

Fig. 1: Pin assignment with view onto the sensor plug and the coding of the microsonic connection cable

Synchronisation
If the assembly distances shown in Fig.1 for

two or more sensors are exceeded the integrated synchronisation should be used. Connect Sync/Com-channels (pin 5 at the units receptable) of all sensors (10 maximum).

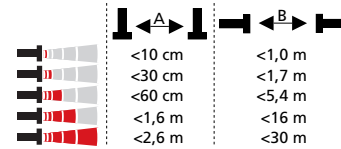


Fig. 2: Assembly distances, indicating synchronisation/multiplex

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«.)

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

- Switched outputs on NOC
- Detecting distances at operating range and half operating range
- Maximum detection range set to maximum range

Set the parameters of the sensor using the LinkControl adapter LCA-2 with the LinkControl software.

Operation
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 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.



Operating instructions

Ultrasonic proximity switch with two switched outputs

- mic-25/DD/M
- mic-35/DD/M
- mic-130/DD/M
- mic-340/DD/M
- mic-600/DD/M

Product description

- The mic-sensor with two switched outputs measures the distance to an object within the detection zone contactless. Depending on the adjusted detection distances the switched outputs are set.
- The output functions are changeable from NOC to NCC.
- The sensors are adjustable using Teach-in processes via the Com-channel (Pin 5).
- Using the LinkControl adapter (optional accessory) all sensor parameter settings can be made by a Windows-Software.

Important instructions for assembly and application

All employee and plant safety-relevant measures must be taken prior to assembly, start-up, or maintenance work (see operation manual for the entire plant and the operator instruction of the plant).

The sensors are not considered as safety equipment and may not be used to ensure human or machine safety!

The mic-sensors indicate a **blind zone**, in which the distance cannot be measured. 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.

Assembly instructions

- Assemble the sensor at the installation location.
- Plug in the connector cable to the M 12 connector.

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 | 600 mm | 2.000 mm | 5.000 mm | 8.000 mm |
| Angle of beam spread | Please see detection zone | Please see detection zone | Please see detection zone | Please see detection zone | Please see detection zone |
| Transducer frequency | 320 kHz | 400 kHz | 200 kHz | ca. 120 kHz | ca. 80 kHz |
| Resolution, sampling rate | 0,18 mm | 0,18 mm | 0,18 mm | 0,18 mm | 0,18 mm |
| Reproducibility | ± 0,15 % | ± 0,15 % | ± 0,15 % | ± 0,15 % | ± 0,15 % |
| Accuracy | 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 | 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: | | | | | |
| Operating voltage U_B | 9 V to 30 V DC, reverse polarity protection | 9 V to 30 V DC, reverse polarity protection | 9 V to 30 V DC, reverse polarity protection | 9 V to 30 V DC, reverse polarity protection | 9 V to 30 V DC, reverse polarity protection |
| Voltage ripple | ± 10 % | ± 10 % | ± 10 % | ± 10 % | ± 10 % |
| No-load supply current | ≤ 80 mA | ≤ 80 mA | ≤ 80 mA | ≤ 80 mA | ≤ 80 mA |
| Housing | Brass sleeve, nickel-plated, plastic parts: PBT Ultrasonic transducer: polyurethane foam, epoxy resin with glass content | Brass sleeve, nickel-plated, plastic parts: PBT Ultrasonic transducer: polyurethane foam, epoxy resin with glass content | Brass sleeve, nickel-plated, plastic parts: PBT Ultrasonic transducer: polyurethane foam, epoxy resin with glass content | Brass sleeve, nickel-plated, plastic parts: PBT Ultrasonic transducer: polyurethane foam, epoxy resin with glass content | Brass sleeve, nickel-plated, plastic parts: PBT Ultrasonic transducer: polyurethane foam, epoxy resin with glass content |
| Class of protection to EN 60529 | 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 |
| Controls | No | No | No | No | No |
| Indicators | No | No | No | No | No |
| Programmable | Yes, with LinkControl | Yes, with LinkControl | Yes, with LinkControl | Yes, with LinkControl | Yes, with LinkControl |
| Operating temperature | -25°C to +70°C | -25°C to +70°C | -25°C to +70°C | -25°C to +70°C | -25°C to +70°C |
| Storage temperature | -40°C to +85°C | -40°C to +85°C | -40°C to +85°C | -40°C to +85°C | -40°C to +85°C |
| Weight | 200 g | 200 g | 260 g | 320 g | 320 g |
| Switching hysteresis¹⁾ | 3 mm | 5 mm | 20 mm | 50 mm | 100 mm |
| switching frequency¹⁾ | 11 Hz | 8 Hz | 6 Hz | 3 Hz | 2 Hz |
| Response time¹⁾ | 50 ms | 70 ms | 110 ms | 180 ms | 240 ms |
| Time delay before availability | < 300 ms | < 300 ms | < 300 ms | < 300 ms | < 300 ms |
| Order No. | mic-25/DD/M | mic-35/DD/M | mic-130/DD/M | mic-340/DD/M | mic-600/DD/M |
| Switched output | 2 x pnp, U _B - 2 V, I _{max} = 2 x 200 mA switchable NOC/NCC, short-circuit-proof | 2 x pnp, U _B - 2 V, I _{max} = 2 x 200 mA switchable NOC/NCC, short-circuit-proof | 2 x pnp, U _B - 2 V, I _{max} = 2 x 200 mA switchable NOC/NCC, short-circuit-proof | 2 x pnp, U _B - 2 V, I _{max} = 2 x 200 mA switchable NOC/NCC, short-circuit-proof | 2 x pnp, U _B - 2 V, I _{max} = 2 x 200 mA switchable NOC/NCC, short-circuit-proof |

1) Can be programmed with LinkControl