

## Technical data sheet

### Energetic diffuse sensor set

Part no.: 50125987

SET FT5 + BT205M




Figure can vary

#### Contents

- Set consists of
- Technical data
- Dimensioned drawings
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## Set consists of

|  | Quantity | Part no. | Designation | Article                  | Description   |
|--|----------|----------|-------------|--------------------------|---|
|  | 1        | 50122573 | FT5.3/4P    | Energetic diffuse sensor | Operating range limit, white 90%: 0 ... 0.28 m<br>Light source: LED, Red<br>Supply voltage: DC<br>Digital switching outputs: 2 Piece(s)<br>Switching output 1: Transistor, PNP, Light switching<br>Switching output 2: Transistor, PNP, Dark switching<br>Switching frequency: 500 Hz<br>Connection: Cable, 2,000 mm, 4 -wire<br>Operational controls: Teach button |

## Technical data

### Basic data

|                     |                               |
|---------------------|-------------------------------|
| Series              | 5                             |
| Operating principle | Diffuse reflection principle  |
| Contains            | 1x BT 205M<br>2x M3 x 8 screw |

### Special version

|                 |             |
|-----------------|-------------|
| Special version | Article set |
|-----------------|-------------|

### Optical data

|                                  |                                      |
|----------------------------------|--------------------------------------|
| Operating range                  | Guaranteed operating range           |
| Operating range, white 90%       | 0.001 ... 0.215 m                    |
| Operating range, gray 50%        | 0.001 ... 0.19 m                     |
| Operating range, gray 18%        | 0.003 ... 0.15 m                     |
| Operating range, black 6%        | 0.003 ... 0.125 m                    |
| Operating range limit            | Typical operating range              |
| Operating range limit, white 90% | 0 ... 0.28 m                         |
| Operating range limit, gray 50%  | 0.001 ... 0.245 m                    |
| Operating range limit, gray 18%  | 0.003 ... 0.19 m                     |
| Operating range limit, black 6%  | 0.001 ... 0.16 m                     |
| Light source                     | LED, Red                             |
| LED light wavelength             | 620 nm                               |
| Transmitted-signal shape         | Pulsed                               |
| LED group                        | Exempt group (in acc. with EN 62471) |

### Electrical data

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

### Performance data

|                      |  |
|----------------------|--|
| Supply voltage $U_B$ | 10 ... 30 V, DC, Incl. residual ripple |
| Residual ripple      | 0 ... 15 %, From $U_B$                 |
| Open-circuit current | 0 ... 20 mA                            |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 2 Piece(s) |
|-------------------------------------|------------|

### Switching outputs

|                         |  |
|-------------------------|--|
| Voltage type            | DC   |
| Switching current, max. | 100 mA                                       |
| Switching voltage       | high: $\geq(U_B - 2.5V)$<br>low: $\leq 2.5V$ |

### Switching output 1

|                     |                           |
|---------------------|---------------------------|
| Assignment          | Connection 1, conductor 4 |
| Switching element   | Transistor, PNP           |
| Switching principle | Light switching           |

### Switching output 2

|                     |                           |
|---------------------|---------------------------|
| Assignment          | Connection 1, conductor 2 |
| Switching element   | Transistor, PNP           |
| Switching principle | Dark switching            |

### Timing

|                     |        |
|---------------------|--------|
| Switching frequency | 500 Hz |
| Response time       | 1 ms   |
| Readiness delay     | 300 ms |

### Connection

#### Connection 1

|                      |                              |
|----------------------|------------------------------|
| Function             | Signal OUT<br>Voltage supply |
| Type of connection   | Cable                        |
| Cable length         | 2,000 mm                     |
| Sheathing material   | PUR                          |
| Cable color          | Black                        |
| Number of conductors | 4 -wire                      |
| Wire cross section   | 0.2 mm <sup>2</sup>          |

### Mechanical data

|                       |                           |
|-----------------------|---------------------------|
| Dimension (W x H x L) | 14 mm x 32.5 mm x 20.2 mm |
| Housing material      | Plastic                   |
| Plastic housing       | ABS                       |
| Lens cover material   | Plastic                   |
| Housing color         | Black<br>Red              |

### Operation and display

|                      |              |
|----------------------|--------------|
| Type of display      | LED          |
| Number of LEDs       | 2 Piece(s)   |
| Operational controls | Teach button |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -40 ... 60 °C |
| Ambient temperature, storage   | -40 ... 60 °C |

### Certifications

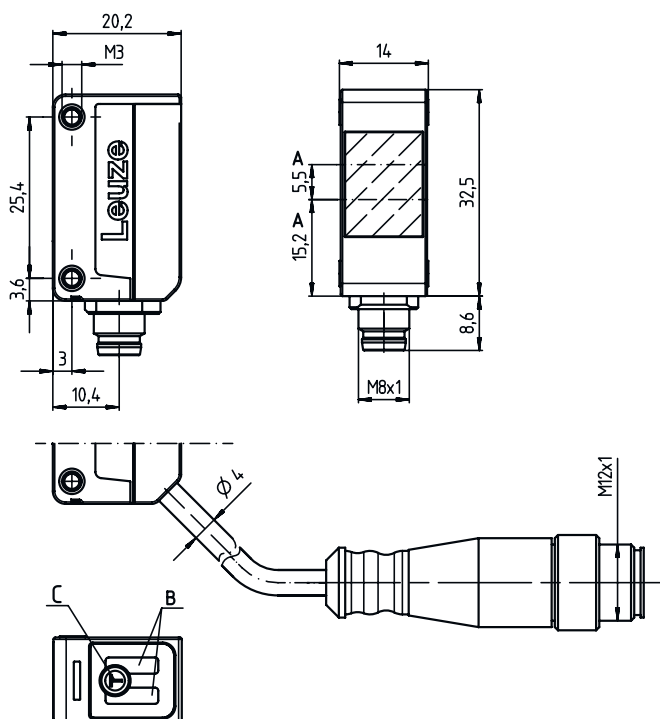
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Certifications       | c UL US       |
| Standards applied    | IEC 60947-5-2 |

