Online data sheet

STR1-SAMF0AC5

STR1

NON-CONTACT SAFETY SWITCHES

SICK
Sensor Intelligence.

Ordering information

Type	Part no.
STR1-SAMF0AC5	1073216

Other models and accessories ➜ www.sick.com/STR1

Detailed technical data

Features

System part	Sensor and actuator
Sensor principle	Transponder
Number of safe outputs	2
Auxiliary contact (AUX)	1
Safe switch on distance S_{ao}	
Active front sensor surface	14 mm
Active side sensor surface	9 mm
Safe switch off distance S_{ar}	28 mm
Active sensor surfaces	3
Actuation directions	5
Coding	Permanently coded

Safety-related parameters

Safety integrity level	SIL3 (IEC 61508), SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	$5{,}21 \times 10^{-9}$ (EN ISO 13849)
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.

Interfaces

Connection type	Cable with plug M12, 5-pin
Flexi-Loop-ready	✓
Length of cable	0.2 m
Cable material	PVC
Diagnostics indicator	✓

Status display	✓

Electrical data

Protection class	III (IEC 61140)
Classification according to cULus	Class 2
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC)
Power consumption	50 mA
Type of output	Semiconductor (OSSD)
Output current	≤ 100 mA
Response time	40 ms [1)]
Enable time	100 ms [1) 2)]
Risk time	80 ms [1) 3)]
Switch-on time	2.5 s [4)]

[1)] In a cascade, each downstream safety switch increases the system response time. More response times can be found in the operating instructions.
[2)] Response time on approach to the enable zone.
[3)] Detection time for internal oder external faults (e.g., short-circuit or cross-circuit of output signal switching devices). Follow the detailed information in the operating instructions.
[4)] The stated time applies for one sensor after application of the supply voltage to the safety switch. In case of a cascade 0.1 s must be added per sensor. For uniquely coded or permanently coded sensors 0.5 s must be added additionally per taught-in actuator.

Mechanical data

Dimensions (W x H x D)	40 mm x 18 mm x 26 mm
Weight	63 g
Housing material	VISTAL®

Ambient data

Enclosure rating	IP67 (EN 60529) IPX9K (ISO 20653)
Ambient operating temperature	–10 °C ... +70 °C
Storage temperature	–25 °C ... +70 °C
Vibration resistance	10 Hz ... 55 Hz, 1 mm (IEC 60068-2-6)
Shock resistance	30 g, 11 ms (IEC 60068-2-27)
EMC	EN IEC 61326-3-1 EN IEC 60947-5-2 EN IEC 60947-5-3 EN 300330 V2.1.1

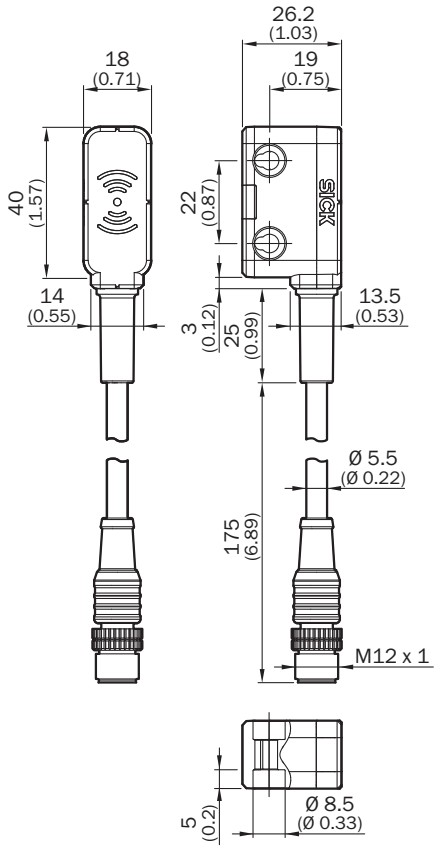
Classifications

ECl@ss 5.0	27272403
ECl@ss 5.1.4	27272403
ECl@ss 6.0	27272403
ECl@ss 6.2	27272403
ECl@ss 7.0	27272403
ECl@ss 8.0	27272403
ECl@ss 8.1	27272403
ECl@ss 9.0	27272403
ETIM 5.0	EC001829

