



# FXL1-SPBMSA00

flexLock

SAFETY LOCKING DEVICES

**SICK**  
Sensor Intelligence.



### Ordering information

Locking principle	Switching behavior of the OSSDs	Coding	Auxiliary release	Type	Part no.
Power to release	Locking monitoring	Universally coded	✓	FXL1-SPB-MSA00	1101321

The actuator has to be ordered separately. See "Accessories" for further details.

Other models and accessories → [www.sick.com/flexLock](http://www.sick.com/flexLock)

actuator not supplied with delivery



### Detailed technical data

#### Features

<b>Sensor principle</b>	RFID
<b>Locking principle</b>	Power to release
<b>Coding</b>	Universally coded
<b>Locking force <math>F_{max}</math></b>	
Flexible actuator	4,100 N (EN ISO 14119)
Rigid actuator (frontal)	3,630 N (EN ISO 14119)
Rigid actuator (lateral)	3,510 N (EN ISO 14119)
<b>Locking force <math>F_{Zh}</math></b>	
Flexible actuator	3,150 N (EN ISO 14119)
Rigid actuator (frontal)	2,790 N (EN ISO 14119)
Rigid actuator (lateral)	2,700 N (EN ISO 14119)
<b>Actuation force</b>	20 N
<b>Retaining force</b>	30 N
<b>Force against which unlocking is possible</b>	≤ 25 N
<b>Actuation frequency</b>	≤ 1 Hz
<b>Approach speed</b>	≤ 20 m/min

#### Safety-related parameters

<b>Safety integrity level</b>	SIL 3 (IEC 61508)
<b>Category</b>	Category 4 (EN ISO 13849) <sup>1)</sup>
<b>Performance level</b>	PL e (EN ISO 13849) <sup>1)</sup>
<b>PFH<sub>D</sub> (mean probability of a dangerous failure per hour)</b>	$9.55 \times 10^{-9}$ <sup>2)</sup>

<sup>1)</sup> Applies for monitoring of the door position (interlocking monitoring) and locking monitoring.

<sup>2)</sup> At 40 °C and 0 m above sea level.

<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>Safe state in the event of a fault</b>	At least one safety-related semiconductor output (OSSD) is in the OFF state.

<sup>1)</sup> Applies for monitoring of the door position (interlocking monitoring) and locking monitoring.

<sup>2)</sup> At 40 °C and 0 m above sea level.

## Functions

<b>Auxiliary release</b>	✓
<b>Switching behavior of the OSSDs</b>	Locking monitoring
<b>Safe series connection</b>	In control cabinet (with diagnostics) With Flexi Loop (with diagnostics) With T-connector (without diagnostics)

## Interfaces

<b>Connection type</b>	Plug connector, M12, 8-pin
Coupling nut material	Stainless steel
<b>Display elements</b>	LEDs
Diagnostics indicator	✓
Status display	✓

## Electrical data

<b>Protection class</b>	III (IEC 61140)
<b>Contamination rating</b>	3 (IEC 60947-1)
<b>Classification according to cULus</b>	Class 2
<b>Usage category</b>	DC-13 (IEC 60947-5-3)
<b>Rated insulation voltage U<sub>i</sub></b>	32 V
<b>Rated impulse withstand voltage U<sub>imp</sub></b>	1,500 V
<b>Supply voltage V<sub>s</sub></b>	24 V DC (19.2 V DC ... 28.8 V DC)
<b>Power consumption</b>	
Locking device unlocked	65 mA
Locking device locked	65 mA
<b>Peak current</b>	800 mA, 200 ms
<b>Type of output</b>	Self-monitoring semiconductor outputs (OSSDs)
Safety outputs	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
<b>Output current</b>	
Safety outputs	≤ 100 mA
Application diagnostic outputs	≤ 50 mA
<b>Output voltage</b>	U <sub>V</sub> - 2 V DC ... U <sub>V</sub>
<b>Response time</b>	≤ 150 ms <sup>1)</sup>
<b>Release time</b>	≤ 350 ms <sup>1)</sup>
<b>Risk time</b>	150 ms <sup>1)</sup>
<b>Switch-on time</b>	3 s

<sup>1)</sup> In safe series connection: The value increases by 70 ms with each additional switch.

<b>Locking principle</b>	Power to release
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<sup>1)</sup> In safe series connection: The value increases by 70 ms with each additional switch.

