

**Model Number**

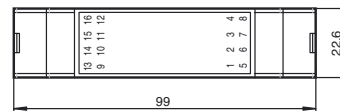
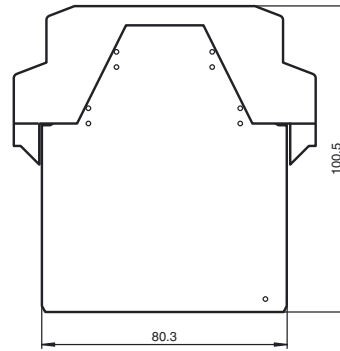
**SB4 Module 4C**

Safety control unit module  
Module for Evaluation unit SafeBox - series SB4

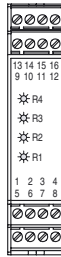
**Features**

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

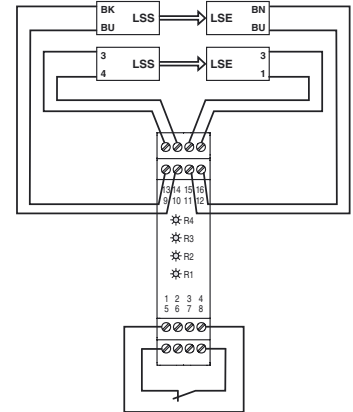
**Dimensions**



**Electrical connection**



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



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

**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 display	LED yellow (4x): indicator lamp channel 1 ... 4
Pre-fault indication	LED yellow flashing: Indicator lamp channel 1 ... 4
Controls	DIP-switch

**Electrical specifications**

Operating voltage U<sub>B</sub> 24 V DC ± 20 % , via SB4 Housing

**Input**

Activation current approx. 7 mA

**Ambient conditions**

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

**Mechanical specifications**

Protection degree	IP20
Connection	screw terminals , lead cross section 0.2 ... 2 mm <sup>2</sup> Option /165: Cage tension spring terminals , Cable cross-section 0.2 ... 1
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

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Subject to modifications without notice

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General information	
Ordering information	without Option /165 -> with screw terminals with Option /165 -> spring clamp terminals
Compliance with standards and directives	
Standard conformity	(extract)
Standards	EN IEC 61496-1 EN IEC 61508 EN ISO 13849-1
Approvals and certificates	
SIL classification	up to SIL3 acc. to IEC 61508 tested and certified by TÜV SÜD according to: IEC 61508:1998 part 1, 3,4 IEC 61508: 2000 ISO 13849-1:2006 EN 50178:1997 IEC 61496-1:2004 IEC 61496-2:2006
UL approval	cULus
TÜV approval	TÜV

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".

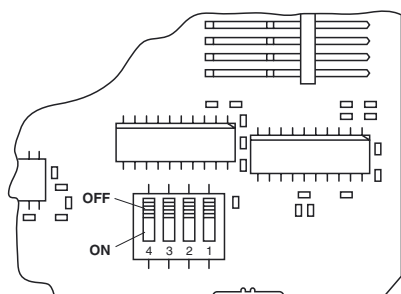
The channels 1 and 2 as well as 3 and 4 can be monitored for simultaneousness or antivalence. If simultaneousness monitoring is activated, 2 channel safety equipment is monitored for simultaneous opening or changing of the signals. The monitoring time is 2 s.

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