2-D LiDAR Sensor

OMD10M-R2000-B23-V1V1D

- Very high angle resolution
- Red laser as the light emitter
- Measuring method PRT (Pulse Ranging Technology)
- Flexible measured data filter

R2000 UHD, 2-D LiDAR sensor for precise and highly dynamic positioning, measuring range to object up to 10 m, Ethernet

Function

Based on Pulse Ranging Technology (PRT), the sensor is powerful for measurements with a long range and a small light spot. The device scans its environment over the complete measuring angle of 360°. Due to the high scanning frequency, this sensor type is suitable for advanced applications. The device meets laser class 1 and is eye safe. Additional precautions to protect the operating personnel are not required. The interactive all-round display integrated in the optical surface can freely display individual texts and graphics. A wide range of accessories enables the sensor to be used in different applications. A PACTware device type manager (DTM) specially developed for this series offers extensive configuration and diagnostic options.

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Dimensions

Technical Data

General specifications	
Measurement range	0.3 ... 3 m (bk 10%) 0.2 to 10 m (wh 90%) 0.2 to 60 m (reflector)
Light source	laser diode
Light type	modulated visible red light
Laser nominal ratings	
Note	LASER LIGHT , DO NOT STARE INTO BEAM
Laser class	1
Wave length	660 nm
Beam divergence	1 mrad
Pulse length	5 ns
Repetition rate	250 kHz
max. pulse energy	< 4 nJ
Measuring method	Pulse Ranging Technology (PRT)
Scan rate	10 ... 50 s^{-1}
Scanning angle	360°
Diameter of the light spot	< 20 mm at 10 m
Filter	Maximum, average, median, reflectivity
Ambient light limit	80000 Lux
Resolution	1 mm
Functional safety related parameters	
$MTTF_d$	75 a

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Technical Data

Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operation indicator		LED green
Data flow indicator		LED yellow: active ethernet LED green: Ethernet link
Function indicator		LED red: fault LED yellow: Q1 + Q2
Control elements		2 Button
Parameterization indicator		24 x 252 pixels , red
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC
Ripple		10 % within the supply tolerance
No-load supply current	I_0	≤ 400 mA / 24 V DC
Power consumption	P_0	< 10 W
Time delay before availability	t_v	< 40 s
Interface		
Interface type		Fast Ethernet, 2 switching outputs
Protocol		HTTP , TCP/IP and UDP/IP
Input/Output		
Input/output type		2 Inputs/Outputs , Independently configurable , short circuit/reverse polarity protected
Output		
Switching threshold		low: Ua < 1 V, high: Ua > Ub - 2 V
Switching current		100 mA per output
Conformity		
Laser safety		EN 60825-1:2014
Compliance with standards and directives		
Standard conformity		
Product standard		IEC 60947-5-2
Shock and impact resistance		EN 60068-2-6 EN 60068-2-27
Measurement accuracy		
Measuring speed		250000 measurements per second
Measured value noise		± 9 mm (1 sigma, on reflector film) with measured value filter deactivated
Angle resolution		0.014 °
Absolute accuracy		typ. ± 35 mm
Repeat accuracy		< 12 mm
Approvals and certificates		
Protection class		III (operating voltage 50 V)
UL approval		cULus Listed, Class 2 Power Source, Type 1 enclosure
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-10 ... 50 °C (14 ... 122 °F)
Storage temperature		-20 ... 70 °C (-4 ... 158 °F)
Relative humidity		95 % , no moisture condensation
Mechanical specifications		
Degree of protection		IP65
Connection		4-pin, M12x1 connector, standard (supply) , 8-pin, M12x1 connector, A-coded (MultiPort) , 4-pin, M12x1 socket, D-coded (LAN)
Material		
Housing		ABS + PC + Aluminum
Optical face		PMMA
Mass		approx. 0.8 kg
Dimensions		

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Height	116.5 mm
Width	106 mm
Length	106 mm

Connection Assignment

Assembly

1	Operating status	green
2	Fault indication	red
3	Menu button	
4	Menu button	
5	Q2 signal indicator	yellow
6	Q1 signal indicator	yellow
7	Laser outlet	

Characteristic Curve

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Safety Information

Safety Information

Laser Class 1 Information

- The irradiation can lead to irritation especially in a dark environment. Do not point at people!
- Maintenance and repairs should only be carried out by authorized service personnel!
- Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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