## Technical data

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| eCl@ss 5.1.4          | 27270903 |
| eCl@ss 8.0            | 27270903 |
| eCl@ss 9.0            | 27270903 |
| eCl@ss 10.0           | 27270903 |
| eCl@ss 11.0           | 27270903 |
| ETIM 5.0              | EC001821 |
| ETIM 6.0              | EC001821 |
| ETIM 7.0              | EC001821 |

## Dimensioned drawings

All dimensions in millimeters



## Electrical connection

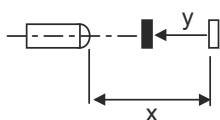
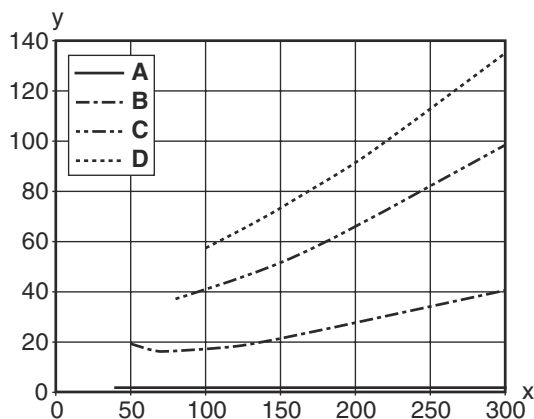
### Connection 1

|                      |                     |
|----------------------|---------------------|
| Function             | Signal OUT          |
|                      | Voltage supply      |
| Type of connection   | Cable               |
| Cable length         | 2,000 mm            |
| Sheathing material   | PUR                 |
| Cable color          | Black               |
| Number of conductors | 4 -wire             |
| Wire cross section   | 0.2 mm <sup>2</sup> |

## Electrical connection

| Conductor color | Conductor assignment |
|-----------------|----------------------|
| Brown           | V+                   |
| White           | OUT 2                |
| Blue            | GND                  |
| Black           | OUT 1                |

## Diagrams



## Operation and display

| LED | Display                  | Meaning               |
|-----|--------------------------|-----------------------|
| 1   | Yellow, continuous light | Object detected       |
| 2   | Green, continuous light  | Operational readiness |

## Part number code

Part designation: **AAA5d.EE/ ff-GG-hh-l**

|             |  |
|-------------|--|
| <b>AAA5</b> | <b>Operating principle / construction</b><br>HT5: diffuse reflection sensor with background suppression<br>LS5: throughbeam photoelectric sensor transmitter<br>LE5: throughbeam photoelectric sensor receiver<br>ET5: energetic diffuse reflection sensor<br>FT5: diffuse reflection sensor with fading<br>PRK5: retro-reflective photoelectric sensor with polarization filter |
| <b>d</b>    | <b>Light type</b><br>n/a: red light<br>I: infrared light   |
| <b>EE</b>   | <b>Equipment</b><br>1: adjustable range<br>M: for semi-transparent objects<br>H: for the detection of transparent films<br>X: reinforced fading<br>3: teach-in via button<br>R: combination product for reflector DTKS 30x50   |

## Part number code

|           |   |
|-----------|---|
| <b>ff</b> | <b>Switching output / function / OUT1OUT2 (OUT1 = pin 4, OUT2 = pin 2)</b><br>2: NPN transistor output, light switching<br>N: NPN transistor output, dark switching<br>4: PNP transistor output, light switching<br>P: PNP transistor output, dark switching<br>X: pin not used<br>9: deactivation input (deactivation with high signal)<br>D: deactivation input (deactivation with low signal)                        |
| <b>GG</b> | <b>Version</b><br>P1: narrow light beam   |
| <b>hh</b> | <b>Electrical connection</b><br>n/a: cable, standard length 2000 mm, 4-wire<br>M8: M8 connector, 4-pin (plug)<br>M8.3: M8 connector, 3-pin (plug)<br>200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug)<br>200-M8.3: cable, length 200 mm with M8 connector, 3-pin, axial (plug)<br>200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (plug)<br>M8.1: Snap-in, M8 connector, 4-pin (plug) |
| <b>I</b>  | <b>Configuration</b><br>P1: different configuration   |

### Note



A list with all available device types can be found on the Leuze website at [www.leuze.com](http://www.leuze.com).

## Notes



### Observe intended use!



- ⌘ This product is not a safety sensor and is not intended as personnel protection.
- ⌘ The product may only be put into operation by competent persons.
- ⌘ Only use the product in accordance with its intended use.

### For UL applications:



- ⌘ Only for use in "class 2" circuits
- ⌘ These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/ CYJV7 or PVVA/PVVA7)

## Further information

- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C
- With the set scanning range, a tolerance of the operating range is possible depending on the reflection properties of the material surface.