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DATA SHEET

FXL1-SPBUSA00

flexLock
Safety locking devices

SICK Sensor Intelligence

actuator not supplied with delivery

SAFETY LOCKING DEVICES

FXL1-SPBUSA00

ORDERING INFORMATION

Type	part no.
FXL1-SPBUSA00	1101320

Further device versions and accessories at www.sick.com/flexLock

DETAILED TECHNICAL DATA

FEATURES

Sensor principle	RFID
Locking principle	Power to release
Coding	Uniquely coded
Locking force F_{max}	
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)
Locking force F_{zh}	
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)
Actuation force	20 N
Retaining force	30 N
Force against which unlocking is possible	≤ 25 N
Actuation frequency	≤ 1 Hz
Approach speed	≤ 20 m/min

SAFETY-RELATED PARAMETERS

Safety integrity level	SIL 3 (IEC 61508)
Category	Category 4 (EN ISO 13849) [1]

[1] Applies for monitoring of the door position (interlocking monitoring) and locking monitoring.

[2] At 40 °C and 0 m above sea level.

Performance level	PL e (EN ISO 13849) [1]
PFH_D (mean probability of a dangerous failure per hour)	9.55×10^{-9} [2]
T_M (mission time)	20 years (EN ISO 13849)
Type	Type 4 (EN ISO 14119)
Actuator coding level	High coding level (EN ISO 14119)
Safe state in the event of a fault	At least one safety-related semiconductor output (OSSD) is in the OFF state.

[1] Applies for monitoring of the door position (interlocking monitoring) and locking monitoring.

[2] At 40 °C and 0 m above sea level.

FUNCTIONS

Auxiliary release	✓
Switching behavior of the OSSDs	Locking monitoring
Switching behavior of the application diagnostic output	Actuator monitoring
Safe series connection	In control cabinet (with diagnostics) With Flexi Loop (with diagnostics) With T-connector (without diagnostics)

INTERFACES

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

ELECTRONICS

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

[1] In safe series connection: The value increases by 70 ms with each additional switch.

Locking principle	Power to release

[1] In safe series connection: The value increases by 70 ms with each additional switch.

MECHANICS

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

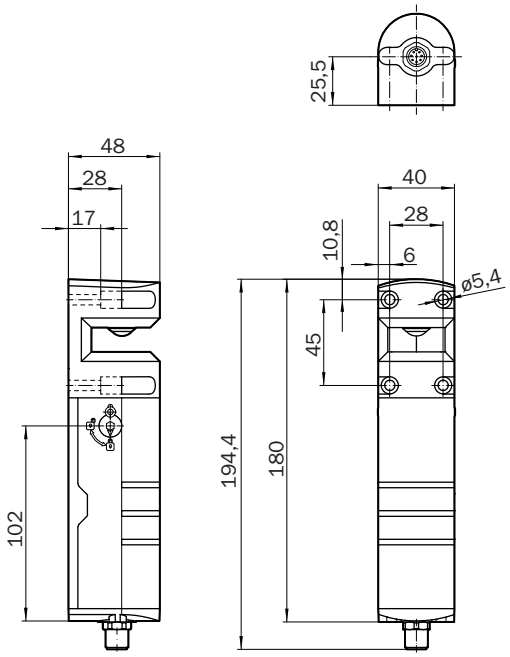
AMBIENT DATA

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

CERTIFICATES

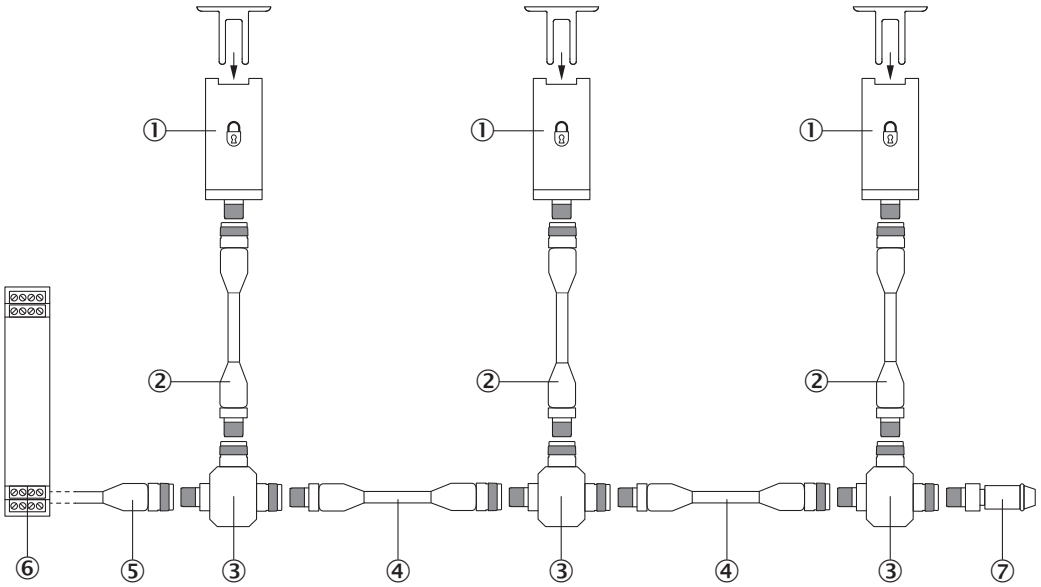
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
ECOLAB certificate	✓
cULus certificate	✓
EC-Type-Examination approval	✓
Third party certificate	✓