### Mechanical data

<b>Weight</b>	480 g
<b>Material</b>	
Housing	VISTAL®
Ball bracket	Stainless steel
Latch plate of the actuator	Stainless steel
Plug connectors	Stainless steel
<b>Mechanical life</b>	1 x 10 <sup>6</sup> switching cycles

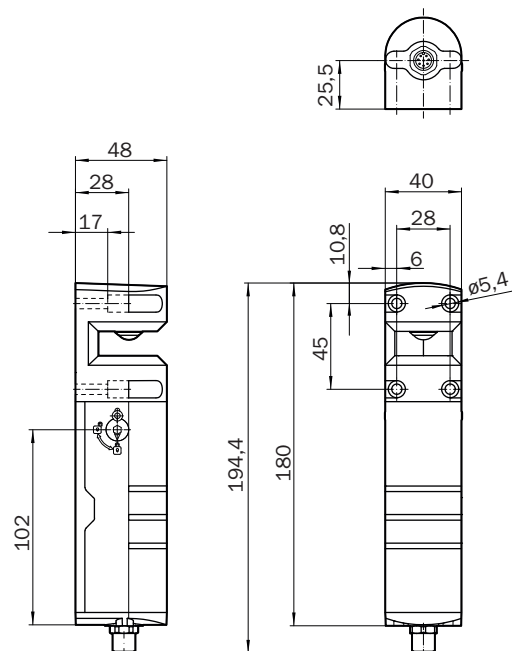
### Ambient data

<b>Enclosure rating</b>	IP65, IP67, IP69K (IEC 60529, IEC 60529, IEC 20653)
<b>Ambient operating temperature</b>	-20 °C ... +55 °C
<b>Storage temperature</b>	-25 °C ... +70 °C
<b>Relative humidity</b>	10 % ... 95 %, at 40 °C (IEC 60068)
<b>Vibration resistance</b>	10 Hz ... 55 Hz, 1 mm (IEC 60068-2-6)
<b>Shock resistance</b>	30 g, 11 ms (EN 60068-2-27)
<b>EMC</b>	EN IEC 61326-3-1, EN IEC 60947-5-2, EN IEC 60947-5-3, EN 300330

### Classifications

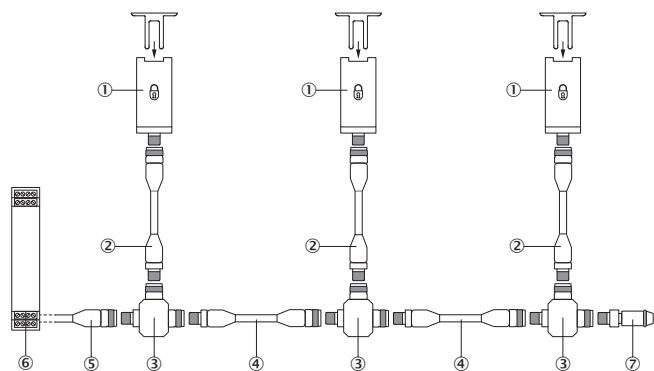
<b>ECLASS 5.0</b>	27272603
<b>ECLASS 5.1.4</b>	27272603
<b>ECLASS 6.0</b>	27272603
<b>ECLASS 6.2</b>	27272603
<b>ECLASS 7.0</b>	27272603
<b>ECLASS 8.0</b>	27272603
<b>ECLASS 8.1</b>	27272603
<b>ECLASS 9.0</b>	27272603
<b>ECLASS 10.0</b>	27272603
<b>ECLASS 11.0</b>	27272603
<b>ECLASS 12.0</b>	27272603
<b>ETIM 5.0</b>	EC002593
<b>ETIM 6.0</b>	EC002593
<b>ETIM 7.0</b>	EC002593
<b>ETIM 8.0</b>	EC002593
<b>UNSPSC 16.0901</b>	39122205

**Dimensional drawing** (Dimensions in mm (inch))



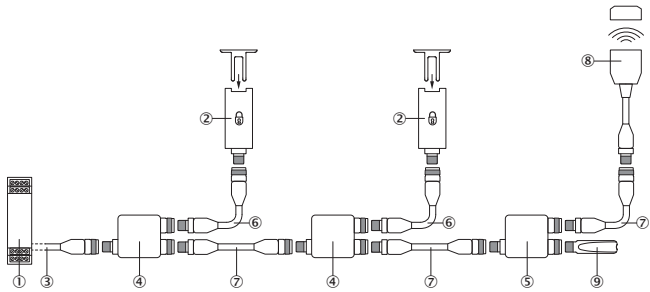
**Series connection**

Series connection with T-piece (without diagnostics)



- ① flexLock safety locking device
- ② Connection cable with 8-pin, M12 male connector and 8-pin, M12 female connector (e.g., YF2A18-xxxUA5M2A18)
- ③ T-junctions
- ④ Connection cable with 5-pin, M12 male connector and 5-pin, M12 female connector (e.g., YF2A15-xxxUB5M2A15)
- ⑤ Connecting cable with M12 female connector, 5-pin and flying leads (e.g., YF2A15-xxxVB5XLEAX)
- ⑥ Safe evaluation unit
- ⑦ End plug

