

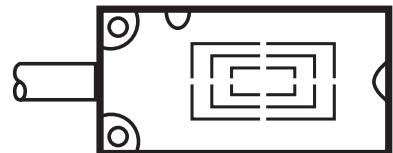


Operating instructions
Capacitive sensors

KQ5

UK

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1 Preliminary note

1.1 Symbols used

- An instruction is indicated by "▶":
Example: ▶ Mount the unit as shown.
- A reaction to the action is indicated by ">":
Example: > yellow LED lights.



Important note

Non-compliance can result in malfunctions or interference.



Information

Supplementary note.

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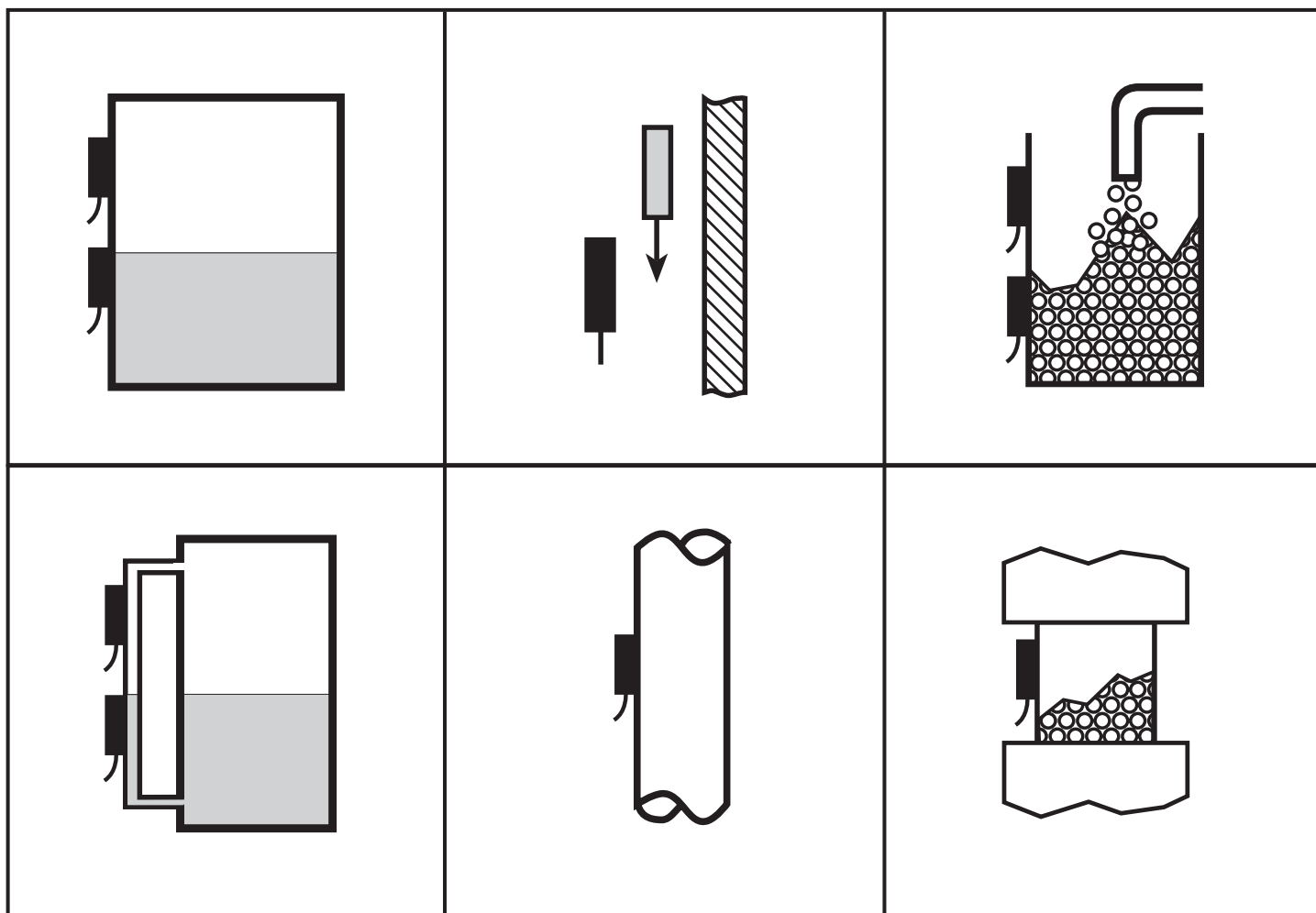
2 Safety instructions