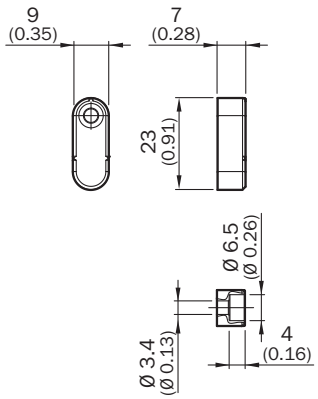
ETIM 6.0	EC001829
UNSPSC 16.0901	39122205

Dimensional drawing (Dimensions in mm (inch))

Sensor with cable and male connector

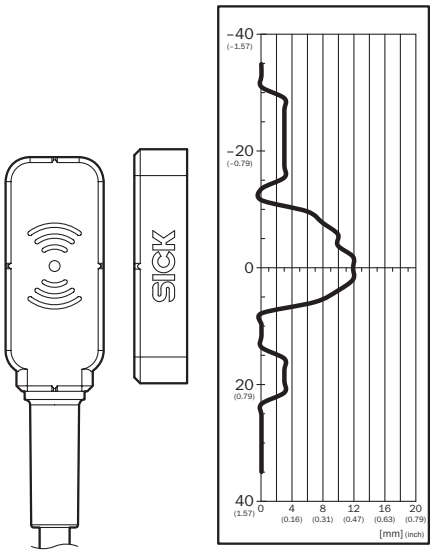


"Mini" actuator



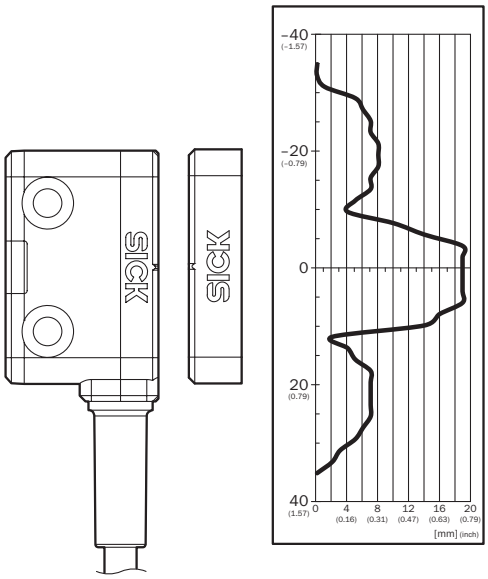
Response range

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



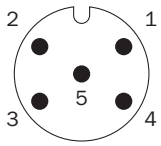
Safe switch on distance S_{Ao} 9 mm.Pay attention to boundary areas in case of parallel approach: If the actuator moves laterally in relation to the surface of the sensor, a minimum distance of 4 mm must be maintained. This distance will prevent premature triggering due to the side approach areas.

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



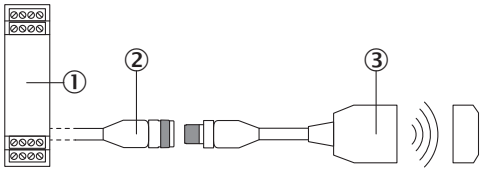
Safe switch on distance S_{Ao} 14 mm.Pay attention to boundary areas in case of parallel approach: If the actuator moves laterally in relation to the surface of the sensor, a minimum distance of 10 mm must be maintained. This distance will prevent premature triggering due to the side approach areas.

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)

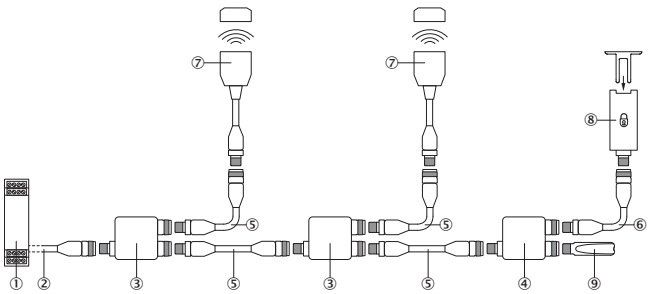
Connection single sensor



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-SAxx0AC5)

