



Instruction manual

Ics-Ultrasonic Sensors with three switched outputs

Ics-25/DDD/QP
Ics-35/DDD/QP
Ics-130/DDD/QP

Product description

- The Ics-sensor with three switched outputs measures the distance to an object within the detection zone contactless.

Depending on the adjusted detect distance the switched outputs are set.

- The output functions are changeable from NOC to NCC.
- Light emitting diodes (three-colour LEDs) indicate the switching status.
- Using the LinkControl adapter (optional accessory) all sensor parameter settings may be made by a Windows-Software.

Important instructions for assembly and application

All employee and plant safety-relevant measures must be taken prior to assembly, start-up, or maintenance work (see operation manual for the entire plant and the operator instruction of the plant).

The sensors are not considered as safety equipment and may not be used to ensure human or machine safety!

The Ics-sensors indicate a **blind zone**, in which the distance cannot be measured. The **operating range** indicates the distance of the sensor that can be applied with normal reflectors with sufficient function reserve. When using good reflectors, such as a calm water surface, the sensor can also be used up to its **maximum range**. Objects that strongly absorb (e.g. plastic foam) or diffusely reflect sound (e.g. pebble stones) can also reduce the defined operating range.

Assembly instructions

- Assemble the sensor at the installation location.
- Plug in the connector cable to the M 12 connector.

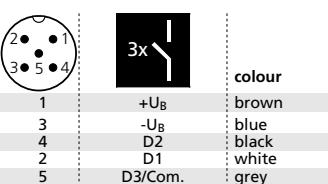


Fig. 1: Pin assignment with view onto sensor plug and colour coding of the microsonic connection cable

Assembly distances

The assembly distances shown in Fig.2 for two or more sensors should not be fallen below in order to avoid mutual interference.

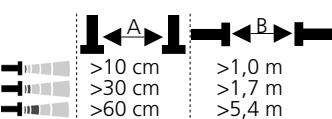


Fig. 2: Assembly distances

Start-up

Ics sensors are delivered factory made with the following settings:

- Switched outputs on NOC
- Detecting distances at operating range and half operating range
- Measurement range set to maximum range

Set the parameters of the sensor using the LinkControl Adapter LCA-2 and the LinkControl software.

Operation

Ics-sensors work maintenance free. Small amounts of dirt on the surface do not influence function. Thick layers of dirt and caked-on dirt affect sensor function and therefore must be removed.

Note

- Ics-sensors have internal temperature compensation. Because the sensors heat up on their own, the temperature com-

pensation reaches its optimum working point after approx. 30 minutes of operation.

- During normal mode operation, a yellow LED signals that the corresponding switched output has connected.
- You can reset the factory settings at any time, see »Lock Teach-in & factory setting«.
- Ics-sensors optional can be programmed using the LinkControl adapter LCA-2, see ② «Optional setting of parameters using the LinkControl Adapter LCA-2» , ① «Download of sensor parameters in the LCA-1» and ③ «Upload of sensor parameters back to the sensor».



89/336/EEC



Factory setting

Reset to factory setting

Turn supply voltage OFF

Turn supply voltage ON while »D3/Com« is connected to -UB

Keep »D3/Com« connected to -UB until both LEDs stop flashing (ca. 13 sec)

Normal mode operation

① Download of sensor parameters in the LCA-1

888

F + T2

Press F + T2 at the LCA-2 simultaneously (ca. 1 sec)

8888888888

R

Press R at the LCA-2 (ca. 1 sec)

8888

Parameters are transferred from the sensor to the LCA-2

End

Download of parameters completed

199

Current measurement value is displayed

③ Upload of sensor parameters back to the sensor

888

F + T1

Press F + T1 at the LCA-2 simultaneously (ca. 1 sec)

8888888888

R

Press R at the LCA-2 (ca. 1 sec)

8888

Parameters are transferred from the LCA-2 to the sensor

End

Upload of parameters completed

199

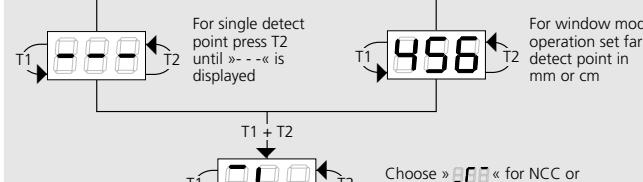
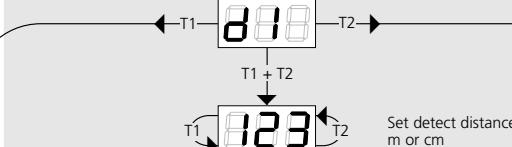
Current measurement value is displayed