- Please read the product description prior to set-up of the unit. Ensure that the product is suitable for your application without any restrictions.
- The unit conforms to the relevant regulations and EC directives.
- Improper or non-intended use may lead to malfunctions of the unit or to unwanted effects in your application.
- That is why installation, electrical connection, set-up, operation and maintenance of the unit must only be carried out by qualified personnel authorised by the machine operator.

3 Functions and features

- capacitive sensor used as level or proximity sensor
- detects without contact metals, almost all plastics, glass, ceramics, wood, paper, oils, greases, water and all hydrous materials and indicates their presence by providing a switched signal
- in level applications the sensor detects the medium through the tank wall (only suitable for non-metallic tanks)

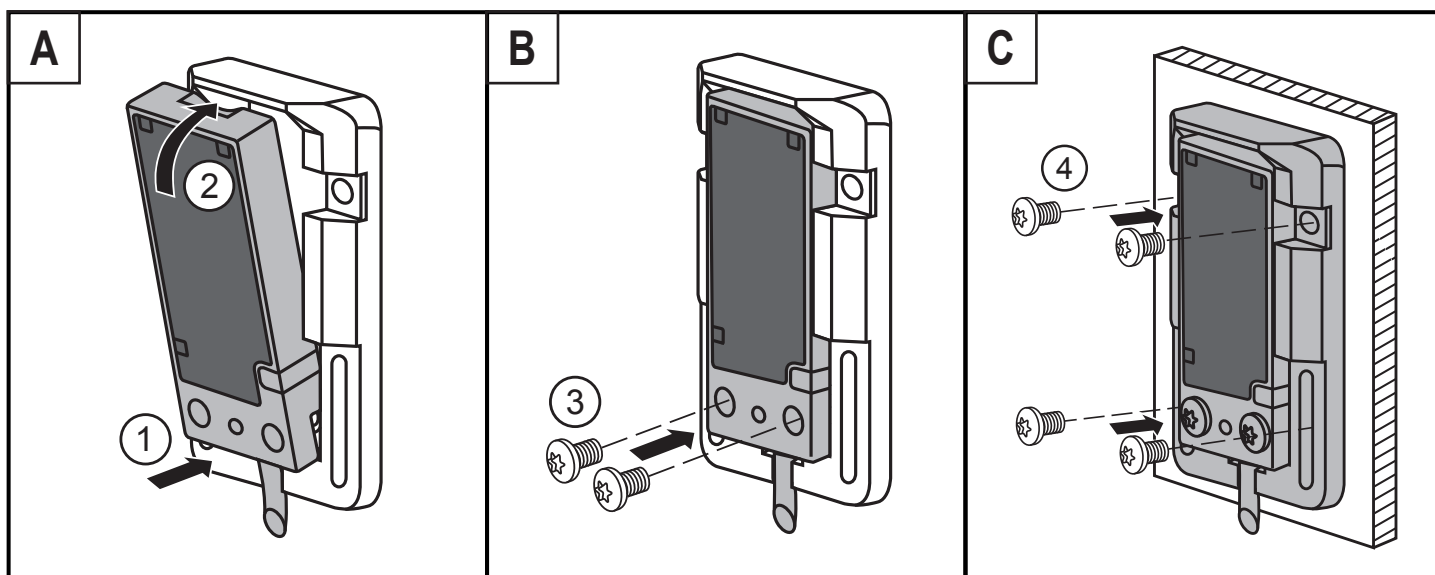
3.1 Applications



4 Installation

4.1 Use as a level sensor

4.1.1 Installation on tanks with a mounting adapter



The mounting adapter is to be ordered separately (order no. E12153).

Figure A

- ▶ Place the sensor with the lower part (1) into the mounting adapter. The sleeves of the mounting adapter must engage with the lower cutouts of the sensor.
- ▶ First slightly press the lower part of the sensor.
- ▶ The sensor must be fully inserted into the mounting adapter (2).
- > You can hear the sensor snap in.

