3-D LiDAR sensor

OMD10M-R2300-B23-V1V1D-4S

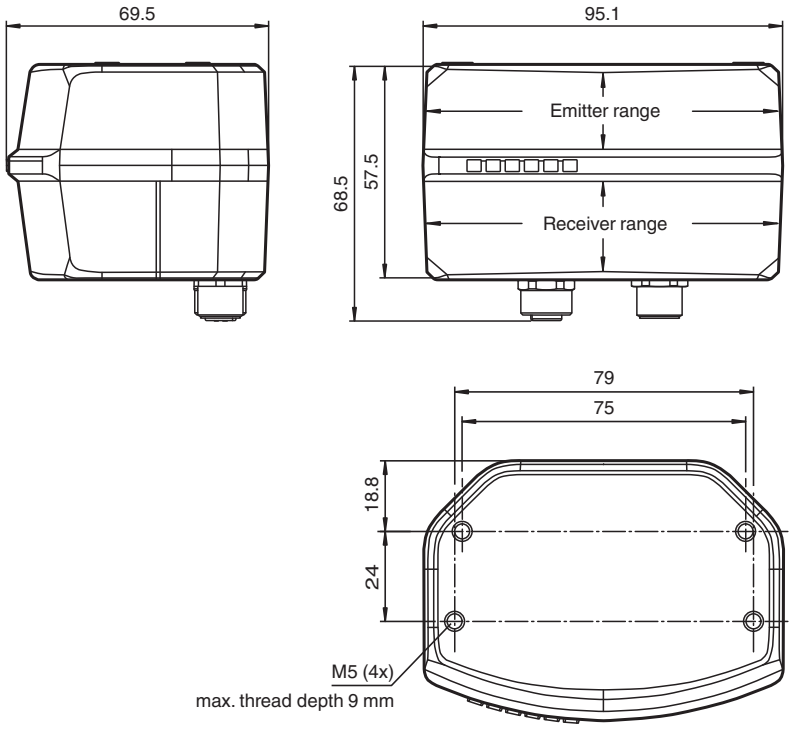
- High angle resolution
- Can be aligned using an integrated pilot laser
- Measuring method PRT (Pulse Ranging Technology)
- Compact design
- High pollution tolerance

R2300, 3-D LiDAR sensor for object detection and positioning, measuring range to object up to 10 m, Ethernet

Function

The 3-D LiDAR sensor uses Pulse Ranging Technology (PRT). So the sensor reaches a large detection range for small light spot widths.
The device has a measuring angle of 100°. With 4 scanning layers the device produces 3-D-data.
The optional switchable pilot laser is projected accurately on the scanning layers. Thus an optimal orientation of the sensor is possible.
Output of the measuring values as well as the parameterization takes place via standard Ethernet-interface.

Dimensions



Technical Data

General specifications	
Measuring range	0.2 ... 4 m (black 10%) 0.2 ... 10 m (white 90%)
Reference target	Kodak white (90%)
Light source	laser diode

Release date: 2026-04-16 Date of issue: 2026-04-16 Filename: 70159636_eng.pdf

Technical Data

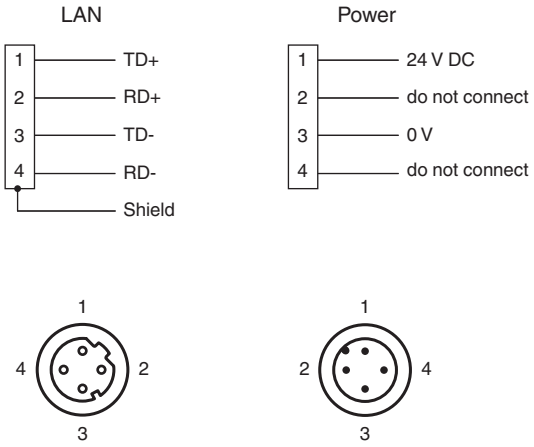
Laser nominal ratings		
Note		LASER RADIATION , DO NOT STARE INTO BEAM
Laser class		1
Wave length		Measuring laser infrared light 905 nm Pilot laser red light 650 nm
Beam divergence		Measuring laser: transversal 2 mrad , longitudinal 9.5 mrad Pilot laser: 0.3 mrad
Pulse length		Measuring laser: 5.2 ns Pilot laser: 1.1 µs
Repetition rate		90 kHz
max. pulse energy		Measuring laser: < 81 nJ Pilot laser: < 60 nJ
Measuring method		Pulse Ranging Technology (PRT)
Frame rate		25 fps 12.5 fps
Scan rate		100 s^{-1} 50 s-1
Scanning zone		100° horizontal, 9° vertical
Diameter of the light spot		25 mm x 100 mm at 10 m
Filter		Maximum, average, median
Ambient light limit		60000 Lux
Resolution		1 mm
Functional safety related parameters		
$MTTF_d$		75 a
Mission Time (T_M)		10 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
Control elements		none
Parameterization indicator		none
Electrical specifications		
Operating voltage	U_B	10 ... 30 V
Ripple		10 % within the supply tolerance
No-load supply current	I_0	≤ 300 mA / 24 V DC
Power consumption	P_0	< 8 W
Time delay before availability	t_v	< 20 s
Interface		
Interface type		Fast Ethernet
Protocol		HTTP , UDP/IP
Input/Output		
Input/output type		none
Conformity		
Product standard		EN 60947-5-2
Laser safety		EN 60825-1:2014
Measurement accuracy		
Measuring speed		50000 measurements per second
Measured value noise		typ. 30 mm , 1 sigma
Angle resolution		0.1° at 12.5 Hz
Absolute accuracy		typ. ± 30 mm
Repeat accuracy		< 12 mm
Approvals and certificates		

