



# TMM88D-PJ1090

TMS/TMM88 Dynamic

**DYNAMIC INCLINATION SENSORS**

**SICK**  
Sensor Intelligence.



Illustration may differ

### Ordering information

| Type          | Part no. |
|---------------|----------|
| TMM88D-PJI090 | 1094488  |

Other models and accessories → [www.sick.com/TMS\\_TMM88\\_Dynamic](http://www.sick.com/TMS_TMM88_Dynamic)



### Detailed technical data

#### Performance

|   |  |
|---|--|
| <b>Number of axis</b>   | 2  |
| <b>Measuring range</b>  | ± 90°  |
| <b>Resolution</b>   | 0.01°  |
| <b>Static measurement accuracy</b>                            | ± 0.3°   |
| <b>Dynamic measurement accuracy</b>                           | ± 0.5°   |
| <b>Temperature coefficient (zero point)</b>                   | Typ. ±0.01°/K <sup>1)</sup>                      |
| <b>Limit frequency</b>  | 0.1 Hz ... 25 Hz, 8. range (with digital filter) |
| <b>Interference suppression time for sensor fusion filter</b> | 100 ms ... 10,000 ms                             |
| <b>Sampling rate</b>  | 200 Hz   |
| <b>Additional information</b>                                 |  |
| Pitch (Euler angle)   | ± 90° (Pitch)<br>± 180° (Roll)                   |
| Pitch (quaternion)  | Scalar parts w, vector parts x, y, z             |
| Acceleration  | ± 8 g (x-, y-, z-axis)                           |
| Turning rate  | ± 250 °/s (x-, y-, z-axis)                       |

<sup>1)</sup> Referring to the temperature of 25 °C.

#### Interfaces

|   |   |
|---|---|
| <b>Communication interface</b>            | SAE J1939   |
| <b>Address setting</b>                    | 0...253 (Address Claiming: 0...240), default: 128   |
| <b>Data transmission rate (baud rate)</b> | 250 kbit/s ... 500 kbit/s, default: 250 kbit/s  |
| <b>Status information</b>                 | Via status LED  |
| <b>Bus termination</b>                    | Via external terminator   |
| <b>Parameterising data</b>                | Zeroset<br>Limit frequency<br>Interference suppression time<br>Sensor fusion<br>Preset value<br>Inverting of counting direction |
| <b>Programmable/configurable</b>          | Over PGT-12-Pro   |
| <b>Initialization time</b>                | 120 ms  |

## Electrical data

|  |  |
|--|--|
| <b>Connection type</b>                         | Male connector, Female connector, 1x, 1x, M12, M12, 5-pin, 5-pin |
| <b>Supply voltage</b>                          | 8 V DC ... 36 V DC   |
| <b>Current consumption</b>                     | < 15 mA @ 24 V   |
| <b>Reverse polarity protection</b>             | ✓  |
| <b>Short-circuit protection of the outputs</b> | ✓  |
| <b>MTTFd: mean time to dangerous failure</b>   | 619 years (EN ISO 13849-1) <sup>1)</sup>                         |

<sup>1)</sup> This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

## Mechanical data

|                         |                       |
|-------------------------|-----------------------|
| <b>Dimensions</b>       | 66 mm x 90 mm x 36 mm |
| <b>Weight</b>           | 200 g                 |
| <b>Housing material</b> | Plastic (PBT)         |

## Ambient data

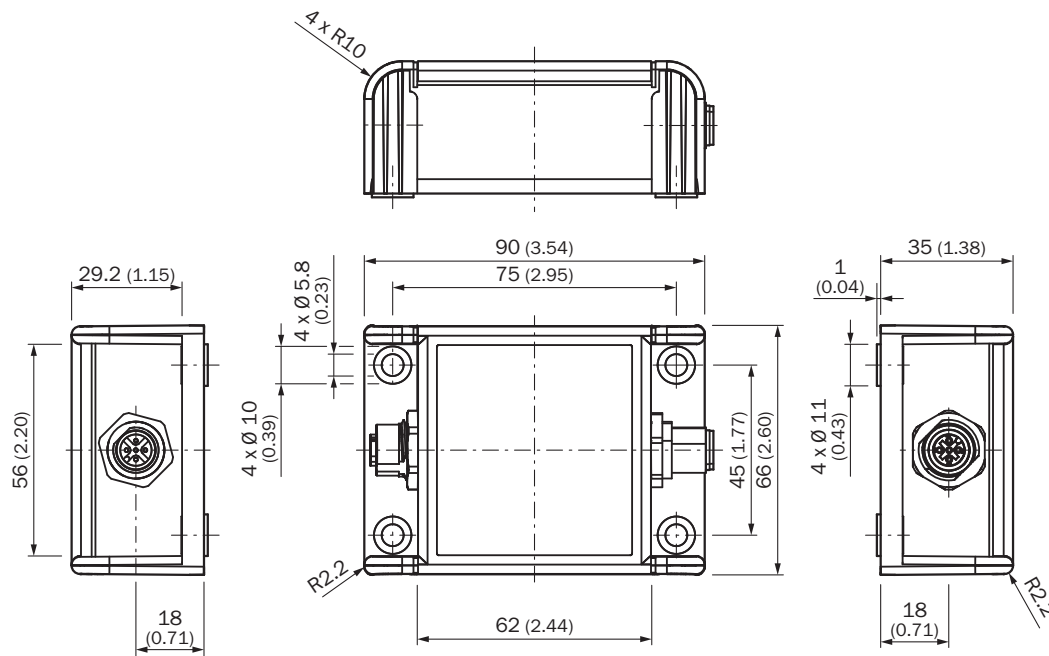
|                                    |  |
|------------------------------------|--|
| <b>EMC</b>                         | EN 61326-1, EN ISO 14982, EN ISO 13309   |
| <b>Enclosure rating</b>            | IP67<br>IP69K                            |
| <b>Operating temperature range</b> | -40 °C ... +80 °C                        |
| <b>Storage temperature range</b>   | -40 °C ... +85 °C                        |
| <b>Resistance to shocks</b>        | 100 g, 6 ms (according to EN 60068-2-27) |
| <b>Resistance to vibration</b>     | 10 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)  |