Figure B

- ▶ Fix the sensor with the enclosed screws (3) to the adapter.

Figure C

- ▶ Fix the mounting adapter including the inserted sensor to the tank at the requested height using suitable screws (7).

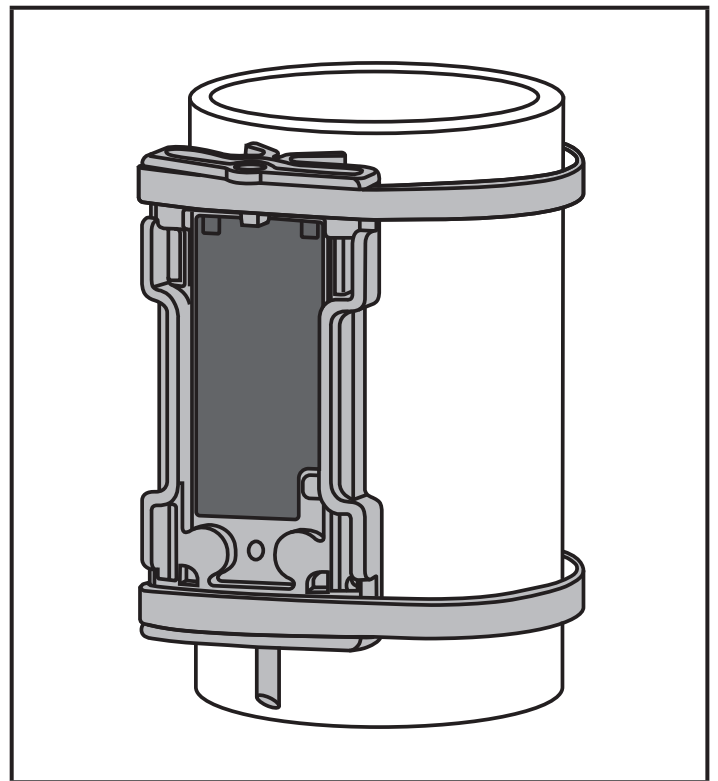
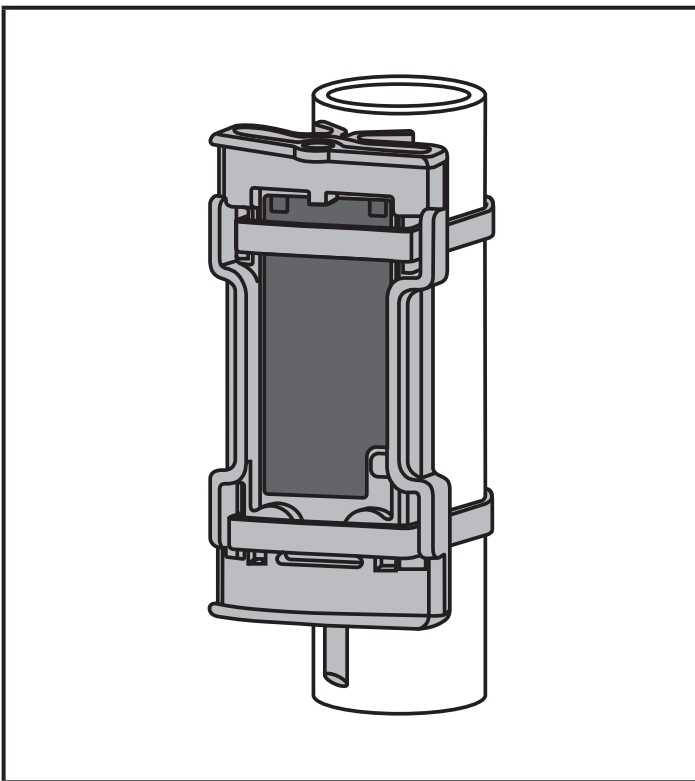


The sensor can be inserted in the mounting adapter E12153 in both directions.



Do not place the mounting adapter including inserted sensor in the immediate vicinity of metallic objects.

