

# Radar sensor

## MWC25M-L2M-B20-0,3M-APS5P



- CAN bus with SAE J1939 protocol
- Sensing range up to 25 m
- Degree of protection IP68 / IP69
- High EMC resistance
- Sensor head bidirectional and rotatable
- Robust metall fastening

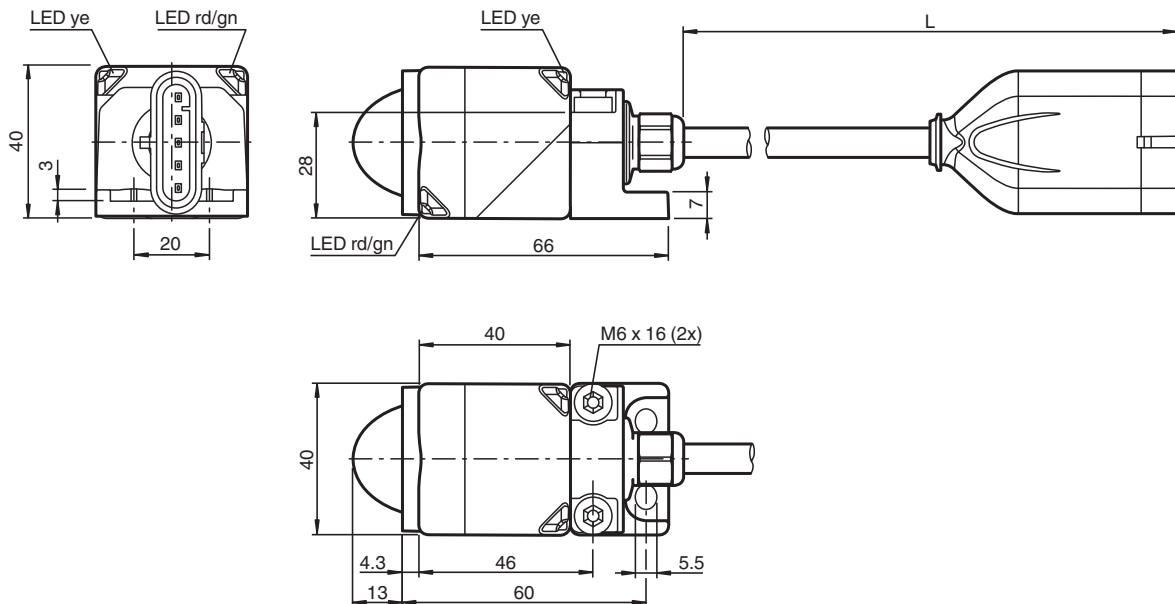
Radar sensor for distance and velocity measuring up to 25 m measuring range



### Function

The radar sensor series MWC25M with J1939 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 Parameter Group Numbers (PGNs), 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

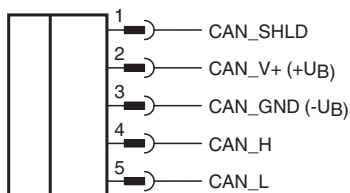
## Technical Data

Measured variable		distance 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 velocity 0.01 m/s
Time delay before availability	t <sub>v</sub>	≤ 400 ms
<b>Functional safety related parameters</b>		
Performance level (PL)		up to PL c
MTTF <sub>d</sub>		310 a
Mission Time (T <sub>M</sub> )		20 a
Diagnostic Coverage (DC)		up to 60 % , see functional safety manual
<b>Indicators/operating means</b>		
LED yellow		object within measuring range
LED red/green		J1939 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		J1939
Process data		status register distance signal quality cycle counter velocity
Transfer rate		250 kBit/s , 500 kBit/s , programmable
Termination		external
<b>Compliance with standards and directives</b>		
Standard conformity		
Standards		EN 301489-1 EN 301489-3 EN 305550-1 EN 62368-1 EN 62311
<b>Approvals and certificates</b>		
UL approval		UL Recognized , General purpose , Class 2 power source
FCC approval		CFR Title 47, Part 15 FCC ID: IRE-MWL2A
ISED approval		IC ID: 7037A-MWL2A 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		fixed cable with plug
Degree of protection		IP68 / IP69

