



Product Description
 The sks sensor offers a non-contact measurement of the distance to an object which must be positioned within the sensor's detection zone. The switching output is set in dependence of the adjusted detect distance. Via the push-button, the detect distance and operating mode can be adjusted (Teach-in). Two LEDs indicate operation and the state of the switching output. The output function is changeable from NOC to NCC.

Operation Manual
Ultrasonic proximity switch with one switching output

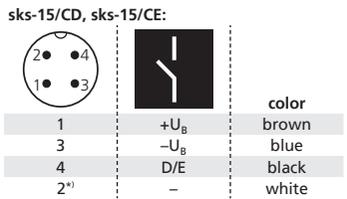
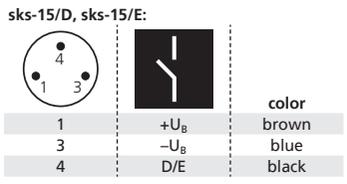
sks-15/D sks-15/E
 sks-15/CD sks-15/CE

Safety Notes

- Read the operation manual prior to start-up.
- Connection, installation and adjustment works may only be carried out by expert personnel.
- No safety component in accordance with the EU Machine Directive, use in the area of personal and machine protection not permitted

Installation

- ➔ Mount the sensor at the place of fitting. Maximum torque of attachment screw: 0,5 Nm.
- ➔ Connect a connection cable to the M8 device plug, see Fig. 1.



**) do not connect*
 Fig. 1: Pin assignment with view onto sensor plug and colour coding of the microsonic connection cables

Start-Up

- ➔ Connect the power supply.
- ➔ Set the sensor parameters using the Teach-in procedure, see Diagram 1.

Factory Setting
 sks sensors are delivered with the following settings:

- Operation with one switching point
- Switching output on NOC
- Switching point at operating range

Operating modes
 Three operating modes are available for the switching output:

- **Operation with one switching point**
 The switching output is set if the object falls below the set switching point.
- **Window mode**
 The switching output is set if the object is outside the set window limits.

- **Two-way reflective barrier**
 The switching output is set if there is an object between sensor and reflector.

Checking operating mode

- ➔ In normal operating mode shortly press the push-button. The green LED stops shining for one second, then it will show the current **operating mode**:

