



STR1-SAMFOAC5

STR1

NON-CONTACT SAFETY SWITCHES

SICK
Sensor Intelligence.



Ordering information

| Type | Part no. |
|---------------|----------|
| STR1-SAMFOAC5 | 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 (Switching behavior complementary to OSSDs) |
| Safe switch on distance S_{ao} | 14 mm (-10 ... +70 °C) ¹⁾ 10 mm (-30 ... -10 °C) ¹⁾ |
| Safe switch off distance S_{ar} | 28 mm ¹⁾ |
| Active sensor surfaces | 3 |
| Actuation directions | 5 |
| Coding | Permanently coded |

¹⁾ 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

| | |
|---|--|
| 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. |

Functions

| | |
|-------------------------------|------------------------------------|
| Safe series connection | With Flexi Loop (with diagnostics) |
|-------------------------------|------------------------------------|

Interfaces

| | |
|------------------------|----------------------------|
| Connection type | Cable with plug M12, 5-pin |
| Length of cable | 0.2 m |

| | |
|------------------------------|---------|
| Cable material | PVC |
| Long connecting cable | ≤ 200 m |
| 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 | Self-monitoring semiconductor outputs (OSSDs) |
| Output current | ≤ 100 mA |
| Response time | 40 ms ¹⁾ |
| Enable time | 100 ms ¹⁾ |
| Risk time | 80 ms ¹⁾ |
| Switch-on time | 2.5 s ²⁾ |

¹⁾ In a safe series connection, each downstream safety switch increases the system response time. More response times can be found in the operating instructions.

²⁾ 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

| | |
|-------------------------------|-----------------------|
| 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 | -30 °C ... +70 °C ¹⁾ |
| Storage temperature | -30 °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 |

¹⁾ 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.

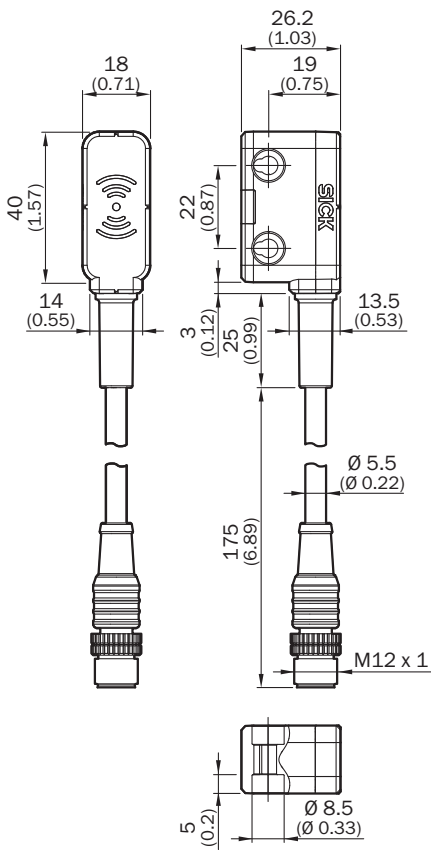
Classifications

| | |
|---------------------|----------|
| 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 |

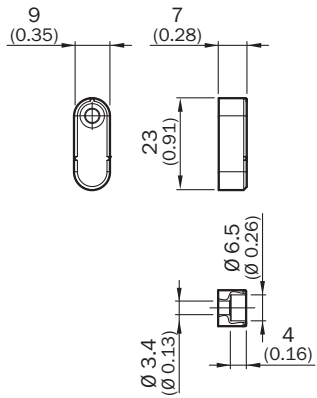
| | |
|-----------------------|----------|
| ECl@ss 8.1 | 27272403 |
| ECl@ss 9.0 | 27272403 |
| ECl@ss 10.0 | 27272403 |
| ECl@ss 11.0 | 27272403 |
| ETIM 5.0 | EC001829 |
| ETIM 6.0 | EC001829 |
| ETIM 7.0 | EC001829 |
| UNSPSC 16.0901 | 39122205 |

Dimensional drawing (Dimensions in mm (inch))

