



IN 4000 Safety Sensor



The safety sensor IN 4000 is an inductive safety sensor that is activated by metal (e.g. steel ST37). It does not, therefore, require a separate coded actuator.

Due to the non-contact form of operation, this sensor has advantages in that it is straightforward to adjust and install. It also has increased resistance to shock and vibration.

The response range of the sensor is monitored spatially and over time. In this way increased protection against tampering is provided.

Using LEDs the status indication can be read directly on the sensor or the protective device.

Failures, for example a coil break, short circuit or cable break are detected by the sensor's self-monitoring.

The sensor is BIA-approved and is certified for cat. 4 in accordance with EN 954-1.

The sensor can be connected directly to a safe PLC or to the IN 4000 relay evaluation unit.

Due to the detection of short circuits and crossed circuits, several sensors can be connected in series.

The input and output signals on the sensor correspond to EN 61131-2 and are thus compatible with the I/O signals on the safe PLC.

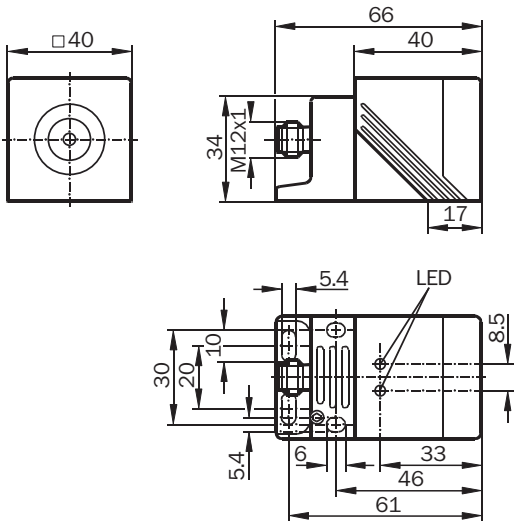
Up to 10 sensors can be connected to the IN 4000 relay evaluation unit. External device monitoring, 3 safety-relevant normally open contacts and 2 normally closed diagnostic contacts provide a high degree of flexibility for the integration in the controller.

Features

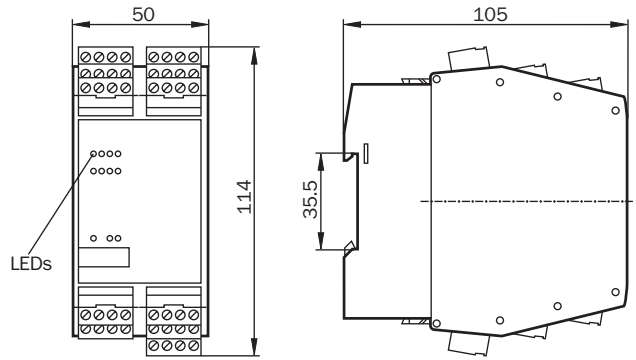
- Control category 4 according to EN 954-1
- No actuator necessary
- Sensor with LED status display
- Safe cascading of the sensors possible
- Direct connection of the sensors to safe PLC
- Connection of up to 10 sensors to one evaluation unit

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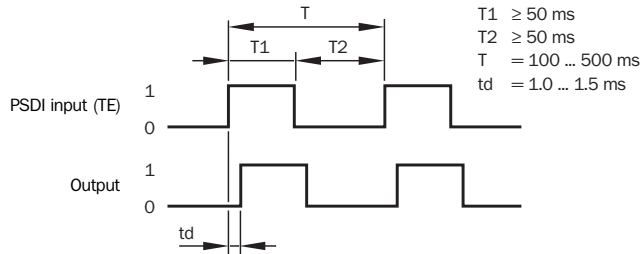
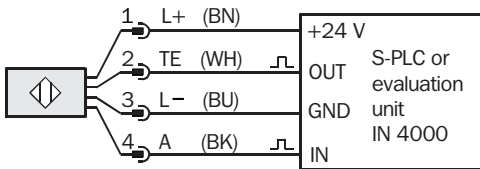
Dimensional drawing IN 4000 sensor



