microsonic

Operating manual

sks-15/CI
sks-15/CU

Ultrasonic proximity switch with one analogue output

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.
Via the push-button, the detect distance and operating mode can be adjusted (Teach-in). Two LEDs indicate operation and the state of the output.

Safety Notes

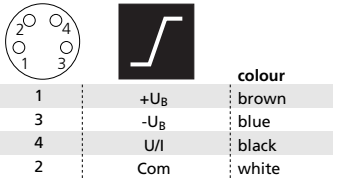
- Read the operating instructions prior to start-up.
- Connection, installation and adjustment works may only be carried out by expert personnel.
- No safety component in accordance with the EU Machine Directive.

Proper Use

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

Installation

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



		colour
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

Start-Up

- Connect the power supply.
- Carry out the adjustment in accordance with the diagram.

Factory Setting

- Rising analogue characteristic curve between the blind zone and the operating range.

Synchronization

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

- Apply a square-wave signal to the sync-input with pulse width t_i and repetition rate t_p (fig. 2 and technical data).

Any amount of sensors may be synchronized with this external synchronisation signal.
A high level on the sync-input will deactivate the sensor.

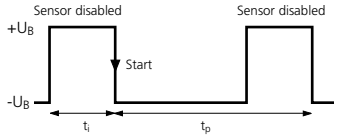


Fig. 2: External synchronization signal

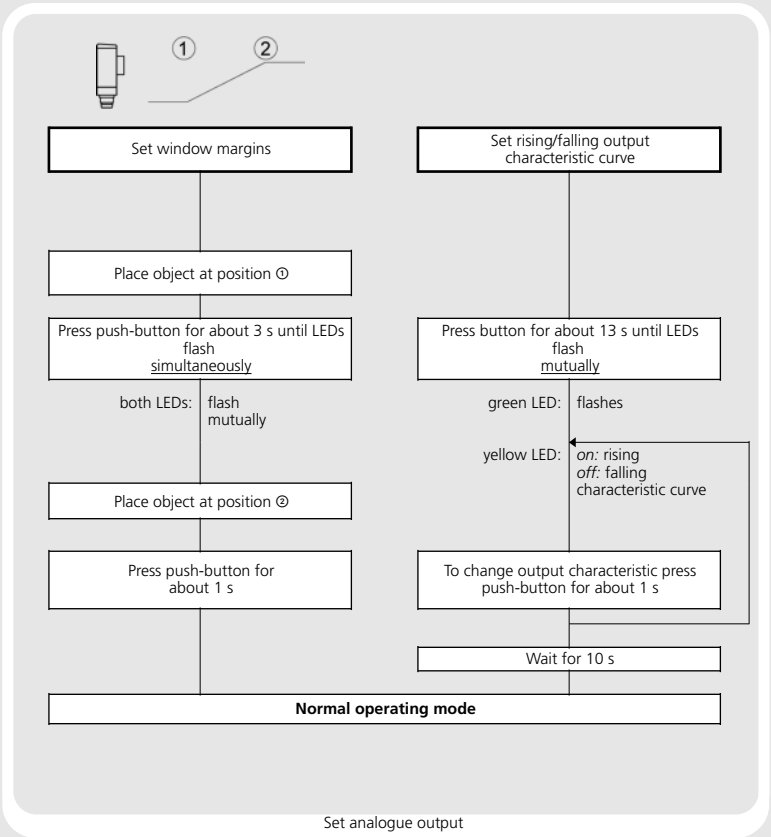
Maintenance

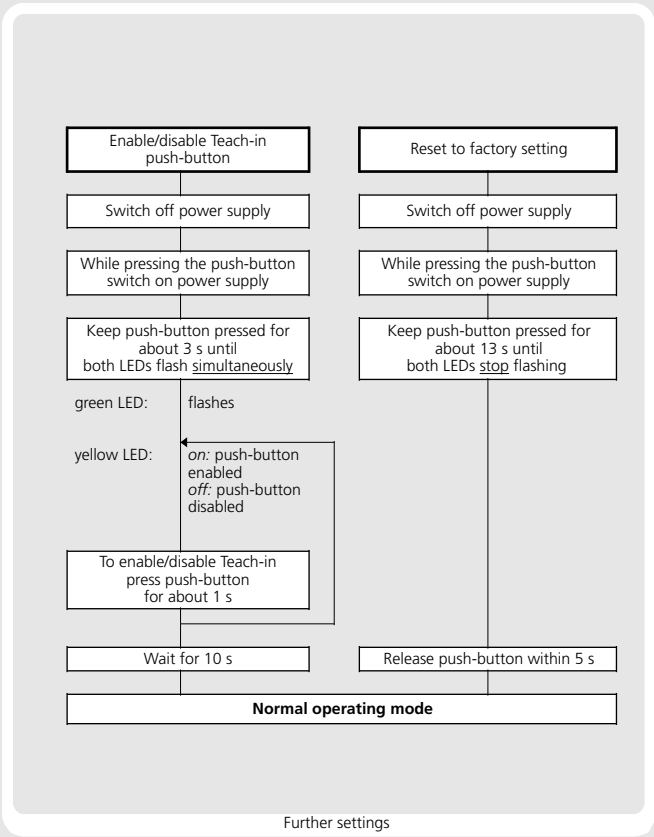
microsonic sensors are maintenance-free. In case of excess caked-on dirt we recommend cleaning the white sensor surface.

Notes

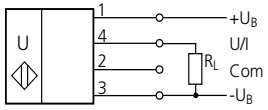
- Every time the power supply is switched on, the sensor detects its actual operating temperature and transmits it to the internal temperature compensation. This results in a slight correction of the analogue output value after 45 seconds.
