

# Technical data sheet

## Ultrasonic sensor

Part no.: 50150568

HTU420B-250.3/GT-M8



For illustration purposes only

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## Technical data

### Basic data

|                     |                                                          |
|---------------------|----------------------------------------------------------|
| Series              | 420B                                                     |
| Operating principle | Diffuse reflection principle with background suppression |

### Special version

|                 |             |
|-----------------|-------------|
| Special version | Teach input |
|-----------------|-------------|

### Characteristic parameters

|      |           |
|------|-----------|
| MTTF | 430 years |
|------|-----------|

### Ultrasonic specifications

|                      |                            |
|----------------------|----------------------------|
| Operating range      | 0.01 ... 0.25 m            |
| Operating range      | Guaranteed operating range |
| Ultrasonic frequency | 370 kHz                    |
| Shape of sound lobe  | standard                   |
| Direction of beam    | Front                      |
| Opening angle        | 3 °                        |
| Adjustment range     | 10 ... 250 mm              |

### Measurement data

|                                    |           |
|------------------------------------|-----------|
| Resolution                         | 1.0 mm    |
| Repeatability                      | 0.5 mm    |
| Temperature drift                  | 2 %       |
| Reference value, temperature drift | End value |

### Electrical data

|                    |                                                                                 |
|--------------------|---------------------------------------------------------------------------------|
| Protective circuit | Inductive protection<br>Polarity reversal protection<br>Short circuit protected |
|--------------------|---------------------------------------------------------------------------------|

### Performance data

|                      |                        |
|----------------------|------------------------|
| Supply voltage $U_B$ | 12 ... 30 V, DC        |
| Residual ripple      | 0 ... 10 %, From $U_B$ |
| Open-circuit current | 0 ... 35 mA            |
| Switching hysteresis | 4 %                    |

### Inputs

|                        |            |
|------------------------|------------|
| Number of teach inputs | 1 Piece(s) |
|------------------------|------------|

### Teach inputs

|                   |                                     |
|-------------------|-------------------------------------|
| Voltage type      | DC                                  |
| Switching voltage | high: $\geq 12V$<br>low: $\leq 2 V$ |

### Teach input 1

|                        |      |
|------------------------|------|
| Active switching state | High |
|------------------------|------|

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 1 Piece(s) |
|-------------------------------------|------------|

### Switching outputs

|                         |                 |
|-------------------------|-----------------|
| Voltage type            | DC              |
| Switching current, max. | 100 mA          |
| Switching voltage       | low: $\leq 2 V$ |

### Switching output 1

|                     |                                            |
|---------------------|--------------------------------------------|
| Switching element   | Transistor, Push-pull                      |
| Switching principle | Dark switching (PNP)/light switching (NPN) |

### Time behavior

|                     |        |
|---------------------|--------|
| Switching frequency | 20 Hz  |
| Response time       | 25 ms  |
| Readiness delay     | 300 ms |

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

### Connection 1

|                    |                                             |
|--------------------|---------------------------------------------|
| Function           | Signal OUT<br>Teach input<br>Voltage supply |
| Type of connection | Connector                                   |
| Thread size        | M8                                          |
| Type               | Male                                        |
| Material           | Metal                                       |
| No. of pins        | 4 -pin                                      |

### Mechanical data

|                                |                                                        |
|--------------------------------|--------------------------------------------------------|
| Design                         | Cubic                                                  |
| Dimension (W x H x L)          | 20.5 mm x 41 mm x 15 mm                                |
| Housing material               | Plastic                                                |
| Plastic housing                | ASA, PMMA                                              |
| Ultrasonic transducer material | Piezoceramics (contains lead zirconium titanate (PZT)) |
| Net weight                     | 22 g                                                   |
| Housing color                  | Black                                                  |
| Type of fastening              | Through-hole mounting                                  |

### Operation and display

|                                     |                  |
|-------------------------------------|------------------|
| Type of display                     | LED              |
| Number of LEDs                      | 3 Piece(s)       |
| Operational controls                | Teach button     |
| Function of the operational control | Range adjustment |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -25 ... 65 °C |
| Ambient temperature, storage   | -25 ... 75 °C |

