DC1 standard is used	EN 60947-4-1
AC1 safe control voltage	240 V
AC1 safely controls the maximum curent	6 A
DC1 safe control voltage	24 V
DC1 safely controls the maximum current	6 A
The category AC15/DC13 standard is used	EN 60947-5-1
AC15 safety control voltage	230 V
AC15 safely controls the maximum current	5 A
DC13 safety control voltage	24 V
Safety contact: AC, according to UL standard	240 V AC G.U. (Same polarity)
Relay contact material	AgCuNi
Other contact specifications of the relay	+ 0.2 µm Au
Environmental data	
Climate suitability criteria for use of equipment	EN 60068-2-78
The ambient temperature expressed in degrees Celsius	-10 ... +55 °C
Humidity rating	93 % r.h.40 °C
Condensation is allowed/not allowed	Not allowed
EMC up to standard ...	EN 60947-5-1, EN 61000-6-2,
	EN 61000-6-4, EN 61326-3-1
Standards against which vibration testing is performed	EN 60068-2-6
Clearance and creepage distance standards to be observed	EN 60947-1
Over voltage level	3
Clearance and creepage distance pollution level specification	2

Cascade Safety Relay Module-time Independent Module-SR22TE

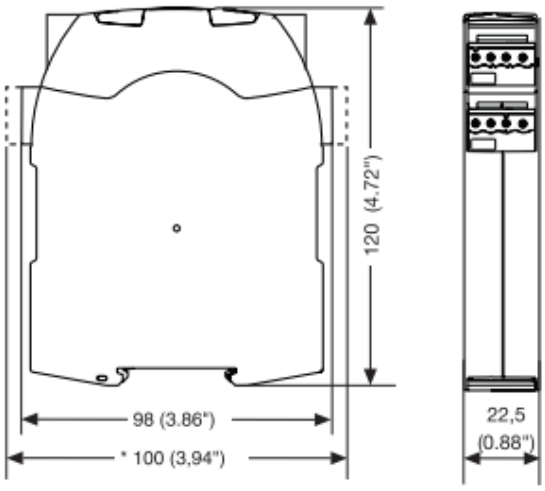
Technical Parameters

Times	
Optional number	0.7 s, 0.8 s, 0.4 s, 0.2 s, 0.3 s, 15 s, 1.5 s, 2.5 s, 25 s, 35 s, 0.5 s, 0.6 s, 7 s, 6 s, 3 s,
	4 s, 5 s, 210 s, 150 s, 0.1 s, 0.04 s, 8 s, 80 s, 90 s, 60 s, 50 s, 20 s, 30 s, 40 s, 16 s, 1 s,
	2 s, 70 s, 100 s, 120 s, 140s, 200 s, 300 s, 160 s, 14 s, 3.5 s, 180 s, 12 s, 240 s, 10 s
Allowable tolerances for Tv	+/-1 % + +/-20 ms
Precision of repetition	+/-1 % + +/-20 ms
Allowable tolerance in case of errors	+/-15 % + +/-20 ms
Formula for calculating the longest delay time	tv + 15 % + 20 ms
Mechanical data	
Location of installation	Any
Lower part of the shell material	PC
Shell material front plate	PC
The upper part of the shell material	PC
Connection terminal	Screw type terminal
Terminal pattern	Pluggable
Allowable cross section area of the flexible AWG conductor	24 - 12 A WG
Height dimension	100 mm
Width dimension	17.5 mm
Depth dimension	120 mm
Net weight	175 g
Total weight	185 g
Environment	
RoHS Directive	2011/65/EC, 2015/863/EC
RoHS compliance	yes
RoHS Exception	yes
RoHS (division), in compliance with direct directives	7a, 7C i
Comply with REACh standards	Contains at least one SVHC substance
Substances contained in REACh	Lead, lead oxide
Percentage of pollutants - proportion	>0,1%
CAS	7439-92-1, 1317-36-8
WEEE classifikation (08/2018)	5 devices (feed size < 50 cm)
SCIP input is available	yes

Working Principle Diagram



Size Diagram



Cascade Safety Relay Module-two-handed Module-SR22H

Product Description

- Safety relay cascade module - Two-handed Module
- Power supply 24 V DC
- Compact design 22.5 mm
- Dual channel inputs, each channel 1NO + 1NC
- Output contact: 3NO + 1NC + 1SC, 4NO + 1SC
- Pluggable terminal
- Simultaneous monitoring via two-handed buttons

Model Selection Table

Type	Notes	Supply voltage	Input channel	Safety output	Auxiliary output
SR22H-31/24VDC	Safety Two-handed cascaded module	24 V DC	2	3NO + 1NC	1SC
SR22H-40/24VDC	Safety Two-handed cascaded module	24 V DC	2	4NO	1SC

Technical Parameters

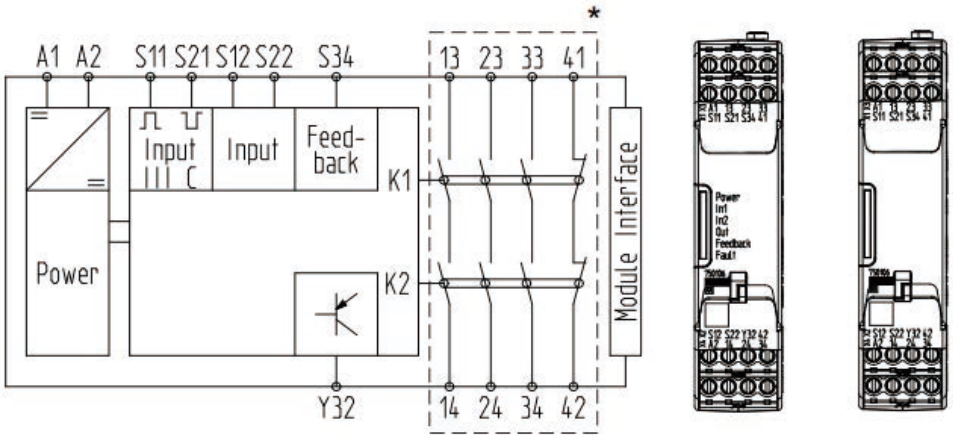
Electrical data	
Supply voltage (V)	24 - 24 V
Supply voltage type U1	DC
Power consumption DC	2.5 W
Maximum equipment circuit breaker	Maximum wire cross-sectional area
Type of bimanual device	III C
Input	
Quantity of input	2
Semiconductor output	
Quantity of semiconductor output	1
Utilization category conforms to EN 60947-1	DC-12
Relay output	
The category AC/DC1 standard is used	EN 60947-4-1
AC1 safe control voltage	240 V
AC1 safely controls the maximum current	6 A
DC1 safe control voltage	24 V
DC1 safely controls the maximum current	6 A
The category AC15/DC13 standard is used	EN 60947-5-1
RoHS (division), in compliance with direct directives	7a, 7Ci
AC15 safely controls the maximum current	5 A
DC13 safety control voltage	24 V
Safety contact:AC, according to UL standard	240 VAC G.U.CuNi (Same polarity)
Relay contact material	AgCuNi
Other contact specifications of the relay	+ 0.2 µm Au
Environmental data	
Climate suitability criteria for use of equipment	EN 60068-2-78
The ambient temperature expressed in degrees Celsius	-10 ... +55 °C
Humidity rating	93 % r.h.40 °C
Condensation is allowed/not allowed	Not allowed

Technical Parameters

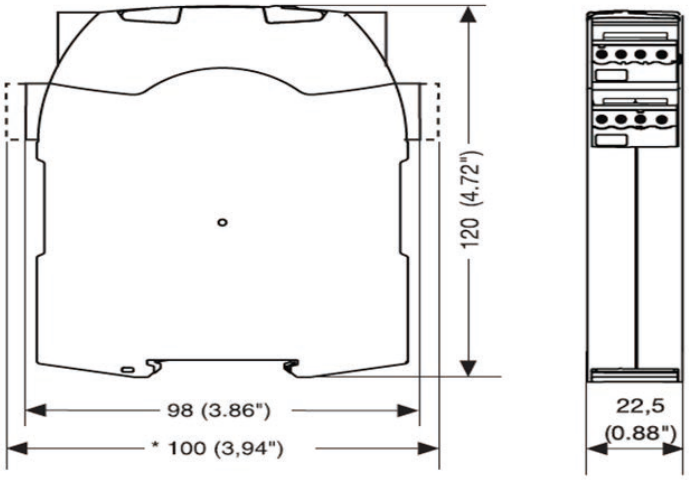
EMC up to standard ...	EN 60947-5-1, EN 61000-6-2, EN 61000-6-4, EN 61326-3-1
Standards against which vibration testing is performed	EN 60068-2-6
Clearance and creepage distance standards to be observed	EN 60947-1
Over voltage level	2
Clearance and creepage distance pollution level specification	2
Mechanical data	
Location of installation	Any
Lower part of the shell material	PC
Shell material front plate	PC
The upper part of the shell material	PC
Connection terminal	Screw type terminal
Terminal pattern	Pluggable
Height dimension	100 mm
Depth dimension	22.5 mm
Depth dimension	120 mm
Net weight	185 g
Total weight	195 g
Environment	
AC15 safely controls the maximum current	230 V
Comply with REACh standards	Contains at least one SVHC substance
WEEE classifikation (08/2018)	5 devices (feed size < 50 cm)

Cascade Safety Relay Module-two-handed Module-SR22H

Working Principle Diagram



Size Diagram



Safety Lock-SL100

CE

Product Description

SL100 contains two series of mechanical locking M and electro-magnetic locking E.

Working principle of mechanical lock: insert latch lock when power is off, release and remove latch after power is on.

Working principle of the electromagnetic lock: insert the latch and lock in the state of power, release andpull out the latch after power off.

- The end can be quickly adjusted and inserted from 5 directions
- The maximum holding force ofthe locking latch is 1200 N
- There are two types of contacts, which are driven by solenoid valve and driven by solenoid valve and bolt, see contact location details
- A variety of latch optional:
  horizontal latch, vertical latch, flexible latch
- LED lights indicate power, locked or unlocked status
- The 3-way catheter inlet M20 x 1.5 is optional
- Protection level IP67
- Optional manual emergency escape handle

Product Model

Type	Model Description
SL100-M0202	Power off lock, contact 2NC + 2NC
SL100-M2002	Power off lock, contact 2NO + 2NC
SL100-M0202X	Power off lock, contact 2NC + 2NC, power indicator light
SL100-M2002X	Power off lock, contact 2NO + 2NC, power indicator light
SL100-M0202X1	Power off lock, contact 2NC + 2NC, power indicator light + open and close indicator light
SL100-M2002X1	Power off lock, contact 2NO + 2NC, power indicator light + open and close indicator light
SL100-E0202	Power on lock, contact 2NC + 2NC
SL100-E2002	Power on lock, contact 2NO + 2NC
SL100-E0202X	Power on lock, contact 2NC + 2NC, power indicator light
SL100-E2002X	Power on lock, contact 2NO + 2NC, power indicator light
SL100-E0202X1	Power on lock, contact 2NC + 2NC, power indicator light + open and close indicator light
SL100-E2002X1	Power on lock, contact 2NO + 2NC, power indicator light + open and close indicator light

Accessories Model

Type	Model Description
SL100-KH	Horizontal latch
SL100-KV	Vertical latch
SL100-KF	Flexibility latch
SL100-RB1	Inner hexagon releases the key
SL100-RK1	Inner hexagon releases the key
SL100-HD001	Safety latch

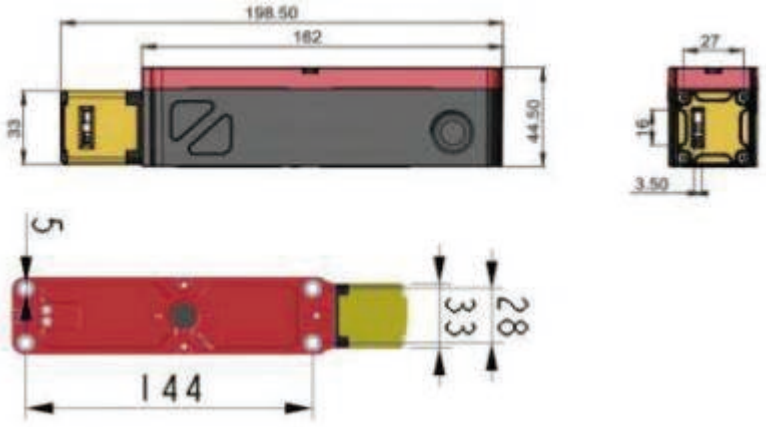
Technical Parameters

Safety level,shell	
Standards	IEC62061 EN ISO13849-1
Shell	Glass fiber reinforced thermoplastic (Self extinguish)
	Operating part: Stainless steel
Code level	According to ISO 14119: low
Performance	
Mechanical life	More than 1,000 ,000 runs
Electrical life	More than 500, 000 runs
Task time	20 years
Force of locking	1,200 N
Direct open action	30 N
Material of contact	Silver plating
Allowable operating frequency	30 time / min
Allowable operating rate	0.05-1 m/s
Cross section of cable	Min 0.25 mm^2, Max 1.5 mm^2
B_{10D}	2 million normally closed contact disconnections
Weight	500 g
Environment	
Protection level	IP67
Operating temperature	-20 ... +55 °C
Relative humidity	5 ~ 95%
Level of pollution	III
Electrical parameters	
Rated operating voltage	DC-13 AC-15
Rated insulation voltage UI	250 V
Resistance of contact	300 mΩ
Rated insulation voltage UI	250 V
Rated shock withstand voltage	1.5 KV
Agreed heating current	3A
Voltage of operation	DC / AC 24 V (+10% ~ 15%)
Current of operation	0.26 (+5% ~ 5%) A
Grade of insulation	Class Ⅱ (Double insulation)

