



# mic

These completely metal mic sensors are available in two device designs with five different detection ranges.

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## HIGHLIGHTS

- › M30 housing and M12 circular connector in metal design › for harsh usage conditions
- › Automatic synchronisation › for simultaneous operation of up to ten sensors in close quarters

## BASICS

- › 1 switching output in pnp variant
- › Analogue output 4–20 mA and 0–10 V › with automatic switching between current and voltage outputs
- › 5 detection ranges with a measurement range of 30 mm to 8 m
- › microsonic Teach-in on pin 5
- › 0.18 mm to 2.4 mm resolution
- › Temperature compensation
- › 9–30 V operating voltage
- › LinkControl › for configuration of sensors from a PC



M12 metal circular connector





Operation under rough conditions

### This very solid construction

is fully made of metal from the M30 housing to the M12 circular connector. Since the sensors do not contain any operating elements or signal lamps, they are especially suited for application under extreme ambient conditions with high mechanical loads for housing and plug connector. The sensors are available in five detection ranges and cover a measuring range of 30 mm up to 8 m.

### Two output stages

are available for all five detection ranges:

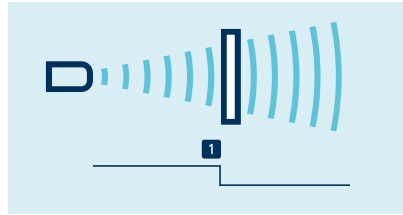
-  1 pnp switching output
-  1 analogue output 4–20 mA and 0–10 V

### Sensors with switching output have three operating modes:

- › Single switching point
- › Two-way reflective barrier
- › Window mode

### Teach-in of a single switching point

- › Place object to be detected at the desired distance **1**.
- › Apply  $+U_B$  to pin 5 for about 3 seconds.
- › Then apply  $+U_B$  to pin 5 again for about 1 second.

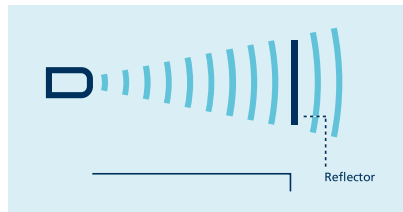


Teach-in of a switching point

### Teach-in of a two-way reflective barrier

with a fixed reflector

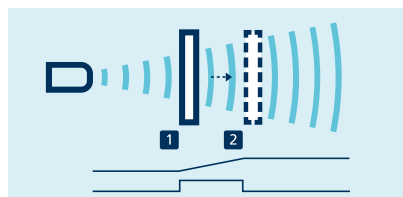
- › Apply  $+U_B$  to pin 5 for about 3 seconds.
- › Then apply  $+U_B$  to pin 5 again for about 10 seconds.



Teach-in of a two-way reflective barrier

### For configuration of a window

- › Place object at the near edge of the window **1**.
- › Apply  $+U_B$  to pin 5 for about 3 seconds.
- › Then move the object to the far edge of the window **2**.
- › Then apply  $+U_B$  to pin 5 again for about 1 second.



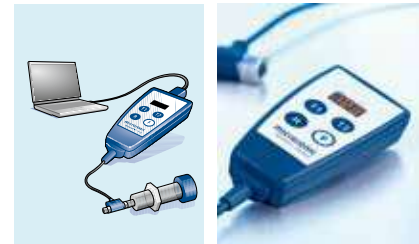
Teach-in of an analogue characteristic or a window with two switching points

### NCC/NOC

and rising/falling analogue characteristic curve can also be set via pin 5.

### LinkControl

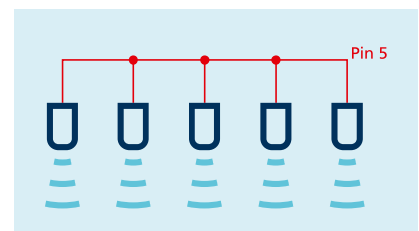
optionally permits the extensive parameterisation of mic sensors. The LCA-2 LinkControl adapter, which is available as an accessory, can be used to connect mic sensors to the PC.



