



# TiM581-2050101

TiM

2D LIDAR SENSORS

**SICK**  
Sensor Intelligence.



Ordering information

| Type           | part no. |
|----------------|----------|
| TiM581-2050101 | 1099504  |

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



Detailed technical data

Features

|                         |                                                |
|-------------------------|------------------------------------------------|
| Application             | Outdoor, Indoor                                |
| Measurement principle   | HDDM <sup>+</sup>                              |
| Light source            | Infrared (850 nm)                              |
| Laser class             | 1 (IEC 60825-1:2014, EN 60825-1:2014+A11:2021) |
| Aperture angle          |                                                |
| Horizontal              | 270°                                           |
| Scanning frequency      | 15 Hz                                          |
| Angular resolution      |                                                |
| Horizontal              | 0.33°                                          |
| Working range           | 0.05 m ... 25 m                                |
| Scanning range          |                                                |
| At 10% remission factor | 8 m                                            |

Mechanics/electronics

|                        |                                                                                                                                                                            |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection type        | 1 x "Ethernet" connection, 4-pin M12 female connector<br>1 x connection "Power/Synchronization output" 5-pin, M12 male connector<br>1 x Micro USB female connector, type B |
| Supply voltage         | 9 V DC ... 28 V DC                                                                                                                                                         |
| Power consumption      | Typ. 4 W                                                                                                                                                                   |
| Output current         | ≤ 100 mA                                                                                                                                                                   |
| Housing color          | Gray (RAL 7032)                                                                                                                                                            |
| Enclosure rating       | IP67, applies only when the plastic cover of the "Aux interface" is closed<br>(IEC 60529:1989+AMD1:1999+AMD2:2013)                                                         |
| Protection class       | III (IEC 61140:2016-1)                                                                                                                                                     |
| Weight                 | 250 g, without connecting cables                                                                                                                                           |
| Dimensions (L x W x H) | 60 mm x 60 mm x 86 mm                                                                                                                                                      |
| MTBF                   | > 100 years                                                                                                                                                                |

## Safety-related parameters

|                         |           |
|-------------------------|-----------|
| <b>MTTF<sub>D</sub></b> | 100 years |
|-------------------------|-----------|

## Performance

|                                |                                                       |
|--------------------------------|-------------------------------------------------------|
| <b>Response time</b>           | 1 scan, typ. 67 ms<br>2 scans, ≤ 134 ms <sup>1)</sup> |
| <b>Detectable object shape</b> | Almost any                                            |
| <b>Systematic error</b>        | ± 60 mm <sup>2)</sup>                                 |
| <b>Statistical error</b>       | < 20 mm <sup>2)</sup>                                 |
| <b>Integrated application</b>  | Output of measurement data                            |

<sup>1)</sup> At +45° to +225° of the working range; max. 150 ms at -45° to +45° of the working range.

<sup>2)</sup> Typical value at 90% remission up to maximum scanning range; real value depends on ambient conditions.

## Interfaces

|                               |                                     |
|-------------------------------|-------------------------------------|
| <b>Ethernet</b>               | ✓, TCP/IP                           |
| <b>USB</b>                    | ✓                                   |
| Remark                        | Micro USB                           |
| Function                      | Service interface, parameterization |
| <b>Digital inputs/outputs</b> |                                     |
| Inputs                        | 0                                   |
| Outputs                       | 1 (PNP, "SYNC"/"device ready")      |
| <b>Optical indicators</b>     | 2 LEDs (ON, "device ready")         |