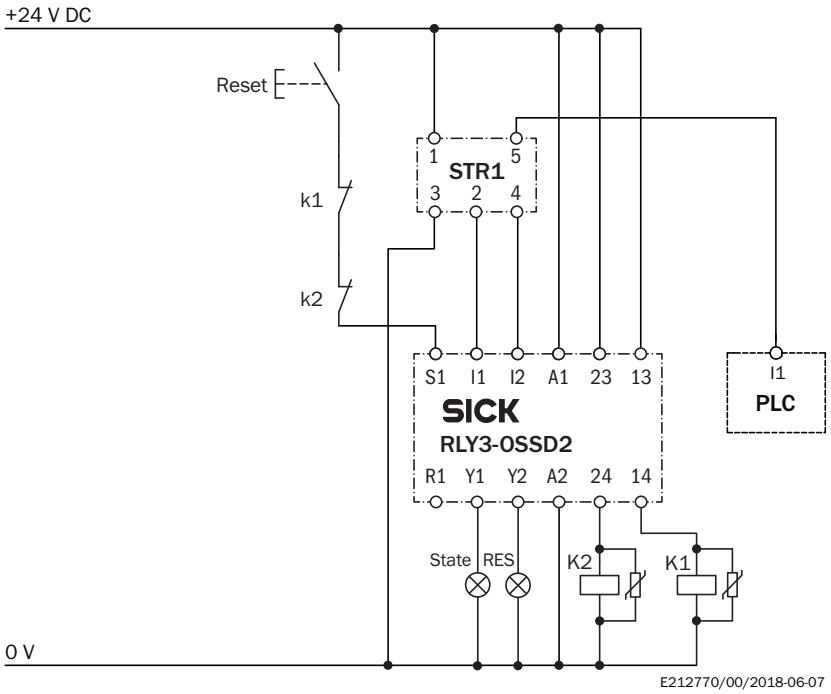
Series connection

Series connection with Flexi Loop (with diagnostics)



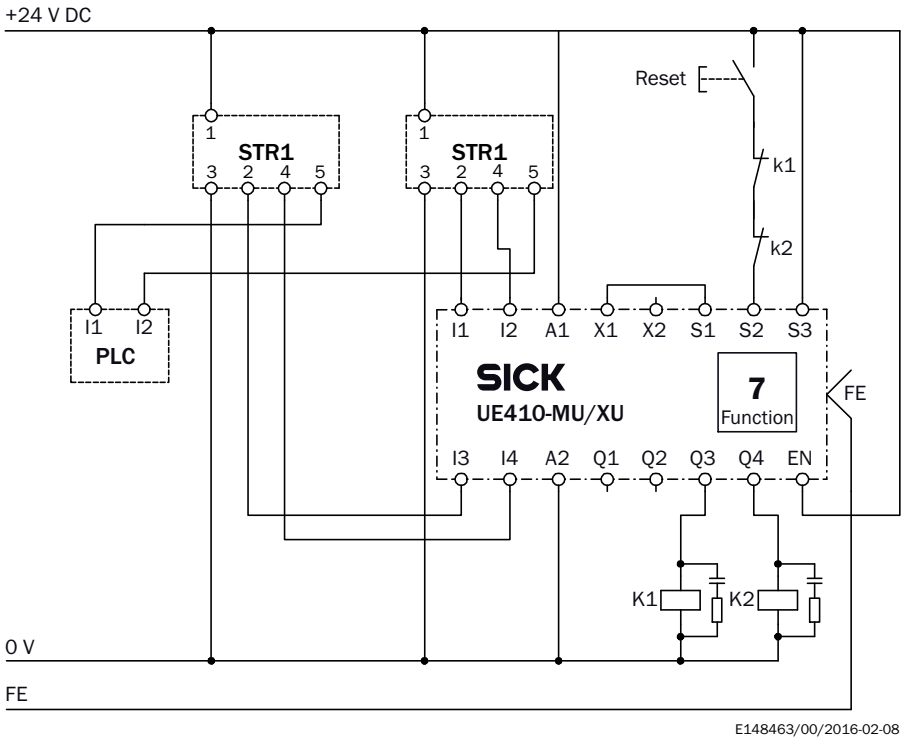
① Flexi Soft safety controller
② Connecting cable with 5-pin, M12 female connector and flying leads (e.g., YF2A15-xxxVB5XLEAX)
③ FLN-OSSD1000105 Flexi Loop node
④ FLN-EMSS1100108 Flexi Loop node
⑤ Connection cable with 5-pin, M12 male connector and 5-pin, M12 female connector (e.g., YF2A15-xxxUB5M2A15)
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-SAxx0AC5)
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

	Brief description	Type	Part no.
Nuts and screws			
	10 pieces	Safety screws M3 x 12	5333569
Plug connectors and cables			
	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

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