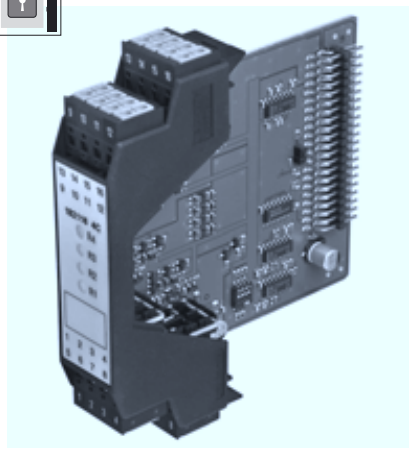
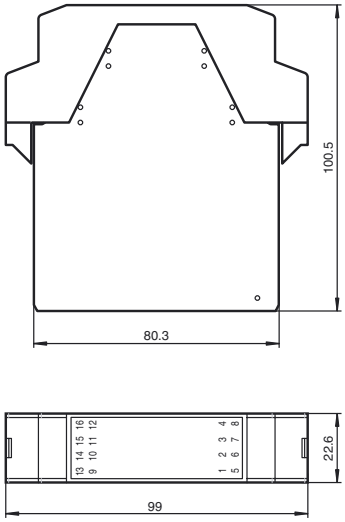


Dimensions



Model Number

SB4 Module 4C/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)
- 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

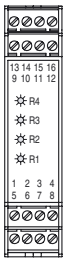
SB4 Housing 4
Empty housing for Evaluation unit SB4

SB4 Housing 5
Empty housing for Evaluation unit SB4

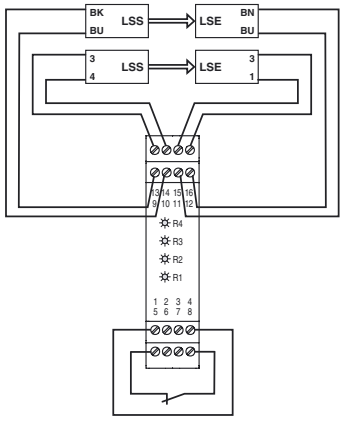
SB4 Housing 6
Empty housing for Evaluation unit SB4

SB4 Housing 8
Empty housing for Evaluation unit SB4

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 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		Cage tension spring terminals , Cable cross-section 0.2 ... 1.5 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

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".

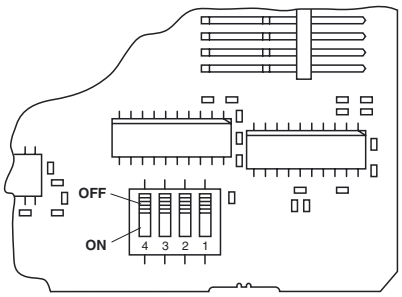
The channels 1 and 2 as well as 3 and 4 can be monitored for simultaneousness or antivalence. If simultaneousness monitoring is activated, 2 channel safety equipment is monitored for simultaneous opening or changing of the signals. The monitoring time is 2 s.

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 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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