Data sheet


# TR110-SRU2BB0

## TR110 Lock

**SAFETY LOCKING DEVICES**

SICK
Sensor Intelligence.


## Ordering information

| Type | part no. |
|---|---|
| TR110-SRU2BB0 | 6082953 |

Other models and accessories ➜ www.sick.com/TR110_Lock

## Detailed technical data

### Features

| | |
|---|---|
| **Sensor principle** | RFID |
| **Locking principle** | Power to release |
| **Coding** | Uniquely coded |
| **Locking force $F_{max}$** | |
| 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) |
| **Locking force $F_{Zh}$** | |
| 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) |
| **Actuation force** | ≥ 10 N |
| **Retaining force** | 20 N |
| **Force against which unlocking is possible** | ≤ 20 N |
| **Actuation frequency** | ≤ 0.5 Hz |
| **Approach speed** | ≤ 20 m/min |
| **Pushbuttons (illuminable)** | ✓ |
| **Items supplied** | Including 6 cover caps (blue, red, yellow, green, 2 x white) |

### Safety-related parameters

| | |
|---|---|
| **Safety integrity level** | SIL 3 (IEC 61508) |
| **Category** | Category 4 (EN ISO 13849) [1)] |
| **Performance level** | PL e (EN ISO 13849) [1)] |

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

| | |
|---|---|
| **$PFH_D$ (mean probability of a dangerous failure per hour)** | 5.38 x $10^{-9}$ [1] |
| **$T_M$ (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.

## Functions

| | |
|---|---|
| **Switching behavior of the OSSDs** | Locking monitoring |
| **Safe series connection** | None, only individual wiring (with diagnostics) |

## Interfaces

| | |
|---|---|
| **Connection type** | Plug connector, M12, 8-pin and plug connector, M12, 5-pin |
| Coupling nut material | Brass |
| **Pushbuttons (illuminable)** | ✓ |
| **Display elements** | LEDs |
| Diagnostics indicator | ✓ |
| Status display | ✓ |

## Electronics

| | |
|---|---|
| **Protection class** | III (IEC 61140) |
| **Contamination rating** | 3 (EN 60947-1) |
| **Classification according to cULus** | Class 2 |
| **Usage category** | DC-13 (IEC 60947-5-1) |
| **Rated operating current (voltage)** | 150 mA (24 V DC) [1] |
| **Rated insulation voltage $U_i$** | 50 V |
| **Rated impulse withstand voltage $U_{imp}$** | 500 V |
| **Supply voltage $V_S$** | |
| Sensor | 24 V DC (20.4 V DC ... 28.8 V DC) |
| Magnet | 24 V DC (20.4 V DC ... 28.8 V DC) |
| **Power consumption** | |
| Sensor | 40 mA |
| Magnet | 400 mA |
| Pushbutton (LED) | 10 mA |
| **Type of output** | Self-monitoring semiconductor outputs (OSSDs) |
| Safety outputs | 2 semiconductor outputs (OSSDs), p-switching, short-circuit protected |
| Application diagnostic outputs | P-switching, short-circuit protected |
| **Output current** | |
| Safety outputs | 1 mA ... 150 mA |
| Application diagnostic outputs | 1 mA ... 50 mA |

[1] In the case of inductive loads, outputs must be protected with a freewheeling diode.
[2] 5 ms for each additional switch.

| | |
|---|---|
| Pushbutton switching outputs | 1 mA ... 50 mA |
| **Power consumption of magnet** | 6 W |
| **Switch-on time of magnet** | 100 % |
| **Response time** | ≤ 260 ms [2] |
| **Release time** | 150 ms |
| **Switch-on time** | 5 s |
| **Discrepancy time** | 10 ms (EN IEC 60947-5-3) |
| **Locking principle** | Power to release |

[1] In the case of inductive loads, outputs must be protected with a freewheeling diode.
[2] 5 ms for each additional switch.

## Mechanics

| | |
|---|---|
| **Weight** | 0.42 kg |
| **Material** | |
| Switch head | Zinc diecast |
| Housing | Glass-fiber reinforced thermoplastic |
| Plug connectors | Nickel-plated brass |
| **Mechanical life** | 1 x $10^6$ switching cycles |

## Ambient data

| | |
|---|---|
| **Enclosure rating** | IP65 (EN 60529) |
| **Ambient operating temperature** | –20 °C ... +55 °C |
| **Vibration resistance** | 10 Hz ... 55 Hz (IEC 60068-2-6) |
| **Shock resistance** | 30 g, 11 ms (EN 60068-2-27) |
| **EMC** | EN IEC 60947-5-3 |

