

# Radar sensor

## MWC25M-L2M-B16-2M



- CANopen interface
- Sensing range up to 25 m
- Degree of protection IP68 / IP69
- High EMC resistance
- Sensor head bidirectional and rotatable
- Robust metal fastening

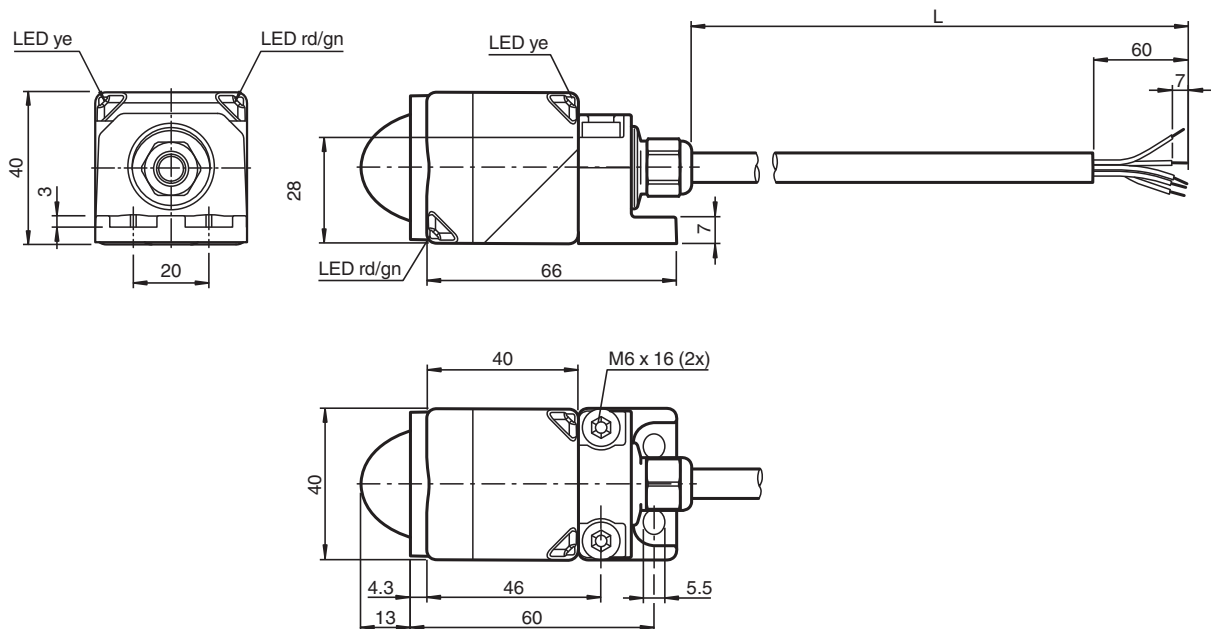
Radar sensor for distance and velocity measuring up to 25 m sensing range, with 2m cable



### Function

The radar sensor series MWC25M with CANopen interface for medium distances up to 25 m range is optimized for use in industrial applications. Its compact cubic housing of the L2 series is proven in many industrial areas due to its high robustness. Via Service Data Objects (SDOs), you can directly parameterize the radar sensor optimally for your application. Alternatively, parameterization with extended functionality is also possible using the FDT framework program PACTware and a DTM. This allows you to additionally use various evaluation and filter settings for distance and velocity values. The radar sensor operates according to the frequency modulated continuous wave (FMCW) method in the ISM band at 122 ... 123 GHz, approved for industrial use. In doing so, it emits a continuous radar signal that is varied over the frequency range of the ISM band. With this method, the sensor is able to reliably detect the distance and velocity of static and moving objects. When measuring velocity, the radar sensor detects the velocity of an object in the radial direction only, without measuring tangential velocities or velocity parts.

