



# DME4000-312

## DME4000

TIME-OF-FLIGHT SENSORS

**SICK**  
Sensor Intelligence.



### Ordering information

| Type        | part no. |
|-------------|----------|
| DME4000-312 | 1041950  |

Other models and accessories → [www.sick.com/DME4000](http://www.sick.com/DME4000)



### Detailed technical data

#### Features

|                                  |                                                      |
|----------------------------------|------------------------------------------------------|
| <b>Measuring range</b>           | 0.15 m ... 220 m, on "diamond grade" reflective tape |
| <b>Target</b>                    | Reflector                                            |
| <b>Resolution</b>                | 50 µm ... 5,000 µm                                   |
| <b>Repeatability</b>             | 3 mm <sup>1) 2)</sup>                                |
| <b>Measurement accuracy</b>      | ± 6 mm                                               |
| <b>Response time</b>             | 6 ms                                                 |
| <b>Output time</b>               | 2 ms                                                 |
| <b>Emitted beam</b>              |                                                      |
| Light source                     | Laser, red <sup>3)</sup>                             |
| Type of light                    | Visible red light                                    |
| Typ. light spot size (distance)  | 130 mm (at 70 m)                                     |
|                                  | 270 mm (at 150 m)                                    |
|                                  | 360 mm (at 220 m)                                    |
| <b>Key laser figures</b>         |                                                      |
| Normative reference              | IEC 60825-1:2014, EN 60825-1:2014                    |
| Laser class                      | 2 <sup>4)</sup>                                      |
| <b>Max. movement speed</b>       | 10 m/s                                               |
| <b>Safety-related parameters</b> |                                                      |
| MTTF <sub>D</sub>                | 101 years                                            |
| DC <sub>avg</sub>                | 0%                                                   |

<sup>1)</sup> On "diamond grade" reflective tape.

<sup>2)</sup> Statistical error 1 σ, environmental conditions constant, min. warm-up time 10 min.

<sup>3)</sup> Average service life of 50,000 h at T<sub>A</sub> = +25 °C.

<sup>4)</sup> Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

## Interfaces

|                                   |                                        |
|-----------------------------------|----------------------------------------|
| <b>PROFIBUS DP</b>                | ✓                                      |
| <b>Digital output</b>             |                                        |
| Number                            | 2                                      |
| Type                              | Push-pull: PNP/NPN                     |
| Maximum output current $I_A$      | $\leq 100 \text{ mA}$ <sup>1) 2)</sup> |
| <b>Multifunctional input (MF)</b> | 1 x MF <sup>3) 4)</sup>                |

<sup>1)</sup> Max. 100 nF/20 mH.

<sup>2)</sup> HIGH =  $> V_S - 3 \text{ V}$  / LOW =  $< 2 \text{ V}$ .

<sup>3)</sup> HIGH =  $> 12 \text{ V}$  / LOW =  $< 3 \text{ V}$ .

<sup>4)</sup> Not reverse-polarity protected.

## Electronics

|                                        |                                    |
|----------------------------------------|------------------------------------|
| <b>Supply voltage <math>U_B</math></b> | DC 18 V ... 30 V, limit values     |
| <b>Current consumption</b>             | At 24 V DC $< 250 \text{ mA}$      |
| <b>Ripple</b>                          | $< 5 \text{ V}_{pp}$ <sup>1)</sup> |
| <b>Initialization time</b>             | 1.5 s <sup>2)</sup>                |
| <b>Display</b>                         | Display                            |
| <b>Enclosure rating</b>                | IP65                               |
| <b>Protection class</b>                | II <sup>3)</sup>                   |
| <b>Connection type</b>                 | Male connector                     |

<sup>1)</sup> May not fall short of or exceed  $V_S$  tolerances.

<sup>2)</sup> After loss of reflector  $< 1 \text{ s}$  at max. speed  $V_{max} < 1 \text{ m/s}$ .

<sup>3)</sup> Reference voltage DC 32 V.

