



## microsonic Mic+25-D-TC Ultrasonic Sensors with One Switching Output Instruction Manual

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*microsonic Mic+25-D-TC Ultrasonic Sensors  
with One Switching Output Instruction Manual*

# microsonic



## Operating Manual

### **mic+ Ultrasonic Sensors with one switching output**

**mic+25/D/TC  
mic+35/D/TC  
mic+130/D/TC  
mic+340/D/TC  
mic+600/D/TC**

**mic+25/E/TC  
mic+35/E/TC  
mic+130/E/TC  
mic+340/E/TC  
mic+600/E/TC**

#### **Product Description**

- The mic+ sensor with one switching output measures the distance to an object within the detection zone contactless. Depending on the adjusted detect distance the switching output is set.
- All settings are done with two push- buttons and a three-digit LED-display (TouchControl).
- Three-colour LEDs indicate the switching status.
- The output functions are changeable from NOC to NCC.
- The sensors are adjustable manually via TouchControl or via Teach-in procedure.
- Useful additional functions are set in the Add-on-menu.
- Using the LinkControl adapter (optional accessory) all TouchControl and additional sensor parameter settings can be adjusted by a Windows® Software.

The mic+ sensors have a blind zone in which distance measurement is not possible. 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.

## 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, use in the area of personal and machine protection not permitted

## Proper Use

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

## Synchronisation

If the assembly distance of multiple sensors falls below the values shown in Fig. 1 the integrated synchronisation should be used. Connect Sync/ Com-channels (pin 5 at the units receptable) of all sensors (10 maximum).


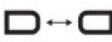
|            |  |  |
|------------|--|---|
| mic+25...  | ≥0.35 m  | ≥2.50 m   |
| mic+35...  | ≥0.40 m  | ≥2.50 m   |
| mic+130... | ≥1.10 m  | ≥8.00 m   |
| mic+340... | ≥2.00 m  | ≥18.00 m  |
| mic+600... | ≥4.00 m  | ≥30.00 m  |

Fig. 1: Assembly distances, indicating synchronisation/multiplex

## Multiplex mode

The Add-on-menu allows to assign an individual address »01« to »10« to each sensor connected via the Sync/ Com-channel (Pin5). The sensors perform the ultrasonic measurement sequentially from low to high address. Therefore any influence between the sensors is rejected.

The address »00« is reserved to synchronisation mode and deactivates the multiplex mode. To use synchronised mode all sensors must be set to address »00«.

## Installation

- Assemble the sensor at the installation location.
- Plug in the connector cable to the M12 connector, see Fig. 2.

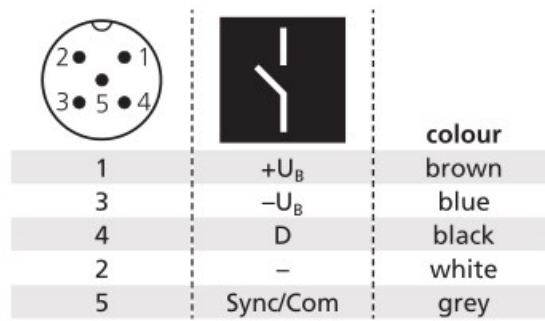


Fig. 2: Pin assignment with view onto sensor plug and colour coding of the micro-sonic connection cable

## Start-up

- Connect the power supply.  $\hat{I}$  Set the parameters of the sensor manually via TouchControl (see Fig. 3 and Diagram 1)
- or use the Teach-in procedure to adjust the detect points (see Diagram 2).

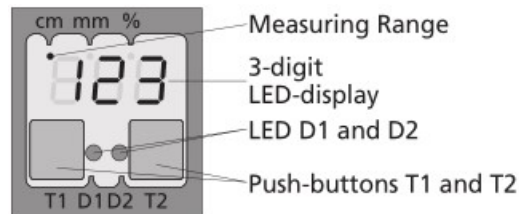


Fig. 3: TouchControl/LED display

## Factory setting

mic+ sensors are delivered factory made with the following settings:

- Switching output on NOC
- Detecting distance at operating range
- Measurement range set to maximum range

## Maintenance

mic+ 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.

