

# TR4-SBM03PB

TR4 Direct

NON-CONTACT SAFETY SWITCHES

**SICK**  
Sensor Intelligence.



### Ordering information

Type	part no.
TR4-SBM03PB	6070793

Other models and accessories → [www.sick.com/TR4\\_Direct](http://www.sick.com/TR4_Direct)



### Detailed technical data

#### Features

<b>System part</b>	Sensor with actuator
<b>Sensor principle</b>	RFID
<b>Number of safe outputs</b>	2
<b>Assured switch on distance <math>S_{ao}</math></b>	25 mm
<b>Assured switch off distance <math>S_{ar}</math></b>	35 mm
<b>Active sensor surfaces</b>	2
<b>Actuation directions</b>	5
<b>Coding</b>	Universally coded

#### Safety-related parameters

<b>Safety integrity level</b>	SIL 3 (IEC 61508)
<b>Category</b>	Category 4 (EN ISO 13849)
<b>Performance level</b>	PL e (EN ISO 13849)
<b>PFH<sub>D</sub> (mean probability of a dangerous failure per hour)</b>	$6.03 \cdot 10^{-10}$
<b>T<sub>M</sub> (mission time)</b>	20 years (EN ISO 13849)
<b>Type</b>	Type 4 (EN ISO 14119)
<b>Actuator coding level</b>	Low coding level (EN ISO 14119)
<b>Classification in compliance with IEC/EN 60947-5-3</b>	PDF-M
<b>Safe state in the event of a fault</b>	At least one safety-related semiconductor output (OSSD) is in the OFF state.

#### Functions

<b>Safe series connection</b>	In control cabinet (with diagnostics)
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#### Interfaces

<b>Connection type</b>	Cable
Length of cable	3 m

<sup>1)</sup> Detection time for external faults (e.g., short-circuit or cross-circuit of output signal switching devices). Follow the detailed information in the operating instructions.

Long connecting cable	≤ 200 m
Cable diameter	6.5 mm
Conductor cross section	0.25 mm <sup>2</sup>
Bend radius (with fixed installation)	> 7 x cable diameter
Bend radius (with moving cable)	> 14 x cable diameter
Cable material	PVC
Conductor material	Copper
<b>IO-Link Safety</b>	
	OFDT ≤ 100 ms <sup>1)</sup>
<b>Display elements</b>	LEDs
Status display	✓

<sup>1)</sup> Detection time for external faults (e.g., short-circuit or cross-circuit of output signal switching devices). Follow the detailed information in the operating instructions.

## Electronics

<b>Protection class</b>	III (EN 50178)
<b>Classification according to cULus</b>	Class 2
<b>Supply voltage V<sub>s</sub></b>	24 V DC (20.4 V DC ... 26.4 V DC)
<b>Power consumption</b>	≤ 50 mA
<b>Type of output</b>	Self-monitoring semiconductor outputs (OSSDs)
<b>Output current</b>	≤ 200 mA
<b>Response time</b>	45 ms <sup>1)</sup>
<b>Release time</b>	360 ms <sup>2)</sup>
<b>Risk time</b>	≤ 100 ms <sup>3)</sup>
<b>Switch-on time</b>	2 s <sup>4)</sup>
<b>Electrical life</b>	10 x 10 <sup>6</sup> switching cycles

<sup>1)</sup> In a safe series connection, each downstream safety switch increases the system response time. More response times can be found in the operating instructions.

<sup>2)</sup> Response time on approach to the enable zone.

<sup>3)</sup> Detection time for external faults (e.g., short-circuit or cross-circuit of output signal switching devices). Follow the detailed information in the operating instructions.

<sup>4)</sup> After application of the supply voltage to the safety switch.

## Mechanics

<b>Design</b>	Cylindrical
<b>Housing diameter (sensor/actuator)</b>	M18 / M30
<b>Weight</b>	237 g
<b>Housing material</b>	Valox® DR48

## Ambient data

<b>Enclosure rating</b>	IP67 (IEC 60529) IP69K (ISO 20653)
<b>Ambient operating temperature</b>	-25 °C ... +70 °C
<b>Vibration resistance</b>	10 Hz ... 55 Hz, 3.5 mm (IEC 60068-2-6)
<b>Shock resistance</b>	30 g, 11 ms (EN 60068-2-27)

