# microsonic mic Ultrasonic Sensors with Two Switching Outputs Instruction Manual



**microsonic mic Ultrasonic Sensors with Two Switching Outputs**

Contents

## mic Ultrasonic Sensors with two switching output

**Product description**

The mic-sensor with two switching outputs measures the distance to an object within the detection zone contactless. Depending on the adjusted detect distances the switching outputs are set. The output functions are changeable from NOC to NCC.

Using the LinkControl adapter (optinal accessory) all sensor parameter settings can be adjusted by a Windows ® Software. Safety Notes  Read the operating manual 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 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.

→ Installation Î Assemble the sensor at the installation location.
→ Plug in the connector cable to the M12 connector, see Fig. 1.

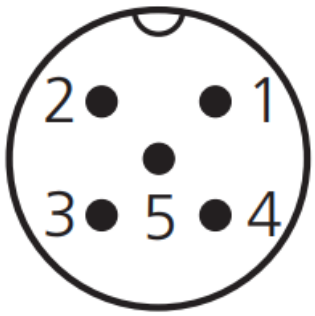
|  |  | **colour** |
|---|---|---|
| 1 | $+U_B$ | brown |
| 3 | $–U_B$ | blue |
| 4 | D2 | black |
| 2 | D1 | white |
| 5 | Sync/Com | grey |

***Fig. 1:*** *Pin assignment with view onto sensor plug and colour coding of the microso- nic connection cable*

**Start-up**

→ Connect the power supply.
→ Set the parameters of the sensor using the LinkControl adapter LCA- 2 with the LinkControl software.

**Factory setting**

- mic-sensors are delivered factory made with the following settings:
- Switching outputs on NOC
- Detecting distances at operating range and half operating range  Maximum detection range set to maximum range

**Synchronization**

If the assembly distances shown in Fig. 2 for two or more sensors are exceeded the integrated synchronization should be used. Connect pins 5 (Sync/ Com) of all sensors (10 maximum).

| |  |  |
|---|---|---|
| mic-25… | <10 cm | <1.0 m |
| mic-35… | <30 cm | <1.7 m |
| mic-130… | <60 cm | <5.4 m |
| mic-340… | <1.6 m | <16 m |
| mic-600… | <2.6 m | <30 m |

**Multiplex mode**

The sensors that are electrically connected to each other via pin 5 (Sync/ Com) can additionally be assigned an individual device address between »01« and »10« with Link Control. The sensors then alternate with their ultra-sonic measurements during operation in ascending order of the device addresses. This completely avoids mutual interference between the sensors. The device address »00« is reserved for synchronous operation and deactivates multiplex operation. For synchronous operation, all sensors must have the device address »00«.

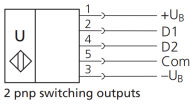
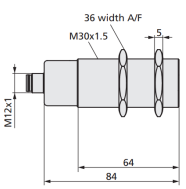
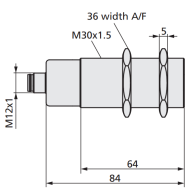
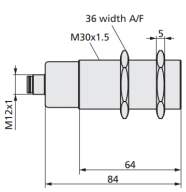
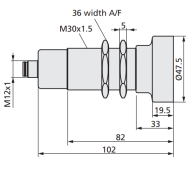
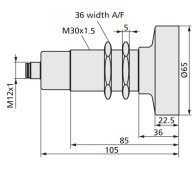
**Maintenance**

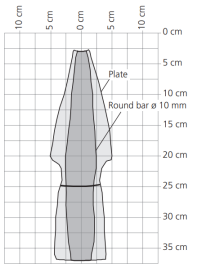
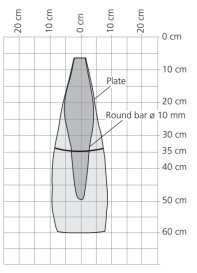
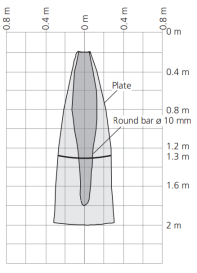
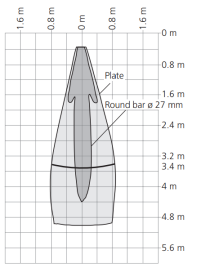
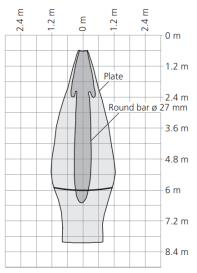
mic-sensors work maintenance free. Small amounts of dirt on the surface do not influence function. Thick layers of dirt and caked-on dirt affect sensor function and therefore must be removed.

**Note**

mic sensors have an internal tempera- ture compensation. Due to the sensor‘s self-heating, the temperature compensation reaches its optimum operating point after approx. 30 mi- nutes of operation.

