



Extract from our online catalogue:

cube-340/FFIU

Current to: 2023-11-13



cube ultrasonic sensors – easy installation: no tools required thanks to QuickLock mounting bracket.

HIGHLIGHTS

- › Cubic miniature housing › only 40 mm x 40 mm x 40 mm
- › Sensor head › mountable in 5 positions
- › Easily visible LED display › in any mounting position
- › Convenient QuickLock mounting bracket
- › UL gelisted › to Canadian and US safety standards
- › IO-Link interface › for support of the new industry standard
- › Smart Sensor Profiles › more transparency between IO-Link Devices

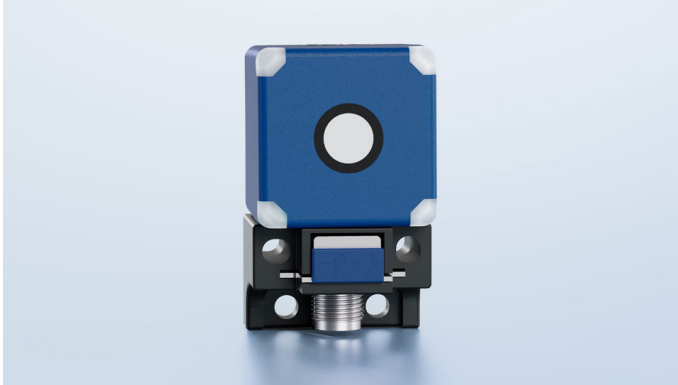
BASICS

- › 1 Push-Pull switching output › pnp or npn basis
- › 1 Push-Pull switching output and 1 analogue output › or switchable to second switching output
- › 3 detection ranges with a measurement range of 65 mm to 5 m
- › microsonic Teach-in by using button T1 and T2
- › Temperature compensation
- › 9–30 V operating voltage
- › LinkControl › for configuration of sensors from a PC

Description

The cube ultrasonic sensors

are designed in a cubic housing for demanding applications. The cube is available with the QuickLock mounting bracket. This allows the sensor to be mounted quickly and easily.



cube sensor with QuickLock mounting bracket

The cube can be easily turned in 5 positions thanks to the rotating sensor head. The convenient mounting allows flexible use in numerous applications.

Four LEDs

show all operating states in any mounting position. The sensor status is clearly visible.

There are two output stages available:



1 Push-Pull switching output in pnp- or npn-circuitry

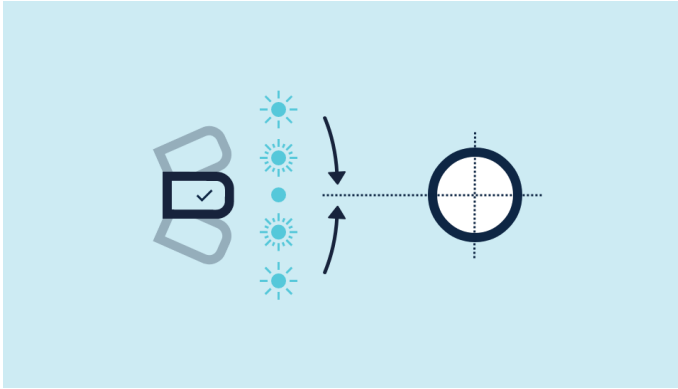


1 Push-Pull switching output and 1 analogue output or switchable to 2. switching output

With LinkControl or IO-Link, the analogue output can be deactivated and a second Push-Pull switching output activated instead. The second switching output could be used in level monitoring, for example, to control the overflow.

New! With the internal alignment assistance

the sensor can be optimally aligned to the object during installation.



cube sensor using alignment assistance

Using the two Teach-in buttons T1 and T2

the cube sensors can be easily set (microsonic Teach-in).

IO-Link

cube ultrasonic sensors support IO-Link in version 1.1 as well as Smart Sensor Profile.