## Mechanics

|                               |                        |
|-------------------------------|------------------------|
| <b>Dimensions (W x H x D)</b> | 61 mm x 85 mm x 166 mm |
| <b>Housing material</b>       | Metal (zinc diecast)   |
| <b>Window material</b>        | Glass                  |
| <b>Weight</b>                 | Approx. 1,650 g        |

## Ambient data

|                                            |                                                                                     |
|--------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Ambient temperature, operation</b>      | -10 °C ... +55 °C<br>-10 °C ... +75 °C, operation with cooling case                 |
| <b>Ambient temperature, storage</b>        | -25 °C ... +75 °C                                                                   |
| <b>Effect of air pressure</b>              | 0.3 ppm/hPa                                                                         |
| <b>Effect of air temperature</b>           | 1 ppm/K                                                                             |
| <b>Temperature drift</b>                   | Typ. 0.1 mm/K                                                                       |
| <b>Typ. Ambient light immunity</b>         | $\leq 40,000 \text{ lx}$                                                            |
| <b>Mechanical load</b>                     | Shock: (EN 600 68-2-27 / -2-29)<br>Sine: (EN 600 68-2-6)<br>Noise: (EN 600 68-2-64) |
| <b>Electromagnetic compatibility (EMC)</b> | EN 61000-6-2, EN 55011: Class B                                                     |

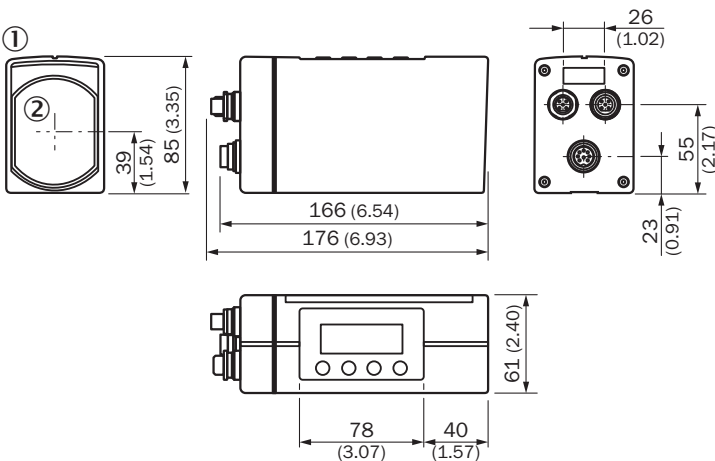
Classifications

|                       |          |
|-----------------------|----------|
| <b>ECLASS 5.0</b>     | 27270801 |
| <b>ECLASS 5.1.4</b>   | 27270801 |
| <b>ECLASS 6.0</b>     | 27270801 |
| <b>ECLASS 6.2</b>     | 27270801 |
| <b>ECLASS 7.0</b>     | 27270801 |
| <b>ECLASS 8.0</b>     | 27270801 |
| <b>ECLASS 8.1</b>     | 27270801 |
| <b>ECLASS 9.0</b>     | 27270801 |
| <b>ECLASS 10.0</b>    | 27270801 |
| <b>ECLASS 11.0</b>    | 27270801 |
| <b>ECLASS 12.0</b>    | 27270916 |
| <b>ETIM 5.0</b>       | EC001825 |
| <b>ETIM 6.0</b>       | EC001825 |
| <b>ETIM 7.0</b>       | EC001825 |
| <b>ETIM 8.0</b>       | EC001825 |
| <b>UNSPSC 16.0901</b> | 41111613 |

Certificates

|                                           |   |
|-------------------------------------------|---|
| <b>EU declaration of conformity</b>       | ✓ |
| <b>UK declaration of conformity</b>       | ✓ |
| <b>ACMA declaration of conformity</b>     | ✓ |
| <b>Moroccan declaration of conformity</b> | ✓ |
| <b>China RoHS</b>                         | ✓ |

