



## Operating Manual

### Ultrasonic sensor with two switching outputs

Ics+340/DD  
Ics+600/DD

## 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 outputs are set conditional upon the adjusted detect distances.

The sensors can be adjusted via Teach-in procedure using two buttons. Two LEDs indicate operation and the states of the switching outputs.

Optionally all Teach-in and additional sensor parameter settings can be made using the LinkControl adapter (optional accessory) and the LinkControl software for windows®.

### Note

The housing was updated with Batch number XXXXXX. The assembly diagram and installation height are identical to the old housing.

## Safety Notes

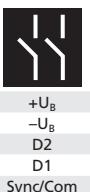
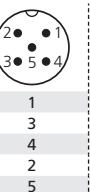
- Read the operating manual prior to start-up.
- Connection, installation and adjustment works should be carried out by expert personnel only.
- No safety component in accordance with the EU Machine Directive, use in the area of personal and machine protection not permitted

## Proper Use

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

## Installation

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



colour
brown
blue
black
white
grey

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

- Switching outputs on NOC
- Detect distance D1 at operating range and D2 at half operating range

## 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 (max. 10 sensors).

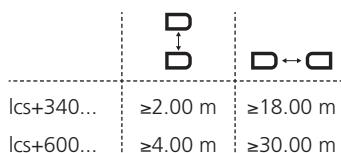


Fig. 2: Minimal assembly distances without synchronisation

## Maintenance

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

## Notes

- Pin 5 (Sync/Com) of the sensor may only be connected for synchronisation.
- The sensors of the Ics+ family have a blind zone, within which a distance measurement is not possible.
- The Ics+ 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 corresponding switching output is set.
- 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 switching 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).

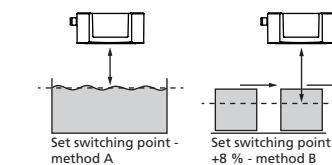
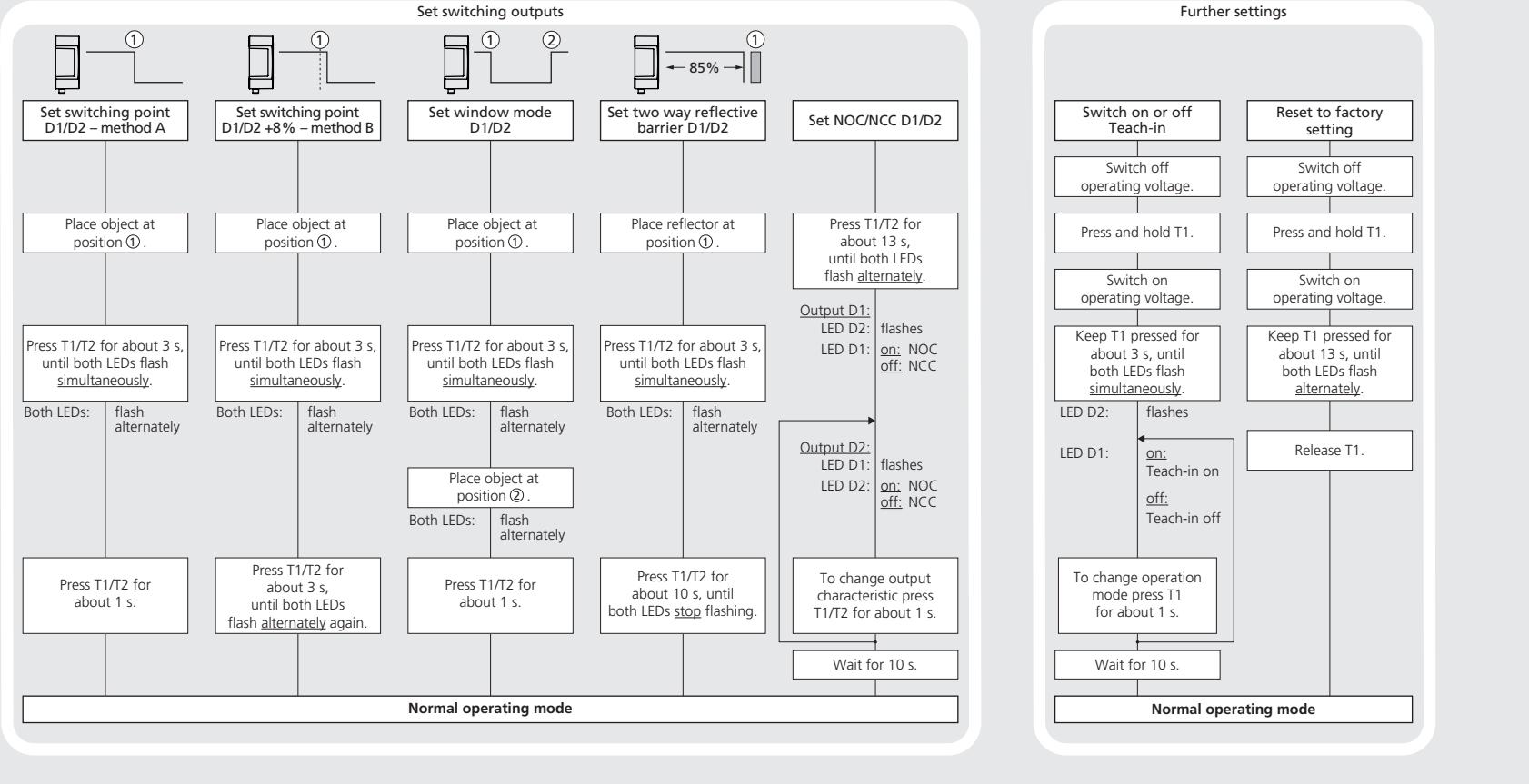
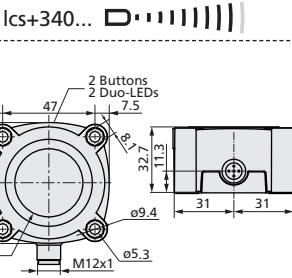
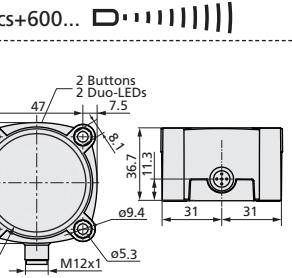
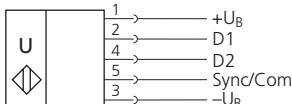
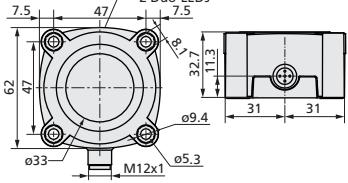
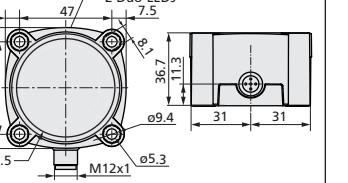