DIMENSIONAL DRAWING



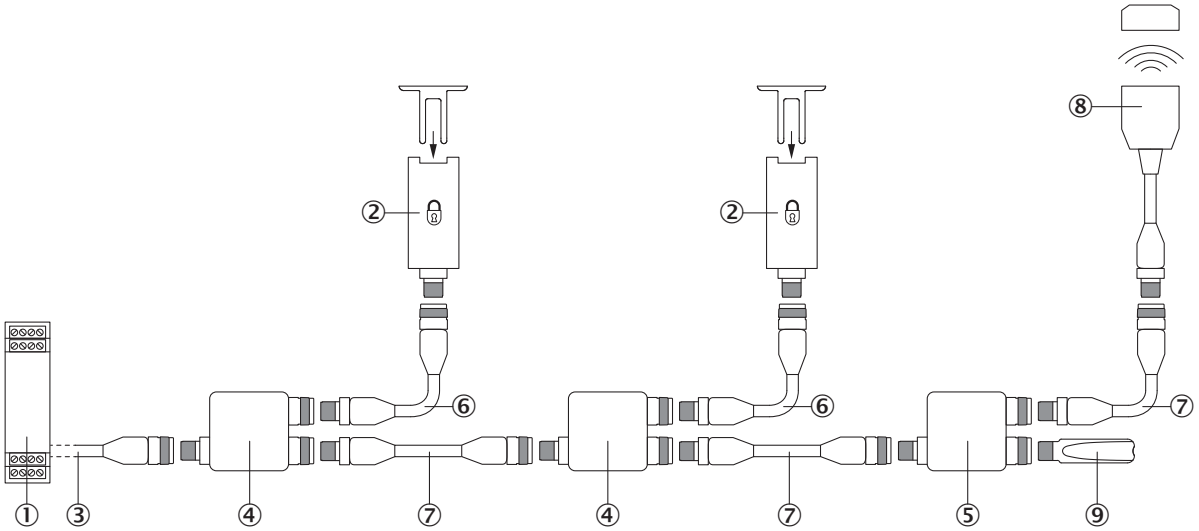
Dimensions in mm (inch)

SERIES CONNECTION WITH T-PIECE (WITHOUT DIAGNOSTICS)



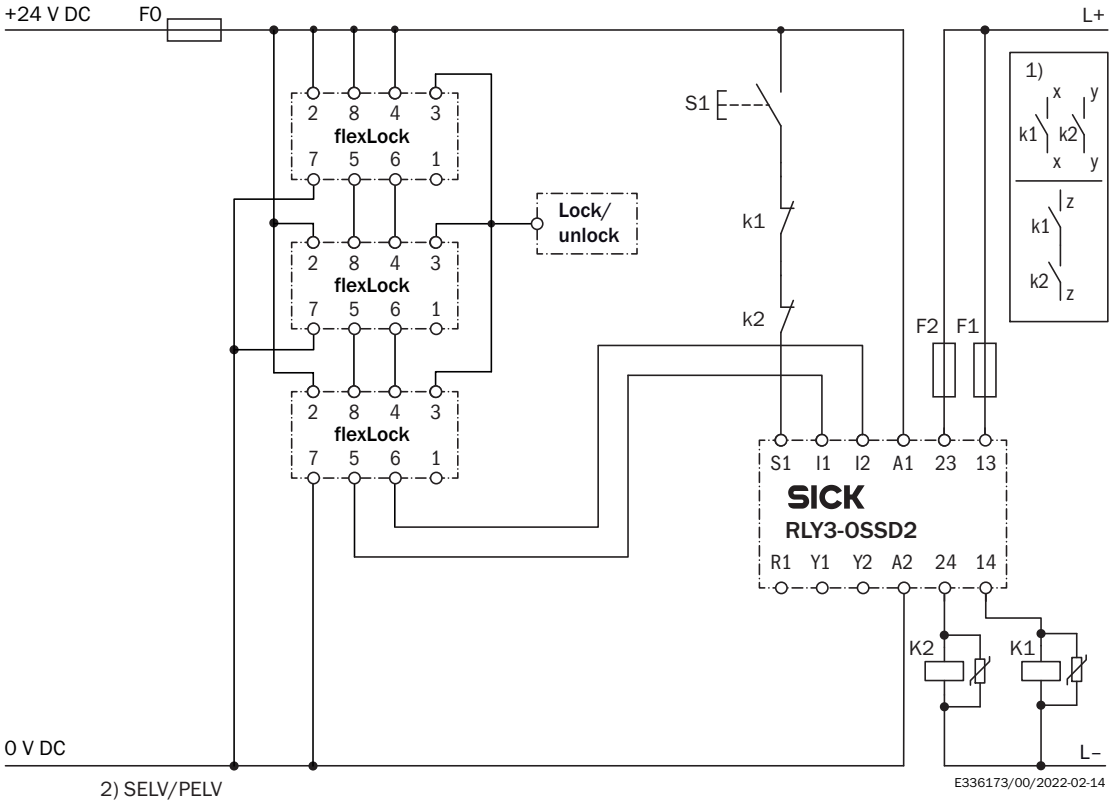
① flexLock safety locking device
② Connection cable with 8-pin, M12 male connector and 8-pin, M12 female connector (e.g., YF2A18-xxxUA5M2A18)
③ T-junctions
④ Connection cable with 5-pin, M12 male connector and 5-pin, M12 female connector (e.g., YF2A15-xxxUB5M2A15)
⑤ connecting cable with M12 female connector,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