② Optional setting of parameters using the LinkControl Adapter LCA-2 (Offline programming)

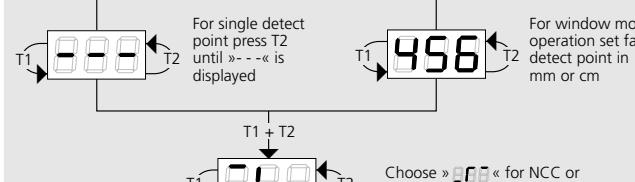
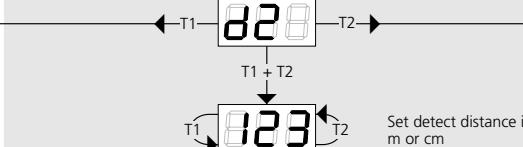
Start here

HELLO Pro

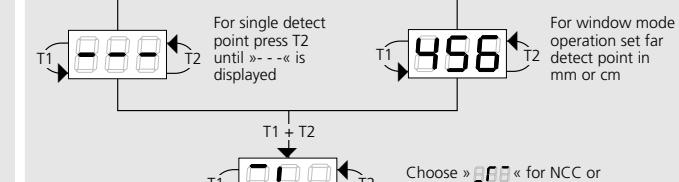
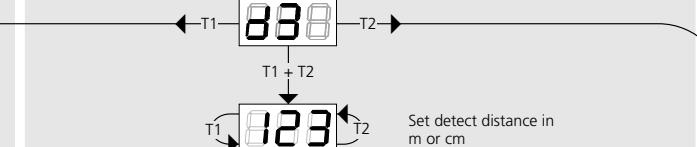
Press **T1 + T2** on the LCA-2 simultaneously for about 3 s until welcome message has passed



Set switched output D1



Set switched output D2



Set switched output D3

End

Ready

③ Setting of additional functions in the LCA-2

Start here

HELLO Pro Add-on

Press **T1 + T2** on the LCA-2 simultaneously for about 13 s until «Add» is shown in the LED-display.

Low power mode

No function!
Changes in the Add-on menu may impair the sensor function.
A6, A7, A8, A10, A11, A12 have influence on the response time of the sensor.

Minimum value: »001«
Maximum value: difference between maximum range and detect point - 1
During window mode operation hysteresis influences both detect points.

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Maximum value: difference between maximum range and detect point - 1
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»F00«: no filter
»F01«: standard filter
»F02«: averaging filter
»F03«: foreground filter
»F04«: background filter

Defines the strength of the chosen filter.
»P00«: weak filter up to
»P09«: strong filter

Delay in seconds between the detection of an object and the output of the measured distance in case of object approach (behaves as on-delay).
»00«: 0 s (no delay)
up to
»20«: 20 s response time

Minimum value: blind zone
Maximum value: near-window limit - 1

No function!

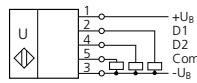
No function!

Minimum value: sensor-distant window margin
Maximum value: 999 mm for mic+25/-...mic+35/-...999 cm for mic+130/-...mic+340/-...mic+600/-...
Affects the size of the detection zone.
»E01«: high
»E02«: standard
»E03«: slight

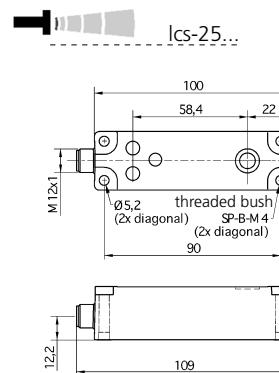
Measurement range
Detection zone sensitivity