## Ambient data

|                                            |                                                                                                                                                                           |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Object remission</b>                    | 4 % ... 1,000 % (reflectors)                                                                                                                                              |
| <b>Electromagnetic compatibility (EMC)</b> |                                                                                                                                                                           |
| Emitted radiation                          | Residential area (EN 61000-6-3:2007+AMD:A1:2011)                                                                                                                          |
| Electromagnetic immunity                   | Industrial environment (EN 61000-6-2:2005)                                                                                                                                |
| <b>Vibration resistance</b>                |                                                                                                                                                                           |
| Sine resonance scan                        | 10 Hz ... 1,000 Hz <sup>1)</sup>                                                                                                                                          |
| Sine test                                  | 10 Hz ... 500 Hz, 5 g, 10 frequency cycles <sup>1)</sup>                                                                                                                  |
| Noise test                                 | 10 Hz ... 250 Hz, 4.24 g RMS, 5 h <sup>2)</sup>                                                                                                                           |
| <b>Shock resistance</b>                    | 50 g, 11 ms, ± 3 single shocks/axis <sup>3)</sup><br>25 g, 6 ms, ± 1,000 continuous shocks/axis <sup>3)</sup><br>50 g, 3 ms, ± 5,000 continuous shocks/axis <sup>3)</sup> |
| <b>Ambient operating temperature</b>       | -25 °C ... +50 °C <sup>4)</sup>                                                                                                                                           |
| <b>Storage temperature</b>                 | -40 °C ... +75 °C <sup>4)</sup>                                                                                                                                           |
| <b>Temperature change</b>                  | -25 °C ... +50 °C, 10 cycles <sup>5)</sup>                                                                                                                                |
| <b>Damp heat</b>                           | +25 °C ... +55 °C, 95 % RH, 6 cycles <sup>6)</sup>                                                                                                                        |

<sup>1)</sup> IEC 60068-2-6:2007.

<sup>2)</sup> IEC 60068-2-64:2008.

<sup>3)</sup> IEC 60068-2-27:2008.

<sup>4)</sup> IEC 60068-2-14:2009.

<sup>5)</sup> EN 60068-2-14:2009.

<sup>6)</sup> EN 60068-2-30:2005.

|                                      |           |                                             |
|--------------------------------------|-----------|---------------------------------------------|
| <b>Permissible relative humidity</b> | Operation | < 80 %, Non-condensing (EN 60068-2-30:2005) |
|                                      | Storage   | ≤ 95 %, Non-condensing (EN 60068-2-30:2005) |
| <b>Ambient light immunity</b>        |           | 80,000 lx                                   |

- 1) IEC 60068-2-6:2007.  
2) IEC 60068-2-64:2008.  
3) IEC 60068-2-27:2008.  
4) IEC 60068-2-14:2009.  
5) EN 60068-2-14:2009.  
6) EN 60068-2-30:2005.

General notes

|                    |                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------|
| <b>Note on use</b> | The sensor does not constitute a safety component as defined by relevant legislation on machine safety. |
|--------------------|---------------------------------------------------------------------------------------------------------|

