



# lcs

Ultrasonic sensors in the lcs series in cuboidal housing with lateral sound exit are available in three device variants with three different detection ranges.

## HIGHLIGHTS

- › Up to 3 pnp switching outputs
- › Automatic synchronisation › for simultaneous operation of up to ten sensors in close quarters

## BASICS

- › 2 or 3 switching outputs in pnp variant
- › Analogue output 4–20 mA and 0–10 V › with automatic switching between current and voltage outputs
- › 3 detection ranges with a measurement range of 30 mm to 2 m
- › microsonic Teach-in on pin 5
- › 0.18 mm resolution
- › Temperature compensation
- › 9–30 V operating voltage
- › LinkControl › for configuration of sensors from a PC



### The Ics sensors

are embedded in block-like plastic housing with four fixation bores, two of which are already equipped with M4 threaded bushings for eased mounting.

### Two or three LEDs

indicate all operating states.

### Three detection ranges and two output stages are available for selection:



2 pnp switching outputs



3 pnp switching outputs



1 analogue output 4–20 mA and 0–10 V

### Via pin 5 at the M12 circular connector,

(Com input), the Ics sensors are set (Teach-in).

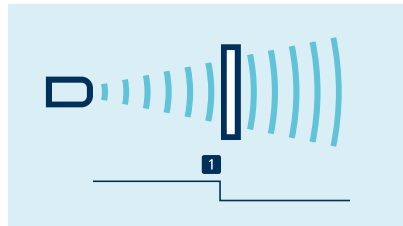
Switched output D1 is set by connecting pin 5 to  $+U_B$  while switched output D2 is set by connecting pin 5 to  $-U_B$ . Also the sensors with analogue output are set via pin 5.

### The Ics sensors with switched output offer 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.

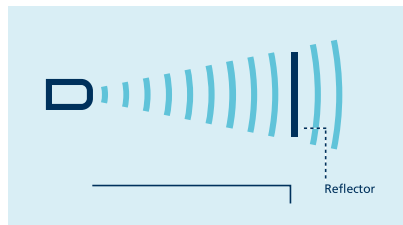


Teach-in of a switching point

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

with a fixed reflector

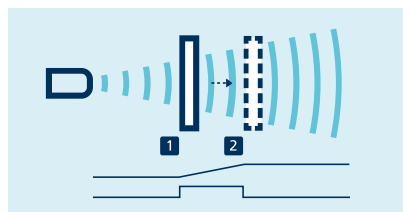
- › Apply  $+U_B$  to pin 5 for about 3 seconds.
- › Then apply  $+U_B$  to pin 5 again for about 10 seconds.



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/NOG

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

### The analogue sensor

checks the load connected to the output and then automatically switch to 4–20 mA output or 0–10 V output to ensure maximum ease of handling.

### The Ics-25/DDD is equipped with three pnp switched outputs

which are set with the help of the LinkControl adapter LCA-2 (see the chapter “Accessories”).

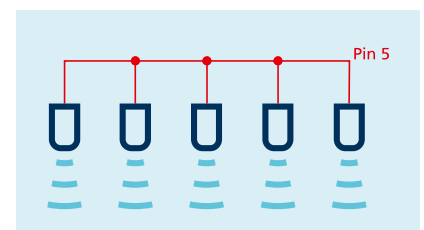
In addition to this “offline” programming, all Ics sensors can also be parameterised on the PC with the LCA-2 and the LinkControl software.



Sensor connected to the PC via LCA-2 for programming

### Synchronisation

permits the simultaneous use of multiple Ics 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 via pin 5

# lcs-25

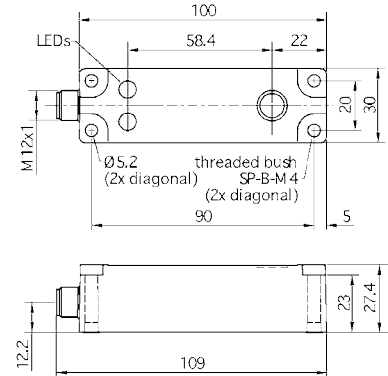
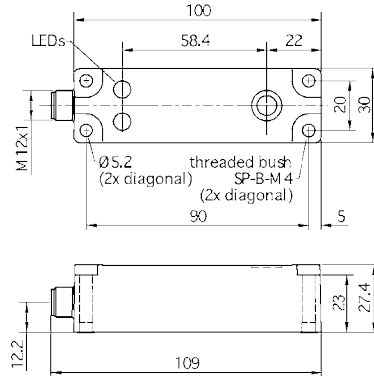
# lcs-35



