Laser light sensor

VLM350-F280-R4-1101

- Resolution 1280 x 960 pixel
- Comparison of up to 32 height profiles
- Output of X/Z offset
- Intelligent exposure time control
- Laser class 1, eyesafe
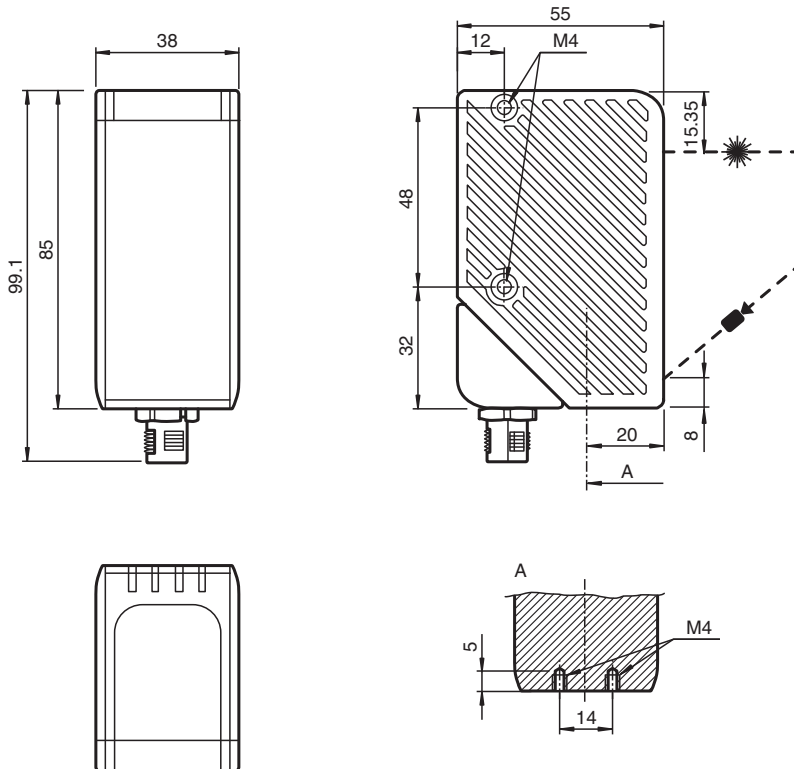- Data Matrix control codes for parameterization

Laser light sensor for profile matching; Comparison of up to 32 height profiles; Output of X/Z offset; Resolution: 1280 x 960 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

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

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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		Measuring laser: 660 nm
Pulse length		Measuring laser: 0.5 ms
Maximum optical power output		Measuring laser: 15 mW
Laser monitoring		The safety system switches off the laser when the laser current is too high
Scan rate		$30 \ s^{-1}$
Resolution		X>0.25 mm; Z>0.2 mm at 60 mm distance X>0.5 mm; Z>0.6 mm at 200 mm distance X>0.9 mm; Z>1.3 mm at 350 mm distance

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 ± 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
Laser class		IEC 60825-1:2007

Approvals and certificates

UL approval		cULus Listed, Type 1 enclosure
CCC approval		CCC approval / marking not required for products rated ≤36 V

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## Technical Data

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	
Housing width	38 mm
Housing height	85 mm
Housing depth	55 mm
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
General information	
Note	**Security Instructions:** - 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
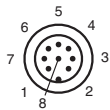
Pin	Signal
1	IN Trigger
2	+UB
3	Data+ RS-485
4	Data- RS-485
5	Teach
6	Good
7	GND
8	Bad

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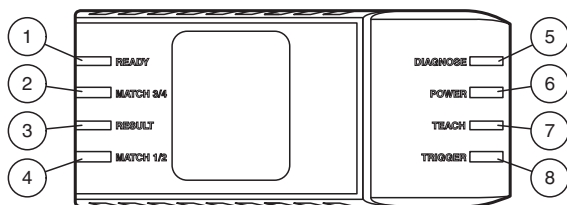
1	Ready	green/red
2	Match 3/4	green/yellow
3	Result	green/red
4	Match 1/2	green/yellow
5	Diagnose	red
6	Power	green
7	Teach	yellow
8	Trigger	yellow

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

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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

Accessories

	V19-G-5M-PUR-ABG	Female cordset single-ended M12 straight A-coded, 8-pin, PUR cable grey, shielded
	VLX-MB2	Mounting bracket
	VLX-MB1	Mounting bracket
	PCV-USB-RS485-Converter Set	USB to RS 485 interface converter
	V19-G-BK0,6M-PUR-U-V1-G-SRMAT	Cordset for SmartRunner Matcher, M12 to M12, 8/4-pin, PUR cable
	VLX-F231-B6	Interface module with PROFIBUS interface for SmartRunner
	VLX-F231-B17	Interface module with PROFINET interface for SmartRunner
	VLX-F231-B21	Interface module with EtherCAT interface for SmartRunner
	VLX-F231-B25	Interface module with EtherNet/IP interface for SmartRunner
	VLX-F280-C	Weld slag cover model
	VLX-F280-C-GLASS	Replacement glass for SmartRunner protective housing

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Installation Conditions

Measuring range
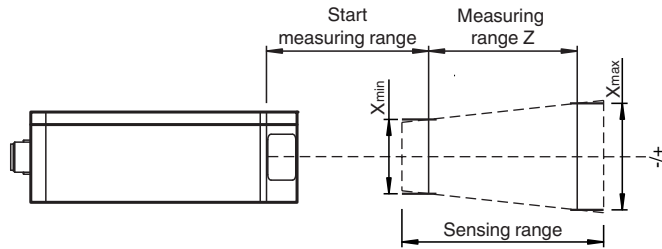
Safety Information

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.

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