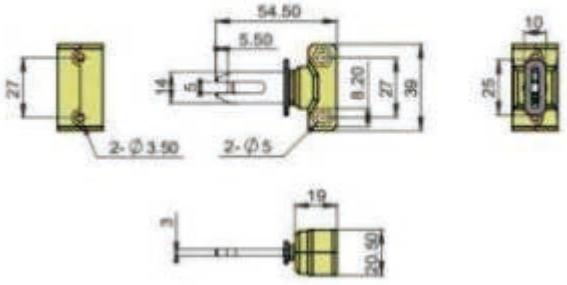
Mechanical Diagram

Safety lock

Control box



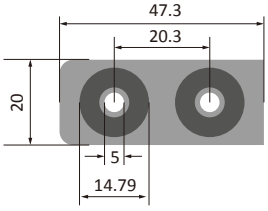
Operating key



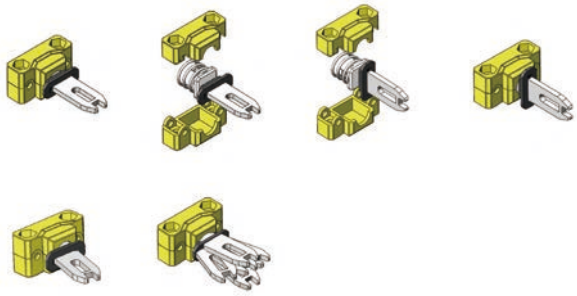
Safety lock latch

SL100-KH

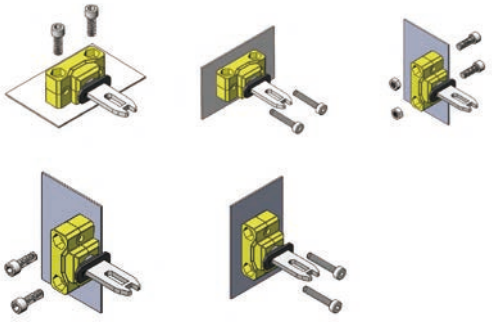
SL100-KV



SL100-KF

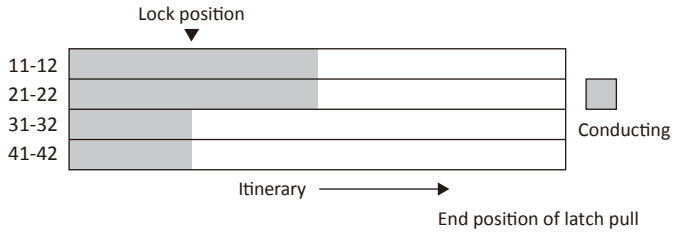
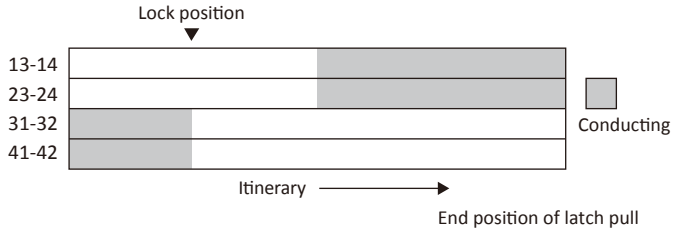


SL100-KF

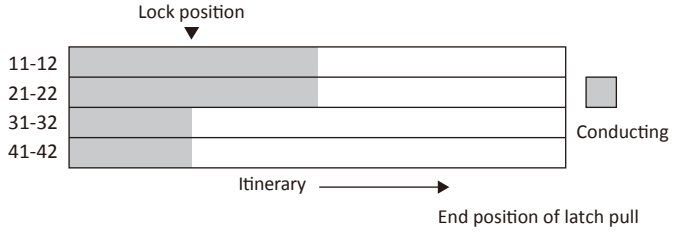
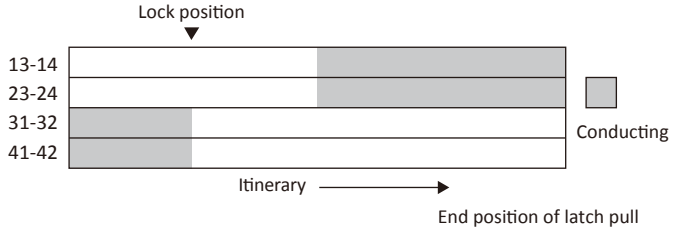


Working Principle Diagram

Principle of operation M: Lock by disconnecting the electromagnetic coil

Type	Contact (door opening and closing detection + lock monitoring)	Form of contact		Mode of action
		Lock monitoring	Door opening and closing detection	
SL100-M0202**	2NC+2NC	31-32 41-42	11-12 21-22	
SL100-M2002**	2NC+2NO	31-32 41-42	13-14 23-24	

Principle of operation E: Lock by turning on the electromagnetic coil

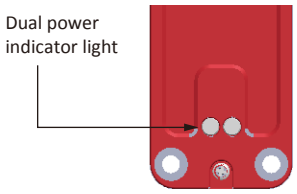
Type	Contact (door opening and closing detection + lock monitoring)	Contact form		Mode of action
		Lock monitoring	Door opening and closing detection	
SL100-E0202 **	2NC+2NC	31-32 41-42	11-12 21-22	
SL100-E2002 **	2NC+2NO	31-32 41-42	13-14 23-24	

Safety Lock Indicator Status

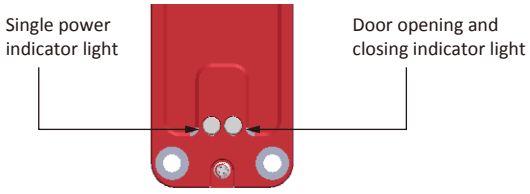
Principle of operation M: Lock by disconnecting the electromagnetic coil

	M series power off locking model			E series power on locking model		
	Lock latch by disconnecting solenoid valve			Lock latch by connecting solenoid valve		
State of work	State A	State B	State C	State A	State B	State C
Actuator	Insert and lock	Insert and Release	Pull out	Insert and lock	Insert and Release	Pull out
Solenoid valve	Power off	Power on	-	Power on	Power off	-
	SL100-M0202X1 series 2NC controlled by solenoid valve 2NC controlled by latch			SL100-E0202X1 series 2NC controlled by solenoid valve 2NC controlled by latch		
POWER	Put out	Green light always on	Green light always on	Green light always on	Put out	Put out
Door monitoring indicator light	Put out	Green light always on	Blue light always on	Green light always on	Put out	Put out
	SL100-M2002X1 series 2NC controlled by solenoid valve 2NO controlled by latch			SL100-E2002X1 series 2NC controlled by solenoid valve 2NO controlled by latch		
POWER	Put out	Green light always on	Green light always on	Green light always on	Put out	Put out
Door monitoring indicator light	Put out	Blue light always on	Green light always on	Blue light always on	Put out	Put out

SL100-M/EX series



SL100-M/EX1 series

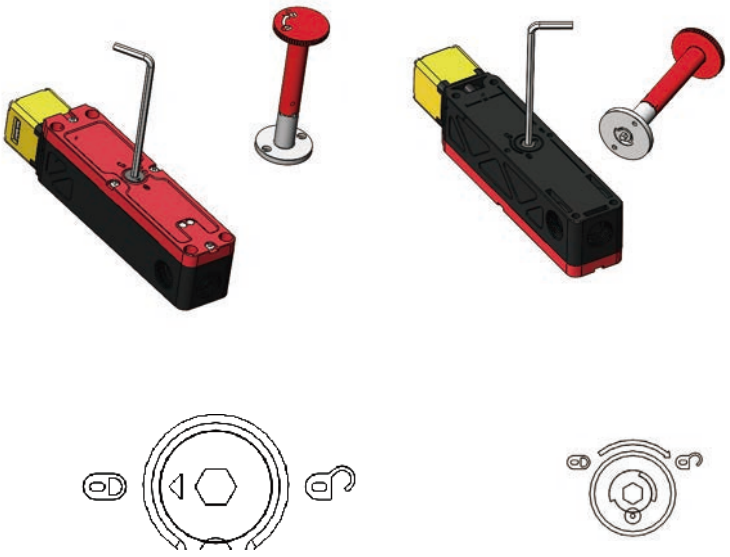


Safety Lock End Adjustment Instructions

The end can be quickly adjusted to any of the four sides of the switch by loosening the four set screws. The latch can be inserted from five directions and eight different positions, which is suitable for various installation environments.

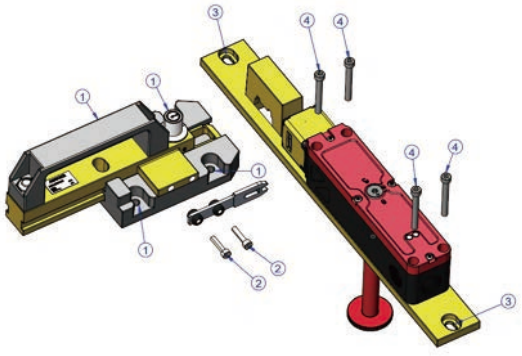
Safety Lock Manual Unlock Instructions

1. In case of repair or emergency, please use the hexagon wrench to turn the front or back unlock knob of SL100 safety lock clockwise from LOCK position to UNLOCK position to complete the manual unlock.
2. SL100 safety lock , front release knob and back emergency release knob at the same time in the LOCK state position will work properly.
3. Electromagnetic lock model: It is forbidden to turn the manual release knob from LOCK to UNLOCK when the safety lock is locked, otherwise it will cause damage to the SL100 safety lock.
4. Electromagnetic lock model: When the safety lock is open, after turning the manual release knob from LOCK to UNLOCK position, it will not provide locking force to the safety door lock. After turning the knob to LOCK position, the door lock is locked.



Safety Lock Installation Instructions

1.Use 4 M5×42mm hexagon screws to fix the SL100-H001 safety latch fixed end mounting base plate.
2.Use 2 M5×18mm hexagon screws to fix the SL100-H001safety latch on slider at movable end.



Safety Lock-SL110

Product Description

SL100 contains two series of mechanical locking M and electro-magnetic locking E.

Working principle of mechanical lock:insert latch lock when ower is off, release and remove latch after power is on.

Working principle of the electromagnetic lock:insert the latch and lock in thestate of power,release and pull out the latch after power off.

- The maximum holding force of the locking latch is 1300N
- Compact appearance can be installed in a narrow space
- General load or small load can be used
- Protection level IP67

Safety Lock Model Selection Table

Type	Model Description
SL110-M1001X	Power off lock, contact 1NO + 1NC, head metal
SL110-M0101X	Power off lock, contact 1NC + 1NC, head metal
SL110-E1001X	Power on lock, contact 1NO + 1NC, head metal
SL110-E0101X	Power on lock, contact 1NC + 1NC, head metal
SL110P-M1001X	Power off lock, contact 1NO + 1NC, head plastic
SL110P-M0101X	Power off lock, contact 1NC + 1NC, head plastic
SL110P-E1001X	Power on lock, contact 1NO + 1NC, head plastic
SL110P-E0101X	Power on lock, contact 1NC + 1NC, head plastic

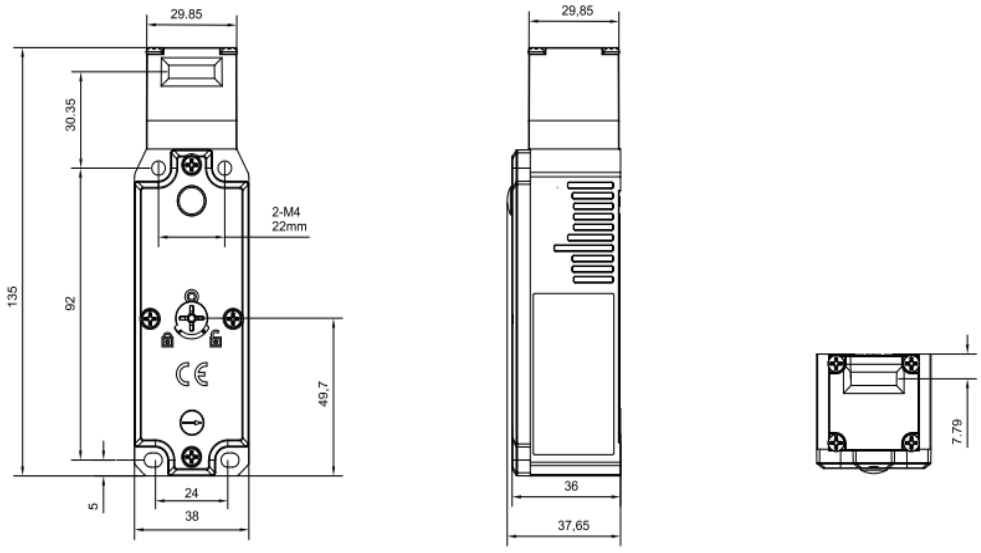
Technical Parameters

Safety level, shell	
Standards	EN60947-5-1 GB14048.5 IEC61508 ENIS014119
Certification	CE, TUV
Inlet of catheter	M16 X 1
Material	PA66 flame retardant
Performance	
Mechanical life	More than 1,000,000 runs
Electrical life	More than 150,000 times (AC 240 V 3 A, resistive load)
Action characteristics	
Direct open action	60N
Force disconnection of pre-trip	10 m m
Allow able operating rate	0.1 ... 0.5m/s
Allow able operating frequence	30 times/min
Force of locking	1300 N
Environment	
Level of pollution	3 (EN60947-5-1)