Release date: 2026-04-16 Date of issue: 2026-04-16 Filename: 70159636_eng.pdf

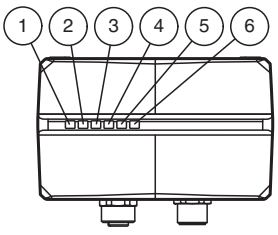
Technical Data

Protection class	III (operating voltage 50 V)
CCC approval	CCC approval / marking not required for products rated ≤36 V
FDA approval	IEC 60825-1:2014 Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice 56, dated May 8, 2019.
Ambient conditions	
Ambient temperature	-30 ... 50 °C (-22 ... 122 °F)
Storage temperature	-30 ... 70 °C (-22 ... 158 °F)
Relative humidity	95 % , no moisture condensation
Mechanical specifications	
Degree of protection	IP65
Connection	4-pin, M12x1 connector, standard (supply) , shield connected on both sides 4-pin, M12x1 socket, D-coded (LAN)
Material	
Housing	ABS + PC
Optical face	PC (Polycarbonate)
Mass	approx. 0.27 kg
Tightening torque, fastening screws	1.5 Nm
Dimensions	
Height	57 mm
Width	96 mm
Length	69 mm
Number of mounting holes	4 , max. thread depth 9 mm

Connection Assignment



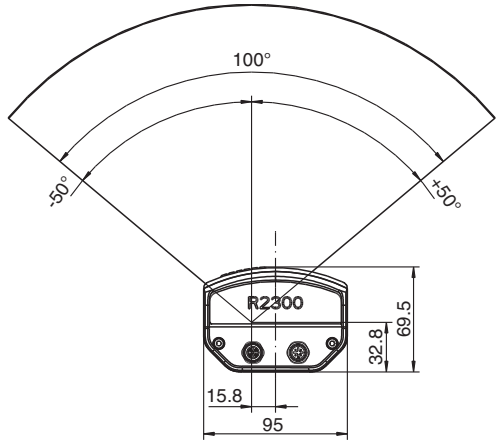
Assembly

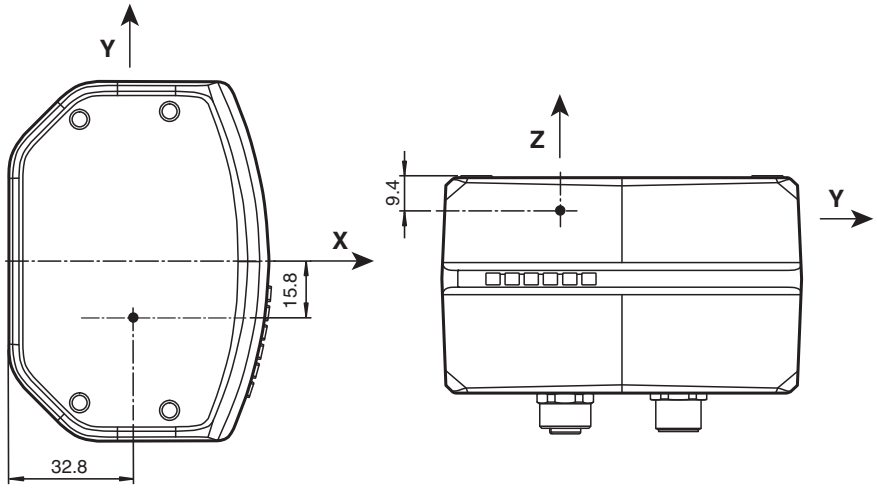


1	Power ON	green
2	Error indication	red
3	Not used	
4	Not used	
5	Ethernet ACT	yellow