4.1.2 Installation on bypass pipes with a mounting adapter

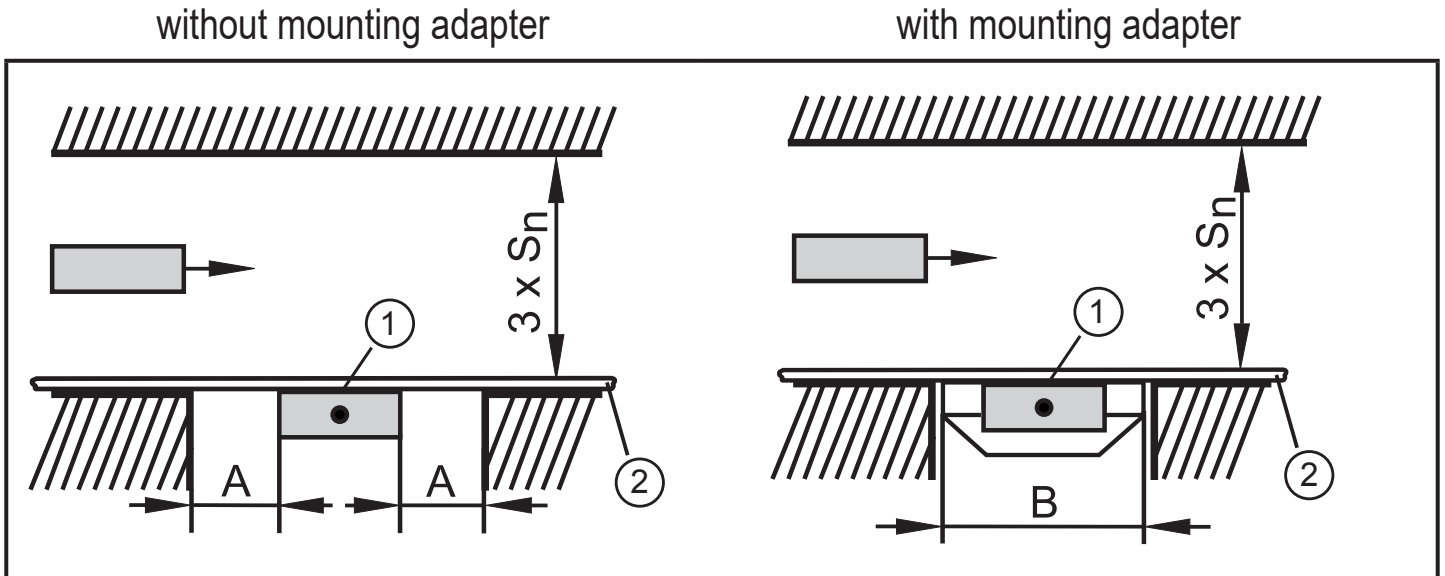


The mounting adapter is to be ordered separately (order no. E12153).

- ▶ Fix the sensor to the bypass at the requested height with common cable ties. Insert the cable ties through the existing openings of the mounting adapter and tighten them firmly.

