



### Product description

- The mic-sensor with one analogue output measures the distance to an object within the detection zone contactless. A signal proportional to distance is created according to the adjusted window margins of the analogue characteristic curve.
- The sensor automatically detects the load put to the analogue output and switches to current output or voltage output respectively.
- Choosing between rising and falling output characteristic is possible.
- The sensors are adjustable using Teach-in processes via the Com-channel (Pin 5).
- Using the LinkControl adapter (optional accessory) all Teach-in and additional sensor parameter settings may 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.

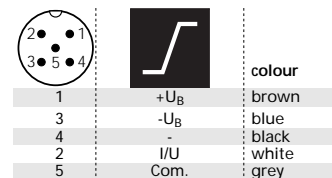


Abb. 1: Pin assignment with view onto sensor plug and colour coding of the microsonic connection cable

### Assembly distances

The table below lists the minimum mounting distances between two sensors. Smaller distances should not be used because otherwise the sensors can influence each other.

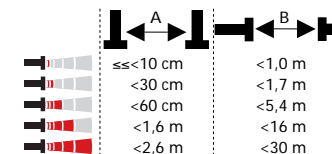


Abb. 2: Minimum assembly distances

### Start-up

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

- Rising analogue characteristic
- Window margins for the analogue output set to blind zone and operating range
- Maximum detection range set to maximum range

Set the parameters of the sensor using the Teach-in procedure to adjust the analogue characteristic curve.

### Operation

mic-sensors work maintenance free. Small amounts of dirt on the surface do not influ-

ence 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.
- The load put to the analogue output is detected automatically when turning supply voltage on.
- If no signal is detected for 20 seconds during teach-in procedure the made changes are stored and the sensor returns to normal mode operation.
- You can reset the factory settings at any time, see »Reset to factory setting«.

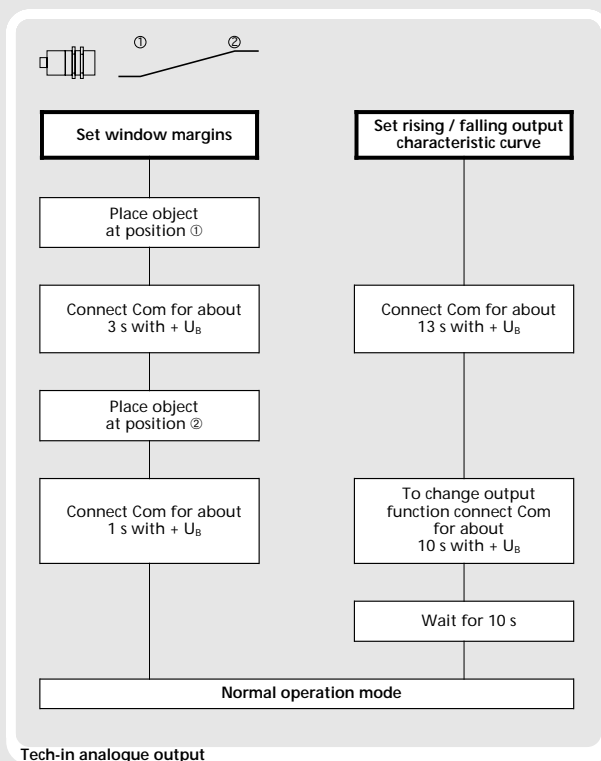


## Instruction manual

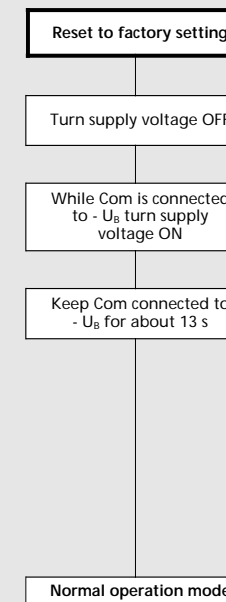
### mic Ultrasonic Sensors with one analogue output

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

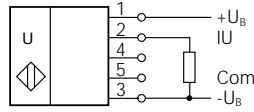
## Set the mic-sensor using the Teach-in procedure



