

Technical data sheet

Energetic diffuse sensor

Part no.: 50131580

FT5I.3/2N-M8



For illustration purposes only

Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Diagrams
- Operation and display
- Part number code
- Notes
- Further information
- Accessories



Technical data

Basic data

| | |
|---------------------|------------------------------|
| Series | 5 |
| Operating principle | Diffuse reflection principle |

Special version

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% | 0.005 ... 0.125 m |
| Operating range limit, white 90% | 0.001 ... 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% | 0.005 ... 0.16 m |
| Operating range limit | Typical operating range |
| Light source | LED, Infrared |
| Wavelength | 850 nm |
| Transmitted-signal shape | Pulsed |
| LED group | Exempt group (in acc. with EN 62471) |

Electrical data

| | |
|--------------------|---------------------------------------------------------|
| Protective circuit | Polarity reversal protection 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: $\geq(U_B - 2.5V)$ low: $\leq 2.5 V$ |

Switching output 1

| | |
|---------------------|---------------------|
| Assignment | Connection 1, pin 4 |
| Switching element | Transistor, NPN |
| Switching principle | Light switching |

Switching output 2

| | |
|---------------------|---------------------|
| Assignment | Connection 1, pin 2 |
| Switching element | Transistor, NPN |
| Switching principle | Dark switching |

Time behavior

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

Connection 1

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

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 |
| Net weight | 20 g |
| Housing color | Black 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 ... 70 °C |

Certifications

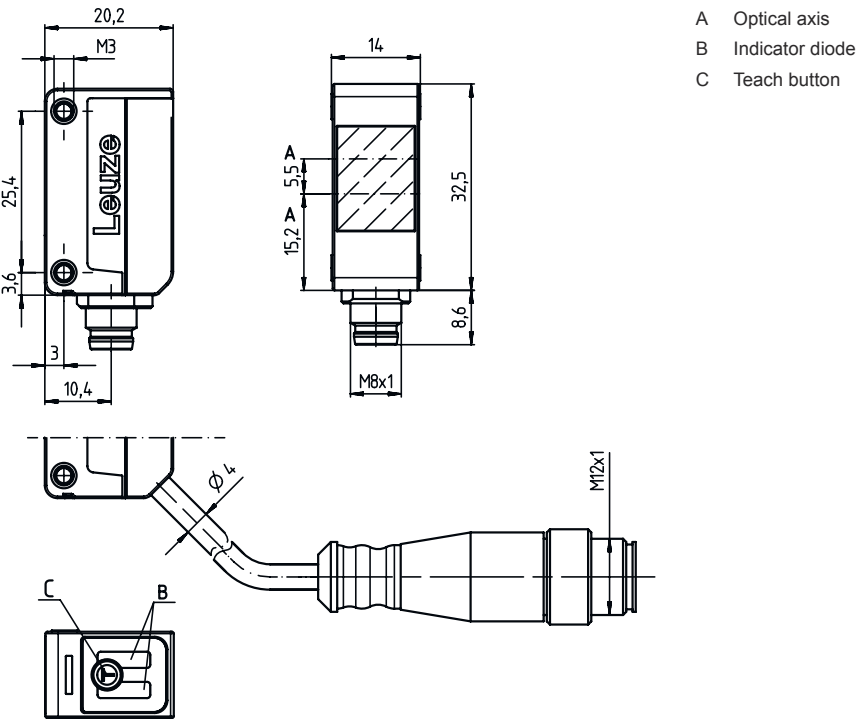
| | |
|----------------------|---------------|
| Degree of protection | IP 67 |
| Protection class | III |
| Approvals | c UL US |
| Standards applied | IEC 60947-5-2 |

Classification

| | |
|-----------------------|----------|
| 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 |
| ECLASS 15.0 | 27270903 |
| ETIM 5.0 | EC001821 |
| ETIM 6.0 | EC001821 |
| ETIM 7.0 | EC001821 |
| ETIM 8.0 | EC001821 |
| ETIM 9.0 | EC001821 |
| ETIM 10.0 | EC001821 |

Dimensioned drawings

All dimensions in millimeters

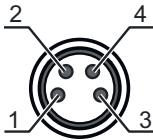


Electrical connection

Connection 1

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

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



Diagrams

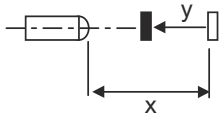
Typ. black/white behavior



x Range [mm]
y Reduction of range [mm]

- A White 90%
- B Gray 50%
- C Gray 18%
- D Black 6%

Fading: black/white error < 50 %
The black/white error is calculated from the operating range against white and the reduction of the operating range against black:
black/white error = reduction of the operating range against black / operating range against white x 100%



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



| | |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AAA5 | Operating principle / construction HT5: diffuse reflection sensor with background suppression LS5: throughbeam photoelectric sensor transmitter LE5: throughbeam photoelectric sensor receiver ET5: energetic diffuse reflection sensor FT5: diffuse reflection sensor with fading PRK5: retro-reflective photoelectric sensor with polarization filter |
| d | Light type n/a: red light l: infrared light |
| EE | Equipment 1: adjustable range M: for semi-transparent objects H: For the detection of transparent films X: reinforced fading 3: teach-in via button R: combination product for reflector DTKS 30x50 |
| ff | Switching output / function / OUT1OUT2 (OUT1 = pin 4, OUT2 = pin 2) 2: NPN transistor output, light switching N: NPN transistor output, dark switching 4: PNP transistor output, light switching P: PNP transistor output, dark switching X: pin not used 9: deactivation input (deactivation with high signal) D: Deactivation input (deactivation with low signal) |
| GG | Version P1: narrow light beam |


Part number code

| | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| hh | Electrical connection n/a: cable, standard length 2000 mm, 4-wire M8: M8 connector, 4-pin (plug) M8.3: M8 connector, 3-pin (plug) 200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug) 200-M8.3: cable, length 200 mm with M8 connector, 3-pin, axial (plug) 200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (plug) M8.1: Snap-in, M8 connector, 4-pin (plug) |
| I | Parameterization P1: different configuration |

| Note | |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
|  | A list with all available device types can be found on the Leuze website at www.leuze.com . |

Notes

|  Observe intended use! | |
|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none">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: | |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none">Only for use in "class 2" circuitsThese 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.

Accessories


Connection technology - Connection cables


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

Accessories

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

Mounting technology - Mounting brackets

| | Part no. | Designation | Article | Description |
|----------------------------------------------------------------------------------|----------|---------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50124651 | BT 205M-10SET | Mounting device set | Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal |

| Note | |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
|  | <p>A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.</p> |