



Operating Manual Ultrasonic proximity switch with one analogue output

sks-15/CI
sks-15/CU

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. Depending on the set window limits, a distance-proportional analogue signal is output.
For sensor setting, the accessory LinkControl adapter LCA-2 is recommended in combination with LinkControl software for Windows®. Alternatively, the sensor can also be adjusted by Teach-in via Teach-in button. Two LEDs indicate operation and the state of the output.

- Safety Notes**
- Read the operating manual prior to start-up.
 - Connection, installation and adjustment works should be carried out by expert personnel only.

- No safety component in accordance with the EU Machine Directive, use in the area of personal and machine protection not permitted

Proper Use
sks ultrasonic sensors are used for non-contact detection of objects.

Installation
→ Mount the sensor at the installation site. Maximum tightening torque of screws: 0.5 Nm
→ Connect a connection cable to the M8 device plug, see Fig. 1.

Start-Up
→ Connect the power supply.
→ Carry out the adjustment in accordance with Diagram 1.

1	+U _B	brown
3	-U _B	blue
4	U/I	black
2	Com	white

Fig. 1: Pin assignment with view onto sensor plug and colour coding of the microsonic connection cable

Factory Setting
■ Rising analogue characteristic curve between the blind zone and the operating range.

Synchronisation
If several sensors are mounted close to another, they should be synchronised with each other. This is done by an externally provided synchronisation signal.

→ Apply a square wave signal to pin 2 with pulse width t_i and cycle time t_p (see Fig. 2 and technical data).

Any amount of sensors can be synchronised with this external synchronisation signal. A high level on pin 2 will deactivate the sensor.

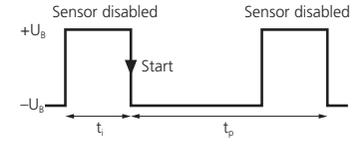


Fig. 2: External synchronisation signal

Checking operation mode
→ In normal operating mode shortly press the Teach-in button. The green LED stops shining for one second, then it will show the current characteristic of the analogue output:

- 1x flashing = rising
- 2x flashing = falling

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

Notes
■ Every time the power supply is switched on, the sensor detects its actual operating temperature and transmits it to the internal temperature compensation. This results in a slight correction of the analogue output value after 45 seconds.

- If the sensor was switched off for at least 30 minutes and after power on an object is placed in the middle of the adjusted analogue window for 30 minutes (the analogue output value is in the range of 11 to 13 mA or 4.4 to 5.6 V) a new adjustment of the internal temperature compensation to the actual mounting conditions takes place.

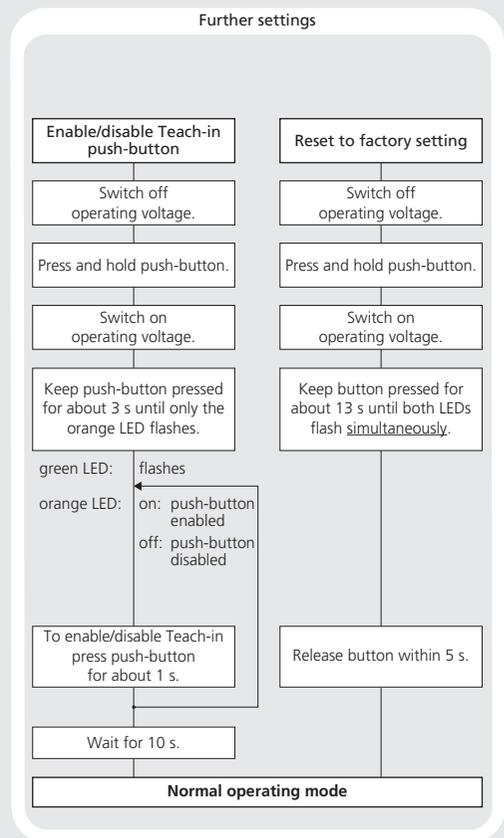
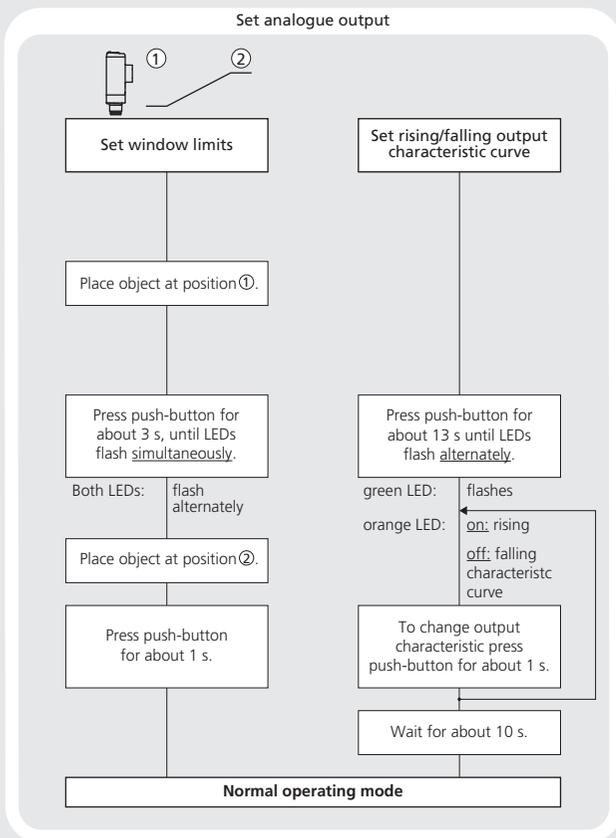
- The sks sensor has a blind zone, within which distance measurements are not possible.