Technical Parameters

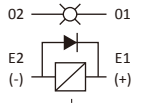
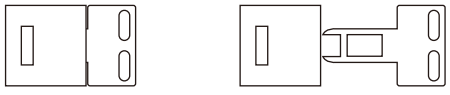
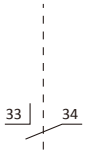
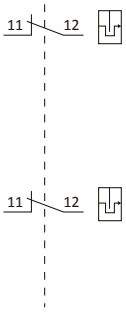
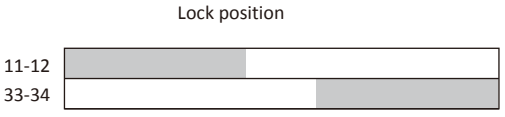
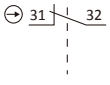
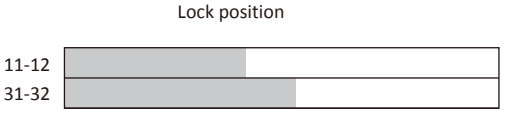
Environment	
Level of pollution	3 (EN60947-5-1)
Protection level	IP67
Operating temperature	-10 ... +55 °C
Relative humidity	Below 95% RH
Electrical parameters	
Rated operating voltage	DC-13 24 V AC-15 240 V
Rated operating current	DC-13 2 A AC-15 3 A
Resistance of contact	25 mΩ
Rated open thermal current Ith	10 A
Rated insulation voltage Ui	300 V
Protection level against electric shock	Class Ⅱ (Double insulation)
Pulse withstand voltage(EN60947-5-1)	2.5 KV
Resistance of insulation	100 MΩ
Short circuit protection device	10 A, 250 V need Quick break fuse
Resistance to vibration	10-55 Hz double amplitude 1.5 mm
Resistance to impact	Durability 1000 m/s², misoperation 300 m/s²
Conditional short circuit current	100 A (EN 60947-5-1)
Contact spacing	2 x 2 mm
Electromagnetic wire tubezz	
Rated operating voltage	DC 24 V
Power consumption	4.8 W
Rated operating current	200 mA
Insulation	Grade B (130)
LED Indicator light	
Rated operating voltage	DC 24 V
Rated operating current	1 mA
Color of light (LED)	Green

Mechanical Diagram



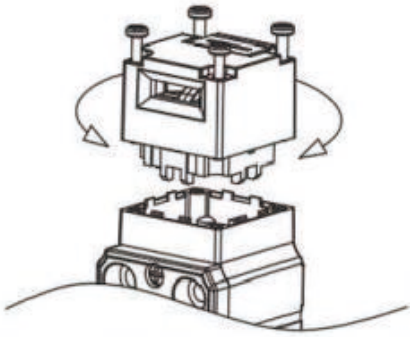
Node Composition And Action

Principle of operation M: Lock by disconnecting the electromagnetic coil

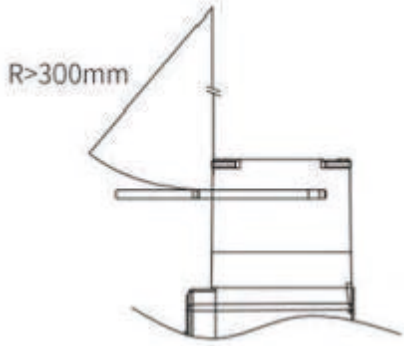
Type	Contact (door opening and closing detection	Form of contact		Mode of action
		Door opening and closing detection	Lock monitoring	
				
SL110	1 NO+1 NC			
SL110	1 NC+1 NC			

Safety Door Lock Installation

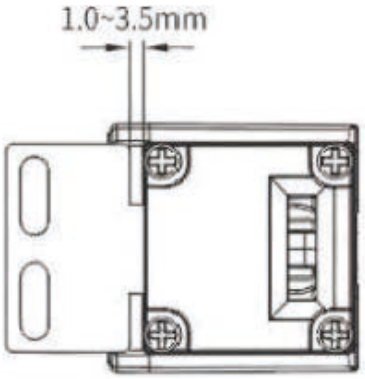
Please install the switch and operating key in the prepared position range (1~3.5mm).



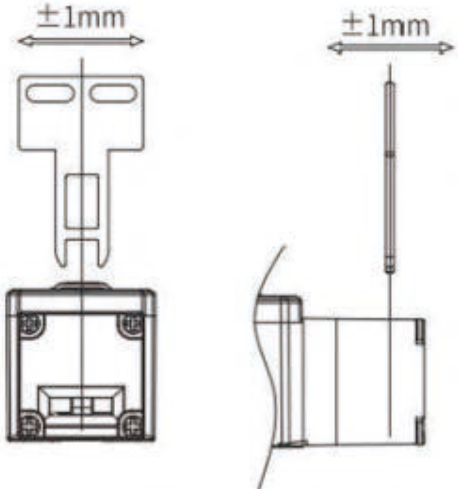
When installed in a flat door, it must be greater than the minimum radius.



Loosen the four screws at the top of the head, rotate the head direction to select the appropriate operation keyhole position and then install.

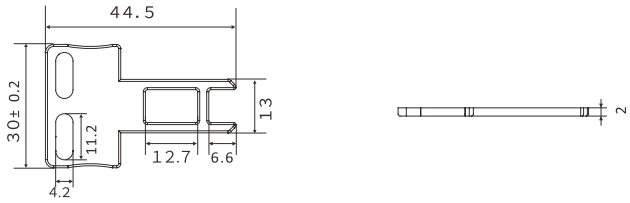
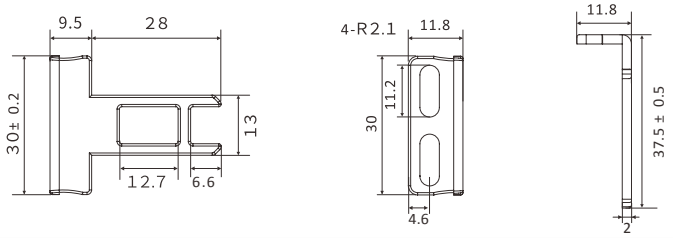
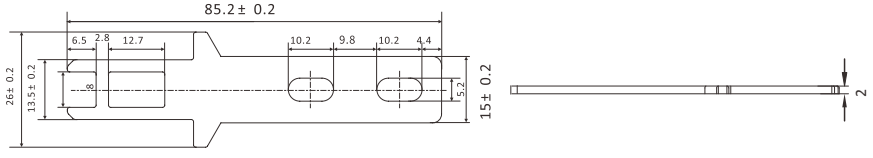
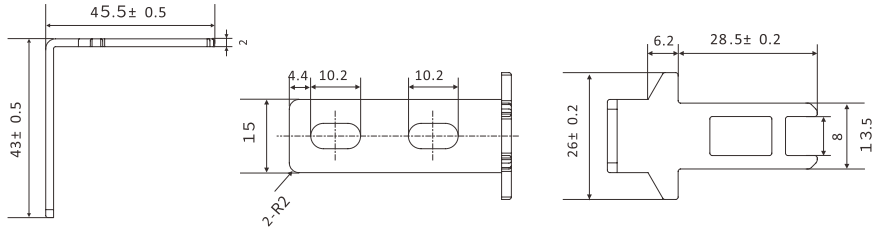
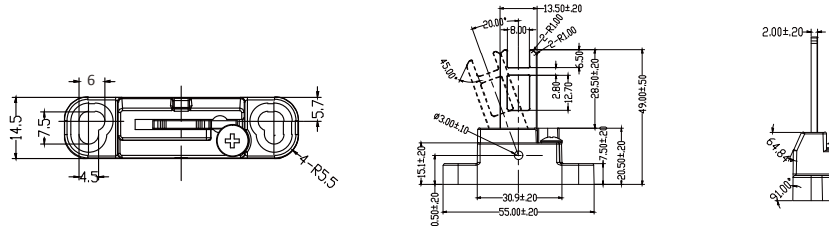


The installation of the operating key allows the error to be within ±1mm of the center of the operating key insertion hole as the reference.



Safety Lock-SL110

Safety Lock Latch

Illustration	Type	Mechanical diagram
	SL110-KH1	
	SL110-KV2	
	SL110-KH3	
	SL110-KV4	
	SL110-KF	

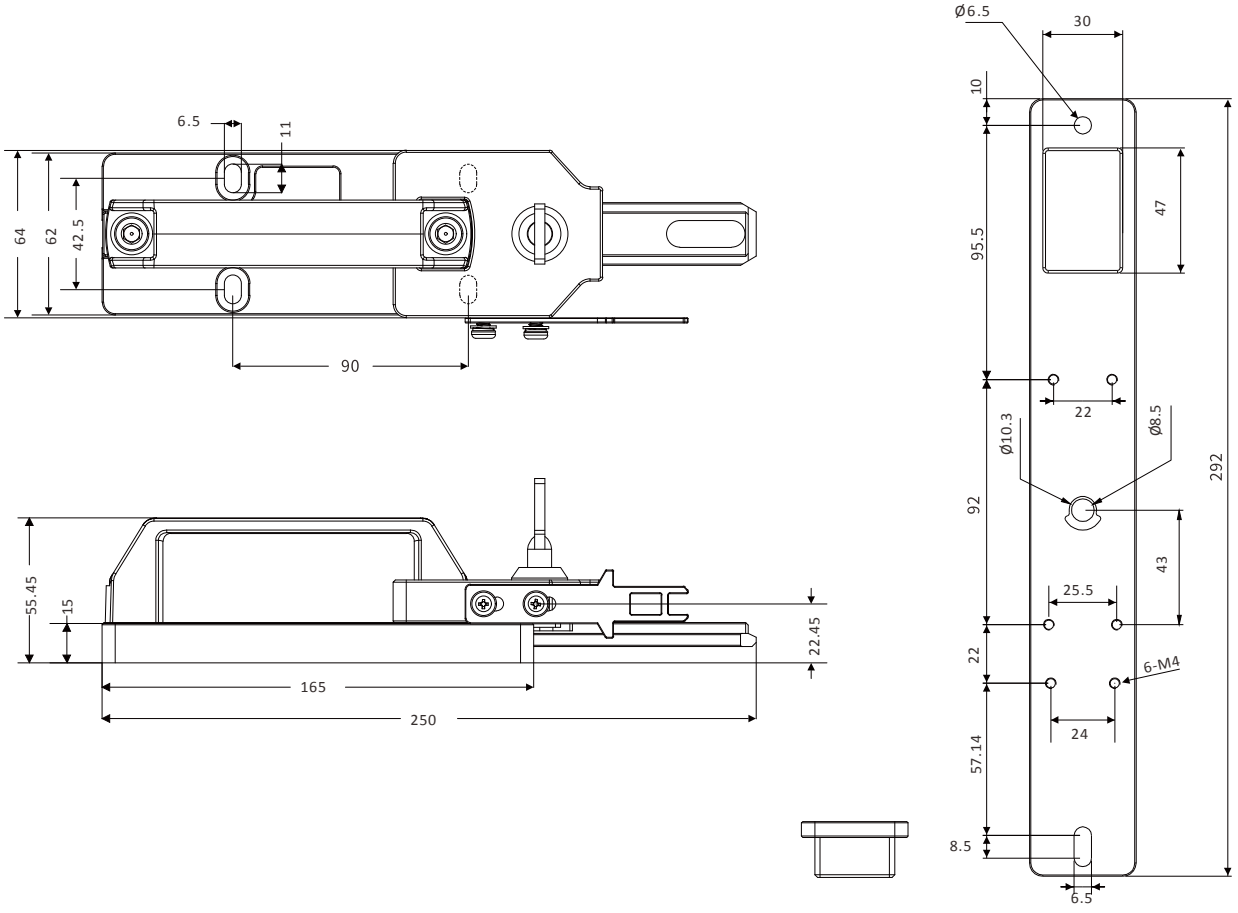
SL110-HD001 Safety Latch

Safety latches are an ideal complement to safety switches and safety locking devices. The accurate guidance of the excitation element to lift the door offset tolerance, always ensure the normal function of the installed safety switch. In addition, the safety latch effectively prevents the excitation element from breaking. As a result, failures can be eliminated and high performance levels can be achieved for the overall construction. Additional options such as articulated locks or emergency unlocking devices reliably prevent maintenance personnel unexpected entry.