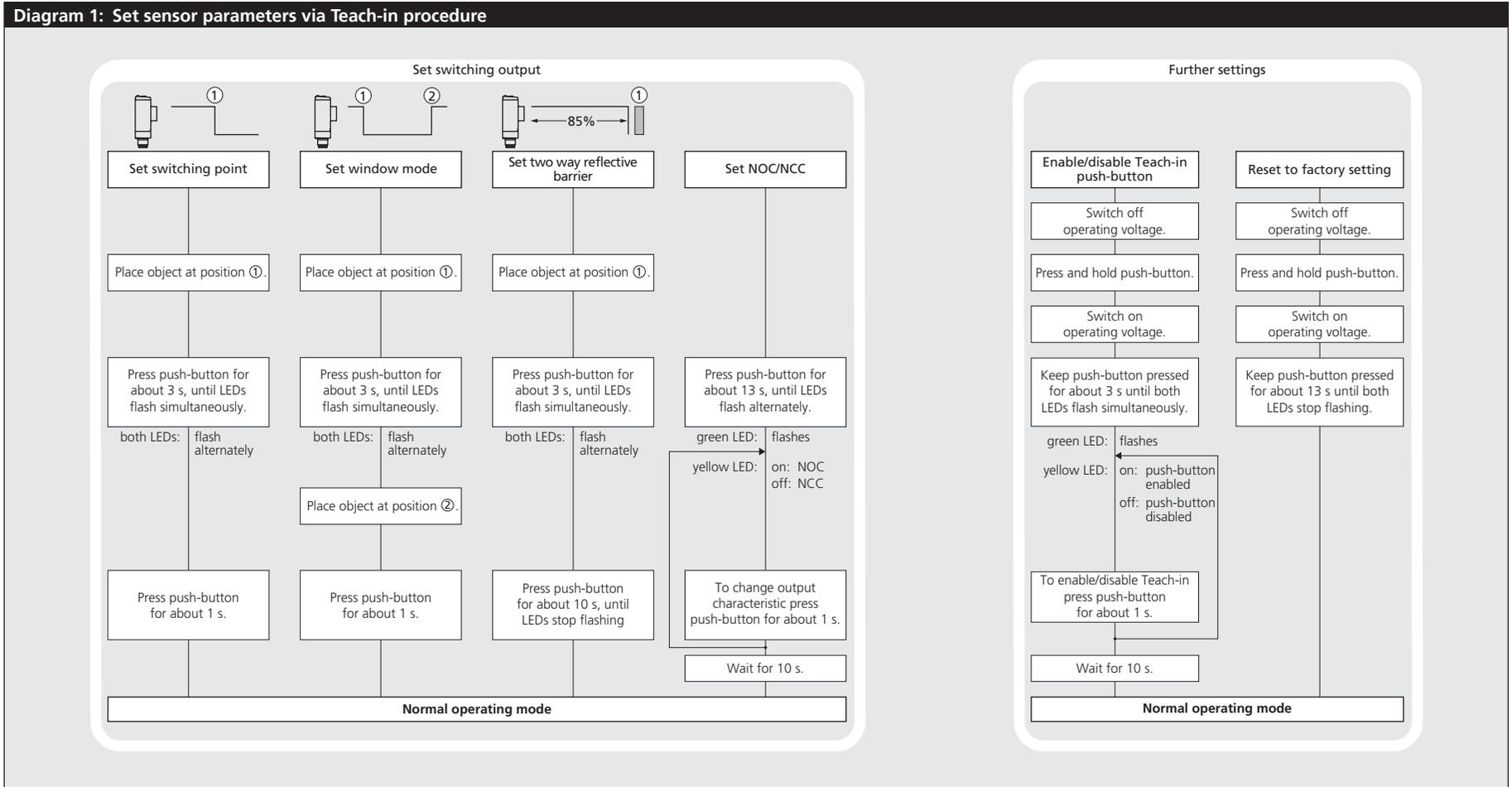
- 1x flashing = operation with one switching point
 - 2x flashing = window mode
 - 3x flashing = reflective barrier
- After a break of 3 s the green LED shows the **output function**:
- 1x flashing = NOC
 - 2x flashing = NCC

Maintenance
 microsonic sensors are maintenance-free. In case of excess caked-on dirt we recommend to clean the white sensor surface.

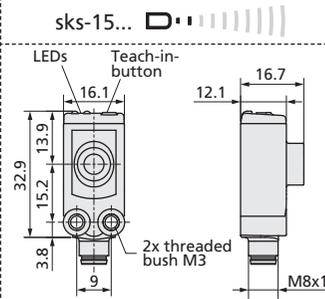
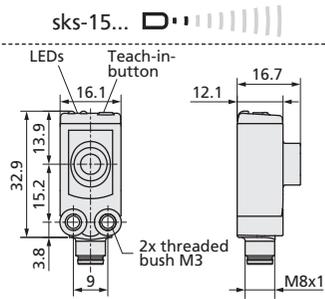
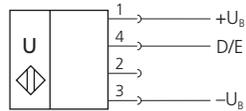
Notes

- The sensors with internal temperature compensation (sks-15/CD and sks-15/CE) determine their current operating temperature each time the operating voltage is switched on and pass this value on to the internal temperature compensation. After 45 seconds, the internal temperature compensation adjusts to its adjusted value.
- sks-15/CD and sks-15/CE sensors have internal temperature compensation. Because the sensors heat up on their own, the temperature compensation reaches its optimum working point after approximately 30 minutes of operation. The sensors sks-15/D and sks-15/E have no temperature compensation.

- The sks sensor has a blind zone, within which distance measurements are not possible.
- In the normal operating mode, an illuminated yellow LED signals the switching output is switched through.



