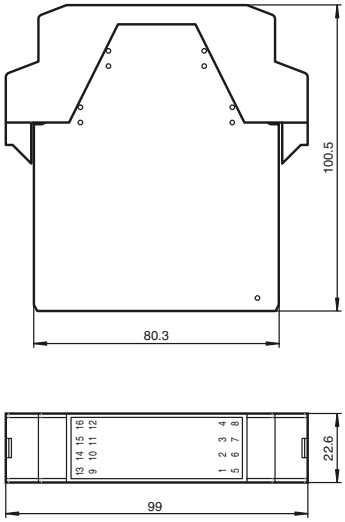


Dimensions



Model Number

SB4 Module 4CP

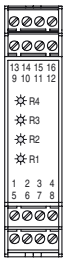
Safety control unit module

Module for Evaluation unit SafeBox - series SB4

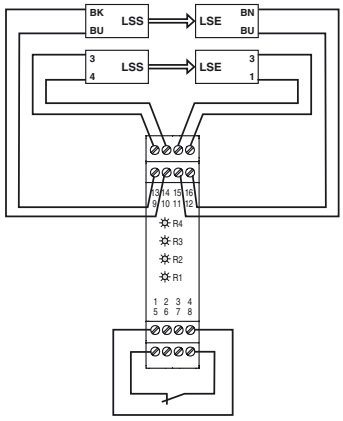
Features

- 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

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		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
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 Option /165: Cage tension spring terminals , Cable cross-section 0.2 ... 1

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Material	
Housing	Polyamide (PA)
Mass	approx. 150 g
General information	
Ordering information	without Option /165 -> with screw terminals with Option /165 -> spring clamp terminals
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 Safe-Box, must operate in the switching mode "normally closed". An open contact means "safe status".

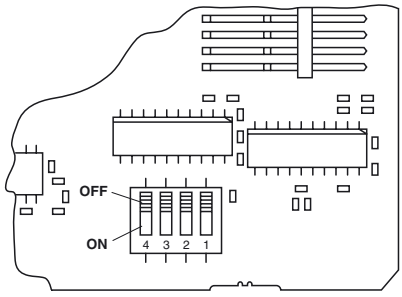
The channels 1 and 2 as well as 3 and 4 (and 5 and 6) can be monitored for simultaneousness or antivalence. If simultaneousness monitoring is activated, 2 channel safety equipment is monitored for simultaneous opening or changing of the signals. The monitoring time is 2 s.

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

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