Product Features

- Reduced development and installation costs.
- Mechanical protection and strong materials ensure an extremely long service life.
- Increase productivity with robust design and sensor protection.
- Models equipped with unlocking buttons prevent accidental operation.
- Padlock lock is used to prevent staff from accidentally stepping in.

Mechanical Diagram



Safety Lock-SRL100

Product Description

SRL110 contains two series of mechanical locking M and electromagnetic locking E.

Working principle of the mechanical lock:insert the latch lock when power is off,release and remove latch after power is on.

Working principle of the electromagnetic lock:insert the latch and lock in the state of power,release and pull out the latch after power off.

● Multiple functions:

At the same time, it has the function of locking and monitoring

● Multiple encoding methods:

Unique encoding and universal encoding modes are optional

● Self-checking and cross-checking design:

dual periodic mutual-check to improve safety

● Independent redundant dual output:

In case potential safety hazards caused by single loop failure

● Flexible installation:

It can be installed directly on the aluminum frame not exceeding 30 mm without bracket

Product Model

Type	Model Description
SRL100-MC0N	Power off lock, standard, universal encoding, NPN
SRL100-MC1N	Power off lock, standard, unique encoding, NPN
SRL100-MC0P	Power off lock, standard, universal encoding, PNP
SRL100-MC1P	Power off lock, standard, unique encoding, PNP
SRL100H-MC0N	Power off lock, advanced, universal encoding, NPN
SRL100H-MC1N	Power off lock, advanced, unique encoding, NPN
SRL100H-MC0P	Power off lock, advanced, universal encoding, PNP
SRL100H-MC1P	Power off lock, advanced, unique encoding, PNP
SRL100-EC0N	Power on lock, standard, universal encoding, NPN
SRL100-EC1N	Power on lock, standard, unique encoding, NPN
SRL100-EC0P	Power on lock, standard, universal encoding, PNP
SRL100-EC1P	Power on lock, standard, unique encoding, PNP
SRL100H-EC0N	Power on lock, advanced, universal encoding, NPN
SRL100H-EC1N	Power on lock, advanced, unique encoding, NPN
SRL100H-EC0P	Power on lock, advanced, universal encoding, PNP
SRL100H-EC1P	Power on lock, advanced, unique encoding, PNP

Technical Parameters

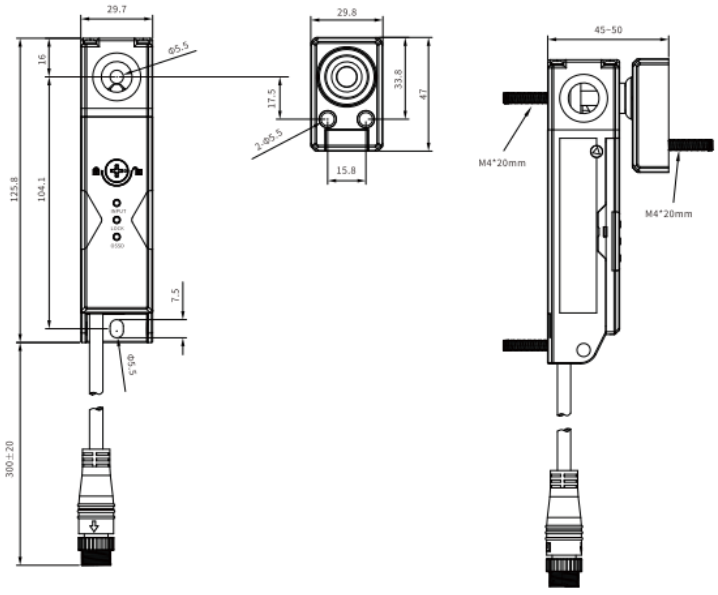
Safety level, shell	
Standards	ISO 13849-1(category4/Ple); IEC/EN60947-5-3
Certification	CE
Material	Nylon / zinc alloy / stainless steel
Locking mode	Mechanical lock / electromagnetic lock
Safety output	NPN*2/ PNP*2
Response time	100 ms (Work independently)
Lock	
Locking holding force	≥ 2000 N
Latch insertion error	≤ 2 mm
Mechanical endurance	> 1 million times (door operation speed 1m/s)
Operating frequency	1 Hz
Minimum use radius of revolving door	≥ 220 mm
Manually unlock	Front and back
Cascade	Maximum 20 sets
Safety output (OSSD)	
Output type	Transistor output x 2
Maximum load current	≤ 200 mA
Residual voltage (DN)	< 2.5 V@200 mA
OFF voltage	≤ 2 V@Cable 5m
Leakage current	≤ 0.5 mA
Maximum load capacity	2.2 μF
Load connection resistance	≤ 2.5 Ω
AUX output (Non-safety output)	
Output type	Transistor output
Number of outputs	1
Maximum load current	50 mA
Residual voltage (DN)	≤ 2.5 V@50 mA
External input (Open circuit current)	
Safety input	1.5 mA*2
Reset / EDM input	About 10 mA*1
Lock control input	About 10 mA*1
Power supply	
Voltage of operation	DC 24 V±15%
Power consumption	4.6 W (No load)
Protection	Safe open circuit protection, current limit, overload protection, overvoltage protection,overheat protection stop and restart, reverse polarity protection, transient noise protection, failure pulse protection
Environment	
IP rating	IP65
Operating temperature	-20 ... +55 °C (no freezing)
Storage temperature	-25 ... +70 °C (no freezing)
Operating humidity	5%~95% RH
Storage humidity	5%~95% RH
Resistance to vibration	10 ... 55 Hz, dual amplitude 2.0 mm, 5 minutes in each direction X, Y, and Z
Resistance to impact	30 g X, Y, Z direction 6 times(IEC60947-5-3)
Risk time	100 ms
Startup time	3.5 s

Safety Lock-SRL100

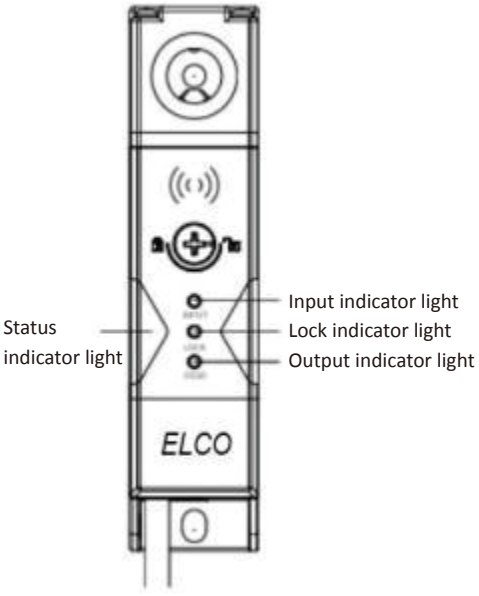
Level & Function

Level & Function						
Type	Safety output	AUX output	Safety input	Lock control input	EDM	Reset
SRL100 Standard	●	●	●	●		
SRL100H Advanced	●	●	●	●	●	●

Mechanical Diagram



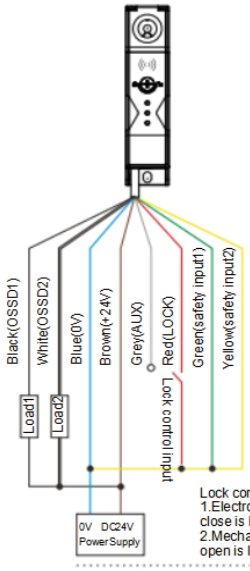
Indicator Light Description



Name of indicator light	Light color	Status Description
Output indicator light	Red, Green	OSSD output:Green OSSD close:Red OSSD error:Red flash(2Hz) EDM error:Red flash(1Hz)
Lock indicator light	Green	Lock the door:Light up Lock error:2Hz flash (electromagnet error,optical coupling error,RFID error) No RFID:1Hz flash Try to lock:Double flash Try to unlock:Double flash off Unlocked:Light go out
Input indicator light	Orange	Normal input:Light up No input(Waiting for input):Light go out Waiting for RESET:1Hz flash
Status indicator light	Green, Red, Orange	Lock and output:Green No output and no system error (not include the above three kinds of light):Red Voltage error:Orange 1Hz flash Internal communication self check error:Red 2Hz flash Internal signal self-test error:Red 1Hz flash Internal energy data calibration error:Green 1Hz flash

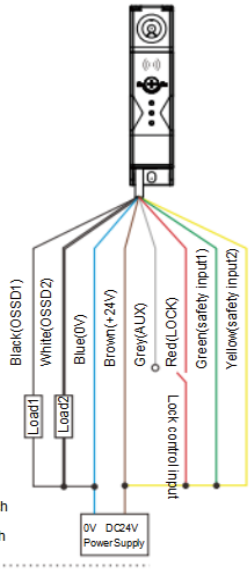
Electrical Connection Diagram

SRL110 Standard (NPN, No cascade)

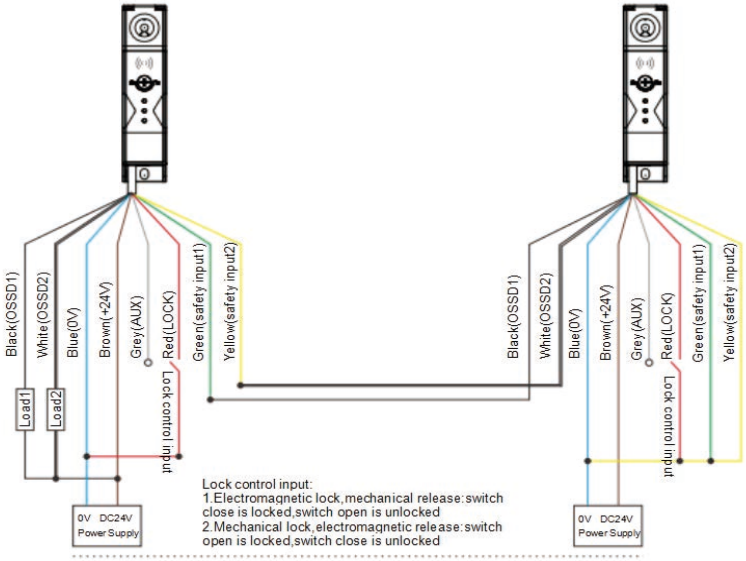


Lock control input:
1.Electromagnetic lock,mechanical release:switch close is locked,switch open is unlocked
2.Mechanical lock,electromagnetic release:switch open is locked,switch close is unlocked

SRL110 Standard (PNP, No cascade)



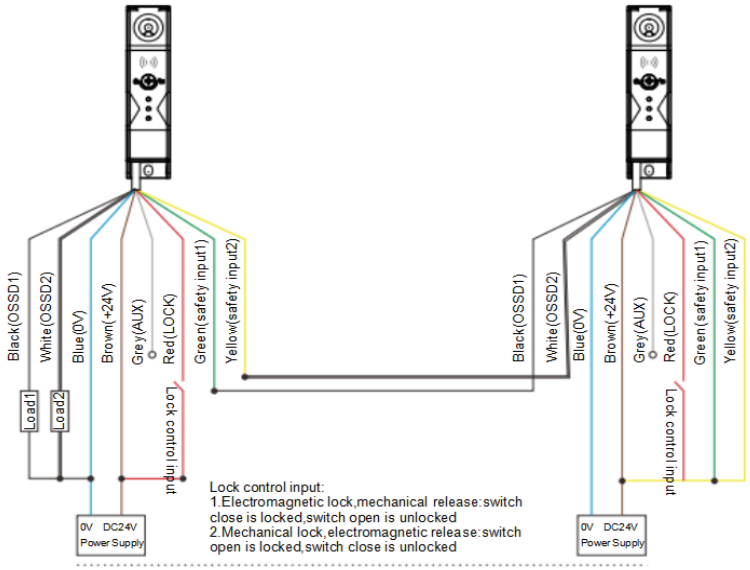
SRL110 Standard (NPN, Cascade)



Lock control input:
1.Electromagnetic lock,mechanical release:switch close is locked,switch open is unlocked
2.Mechanical lock,electromagnetic release:switch open is locked,switch close is unlocked

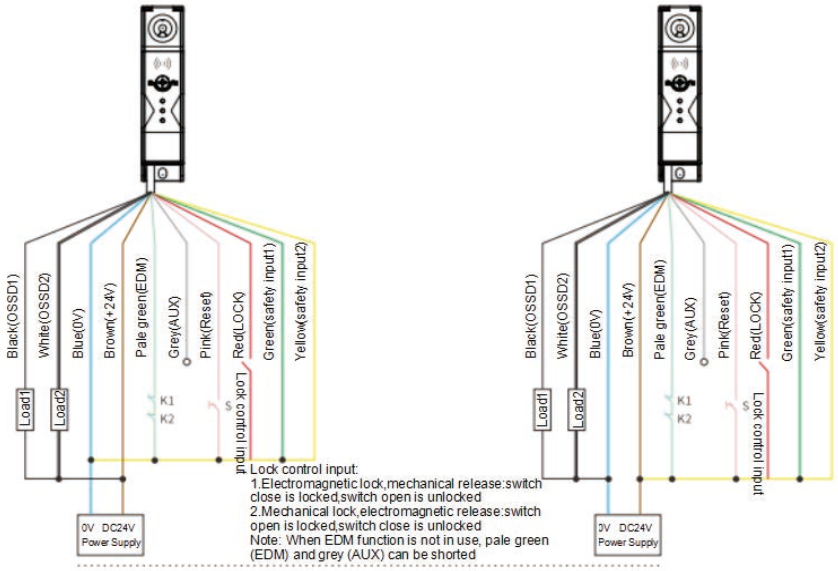
Electrical Connection Diagram

SRL110 Standard (PNP, Cascade)



