

# Safety control unit module

## SB4 Module 4C

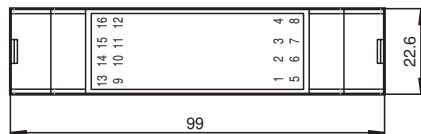
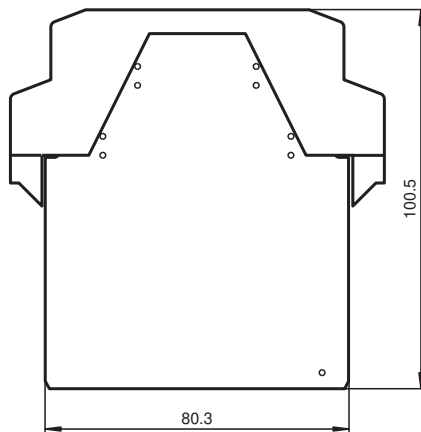


- Sensor module
- 4 sensor channels
- Single module for safety thru-beam sensors SLA12 and SLA29 and for 2 channel safety devices (emergency off)
- Operating mode can be selected by means of DIP switches
- Screw terminals or spring terminals

Safety control unit module



### Dimensions



### Technical Data

#### General specifications

Operating mode simultaneousness, antivalence

#### Functional safety related parameters

Safety Integrity Level (SIL) SIL 3  
 Performance level (PL) PL e  
 Category Cat. 4  
 Mission Time (T<sub>M</sub>) 20 a  
 Type 4

#### Indicators/operating means

Function indicator LED yellow (4x): indicator lamp channel 1 ... 4

Release date: 2023-02-15 Date of issue: 2023-02-15 Filename: 182116\_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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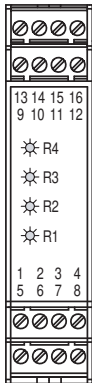
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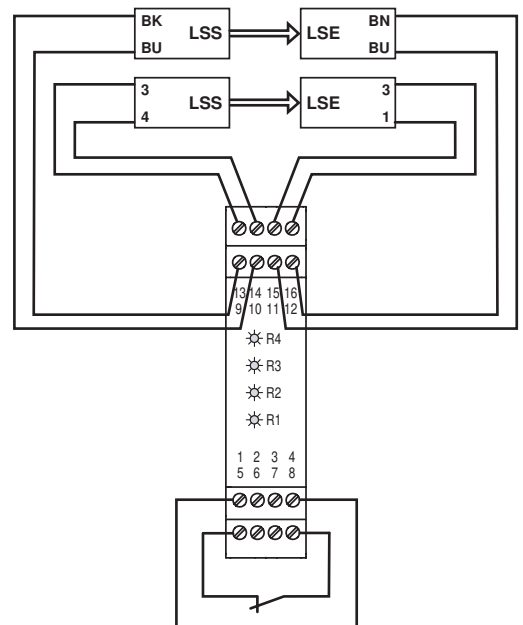
**Technical Data**

|                                   |                |  |
|-----------------------------------|----------------|--|
| Stability alarm indicator         |                | LED yellow flashing: Indicator lamp channel 1 ... 4  |
| Control elements                  |                | DIP switch   |
| <b>Electrical specifications</b>  |                |  |
| Operating voltage                 | U <sub>B</sub> | 24 V DC ± 20 % , via SB4 Housing   |
| <b>Input</b>                      |                |  |
| Activation current                |                | approx. 7 mA   |
| <b>Conformity</b>                 |                |  |
| Functional safety                 |                | ISO 13849-1 ; EN 61508 part1-4   |
| Product standard                  |                | EN 61496-1   |
| <b>Approvals and certificates</b> |                |  |
| CE conformity                     |                | CE   |
| UL approval                       |                | cULus  |
| TÜV approval                      |                | TÜV  |
| <b>Ambient conditions</b>         |                |  |
| Ambient temperature               |                | 0 ... 50 °C (32 ... 122 °F)  |
| Storage temperature               |                | -20 ... 70 °C (-4 ... 158 °F)  |
| <b>Mechanical specifications</b>  |                |  |
| Degree of protection              |                | IP20   |
| Connection                        |                | screw terminals , lead cross section 0.2 ... 2 mm <sup>2</sup><br>Option /165: Cage tension spring terminals , Cable cross-section 0.2 ... 1.5 mm <sup>2</sup> |
| <b>Material</b>                   |                |  |
| Housing                           |                | Polyamide (PA)   |
| Mass                              |                | approx. 150 g  |
| <b>General information</b>        |                |  |
| Ordering information              |                | without Option /165 -> with screw terminals<br>with Option /165 -> spring clamp terminals  |

**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)

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The operation of this module is possible only within a control unit of the type SafeBox SB4.  
 The operating instruction of the SafeBox has to be observed.

**Function**

The 4-channel sensor card module SB4-4C makes it possible to connect light barriers or light grids or contact safety sensors in a one or two-channel version.

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. Safety sensors with switching contacts, which are connected to the SafeBox, must operate in the switching mode "normally closed". An open contact means "safe status".

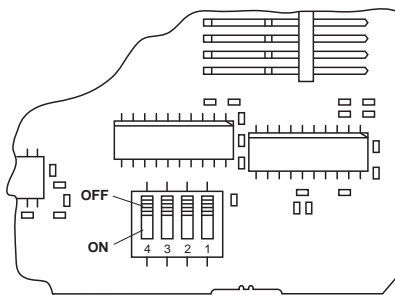
The channels 1 and 2 as well as 3 and 4 can be monitored for simultaneousness or antivalence. If simultaneousness monitoring is activated, 2 channel safety equipment is monitored for simultaneous opening or changing of the signals. The monitoring time is 2 s.

Antivalence monitoring expects the normally closed contact at channel 1 or 3 and the normally open contact at channel 2 or 4. If antivalence monitoring is performed without simultaneousness monitoring, an incorrect contact position causes a switch-off and the error message 7 after approx. 60 s .

**Operation types**

The assembly contains 4 DIP switches for selecting the simultaneousness functions of neighbouring channels (1 and 2, 3 and 4) and for an antivalent evaluation of neighbouring channels (1 and 2, 3 and 4). For selecting functions, 2 selector switches must always be actuated. The functions are not effective if light barriers are connected.

**Position of the DIP switches**



| Switch  | Position | Operation type                     |
|---------|----------|------------------------------------|
| 1 and 3 | OFF      | No antivalent evaluation           |
|         | ON       | Antivalent evaluation active       |
| 2 and 4 | OFF      | No simultaneousness evaluation     |
|         | ON       | Simultaneousness evaluation active |

**Display**

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

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

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