



SafeBox



Model Number

SB4 Module 4CP/165

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
- Screw terminals or spring terminals

Accessories

SB4 Cape
cover sheet

SB4 Housing 2
Empty housing for Evaluation unit SB4

SB4 Housing 3
Empty housing for Evaluation unit SB4

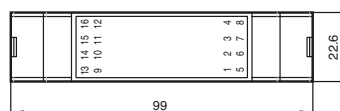
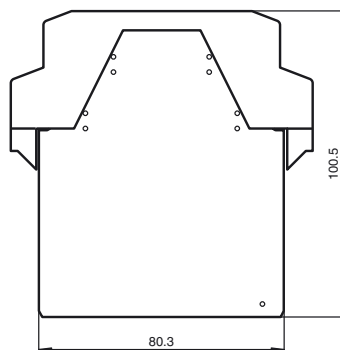
SB4 Housing 4
Empty housing for Evaluation unit SB4

SB4 Housing 5
Empty housing for Evaluation unit SB4

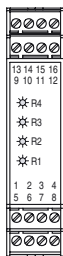
SB4 Housing 6
Empty housing for Evaluation unit SB4

SB4 Housing 8
Empty housing for Evaluation unit SB4

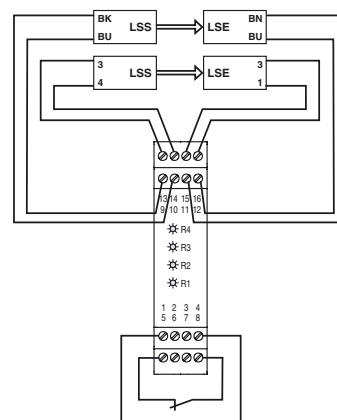
Dimensions



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 simultaneousness, antivalence

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 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 ± 20 % , via SB4 Housing
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Input

Activation current	approx. 7 mA
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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	Cage tension spring terminals , Cable cross-section 0.2 ... 1.5 mm ²
Material	

Housing	Polyamide (PA)
Mass	approx. 150 g

Approvals and certificates

CE conformity	CE
UL approval	cULus
TÜV approval	TÜV

The operation of this module is possible only within a control unit of the type SafeBox SB4.

Is the operating instruction of the SafeBox pay attention.

Function

The 4-channel sensor card module SB4-4CP makes it possible to connect light barriers or light grids or contact safety sensors in a one or two-channel version. In addition it contains the Micro-Controller controls of the SafeBox.

This version only exists once in a system and is always located in slot 2 of the SafeBox. The module is supplied with plug-in jumper. If additional modules are used, this plug-in jumper must be moved.

There is a plug-in jumper on the module. If the system contains further units, this plug-in jumper onto the last slot must be moved.

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".

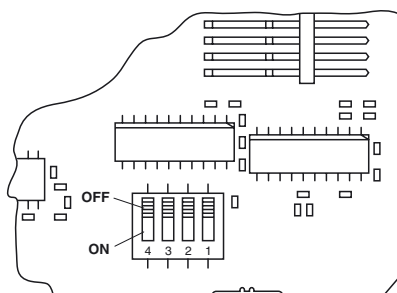
The channels 1 and 2 as well as 3 and 4 (and 5 and 6) can be monitored for simultaneousness or antivalence. If simultaneousness monitoring is activated, 2 channel safety equipment is monitored for simultaneous opening or changing of the signals. The monitoring time is 2 s.

Antivalence monitoring expects the normally closed contact at channel 1 or 3 (or 5) and the normally open contact at channel 2 or 4 (or 6). 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 or also 5 and 6). 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 Off: light beam interrupted On: light beam released Flashing (2.5 Hz): light beam released, function reserve fallen short of Flashing (5 Hz): error