microsonic

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 detect 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 M12 connector.

Pin		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 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).
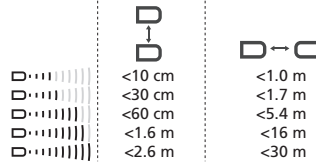
<10 cm	<1.0 m
<30 cm	<1.7 m
<60 cm	<5.4 m
<1.6 m	<16 m
<2.6 m	<30 m

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 opera-
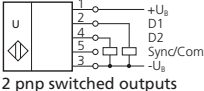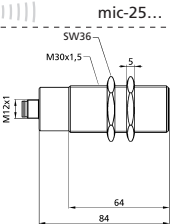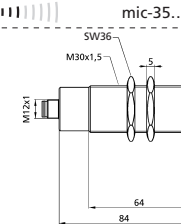
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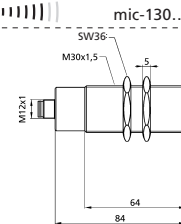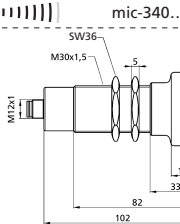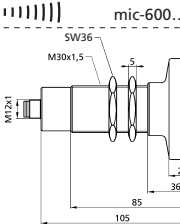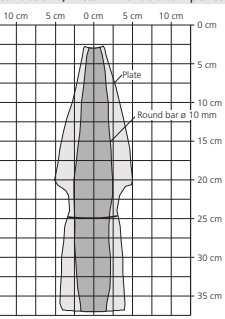
2014/30/EU

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.

Technical data

2 pnp switched outputs

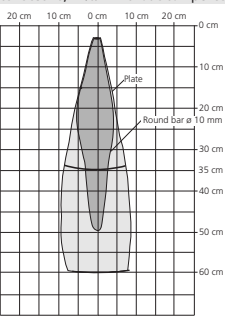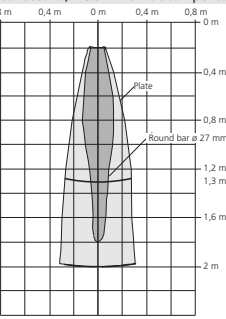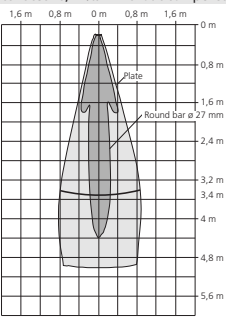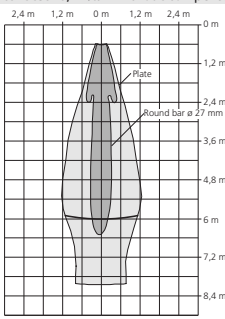|	mic-25...	mic-35...	mic-130...	mic-340...	mic-600...
Blind zone	0 to 30 mm	0 to 65 mm	0 to 200 mm	0 to 350 mm	0 to 600 mm
Operating range	250 mm	350 mm	1.300 mm	3.400 mm	6.000 mm
Maximum range	350 mm	600 mm	2.000 mm	5.000 mm	8.000 mm
Angle of beam spread	Please see detection zone	Please see detection 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					

Detection zones for different objects:
The dark grey areas are determind with a thin round bar (10 or 27 mm dia.) and indicate the typical operating range of a sensor. In order to obtain the light grey areas, a plate (500 x 500 mm) is introduced into the beam spread from the side. In doing so, the optimum angle between plate and sensor is always employed. This therefore indicates the maximum detection zone of the sensor. It is not possible to evaluate ultrasonic reflections outside this area.

	mic-25...	mic-35...	mic-130...	mic-340...	mic-600...
Opperating voltage U$_B$	9 V to 30 V DC, reverse polarity protection (Class 2)	9 V to 30 V DC, reverse polarity protection (Class 2)	9 V to 30 V DC, reverse polarity protection (Class 2)	9 V to 30 V DC, reverse polarity protection (Class 2)	9 V to 30 V DC, reverse polarity protection (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 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	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 availibility	< 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

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