

Model Number

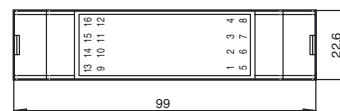
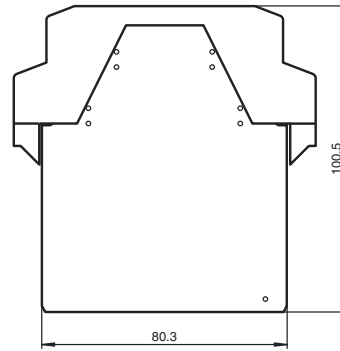
SB4 Module 4CP

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

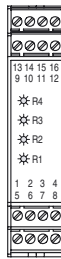
Features

- 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

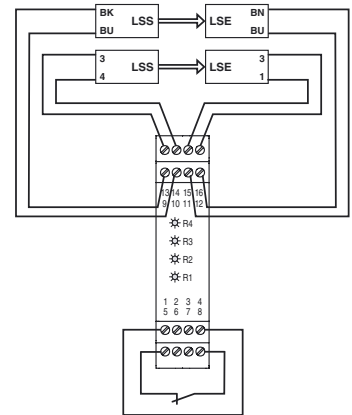
Dimensions



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 _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 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

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776-4411
fa-info@pepperl-fuchs.com

Copyright Pepperl+Fuchs
Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

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.

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".

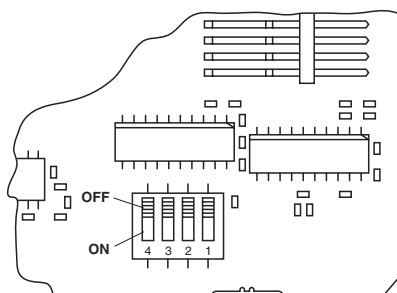
The channels 1 and 2 as well as 3 and 4 (and 5 and 6) can be monitored for simultaneousness or antivalence. If simultaneousness monitoring is activated, 2 channel safety equipment is monitored for simultaneous opening or changing of the signals. The monitoring time is 2 s.

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
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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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