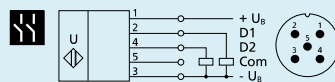
measuring range

30–350 mm

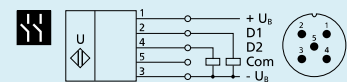
65–600 mm



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	≤ 70 mA	≤ 70 mA
housing	PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content	PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content
class of protection according to EN 60529	IP 65	IP 65
type of connection	5-pin M12 initiator plug	5-pin M12 initiator plug
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>
indicators	2 three-colour LEDs	2 three-colour LEDs
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	120 g	120 g
switching hysteresis <sup>1)</sup>	3 mm	5 mm
switching frequency <sup>1)</sup>	25 Hz	12 Hz
response time <sup>1)</sup>	32 ms	64 ms
delay prior to availability	< 300 ms	< 300 ms
<b>order number</b>	<b>lcs-25/DD/QP</b>	<b>lcs-35/DD/QP</b>
switching outputs	2 x pnp, $U_B=2\text{ V}$ , $I_{\max} = 2 \times 200\text{ mA}$ NOC/NCC adjustable, short-circuit-proof	2 x pnp, $U_B=2\text{ V}$ , $I_{\max} = 2 \times 200\text{ mA}$ NOC/NCC adjustable, short-circuit-proof



2 pnp switching outputs



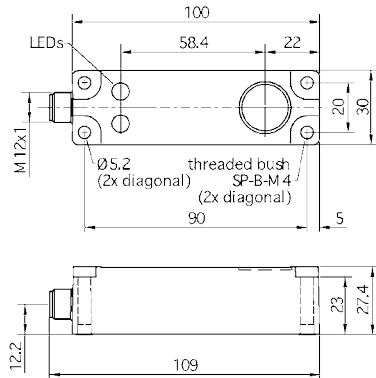
2 pnp switching outputs

<sup>1)</sup> Can be programmed with LinkControl.

# Ics-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

≤ 70 mA

PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content

IP 65

5-pin M12 initiator plug

com input (pin 5)

- Teach-in via com input on pin 5

- LCA-2 with LinkControl

2 three-colour LEDs

-25°C to +70°C

-40°C to +85°C

120 g

20 mm

8 Hz

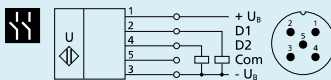
92 ms

< 300 ms

## Ics-130/DD/QP

2 x pnp,  $U_B=2\text{ V}$ ,  $I_{max}=2 \times 200\text{ mA}$

NOC/NCC adjustable, short-circuit-proof



2 pnp switching outputs

# lcs-25

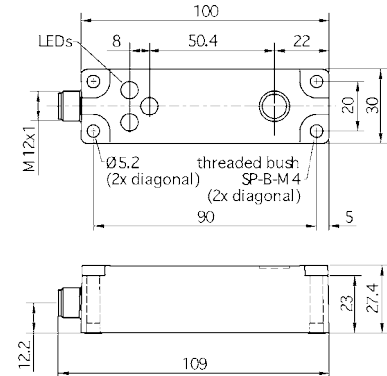
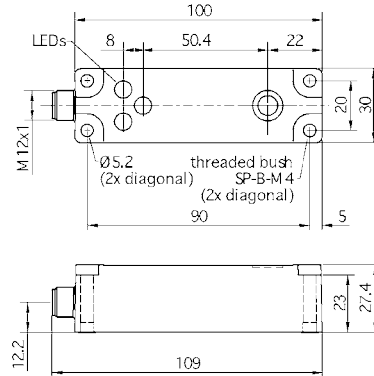
# lcs-35



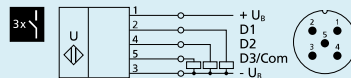
measuring range

30–350 mm

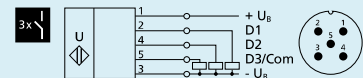
65–600 mm



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	≤ 70 mA	≤ 70 mA
housing	PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content	PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content
class of protection according to EN 60529	IP 65	IP 65
type of connection	5-pin M12 initiator plug	5-pin M12 initiator plug
scope for settings	LCA-2 with LinkControl	LCA-2 with LinkControl
indicators	3 three-colour LEDs	3 three-colour LEDs
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	120 g	120 g
switching hysteresis <sup>1)</sup>	3 mm	5 mm
switching frequency <sup>1)</sup>	25 Hz	12 Hz
response time <sup>1)</sup>	32 ms	64 ms
delay prior to availability	< 300 ms	< 300 ms
<b>order number</b>	<b>lcs-25/DDD/QP</b>	<b>lcs-35/DDD/QP</b>
switching outputs	3 x pnp, $U_B=2\text{ V}$ , $I_{\max} = 3 \times 200\text{ mA}$ NOC/NCC adjustable, short-circuit-proof	3 x pnp, $U_B=2\text{ V}$ , $I_{\max} = 3 \times 200\text{ mA}$ NOC/NCC adjustable, short-circuit-proof