Fig. 3: Teach-in for different directions of movement of the object

## Diagram 1: Set sensor parameters via Teach-in procedure



## Technical data

		<b>Ics+340...</b> 	<b>Ics+600...</b> 
	1 → +U <sub>B</sub> 2 → D1 4 → D2 5 → Sync/Com 3 → -U <sub>B</sub>		
<b>blind zone</b>	0 to 350 mm	<b>blind zone</b>	0 to 600 mm
<b>operating range</b>	3,400 mm	<b>operating range</b>	6,000 mm
<b>maximum range</b>	5,000 mm	<b>maximum range</b>	8,000 mm
<b>angle of beam spread</b>	see detection zone	<b>angle of beam spread</b>	see detection zone
<b>transducer frequency</b>	120 kHz	<b>transducer frequency</b>	80 kHz
<b>resolution</b>	0.18 mm	<b>resolution</b>	0.18 mm
<b>reproducibility</b>	±0.15 %	<b>reproducibility</b>	±0.15 %
<b>detection zones</b>	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.		
<b>accuracy</b>	±1 % (temperature drift internally compensated; can be deactivated <sup>1)</sup> , 0.17 %/K without compensation)	<b>accuracy</b>	±1 % (temperature drift internally compensated; can be deactivated <sup>1)</sup> , 0.17 %/K without compensation)
<b>operating voltage U<sub>B</sub></b>	9 to 30 V DC, reverse polarity protection	<b>operating voltage U<sub>B</sub></b>	9 to 30 V DC, reverse polarity protection
<b>voltage ripple</b>	±10 %	<b>voltage ripple</b>	±10 %
<b>no-load current consumption</b>	≤60 mA	<b>no-load current consumption</b>	≤60 mA
<b>housing</b>	PBT, Polyester; ultrasonic transducer: polyurethane foam, epoxy resin with glass content IP 67	<b>housing</b>	PBT, Polyester; ultrasonic transducer: polyurethane foam, epoxy resin with glass content IP 67
<b>class of protection per EN 60529</b>		<b>class of protection per EN 60529</b>	
<b>type of connection</b>	5-pin M12 circular plug, PBT	<b>type of connection</b>	5-pin M12 circular plug, PBT
<b>controls</b>	2 push-buttons	<b>controls</b>	2 push-buttons
<b>programmable indicators</b>	Teach-in via push-buttons, LCA-2 with LinkControl	<b>programmable indicators</b>	Teach-in via push-buttons, LCA-2 with LinkControl
<b>synchronisation</b>	2 LEDs yellow/green (switching output set/not set)	<b>synchronisation</b>	2 LEDs yellow/green (switching output set/not set)
<b>operating temperature</b>	internal synchronisation up to 10 sensors	<b>operating temperature</b>	internal synchronisation up to 10 sensors
<b>storage temperature</b>	-25 to +70 °C	<b>storage temperature</b>	-25 to +70 °C
<b>weight</b>	-40 to +85 °C	<b>weight</b>	-40 to +85 °C
<b>switching hysteresis</b> <sup>1)</sup>	180 g	<b>switching hysteresis</b> <sup>1)</sup>	240 g
<b>switching frequency</b> <sup>2)</sup>	50 mm	<b>switching frequency</b> <sup>2)</sup>	100 mm
<b>response time</b> <sup>2)</sup>	4 Hz	<b>response time</b> <sup>2)</sup>	3 Hz
<b>time delay before availability</b>	172 ms	<b>time delay before availability</b>	240 ms
<b>norm conformity</b>	<380 ms	<b>norm conformity</b>	<450 ms
<b>order no.</b>	<b>Ics+340/DD</b>	<b>order no.</b>	<b>Ics+600/DD</b>
<b>switching outputs</b>	2x npn, U <sub>B</sub> =2 V, I <sub>max</sub> = 2x 200 mA NOC/NCC adjustable, short-circuit-proof	<b>switching outputs</b>	2x npn, U <sub>B</sub> =2 V, I <sub>max</sub> = 2x 200 mA NOC/NCC adjustable, short-circuit-proof

<sup>1)</sup> Can be programmed via LinkControl.

<sup>2)</sup> With LinkControl the selected filter setting influences the switching frequency and response time.

■ If the object to be scanned moves into the detection area from the side, the »Set switching 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).

■ The sensor can be reset to its factory setting (see Diagram 1).



Enclosure Type 1

For use only in industrial

machinery NFPA 79 applications.

The proximity switches shall be used with a Listed (CYW7) cable/connector assembly rated minimum 32 Vdc, minimum 290 mA, in the final installation.

