



**Part no.: 50128197**  
**ET328I-400F.3/2N**  
**Energetic diffuse sensor**



Figure can vary

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## Technical data

| <b>Basic data</b>                   |   |
|-------------------------------------|---|
| Series                              | 328   |
| Operating principle                 | Diffuse reflection principle                            |
| <b>Optical data</b>                 |   |
| Operating range                     | Guaranteed operating range                              |
| Operating range, white 90%          | 0.001 ... 0.4 m   |
| Operating range, black 6%           | 0.005 ... 0.4 m   |
| Operating range limit               | Typical operating range                                 |
| Operating range limit, white 90%    | 0.001 ... 0.4 m   |
| Operating range limit, black 6%     | 0.005 ... 0.4 m   |
| Permanently set operating range     | 0.4 m   |
| Light source                        | LED , Infrared  |
| LED light wavelength                | 850 nm  |
| LED group                           | Exempt group (in acc. with EN 62471)                    |
| Transmitted-signal shape            | Pulsed  |
| <b>Electrical data</b>              |   |
| Protective circuit                  | Polarity reversal protection<br>Short circuit protected |
| <b>Performance data</b>             |   |
| Supply voltage $U_B$                | 10 ... 30 V , DC , Incl. residual ripple                |
| Residual ripple                     | 0 ... 15 % , From $U_B$                                 |
| Open-circuit current                | 0 ... 20 mA   |
| <b>Outputs</b>                      |   |
| Number of digital switching outputs | 2 Piece(s)  |
| <b>Switching outputs</b>            |   |
| Voltage type                        | DC  |
| Switching current, max.             | 100 mA  |
| Switching voltage                   | high: $\geq(U_B-2.5V)$<br>low: $\leq 2.5V$              |
| <b>Switching output 1</b>           |   |
| Switching element                   | Transistor , NPN  |
| Switching principle                 | Light switching   |
| <b>Switching output 2</b>           |   |
| Switching element                   | Transistor , NPN  |
| Switching principle                 | Dark switching  |
| <b>Timing</b>                       |   |
| Switching frequency                 | 500 Hz  |
| Response time                       | 1 ms  |
| Readiness delay                     | 300 ms  |
| <b>Connection</b>                   |   |

**Part no.: 50128197 – ET328I-400F.3/2N – Energetic diffuse sensor**
**Connection 1**

|                      |                              |
|----------------------|------------------------------|
| Type of connection   | Cable                        |
| Function             | Signal OUT<br>Voltage supply |
| 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**

|                     |  |
|---------------------|--|
| Thread size         | M18 x 1 mm                             |
| Dimension (Ø x L)   | 18 mm x 46 mm                          |
| Housing material    | Plastic<br>Stainless steel , V2A , ABS |
| Lens cover material | Plastic                                |
| Net weight          | 40 g                                   |
| Housing color       | Black<br>Silver                        |

**Operation and display**

|                      |              |
|----------------------|--------------|
| Type of display      | LED          |
| Number of LEDs       | 1 Piece(s)   |
| Operational controls | Teach button |

**Environmental data**

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -40 ... 60 °C |
| Ambient temperature, storage   | -40 ... 70 °C |

**Certifications**

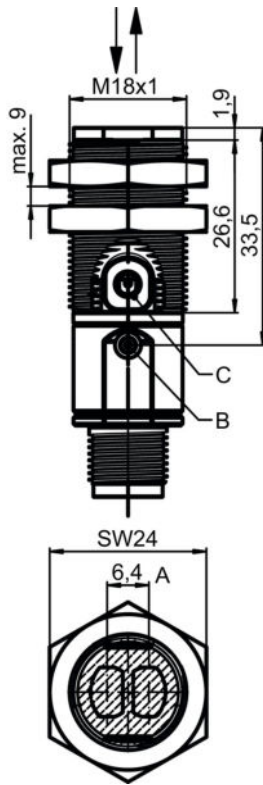
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Certifications       | c UL US       |
| Standards applied    | IEC 60947-5-2 |

