



Product Description

The Ics+ 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 conditional upon the adjusted detect distance. Via the Teach-in procedure, the detect distance and operating mode can be adjusted. One LED indicates operation and the state of the switching output.

Note

The housing was updated with Batch number

- FA2303742 for Ics+340
- FA2304913 for Ics+600.

The assembly diagram and installation height are identical to the old housing.

Proper Use

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

IO-Link

The Ics+ sensor is IO-Link-capable in accordance with IO-Link specification V1.1 and supports Smart Sensor Profile like Digital Measuring Sensor. The sensor can be monitored and parameterized via IO-Link. Detailed information on parameterisation via IO-Link can be found in the sensor's IO-Link data sheet at microsonic.de/en/Ics+.

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



microsonic notation	IO-Link notation	IO-Link Smart Sensor Profile	colour
1 +U _B	L+		brown
2 -	-		white
3 -U _B	L-		blue
4 F	C/Q	SSC1	black
5 Sync/Com	NC		grey

Fig. 1: Pin assignment with view onto sensor plug, IO-Link notation and colour coding of the microsonic connection cables.

Installation

- Mount the sensor at the place of fitting.
- Connect a connection cable to the M12 device plug, see Fig. 1.

Start-Up

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

Factory Setting

- Switching output on NOC
- Detect distance at operating range
- Filter at F01
- Filter strength at P00

Operating Manual Ultrasonic sensor with one switching output and IO-Link

Ics+340/F/A
Ics+600/F/A

Operating Modes

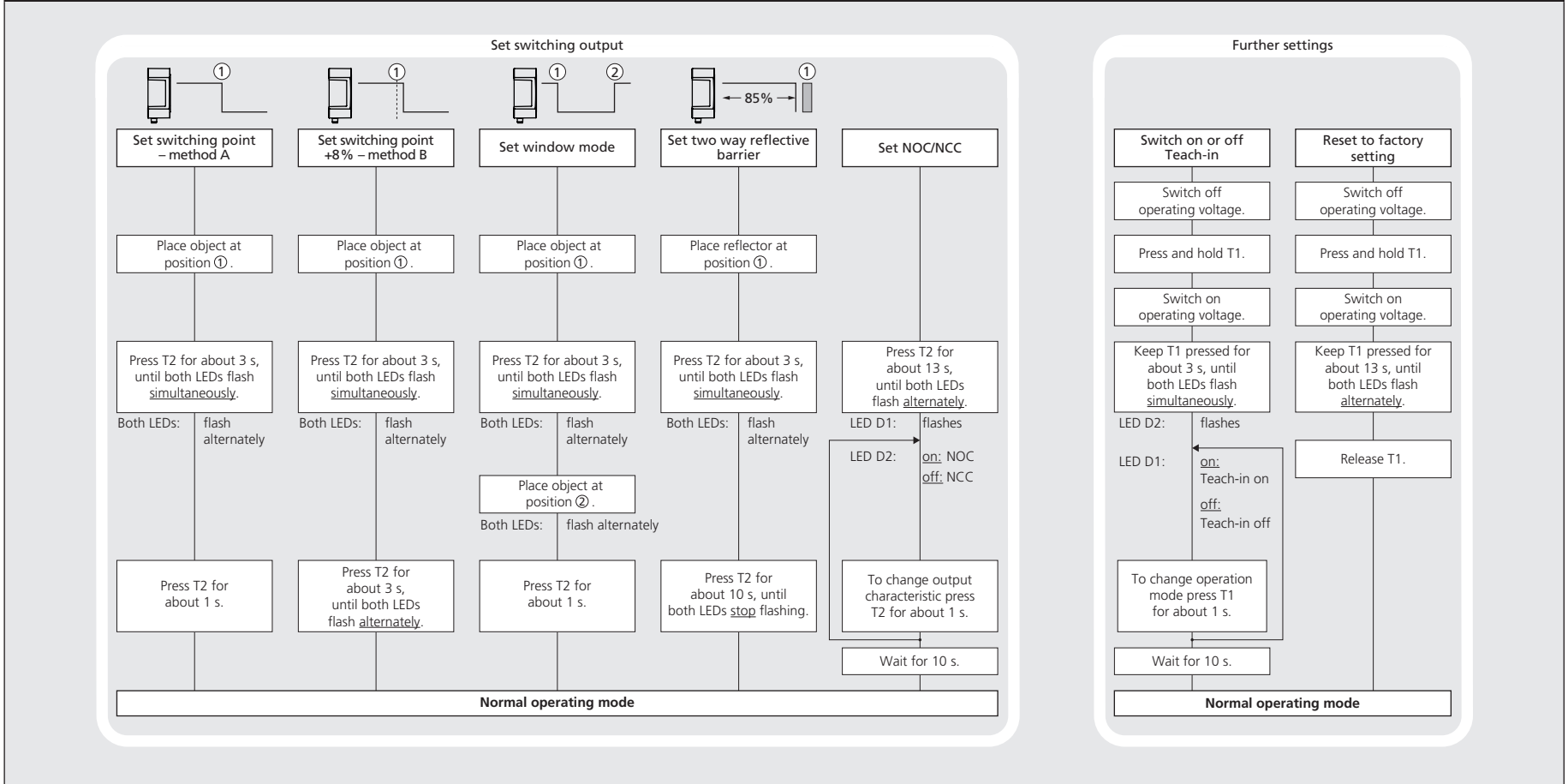
Three operating modes are available for the switching output:

