



# TR110-SLUFL00

TR110 Lock

SAFETY LOCKING DEVICES

**SICK**  
Sensor Intelligence.



### Ordering information

Type	Part no.
TR110-SLUFL00	6044633

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

Other models and accessories → [www.sick.com/TR110\\_Lock](http://www.sick.com/TR110_Lock)



### Detailed technical data

#### Features

<b>Sensor principle</b>	RFID
<b>Locking principle</b>	Power to lock
<b>Coding</b>	Uniquely coded
<b>Locking force <math>F_{max}</math></b>	
With straight actuator	3,900 N (EN ISO 14119)
With angled actuator	1,500 N (EN ISO 14119)
With hinged actuator	2,600 N (EN ISO 14119)
<b>Locking force <math>F_{Zh}</math></b>	
With straight actuator	3,000 N (EN ISO 14119)
With angled actuator	1,100 N (EN ISO 14119)
With hinged actuator	2,000 N (EN ISO 14119)
<b>Actuation force</b>	$\geq 10$ N
<b>Retaining force</b>	20 N
<b>Force against which unlocking is possible</b>	$\leq 20$ N
<b>Actuation frequency</b>	$\leq 0.5$ Hz
<b>Approach speed</b>	$\leq 20$ m/min

#### Safety-related parameters

<b>Safety integrity level</b>	SIL3 (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>	$4.1 \times 10^{-9}$ <sup>1)</sup>
<b>T<sub>M</sub> (mission time)</b>	20 years (EN ISO 13849)

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

<b>Type</b>	Type 4 (EN ISO 14119)
<b>Actuator coding level</b>	High 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.

## Functions

<b>Switching behavior of the OSSDs</b>	Locking monitoring
<b>Safe series connection</b>	With Flexi Loop (with diagnostics)

## Interfaces

<b>Connection type</b>	Plug connector, M12, 8-pin
Coupling nut material	Brass
<b>Diagnostics indicator</b>	✓
<b>Status display</b>	✓

## Electrical data

<b>Protection class</b>	III (IEC 61140)
<b>Contamination rating</b>	3 (EN 60947-1)
<b>Classification according to cULus</b>	Class 2
<b>Usage category</b>	DC-13 (IEC 60947-5-1)
<b>Rated operating current (voltage)</b>	150 mA (24 V DC) <sup>1)</sup>
<b>Rated insulation voltage U<sub>i</sub></b>	50 V
<b>Rated impulse withstand voltage U<sub>imp</sub></b>	500 V
<b>Supply voltage V<sub>s</sub></b>	
Sensor	24 V DC (20.4 V DC ... 27.6 V DC)
Magnet	24 V DC (20.4 V DC ... 26.4 V DC)
<b>Power consumption</b>	
Sensor	40 mA
Magnet	400 mA
<b>Type of output</b>	Self-monitoring semiconductor outputs (OSSDs)
Safety outputs	2 semiconductor outputs (OSSDs), p-switching, short-circuit protected
Application diagnostic outputs	P-switching, short-circuit protected
<b>Output current</b>	
Safety outputs	1 mA ... 150 mA
Application diagnostic outputs	1 mA ... 50 mA
<b>Power consumption of magnet</b>	6 W
<b>Switch-on time of magnet</b>	100 %
<b>Response time</b>	≤ 260 ms <sup>2)</sup>
<b>Release time</b>	400 ms
<b>Switch-on time</b>	1 s
<b>Discrepancy time</b>	≤ 10 ms (EN IEC 60947-5-3)

<sup>1)</sup> In the case of inductive loads, outputs must be protected with a freewheeling diode.

<sup>2)</sup> 5 ms for each additional switch.

<b>Locking principle</b>	Power to lock
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<sup>1)</sup> In the case of inductive loads, outputs must be protected with a freewheeling diode.

<sup>2)</sup> 5 ms for each additional switch.

### Mechanical data

<b>Weight</b>	0.42 kg
<b>Material</b>	
Switch head	Zinc diecast
Housing	Glass-fiber reinforced thermoplastic
Plug connectors	Nickel-plated brass
<b>Mechanical life</b>	1 x 10 <sup>6</sup> switching cycles