4.2 Use as proximity sensor

4.2.1 Installation and installation remarks

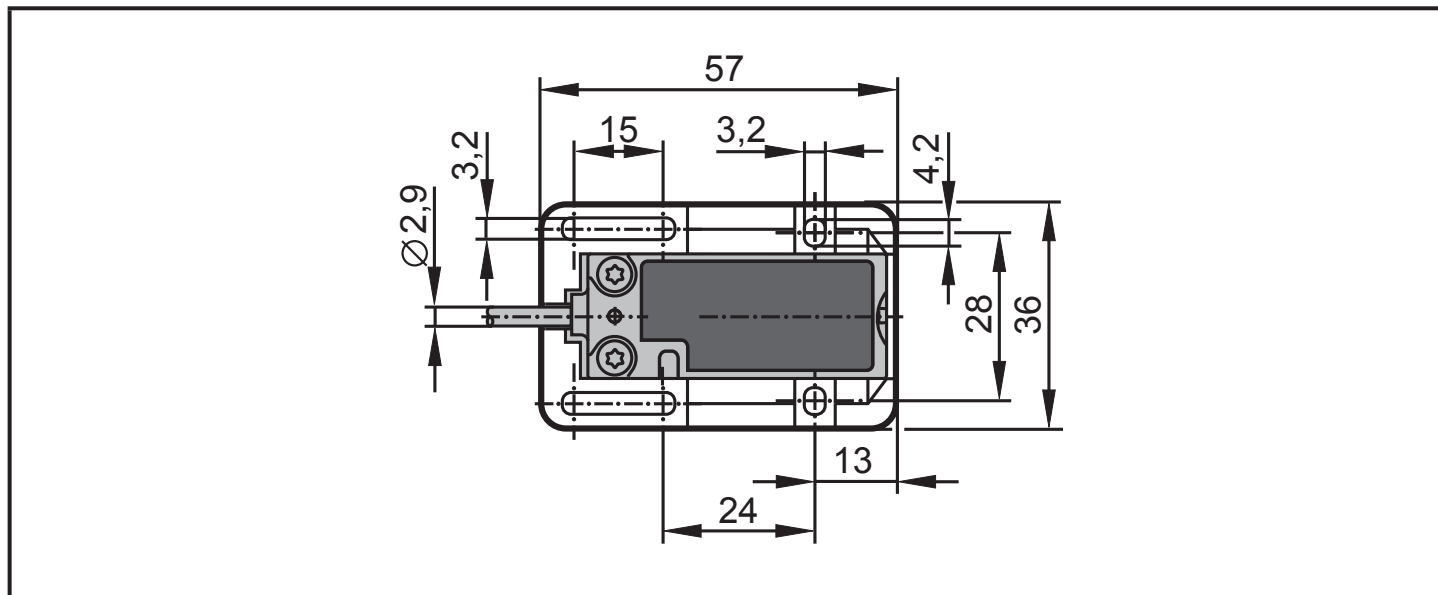


- 1: sensing face
- 2: plastic plate

- S_n : nominal sensing range (see data sheet)
- A: distance = S_n
- B: width of the mounting adapter = 36

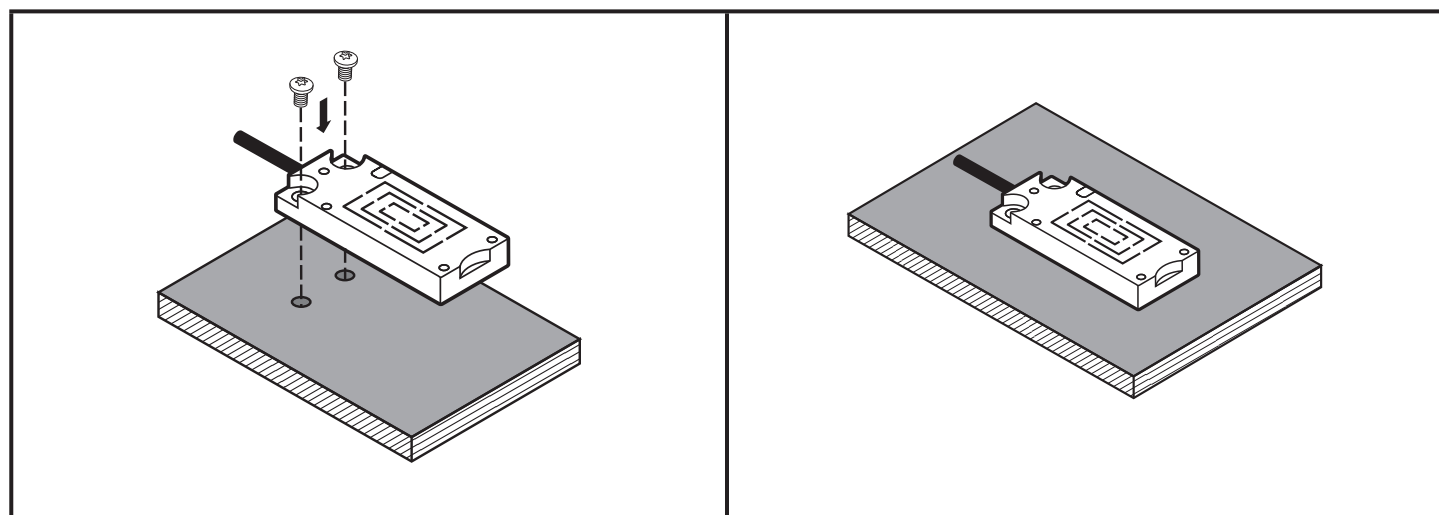
- ▶ Align the sensing face (1) to the object.
- ▶ Adhere to the indicated minimum distances to metallic objects opposite and beside the sensor (free space).
- ▶ Non-metallic objects (e.g. plastic fixtures) are allowed within the lateral free space.
- ▶ Fix the sensor with appropriate fixing screws to the designated location.
- ▶ If the sensor is installed behind a plastic plate (2), the object will be detected through the wall. Depending on the material used and the wall thickness the sensor characteristics might change slightly. Do not use conductive plastics! If possible, use thin walls.

