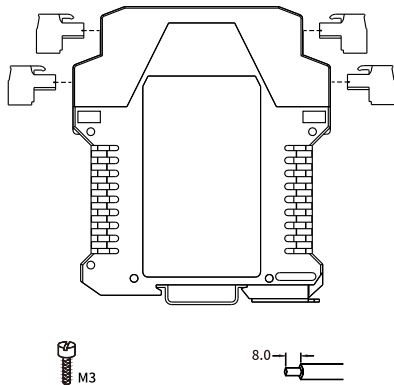


## ■ Connections

1. The module adopts knock-down connector with screw terminals.
2. The minimum cross section area of the flexible copper wire on the input side should be  $0.5\text{mm}^2$ , and  $1\text{mm}^2$  on the output side.
3. A length of 8mm bared wire is locked by the M3 bolt.
4. Sufficient fuse protection must be provided to the output contacts.
5. The copper wire must tolerate ambient temperature at least  $75^\circ\text{C}$ .
6. Wrong use of the terminal screws may cause malfunction, heat, etc., so please tighten the screws with the torque of  $0.5\text{Nm}$ .



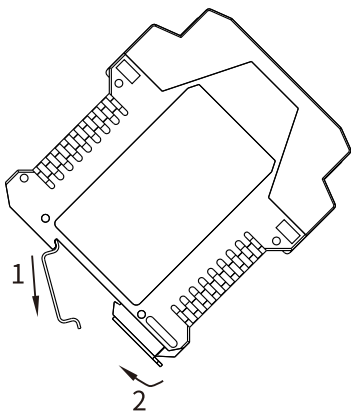
## ■ Installation

The safety relay should be installed in a housing at least IP54 (IEC60529) degree of protection, and the installation and using should fulfill the related requirements of IEC 60204-1.

ELS-3A1B.C series safety relays are designed for mounting on guide rail.

Installation according to the following steps:

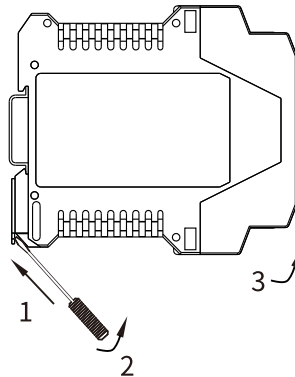
1. Make the upside of the device locked into the guide rail;
2. Push the downside of the device in the rail.



4

## ■ Disassembly

1. Insert a screwdriver (its edge length  $\leq 6\text{mm}$ ) into the downside metal lock of the device;
2. Push the screwdriver upwards, then prize the metal lock downwards;
3. Take the device out of the guide rail.



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## ■ Maintenance

1. Please check the safety function of safety relay periodically, make sure the safety function executes properly, and there is no sign of any components or circuit changed or bypassed.
2. Please observe relevant safety regulations, and operate according to this user manual. Disregarding these safety regulations may cause fatal accident, serious personal injury or property loss.
3. Every product has been test strictly before leaving factory. If users find any abnormality in the module, please contact the nearest agent or our technic support hot-line.
4. In 5 years from the delivery date, if the product works improperly during normal operation, we will repair or replace it without payment.

## DADISICK TECHNOLOGY LIMITED

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We reserve the right to make technical changes

**DADISICK**®

# Configurable Safety Control Unit User Manual



Performance Level: **PL e**  
Category: **Cat.4**



**SIL3**  
IEC61508



Please read this instruction manual carefully before using the product and keep it properly.

### ⚠ CAUTION

- Please check whether the product type on the package accords to the ordering contract;
- Read this manual carefully before installation or using. If anything unclear, please technical dadisick;
- Safety relay should be located in IP54 control cabinet;
- Supply voltage is 24V DC, 220V AC is forbidden;
- Users are not allowed to dismantle or repair the product, otherwise it will induce malfunction.

## Summarize

ELS-3A1B.C is a safety relay suitable for emergency stop, safety door, PNP type safety light curtain signal of various mechanical equipment. It has 3 normally open (NO) safety output contacts and 1 normally closed (NC) auxiliary output contact, and can select single/dual channel operation, manual/automatic reset, and short circuit monitoring between channels. It adopts the design of components produced in China, has excellent cost performance, and maintains the performance, specifications, quality, etc.

## Specification

### POWER

Supply voltage: 24V DC  
Voltage tolerance: 0.85~1.1  
Current consumption: ≤90mA (24V DC); ≤240mA (24V AC)

### INPUT

Input current: ≤50mA(24V DC)  
Cable resistance: ≤15Ω  
Input devices: Emergency stop button, safety door, PNP type safety light curtain

### OUTPUT

Number of contacts: 3NO+1NC  
Contact material: AgSnO<sub>2</sub> + 0.2μm Au  
Contact fuse protection: 10A gL/gG, NEOZED (normally open contact)  
6A gL/gG, NEOZED (normally closed contact)  
Electric shock mechanical life: more than 10<sup>7</sup> times  
Switching capacity (EN60947-5-1): AC-15, 5A/230V; DC-13, 5A/24V

### TIMES

Pull-on buffer time:  
Automatic reset: ≤300ms  
Manual reset: ≤150ms  
Release buffer time:  
Emergency stop operation: ≤30ms  
Power failure: ≤100ms  
Recovery time:  
Emergency stop operation: ≤30ms  
Power failure: ≤100ms  
Short power interruption: 20ms