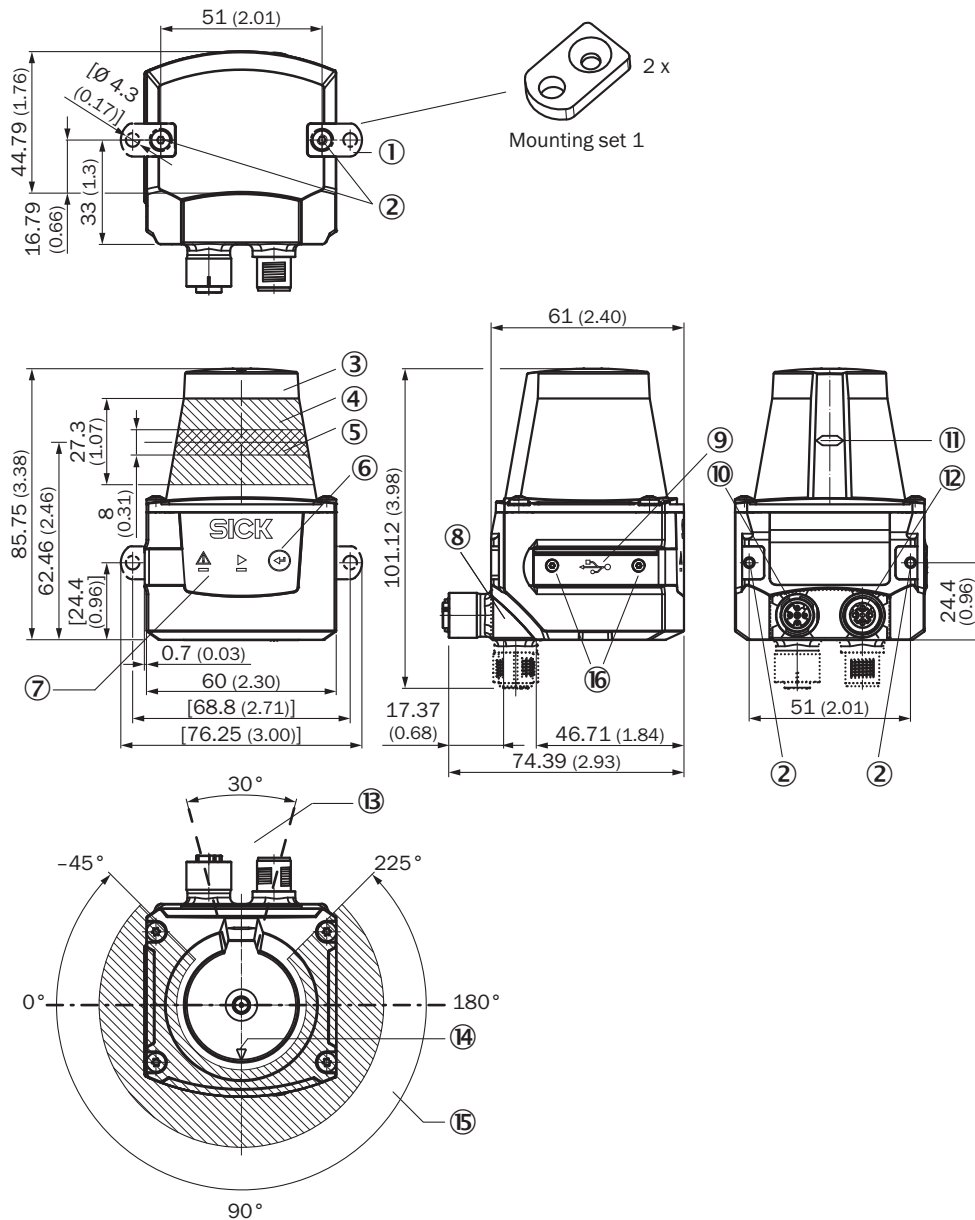
Certificates

|                                                                              |   |
|------------------------------------------------------------------------------|---|
| <b>EU declaration of conformity</b>                                          | ✓ |
| <b>UK declaration of conformity</b>                                          | ✓ |
| <b>ACMA declaration of conformity</b>                                        | ✓ |
| <b>China RoHS</b>                                                            | ✓ |
| <b>cTUVus certificate</b>                                                    | ✓ |
| <b>Information according to Art. 3 of Data Act (Regulation EU 2023/2854)</b> | ✓ |

Classifications

|                       |          |
|-----------------------|----------|
| <b>ECLASS 5.0</b>     | 27270990 |
| <b>ECLASS 5.1.4</b>   | 27270990 |
| <b>ECLASS 6.0</b>     | 27270913 |
| <b>ECLASS 6.2</b>     | 27270913 |
| <b>ECLASS 7.0</b>     | 27270913 |
| <b>ECLASS 8.0</b>     | 27270913 |
| <b>ECLASS 8.1</b>     | 27270913 |
| <b>ECLASS 9.0</b>     | 27270913 |
| <b>ECLASS 10.0</b>    | 27270913 |
| <b>ECLASS 11.0</b>    | 27270913 |
| <b>ECLASS 12.0</b>    | 27270913 |
| <b>ETIM 5.0</b>       | EC002550 |
| <b>ETIM 6.0</b>       | EC002550 |
| <b>ETIM 7.0</b>       | EC002550 |
| <b>ETIM 8.0</b>       | EC002550 |
| <b>UNSPSC 16.0901</b> | 41111615 |