Dimensional drawing DME4000 PROFIBUS

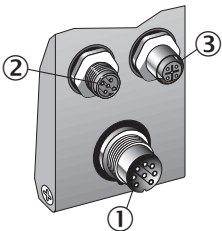


Dimensions in mm (inch)

① LC display

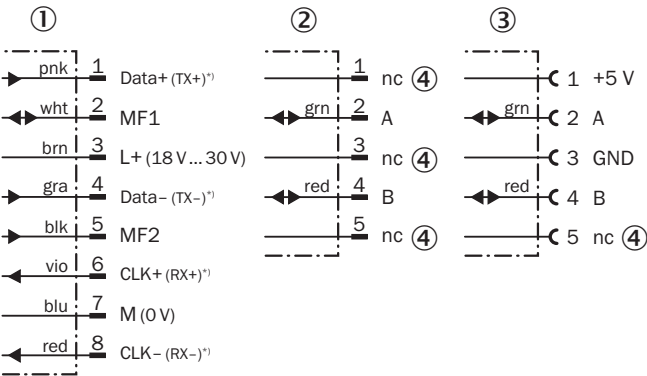
② Center of optical axis

Connection type DME4/5xxx PROFIBUS Connector 2 x M12, 5-pin, B-coded, BUS IN, BUS OUT, 1 x M16, 8-pin



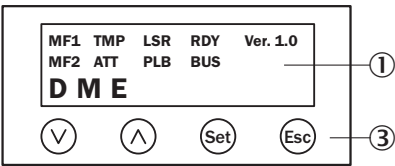
- ① Connector M16, 8-pin
- ② Connector M12, 5-pin, B-coded, BUS IN
- ③ Connector M12, 5-pin, B-coded, BUS OUT

Connection diagram



- <sup>\*)</sup> Internal interface, for production use only.
- ① Connector M16, 8-pin
  - ② Connector M12, 5-pin, B-coded, BUS IN
  - ③ Connector M12, 5-pin, B-coded, BUS OUT
  - ④ Not assigned

Adjustment possible

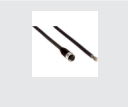
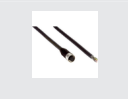


- ① LC display
- ③ Keypad

## Recommended accessories

Other models and accessories → [www.sick.com/DME4000](http://www.sick.com/DME4000)

|                                                                                   | Brief description                                                                                                                                                                                                                                             | Type                      | part no. |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------|
| Mounting systems                                                                  |                                                                                                                                                                                                                                                               |                           |          |
|  | <ul style="list-style-type: none"> <li>• <b>Description:</b> Alignment unit</li> <li>• <b>Material:</b> Stainless steel</li> <li>• <b>Details:</b> Stainless steel</li> </ul>                                                                                 | BEF-DME alignment bracket | 2040695  |
| reflectors and optics                                                             |                                                                                                                                                                                                                                                               |                           |          |
|  | <ul style="list-style-type: none"> <li>• <b>Description:</b> Reflector plate, "diamond grade" reflective tape, 665 mm x 665 mm, base plate material: aluminum, screw connection</li> <li>• <b>Ambient operating temperature:</b> -25 °C ... +65 °C</li> </ul> | PL560DG                   | 1016806  |