## Notes

- mic+ sensors have internal temperature compensation. Because the sensors heat up on their own, the temperature compensation reaches its optimum working point after approx. 30 minutes of operation.
- During normal operating mode, a yellow LED D2 signals that the switching output has connected.
- During normal operating mode, the measured distance value is displayed on the LED-indicator in mm (up to 999 mm) or cm (from 100 cm). Scale switches automatically and is indicated by a point on top of the digits.
- During Teach-in mode, the hysteresis loops are set back to factory settings.
- If no objects are placed within the detection zone the LED-indicator shows »—«.

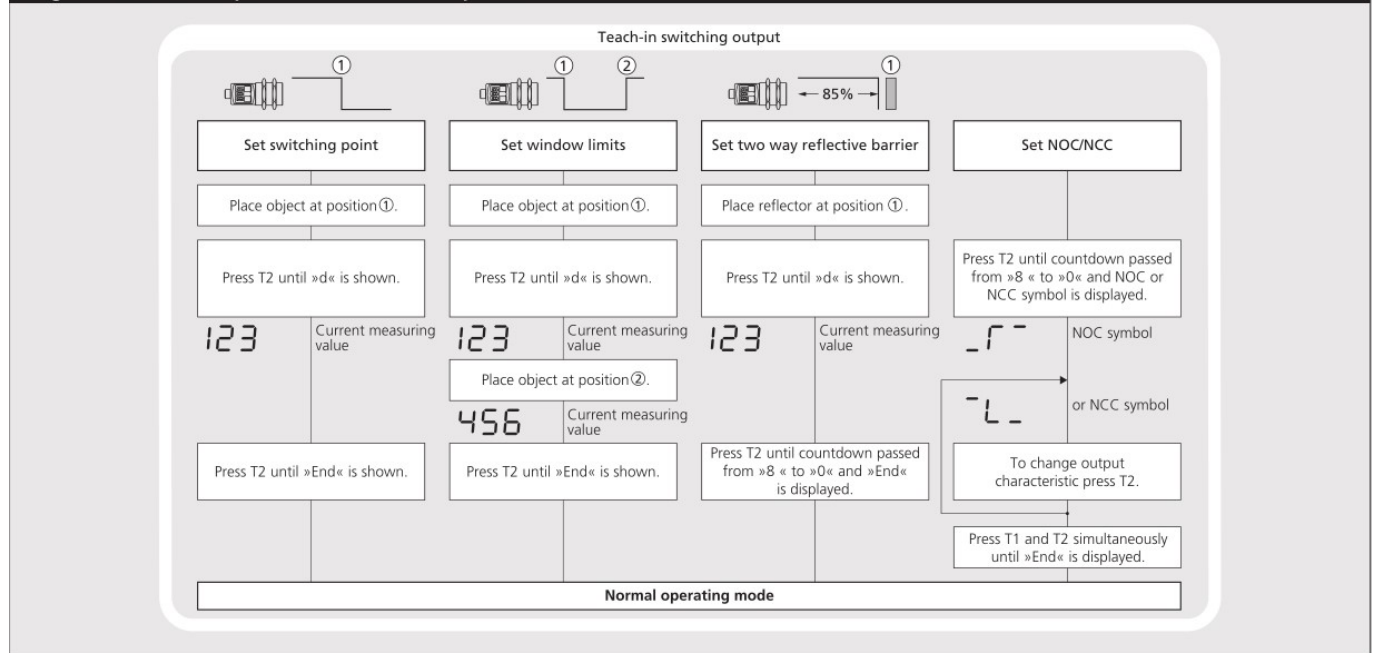
- If no push-buttons are pressed for 20 seconds during parameter setting mode the made changes are stored and the sensor returns to normal operating mode.
- The sensor can be reset to its factory setting, see »Key lock and factory setting«, Diagram 3.

