



## 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<sup>-1</sup>; 2 digital outputs; RS-485 interface

CE



### 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.

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

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

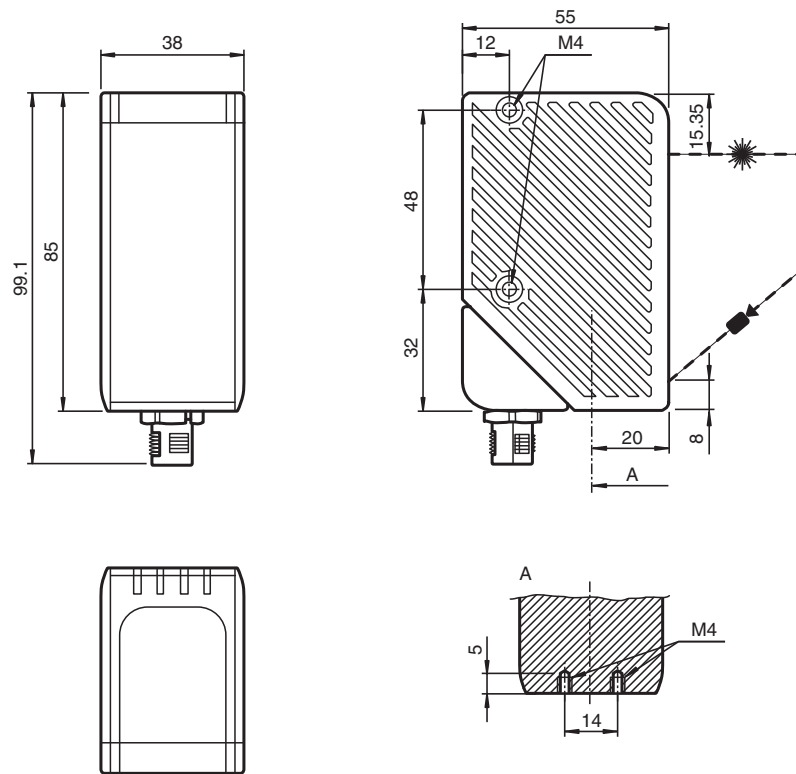
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PEPPERL+FUCHS

**Dimensions**



**Technical Data**

**General specifications**

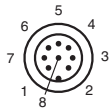
Measurement range	X = 40 ... 160 mm ; Z = 60 ... 350 mm
Light source	laser diode
Light type	red laser + Integrated LED lightning red 650 nm
Laser nominal ratings	
Note	VISIBLE LASER RADIATION , DO NOT STARE INTO BEAM DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS
Laser class	1
Wave length	Measurement laser: 660 nm
Pulse length	Measurement laser: 0.5 ms
Maximum optical power output	Measurement laser: 15 mW
Laser monitoring	The safety system switches off the laser when the laser current is too high
Scan rate	30 s <sup>-1</sup>
Evaluation frequency	30 Hz
Resolution	X > 0.44 mm ; Z > 0.4 mm at 60 mm read distance
<b>Functional safety related parameters</b>	
MTTF <sub>d</sub>	20 a
Mission Time (T <sub>M</sub> )	10 a
Diagnostic Coverage (DC)	0 %
<b>Indicators/operating means</b>	
Operation indicator	LED green
Diagnostics indicator	LED yellow / red

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## Technical Data

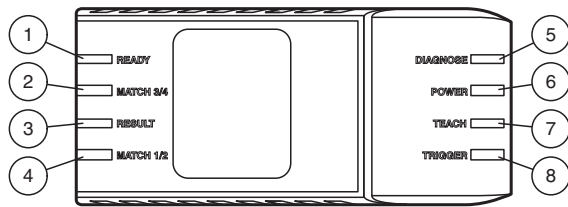
Function indicator	Trigger: LED yellow ; object detected : LED red / green	
Control elements	2 push-buttons	
<b>Electrical specifications</b>		
Operating voltage	U <sub>B</sub>	24 V ± 20 % , PELV
No-load supply current	I <sub>0</sub>	max. 250 mA
Power consumption	P <sub>0</sub>	max. 6 W , Outputs without load
<b>Interface</b>		
Interface type	RS 485 interface	
Physical	Switchable terminal resistor	
Protocol	binary code	
Transfer rate	38400 ... 230400 Bit/s	
<b>Input</b>		
Input voltage	24 V	
Number/Type	External triggering + 1 Input	
Switching threshold	low: < 2.5 V , high: > 8 V	
<b>Output</b>		
Number/Type	2 digital outputs	
Switching type	PNP	
Switching voltage	24 V	
Switching current	150 mA each output	
<b>Compliance with standards and directives</b>		
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	
Laser class	IEC 60825-1:2007	
<b>Approvals and certificates</b>		
CCC approval	CCC approval / marking not required for products rated ≤36 V	
Approvals	CE	
<b>Ambient conditions</b>		
Operating temperature	-20 ... 45 °C (-4 ... 113 °F) , (noncondensing; prevent icing on the lens!)	
Storage temperature	-20 ... 70 °C (-4 ... 158 °F)	
<b>Mechanical specifications</b>		
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	
<b>Material</b>		
Housing	PC/ABS	
Optical face	Plastic pane	
Mass	approx. 125 g	
Tightening torque, fastening screws	max. 2 Nm	
<b>General information</b>		
Note	<b>Security Instructions:</b> - 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	Match 3/4	green/yellow
3	Result	green/red
4	Match 1/2	green/yellow
5	Diagnose	red
6	Power	green
7	Teach	yellow
8	Trigger	yellow

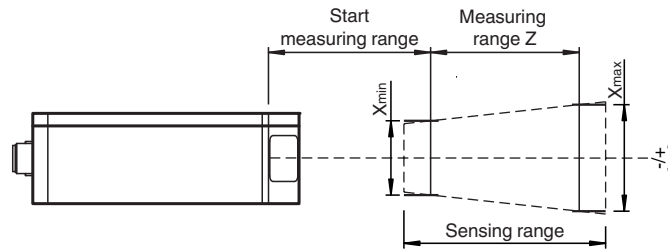
## Accessories

	<b>V19-G-5M-PUR-ABG</b>	Female cordset, M12, 8-pin, shielded, PUR cable
	<b>VLX-MB2</b>	Mounting bracket
	<b>VLX-MB1</b>	Mounting bracket
	<b>PCV-USB-RS485-Converter Set</b>	USB to RS 485 interface converter
	<b>V19-G-BK0,6M-PUR-U-V1-G-SRMAT</b>	Cordset for SmartRunner Matcher, M12 to M12, 8/4-pin, PUR cable
	<b>VLX-F231-B6</b>	Interface module with PROFIBUS interface for SmartRunner
	<b>VLX-F231-B17</b>	Interface module with PROFINET interface for SmartRunner
	<b>VLX-F231-B21</b>	Interface module with EtherCAT interface for SmartRunner
	<b>VLX-F231-B25</b>	Interface module with EtherNet/IP interface for SmartRunner

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## Installation Conditions

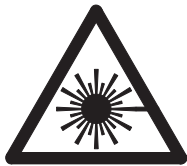
### Measuring range



## Accessories

Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

## Safety Information



**LASERLICHT  
LASER LIGHT**

**LASER KLASSE 1  
CLASS 1 LASER PRODUCT**

### Laser notice laser class 1

- 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.