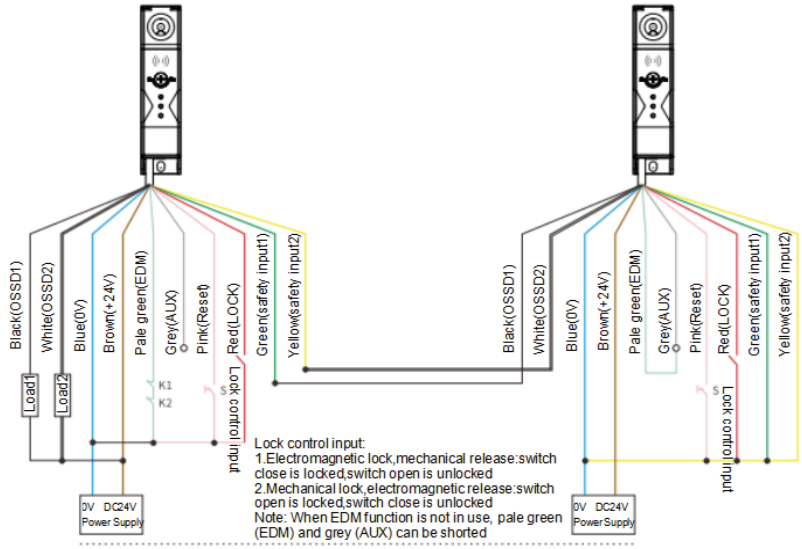
SRL110H Advanced (NPN, No cascade)

SRL110H Advanced (PNP, No cascade)

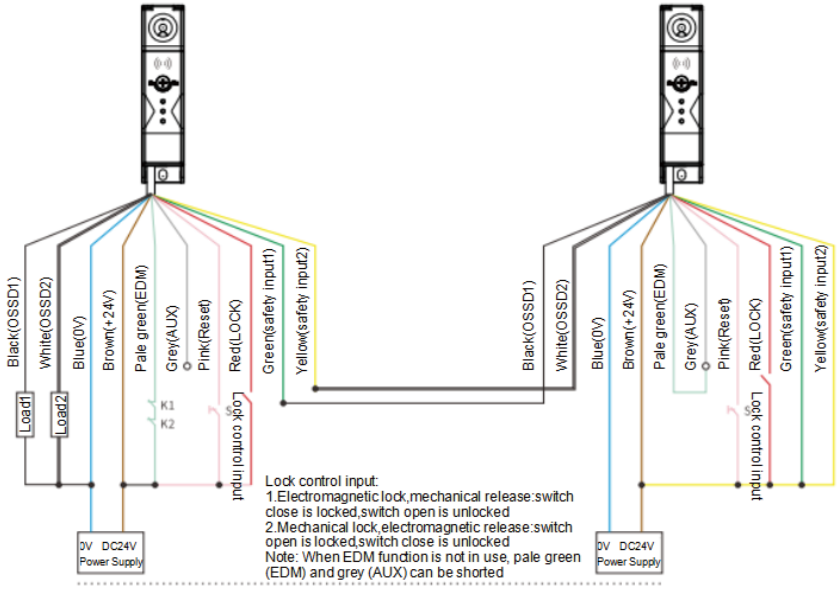


Electrical Connection Diagram

SRL110H Advanced (NPN, Cascade)



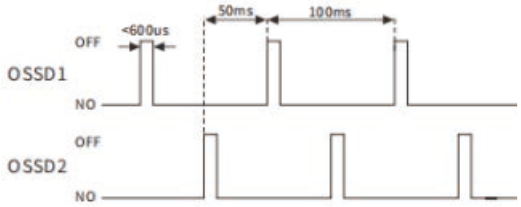
SRL110H Advanced (PNP, Cascade)



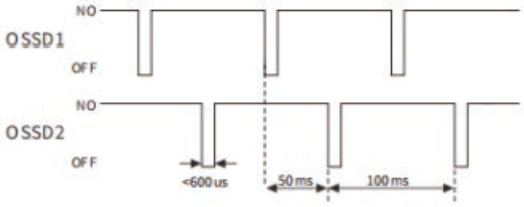
Safety Lock-SRL100

Sequence Diagram

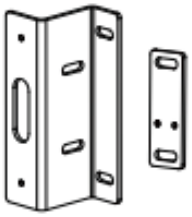
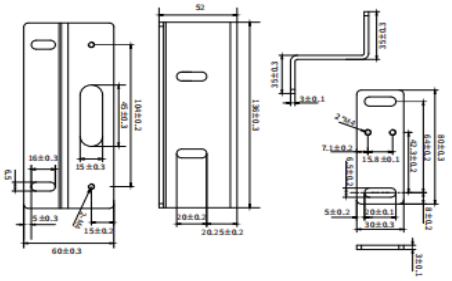
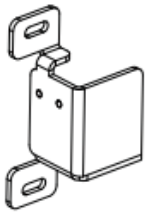
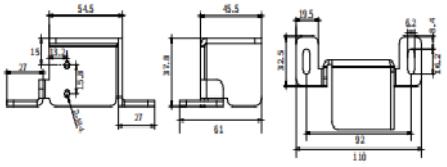
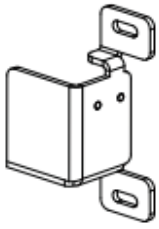
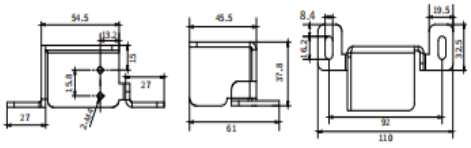
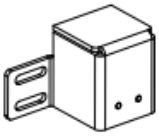
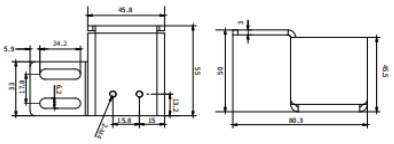
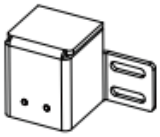
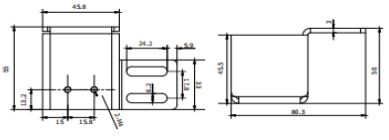
NPN diagnostic sequence



PNP diagnostic sequence



Mount Bracket Type

Illustration	Bracket name	Type	Mechanical diagram
 Lock body fixation Key fixing	Medial side mount bracket (Install and fix the inner side)	SRL100-B01	
	Left open slide mount bracket (Sliding door key fixed)	SRL100-BL01	
	Right open slide mount bracket (Sliding door key fixed)	SRL100-BR01	
	Left open rotation mount bracket (Hinged door key fixed)	SRL100-BL02	
	Right open rotation mount bracket (Hinged door key fixed)	SRL100-BR02	

Installation Diagram

Safety door lock and key orientation
Correct installation

Insert from the front

Insert from the side

Incorrect installation

Safety locks interfere with each other
When multiple SRL100 locks are used, they may interfere with each other and cause misactions.
To prevent mutual interference, please install the door lock as shown below.