- If the sensor was switched off for at least 30 minutes and 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 yellow LED signals that the object is within the adjusted window limits.
- If the push-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«).

Sensor adjustment with Teach-in procedure

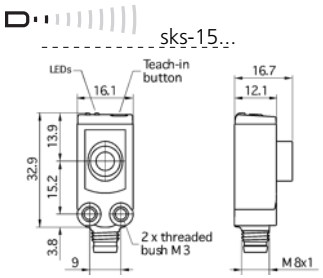


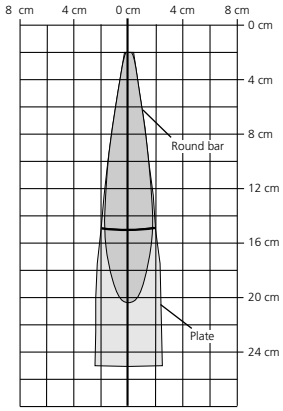


Technical data



1 analogue output



blind zone	20 mm
operating range	150 mm
maximum range	250 mm
angle of beam spread	see detection zone
transducer frequency	380 kHz
resolution, sampling rate	0.10 mm
reproducibility	± 0.15 %
detection zones for different objects: The dark grey areas are determined with a thin round bar (10 mm dia.) 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 internally compensated)
operating voltage U_B	15 - 30 V DC, reverse polarity protection
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 60 529	IP 67
norm conformity	EN 60947-5-2
type of connection	4-pin M8 initiator plug
controls	Teach-in push-button
indicators	LED green (operation)
	LED yellow (object in the window)
synchronisation	yes, via external clock generator
pulse width synchroniszation signal t_i	> 150 µs
repetition rate synchronization signal t_p	8 ms < t_p < 1 s
operating temperature	-25°C to +70°C
storage temperature	-40°C to +85°C
weight	8 g
response time	24 ms
time delay before availability	< 300 ms
norm conformity	EN 60947-5-2
order no.	**sks-15/CI**
current output 4-20 mA	R_L ≤ 500 Ω, rising/falling characteristic
order no.	**sks-15/CU**
voltage output 0-10 V	R_L ≥ 100 kΩ, short-circuit-proof,
	rising/falling characteristic

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