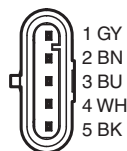
## Technical Data

<b>Material</b>		
Housing		PA-GF35 powder coated metal mounting flange
Radome		PTFE
<b>Connector</b>		
Number of pins		5
Connection assembly		AMP connector Superseal 282107-1 AMP contact Superseal 282109-1
<b>Cable</b>		
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	345 mm ± 5 mm
Mass		238 g
<b>Dimensions</b>		
Height		40 mm
Width		40 mm
Length		83.3 mm
<b>Factory settings</b>		
Default setting		PGN "Distance and velocity"
Sampling rate		50 Hz
Transfer rate		250 kBit/s

## Connection

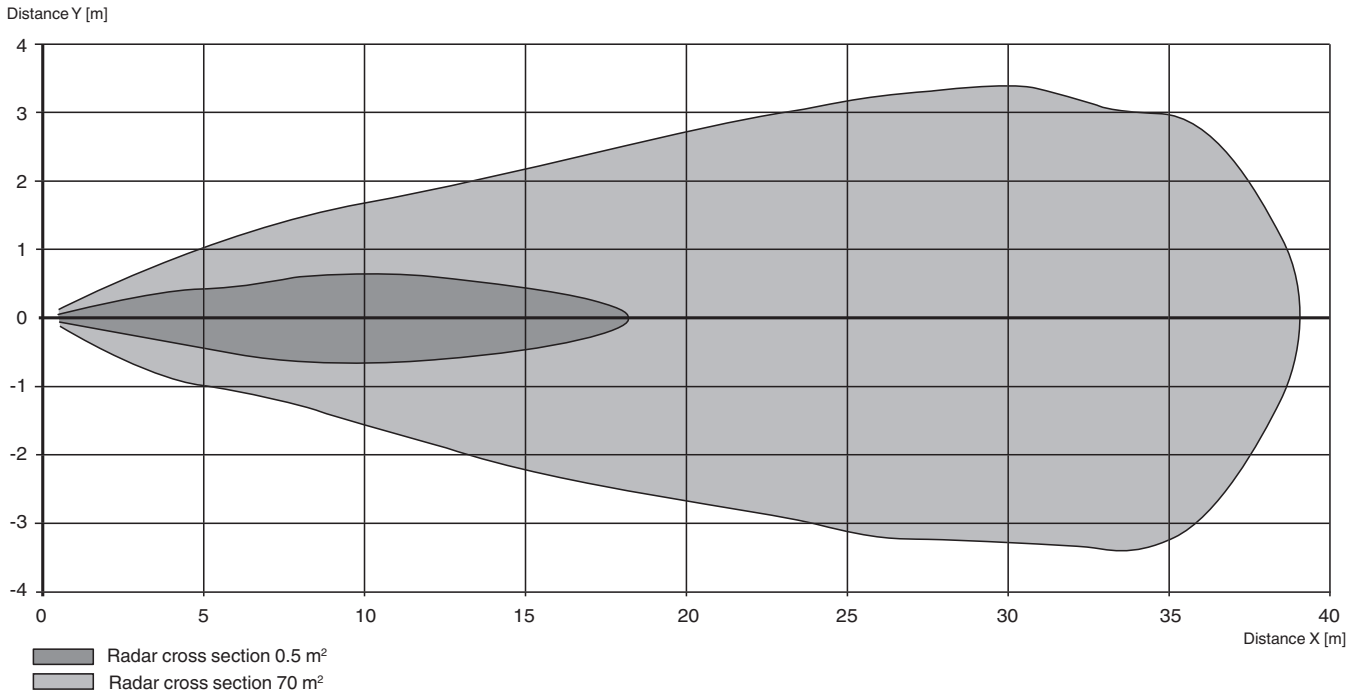


## Connection Assignment



## 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	-
	Radiation	Class B	-

## Accessories

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

Release date: 2024-07-23 Date of issue: 2024-07-23 Filename: 70134318-100005\_eng.pdf