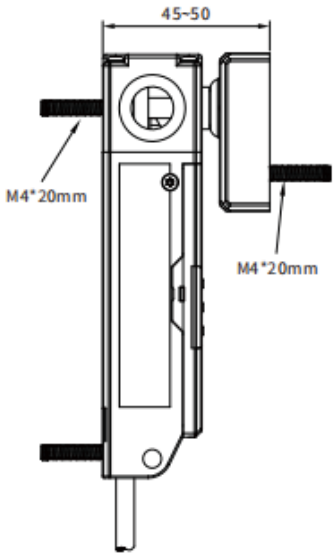
Above 50 mm

Above 50 mm

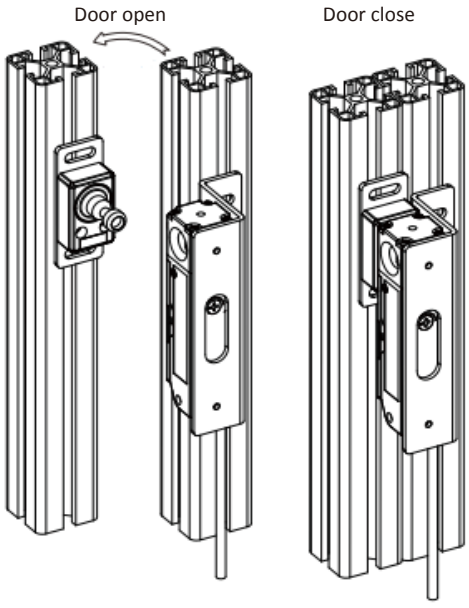
Safety Lock-SRL100

Installation Diagram

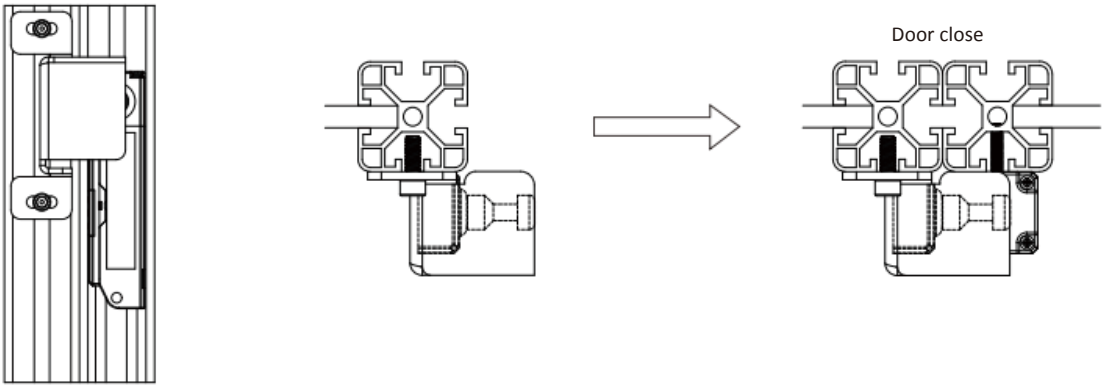
Mounting without support



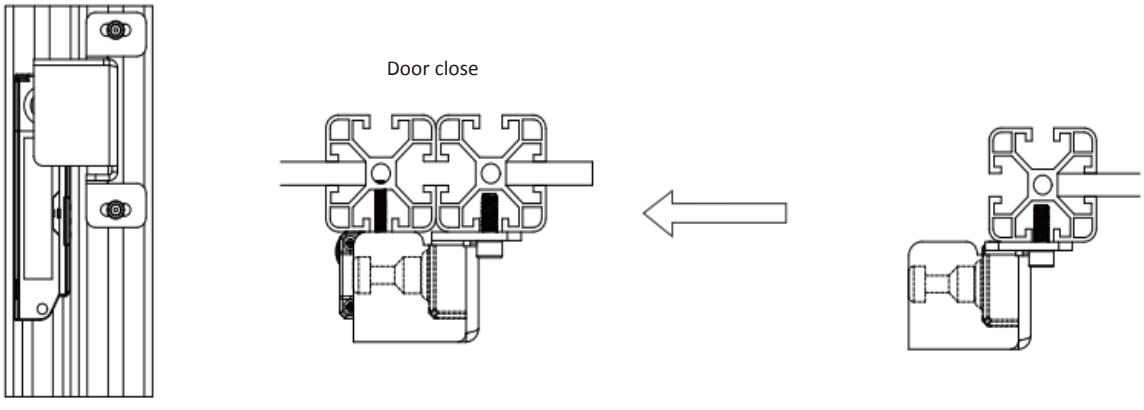
Install and fix the inner side



Left open slide bracket mount

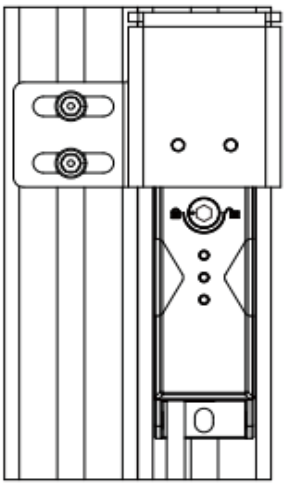


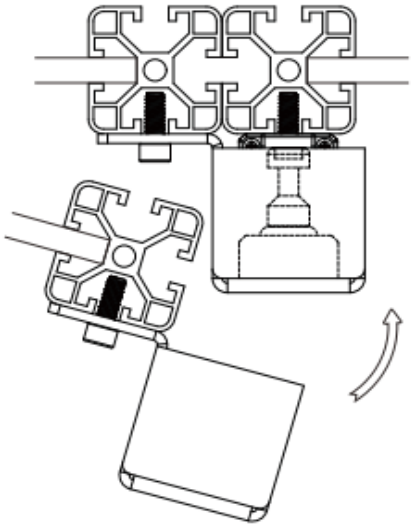
Right open slide bracket mount



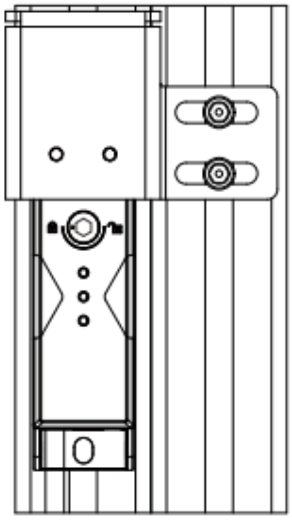
Installation Diagram

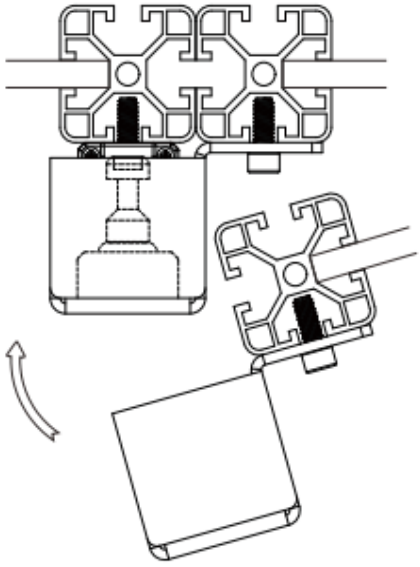
Left open rotation bracket mount





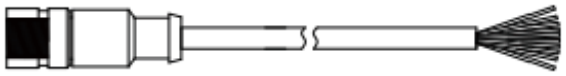
Right open rotation bracket mount



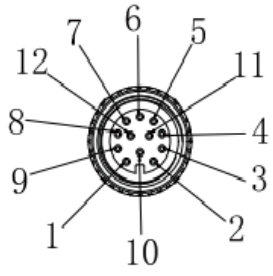
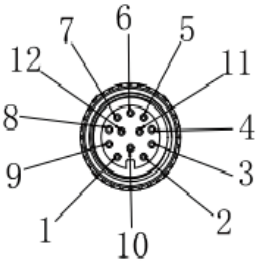


Safety Lock-SRL100

Cable Type

Cable	Categories	Length	Type
	Standard, advanced general	3 m	CE-M12-3000E-12GF
		5 m	CE-M12-5000E-12GF
		10 m	CE-M12-10000E-12GF
		20 m	CE-M12-20000E-12GF

Cable Description

M12 waterproof aviation plug female head standard line sequence		M12 waterproof aviation plug female head advanced line sequence	
			
1	Brown-Positive pole VCC	1	Brown-Positive pole VCC
2	Blue-Negative pole GND	2	Blue-Negative pole GND
3	Grey-AUX output	3	Grey-AUX output
4	Black-OSSD1	4	Black-OSSD1
5	White-OSSD2	5	White-OSSD2
6	Green-Safety input1	6	Green-Safety input1
7	Yellow-Safety input2	7	Yellow-Safety input2
8	Red-Lock control	8	Red-Lock control
9	Pale green-Not use	9	Pale green-EDM
10	Pink-Not use	10	Pink-Reset
11	Empty	11	Empty
12	Empty	12	Empty

Product Description

SW100 series safety switches are suitable for control doors, sliding doors and other protective devices that can protect the machine from inertia. The moving part of the stainless steel operating part fixed to the protective device will be separated from the switch each time the protective device is opened.

- There are three output types of contacts, driven by latch, 3NC/1NO + 2NC/2NO + 1NC
- There are three types of latches: 180 degree horizontal latch KH, 90 degrees vertical latch KV, universal flexible latch KF
- The end can be installed from 5 directions to ensure that the installation is correct in various environments
- The drive end has a wide range of travel Range, and the latch can swing (4 mm) without causing unnecessary downtime
- One catheter inlet, M20 plug model
- Wide temperature range,suitable for -40 ... +80 °C ambient temperature range
- IP65 Protection level

Safety Switch Model Selection Table

Type	Notes
SW100-03	Contact 3NC
SW100-12	Contact 1NO+2NC
SW100-21	Contact 2NO+1NC

Accessories Type

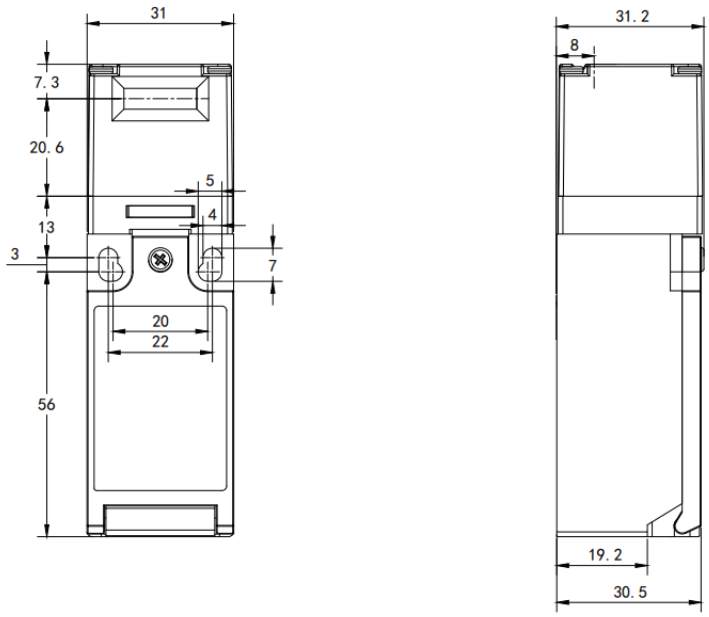
Type	Notes
SW100-KH	Horizontal latch
SW100-KV	Vertical latch
SW100-KF	Flexibility latch
SW100-HD001	Safety latch

Safety Switch-SW100

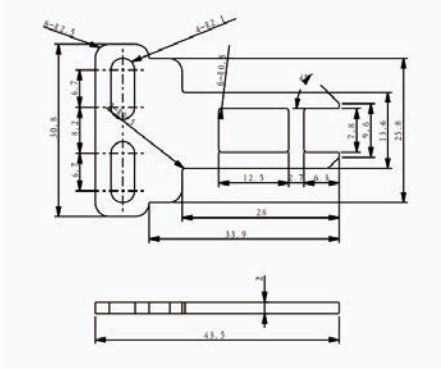
Technical Parameters

Safety level,shell	
Standards	IEC62061 EN ISO13849-1
Shell	Glass fiber reinforced thermoplastic(Self extinguish)
	Operating part: Stainless steel
Code level	According to ISO 14119:low
Performance	
Mechanical life	More than 1,000 ,000 runs
Electrical life	More than 500,000 runs
Task time	20 years
B_{10D}	2 million normally closed contact disconnections
Pull out force of actuator	< 30 N
Material of contact	Silver plated contact
Allowable operating frequency	30 cycles per minute
Allowable operating rate	0.05-1 m/s
Cross section of cable	Min 0.25 mm^2, Max 1.5 mm^2
Inlet of catheter	M20 ×1
Weight	About 90 g
Environment	
Protection level	IP65
Operating temperature	-20 ... +80 °C
Relative humidity	5-95%
Level of pollution	III
Electrical parameters	
Rated insulation voltage UI	250 V
Current of heat	3 A
Resistance of contact	300 mΩ
Rated shock withstand voltage	1.5 KV

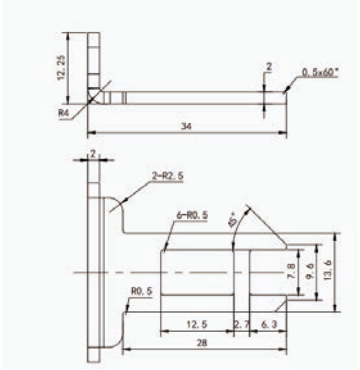
Mechanical Diagram



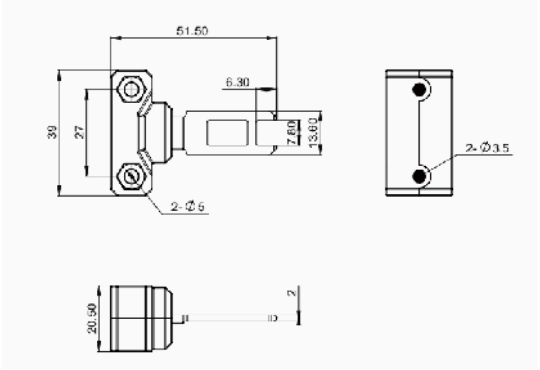
Safety Switch Latch



SW100-KH



SW100-KV

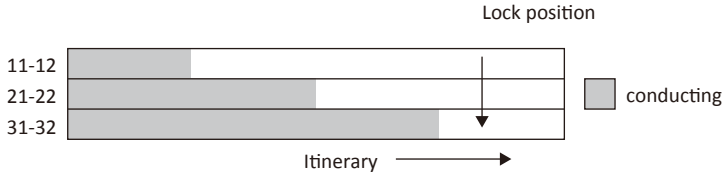
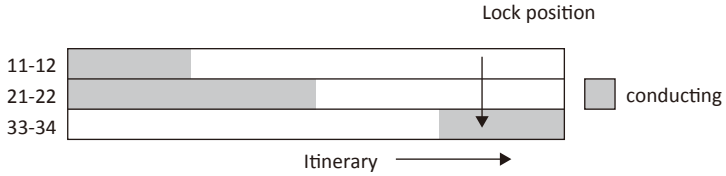
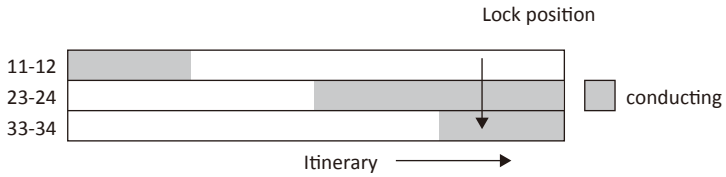


SW100-KF

Safety Switch-SW100

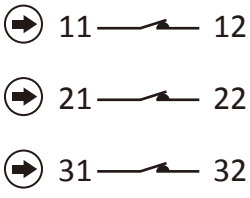
Mechanical Diagram

Principle of operation: Drive the contact by inserting/pulling out the latch

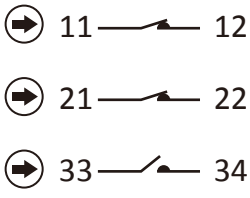
Type	Contact (door opening and closing detection)	Door opening and closing detection	Mode of action
SW100-03	3NC	11-12 21-22 31-32	
SW100-12	2NC+1NO	11-12 21-22 33-34	
SW100-21	2NO+1NC	11-12 23-24 33-34	

Safety Switch Contact Structure

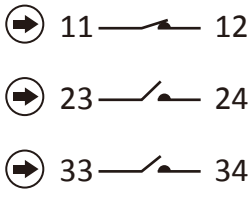
SW100-03



SW100-12



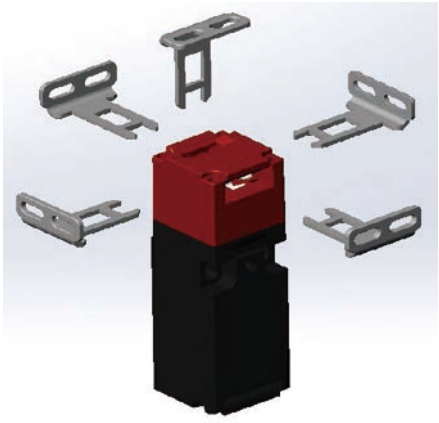
SW100-21



Safety Switch End Adjustment Instructions

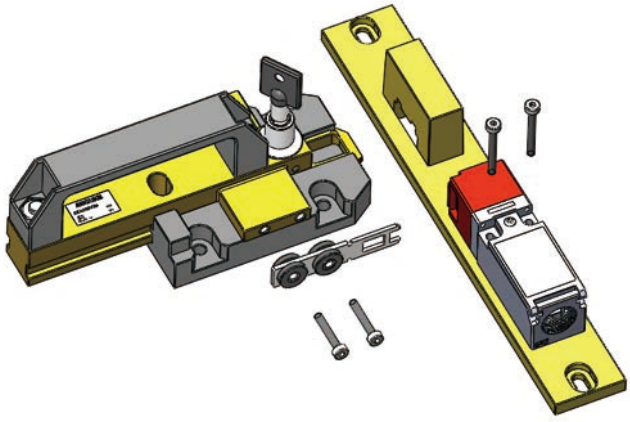
The end can be quickly adjusted to any of the four sides of the switch by pulling out the front and back lock pads (see the picture below for details). The latch can be inserted from five directions and eight different positions, which is suitable for various installation environments.