## Show parameters

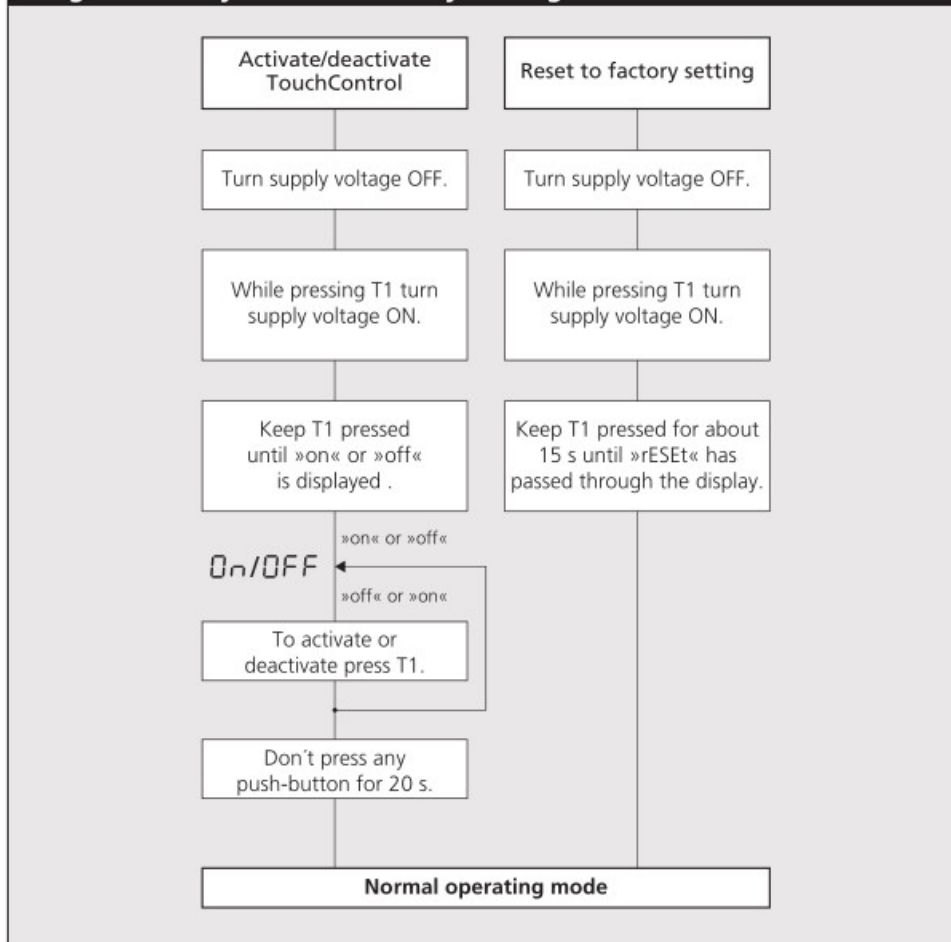
- In normal operating mode shortly push T1. The LED display shows »PAR.«

Each time you tap push-button T1 the actual settings of the switching output are shown.

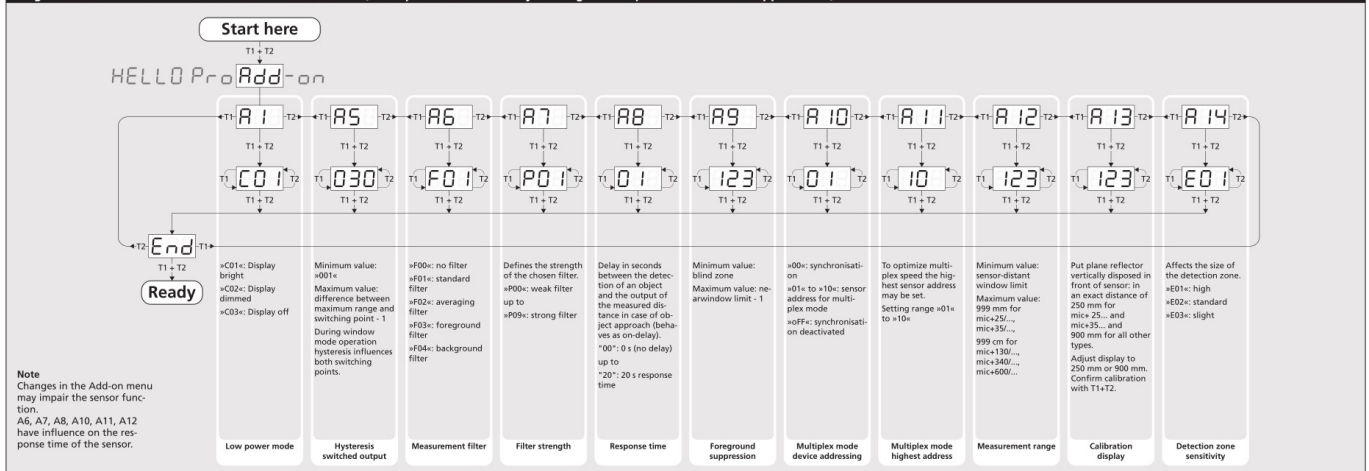
**Diagram 2: Set sensor parameters via Teach-in procedure**