SERIES CONNECTION WITH FLEXI LOOP (WITH DIAGNOSTICS)

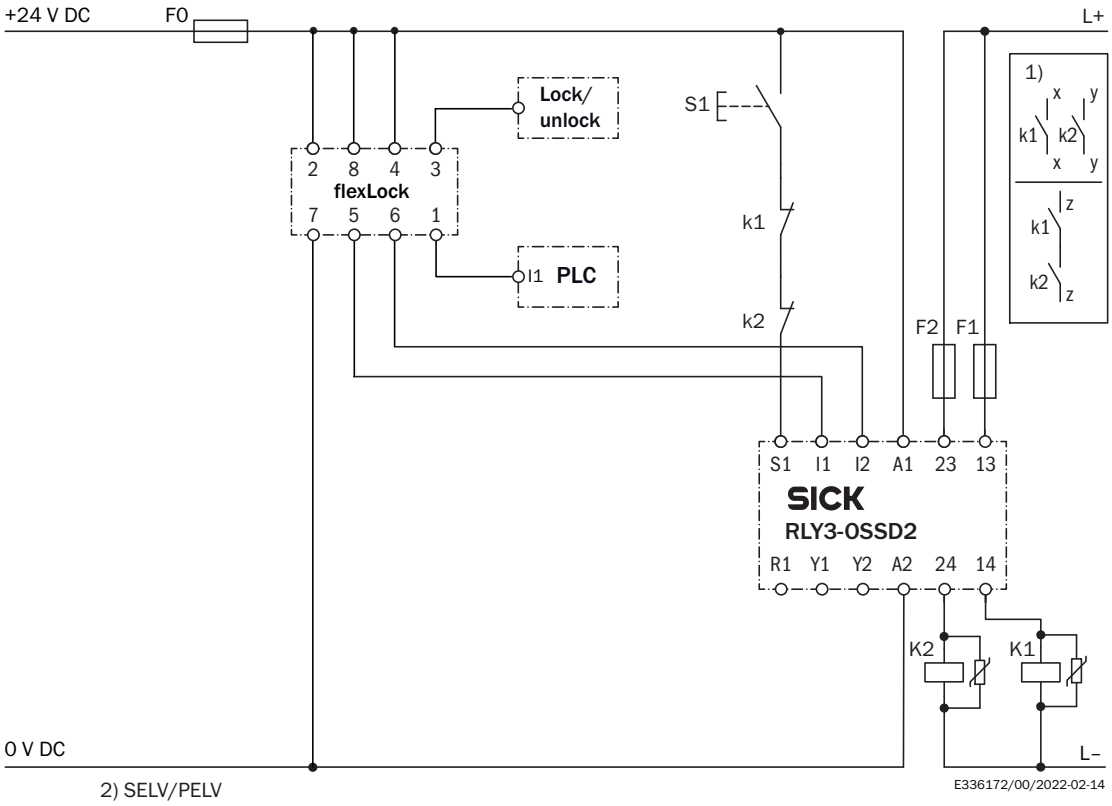


① Flexi Compact safety controller
② flexLock safety locking device
③ connecting cable with M12 female connector, 5-pin and flying leads (e.g., YF2A15-xxxVB5XLEAX)
④ FLN-OSSD1100108 Flexi Loop node
⑤ FLN-OSSD1000105 Flexi Loop node
⑥ Connection cable with 8-pin, M12 male connector and 8-pin, M12 female 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-SAxx0AC5)
⑨ FLT-TERM00001 Flexi Loop terminating element

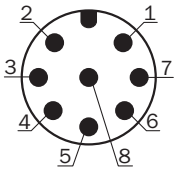
CONNECTION DIAGRAM SERIES CONNECTION OF THREE FLEXLOCK SAFETY LOCKING DEVICES TO RLY3-OSSD2 SAFETY RELAY



CONNECTION DIAGRAM FLEXLOCK SAFETY LOCKING DEVICE TO RLY3-OSSD2 SAFETY RELAY



PINOUTS



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.

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1101320

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SICK AT A GLANCE

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SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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