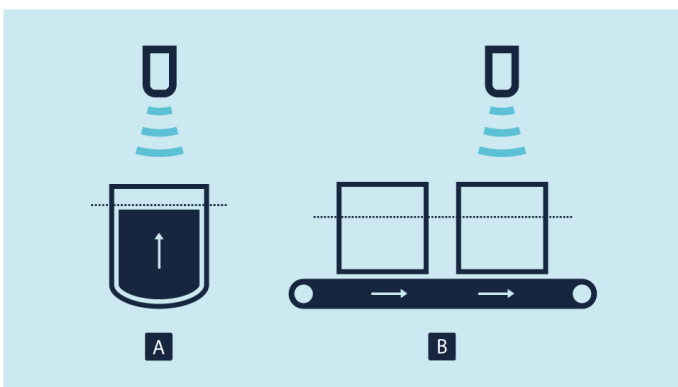
Set cube sensor via Teach-in procedure

The cube sensors with switching output have three operating modes:

- › Single switching point (Method A and B)
- › Two-way reflective barrier
- › Window mode

The operating mode single switching point (Method A)

is suitable for applications, in which the actual distance to the object is also the switching point. A typical application is level control, where the ultrasonic sensor detects the filling level vertically from above during the filling process. The taught switching point corresponds to the maximum filling level.

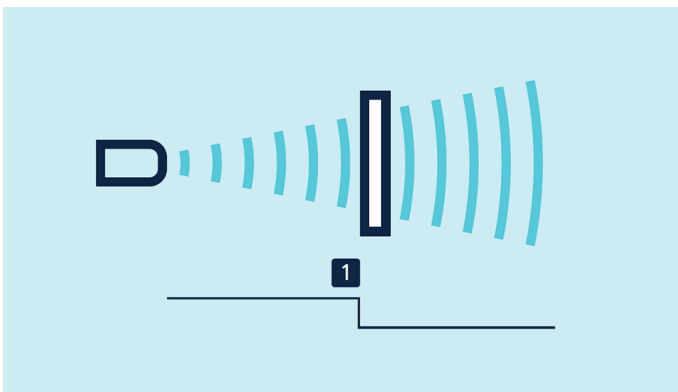


The operating mode single switching point +8 % (Method B)

is recommended by objects, which move into the detection area from the side. In this case the switching distance is set 8 % further than the actual measured distance to the object. This ensures a reliable switching distance even if the height of the objects varies slightly.

Teach-in of a single switching point (Method A)

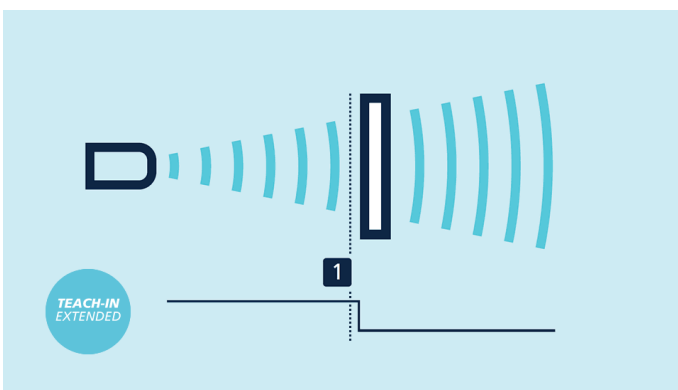
- › Place object to be detected (1) at the desired distance
- › Push button T2 for about 3 seconds
- › Then push button T2 again for about 1 second



Teach-in of a switching point (Method A)

Teach-in of a single switching point +8% (Method B)

- › Place object to be detected (1) at the desired distance.
- › Push button T2 for about 3 seconds.
- › Then push button T2 again for about 3 seconds.

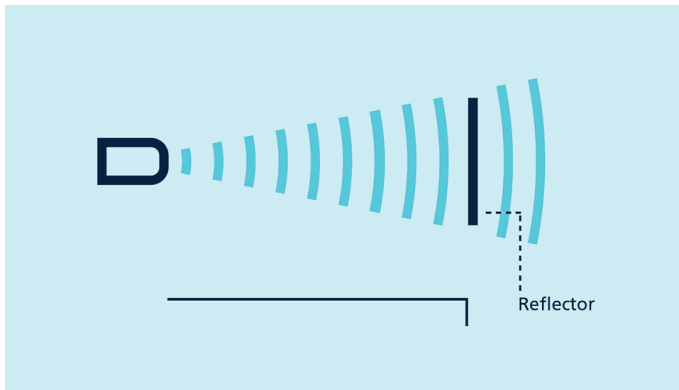


Teach-in of a switching point +8% (Method B)