## Technical data

| | mic-25… | mic-35… | mic-130… | mic-340… | mic-600… |
|---|---|---|---|---|---|
|  |  |  |  |  |  |

| | | | | | |
|---|---|---|---|---|---|
| blind zone | 0 to 30 mm | 0 to 65 mm | 0 to 200 mm | 0 to 350 mm | 0 to 600 mm |
| operating range | 250 mm | 350 mm | 1,300 mm | 3,400 mm | 6,000 mm |
| maximum range | 350 mm | see detection zone | 2,000 mm | 5,000 mm | 8,000 mm |
| angle of beam spread | see detection zone | 400 kHz | see detection zone | see detection zone | see detection zone |
| transducer frequency | 320 kHz | 0.18 mm | 200 kHz | 120 kHz | 80 kHz |
| resolution | 0.18 mm | ±0.15 % | 0.18 mm | 0.18 mm | 0.18 mm |
| reproducibility | ±0.15 % | Temperature drift internal compensated, ≤2 %, may | ±0.15 % | ±0.15 % | ±0.15 % |
| accuracy | Temperature drift internal compensated, ≤2 %, may be deactivated 1) (0.17%/K without compensation) | be deactivated 1) (0.17%/K without compensation) | Temperature drift internal compensated, ≤2 %, may be deactivated 1) (0.17%/K without compensation) | Temperature drift internal compensated, ≤2 %, may be deactivated 1) (0.17%/K without compensation) | Temperature drift internal compensated, ≤2 %, may be deactivated 1) (0.17%/K without compensation) |
| detection zones for different objects: The dark grey areas represent the zone where it is easy to recognize 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. |  |  |  |  |  |

| | | | | | |
|---|---|---|---|---|---|
| operating voltage UB | 9 to 30 V DC, short-circuit-proof, Class 2 | 9 to 30 V DC, short-circuit-proof, Class 2 | 9 to 30 V DC, short-circuit-proof, Class 2 | 9 to 30 V DC, short-circuit-proof, Class 2 | 9 to 30 V DC, short-circuit-proof, Class 2 |
| voltage ripple | ±10 % | ±10 % | ±10 % | ±10 % | ±10 % |
| no-load supply current | ≤55 mA | ≤55 mA | ≤55 mA | ≤55 mA | ≤55 mA |
| housing | Brass sleeve, nickel-plated, plastic parts: PBT | Brass sleeve, nickel-plated, plastic parts: PBT; | Brass sleeve, nickel-plated, plastic parts: PBT; | Brass sleeve, nickel-plated, plastic parts: PBT; | Brass sleeve, nickel-plated, plastic parts: PBT; |
| | Ultrasonic transducer: polyurethane foam, | Ultrasonic transducer: polyurethane foam | Ultrasonic transducer: polyurethane foam, | Ultrasonic transducer: polyurethane foam, | Ultrasonic transducer: polyurethane foam, |
| | epoxy resin with glass content | epoxy resin with glass content | epoxy resin with glass content | epoxy resin with glass content | epoxy resin with glass content |
| class of protection to EN 60529 | 9 IP 67 | IP 67 | IP 67 | IP 67 | IP 67 |
| norm conformity | EN 60947-5-2 | EN 60947-5-2 | EN 60947-5-2 | EN 60947-5-2 | EN 60947-5-2 |
| type of connection | 5-pin initiator plug, Brass, nickel-plated | 5-pin initiator plug, Brass, nickel-plated | 5-pin initiator plug, Brass, nickel-plated | 5-pin initiator plug, Brass, nickel-plated | 5-pin initiator plug, Brass, nickel-plated |
| programmable | via LinkControl | via LinkControl | via LinkControl | via LinkContro | via LinkControl |
| operating temperature | –25 to +70 °C | l via LinkControl via LinkControl via LinkControl operating temperature –25 to +70 °C –25 to +70 °C | –25 to +70 °C | –25 to +70 °C | –25 to +70 °C |
| storage temperature | –40 to +85 °C | –40 to +85 °C | –40 to +85 °C | –40 to +85 °C | –40 to +85 °C |
| weight | 200 g | 200 g | 200 g | 260 g | 320 g |
| switching hysteresis 1) | 3 mm | 5 mm | 20 mm | 50 mm | 100 mm |
| switching frequency 1) | 11 Hz | 8 Hz | 6 Hz | 3 Hz | 2 Hz |
| response time 1) | 50 ms | 70 ms | 110 ms | 180 ms | 240 ms |
| time delay before availability 1) | | mic-35/DD/M | mic-130/DD/M | mic-340/DD/M | mic-600/DD/M |
| order No. | mic-25/DD/M | 2x pnp, UB – 2 V, Imax = 2x 200 mA | 2x pnp, UB – 2 V, Imax = 2x 200 mA | 2x pnp, UB – 2 V, Imax = 2x 200 mA | 2x pnp, UB – 2 V, Imax = 2x 200 mA |

| | | | | | |
|---|---|---|---|---|---|
| switching output | t 2x pnp, UB – 2 V, Imax = 2x 200 mA | switchable NOC /NCC, short-circuit-proof | switchable NOC /NCC, short-circuit-proof | switchable NOC /NCC, short-circuit-proof | switchable NOC/ NCC, short-circuit-proof |

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c UL us LISTED losure 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 mini -mum 32 Vdc, minimum 290 mA, in the final installation.

## Documents / Resources

| | |
|---|---|
|  | microsonic mic Ultrasonic Sensors with Two Switching Outputs [pdf] Instruction Manual mic-25-DD-M, mic-35-DD-M, mic-130-DD-M, mic-340-DD-M, mic-600-DD-M, mic Ultrasonic Sensors with Two Switching Outputs, mic Ultrasonic Sensors, Ultrasonic Sensors, Ultrasonic Sensors with Two Switching Outputs |