



SafeBox



Model Number

SB4 Module 4COP

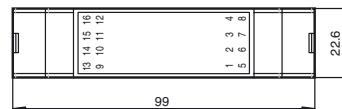
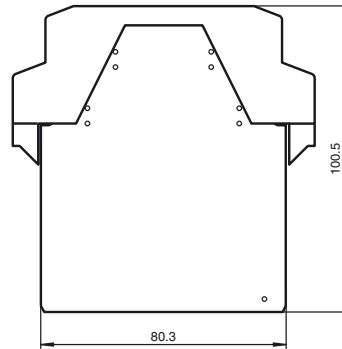
Safety control unit module

Module for Evaluation unit SafeBox - series SB4

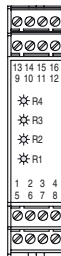
Features

- Sensor module
- 4 sensor channels
- Single module for safety thru-beam sensors SLA12 and SLA29 and for 2 channel safety devices (emergency off)
- Micro-Controller controls
- Operating mode can be selected by means of DIP switches

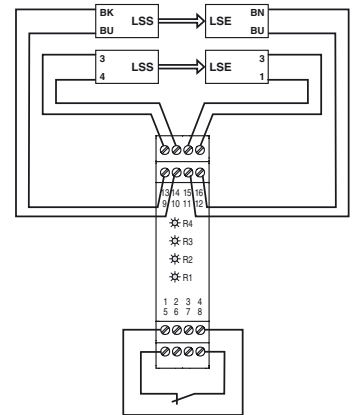
Dimensions



Electrical connection



| Terminal | Function | Channel assignment |
|----------|----------------------|--------------------|
| 1 | Receiver 2 input | Channel 2 |
| 2 | Receiver 2 +U | |
| 3 | Transmitter 2 +U | Channel 2 |
| 4 | Transmitter 2 output | |
| 5 | Receiver 1 input | Channel 1 |
| 6 | Receiver 1 +U | |
| 7 | Transmitter 1 +U | Channel 1 |
| 8 | Transmitter 1 output | |
| 9 | Transmitter 3 output | Channel 3 |
| 10 | Transmitter 3 +U | |
| 11 | Receiver 3 +U | Channel 3 |
| 12 | Receiver 3 input | |
| 13 | Transmitter 4 output | Channel 4 |
| 14 | Transmitter 4 +U | |
| 15 | Receiver 4 +U | Channel 4 |
| 16 | Receiver 4 input | |



Connection example
(LSS = transmitter of light barrier;
LSE = receiver of light barrier)

Technical data

General specifications

| | |
|----------------|---------------|
| Operating mode | ODER-Function |
|----------------|---------------|

Functional safety related parameters

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | SIL 3 |
| Performance level (PL) | PL e |
| Category | Cat. 4 |
| Mission Time (T_M) | 20 a |
| Type | 4 |
| Function indicator | LED yellow (4x): indicator lamp channel 1 ... 4 |
| Pre-fault indicator | LED yellow flashing: Indicator lamp channel 1 ... 4 |
| Control elements | DIP-switch |

Electrical specifications

| | | |
|-------------------|-------|--------------------------------------|
| Operating voltage | U_B | 24 V DC \pm 20 % , via SB4 Housing |
|-------------------|-------|--------------------------------------|

Input

| | |
|--------------------|--------------|
| Activation current | approx. 7 mA |
|--------------------|--------------|

Conformity

| | |
|-------------------|--------------------------------|
| Functional safety | ISO 13849-1 ; EN 61508 part1-4 |
| Product standard | EN 61496-1 |

Ambient conditions

| | |
|---------------------|-------------------------------|
| Ambient temperature | 0 ... 50 °C (32 ... 122 °F) |
| Storage temperature | -20 ... 70 °C (-4 ... 158 °F) |

Mechanical specifications

| | |
|----------------------|--|
| Degree of protection | IP20 |
| Connection | screw terminals , lead cross section 0.2 ... 2 mm ² |
| Material | |

| | |
|---------|----------------|
| Housing | Polyamide (PA) |
| Mass | approx. 150 g |

Approvals and certificates

| | |
|---------------|-------|
| CE conformity | CE |
| UL approval | cULus |
| TÜV approval | TÜV |

This module can only be operated within an evaluation device of the SafeBox SB4 type.

The SafeBox instruction manual should be observed.

Function

The 4-channel sensor card module SB4-4COP makes it possible to connect light barriers or light grids or contact safety sensors in a one-channel version. Also, it contains the microcontroller control of the SafeBox.

This module is only contained once in a SafeBox SB4 and has to be mounted on slot 2. The module has a plug-in jumper. If the system contains additional assemblies, then this plug-in jumper has to be connected to the last slot.

When the system is switched on, the software determines whether a light barrier or a contact safety sensor is switched on at a channel and monitors its presence during operation.

Contact safety sensors, which are connected to the SafeBox, must work according to the normally closed principle. An open contact indicates "safe state".

The channels 1 and 2 as well as 3 and 4 can be combined via an OR function when using light barriers.

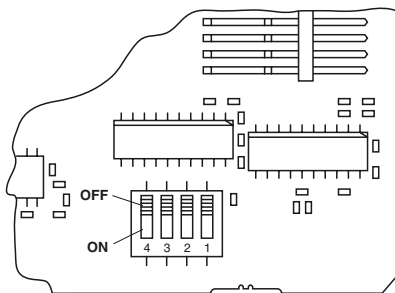


When using this function, it must be ensured that the effectiveness of the fusing is maintained. This must be checked on installation and commissioning.

Operating modes

The assembly has 4 DIP switches for selecting the OR-operation of neighbouring channels (1 OR 2 and 3 OR 4). For selecting functions, 2 selector switches must always be actuated. The functions are only effective if light barriers are connected.

Position of the DIP switches



| Switch | Position | Operation type |
|---------|----------|---------------------------------|
| 1 and 3 | OFF | No OR-operation channel 1 and 2 |
| | ON | OR-operation channel 1 and 2 |
| 2 and 4 | OFF | No OR-operation channel 3 and 4 |
| | ON | OR-operation channel 3 and 4 |

Displays

For each channel, there is a yellow LED on the front panel of the module.

| Display | LED | Meaning |
|---------|--------|--|
| R1 - R4 | yellow | <p>Status of light barrier 1 ... 4</p> <p>Off: light beam interrupted On: light beam released</p> <p>Flashing: light beam released, function reserve fallen short of (frequency approx. 2.5 Hz)</p> <p>Flashing fast: error (frequency approx. 5 Hz)</p> |