- In the normal operating mode, an illuminated orange LED signals that the object is within the adjusted window limits.

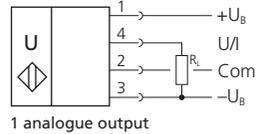
- If the Teach-in button is not pressed for 30 seconds during the Teach-in setting, the settings made hitherto are deleted.

- The sensor can be reset to its factory setting (see »Further settings«).

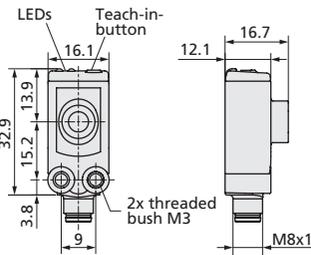
Diagram 1: Set sensor parameters via Teach-in procedure



Technical data

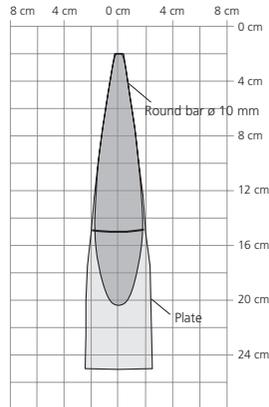


sks-15...



- 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 are determined with a round bar and indicate the typical operating range of a sensor. In order to obtain the light grey areas, a plate (100 x 100 mm) is introduced into the beam spread from the side. In doing so, the optimum angle between plate and sensor is always employed. This therefore indicates the maximum detection zone of the sensor. It is not possible to evaluate ultrasonic reflections outside this area.



- accuracy** : ±1 % (Temperature drift internal compensated)
- operating voltage U_B** : 15 to 30 V DC, reverse polarity protection (Class 2)
- operating 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
- controls** : Teach-in button
- indicators** : LED green (operation)
LED orange (object in the window)
- programmable** : Teach-in, LinkControl
- synchronisation** : via external signal generator
- pulse width, synchronisation signal t_i** : > 150 μs
- cycle time, synchronisation signal t_p** : 8 ms < t_p < 1 s
- operating temperature** : -25 to +70 °C
- storage temperature** : -40 to +85 °C
- weight** : 8 g
- response time ¹⁾** : 24 ms
- time delay before availability** : <300 ms
- order no.** : sks-15/CI
- current output 4 to 20 mA** : R_L ≤ 500 Ω, rising/falling characteristic
- order no.** : sks-15/CU
- voltage output 0 to 10 V** : R_L ≥ 100 kΩ, short-circuit proof, rising/falling characteristic

¹⁾ With LinkControl, the selected filter setting influences the response time.

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

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