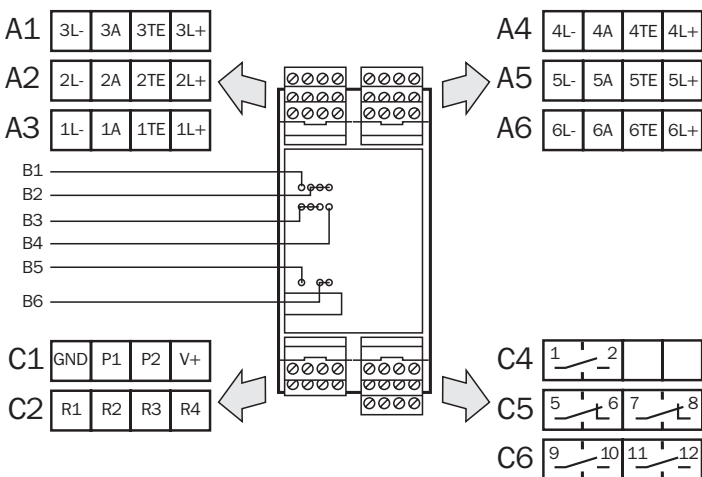
Dimensional drawing IN 4000 evaluation unit



Sensor connections and timing



Evaluation unit – pin assignment



- A1–A6: Connection for sensors
- B1–B6: LED displays
- C1: Connection voltage supply
- C2: Connection external device monitoring
- C4/C6: Safety outputs (normally open contacts)
- C5: Diagnostic outputs (normally closed contacts)

Technical data sensor	
Response range ¹⁾	
Release range ¹⁾	Zone 2 (10 ... 15 mm)
Safe shut-down area ¹⁾	Zone 4 (> 30 mm)
Transition areas ¹⁾	Zone 1 and Zone 3 switched off
Control category according to EN 954-1	4
PDF class in compliance with EN 60947-5-3	PDF-M
Housing material	PPE, zinc-die cast
Enclosure rating in compliance with IEC 60529	IP 67
Protection class	III
Operating temperature	-25 ... +70 °C
Short-circuit protection, pulsed	Yes
Reverse polarity protected	Yes
Operating voltage	24 V DC (19.2 ... 30 V DC)
Power consumption	< 15 mA
Voltage drop	< 2.5 V
Response time (removal from the enable zone)	From ON to safe OFF < 20 ms
Enable time (on approach to enable zone)	Typ. 100 ms, < 200 ms
Ready delay time to enable	5 s
Displays	LED green: POWER LED yellow: Signal

¹⁾ Over the entire temperature range data relate to reference measuring plate in accordance with EN 60947-5-2 (FE360 = St37K) 45 x 45 x 1 mm.

Technical data evaluation unit	
Control category according to EN 954-1	4
Housing material	PA
Enclosure rating in compliance with IEC 60529	IP 20
Operating voltage	24 V DC (19.2 ... 30 V DC)
Operating temperature	0 ... +70 °C
Outputs	3 safety-relevant normally open contacts 2 diagnostic outputs (normally closed contacts)
Number of sensors	Max. 6 sensor chains Max. 10 sensors
Power consumption	200 mA + n x 15 mA (n: Number of connected sensors)
Max. switching current/switching voltage	AC: 6 A /250 V AC DC: 6 A /30 V DC
Response time (to safety request)	< 210 ms
Ready delay time to enable (normal operation)	1 s
Ready delay time to enable (power on)	5 s
Displays	LED green: POWER LED green: 2 x relay outputs LED yellow: Pulse Out LED green: 6 x sensor channel 1 ... 6 LED red: Error

Ordering information IN 4000		
Product description	Type	Part no.
Q 40 sensor ⁷⁾	IN40-D0101K	6 027 389
Evaluation unit ⁷⁾	IN40-R1212B	6 027 390

⁷⁾ Available from IV. quarter 2004

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