



# STR1-SAFF0AC5

## STR1

NON-CONTACT SAFETY SWITCHES

**SICK**  
Sensor Intelligence.



## Ordering information

Type	Part no.
STR1-SAFFOAC5	1073206

Other models and accessories → [www.sick.com/STR1](http://www.sick.com/STR1)



## Detailed technical data

### Features

<b>System part</b>	Sensor and actuator
<b>Sensor principle</b>	Transponder
<b>Number of safe outputs</b>	2
<b>Auxiliary contact (AUX)</b>	1 (Switching behavior complementary to OSSDs)
<b>Safe switch on distance <math>S_{ao}</math></b>	14 mm (-10 ... +70 °C) <sup>1)</sup> 10 mm (-30 ... -10 °C) <sup>1)</sup>
<b>Safe switch off distance <math>S_{ar}</math></b>	28 mm <sup>1)</sup>
<b>Active sensor surfaces</b>	3
<b>Actuation directions</b>	5
<b>Coding</b>	Permanently coded

<sup>1)</sup> Values apply for the frontal alignment of the sensor to the actuator. A detailed display of the alignment options and values can be found in the operating instructions.

### Safety-related parameters

<b>Safety integrity level</b>	SIL3 (IEC 61508) SILCL3 (EN 62061)
<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>	5,21 x 10 <sup>-9</sup> (EN ISO 13849)
<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>	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.

### Functions

<b>Safe series connection</b>	With Flexi Loop (with diagnostics)
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### Interfaces

<b>Connection type</b>	Cable with plug M12, 5-pin
Length of cable	0.2 m

Cable material	PVC
Long connecting cable	≤ 200 m
<b>Diagnostics indicator</b>	✓
<b>Status display</b>	✓

#### Electrical data

<b>Protection class</b>	III (IEC 61140)
<b>Classification according to cULus</b>	Class 2
<b>Supply voltage <math>V_s</math></b>	24 V DC (19.2 V DC ... 28.8 V DC)
<b>Power consumption</b>	50 mA
<b>Type of output</b>	Self-monitoring semiconductor outputs (OSSDs)
<b>Output current</b>	≤ 100 mA
<b>Response time</b>	40 ms <sup>1)</sup>
<b>Enable time</b>	100 ms <sup>1)</sup>
<b>Risk time</b>	80 ms <sup>1)</sup>
<b>Switch-on time</b>	2.5 s <sup>2)</sup>

<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> The time specified applies to one sensor after the supply voltage has been applied to the safety switch. In a safe series connection, 0.1-s must be added for each sensor. An additional 0.5-s per taught-in actuator must be added for uniquely coded and permanently coded sensors.

#### Mechanical data

<b>Dimensions (W x H x D)</b>	40 mm x 18 mm x 26 mm
<b>Weight</b>	68 g
<b>Housing material</b>	VISTAL®

#### Ambient data

<b>Enclosure rating</b>	IP67 (EN 60529) IPX9K (ISO 20653)
<b>Ambient operating temperature</b>	-30 °C ... +70 °C <sup>1)</sup>
<b>Storage temperature</b>	-30 °C ... +70 °C
<b>Vibration resistance</b>	10 Hz ... 55 Hz, 1 mm (IEC 60068-2-6)
<b>Shock resistance</b>	30 g, 11 ms (IEC 60068-2-27)
<b>EMC</b>	EN IEC 61326-3-1 EN IEC 60947-5-2 EN IEC 60947-5-3 EN 300330 V2.1.1

<sup>1)</sup> Only applies for safety switches whose serial numbers begin with number series 1825\*\*\*\* or higher. For safety switches whose serial numbers deviate from this, an ambient operating temperature of -10 °C ... +70 °C applies.  
The serial number is displayed on the safety switch over the data matrix code.