Sensor with cable and male connector

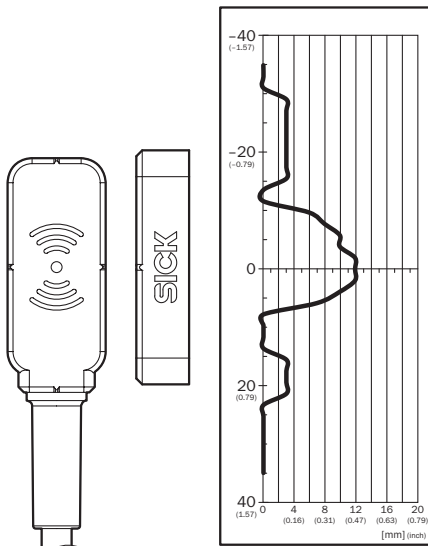


“Mini” actuator



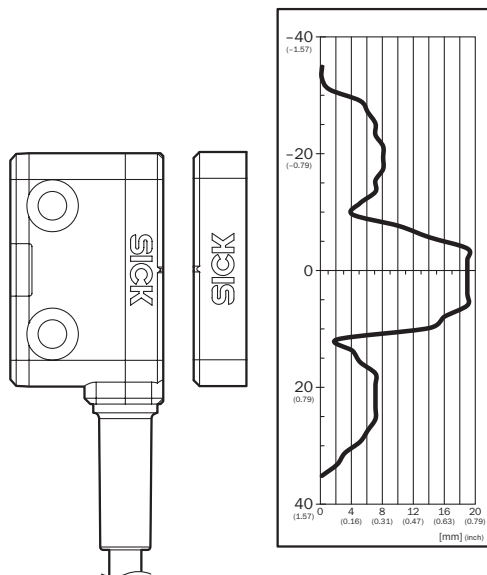
Response range

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



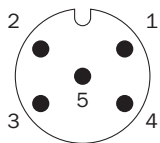
Assured switch on distance S_{ao} 9 mm. Observe border areas for parallel approach: a minimum distance of 4 mm (typical) must be upheld when the actuator moves laterally to the sensor surface. This prevents early triggering due to the side preparation areas.

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



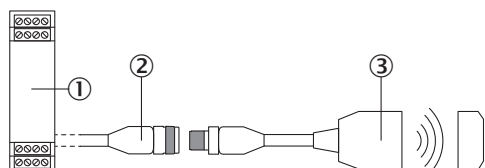
Assured switch on distance S_{ao} 14 mm. Observe border areas for parallel approach: a minimum distance of 10 mm (typical) must be upheld when the actuator moves laterally to the sensor surface. This prevents early triggering due to the side preparation areas.

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) |

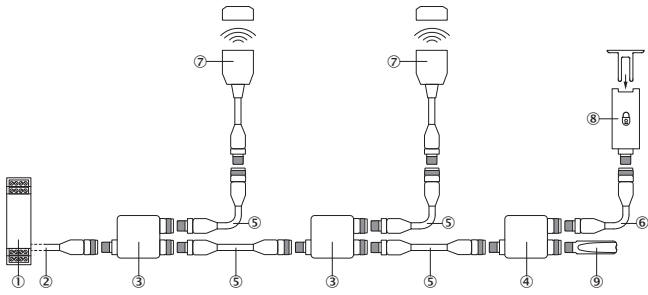
Connection single sensor



- 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)

