

## Technical data sheet

### Energetic diffuse sensor set

Part no.: 50125988  
SET ET5 + BT205M



For illustration purposes only

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## Set consists of

|                                                                                  | Quantity | Part no. | Designation | Article                  | Description                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------|----------|----------|-------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 1        | 50122579 | ET5.3/4P    | Energetic diffuse sensor | Operating range limit, white 90%: 0 ... 1 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 ... 0.7 m                      |
| Operating range, gray 50%        | 0.001 ... 0.59 m                     |
| Operating range, gray 18%        | 0.003 ... 0.39 m                     |
| Operating range, black 6%        | 0.005 ... 0.28 m                     |
| Operating range limit            | Typical operating range              |
| Operating range limit, white 90% | 0 ... 1 m                            |
| Operating range limit, gray 50%  | 0.001 ... 0.85 m                     |
| Operating range limit, gray 18%  | 0.003 ... 0.55 m                     |
| Operating range limit, black 6%  | 0.002 ... 0.4 m                      |
| Light source                     | LED, Red                             |
| 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: $\leq 2.5 V$ |

## 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            |

## Time behavior

|                     |        |
|---------------------|--------|
| 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

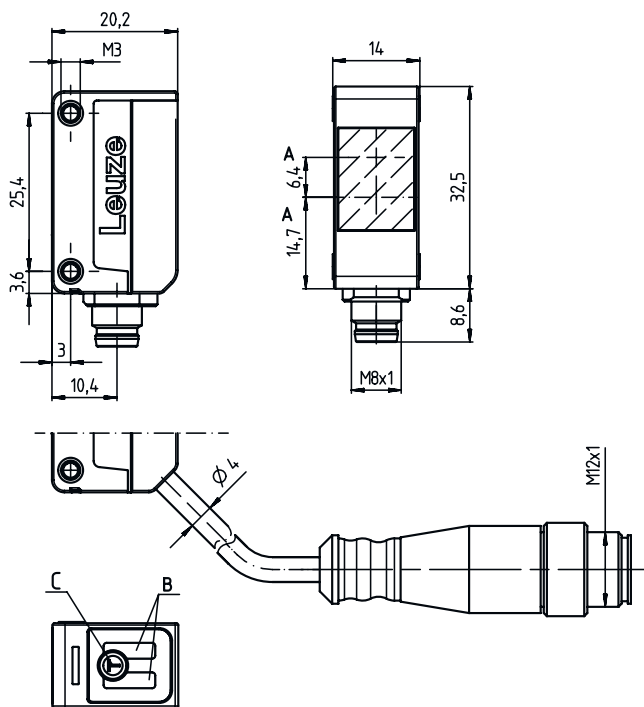
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Certifications       | c UL US       |
| Standards applied    | IEC 60947-5-2 |

## Technical data

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27270903 |
| ECLASS 8.0            | 27270903 |
| ECLASS 9.0            | 27270903 |
| ECLASS 10.0           | 27270903 |
| ECLASS 11.0           | 27270903 |
| ECLASS 12.0           | 27270903 |
| ECLASS 13.0           | 27270903 |
| ECLASS 14.0           | 27270903 |
| ETIM 5.0              | EC001821 |
| ETIM 6.0              | EC001821 |
| ETIM 7.0              | EC001821 |
| ETIM 8.0              | EC001821 |
| ETIM 9.0              | EC001821 |

## Dimensioned drawings

All dimensions in millimeters



Electrical connection

Connection 1

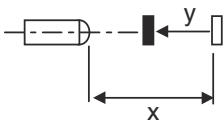
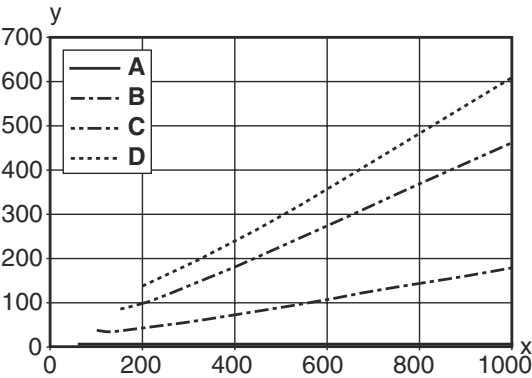
|                      |                |
|----------------------|----------------|
| Function             | Signal OUT     |
|                      | Voltage supply |
| Type of connection   | Cable          |
| Cable length         | 2,000 mm       |
| Sheathing material   | PUR            |
| Cable color          | Black          |
| Number of conductors | 4 -wire        |
| Wire cross section   | 0.2 mm²        |

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-I

|      |                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AAA5 | <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                                        |
| d    | <b>Light type</b><br>n/a: red light<br>I: infrared light                                                                                                                                                                                                                                                                                                                                                                |
| EE   | <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                                                                                                                                                                                            |
| ff   | <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)                        |
| GG   | <b>Version</b><br>P1: narrow light beam                                                                                                                                                                                                                                                                                                                                                                                 |
| hh   | <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) |
| I    | <b>Parameterization</b><br>P1: different configuration                                                                                                                                                                                                                                                                                                                                                                  |

| Note                                                                               |                                                                                                                                |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
|  | 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> . |

Notes

|  Observe intended use! |                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <ul style="list-style-type: none"><li>This product is not a safety sensor and is not intended as personnel protection.</li><li>The product may only be put into operation by competent persons.</li><li>Only use the product in accordance with its intended use.</li></ul> |

| For UL applications:                                                               |                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"><li>Only for use in "class 2" circuits</li><li>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)</li></ul> |

## 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.