## Safety

PL: PLe  
Cat.: Cat.4  
T<sub>M</sub>: 20 years  
DC/DC<sub>avg</sub>: 99%  
SIL: SIL3  
HFT: 1  
SFF: 99%  
PFH<sub>r</sub>: 3.09E-10/h  
Stop category: 0  
B<sub>10d</sub>:

in accordance with ISO 13849  
in accordance with ISO 13849  
in accordance with ISO 13849  
in accordance with ISO 13849  
in accordance with IEC 61508, IEC 62061  
in accordance with IEC 61508, IEC 62061  
in accordance with IEC 61508, IEC 62061  
in accordance with IEC 61508, IEC 62061  
in accordance with EN 60204-1

DC13, U<sub>e</sub>=24V DC:

I <sub>e</sub>	5A	2A	1A
Cycles	300,000	2,000,000	7,000,000

AC15, U<sub>e</sub>=230V DC:

I <sub>e</sub>	5A	3A	1A
Cycles	200,000	230,000	380,000

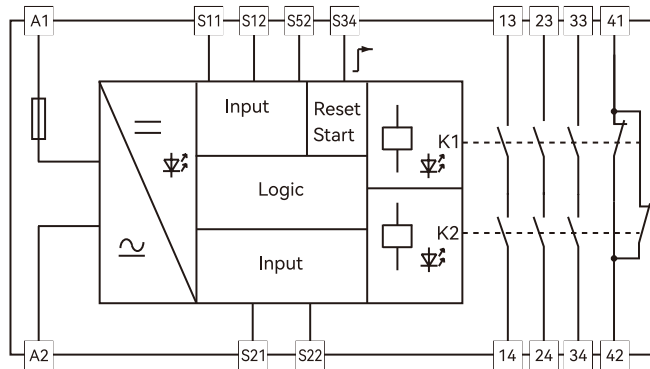
## Environmental Characteristics

EMC: In accordance with EN60947, EN61000-6-2, EN61000-6-4  
Vibration frequency: 10Hz ~ 55Hz  
Vibration amplitude: 0.35mm  
Ambient temperature: -20°C ~ +60°C  
Storage temperature: -40°C ~ +85°C  
Relative humidity: 10% ~ 90%

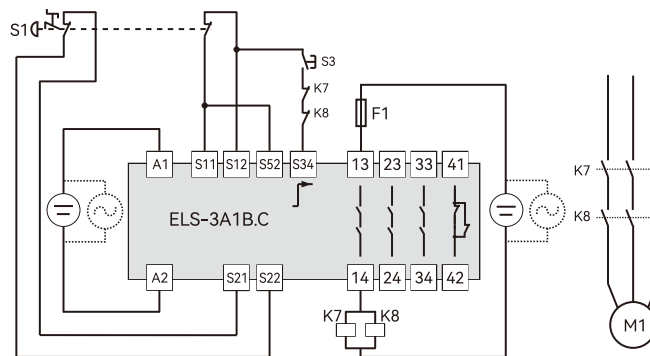
## Insulation Characteristic

Clearance and creepage: In accordance with EN60947-1  
Overvoltage category: III  
Pollution degree: 2  
Protection type: IP20  
Elevation: ≤2000m  
Rated insulation voltage: 250V AC  
Rated impulse voltage: 6000V (1.2/50μs)  
Dielectric strength: 1500V AC, 1min

## Block Diagram

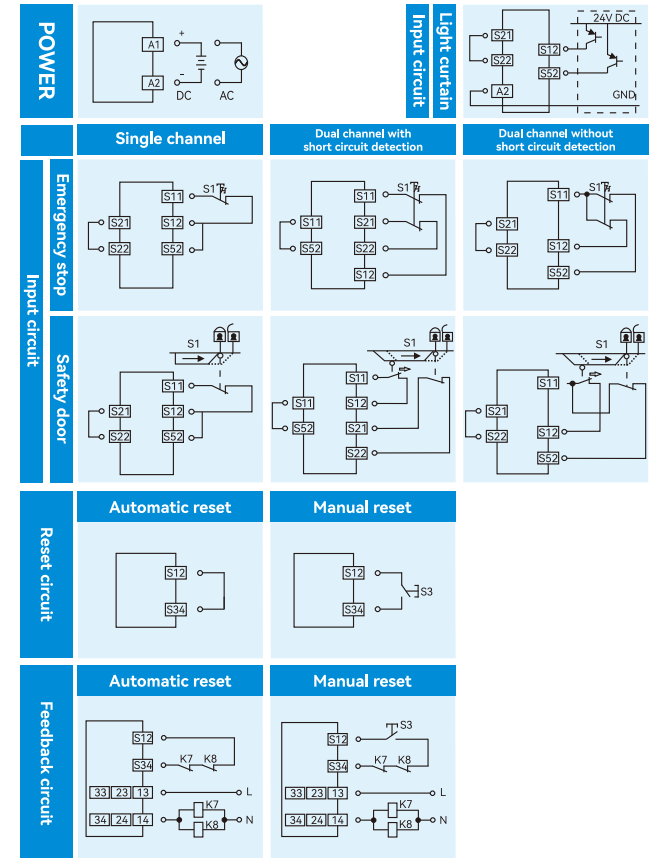


## Typical Application



- Dual-channel emergency stop button input
  - Channel short circuit monitoring
  - Manual reset
  - With output contact feedback
  - Suitable for the highest safety level 4
- S1: Dual-channel emergency stop button  
S3: Reset button  
K7, K8: Contactor  
F1: External fuse  
M1: Motor

## Wiring Diagrams



## Dimensions

Dimensions(L×H×W): 114.5mm×99.0mm×22.5mm  
Weight: 200g

