



Laser light sensor VLM350-F280-R4-1002

- Comparison of up to 32 height profiles
- Evaluation frequency 30 Hz
- Output of X/Z offset
- Intelligent exposure time control
- Laser class 1, eyesafe
- Data Matrix control codes for parameterization

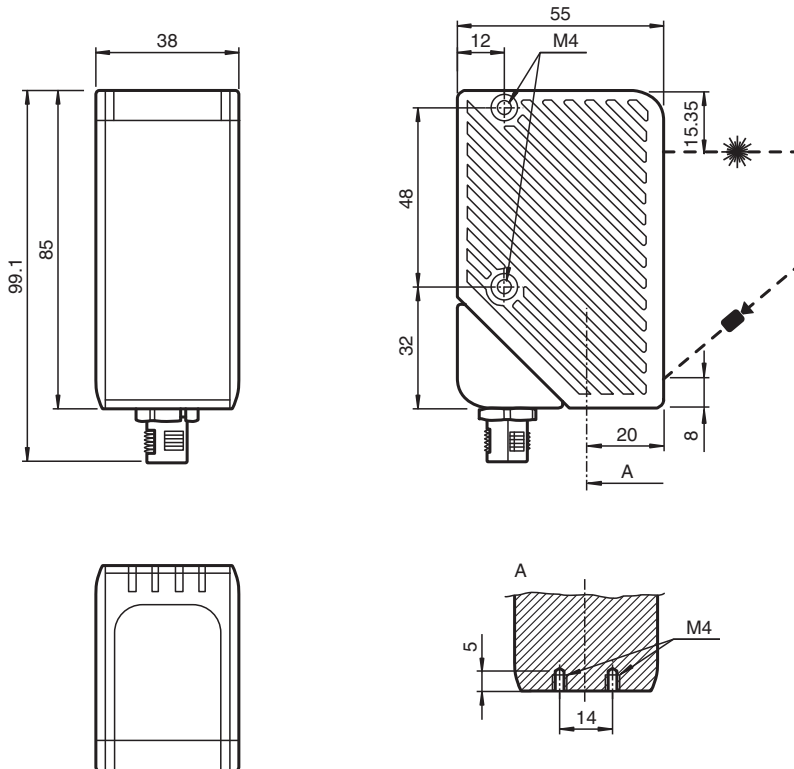
Laser light sensor for profile matching; Comparison of up to 32 height profiles; Output of X/Z offset; Resolution: 752 x 480 pixel; Measuring range: X = 40 ... 160 mm, Z = 60 ... 350 mm; Scan rate: 30 s-1; 2 digital outputs; RS-485 interface



Function

The SmartRunner Matcher compares current height profiles with a previously taught-in height profile. The Matcher is based on innovative SmartRunner technology and combines the light section method for detecting height profiles with a 2-D vision sensor. The light section method involves projecting a laser line onto an object. This is then detected by a camera at a specific angle. A height profile is then created using the triangulation principle. This innovative laser technology provides reliable measurements on different surfaces.

Dimensions



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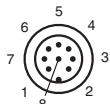
Technical Data

| General specifications | |
|--|---|
| Measuring range | X = 40 ... 160 mm ; Z = 60 ... 350 mm |
| Light source | laser diode |
| Light type | red laser + Integrated LED lightning red 650 nm |
| Laser nominal ratings | |
| Note | VISIBLE LASER RADIATION , DO NOT STARE INTO BEAM DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS |
| Laser class | 1 |
| Wave length | Measuring laser: 660 nm |
| Beam divergence | $\pm 16^\circ$ |
| Pulse length | < 3 ms |
| Repetition rate | < 30 Hz |
| Maximum optical power output | 15 mW |
| max. pulse energy | < 4.5 μ J |
| Laser monitoring | The safety system switches off the laser when the laser current is too high |
| Scan rate | 30 s ⁻¹ |
| Evaluation frequency | 30 Hz |
| Resolution | X>0.44 mm; Z>0.4 mm at 60 mm distanc X>1.1 mm; Z>1.1 mm at 200 mm distance X>1.9 mm; Z>2.5 mm at 350 mm distanc |
| Functional safety related parameters | |
| MTTF _d | 20 a |
| Mission Time (T _M) | 10 a |
| Diagnostic Coverage (DC) | 0 % |
| Indicators/operating means | |
| Operation indicator | LED green |
| Diagnostics indicator | LED yellow / red |
| Function indicator | Trigger: LED yellow ; object detected : LED red / green |
| Control elements | 2 push-buttons |
| Electrical specifications | |
| Operating voltage | U _B 24 V \pm 20 % , PELV |
| No-load supply current | I ₀ max. 250 mA |
| Power consumption | P ₀ max. 6 W , Outputs without load |
| Interface | |
| Interface type | RS 485 interface |
| Physical | Switchable terminal resistor |
| Protocol | binary code |
| Transfer rate | 38400 ... 230400 Bit/s |
| Input | |
| Input voltage | 24 V |
| Number/Type | External triggering + 1 Input |
| Switching threshold | low: < 2.5 V, high: > 8 V |
| Output | |
| Number/Type | 2 digital outputs |
| Switching type | PNP |
| Switching voltage | 24 V |
| Switching current | 150 mA each output |
| Compliance with standards and directives | |
| Standard conformity | |
| Noise immunity | EN 61000-6-2:2005 |
| Emitted interference | EN 61000-6-4:2007/A1:2011 |
| Degree of protection | EN 60529 |
| Shock and impact resistance | EN 60068-2-27:2009 |