## Classifications

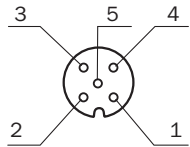
|                       |          |
|-----------------------|----------|
| <b>ECLASS 5.0</b>     | 27270790 |
| <b>ECLASS 5.1.4</b>   | 27270790 |
| <b>ECLASS 6.0</b>     | 27270790 |
| <b>ECLASS 6.2</b>     | 27270790 |
| <b>ECLASS 7.0</b>     | 27270790 |
| <b>ECLASS 8.0</b>     | 27270790 |
| <b>ECLASS 8.1</b>     | 27270790 |
| <b>ECLASS 9.0</b>     | 27270790 |
| <b>ECLASS 10.0</b>    | 27271101 |
| <b>ECLASS 11.0</b>    | 27271101 |
| <b>ECLASS 12.0</b>    | 27271101 |
| <b>ETIM 5.0</b>       | EC001852 |
| <b>ETIM 6.0</b>       | EC001852 |
| <b>ETIM 7.0</b>       | EC001852 |
| <b>ETIM 8.0</b>       | EC001852 |
| <b>UNSPSC 16.0901</b> | 41111613 |

### Dimensional drawing (Dimensions in mm (inch))

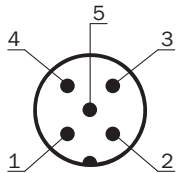
TMx88x-Pxl



### PIN assignment



| PIN<br>Female connector M12, 5-pin | Signal      |                |
|------------------------------------|-------------|----------------|
| 1                                  | CAN Shield  | Shielding      |
| 2                                  | VDC         | Supply voltage |
| 3                                  | GND/CAN GND | 0V (GND)       |
| 4                                  | CAN high    | CAN signal     |
| 5                                  | CAN low     | CAN signal     |











| PIN<br>Male connector M12, 5-pin | Signal     |                |
|----------------------------------|------------|----------------|
| 1                                | CAN Shield | Shielding      |
| 2                                | VDC        | Supply voltage |

| PIN<br>Male connector M12, 5-pin | Signal      |            |
|----------------------------------|-------------|------------|
| 3                                | GND/CAN GND | OV (GND)   |
| 4                                | CAN high    | CAN signal |
| 5                                | CAN low     | CAN signal |

### Recommended accessories

Other models and accessories → [www.sick.com/TMS\\_TMM88\\_Dynamic](http://www.sick.com/TMS_TMM88_Dynamic)

|   | Brief description   | Type               | Part no. |
|---|---|--------------------|----------|
| Programming and configuration tools   |   |                    |          |
|    | Hand-held programming device for the programmable SICK AHS/AHM36 CANopen encoders, TMS/TMM61 CANopen inclination sensors, TMS/TMM88 CANopen, TMS/TMM88 Analog, and wire draw encoders with AHS/AHM36 CANopen. Compact dimensions, low weight, and intuitive operation.  | PGT-12-Pro         | 1076313  |
| Others  |   |                    |          |
|    | <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> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, CANopen, DeviceNet™, shielded</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                   | YF2A15-020C1BXLEAX | 2106283  |
|  | <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> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, CANopen, DeviceNet™, shielded</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                   | YF2A15-050C1BXLEAX | 2106284  |
|  | <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, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, CANopen, DeviceNet™, shielded</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                  | YF2A15-100C1BXLEAX | 2106286  |
|  | <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> Male connector, M12, 5-pin, straight, A-coded</li> <li><b>Signal type:</b> Fieldbus, CANopen, DeviceNet™</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, CANopen, DeviceNet™, shielded</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>  | YF2A15-020C1BM2A15 | 2106279  |
|  | <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> Male connector, M12, 5-pin, straight, A-coded</li> <li><b>Signal type:</b> Fieldbus, CANopen, DeviceNet™</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, CANopen, DeviceNet™, shielded</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>  | YF2A15-050C1BM2A15 | 2106281  |
|  | <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> Male connector, M12, 5-pin, straight, A-coded</li> <li><b>Signal type:</b> Fieldbus, CANopen, DeviceNet™</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, CANopen, DeviceNet™, shielded</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul> | YF2A15-100C1BM2A15 | 2106282  |

|   | Brief description   | Type             | Part no. |
|---|---|------------------|----------|
|  | <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> Female connector, D-Sub, 9-pin, straight</li><li>• <b>Signal type:</b> CANopen</li><li>• <b>Description:</b> CANopen, shielded, Adapter cable for encoders and inclination sensors with CANopen interface and M12</li><li>• <b>Note:</b> Programming adapter cable for programming tool PGT-12-Pro</li></ul> | DDL-2D05-G0M5BC9 | 2083805  |

## 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)