#### Classifications

<b>ECl@ss 5.0</b>	27272403
<b>ECl@ss 5.1.4</b>	27272403
<b>ECl@ss 6.0</b>	27272403
<b>ECl@ss 6.2</b>	27272403
<b>ECl@ss 7.0</b>	27272403
<b>ECl@ss 8.0</b>	27272403

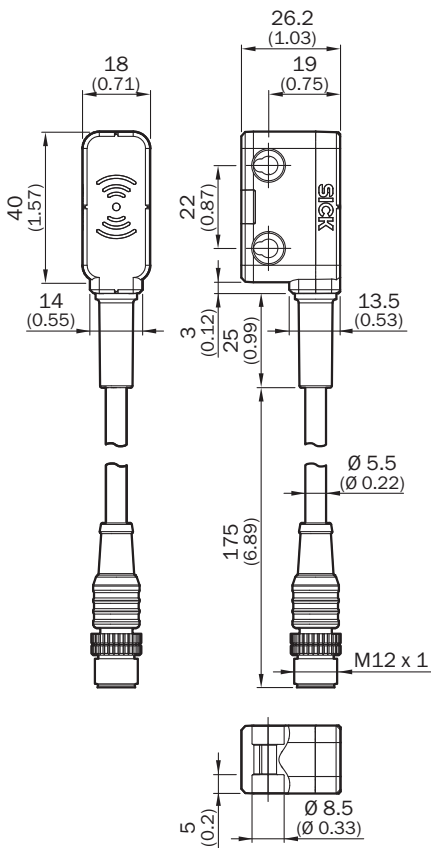
# STR1-SAFF0AC5 | STR1

## NON-CONTACT SAFETY SWITCHES

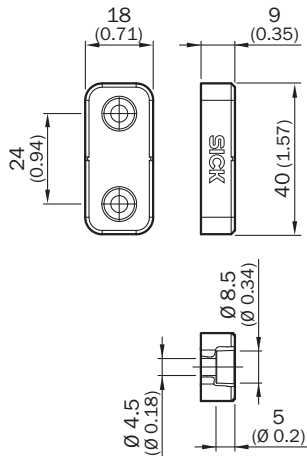
<b>ECl@ss 8.1</b>	27272403
<b>ECl@ss 9.0</b>	27272403
<b>ECl@ss 10.0</b>	27272403
<b>ECl@ss 11.0</b>	27272403
<b>ETIM 5.0</b>	EC001829
<b>ETIM 6.0</b>	EC001829
<b>ETIM 7.0</b>	EC001829
<b>UNSPSC 16.0901</b>	39122205