- **Operation with one switching point**
The switching output is set when the object falls below the set switching point.
- **Window mode**
The switching output is set when the object is outside the window limits.
- **Two-way reflective barrier**
The switching output is set when the object is between sensor and fixed reflector.

Ics+340...	≥2.00 m	≥18.00 m
Ics+600...	≥4.00 m	≥30.00 m

Fig. 2: Minimal assembly distances without synchronisation

Diagram 1: Set sensor parameters via Teach-in procedure



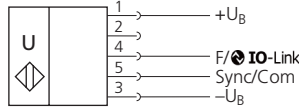
Synchronisation

If the assembly distance of multiple sensors falls below the values shown in Fig. 2, the internal synchronisation should be used to avoid mutual interference between them. To do this interconnect each pin 5 of the sensors to be synchronised.

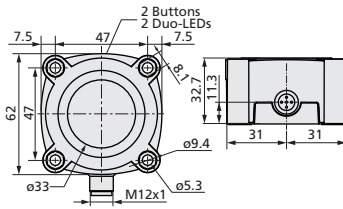
Maintenance

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

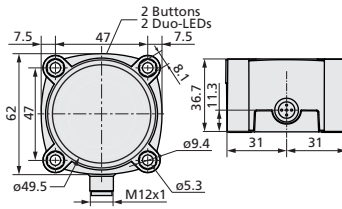
Technical data



lcs+340...

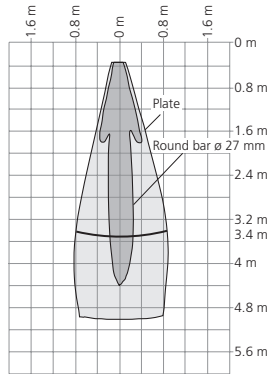


lcs+600...

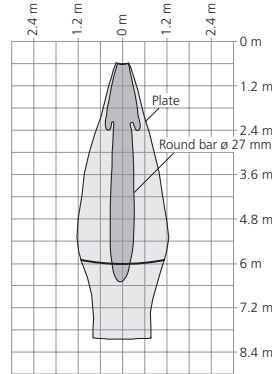


blind zone
operating range
maximum range
angle of beam spread
transducer frequency
resolution
reproducibility
detection zones
 for different objects:
 The dark grey areas represent the zone where it is easy to recognise the normal reflector (round bar). This indicates the typical operating range of the 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.