Lock head clamp pad



Safety Switch Installation Instructions

1.Use 2 M4×30mm hexagon screws to fix the SW100-H001 safety latch fixed end mounting base plate.
2.Use 2 M5×18mm hexagon screws to fix the SW100-H001 safety latch on slider at movable end.



Safety Switch-SRW48

Product Description

Contactless safety door switch is safety device used for monitoring the opening and closing status of movable protective mechanisms such as door of safety fence and the protective cover.

The SRW48 contactless safety door switch with RFID technology ensure higher security & confidentiality; Sensor & label can be matched with universal or unique coding; Small size for easy installation.

● Self-checking and cross-checking design: dual periodic mutual-check toi mprove safety.

● Independent redundant dual output: In case potential safety hazards caused by single loop failure.

Safety switch Model Selection Table

Type	Notes
SRW48B-C0P	Base, PNP, universal encoding
SRW48B-C1P	Base, PNP, unique encoding
SRW48B-C0N	Base, NPN, universal encoding
SRW48B-C1N	Base, NPN, unique encoding
SRW48-C0P	Standard, PNP, universal encoding
SRW48-C1P	Standard, PNP, unique encoding
SRW48-C0N	Standard, NPN, universal encoding
SRW48-C1N	Standard, NPN, unique encoding

Technical Parameters

Standard	ISO 13849-1 (Cat. 2/PLc) IEC/EN60947-5-3
Power supply	DC 24 V±15%
Power consumption	< 1 W
Response time	50 ms
Output current	150 mA
Operating frequency	1 Hz
Safety output	PNP / NPN transistor output, load current below 200mA residual voltage below
	1 V (except voltage drop caused by cable extension), leakage current below 1 mA
Protective circuit	Over voltage protection, power supply reverse polarity protection and over current protection
Encoding mode	Universal encoding / Unique encoding
IP rating	IP65
Cross-section	36 x 23 mm
Vibration resistance	Frequency 10 ... 55 Hz, amplitude 0.35 + 0.05 mm 20 times each at X, Y and Z directions
Operating temperature	-10 ... +55 °C (no freezing)
Storage temperature	-30 ... +70 °C (no freezing)
Operating humidity	When temperature is 20 °C, humidity max 85%

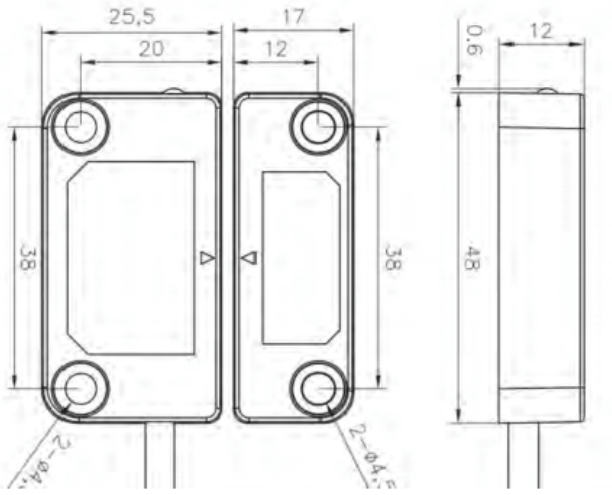
Level & Function

Type	Safety output	Cascade function
Base type	●	
Standard type	●	●

Indicator light description

Status	Indicator light display
Output error	Red light flash at 1Hz
Voltage error	Red light double flash
Unique code unmatched	Red and green light flash alternately at 4Hz
No error, no RFID, no output	Red light always on
No error, with RFID,no cascade	Green light flash at 1Hz
No error, with RFID,cascade signal error	Green light double flash
No error, with RFID, cascade, with output	Green light always on

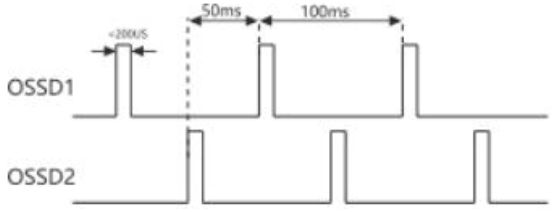
Mechanical diagram



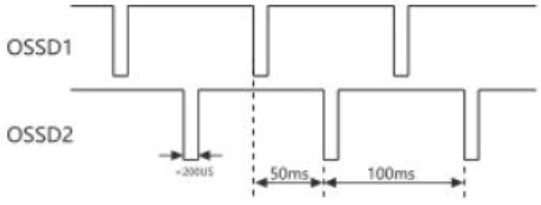
Indicator Adapter

Sequence diagram

NPN diagnostic sequence

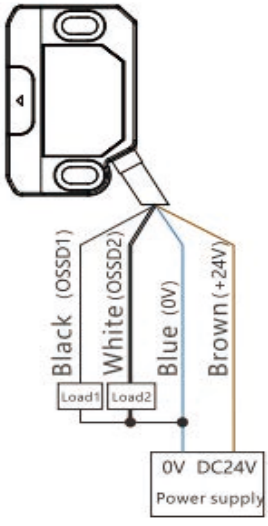


PNP diagnostic sequence

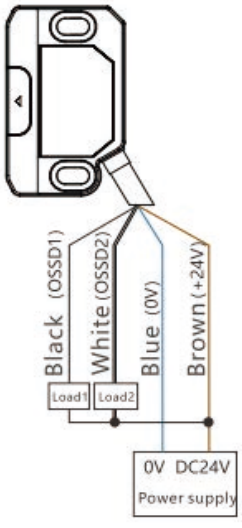


Electrical connection diagram

SRW48 Base (NPN)

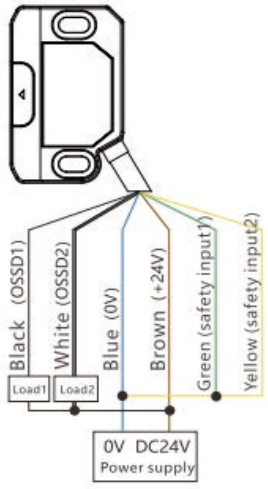


SRW48 Base (PNP)

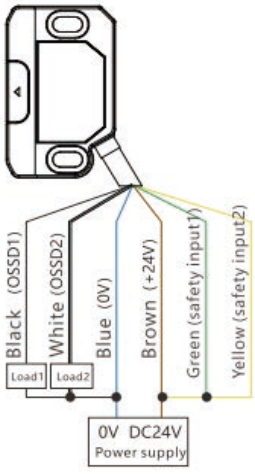


Electrical connection diagram

SRW48 Standard (NPN)



SRW48 Standard (PNP)



Wire color	Function	Wiring Connection
Brown	Power positive pole	Connect positive pole
Blue	Power negative pole	Connect negative pole
Black	Safety output 1	Connect safety PLC or other safety input control interface
White	Safety output 2	
Green	Safety input 1	No need cascade:PNP connect positive,NPN connect negative
Yellow	Safety input 2	Use cascade:connect switch safety input signal(OSSD1and OSSD2)

Safety Switch-SRW50

Product Description

Contactless safety door switch is safety device used for monitoring the opening and closing status of movable protective mechanisms such as door of safety fence and the protective cover.
The SRW50 contactless safety door switch with RFID technology ensure higher security & confidentiality; Sensor & label can be matched with universal or unique coding; Small size for easy installation.

CE

- Self-checking and cross-checking design: dual periodic mutual-check to improve safety.
- Independent redundant dual output: In case potential safety hazards caused by single loop failure.
- Magnetic holding force can reach 15N, which can replace the door magnet.

Safety Switch Model Selection Table

Type	Notes
SRW50B-C0P	Base, PNP, Universal encoding
SRW50B-C1P	Base, PNP, Unique encoding
SRW50B-C0N	Base, NPN, Universal encoding
SRW50B-C1N	Base, NPN, Unique encoding
SRW50B-C0P-0.3M-Q12	Base, PNP, Universal encoding
SRW50B-C1P-0.3M-Q12	Base, PNP, Unique encoding
SRW50B-C0N-0.3M-Q12	Base, NPN, Universal encoding
SRW50B-C1N-0.3M-Q12	Base, NPN, Unique encoding
SRW50-C0P	Standard, PNP, Universal encoding
SRW50-C1P	Standard, PNP, Unique encoding
SRW50-C0N	Standard, NPN,Universal encoding
SRW50-C1N	Standard, NPN, Unique encoding
SRW50-C0P-0.3M-Q12.8	Standard, PNP, Universal encoding
SRW50-C1P-0.3M-Q12.8	Standard, PNP, Unique encoding
SRW50-C0N-0.3M-Q12.8	Standard, NPN, Universal encoding
SRW50-C1N-0.3M-Q12.8	Standard, NPN, Unique encoding
SRW50H-C0P	Advanced, PNP, Universal encoding
SRW50H-C1P	Advanced, PNP, Unique encoding
SRW50H-C0N	Advanced, NPN, Universal encoding
SRW50H-C1N	Advanced, NPN, Unique encoding
SRW50H-C0P-0.3M-Q12.12	Advanced, PNP, Universal encoding
SRW50H-C1P-0.3M-Q12.12	Advanced, PNP, Unique encoding
SRW50H-C0N-0.3M-Q12.12	Advanced, NPN, Universal encoding
SRW50H-C1N-0.3M-Q12.12	Advanced, NPN, Unique encoding

Technical Parameters

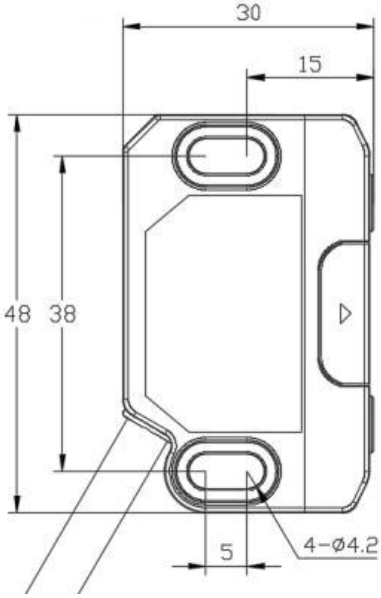
Standard	ISO13849-1 (Cat.4/PLe) IEC/EN60947-5-1 IEC/EN60947-5-3
Power supply	DC 24 V±15%
Power consumption	< 1 W
Response time	50 ms
Risk time	50 ms
Magnetic holding force	> 15 N
Operating frequency	1Hz
Safety output	PNP / NPN transistor output, load current below 200 mA residual voltage below 1 V
	(except voltage drop caused by cable extension), leakage current below 1 mA
Protective circuit	Over voltage protection, power supply reverse polarity protection and
	over current protection
Encoding mode	Universal encoding / Unique encoding
IP rating	IP65
Cross-section	48*30 mm
Vibration resistance	Frequency 10 ... 55 Hz, amplitude 0.35 + 0.05 mm 20 times each at X, Y and Z directions
Operating temperature	-10 ... +55 °C (no freezing)
Storage temperature	-30 ... +70 °C (no freezing)
Operating humidity	When temperature is 20 °C, humidity max 85%

Level & Function

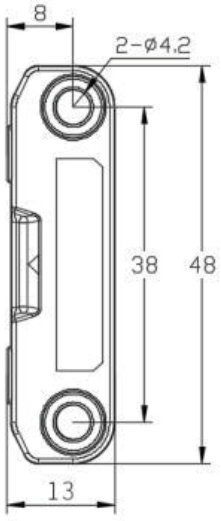
Type	Safety output	Cascade function	EDM	Reset	Auxiliary
Base type	●				
Standard type	●	●			
Advanced type	●	●	●	●	●

Mechanical Diagram

Left open rotation bracket mount

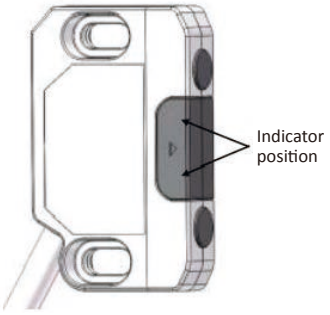


Indicator



Adapter

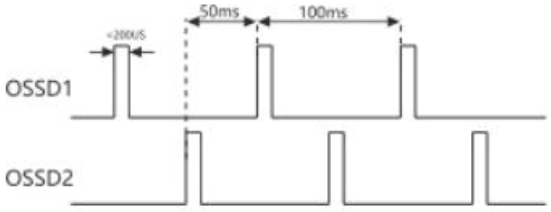
Indicator Light Description



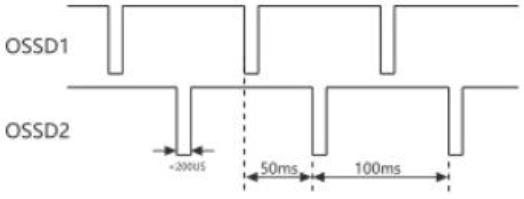
Status	Indicator light display
EEPROM error / SPI error	Red light flash at 4 Hz
Output error / EDM error	Red light flash at 1 Hz
Voltage error	Red light double flash
Unique code unmatched	Red and green light flash alternately at 4 Hz
No error, no RFID, no output	Red light always on
No error, with RFID, with cascade, waiting for reset signal	Green light fash at 4 Hz
No error, with RFID, no cascade	Green light flash at 1 Hz
No error, with RFID, cascade signal error	Green light double flash
No error, with RFID, cascade, with output	Green light always on