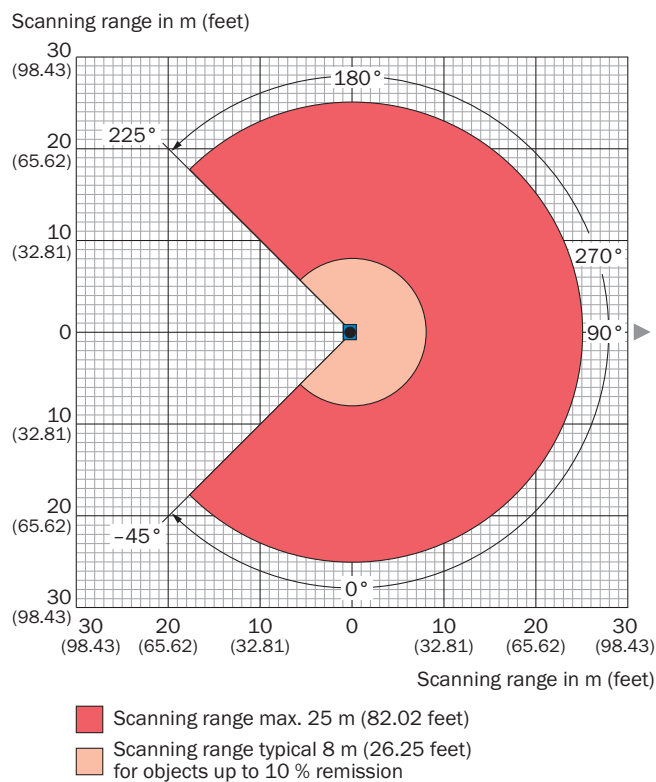
## Dimensional drawing



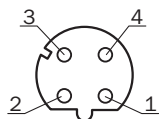
Dimensions in mm (inch)

- ① 2 x straight plates with M3 x 4 mm screw (included in delivery)
- ② M3 threaded mounting hole, 2.8 mm deep (blind hole thread), max. tightening torque 0.8 Nm
- ③ Optical hood
- ④ Receiving range (light inlet)
- ⑤ Transmission range (light emission)
- ⑥ push-button (no function)
- ⑦ Red and green LED (status displays)
- ⑧ swivel connector unit
- ⑨ Micro USB female connector, type B
- ⑩ connection "Power/Synchronization output" 5-pin, M12 male connector
- ⑪ Marking for the position of the light emission level
- ⑫ "Ethernet" connection, 4-pin M12 female connector
- ⑬ Area in which no reflective surfaces are allowed for mounted devices
- ⑭ Bearing marking to support alignment (90° axis)
- ⑮ Aperture angle 270° (scanning angle)
- ⑯ 2 x countersunk screw (Torx TX 6) M2 x 4 mm