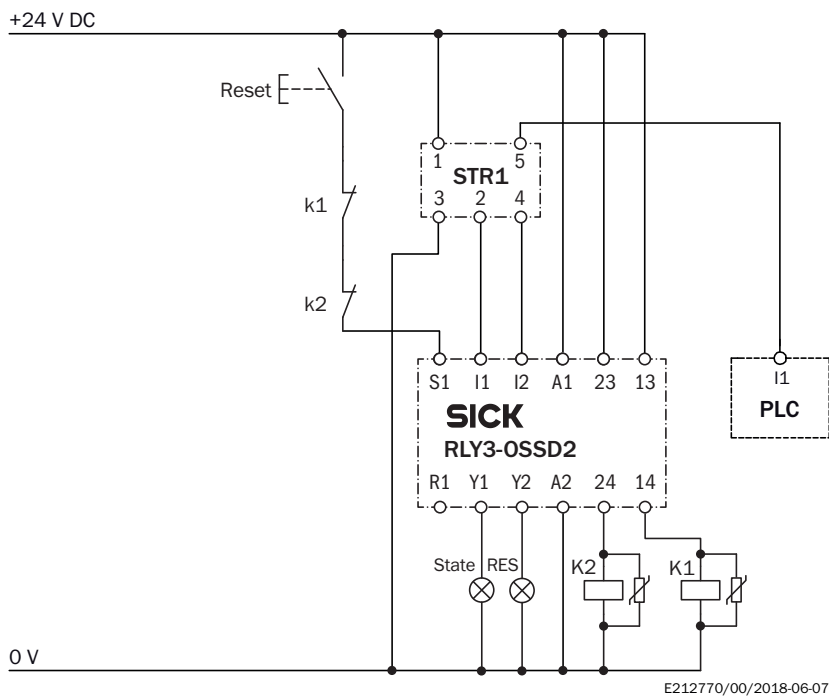
Series connection

Series connection with Flexi Loop (with diagnostics)

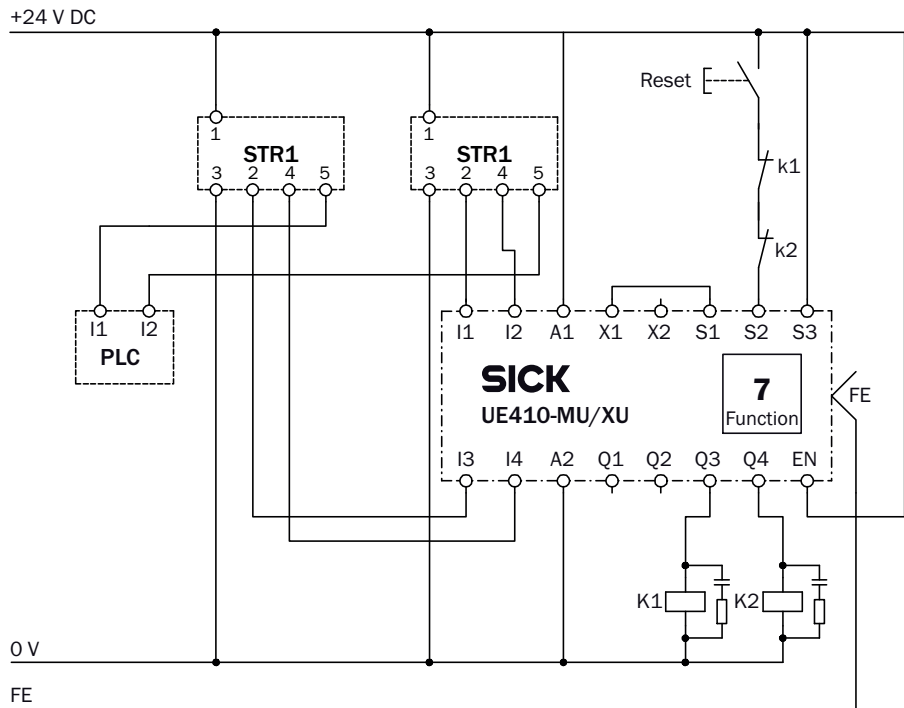


- ① Flexi Soft safety controller
- ② Connecting cable with 5-pin, M12 female connector and flying leads (e.g., YF2A15-xxxVB5XLEAX)
- ③ FLN-OSSD1000105 Flexi Loop node
- ④ FLN-EMSS1100108 Flexi Loop node
- ⑤ Connection cable with 5-pin, M12 male connector and 5-pin, M12 female connector (e.g., YF2A15-xxxUB5M2A15)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





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 |

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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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