### Dimensions



### Technical Data

#### General specifications

|                      |      |
|----------------------|------|
| Measuring technology | FMCW |
|----------------------|------|

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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## Technical Data

|   |                |   |
|---|----------------|---|
| Measured variable                               |                | distance<br>velocity  |
| Measurement range                               |                |   |
| Distance  |                | 0.5 ... 25 m  |
| Velocity  |                | 0.1 ... 80 m/s  |
| Dead band                                       |                | 0 ... 0.5 m   |
| Standard target plate                           |                | corner reflector 100 mm edge length   |
| Working frequency                               |                | 122.25 ... 123 GHz  |
| Opening angle                                   |                | < 12 ° (see characteristic curve)   |
| Transmitter radiated power (EIRP)               |                | < +20 dBm   |
| Sampling rate                                   |                | 1 ... 200 Hz , programmable   |
| <b>Nominal ratings</b>                          |                |   |
| Linearity error                                 |                | < ± 0.1 % of full-scale value (linearity error incl. temperature drift)     |
| Repeat accuracy                                 | R              | 1 mm  |
| Resolution                                      |                | distance 1 mm<br>velocity 0.01 m/s  |
| Time delay before availability                  | t <sub>v</sub> | ≤ 400 ms  |
| <b>Functional safety related parameters</b>     |                |   |
| MTTF <sub>d</sub>                               |                | 310 a   |
| Mission Time (T <sub>M</sub> )                  |                | 20 a  |
| Diagnostic Coverage (DC)                        |                | up to 60 % (see application report)   |
| <b>Indicators/operating means</b>               |                |   |
| LED yellow                                      |                | object within measuring range   |
| LED red/green                                   |                | CANopen status display  |
| <b>Electrical specifications</b>                |                |   |
| Operating voltage                               | U <sub>B</sub> | 9 ... 32 V  |
| No-load supply current                          | I <sub>0</sub> | ≤ 100 mA  |
| Power consumption                               | P <sub>0</sub> | typ. 0.4 W , max. 1 W   |
| <b>Interface</b>                                |                |   |
| Interface type                                  |                | CANopen   |
| Process data                                    |                | distance<br>velocity<br>signal quality<br>cycle counter                     |
| Node ID   |                | 1 ... 127 , programmable  |
| Transfer rate                                   |                | 125 kBit/s , 250 kBit/s , 500 kBit/s , 800 kBit/s , 1 MBit/s , programmable |
| Termination                                     |                | external  |
| <b>Compliance with standards and directives</b> |                |   |
| Standard conformity                             |                |   |
| Standards                                       |                | EN 301489-1<br>EN 301489-3<br>EN 305550-1<br>EN 62368-1<br>EN 62311         |
| <b>Approvals and certificates</b>               |                |   |
| UL approval                                     |                | cULus   |
| FCC approval                                    |                | CFR Title 47, Part 15<br>FCC ID: IRE-MWL2A                                  |
| ISED approval                                   |                | IC ID: 7037A-MWL2A<br>HVIN/PMN: MWL2A                                       |
| <b>Ambient conditions</b>                       |                |   |
| Ambient temperature                             |                | -40 ... 70 °C (-40 ... 158 °F)  |
| Storage temperature                             |                | -40 ... 85 °C (-40 ... 185 °F)  |
| <b>Mechanical specifications</b>                |                |   |
| Connection type                                 |                | cable   |
| Degree of protection                            |                | IP68 / IP69   |
| Material  |                |   |

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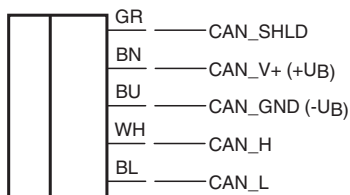
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## Technical Data

|                         |   |  |
|-------------------------|---|--|
| Housing                 |   | PA-GF35<br>powder coated metal mounting flange |
| Radome                  |   | PTFE   |
| Cable                   |   |  |
| Cable diameter          |   | 7.25 mm ± 0.2 mm                               |
| Bending radius          |   | static min. 37.3 mm , dynamic min. 74.7 mm     |
| Material                |   | PUR  |
| Color                   |   | black  |
| Number of cores         |   | 5  |
| Core cross section      |   | 0.8 mm <sup>2</sup>                            |
| Length                  | L | 2000 mm ± 25 mm                                |
| Mass                    |   | 335 g  |
| Dimensions              |   |  |
| Height                  |   | 40 mm  |
| Width                   |   | 40 mm  |
| Length                  |   | 83.3 mm  |
| <b>Factory settings</b> |   |  |
| Sampling rate           |   | 50 Hz  |
| Node ID                 |   | 16   |
| Transfer rate           |   | 250 kBit/s                                     |