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

Sensor with cable and male connector

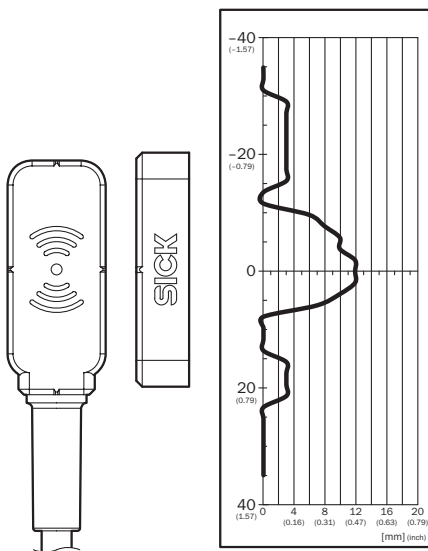


“Flat” actuator



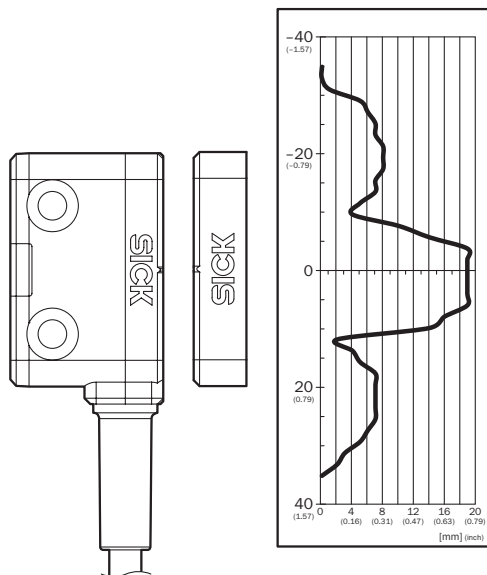
Response range

“Flat”/“Mini” actuator, active side sensor surface



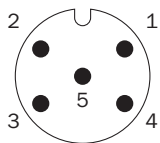
Assured switch on distance  $S_{ao}$  9 mm. Observe border areas for parallel approach: a minimum distance of 4 mm (typical) must be upheld when the actuator moves laterally to the sensor surface. This prevents early triggering due to the side preparation areas.

“Flat”/“Mini” actuator, active front sensor surface



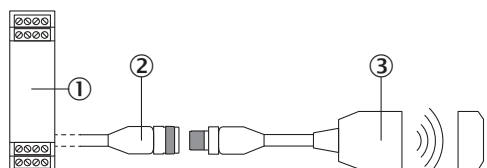
Assured switch on distance  $S_{ao}$  14 mm. Observe border areas for parallel approach: a minimum distance of 10 mm (typical) must be upheld when the actuator moves laterally to the sensor surface. This prevents early triggering due to the side preparation areas.

### Connection diagram



1	Voltage supply 24 V DC
2	OSSD 1
3	Voltage supply 0 V DC
4	OSSD 2
5	Aux output (not safe)

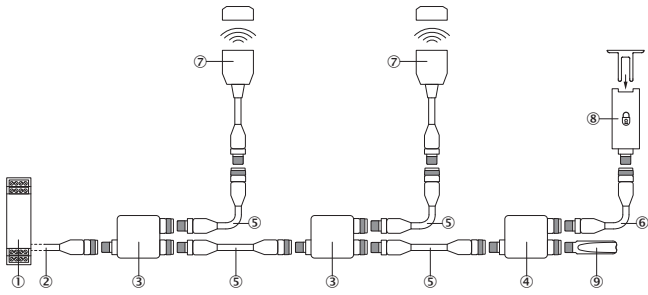
### Connection single sensor



- ① Safe evaluation unit
- ② Connecting cable with 5-pin, M12 female connector and flying leads (e.g., YF2A15-xxxVB5XLEAX)
- ③ STR1 transponder safety switch (e.g., STR1-SAx0AC5)

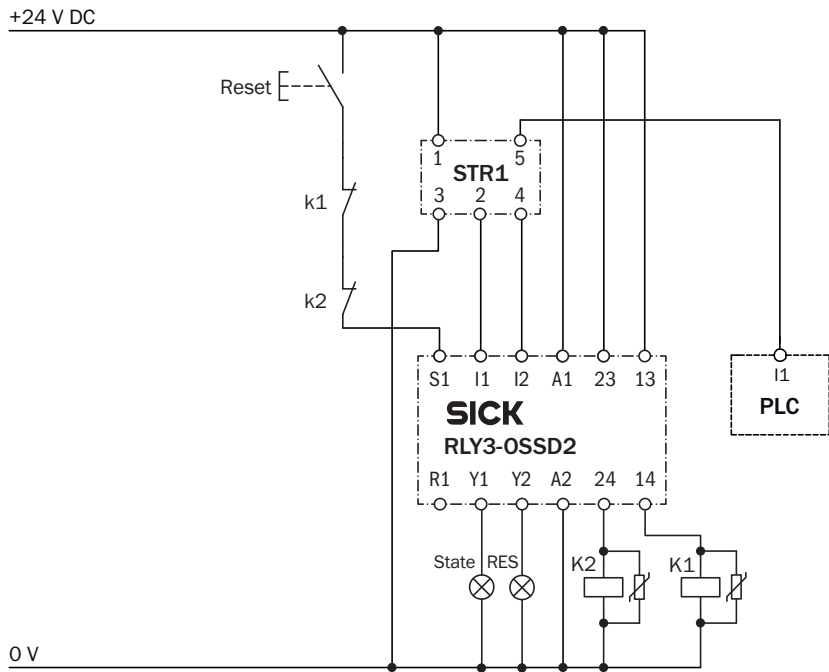
## Series connection

Series connection with Flexi Loop (with diagnostics)