6	Ethernet Link	green

Release date: 2026-04-16 Date of issue: 2026-04-16 Filename: 70159636_eng.pdf

Technical Features





Release date: 2026-04-16 Date of issue: 2026-04-16 Filename: 70159636_eng.pdf

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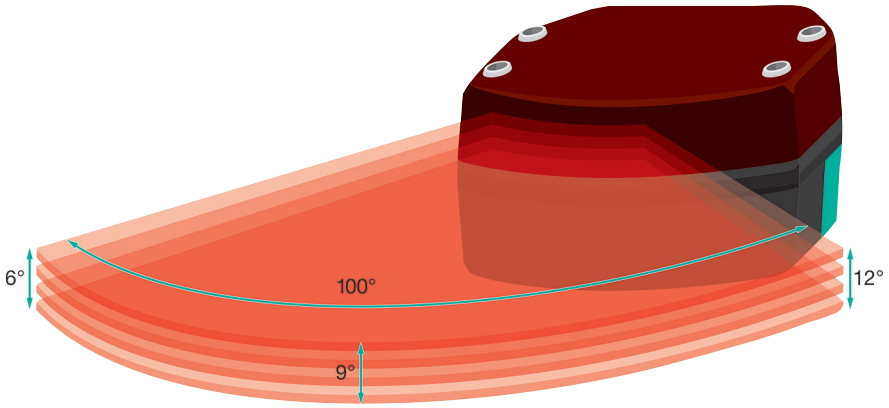
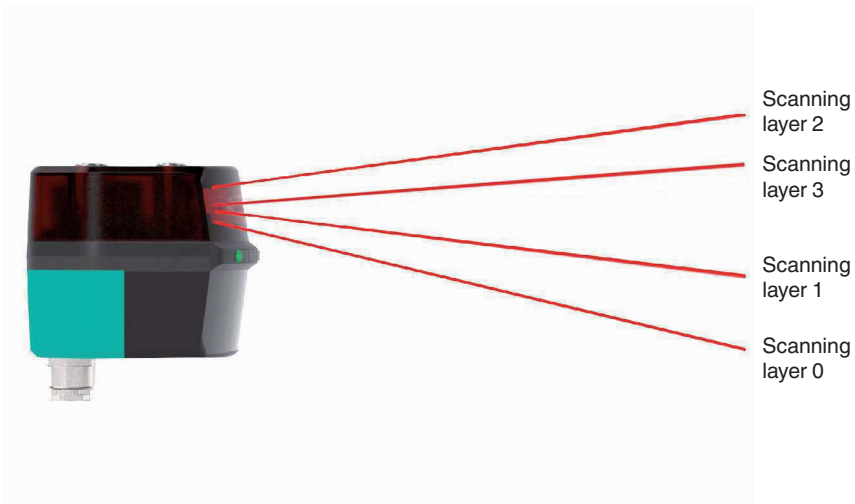
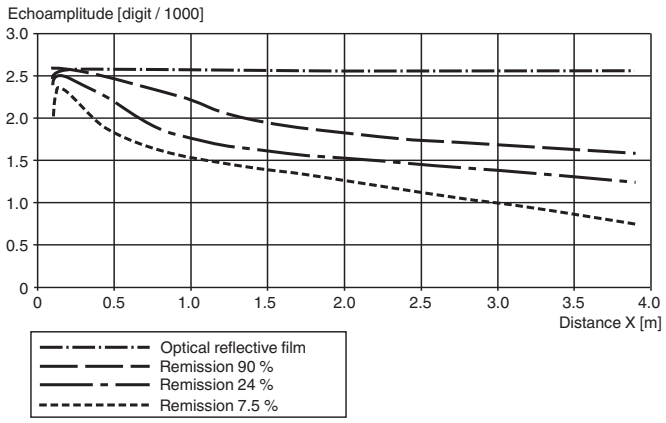




Release date: 2026-04-16 Date of issue: 2026-04-16 Filename: 70159636_eng.pdf

Technical Features

Typical Echoamplitude



Cybersecurity

From the security point-of-view, the responsible plant operator requires to take the following measures:

- Provide physical protection of the device from unauthorized third-party access
- Ensure a point-to-point connection between the device and the higher-level controller
- Ensure that the device is only operated in an isolated network without any direct connection to a company network, the internet, or cloud services;
  - in this context, the device may only communicate with a higher-level controller or with a defined, trustworthy group of network participants

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