## Certificates

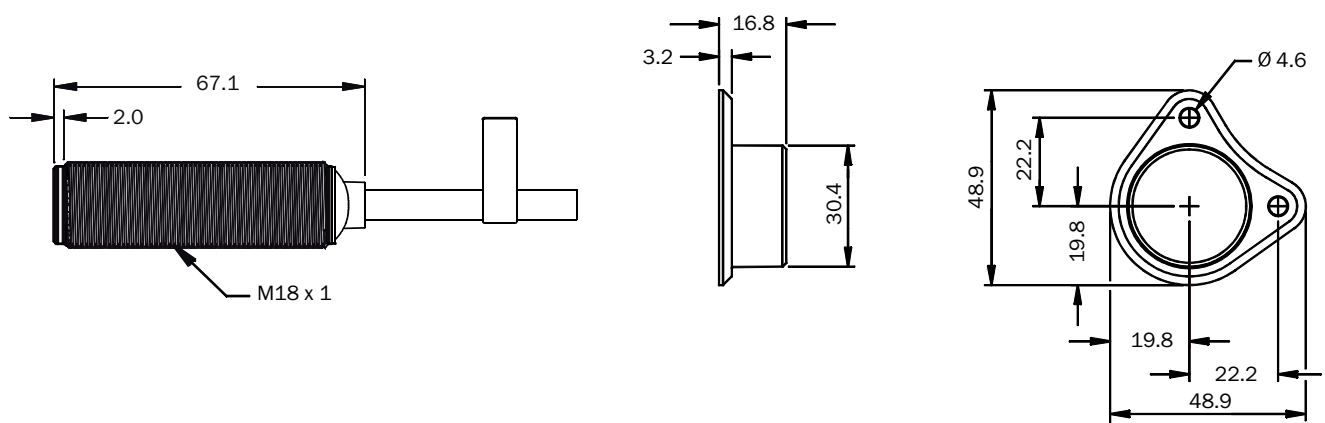
<b>EU declaration of conformity</b>	✓
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<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>China RoHS</b>	✓
<b>cULus certificate</b>	✓
<b>EC-Type-Examination approval</b>	✓

### Classifications

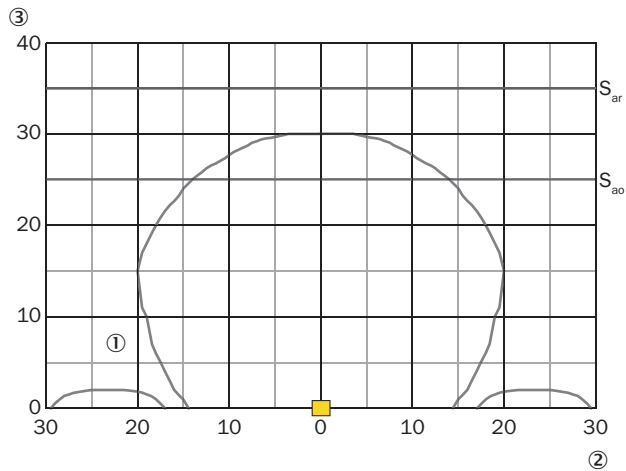
<b>ECLASS 5.0</b>	27272403
<b>ECLASS 5.1.4</b>	27272403
<b>ECLASS 6.0</b>	27272403
<b>ECLASS 6.2</b>	27272403
<b>ECLASS 7.0</b>	27272403
<b>ECLASS 8.0</b>	27272403
<b>ECLASS 8.1</b>	27272403
<b>ECLASS 9.0</b>	27272403
<b>ECLASS 10.0</b>	27272403
<b>ECLASS 11.0</b>	27272403
<b>ECLASS 12.0</b>	27274601
<b>ETIM 5.0</b>	EC001829
<b>ETIM 6.0</b>	EC001829
<b>ETIM 7.0</b>	EC001829
<b>ETIM 8.0</b>	EC001829
<b>UNSPSC 16.0901</b>	39122205

### Dimensional drawing



Dimensions in mm (inch)

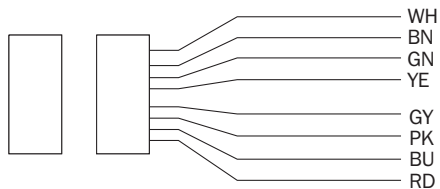
## Response range



If the actuator moves laterally in relation to the surface of the sensor, a minimum distance of 3 mm must be maintained. This distance will prevent premature triggering due to the side approach areas.

- ① Sensing range
- ② side deviation in mm
- ③ distance to sensor surface



## Pin assignment



White	Aux output (not safe)
Brown	Voltage supply 24 V DC
Green	Not connected
Yellow	Enable input for channel B
Grey	Safety output A
Pink	Safety output B
Blue	Voltage supply 0 V DC
Red	Enable input for channel A

Recommended accessories

Other models and accessories → [www.sick.com/TR4\\_Direct](http://www.sick.com/TR4_Direct)

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket for M18 sensors</li> <li><b>Material:</b> Steel</li> <li><b>Details:</b> Steel, zinc coated</li> <li><b>Items supplied:</b> Without mounting hardware</li> <li><b>Suitable for:</b> GR18, V180-2, V18, W15, Z1, Z2</li> </ul>	BEF-WN-M18	5308446
	<ul style="list-style-type: none"> <li><b>Description:</b> Clamping block for round sensors M18, without fixed stop</li> <li><b>Material:</b> Plastic</li> <li><b>Details:</b> Plastic (PA12), glass-fiber reinforced</li> <li><b>Items supplied:</b> Mounting hardware included</li> <li><b>Suitable for:</b> GR18, MH15V, V180-2, V18</li> </ul>	BEF-KH-M18	2051481

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)