Sensor connected to the PC via LCA-2 for programming

### Synchronisation

permits the simultaneous use of multiple mic sensors in one application. To avoid mutual interference, the sensors can be synchronised with one another. To do this, all the sensors are electrically connected on pin 5.



Synchronisation using pin 5

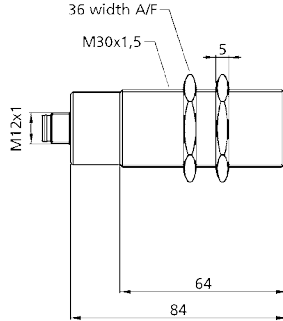
If more than ten sensors need to be synchronised, this can be carried out with the SyncBox1, which is available as an accessory.

# mic-25



measuring range

30–350 mm

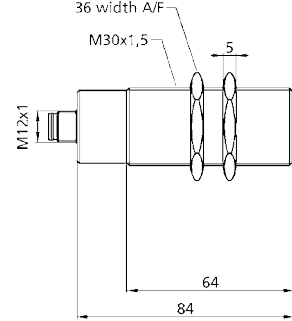


# mic-35

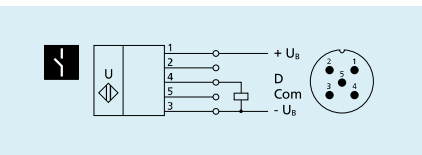


measuring range

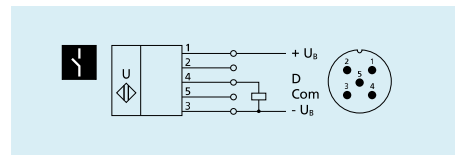
65–600 mm



blind zone	30 mm	65 mm
operating range	250 mm	350 mm
maximum range	350 mm	600 mm
angle of beam spread	please see <a href="#">i</a>	please see <a href="#">i</a>
transducer frequency	320 kHz	400 kHz
resolution/sampling rate	0.18 mm	0.18 mm
reproducibility	± 0.15 %	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)	± 1 % (temperature drift internally compensated)
operating voltage $U_B$	9 V to 30 V DC, reverse polarity protection	9 V to 30 V DC, reverse polarity protection
no-load current consumption	≤ 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
class of protection according to EN 60529	IP 67	IP 67
type of connection	5-pin M12 initiator plug <sup>2)</sup>	5-pin M12 initiator plug <sup>2)</sup>
controls	com input (pin 5)	com input (pin 5)
scope for settings	<ul style="list-style-type: none"> <li>Teach-in via com input on pin 5</li> <li>LCA-2 with LinkControl</li> </ul>	<ul style="list-style-type: none"> <li>Teach-in via com input on pin 5</li> <li>LCA-2 with LinkControl</li> </ul>
operating temperature	-25°C to +70°C	-25°C to +70°C
storage temperature	-40°C to +85°C	-40°C to +85°C
weight	200 g	200 g
switching hysteresis <sup>3)</sup>	3 mm	5 mm
switching frequency <sup>3)</sup>	25 Hz	12 Hz
response time <sup>3)</sup>	32 ms	64 ms
delay prior to availability	< 390 ms	< 420 ms
<b>order number<sup>2)</sup></b>	<b>mic-25/D/M</b>	<b>mic-35/D/M</b>
switching output	pnp, $U_B=2\text{ V}$ , $I_{\text{max}} = 200\text{ mA}$ NOC/NCC adjustable, short-circuit-proof	pnp, $U_B=2\text{ V}$ , $I_{\text{max}} = 200\text{ mA}$ NOC/NCC adjustable, short-circuit-proof