Sequence Diagram

NPN diagnostic sequence

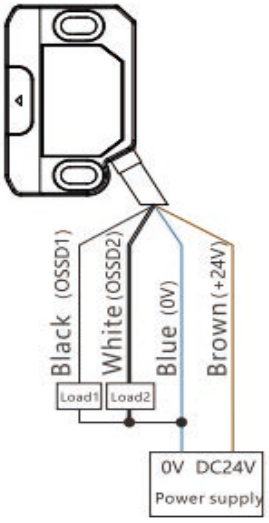


PNP diagnostic sequence

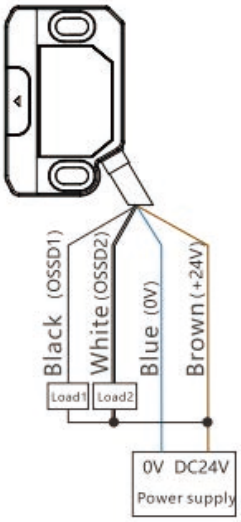


Electrical Connection Diagram

SRW50 Base (NPN)

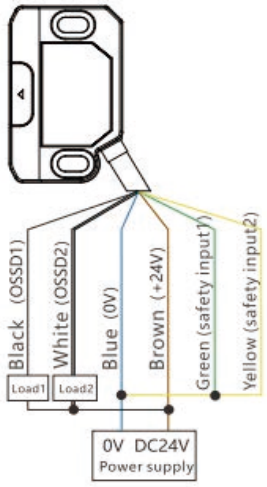


SRW50 Base (PNP)

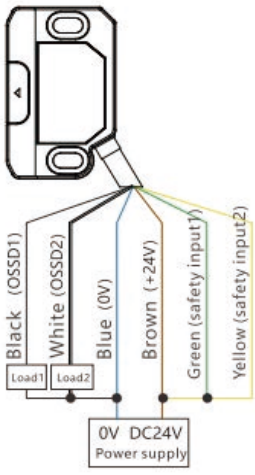


Electrical Connection Diagram

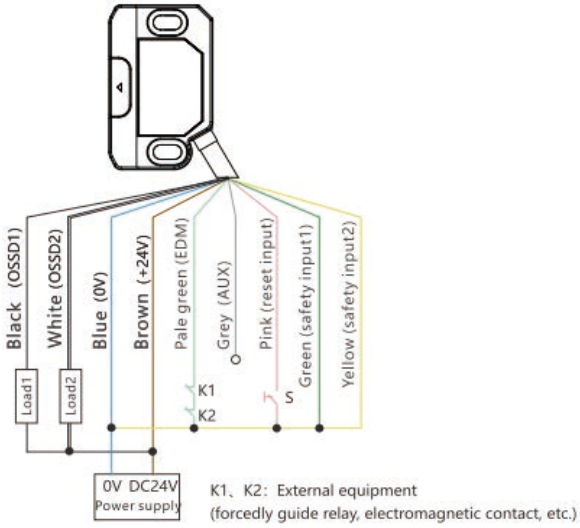
SRW50 Standard (NPN)



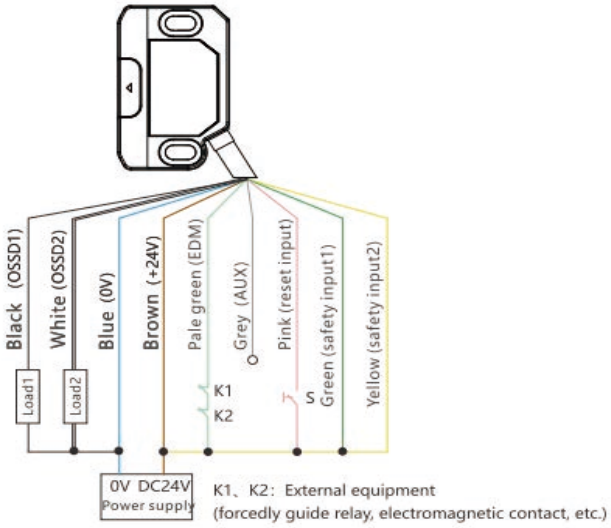
SRW50 Standard (PNP)



SRW50 Advanced (NPN)



SRW50 Advanced (PNP)



Wire color	Function	Wiring Connection
Brown	Power positive pole	Connect positive pole
Blue	Power negative pole	Connect negative pole
Black	Safety output 1	Connect safety PLC or other safety input control interface
White	Safety output 2	
Green	Safety input 1	No need cascade: PNP connect positive, NPN connect negative
Yellow	Safety input 2	Use cascade: connect switch safety input signal (OSSD1 and OSSD2)
Pale green	EDM	External relay or solenoid valve monitoring device
Pink	Reset	Connect reset
Grey	Auxiliary output	Connect PLC

Emergency Stop Button SE30

Product Description

● Prevent falling function

The normally closed contact module has the monitoring function. The contact module accidentally falls off, and the signal is forced to disconnect.

● Optional combination of contact module

Five kinds of contact model optional solution, save your time and cost

● One-click installation function

Contact module terminal platform installation is quick, convenient for engineers wiring installation.

● High level of safety

Authority certification, with high reliability and safety.

Surface mount Type Selection Table

Product shape	Action function	Structure of contact	Complete set model
	Small Rotation reset SE30 Series	1: 1NC	SE30-C1
		2: 1NC (Monitor)	SE30-C2
		3: 1NC (Monitor) + 1NC + 1NO	SE30-C3
		4: 1NC (Monitor) + 1NC	SE30-C4
		5: 1NC + 1NO	SE30-C5
	Small with protective cover Rotation reset SE30P Series	1: 1NC	SE30P-C1
		2: 1NC (Monitor)	SE30P-C2
		3: 1NC (Monitor) + 1NC + 1NO	SE30P-C3
		4: 1NC (Monitor) + 1NC	SE30P-C4
		5: 1NC + 1NO	SE30P-C5

Box installation Type Selection Table

Product shape	Action function	Structure of contact	Complete set model
	Small Rotation reset SE30-B Series	1: 1NC	SE30-C1-B
		2: 1NC (Monitor)	SE30-C2-B
		3: 1NC (Monitor) + 1NC + 1NO	SE30-C3-B
		4: 1NC (Monitor) + 1NC	SE30-C4-B
		5: 1NC + 1NO	SE30-C5-B
	Small with protective cover Rotation reset SE30P-B Series	1: 1NC	SE30P-C1-B
		2: 1NC (Monitor)	SE30P-C2-B
		3: 1NC (Monitor) + 1NC + 1NO	SE30P-C3-B
		4: 1NC (Monitor) + 1NC	SE30P-C4-B
		5: 1NC + 1NO	SE30P-C5-B

Technical Parameters

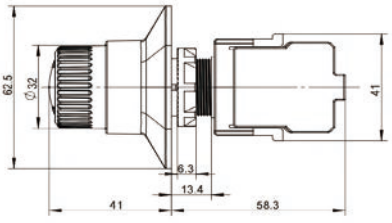
Shell material	Reinforced glass fiber reinforced thermoplastic (self extinguisher), shock proof
Screw material	Stainless steel
Inlet of catheter	M20×2, M16×1
Protection level	IEC60947-1: IP65
Ambient temperature	-25 ... +70 °C
Ambient humidity	Below 95%RH
Ambient humidity	300,000 operation cycles (set and reset considered as one time)
Electrical life	300,000 operation cycles (set and reset considered as one time)
Maximum driving frequency	30 operation cycles/min
Operating parts travel Range	5.7 mm (NO / NC)
Driving force	45 N
Resistance of contact	Below 100 mA
Shock resistance	Max 250 m/s²
With conditional short circuit current	100 A (IEC60947-5-1)

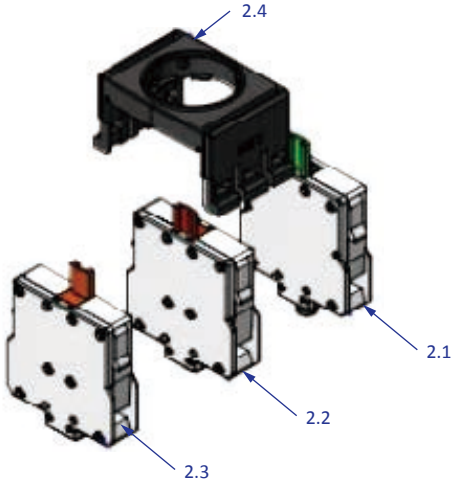
Contact Function Block Parameters

Scope of application	SIL CL1, 2, or 3 of IEC62061 ISO13849-1 PLc, dore class, IEC60947-5-1
Rated operating voltage	24 V DC (2A)
Material of contact	Hard Silver AG/NI
Minimum current	1 mA
Connection	Screw connection
Minimum voltage	5 V

Mechanical diagram

Surface mount Type

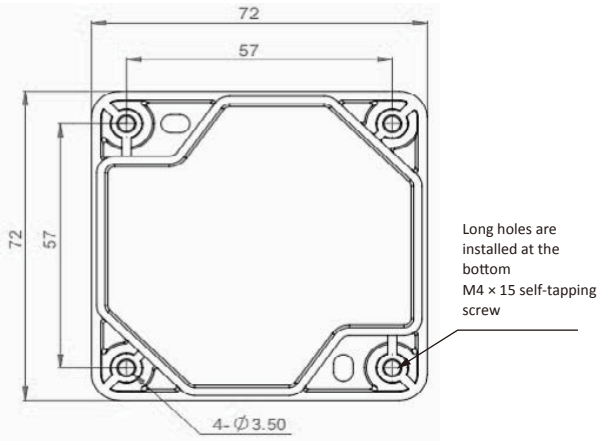


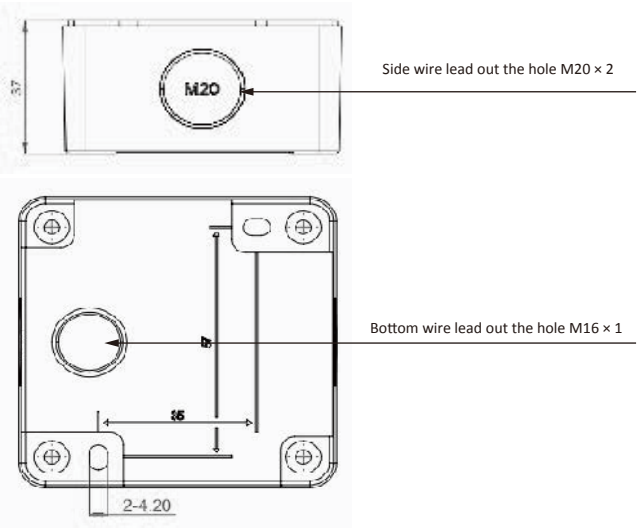


Emergency Stop Button SE30

Mechanical diagram

Box installation Type



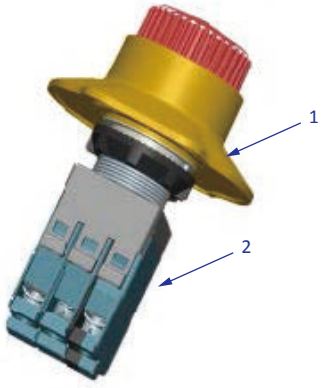


Emergency stop switch product composition diagram

Surface mount Type

2 Choice 1
1. Button cover
2. Contact protection cover

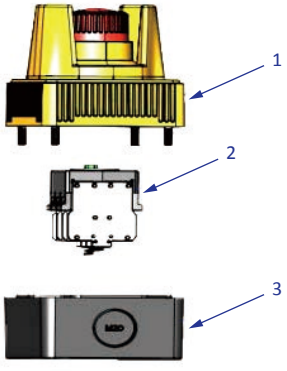
5 Choice1
1: 1NC
2: 1NC (Monitor)
3: 1NC (Monitor) + 1NC + 1NO
4: 1NC (Monitor) + 1NC
5: 1NC + 1NO



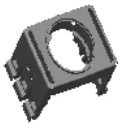
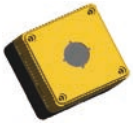
Box installation Type

2 Choice 1
1. Button cover
2. Contact protection cover

5 Choice1
1: 1NC
2: 1NC (Monitor)
3: 1NC (Monitor) + 1NC + 1NO
4: 1NC (Monitor) + 1NC
5: 1NC + 1NO



Product Accessories Selection Table

Product shape	Name	Type	Specifications
	Normally open contact	SE-1NO	1NO Contact point module (red)
	Normally close contact	SE-1NC	1NC Contact point module (red)
	Normally close contact with monitoring	SE-1NCM	1NC Monitoring contact module (green)
	Contact clasp	SE-C	Up to three sets of contact modules are supported
	Control box	SE-BOX	Protection level: IP65 size (high × wide × deep mm): 62.8 × 72 × 72 mm
	Contact protection cover	SE-PC	PC flame retardant grade V 0
	Button cover	SE-BC	PC flame retardant grade V 0

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