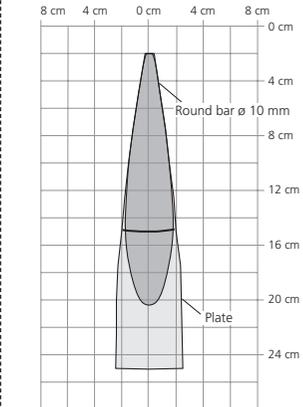
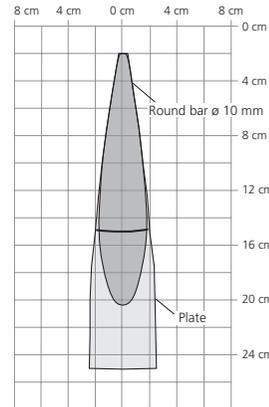
Technical data



blind zone: 20 mm
operating range: 150 mm
maximum range: 250 mm
angle of beam spread: see detection zone
transducer frequency: 380 kHz
resolution: 0.10 mm
reproducibility: ±0.15 %

blind zone: 20 mm
operating range: 150 mm
maximum range: 250 mm
angle of beam spread: see detection zone
transducer frequency: 380 kHz
resolution: 0.10 mm
reproducibility: ±0.15 %

detection zones
 for different objects:
 The dark grey areas represent the zone where it is easy to recognise the normal reflector (round bar). This indicates the typical operating range of the sensors. The light grey areas represent the zone where a very large reflector – for instance a plate – can still be recognised. The requirement here is for an optimum alignment to the sensor. It is not possible to evaluate ultrasonic reflections outside this area.



accuracy: Temperature drift 0.17 %/K
operating voltage U_B: 20 to 30 V DC, reverse polarity protection (Class 2)
voltage ripple: ±10 %
no-load current consumption: <25 mA
housing: ABS
 ultrasonic transducer: polyurethane foam, epoxy resin with glass content
class of protection to EN 60529: IP 67
norm conformity: EN 60947-5-2
type of connection: 3-pin M8 initiator plug
scope of settings: Teach-in-Taster
indicators: LED green (operation), LED yellow (state of output)
operating temperature: -25 to +70 °C
storage temperature: -40 to +85 °C
weight: 8 g
switching hysteresis: 2 mm
switching frequency: 25 Hz
response time: 32 ms
switch-off delay time: <300 ms

accuracy: Temperature drift 0.17 %/K
operating voltage U_B: 20 to 30 V DC, reverse polarity protection (Class 2)
voltage ripple: ±10 %
no-load current consumption: <25 mA
housing: ABS
 ultrasonic transducer: polyurethane foam, epoxy resin with glass content
class of protection to EN 60529: IP 67
norm conformity: EN 60947-5-2
type of connection: 4-pin M8 initiator plug
scope of settings: Teach-in-Taster
indicators: LED green (operation), LED yellow (state of output)
operating temperature: -25 to +70 °C
storage temperature: -40 to +85 °C
weight: 8 g
switching hysteresis: 2 mm
switching frequency: 25 Hz
response time: 32 ms
switch-off delay time: <300 ms

order no.: **skS-15/D**
switching output: pnp, U_B-2 V, I_{max} = 200 mA
 switchable NOC/NCC, short-circuit-proof

order no.: **skS-15/CD**
switching output: pnp, U_B-2 V, I_{max} = 200 mA
 switchable NOC/NCC, short-circuit-proof

order no.: **skS-15/E**
switching output: npn, -U_B+2 V, I_{max} = 200 mA
 switchable NOC/NCC, short-circuit-proof

order no.: **skS-15/CE**
switching output: npn, -U_B+2 V, I_{max} = 200 mA
 switchable NOC/NCC, short-circuit-proof

- If the object moves towards the sensor (e.g. level control) the switching point can be taught to the actual distance at which the sensor has to switch the output. If the object to be scanned moves into the detection area from the side, the switching distance should be set 8-10 % further than the actual measured distance to the object. This ensures a reliable switching distance even if the height of the objects varies slightly (see Fig. 2).

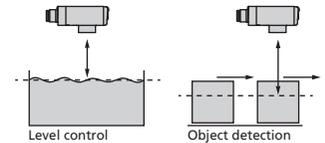


Fig. 2: Teach-in for different directions of movement of the object

- In the »Two-way reflective barrier« operating mode, the object has to be within the range of 0-85 % of the set distance.
- If the Teach-in button is not pressed for 30 seconds during the Teach-in setting, the settings made hitherto are deleted.
- The sensor can be reset to its factory setting (see »Further settings«, Diagram 1).

Enclosure Type 1
 For use only in industrial machinery NFPA 79 applications.

UL LISTED

The proximity switches shall be used with a Listed (CYJV7) cable/connector assembly rated minimum 32 Vdc, minimum 290 mA, in the final installation.