1 pnp switching output

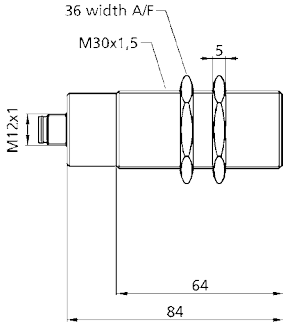


1 pnp switching output

# mic-130



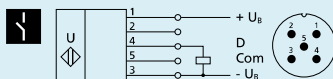
200–2,000 mm



- 200 mm
- 1,300 mm
- 2,000 mm
- please see ⓘ
- 200 kHz
- 0.18 mm
- ± 0.15 %
- ± 1 % (temperature drift internally compensated)
- 9 V to 30 V DC, reverse polarity protection
- ≤ 55 mA
- brass sleeve, nickel-plated
- plastic parts: PBT
- ultrasonic transducer: polyurethane foam, epoxy resin with glass content
- IP 67
- 5-pin M12 initiator plug<sup>2)</sup>
- com input (pin 5)
  - Teach-in via com input on pin 5
  - LCA-2 with LinkControl
- 25°C to +70°C
- 40°C to +85°C
- 200 g
- 20 mm
- 8 Hz
- 92 ms
- < 440 ms

## mic-130/D/M

pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=200\text{ mA}$   
 NOC/NCC adjustable, short-circuit-proof



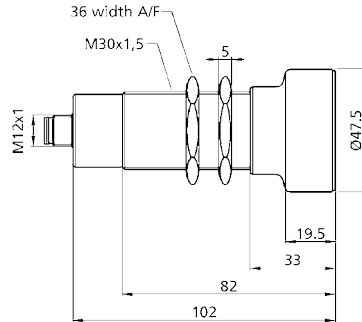
1 pnp switching output

<sup>2)</sup> Model with cable on request.

# mic-340



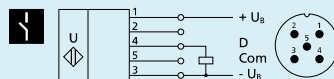
350–5,000 mm



- 350 mm
- 3,400 mm
- 5,000 mm
- please see ⓘ
- 120 kHz
- 0.18 mm
- ± 0.15 %
- ± 1 % (temperature drift internally compensated)
- 9 V to 30 V DC, reverse polarity protection
- ≤ 55 mA
- brass sleeve, nickel-plated
- plastic parts: PBT
- ultrasonic transducer: polyurethane foam, epoxy resin with glass content
- IP 67
- 5-pin M12 initiator plug<sup>2)</sup>
- com input (pin 5)
  - Teach-in via com input on pin 5
  - LCA-2 with LinkControl
- 25°C to +70°C
- 40°C to +85°C
- 260 g
- 50 mm
- 4 Hz
- 172 ms
- < 530 ms

## mic-340/D/M

pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=200\text{ mA}$   
 NOC/NCC adjustable, short-circuit-proof



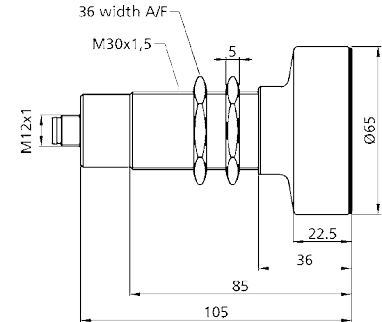
1 pnp switching output

<sup>3)</sup> Can be programmed with LinkControl.

# mic-600



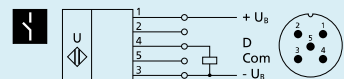
600–8,000 mm



- 600 mm
- 6,000 mm
- 8,000 mm
- please see ⓘ
- 80 kHz
- 0.18 mm
- ± 0.15 %
- ± 1 % (temperature drift internally compensated)
- 9 V to 30 V DC, reverse polarity protection
- ≤ 55 mA
- brass sleeve, nickel-plated
- plastic parts: PBT
- ultrasonic transducer: polyurethane foam, epoxy resin with glass content
- IP 67
- 5-pin M12 initiator plug<sup>2)</sup>
- com input (pin 5)
  - Teach-in via com input on pin 5
  - LCA-2 with LinkControl
- 25°C to +70°C
- 40°C to +85°C
- 320 g
- 100 mm
- 3 Hz
- 240 ms
- < 600 ms