4.2.2 Mounting adapter bore hole dimensions



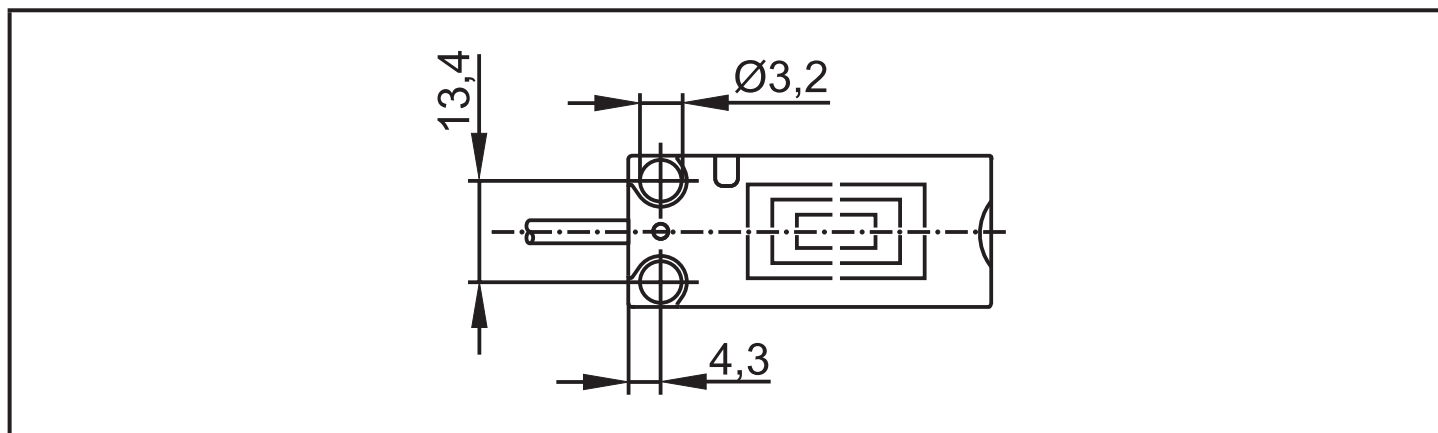
Do not place the mounting adapter including inserted sensor in the immediate vicinity of metallic objects.

4.2.3 Installation without a mounting adapter



- ▶ Fix the sensor at the intended location using suitable screws or a suitable glue.
- ▶ Align the cutouts as shown.

4.2.4 Sensor bore hole dimensions



5 Electrical connection



The unit must be connected by a qualified electrician.

The national and international regulations for the installation of electrical equipment must be adhered to.

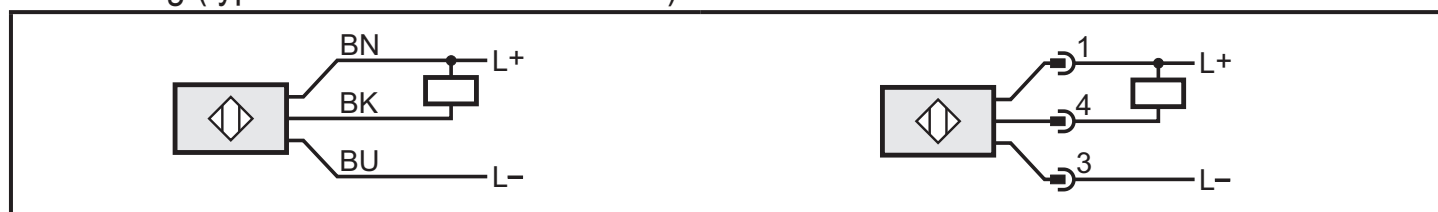
► Disconnect the installation from power and connect the unit.