0 to 350 mm
 3,400 mm
 5,000 mm
 see detection zone
 120 kHz
 0.18 mm
 ±0.15 %



0 to 600 mm
 6,000 mm
 8,000 mm
 see detection zone
 80 kHz
 0.18 mm
 ±0.15 %



accuracy ±1 % (temperature drift internally compensated; can be deactivated ¹⁾, 0.17 %/K without compensation)
operating voltage UB 9 to 30 V DC, reverse polarity protection
voltage ripple ±10 %
no-load current consumption ≤60 mA
housing PBT, Polyester; ultrasonic transducer: polyurethane foam, epoxy resin with glass content
class of protection per EN 60529 IP 67
type of connection 5-pin M12 circular plug, PBT
controls 2 push-buttons
scope of settings Teach-in via push-buttons
 LCA-2 with LinkControl, IO-Link
IO-Link V1.1
indicators LED yellow/green (switching output set/not set)
synchronisation internal synchronisation up to 10 sensors
operating temperature -25 to +70 °C
storage temperature -40 to +85 °C
weight 180 g
switching hysteresis ¹⁾ 50 mm
switching frequency ²⁾ 4 Hz
response time ²⁾ 172 ms
time delay before availability <380 ms
norm conformity EN 60947-5-2

±1 % (temperature drift internally compensated; can be deactivated ¹⁾, 0.17 %/K without compensation)
 9 to 30 V DC, reverse polarity protection
 ±10 %
 ≤60 mA
 PBT, Polyester; ultrasonic transducer: polyurethane foam, epoxy resin with glass content
 IP 67
 5-pin M12 circular plug, PBT
 2 push-buttons
 Teach-in via push-buttons
 LCA-2 with LinkControl, IO-Link
 V1.1
 LED yellow/green (switching output set/not set)
 internal synchronisation up to 10 sensors
 -25 to +70 °C
 -40 to +85 °C
 240 g
 100 mm
 3 Hz
 240 ms
 <450 ms
 EN 60947-5-2

order no. lcs+340/F/A
switching output Push-Pull, $U_B = -3 V$, $-U_B + 3 V$, $I_{max} = 100 mA$
 NOC/NCC adjustable, short-circuit-proof

order no. lcs+600/F/A
switching output Push-Pull, $U_B = -3 V$, $-U_B + 3 V$, $I_{max} = 100 mA$
 NOC/NCC adjustable, short-circuit-proof

¹⁾ Can be programmed via LinkControl and IO-Link.

²⁾ With LinkControl and IO-Link, the selected filter setting influences the switching frequency and response time.

Notes

- Pin 5 (Sync/Com) of the sensor may only be connected for synchronisation.
- The sensors of the lcs+ family have a blind zone, within which a distance measurement is not possible.
- The lcs+ sensors are equipped with an internal temperature compensation. Due to the sensors self heating, the temperature compensation reaches its optimum working-point after approx. 30 minutes of operation.
- In the normal operating mode, an illuminated yellow LED signals that the switching output is switched through.
- The lcs+ sensors have a push-pull switching output.
- In the »Two-way reflective barrier« operating mode, the object has to be within the range of 0 to 85 % of the set distance.
- If no push-buttons are pressed for 5 minutes during parameter setting mode the made changes are discarded and the sensor returns to normal operating mode.
- In the »Set detect point – method A« Teach-in procedure the actual distance to the object is taught to the sensor as the detect point. If the object moves towards the sensor (e.g. with level control) then the taught distance is the level at which the sensor has to switch the output (see Fig. 3).
- If the object to be scanned moves into the detection area from the side, the »Set detect point +8 % – method B« Teach-in procedure should be used. In this way the switching distance is set 8 % 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. 3).

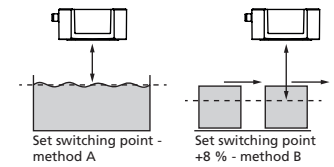


Fig. 3: Teach-in for different directions of movement of the object

- The sensor can be reset to its factory setting (see Diagram 1).
- Optionally all Teach-in and additional sensor parameter settings can be made using the LinkControl adapter (optional accessory) and the LinkControl software for Windows®.
- The latest IODD file and informations about start-up and configuration of lcs+ sensors via IO-Link, you will find online at: www.microsonic.de/en/lcs+



UL LISTED
 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.