## mic-600/D/M

pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=200\text{ mA}$   
 NOC/NCC adjustable, short-circuit-proof



1 pnp switching output

# mic-25

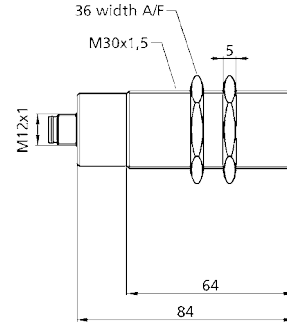
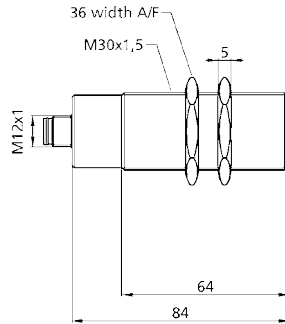
# mic-35



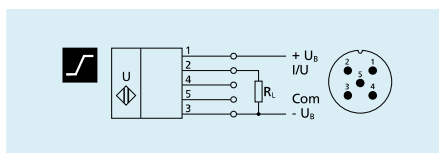
measuring range

30–350 mm

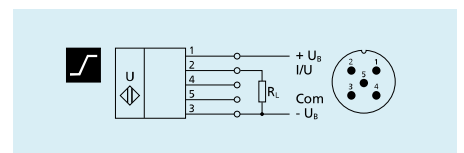
65–600 mm



blind zone	30 mm	65 mm
operating range	250 mm	350 mm
maximum range	350 mm	600 mm
angle of beam spread	please see <a href="#">i</a>	please see <a href="#">i</a>
transducer frequency	320 kHz	400 kHz
resolution/sampling rate	0.18 mm	0.18 mm
reproducibility	± 0.15 %	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)	± 1 % (temperature drift internally compensated)
operating voltage $U_B$	9 V to 30 V DC, reverse polarity protection	9 V to 30 V DC, reverse polarity protection
no-load current consumption	≤ 55 mA	≤ 55 mA
housing	brass sleeve, nickel-plated	brass sleeve, nickel-plated
	plastic parts: PBT	plastic parts: PBT
	ultrasonic transducer: polyurethane foam, epoxy resin with glass content	ultrasonic transducer: polyurethane foam, epoxy resin with glass content
class of protection according to EN 60529	IP 67	IP 67
type of connection	5-pin M12 initiator plug <sup>2)</sup>	5-pin M12 initiator plug <sup>2)</sup>
controls	com input (pin 5)	com input (pin 5)
scope for settings	<ul style="list-style-type: none"> <li>Teach-in via com input on pin 5</li> <li>LCA-2 with LinkControl</li> </ul>	<ul style="list-style-type: none"> <li>Teach-in via com input on pin 5</li> <li>LCA-2 with LinkControl</li> </ul>
operating temperature	-25°C to +70°C	-25°C to +70°C
storage temperature	-40°C to +85°C	-40°C to +85°C
weight	200 g	200 g
response time <sup>3)</sup>	32 ms	64 ms
delay prior to availability	< 390 ms	< 420 ms
<b>order number<sup>2)</sup></b>	<b>mic-25/IU/M</b>	<b>mic-35/IU/M</b>
analogue output	current output 4–20 mA voltage output 0–10 V (at $U_B \geq 15$ V), short-circuit-proof switchable rising/falling	current output 4–20 mA voltage output 0–10 V (at $U_B \geq 15$ V), short-circuit-proof switchable rising/falling