## Certificates

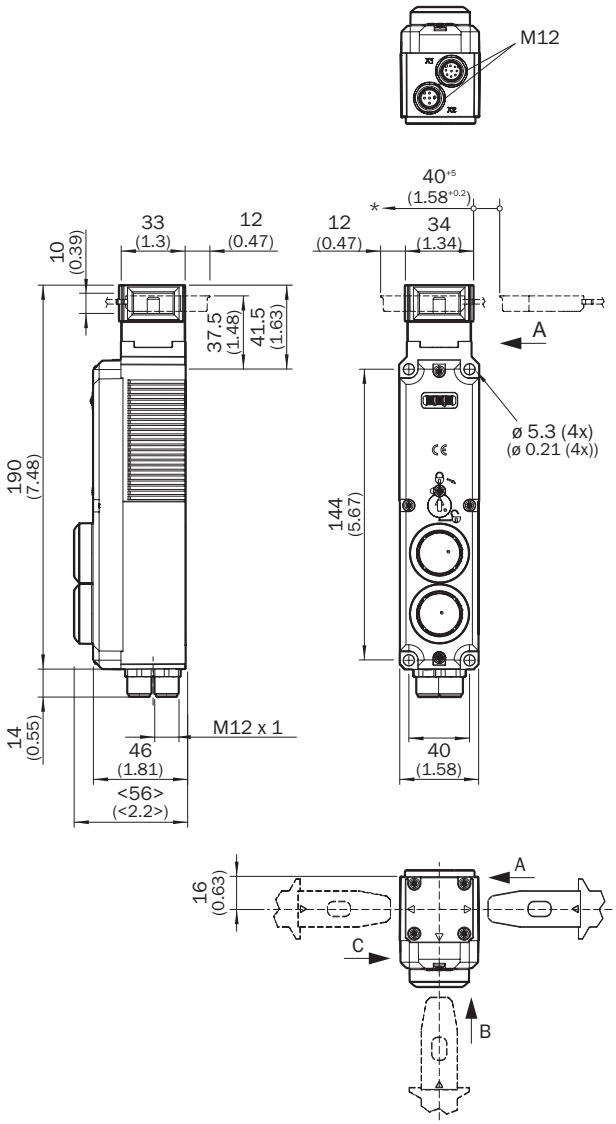
| | |
|---|---|
| **EU declaration of conformity** | ✓ |
| **UK declaration of conformity** | ✓ |
| **ACMA declaration of conformity** | ✓ |
| **China RoHS** | ✓ |
| **cULus certificate** | ✓ |

## Classifications

| | |
|---|---|
| **ECLASS 5.0** | 27272603 |
| **ECLASS 5.1.4** | 27272603 |
| **ECLASS 6.0** | 27272603 |
| **ECLASS 6.2** | 27272603 |
| **ECLASS 7.0** | 27272603 |
| **ECLASS 8.0** | 27272603 |
| **ECLASS 8.1** | 27272603 |
| **ECLASS 9.0** | 27272603 |
| **ECLASS 10.0** | 27272603 |
| **ECLASS 11.0** | 27272603 |

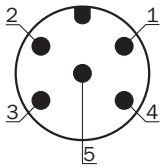
| | |
|---|---|
| **ECLASS 12.0** | 27272603 |
| **ETIM 5.0** | EC002593 |
| **ETIM 6.0** | EC002593 |
| **ETIM 7.0** | EC002593 |
| **ETIM 8.0** | EC002593 |
| **UNSPSC 16.0901** | 39122205 |

## Dimensional drawing



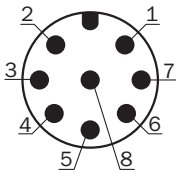

Dimensions in mm (inch)

## Pinouts




| Pin | Designation | Description |
|---|---|---|
| 1 | NO1 | Pushbutton 1, normally open |
| 2 | LED1 | LED1 |
| 3 | NO2 | Pushbutton 2, normally open |
| 4 | LED2 | LED2 |
| 5 | n.c. | Not connected |
| For details see operating instructions | | |

## 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 | AUX DIAG | Error application diagnostic output |
| 5 | OSSD 1 | OSSD 1 output |
| 6 | OSSD 2 | OSSD 2 output |
| 7 | 0 V | 0 V DC voltage supply |
| 8 | AUX LOCK | Locking application diagnostic output |
| For details see operating instructions | | |

## Recommended accessories

Other models and accessories ➜ www.sick.com/TR110_Lock

| | Brief description | Type | part no. |
|---|---|---|---|
| actuators and bolts | | | |
|  | • **Product:** Actuators for RFID safety switches<br>• **Description:** Actuator angled<br>• **Items supplied:** Including two safety screws M4 | TR110-XABT | 5334663 |
|  | • **Product:** Actuators for RFID safety switches<br>• **Description:** Hinged actuators for doors with hinges on left<br>• **Items supplied:** Including two safety screws M5 | TR110-XAFL | 5338331 |
|  | • **Product:** Actuators for RFID safety switches<br>• **Description:** Hinged actuators for doors with hinges on right<br>• **Items supplied:** Including two safety screws M5 | TR110-XAFR | 5338332 |
|  | • **Product:** Actuators for RFID safety switches<br>• **Description:** Hinged actuators for doors with hinges on top<br>• **Items supplied:** Including two safety screws M5 | TR110-XAFT | 5338336 |
|  | • **Product:** Actuators for RFID safety switches<br>• **Description:** Actuator straight<br>• **Items supplied:** Including two safety screws M4 | TR110-XAS | 5321176 |
|  | • **Product:** Actuators for RFID safety switches<br>• **Description:** Hinged actuators for doors with hinges on bottom<br>• **Items supplied:** Including two safety screws M5 | TR110-XAFB | 5338338 |

# SICK AT A GLANCE

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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.”**

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