**Product description**

The lpc+ sensor offers a non-contact measurement of the distance to an object which must be positioned within the sensor's detection zone. The switched output is set conditional upon the adjusted detect distance, as an alternative to the set window margins, a distance proportional analogue signal is output.

Via the Teach-in procedure, the detect distance and operating mode can be adjusted. Two LEDs indicate operation and status of the switching and analogue outputs.

Use for intended purpose only

The lpc+ 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.

**Start-up**

- Connect the power supply.
- Carry out sensor adjustment in accordance with the diagram «Sensor adjustment with the Teach-in procedure».

Set operation-specific parameters can be locked against changes with the teach-in procedure »Switch on or off Teach-in + Synchronisation«.

**Factory setting**

- Detect point operation
- Switched output on NOC
- Detect distance at operating range
- Multifunction input »Com« set to

**Operating modes**

Three operating modes are available:

- Operation with one detect point
- Window mode
- Two-way reflective barrier

The switched output is set when the object is between sensor and fixed reflector.

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**Operating Instructions**

**Ultrasonic proximity switch with one analogue output, one switched output and IO-Link**

- lpc+15/CFU
- lpc+15/WK/CFU
- lpc+25/CFU
- lpc+25/WK/CFU
- lpc+35/CFU
- lpc+35/WK/CFU
- lpc+100/CFU
- lpc+100/WK/CFU

**Fig. 1: Pin assignmen with view onto sensor plug and colour coding of the microsonic connection cables.**
Synchronisation

If under multiple sensor operation the assembly distance falls below the values shown in fig. 2, the internal synchronisation should be used. For this purpose set the switched outputs of all sensors in accordance with the diagram »Sensor adjustment with the Teach-in procedure«.

Then switch-on the multi-function output »Com« (pin 5) to »Teach-in« and »synchronisation« (see »Further settings«). Finally interconnect each pin 5 of the sensors to be synchronised.

In the »Two-way reflective barrier« operating mode, the object has to be within the range of 0-85 % of the set distance.

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.

Maintenance

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

Notes

- The sensors of the lpc+ family have a blind zone, within which a distance measurement is not possible.
- The lpc+ sensors are equipped with an internal temperature compensation. Due to the sensors self heating, the temperature compensation reaches its optimum working point after approx. 120 seconds of operation.
- In the normal operating mode, an illuminated yellow LED signals that the switched output is switched through.
- The lpc+ sensors have a push-pull switching output.
- 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.
- The sensor can be reset to its factory setting (see »Further settings«).
- Using the LinkControl adapter LCA-2 (optional accessory) and the LinkControl software for Windows, all Teach-in and additional sensor parameter settings can be optionally undertaken.
- The latest IODD file and informations about start-up and configuration of lpc+ sensors with IO-Link, you will find online at: https://www.microsonic.de/lpc+.
## Technical Data

### Push-Pull Output in PNP Circuit

1. **Can be programmed with LinkControl**

### Operating Range of the Sensors

- **Light grey areas** represent the zone where a requirement here is for an optimum alignment to the sensor. It is not possible to evaluate ultrasonic reflections outside this area.

### Operating Voltage $U$

- $10 - 30$ V DC, reverse polarity protection (Class 2)

### No-Load Current Consumption

- Less than $60$ mA

### Housing

- **Brass sleeve, nickel-plated, plastic parts: PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content**

### Maximum Tensioning Torque of Nut

- 15 Nm

### Class of Protection per EN 60 529

- IP 67

### Type of Connection

- 5-pin M12 circular plug

### Programmable Synchronisation

- Internal synchronisation up to 10 sensors

### Operating Temperature

- $-25^\circ$C to $+70^\circ$C

### Storage Temperature

- $-40^\circ$C to $+85^\circ$C

### Switching Hysteresis

- Less than or equal to $150$ kΩ

### Response Time

- Less than or equal to $80$ ms

### Time Delay Before Availability

- Less than or equal to $300$ ms

### Operating Voltage $U$

- $10 - 30$ V DC, reverse polarity protection (Class 2)

### Terminal Reverse Polarity Protected

- Class 2

### EN 60947-5-2

- **Terminals reverse polarity protected, Class 2**

### Normal Conformity

- EN 60947-5-2

### Order No. (Directly Radiating)

- $25$ g

### Order No. Angular Head

- $15$ g

### Weight

- $25$ g

### Weight

- $15$ g

### Weight

- $25$ g

### Weight

- $40$ g