5.1 Wiring

p-switching (types FPKG... or ...FPOG...)

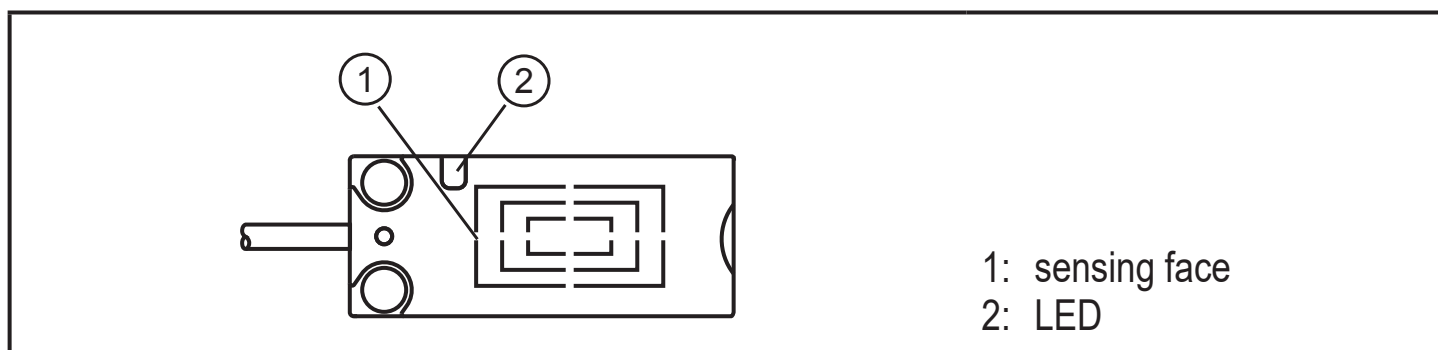


n-switching (types ...FNKG... or ...FNOG...)



BN = brown, BK = black, BU = blue

6 Operating and display elements



7 Settings



The following chapter applies only to units with the article number KQ51xx.

7.1 IO-Link

This unit has an IO-Link communication interface which enables direct access to process and diagnostic data. In addition it is possible to set the parameters of the unit while it is in operation. Operation of the unit via the IO-Link interface requires an IO-Link master.

With a PC, suitable IO-Link software and an IO-Link adapter cable communication is possible while the system is not in operation.

The IO-DDs necessary for the configuration of the unit, detailed information about process data structure, diagnostic information, parameter addresses and the necessary information about the required IO-Link hardware and software can be found at www.ifm.com.

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8 Operation

Check whether the unit operates correctly. Bring about a sensor response by taking suitable measures.

Display by LEDs:

LED yellow OFF: switching output disabled

LED yellow ON: switching output enabled

9 Maintenance, repair, disposal

The operation of the unit is maintenance-free. To ensure a correct function:

- Keep the sensing face and a clear space, if any, free from deposits and foreign bodies.

When replacing the sensor ensure that installation is done in the same way and that the same type of unit is used.

It is not possible to repair the unit.

After use dispose of the unit in an environmentally friendly way in accordance with the applicable national regulations.

10 Terms

Active zone

Area above the sensing face in which the sensor reacts to the approach of the target.

Output function

Normally open: object within the active zone - output switched.

Normally closed: object within the active zone - output blocked.

Programmable: Choice between normally closed or normally open.

Positive switching: positive output signal (to L-).

Negative switching: negative output signal (to L+).

Power-on delay time

The time the sensor needs to be ready for operation after application of the operating voltage (in the millisecond range).

Hysteresis

Difference between the switch-on and the switch-off point.

Leakage current

Current for the internal supply of 2-wire units, also flows through the load when the output is blocked.

Current consumption

Current for the internal supply of 3-wire DC units.

Switch point drift

Shifting of the switch point owing to changes of the operating conditions (e.g. temperature, pressure, air humidity).

Short-circuit protection

ifm sensors which are protected against excessive current by means of a pulsed short-circuit protection. The inrush current of incandescent lamps, electronic relays and low resistance loads may cause this protection to cut in and turn the sensor off!

Operating voltage

The voltage range in which the sensor functions safely. A stabilised and smoothed direct voltage should be used! Take into account residual ripple!