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Type               | part no. |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|
| connectors and cables                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    |          |
|    | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 5-pin, straight, B-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> PROFIBUS DP</li> <li>• <b>Cable:</b> 15 m, 2-wire, PUR, halogen-free</li> <li>• <b>Description:</b> PROFIBUS DP, twisted pair, shielded</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation</li> </ul>                                                                                    | STL-1205-G15MQ     | 6036898  |
|    | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 5-pin, straight, B-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> PROFIBUS DP</li> <li>• <b>Cable:</b> 10 m, 2-wire, PUR, halogen-free</li> <li>• <b>Description:</b> PROFIBUS DP, twisted pair, shielded</li> <li>• <b>Note:</b> Wire shield Al-Pt film, overall shield C-screen tin-plated</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation</li> </ul> | STL-1205-G10MQ     | 6026007  |
|    | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 4-pin, straight, B-coded</li> <li>• <b>Signal type:</b> PROFIBUS DP</li> <li>• <b>Description:</b> PROFIBUS DP, terminal resistor</li> </ul>                                                                                                                                                                                                                                                                                             | STE-END-Q          | 6021156  |
|    | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 5-pin, straight, B-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> PROFIBUS DP</li> <li>• <b>Cable:</b> 5 m, 2-wire, PUR, halogen-free</li> <li>• <b>Description:</b> PROFIBUS DP, twisted pair, shielded</li> <li>• <b>Note:</b> Wire shield Al-Pt film, overall shield C-screen tin-plated</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation</li> </ul>  | STL-1205-G05MQ     | 6026005  |
|    | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> CANopen</li> <li>• <b>Cable:</b> 6 m</li> <li>• <b>Description:</b> CANopen, shielded</li> </ul>                                                                                                                                                                                                                                 | DOL-1205-G06MK     | 6028326  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, 7/8", 5-pin, straight</li> <li>• <b>Signal type:</b> DeviceNet™, CANopen</li> <li>• <b>Description:</b> DeviceNet™, terminal resistor, shielded, CANopen</li> <li>• <b>Permitted cross-section:</b> <math>\leq 1.5 \text{ mm}^2</math></li> <li>• <b>Note:</b> For field bus technology</li> </ul>                                                                                                                                          | DOS-7805-GKEND     | 6028329  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, B-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> PROFIBUS DP</li> <li>• <b>Cable:</b> 15 m, 2-wire, PUR, halogen-free</li> <li>• <b>Description:</b> PROFIBUS DP, twisted pair, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>                                                     | DOL-1205-G15MQ     | 6032637  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, B-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> PROFIBUS DP</li> <li>• <b>Cable:</b> 10 m, 2-wire, PUR, halogen-free</li> <li>• <b>Description:</b> PROFIBUS DP, twisted pair, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>                                                     | DOL-1205-G10MQ     | 6026008  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, B-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> PROFIBUS DP</li> <li>• <b>Cable:</b> 5 m, 2-wire, PUR, halogen-free</li> <li>• <b>Description:</b> PROFIBUS DP, twisted pair, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>                                                      | DOL-1205-G05MQ     | 6026006  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Cable:</b> 10 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Shielded</li> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                                                                                                                                 | YF2A68-100XXXXLEAX | 6032450  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Cable:</b> 5 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Shielded</li> </ul>                                                                                                                                                                                                                                                      | YF2A68-050XXXXLEAX | 6032449  |

|                                                                                   | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Type               | part no. |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|
|  | <ul style="list-style-type: none"> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> <li><b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Cable:</b> 2 m, 8-wire, PUR, halogen-free</li> <li><b>Description:</b> Shielded</li> <li><b>Connection systems:</b> Flying leads</li> <li><b>Application:</b> Zones with oils and lubricants</li> </ul> | YF2A68-020XXXLEAX  | 6032448  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Power, CAN</li> <li><b>Cable:</b> 5 m, 5-wire</li> <li><b>Description:</b> Power, unshielded, CAN</li> </ul>                                                                                                                                                              | DOL-1205-G05M_Can  | 6021166  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M16, 8-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Cable:</b> 10 m, PUR, halogen-free</li> <li><b>Description:</b> Shielded</li> </ul>                                                                                                                                                                                                       | YF2Z18-100XXXLE-BX | 2027193  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M16, 8-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Cable:</b> 5 m, PUR, halogen-free</li> <li><b>Description:</b> Shielded</li> </ul>                                                                                                                                                                                                        | YF2Z18-050XXXLE-BX | 2026742  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, CANopen, DeviceNet™</li> <li><b>Cable:</b> 10 m, 5-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, CANopen, DeviceNet™</li> <li><b>Connection systems:</b> Flying leads</li> <li><b>Note:</b> Shielded on pin 1</li> </ul>   | YF2A14-100C1BXLEAX | 6021175  |



## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

## WORLDWIDE PRESENCE:

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