## Connection Assignment



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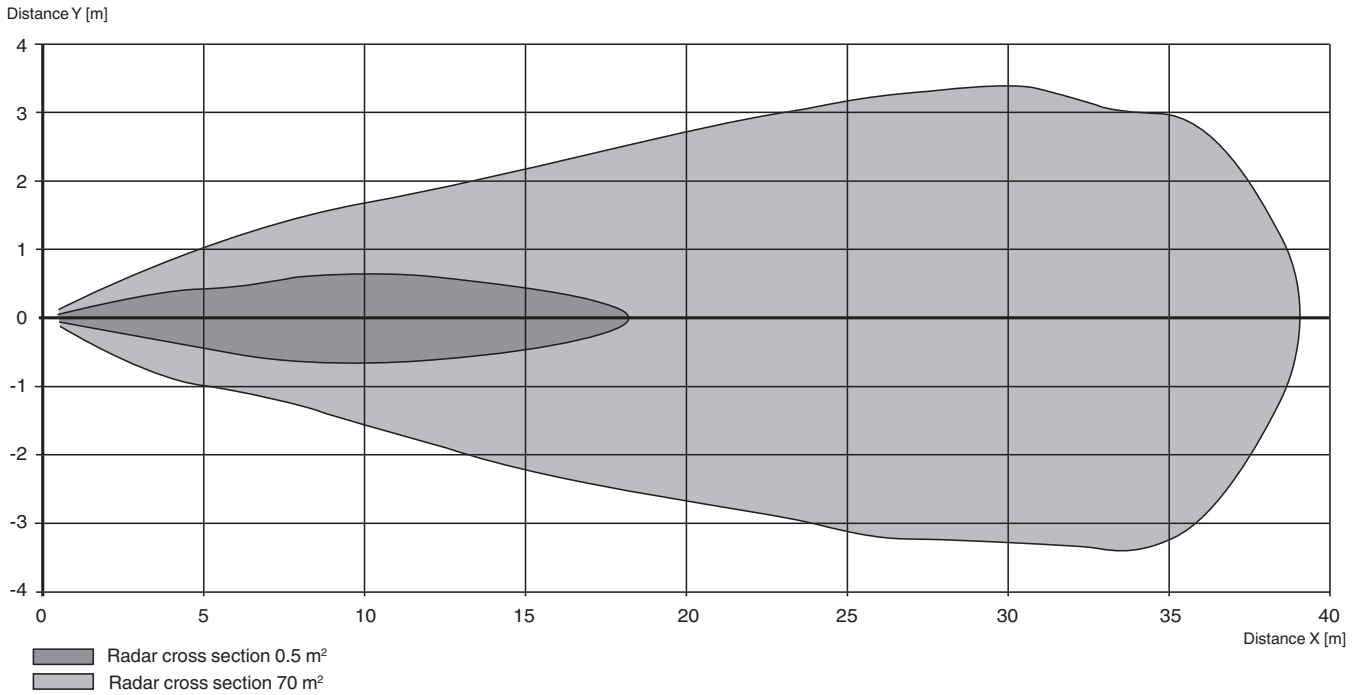
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## Characteristic Curve

### Characteristic response curve radar sensor



## Technical Features

### Emitted Interference and Interference Immunity Specifications

| Mains-Borne Interference in Accordance with ISO 7637-2 |   |    |    |    |    |   |   |    |    |
|--|---|----|----|----|----|---|---|----|----|
| Pulse  | 1 | 2a | 2b | 3a | 3b | 4 | 5 | 5a | 5b |
| Failure criterion                                      | A | A  | C  | A  | A  | A | A | A  | A  |

| Interference Immunity | Coupling  | Level   | Failure Criterion |
|-----------------------|-----------|---------|-------------------|
| ISO 11452-2           | –         | 30 V/m  | –                 |
| EN 61000-4-2          | Contact   | 8 kV    | A                 |
|                       | Air       | 15 kV   | A                 |
| EN 61000-4-3          | –         | 11 V/m  | A                 |
| EN 61000-4-4          | Direct    | 1,1 kV  | B                 |
|                       | Capacitiv | 2,2 kV  | B                 |
| EN 61000-4-6          | –         | 15 V    | A                 |
| EN 55011              | Contact   | Class B | –                 |
| EN 55011              | Radiation | Class B | –                 |

## Accessories

Accessories for this product can be found on the internet at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

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