### Certifications

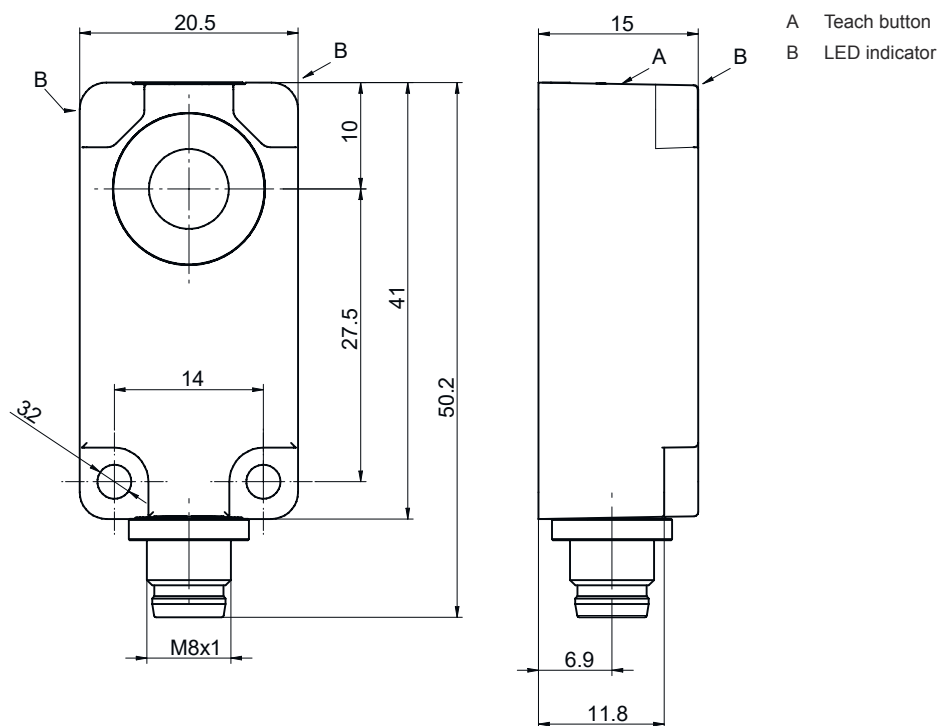
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Approvals            | c UL US       |
| Standards applied    | IEC 60947-5-2 |

## Technical data

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27272803 |
| ECLASS 8.0            | 27272803 |
| ECLASS 9.0            | 27272803 |
| ECLASS 10.0           | 27272803 |
| ECLASS 11.0           | 27272803 |
| ECLASS 12.0           | 27272803 |
| ECLASS 13.0           | 27272803 |
| ECLASS 14.0           | 27272803 |
| ECLASS 15.0           | 27272803 |
| ETIM 5.0              | EC001849 |
| ETIM 6.0              | EC001849 |
| ETIM 7.0              | EC001849 |
| ETIM 8.0              | EC001849 |
| ETIM 9.0              | EC001849 |
| ETIM 10.0             | EC001849 |