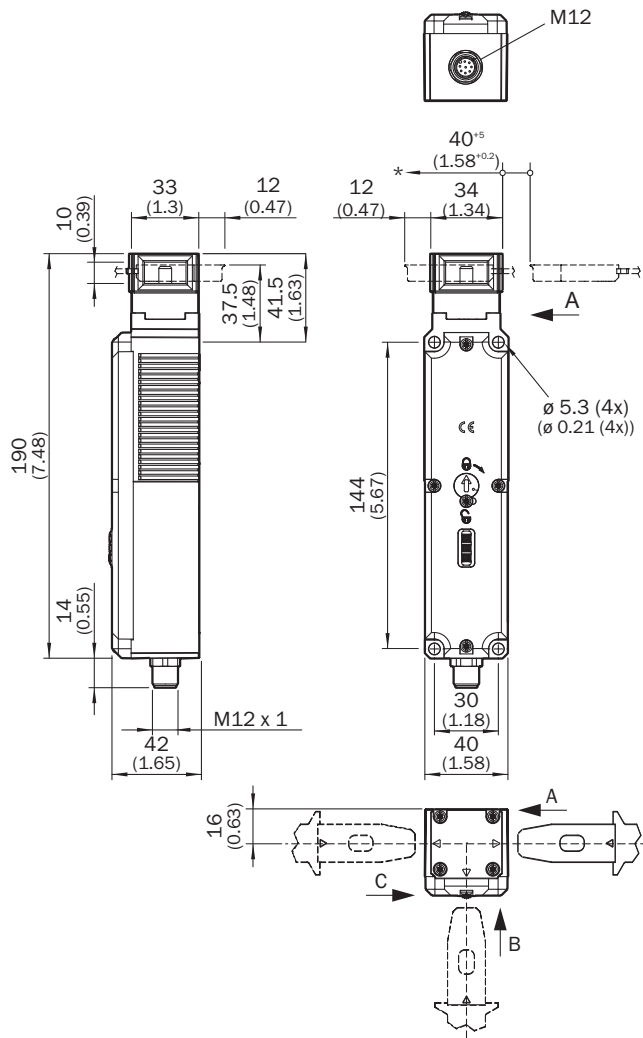
### Ambient data

<b>Enclosure rating</b>	IP67 (EN 60529) IP69K
<b>Ambient operating temperature</b>	-20 °C ... +55 °C
<b>Vibration resistance</b>	10 Hz ... 55 Hz (IEC 60068-2-6)
<b>Shock resistance</b>	30 g, 11 ms (EN 60068-2-27)
<b>EMC</b>	EN IEC 60947-5-3

### Classifications

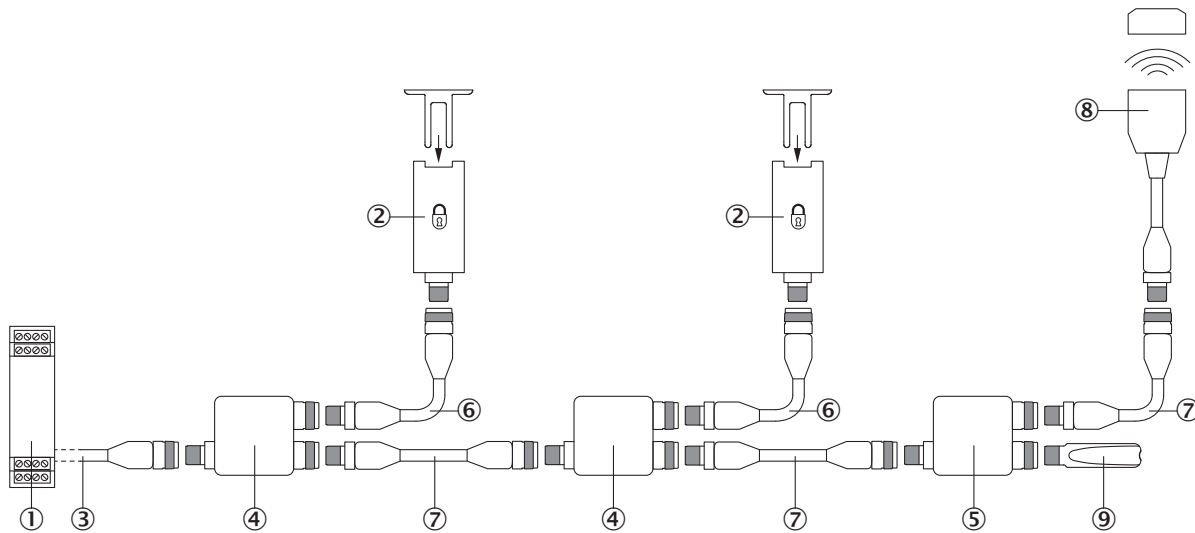
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<b>eCl@ss 12.0</b>	27272603
<b>ETIM 5.0</b>	EC002593
<b>ETIM 6.0</b>	EC002593
<b>ETIM 7.0</b>	EC002593
<b>ETIM 8.0</b>	EC002593
<b>UNSPSC 16.0901</b>	39122205

Dimensional drawing (Dimensions in mm (inch))



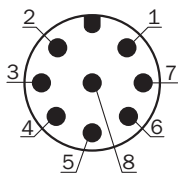
### Series connection

Series connection with Flexi Loop (with diagnostics)



- ① Flexi Soft safety controller
- ② TR110 Lock 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-SAxxOAC5)
- ⑨ FLT-TERM00001 Flexi Loop terminating element

### Pin assignment









Pin	Designation	Description
1	AUX DOOR	Door application diagnostic output
2	+24 V DC	Safety switch voltage supply
3	Magnet +	Magnet control 24 V DC
4	n.c.	Not connected
5	OSSD 1	OSSD 1 output
6	OSSD 2	OSSD 2 output
7	0 V DC / Magnet -	0 V DC voltage supply / magnet control 0 V DC
8	n.c.	Not connected

For details see operating instructions

## Recommended accessories

Other models and accessories → [www.sick.com/TR110\\_Lock](http://www.sick.com/TR110_Lock)

	Brief description	Type	Part no.
Actuators			
	Actuator angled	TR110-XABT	5334663
	Hinged actuators for doors with hinges on bottom <sup>6</sup> *	TR110-XAFB	5338338
	Hinged actuators for doors with hinges on left	TR110-XAFL	5338331
	Hinged actuators for doors with hinges on right	TR110-XAFR	5338332
	Hinged actuators for doors with hinges on top	TR110-XAFT	5338336
	Actuator straight	TR110-XAS	5321176

## 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)