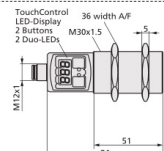
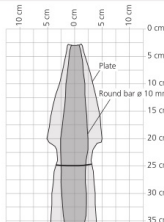

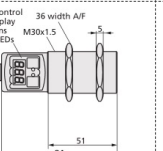
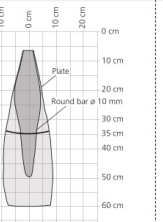

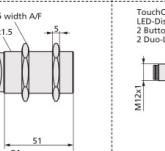
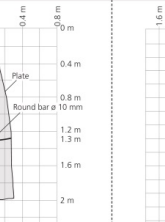

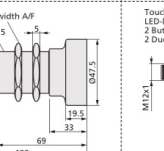
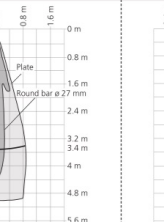

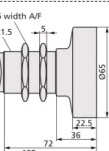
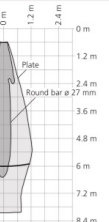
**Diagram 3: Key lock and factory setting**



**Diagram 4: Useful additional functions in Add-on menu (for experienced users only, settings not required for standard applications)**



Technical data

|   |   |   |   |  |  |
|---|---|---|---|--|--|
| <div><br/>1 pin switching output</div> <div><br/>1 pin switching output</div> | <div><br/><br/>0 to 30 mm<br/>250 mm<br/>350 mm<br/>see detection zone<br/>400 kHz<br/>0.025 mm</div> <div></div> <div><p>reproducibility <math>\pm 0.15\%</math><br/>accuracy <math>\pm 1\%</math> (Temperature drift internal compensated, may be deactivated <sup>1)</sup>, 0.17%/K without compensation)<br/>operating voltage <math>U_s</math> 9 to 30 V DC, short-circuit-proof, Class 2<br/>voltage ripple <math>\leq 10\%</math><br/>no-load supply current <math>\leq 80\text{ mA}</math><br/>housing Brass sleeve, nickel-plated, plastic parts: PBT, TPU; Ultrasonic transducer: polyurethane foam, epoxy resin with glass content<br/>class of protection to EN 60529 IP 67<br/>norm conformity EN 60947-5-2<br/>type of connection 5-pin initiator plug, PBT<br/>controls 2 push-buttons (TouchControl)<br/>indicators 3-digit LED display, 2 three-colour LEDs with TouchControl and LinkControl<br/>programmable with TouchControl and LinkControl<br/>operating temperature -25 to +70 °C<br/>storage temperature -40 to +85 °C<br/>weight 150 g<br/>switching hysteresis 3 mm<br/>switching frequency 25 Hz<br/>response time <sup>2)</sup> 32 ms<br/>time delay before availability &lt;300 ms</p><p>order No. <b>mic+25/D/TC</b><br/>switching output prnp, <math>U_s = 2\text{ V}</math>, <math>I_{\text{max}} = 200\text{ mA}</math><br/>switchable NOC/NCC, short-circuit-proof</p><p>order No. <b>mic+25/E/TC</b><br/>switching output prnp, <math>U_s = 2\text{ V}</math>, <math>I_{\text{max}} = 200\text{ mA}</math><br/>switchable NOC/NCC, short-circuit-proof</p></div> | <div><br/><br/>0 to 65 mm<br/>350 mm<br/>600 mm<br/>see detection zone<br/>400 kHz<br/>0.025 mm</div> <div></div> <div><p>reproducibility <math>\pm 0.15\%</math><br/>accuracy <math>\pm 1\%</math> (Temperature drift internal compensated, may be deactivated <sup>1)</sup>, 0.17%/K without compensation)<br/>operating voltage <math>U_s</math> 9 to 30 V DC, short-circuit-proof, Class 2<br/>voltage ripple <math>\leq 10\%</math><br/>no-load supply current <math>\leq 80\text{ mA}</math><br/>housing Brass sleeve, nickel-plated, plastic parts: PBT, TPU; Ultrasonic transducer: polyurethane foam, epoxy resin with glass