



TR4-SFM01C

TR4 Direct

NON-CONTACT SAFETY SWITCHES

SICK
Sensor Intelligence.



Ordering information

Type	Part no.
TR4-SFM01C	6044650

Other models and accessories → www.sick.com/TR4_Direct



Detailed technical data

Features

System part	Sensor and actuator
Sensor principle	Transponder
Number of safe outputs	2
Safe switch on distance S_{ao}	15 mm
Safe switch off distance S_{ar}	35 mm
Active sensor surfaces	2
Actuation directions	5
Magnetic retaining force	✓
Boundary area indication	✓
Coding	Universally 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)	1.119×10^{-9} (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Type	Type 4 (EN ISO 14119)
Actuator coding level	Low coding level (EN ISO 14119)
Classification in compliance with IEC/EN 60947-5-3	PDF-M
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) With T-connector (without diagnostics)
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Interfaces

Connection type	Cable with plug M12, 8-pin
Length of cable	0.2 m
Cable material	PVC
Long connecting cable	≤ 200 m

Status display	✓
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Electrical data

Protection class	III (EN 50178)
Classification according to cULus	Class 2
Supply voltage V_s	24 V DC (20.4 V DC ... 26.4 V DC)
Power consumption	50 mA
Type of output	Semiconductor (OSSD)
Output current	≤ 200 mA
Response time	60 ms ¹⁾
Enable time	360 ms ²⁾
Risk time	60 s ³⁾
Switch-on time	2.5 s ⁴⁾
Electrical life	10 x 10 ⁶ switching cycles

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⁾ Response time on approach to the enable zone.

³⁾ Detection time for external faults (e.g., short-circuit or cross-circuit of output signal switching devices). Follow the detailed information in the operating instructions.

⁴⁾ After application of the supply voltage to the safety switch.

Mechanical data

Design	Rectangular
Dimensions (W x H x D)	25 mm x 88 mm x 20 mm
Weight	112 g
Housing material	Valox® DR48

Ambient data

Enclosure rating	IP69K (IEC 60529) NEMA 3 (NEMA 250) NEMA 4X (NEMA 250) NEMA 12 (NEMA 250) NEMA 13 (NEMA 250)
Ambient operating temperature	-10 °C ... +55 °C
Vibration resistance	10 Hz ... 55 Hz, 3.5 mm (IEC 60068-2-6)
Shock resistance	30 g, 11 ms (EN 60068-2-27)