analogue output

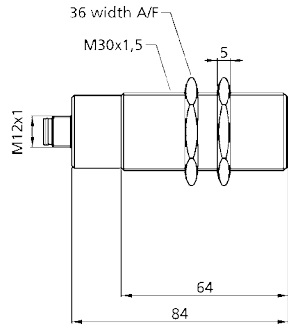


analogue output

# mic-130



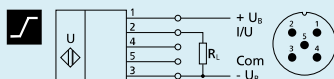
200–2,000 mm



- 200 mm
- 1,300 mm
- 2,000 mm
- please see ⓘ
- 200 kHz
- 0.18 mm to 0.57 mm, depending on the analogue window
- ± 0.15 %
- ± 1 % (temperature drift internally compensated)
- 9 V to 30 V DC, reverse polarity protection
- ≤ 55 mA
- brass sleeve, nickel-plated
- plastic parts: PBT
- ultrasonic transducer: polyurethane foam, epoxy resin with glass content
- IP 67
- 5-pin M12 initiator plug<sup>2)</sup>
- com input (pin 5)
  - Teach-in via com input on pin 5
  - LCA-2 with LinkControl
- 25°C to +70°C
- 40°C to +85°C
- 200 g
- 92 ms
- < 440 ms

## mic-130/IU/M

- current output 4–20 mA
- voltage output 0–10 V (at  $U_B \geq 15$  V), short-circuit-proof
- switchable rising/falling



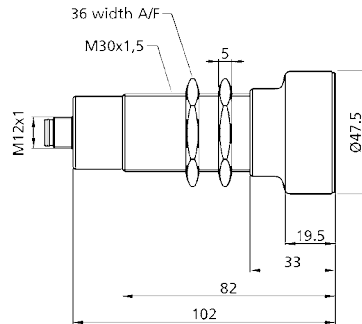
analogue output

<sup>2)</sup> Model with cable on request.

# mic-340



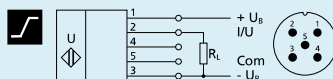
350–5,000 mm



- 350 mm
- 3,400 mm
- 5,000 mm
- please see ⓘ
- 120 kHz
- 0.18 mm to 1.5 mm, depending on the analogue window
- ± 0.15 %
- ± 1 % (temperature drift internally compensated)
- 9 V to 30 V DC, reverse polarity protection
- ≤ 55 mA
- brass sleeve, nickel-plated
- plastic parts: PBT
- ultrasonic transducer: polyurethane foam, epoxy resin with glass content
- IP 67
- 5-pin M12 initiator plug<sup>2)</sup>
- com input (pin 5)
  - Teach-in via com input on pin 5
  - LCA-2 with LinkControl
- 25°C to +70°C
- 40°C to +85°C
- 260 g
- 172 ms
- < 530 ms

## mic-340/IU/M

- current output 4–20 mA
- voltage output 0–10 V (at  $U_B \geq 15$  V), short-circuit-proof
- switchable rising/falling



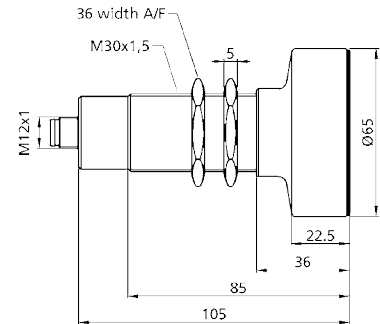
analogue output

<sup>3)</sup> Can be programmed with LinkControl.

# mic-600



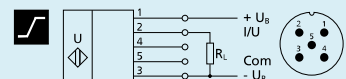
600–8,000 mm



- 600 mm
- 6,000 mm
- 8,000 mm
- please see ⓘ
- 80 kHz
- 0.18 mm to 2.4 mm, depending on the analogue window
- ± 0.15 %
- ± 1 % (temperature drift internally compensated)
- 9 V to 30 V DC, reverse polarity protection
- ≤ 55 mA
- brass sleeve, nickel-plated
- plastic parts: PBT
- ultrasonic transducer: polyurethane foam, epoxy resin with glass content
- IP 67
- 5-pin M12 initiator plug<sup>2)</sup>
- com input (pin 5)
  - Teach-in via com input on pin 5
  - LCA-2 with LinkControl
- 25°C to +70°C
- 40°C to +85°C
- 320 g
- 240 ms
- < 600 ms

## mic-600/IU/M

- current output 4–20 mA
- voltage output 0–10 V (at  $U_B \geq 15$  V), short-circuit-proof
- switchable rising/falling



analogue output