## Working range diagram



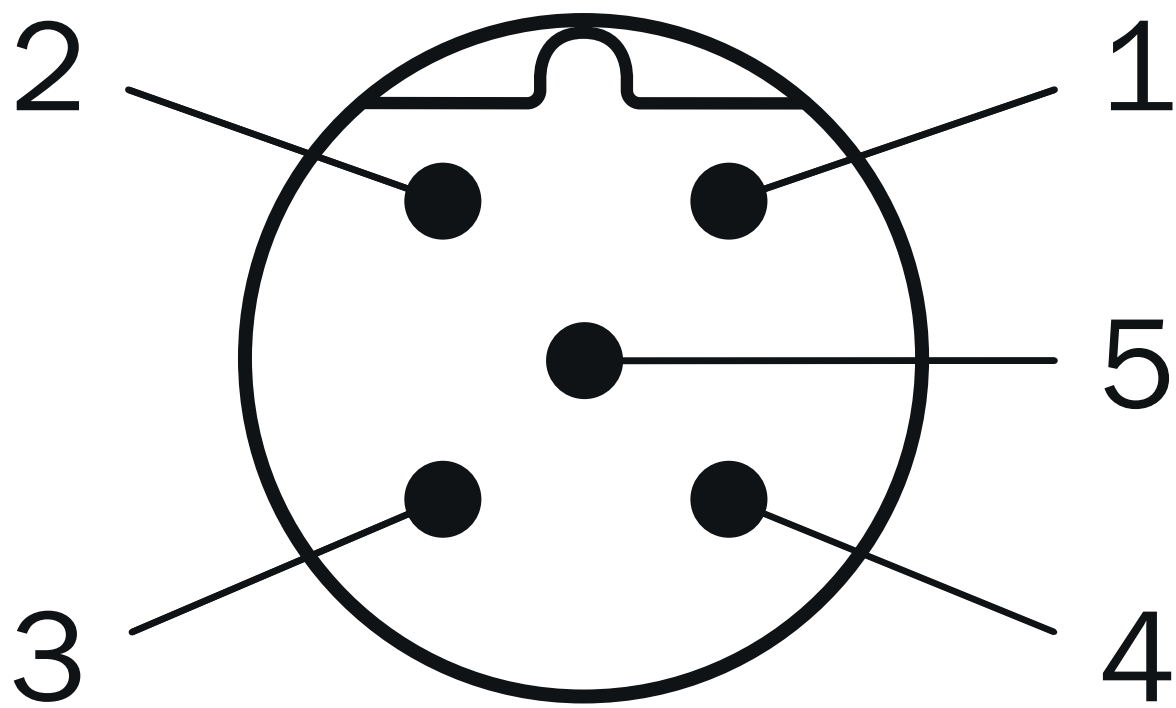
## Connection type Ethernet



M12 female connector, 4-pin, D-coded

- ① TX+
- ② RX+
- ③ TX-
- ④ RX-

PIN assignment Power



- Connector M12, 5-pin, A-coded
- ① DC 9 V ... 28 V
  - ② "SYNC"/"device ready"
  - ③ GND
  - ④ nc
  - ⑤ nc

Recommended accessories

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

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                             | Type         | part no. |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------|
| Mounting systems                                                                    |                                                                                                                                                                                                                                                                                                               |              |          |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting kit with shock absorber</li> <li><b>Material:</b> Anodized aluminum</li> <li><b>Details:</b> Anodized aluminum</li> <li><b>Items supplied:</b> Mounting hardware included</li> <li><b>Suitable for:</b> TiM3xx, TiM5xx, TiM7xx</li> </ul> | Mounting kit | 2086074  |

|                                                                                   | Brief description                                                                                                                                                                                                                                                                                                                                                                 | Type                | part no. |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|
| connectors and cables                                                             |                                                                                                                                                                                                                                                                                                                                                                                   |                     |          |
|  | <ul style="list-style-type: none"><li>• <b>Connection type head A:</b> Male connector, Micro-B, 4-pin, straight</li><li>• <b>Connection type head B:</b> Male connector, USB-A, 4-pin, straight</li><li>• <b>Signal type:</b> USB 2.0</li><li>• <b>Cable:</b> 2 m, 4-wire</li><li>• <b>Description:</b> USB 2.0, unshielded</li></ul>                                             | USB cable           | 6036106  |
|  | <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> Power</li><li>• <b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li><li>• <b>Description:</b> Power, shielded</li><li>• <b>Connection systems:</b> Flying leads</li></ul> | YF2A64-050XXXXLEAX  | 6036159  |
|  | <ul style="list-style-type: none"><li>• <b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li><li>• <b>Connection type head B:</b> Male connector, RJ45, 8-pin, straight</li><li>• <b>Signal type:</b> Ethernet, PROFINET</li><li>• <b>Cable:</b> 5 m, 4-wire, AWG26, PVC</li><li>• <b>Description:</b> Ethernet, shielded, PROFINET</li></ul>         | YM2D24-050E-B2MRJA4 | 6050200  |

## 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:

Contacts and other locations –[www.sick.com](http://www.sick.com)