Ready

Technical data



3 pnp switched outputs



Blind zone

0 to 30 mm

Operating range

250 mm

Maximum range

350 mm

Angle of beam spread

See detection zone

Transducer frequency

320 kHz

Resolution, sampling rate

0,18 mm

Reproducibility

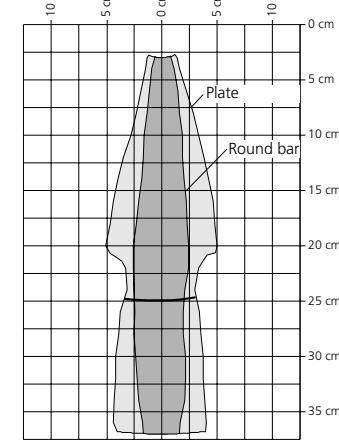
± 0,15 %

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

Temperature drift internal compensated, ≤ 2%, may be deactivated¹⁾ (0,17%/K without compensation

Operating voltage UB

9 V to 30 V DC, reverse polarity protection

Voltage ripple

±10 %

No-load current consumption

< 70 mA

Housing

PBT

ultrasonic transducer: polyurethane foam, epoxy resin with glass content

Class of protection to EN 60 529

IP 65

Norm conformity

EN 60947-5-2

Type of connection

No

Indicators

3 three-colour LEDs

Programmable

Yes, with LCA-2 & LinkControl

Operating temperature

-25°C to +70°C

Storage temperature

-40°C to +85°C

Weight

120 g

Switching hysteresis¹⁾

3 mm

Switching frequency¹⁾

11 Hz

Response time¹⁾

50 ms

Time delay before availability

< 300 ms

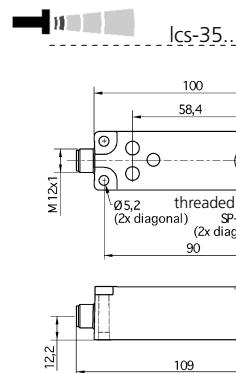
Order no.

Ics-25/DDD/QP

Switched output

3 * pnp, UB=2 V, I_{max} = 200 mA

switchable NOC/NCC, short-circuit-proof



0 to 65 mm

350 mm

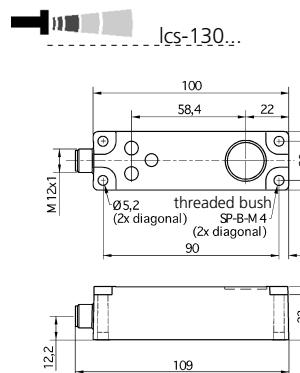
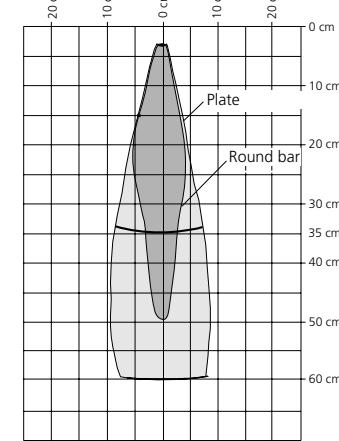
600 mm

See detection zone

400 kHz

0,18 mm

± 0,15 %



0 to 200 mm

1.300 mm

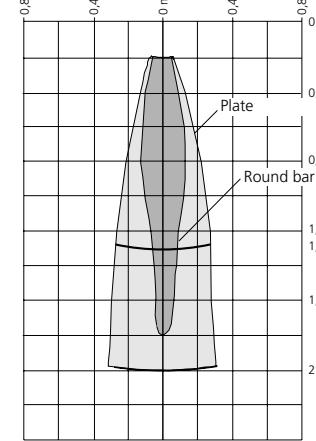
2.000 mm

See detection zone

200 kHz

0,18 mm

± 0,15 %



Temperature drift internal compensated, ≤ 2%, may be deactivated¹⁾ (0,17%/K without compensation

9 V to 30 V DC, reverse polarity protection

±10 %

< 70 mA

PBT

ultrasonic transducer: polyurethane foam, epoxy resin with glass content

IP 65

EN 60947-5-2

No

3 three-colour LEDs

Yes, with LCA-2 & LinkControl

-25°C to +70°C

-40°C to +85°C

120 g

20 mm

6 Hz

110 ms

< 300 ms

Order no.

Ics-35/DDD/QP

3 * pnp, UB=2 V, I_{max} = 200 mA

switchable NOC/NCC, short-circuit-proof

¹⁾ Can be programmed with LinkControl