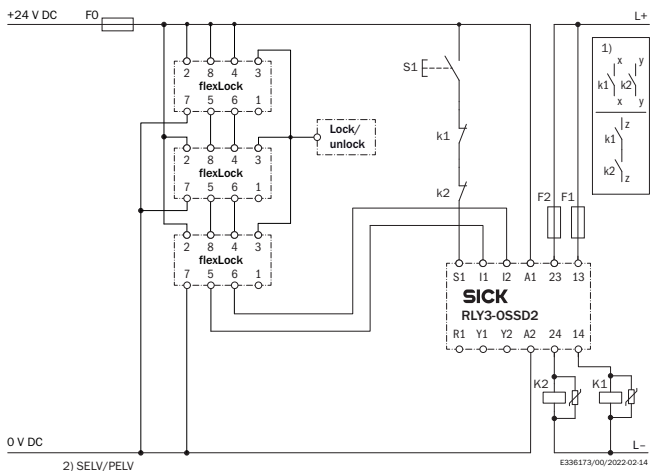
Series connection with Flexi Loop (with diagnostics)



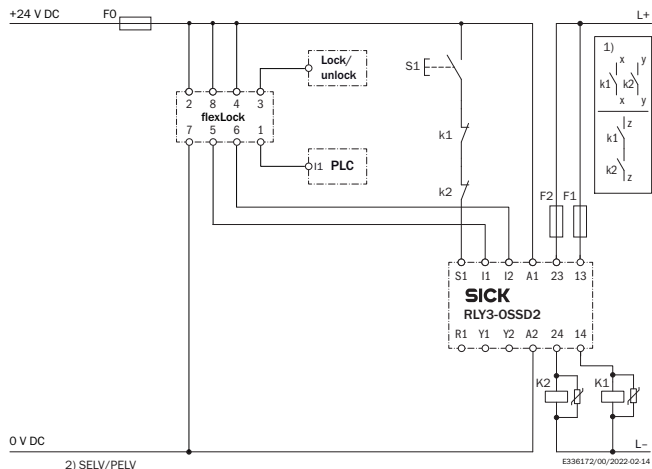
- ① Flexi Compact safety controller
- ② flexLock safety locking device
- ③ Connecting cable with M12 female connector, 5-pin and flying leads (e.g., YF2A15-xxxVB5XLEAX)
- ④ FLN-OSSD1100108 Flexi Loop node
- ⑤ FLN-OSSD1000105 Flexi Loop node
- ⑥ Connection cable with 8-pin, M12 male connector and 8-pin, M12 female connector (e.g., YF2A18-xxxUA5M2A18)
- ⑦ Connection cable with 5-pin, M12 male connector and 5-pin, M12 female connector (e.g., YF2A15-xxxUB5M2A15)
- ⑧ STR1 RFID safety switch (e.g., STR1-SAx0AC5)
- ⑨ FLT-TERM00001 Flexi Loop terminating element

### Connection diagram

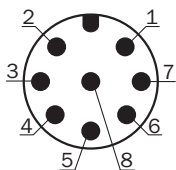
Series connection of three flexLock safety locking devices to RLY3-OSSD2 safety relay



flexLock safety locking device to RLY3-OSSD2 safety relay



## Pin assignment






Pin	Designation	Description
1	Out AUX	Application diagnostic output (not safe)
2	+24 V DC	24 V DC voltage supply
3	LOCK	Locking device input
4	In 2	Enable input for OSSD 2*
5	OSSD 1	OSSD 1 output
6	OSSD 2	OSSD 2 output
7	0 V	0 V DC voltage supply
8	In 1	Enable input for OSSD 1*

\* When used as an individual safety locking device or as the first safety locking device in a safe series connection, apply 24 V DC.

## Recommended accessories

Other models and accessories → [www.sick.com/flexLock](http://www.sick.com/flexLock)

	Brief description	Type	Part no.
<b>Actuators</b>			
	Flexible actuator, can be inserted into the locking device from the front	FXL1-AF1	1101326

	Brief description	Type	Part no.
	Rigid actuator, can be inserted into the locking device from the front or side	FXL1-AR1	1101327
MB1			
	<ul style="list-style-type: none"> <li>• <b>Catch release button/ANSI-compliant locking mechanism:</b> yes</li> <li>• <b>Escape release:</b> no</li> <li>• <b>Frame plate with latching function:</b> no</li> <li>• <b>Suitable for:</b> flexLock safety locking device (with actuator FXL-AR1)</li> <li>• <b>Items supplied:</b> Bolt unit, frame plate flexLock, adapter for actuator mounting (MB1-BRFL), safety screws for installing provided adapters, Mounting instructions</li> </ul>	MB1-BF10	1111207



## 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.

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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.”

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