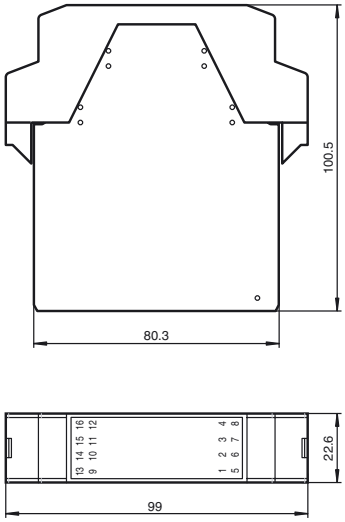
Dimensions



Model Number

SB4 Module 2E/165

Safety control unit module

Module for Evaluation unit SafeBox - series SB4

Features

- OSSD-R/E-stop-module
- Safety outputs OSSD, external status displays OSSD
- 2 sensor channels
- Operating mode can be selected by means of DIP switches
- Start/Restart disable
- Relay monitor
- Stop function Cat.0 or Cat.1 and central stop function Cat.0
- Time function
- 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

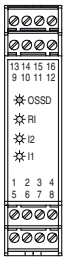
SB4 Housing 4
Empty housing for Evaluation unit SB4

SB4 Housing 5
Empty housing for Evaluation unit SB4

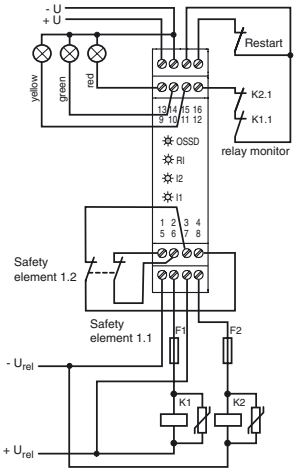
SB4 Housing 6
Empty housing for Evaluation unit SB4

SB4 Housing 8
Empty housing for Evaluation unit SB4

Electrical connection



Terminal	Function
1	Safety element 1.1 Out
2	Safety element 1.1 In
3	Safety element 1.2 Out
4	Safety element 1.2 In
5 - 6	OSSD1; potential free relay contact; normally open contact
7 - 8	OSSD2; potential free relay contact; normally open contact
9	Signal output OSSD off
10	Signal output OSSD on
11	Signal output restart
12	Relay monitor (RM)
13	+24 V DC supply voltage
14	0 V DC supply voltage
15	24 V DC connection restart and RM
16	Restart input (RI); normally closed contact



Technical data

General specifications		
Operating mode		Startup/restart disable, relay monitor, emergency off, turn off time
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 red: OSSD OFF LED green: OSSD ON Yellow LED: start readiness LED yellow (2x): indi
Controls		DIP-switch
Electrical specifications		
Operating voltage	U_B	24 V DC ± 20 % , 24 V DC ± 20 % , via SB4 Housing
Input		
Activation current		approx. 7 mA
Test input		Reset-input for system test
Output		
Safety output		2 relay outputs, force-guided NO-contact
Signal output		Output for displaying the switching state of the OSSDs
Switching voltage		10 V ... 250 V AC/DC
Switching current		min. 10 mA , max. 6 A AC/DC
Switch power		max. DC 24 VA , AC 230 VA
Ambient conditions		
Ambient temperature		0 ... 50 °C (32 ... 122 °F)
Storage temperature		-20 ... 70 °C (-4 ... 158 °F)

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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
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 OSSD-R/E stop module contains 2 OSSDs, the relay monitor, the restart connection and 2 connections for contact safety signals, (e.g. emergency off button). From position 3 on, this module may exist several times in the SafeBox and may perform different functions depending on the switch position.

The OSSDs are designed as potential free connection NO contacts. The module can be operated with or without restart interlock. Also, monitoring of the externally connected switching elements can be activated (relay monitor). The OSSD On or Off statuses are indicated via a short-circuit-proof pnp signal output. The restart output is used for indication of the start readiness status. In the case of an error, this output oscillates with 1 Hz.

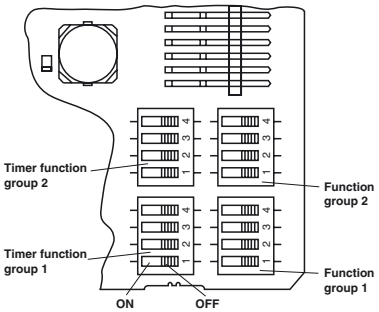
If the inputs remain unused of the OSSD-R/E stop module, a bridge is to be created, this also applies to the set Stop 1 function.

The module can work in stop function cat. 0 or cat.1 or it work in central emergency-stop function cat. 0.

Settings

The assembly contains 16 DIP switches for selecting the functions restart, relay monitor, central emergency-stop, OSSD assignment and time function. For selecting functions, 2 selector switches must always be actuated.

Position of the DIP switches



Switch	Position	Operation type
1 Group 1 and 2	OFF	Emergency-Stop 0 or 1, effective locally
	ON	Function as central Emergency-Stop
2 Group 1 and 2	OFF	Without restart interlock (restart, RI)
	ON	With restart interlock (restart, RI) for stop cat. 0
3 Group 1 and 2	OFF	Without relay monitor (RM)
	ON	With relay monitor (RM)
4 Group 1 and 2	OFF	Stop function cat. 0
	ON	Stop function cat. 1

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Time value / s	Switch 1 Group 1 and 2	Switch 2 Group 1 and 2	Switch 3 Group 1 and 2	Switch 4 Group 1 and 2
0.0	OFF	OFF	OFF	OFF
0.3	ON	OFF	OFF	OFF
0.4	OFF	ON	OFF	OFF
0.5	ON	ON	OFF	OFF
0.63	OFF	OFF	ON	OFF
0.8	ON	OFF	ON	OFF
1.0	OFF	ON	ON	OFF
1.3	ON	ON	ON	OFF
1.6	OFF	OFF	OFF	ON
2.0	ON	OFF	OFF	ON
2.5	OFF	ON	OFF	ON
3.2	ON	ON	OFF	ON
4.0	OFF	OFF	ON	ON
5.0	ON	OFF	ON	ON
6.3	OFF	ON	ON	ON
8.0	ON	ON	ON	ON

Displays

The OSSD assembly has a red/green LED for indicating the OSSD on/off statuses, a yellow LED for the start-ready status and 2 LEDs for the sensor channels.

If there is an error on the OSSD assembly itself, only the displays on this assembly are flashing.

Display	LED	Meaning
OSSD	red	OSSD outputs switched off
	green	OSSD outputs switched on
RI	yellow	Continuous light: protected area free, OSSD off, start readiness, actuate restart push button
		Flashing (5 Hz): error on the card, in the switch group or system error
I1, I2	yellow	Continuous light: sensor channel closed
		Flashing (5 Hz). sensor channel error

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