Teach-in of a two-way reflective barrier

with a fixed mounted reflector

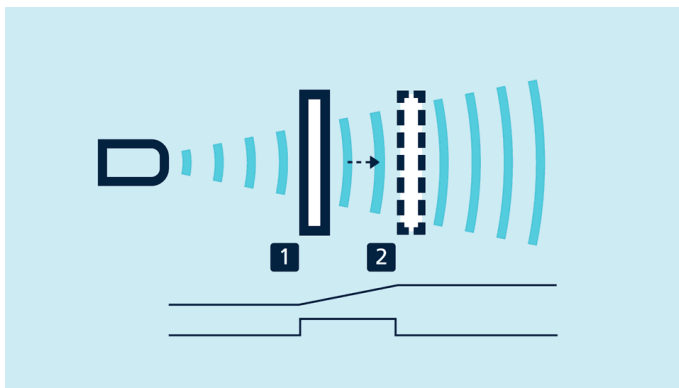
- › Push button T2 for about 3 seconds
- › Then push button T2 again for about 10 seconds



Teach-in of a two-way reflective barrier

For setting the analogue output

- › Initially position the object to be detected to the sensor-close window limit (1)
- › Push button T1 for about 3 seconds
- › Then move the object to the sensor-distant window limit (2)
- › Then push button T1 again for about 1 second



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

For configuration of a window

with two switching points on a single switching output, the procedure is the same as setting the analogue characteristic.

Analogue sensors

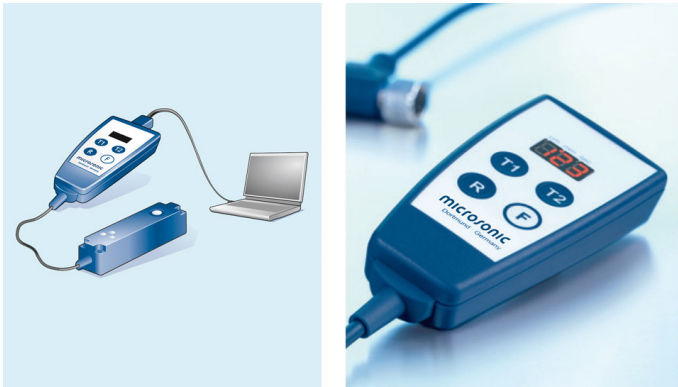
check the connected working resistance at the output and automatically switch to 4–20 mA current output or 0–10 V voltage output.

NCC/NOC

and rising/falling analogue characteristics can also be set via the buttons.

LinkControl

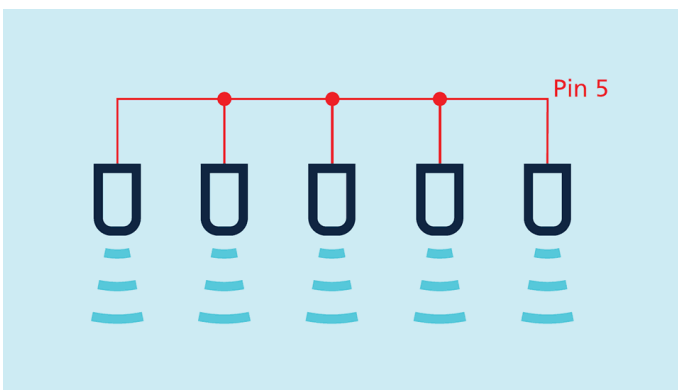
permits comprehensive parameterisation of cube ultrasonic sensors via the **LinkControl-Adapter LCA-2** which connects the sensors to the PC.



Sensor connected to the PC via LCA-2 for programming

Easy to synchronise

If several cube ultrasonic sensors are operated in one application, they can be synchronised via pin 5 to prevent.



Synchronisation über Pin 5

If more than 10 sensors must be synchronised, this can be carried out with the **SyncBox1**, which is available as an accessory. Synchronisation via pin 5 is also possible in IO-Link mode.

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Imprint

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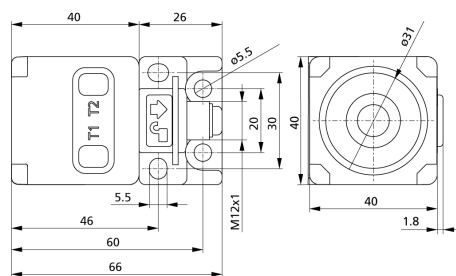
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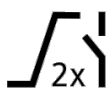
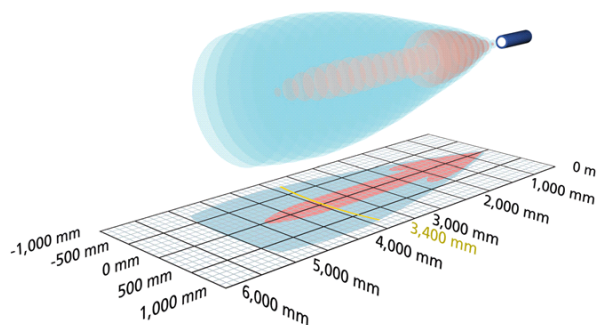
[Contact form](#)