3 pnp switching outputs



3 pnp switching outputs

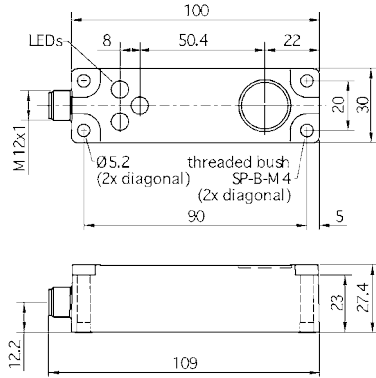
<sup>1)</sup> Can be programmed with LinkControl.

# lcs-130



1.3 m


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

≤ 70 mA

PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content

IP 65

5-pin M12 initiator plug

LCA-2 with LinkControl

3 three-colour LEDs

-25°C to +70°C

-40°C to +85°C

120 g

20 mm

8 Hz

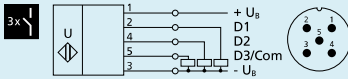
92 ms

< 300 ms

## lcs-130/DDD/QP

3 x pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=3 \times 200\text{ mA}$

NOC/NCC adjustable, short-circuit-proof



3 pnp switching outputs

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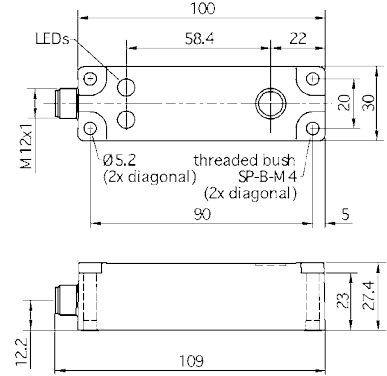
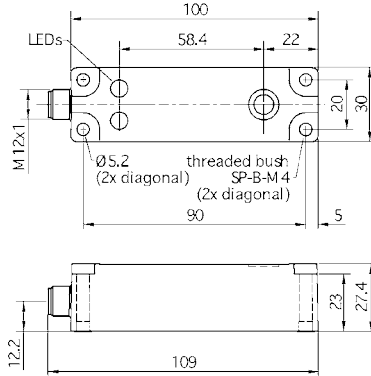
# lcs-35



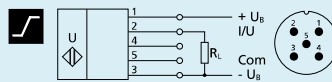
measuring range

30–350 mm

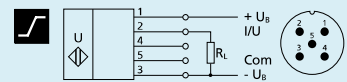
65–600 mm



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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	120 g	120 g
response time <sup>1)</sup>	32 ms	64 ms
delay prior to availability	< 300 ms	< 300 ms
<b>order number</b>	<b>lcs-25/IU/QP</b>	<b>lcs-35/IU/QP</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



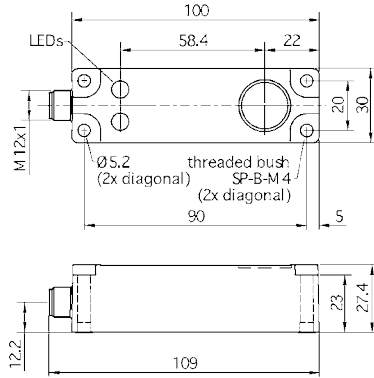
analogue output

<sup>1)</sup> Can be programmed with LinkControl.

# Ics-130



200–2,000 mm



200 mm

1,300 mm

2,000 mm

please see [i](#)

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

≤ 70 mA

PBT; ultrasonic transducer: polyurethane foam,

epoxy resin with glass content

IP 65

5-pin M12 initiator plug

com input (pin 5)

- Teach-in via com input on pin 5

- LCA-2 with LinkControl

2 three-colour LEDs

-25°C to +70°C

-40°C to +85°C

120 g

92 ms

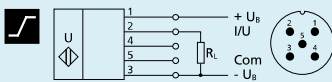
< 300 ms

## Ics-130/IU/QP

current output 4–20 mA

voltage output 0–10 V (at  $U_B \geq 15$  V),

short-circuit-proof, switchable rising/falling



analogue output