**Classification**

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

## Dimensioned drawings

All dimensions in millimeters



A Optical axis  
 B Indicator diode  
 C Teach button

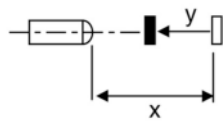
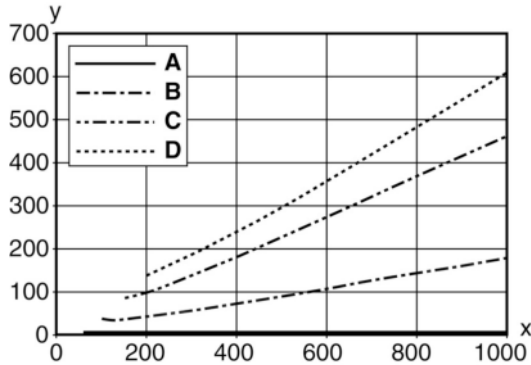
## Electrical connection

| Connection 1         |                              |
|----------------------|------------------------------|
| Type of connection   | Cable                        |
| Function             | Signal OUT<br>Voltage supply |
| 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>          |

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

## Operation and display

LEDs

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

## Part number code

Part designation: XXX328BY-AAAF.BB/CC-DDD

|        |   |
|--------|---|
| XXX328 | <b>Operating principle:</b><br>PRK: retro-reflective photoelectric sensor with polarization filter<br>ET: energetic diffuse reflection sensor<br>FT: diffuse reflection sensor with fading<br>LE: throughbeam photoelectric sensor receiver<br>LS: throughbeam photoelectric sensor transmitter |
| Y      | <b>Light type:</b><br>n/a: red light<br>I: infrared light   |
| AAAF   | <b>Preset range (optional):</b><br>n/a: operating range acc. to data sheet<br>XXXX: preset range [mm]   |
| BB     | <b>Equipment:</b><br>n/a: axial optics<br>W: 90° angular optics<br>3: teach-in via button   |

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|     |   |
|-----|---|
| CC  | <b>Switching output / function (OUT1 = pin 4, OUT2 = pin 2)::</b><br>4: PNP transistor output, light switching<br>P: PNP transistor output, dark switching<br>2: NPN transistor output, light switching<br>N: NPN transistor output, dark switching<br>9: input for transmitter deactivation (deactivation with HIGH signal)<br>D: input for transmitter deactivation (deactivation with LOW signal)<br>X: pin not used |
| DDD | <b>Electrical connection:</b><br>n/a: cable, standard length 2000 mm, 4-wire<br>M12: M12 connector, 4-pin (plug)  |

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

## Notes


|   |
|---|
| <b>Observe intended use!</b>  |
| <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> |

|  |
|--|
| <b>For UL applications:</b>  |
| <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> <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> |

- 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

### Mounting technology - Mounting brackets



|   | Part no. | Designation | Article          | Description  |
|---|----------|-------------|------------------|--|
|  | 50113548 | BT D18M.5   | Mounting bracket | Diameter, inner: 18 mm<br>Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Rigid<br>Material: Stainless steel |

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## Mounting technology - Rod mounts

|   | Part no. | Designation  | Article         | Description  |
|---|----------|--------------|-----------------|--|
|  | 50117490 | BTU D18M-D12 | Mounting system | Design of mounting device: Mounting system<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal |

## Mounting technology - Other

|  | Part no.    | Designation | Article                   | Description  |
|--|-------------|-------------|---------------------------|--|
|   | 50083189    | BT 318-ARH  | Adjustment fastening part | Design of mounting device: Mounting plate<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Swiveling, Adjustable<br>Material: Metal   |
|  | 50126631 ** | BT 328M     | Fastening                 | Contains: 2x M18 mounting nut<br>Design of mounting device: Mounting clamp<br>Fastening, at system: For 18 mm rod, Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Turning, 360°<br>Material: Stainless steel |

\*\* Included in delivery contents

### Note

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