cube-340/FFIU

scale drawing



detection zone



2 x Push-Pull + 1 x analog 4-20 mA / 0-10 V



5,000 mm

| | |
|-----------------|--|
| measuring range | 350 - 5.000 mm |
| design | cuboidal |
| operating mode | IO-Link proximity switch/reflective mode reflective barrier window mode analogue distance measurement |
| particularities | kleine quaderförmige Bauform IO-Link Version 1.1 Smart Sensor Profile UL Listed QuickLock-Montagehalterung 2. Ausgang umschaltbar |

ultrasonic-specific

| | |
|----------------------|--|
| means of measurement | echo propagation time measurement |
| transducer frequency | 120 kHz |
| blind zone | 350 mm |
| operating range | 3,400 mm |
| maximum range | 5,000 mm |
| reproducibility | ± 0.15 % |
| accuracy | ± 1 % (temperature drift internally compensated) |

electrical data

| | |
|-----------------------------|--|
| operating voltage U_b | 9 - 30 V d.c., reverse polarity protection |
| voltage ripple | ± 10 % |
| no-load current consumption | ≤ 50 mA |
| type of connection | 5-pin M12 initiator plug |

cube-340/FFIU

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outputs

| | |
|-----------------------------|---|
| output 1 | switching output Push-Pull, $U_B-3\text{ V}$, $-U_B+3\text{ V}$, $I_{\max} = 100\text{ mA}$ NOC/NCC adjustable, short-circuit-proof |
| output 2 | analogue output current: 4-20 mA / voltage: 0-10 V (at $U_B \geq 15\text{ V}$), short-circuit-proof switchable rising/falling switching output Push-Pull, $U_B-3\text{ V}$, $-U_B+3\text{ V}$, $I_{\max} = 100\text{ mA}$ NOC/NCC adjustable, short-circuit-proof |
| switching hysteresis | 50 mV |
| switching frequency | 4 Hz |
| response time | 166 ms |
| delay prior to availability | < 300 ms |

inputs

| | |
|---------|--|
| input 1 | com input synchronisation input teach-in input |
|---------|--|

IO-Link

| | |
|-------------------------|---|
| product name | cube-340/FFIU |
| product ID | 43440 |
| SIO mode support | yes |
| COM mode | COM2 (38,4 kBaud) |
| min. cycle time | 41,6 ms |
| format of process data | 16 Bit, R, UNI16 |
| content of process data | Bit 0: state SSC1; Bit 1: state SSC2 or ASC1; Bit 2-4: signal stability; Bit 5-7: signal level; Bit 8-15: scale (Int. 8); Bit 16-31: measured value (Int. 16) |
| ISDU paramter | Identification, measuring configuration, switched output, filter, temperature compensation, operation |
| system commands | SP1 Teach-in, SP2 Teach-in, factory settings |
| Smart Sensor Profile | yes |
| IODD version | IODD version 1.1 |

cube-340/FFIU

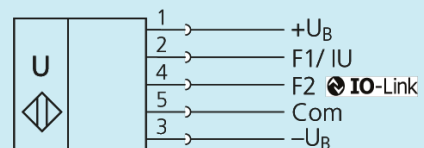
housing

| | |
|---------------------------------|--|
| material | PA |
| ultrasonic transducer | polyurethane foam, epoxy resin with glass contents |
| class of protection to EN 60529 | IP 67 |
| operating temperature | -25°C to +70°C |
| storage temperature | -40°C to +85°C |
| weight | 130 g |

technical features/characteristics

| | |
|--------------------------|--|
| temperature compensation | yes |
| controls | 2 push-buttons |
| scope for settings | Teach-in via push-button Teach-in via com input on pin 5 LCA-2 with LinkControl IO-Link |
| Synchronisation | yes |
| multiplex | yes |
| indicators | 2 x LED green, 2 x LED yellow |
| particularities | kleine quaderförmige Bauform IO-Link Version 1.1 Smart Sensor Profile UL Listed QuickLock-Montagehalterung 2. Ausgang umschaltbar |

pin assignment



order no.

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The content of this document is subject to technical changes.
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