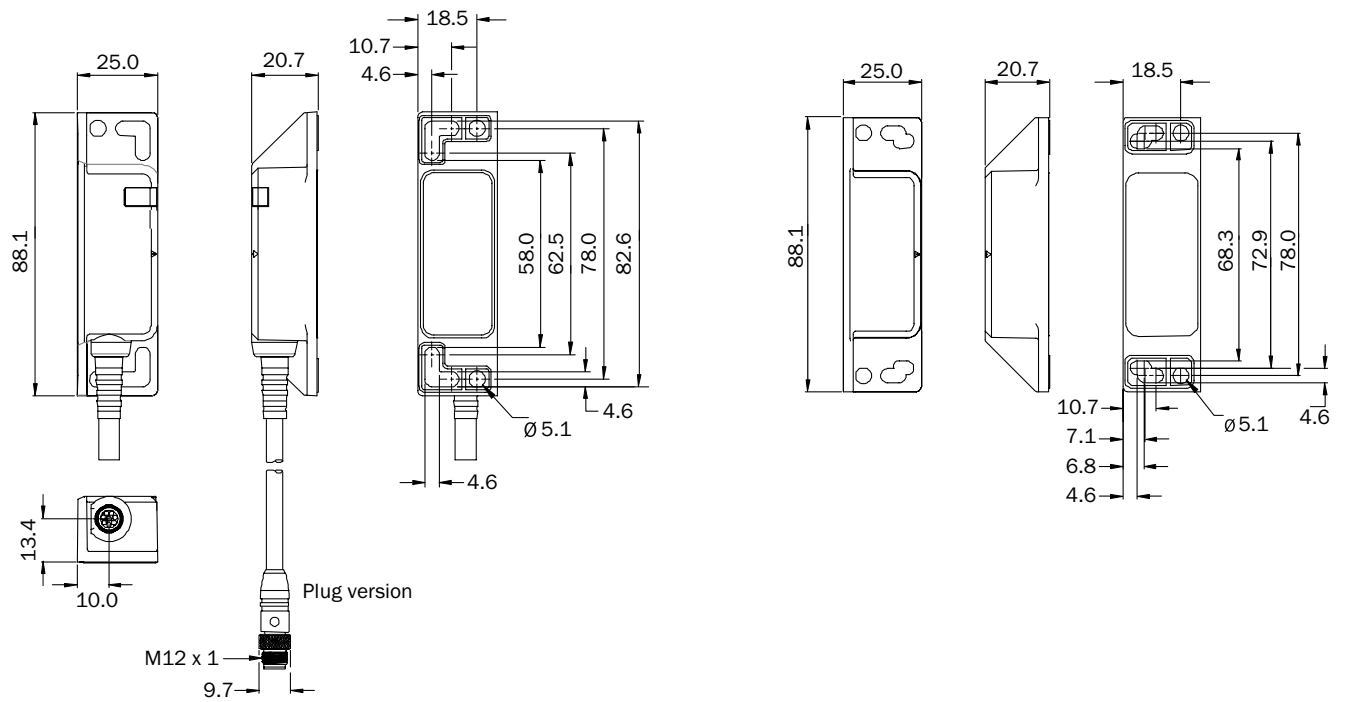
Classifications

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

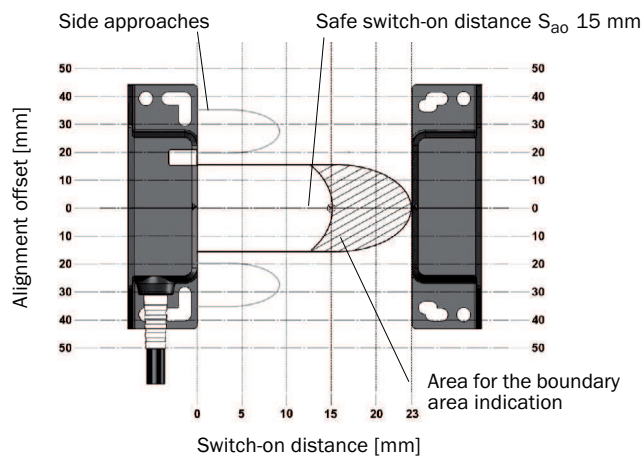
UNSPSC 16.0901

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Dimensional drawing (Dimensions in mm (inch))

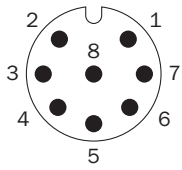


Response range



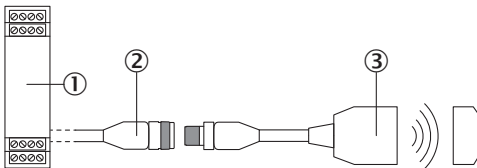
If the actuator moves laterally in relation to the surface of the sensor, a minimum distance of 9 mm must be maintained. This distance will prevent premature triggering due to the side approach areas.

Connection diagram



1	Aux output (not safe)
2	Voltage supply 24 V DC
3	Not connected
4	Enable input for OSSD 2
5	OSSD 1
6	OSSD 2
7	Voltage supply 0 V DC
8	Enable input for OSSD 1

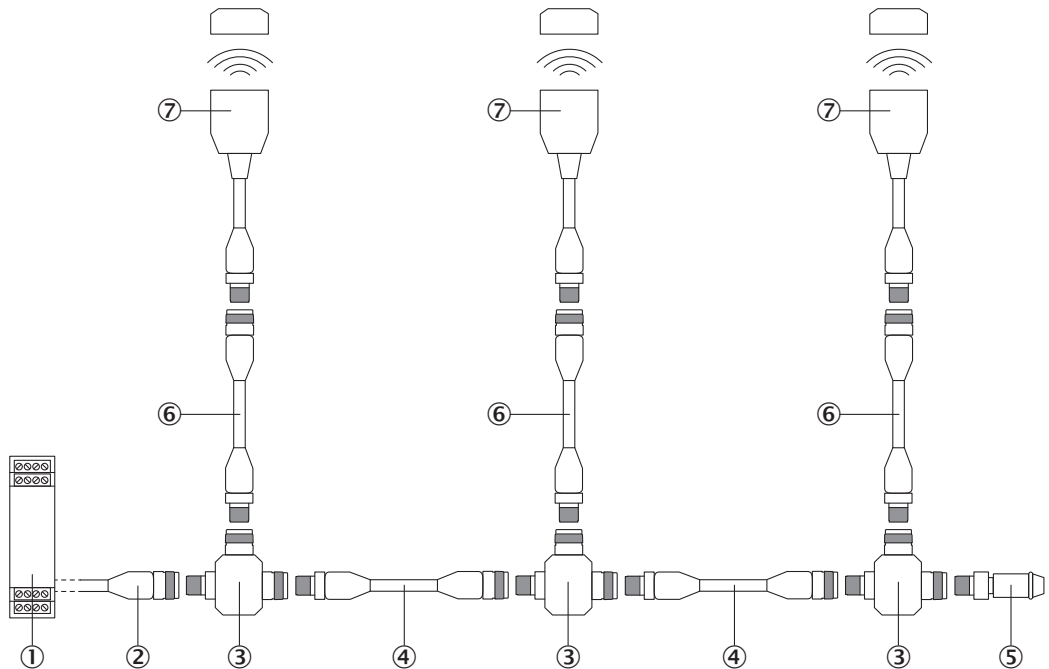
Connection single sensor



- ① Safe evaluation unit
- ② Connecting cable with 8-pin, M12 female connector and flying leads (e.g., YF2A18-xxxUA5LEAX)
- ③ TR4 Direct transponder safety switch (e.g., TR4-Sxx01C)

Series connection


Series connection with T-piece (without diagnostics)



- ① Safe evaluation unit
- ② Connecting cable with 4-pin, M12 female connector and flying leads (e.g., YF2A14-xxxVB3XLEAX)
- ③ STR1-XXA T-connector
- ④ Connection cable with 4-pin, M12 male connector and 4-pin, M12 female connector (e.g., YF2A14-xxxVB3M2A14)
- ⑤ MLP1-XXT end connector
- ⑥ Connection cable with 8-pin, M12 male connector and 8-pin, M12 female connector (e.g., YF2A18-xxxUA5M2A18)
- ⑦ TR4 Direct transponder safety switch (e.g., TR4-Sxx01C)

Recommended accessories

Other models and accessories → www.sick.com/TR4_Direct

Brief description	Type	Part no.
Plug connectors and cables		
 Head A: female connector, M12, 8-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 2 m	YF2A18-020UA5XLEAX	2095652
	YF2A18-050UA5XLEAX	2095653
	YF2A18-100UA5XLEAX	2095654

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