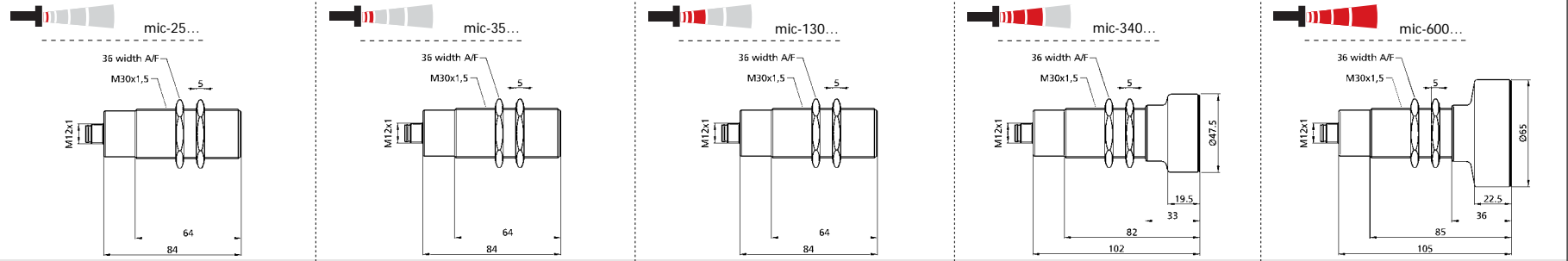
Tech-in analogue output



# Technical data

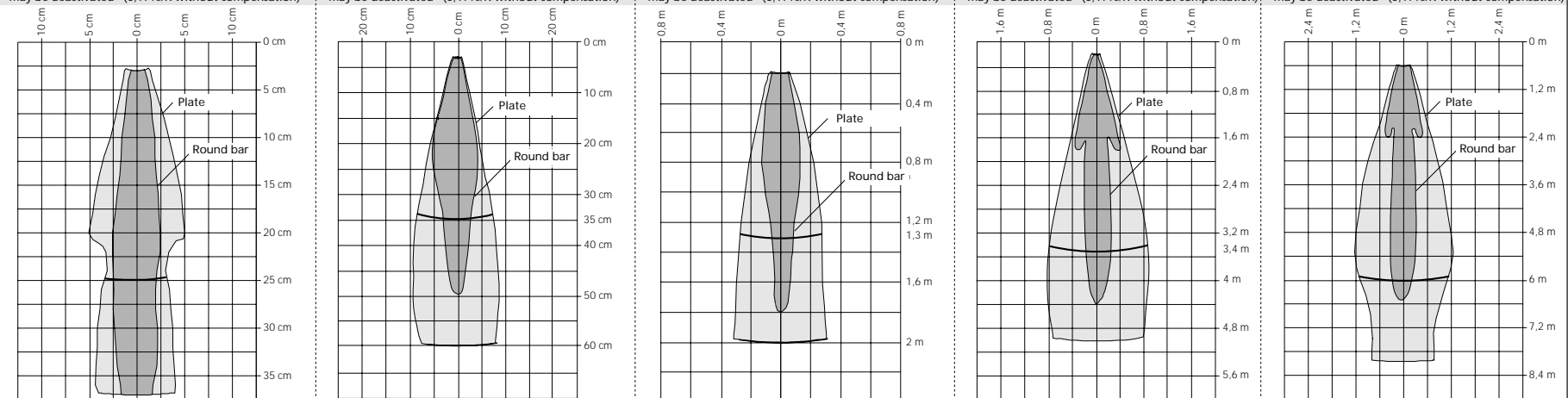


Analogue output



<b>Blind zone</b>	0 to 30 mm	0 to 60 mm	0 to 200 mm	0 to 350 mm	0 to 600 mm
<b>Operating range</b>	250 mm	350 mm	1.300 mm	3.400 mm	6.000 mm
<b>Maximum range</b>	350 mm	600 mm	2.000 mm	5.000 mm	8.000 mm
<b>Angle of beam spread</b>	Please see detection zone				
<b>Transducer frequency</b>	320 kHz	400 kHz	200 kHz	120 kHz	80 kHz
<b>Resolution, sampling rate</b>	0,18 mm				
<b>Reproducibility</b>	± 0,15 %				
<b>Accuracy</b>	Temperature drift internal compensated, ≤ 2 % may be deactivated <sup>1)</sup> (0,17%/K without compensation)				

**Detection zones for different objects:**  
The dark grey areas are determined 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.



<b>Operating voltage U<sub>B</sub></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
<b>Voltage ripple</b>	±10 %				
<b>No-load supply current</b>	≤ 80 mA				
<b>Housing</b>	Brass sleeve, nickel-plated, plastic parts: PBT; Ultrasonic transducer: polyurethane foam, epoxy resin with glass content				
<b>Class of protection to EN 60529</b>	IP 67				
<b>Norm conformity</b>	EN 60947-5-2				
<b>Type of connection</b>	5-pin initiator plug, Brass, nickel-plated				
<b>Controls</b>	Yes, via Com-channel				
<b>Indicators</b>	No				
<b>Programmable</b>	Yes, with Teach-in and LinkControl				
<b>Operating temperature</b>	-25°C bis +70°C				
<b>Storage temperature</b>	-40°C bis +85°C				
<b>Weight</b>	200 g				
<b>Response time<sup>1)</sup></b>	50 ms				
<b>Time delay before availability</b>	< 300 ms				
<b>Order No.</b>	mic-25/IU/M	mic-35/IU/M	mic-130/IU/M	mic-340/IU/M	mic-600/IU/M
<b>Current output 4 – 20 mA</b>	R <sub>i</sub> ≤ 100 Ω at 9V ≤ U <sub>B</sub> ≤ 20V; R <sub>i</sub> ≤ 500 Ω at U <sub>B</sub> ≥ 20V Rising/falling output characteristic				
<b>Voltage output 0 – 10 V</b>	R <sub>i</sub> ≥ 100 kΩ at U <sub>B</sub> ≥ 15 V, short-circuit-proof Rising/falling output characteristic				

1) Can be programmed with LinkControl



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The contents of this document are subject to technical changes. Specifications are presented in a described way only. They do not warrant product features.