## Dimensioned drawings

All dimensions in millimeters

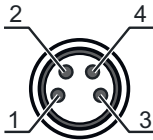


Electrical connection

Connection 1

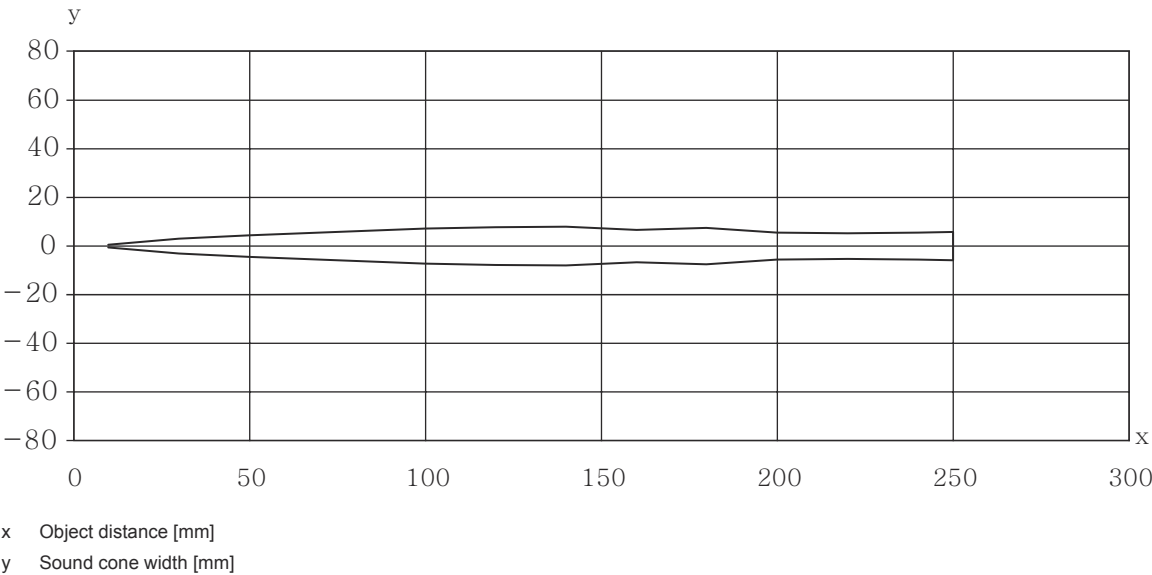
|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Teach input    |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M8             |
| Type               | Male           |
| Material           | Metal          |
| No. of pins        | 4 -pin         |

| Pin | Pin assignment |
|-----|----------------|
| 1   | V+             |
| 2   | Teach-in       |
| 3   | GND            |
| 4   | OUT 1          |



Diagrams

Typ. response behavior  
Standard object, size 15 x 15 mm, aligned perpendicular to the sensor reference axis



Operation and display

| LED | Display                  | Meaning                |
|-----|--------------------------|------------------------|
| 1   | Blue, continuous light   | Teach active           |
| 2   | Green, continuous light  | Operational readiness  |
| 3   | Yellow, continuous light | Measurement field free |

Part number code

Part designation: AAA4BB-xxxx.C/DEF-GG

|      |                                                                                                                                                                                                                                                                   |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AAA  | <b>Operating principle</b><br>HTU: Ultrasonic sensor, scanning principle, with background suppression<br>DMU: Ultrasonic sensor, distance measurement                                                                                                             |
| 4BB  | <b>Design</b><br>420B: Cubic<br>412B: Cylindrical with M12 thread                                                                                                                                                                                                 |
| xxxx | <b>Operating range</b><br>Operating range in millimeters                                                                                                                                                                                                          |
| C    | <b>Operating range adjustment</b><br>3: teach-in via button                                                                                                                                                                                                       |
| D    | <b>Switching output / function OUT 1/IN: Pin 4</b><br>6: push-pull switching output, PNP light switching, NPN dark switching<br>G: Push-pull switching output, PNP dark switching, NPN light switching<br>L: IO-Link / light switching (PNP)/dark switching (NPN) |
| E    | <b>Switching output / function OUT 2/IN: pin 2</b><br>T: teach-in via cable<br>C: Analog current output<br>V: Analog voltage output<br>X: pin not used<br>6: push-pull switching output, PNP light switching, NPN dark switching                                  |
| F    | <b>Switching output / function OUT 3/IN: Pin 5</b><br>T: teach-in via cable                                                                                                                                                                                       |
| GG   | <b>Electrical connection</b><br>M12: M12 connector<br>M8: M8 connector                                                                                                                                                                                            |

| Note                                                                              |                                                                                                                                      |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>A list with all available device types can be found on the Leuze website at <a href="http://www.leuze.com">www.leuze.com</a>.</p> |

Notes

|  Observe intended use! |                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <p>This product is not a safety sensor and is not intended as personnel protection.</p> <p>The product may only be put into operation by competent persons.</p> <p>Only use the product in accordance with its intended use.</p> |

|  For UL applications: |                                                                                                                            |
|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
|                        | <p>For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).</p> |

Accessories

Connection technology - Connection cables

|                                                                                                                                                                        | Part no. | Designation       | Article          | Description                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br> | 50130850 | KD U-M8-4A-V1-050 | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC  |
| <br> | 50130871 | KD U-M8-4W-V1-050 | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC |

Note



A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.