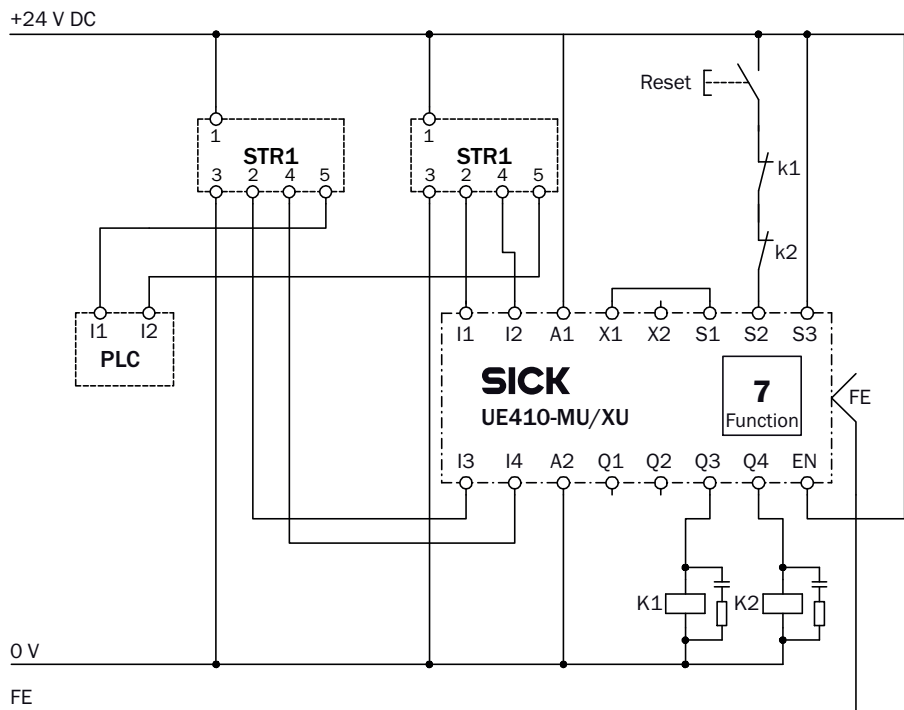
- ① Flexi Soft safety controller
- ② Connecting cable with 5-pin, M12 female connector and flying leads (e.g., YF2A15-xxxVB5XLEAX)
- ③ FLN-OSSD1000105 Flexi Loop node
- ④ FLN-EMSS1100108 Flexi Loop node
- ⑤ Connection cable with 5-pin, M12 male connector and 5-pin, M12 female connector (e.g., YF2A15-xxxUB5M2A15)
- ⑥ Connection cable with 8-pin, M12 male connector and 8-pin, M12 female connector (e.g., YF2A18-xxxUA5M2A18)
- ⑦ STR1 transponder safety switch (e.g., STR1-SAx0AC5)
- ⑧ Safety locking device (e.g., i10-x0454 or i110-x0454)
- ⑨ FLT-TERM00001 Flexi Loop terminating element

STR1 transponder safety switch to RLY3-OSSD2 safety relay



E212770/00/2018-06-07



Parallel connection of two STR1 transponder safety switches to a Flexi Classic safety controller



E148463/00/2016-02-08

### Recommended accessories

Other models and accessories → [www.sick.com/STR1](http://www.sick.com/STR1)

Brief description		Type	Part no.
<b>Nuts and screws</b>			
	10 pieces	Safety screws M4 x 14	5333570
<b>Plug connectors and cables</b>			
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 2 m	YF2A15-020VB5XLEAX	2096239
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF2A15-050VB5XLEAX	2096240
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 10 m	YF2A15-100VB5XLEAX	2096241



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For us, that is “Sensor Intelligence.”

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