content<br/>class of protection to EN 60529 IP 67<br/>norm conformity EN 60947-5-2<br/>type of connection 5-pin initiator plug, PBT<br/>controls 2 push-buttons (TouchControl)<br/>indicators 3-digit LED display, 2 three-colour LEDs with TouchControl and LinkControl<br/>programmable with TouchControl and LinkControl<br/>operating temperature -25 to +70 °C<br/>storage temperature -40 to +85 °C<br/>weight 150 g<br/>switching hysteresis 3 mm<br/>switching frequency 25 Hz<br/>response time <sup>2)</sup> 32 ms<br/>time delay before availability &lt;300 ms</p><p>order No. <b>mic+35/D/TC</b><br/>switching output prnp, <math>U_s = 2\text{ V}</math>, <math>I_{\text{max}} = 200\text{ mA}</math><br/>switchable NOC/NCC, short-circuit-proof</p><p>order No. <b>mic+35/E/TC</b><br/>switching output prnp, <math>U_s = 2\text{ V}</math>, <math>I_{\text{max}} = 200\text{ mA}</math><br/>switchable NOC/NCC, short-circuit-proof</p></div> | <div><br/><br/>0 to 200 mm<br/>1,300 mm<br/>2,000 mm<br/>see detection zone<br/>200 kHz<br/>0.18 mm</div> <div></div> <div><p>reproducibility <math>\pm 0.15\%</math><br/>accuracy <math>\pm 1\%</math> (Temperature drift internal compensated, may be deactivated <sup>1)</sup>, 0.17%/K without compensation)<br/>operating voltage <math>U_s</math> 9 to 30 V DC, short-circuit-proof, Class 2<br/>voltage ripple <math>\leq 10\%</math><br/>no-load supply current <math>\leq 80\text{ mA}</math><br/>housing Brass sleeve, nickel-plated, plastic parts: PBT, TPU; 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|---|---|---|---|--|--|

<sup>1)</sup> Can be programmed by TouchControl and LinkControl.      <sup>2)</sup> With TouchControl and LinkControl, the selected filter setting and the maximum range influence the switching frequency and the response time.

<sup>3)</sup> Can be deactivated by LinkControl.

<sup>1)</sup> Can be programmed via TouchControl and LinkControl. <sup>2)</sup> With TouchControl and LinkControl, the selected filter setting and the maximum range influence the switching frequency and the response time. <sup>3)</sup> Can be deactivated via LinkControl.

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The content of this document is subject to technical changes. Specifications in this document are presented in a descriptive way only. They do not warrant any product features.



Enclosure Type 1  
For use only in industrial machinery NFPA 79 applications.

The proximity switches shall be used with a Listed (CYJV/7) cable/connector assembly rated minimum 32 Vdc, minimum 290 mA, in the final installation.



2014/30/EU



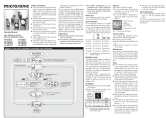
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## Documents / Resources

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|---|--|

## References

- [microsonic | ultrasonic sensors | Made in Germany](#)
- [User Manual](#)

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