Technical Data

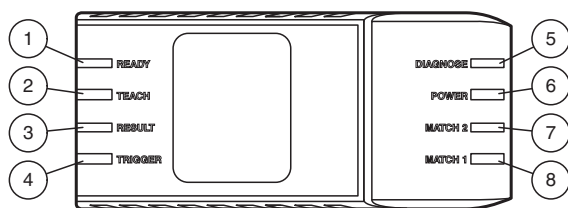
| | |
|-------------------------------------|---|
| Laser class | IEC 60825-1:2014 |
| Approvals and certificates | |
| UL approval | cULus Listed, Type 1 enclosure |
| CCC approval | CCC approval / marking not required for products rated ≤36 V |
| Approvals | CE |
| Ambient conditions | |
| Operating temperature | -20 ... 45 °C (-4 ... 113 °F) , (noncondensing; prevent icing on the lens!) |
| Storage temperature | -20 ... 70 °C (-4 ... 158 °F) |
| Mechanical specifications | |
| Degree of protection | IP67 |
| Connection | 8-pin, M12 x 1 connector (supply + RS485 + Inputs/Outputs) ; can be rotated 90° ; Grounding : Grounding clip for PCV system |
| Material | |
| Housing | PC/ABS |
| Optical face | Plastic pane |
| Mass | approx. 125 g |
| Tightening torque, fastening screws | max. 2 Nm |
| Dimensions | |
| Height | 85 mm |
| Width | 38 mm |
| Depth | 55 mm |
| General information | |
| Note | Security Instructions: <ul style="list-style-type: none"> - Read the operating instructions before attempting commissioning - Installation, connection and adjustments should only be undertaken by specialist personnel - Not a safety component in accordance with the EU Machinery Directive |

Connection



| Pin | Signal |
|-----|--------------|
| 1 | IN Trigger |
| 2 | +UB |
| 3 | Data+ RS-485 |
| 4 | Data- RS-485 |
| 5 | Teach |
| 6 | Good |
| 7 | GND |
| 8 | Bad |

Assembly



| | | |
|---|----------|--------------|
| 1 | Ready | green/red |
| 2 | Teach | green/yellow |
| 3 | Result | green/red |
| 4 | Trigger | green/yellow |
| 5 | Diagnose | red |
| 6 | Power | green |
| 7 | Match 2 | green |
| 8 | Match 1 | yellow |

Safety Information

**CLASS 1
LASER PRODUCT**

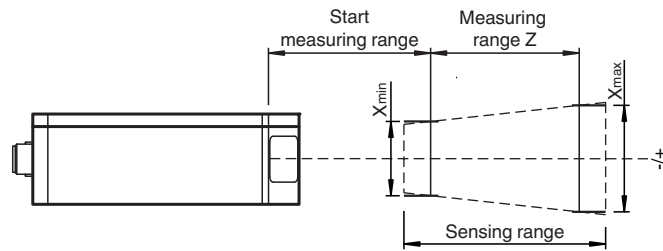
IEC 60825-1: 2007 certified.

Complies with 21 CFR
1040.10 and 1040.11 except
for deviations pursuant to
Laser Notice No. 50,
dated June 24, 2007

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Installation Conditions

Measuring range



Safety Information



**LASERLICHT
LASER LIGHT**

**LASER KLASSE 1
CLASS 1 LASER PRODUCT**

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!

Attach the device so that the warning is clearly visible and readable.

The warning accompanies the device and should be attached in immediate proximity to the device.

Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.