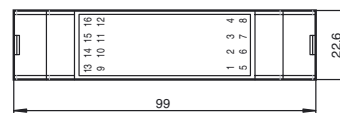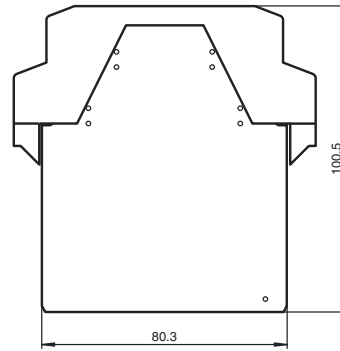## Dimensions

Model Number

SB4 Module 4COP

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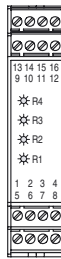
Module for Evaluation unit SafeBox - series SB4

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
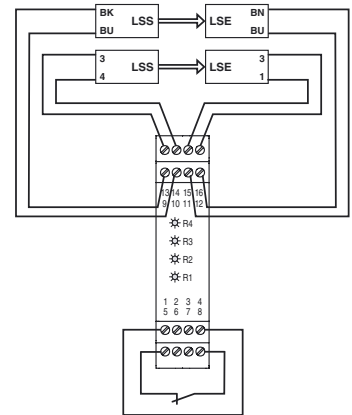- Operating mode can be selected by means of DIP switches

Electrical connection

Terminal	Function	Channel assignment	
1	Receiver 2 input	Input	
2	Receiver 2 +U		Channel 2
3	Transmitter 2 +U		
4	Transmitter 2 output	Output	
5	Receiver 1 input	Input	
6	Receiver 1 +U		Channel 1
7	Transmitter 1 +U		
8	Transmitter 1 output	Output	
9	Transmitter 3 output	Output	
10	Transmitter 3 +U		Channel 3
11	Receiver 3 +U		
12	Receiver 3 input	Input	
13	Transmitter 4 output	Output	
14	Transmitter 4 +U		Channel 4
15	Receiver 4 +U		
16	Receiver 4 input	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
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_B	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^2
Material	
Housing	Polyamide (PA)
Mass	approx. 150 g

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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

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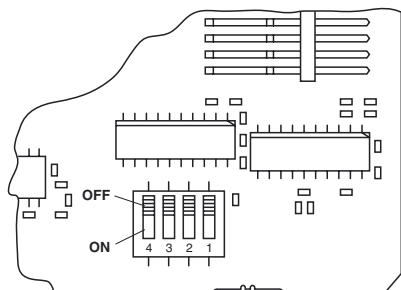
Danger! When using this function, it must be ensured that the effectiveness of the fusing is maintained.
This must be checked on installation and commissioning .

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	Status of light barrier 1 ... 4
		Off: light beam interrupted On: light beam released
		Flashing: light beam released, function reserve fallen short of (frequency approx. 2.5 Hz)
		Flashing fast: error (frequency approx. 5 Hz)

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