

## Technical data sheet

### Diffuse sensor with background suppression

Part no.: 50156050

HT20-15F/2.FL

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For illustration purposes only



## Technical data

### Basic data

|                     |                                                          |
|---------------------|----------------------------------------------------------|
| Series              | 20 flat                                                  |
| Operating principle | Diffuse reflection principle with background suppression |

### Optical data

|                                      |                                      |
|--------------------------------------|--------------------------------------|
| Black-white error                    | < 7%                                 |
| Operating range                      | Guaranteed operating range           |
| Operating range, white 90%           | 0.001 ... 0.015 m                    |
| Operating range, gray 18%            | 0.002 ... 0.015 m                    |
| Operating range, black 6%            | 0.002 ... 0.014 m                    |
| Operating range limit                | 0.01 ... 0.015 m                     |
| Operating range limit                | Typical operating range              |
| Permanently set operating range      | 0.015 m                              |
| Beam path                            | Typ. focus at 15 mm                  |
| Light source                         | PinPoint LED, Red                    |
| Wavelength                           | 630 nm                               |
| LED group                            | Exempt group (in acc. with EN 62471) |
| Light spot size [at sensor distance] | 4 mm [15 mm]                         |
| Type of light spot geometry          | Round                                |
| Minimum detectable object size       | typ. 0.2 mm                          |
| Light beam exit                      | Frontal                              |

### Electrical data

|                    |                                                     |
|--------------------|-----------------------------------------------------|
| Protective circuit | Overload protection<br>Polarity reversal protection |
|--------------------|-----------------------------------------------------|

### Performance data

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

### Outputs

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

### Switching outputs

|                          |                          |
|--------------------------|--------------------------|
| Type                     | Digital switching output |
| Switching voltage, type. | 30 V                     |
| Voltage type             | DC                       |
| Switching current, max.  | 50 mA                    |

### Switching output 1

|                     |                           |
|---------------------|---------------------------|
| Assignment          | Connection 1, conductor 2 |
| Switching element   | Transistor, NPN           |
| Switching principle | Light switching           |

### Time behavior

|                        |          |
|------------------------|----------|
| Switching frequency    | 1,000 Hz |
| Response time          | 0.5 ms   |
| Switch-on delay string | < 100 ms |

### Connection

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

### Connection 1

|                      |                              |
|----------------------|------------------------------|
| Function             | Signal OUT<br>Voltage supply |
| Type of connection   | Cable                        |
| Cable length         | 2,000 mm                     |
| Sheathing material   | PVC                          |
| Cable color          | Black                        |
| Number of conductors | 3 -wire                      |
| Wire cross section   | 0.1 mm <sup>2</sup>          |

### Mechanical data

|                       |                                     |
|-----------------------|-------------------------------------|
| Dimension (W x H x L) | 14 mm x 20.5 mm x 4.2 mm            |
| Housing material      | Plastic                             |
| Plastic housing       | PBT+ABS                             |
| Lens cover material   | Plastic / PMMA                      |
| Net weight            | 10 g                                |
| Housing color         | Red                                 |
| Type of fastening     | Through-hole mounting, 2 x ø 2.2 mm |

### Operation and display

|                 |            |
|-----------------|------------|
| Type of display | LED        |
| Number of LEDs  | 2 Piece(s) |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -25 ... 55 °C |
| Ambient temperature, storage   | -30 ... 70 °C |

### Certifications

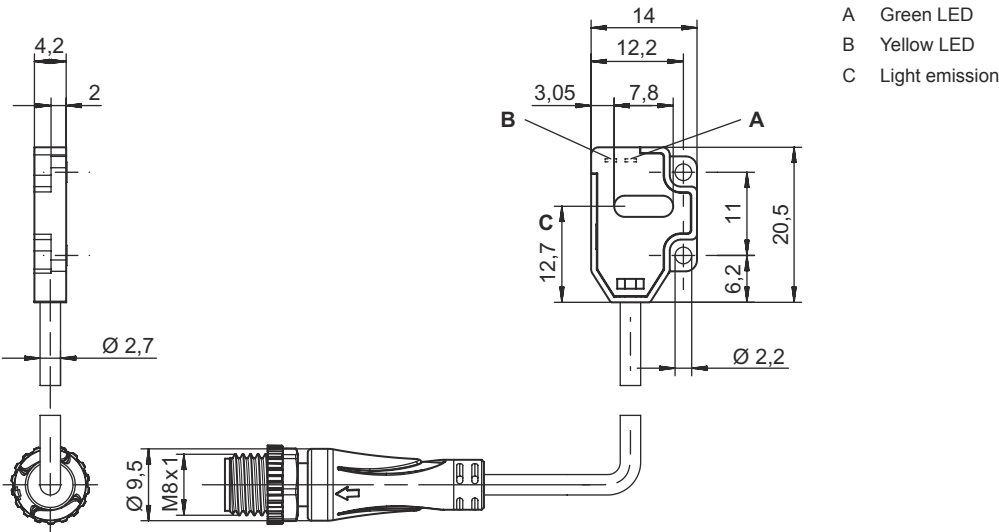
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Approvals            | c UL US<br>CE |
| Standards applied    | IEC 60947-5-2 |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27270904 |
| ECLASS 8.0            | 27270904 |
| ECLASS 9.0            | 27270904 |
| ECLASS 10.0           | 27270904 |
| ECLASS 11.0           | 27270904 |
| ECLASS 12.0           | 27270903 |
| ECLASS 13.0           | 27270903 |
| ECLASS 14.0           | 27270903 |
| ECLASS 15.0           | 27270903 |
| ECLASS 16.0           | 27270903 |
| ETIM 5.0              | EC002719 |
| ETIM 6.0              | EC002719 |
| ETIM 7.0              | EC002719 |
| ETIM 8.0              | EC002719 |
| ETIM 9.0              | EC002719 |
| ETIM 10.0             | EC002719 |
| UNSPSC 26.08          | 39121528 |

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   | PVC            |
| Cable color          | Black          |
| Number of conductors | 3 -wire        |
| Wire cross section   | 0.1 mm²        |

Conductor color

Conductor assignment

|       |     |
|-------|-----|
| Brown | V+  |
| Black | OUT |
| Blue  | GND |

Operation and display

| LED | Display | Meaning                                     |
|-----|---------|---------------------------------------------|
| 1   | Green   | Operational readiness / Stability indicator |
| 2   | Orange  | Switching output function                   |

Part number code

Part designation: AAA20 D-E/GG.HH-JJ

|       |                                                                                                                                                                          |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AAA20 | Operating principle / construction<br>SETLS+LE20: Throughbeam photoelectric sensor transmitter + receiver<br>HT20: Diffuse reflection sensor with background suppression |
| D     | Light type<br>n/a: red light                                                                                                                                             |

Part number code

|    |                                                                                                                                                                                                                                 |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E  | <b>Preset range (optional)</b><br>15F: 15 mm<br>30F: 30 mm<br>150: operating range 150 mm<br>500: operating range 500 mm<br>1000: operating range 1000 mm                                                                       |
| GG | <b>Switching output / Function</b><br>2: NPN transistor output, light switching<br>4: PNP transistor output, light switching<br>N: NPN transistor output, dark switching<br>P: PNP transistor output, dark switching<br>X: n.c. |
| HH | <b>Electrical connection</b><br>n/a: Cable, standard length 2000 mm, 2 wire (LS), 3 wire (LE, HT)<br>M8: M8 connector, 4-pin (plug)<br>200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug)                      |
| JJ | <b>Design detail</b><br>n/a: Slim<br>FL: Flat                                                                                                                                                                                   |

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