Laser light sensor

VLD700-F280-2E2-1000

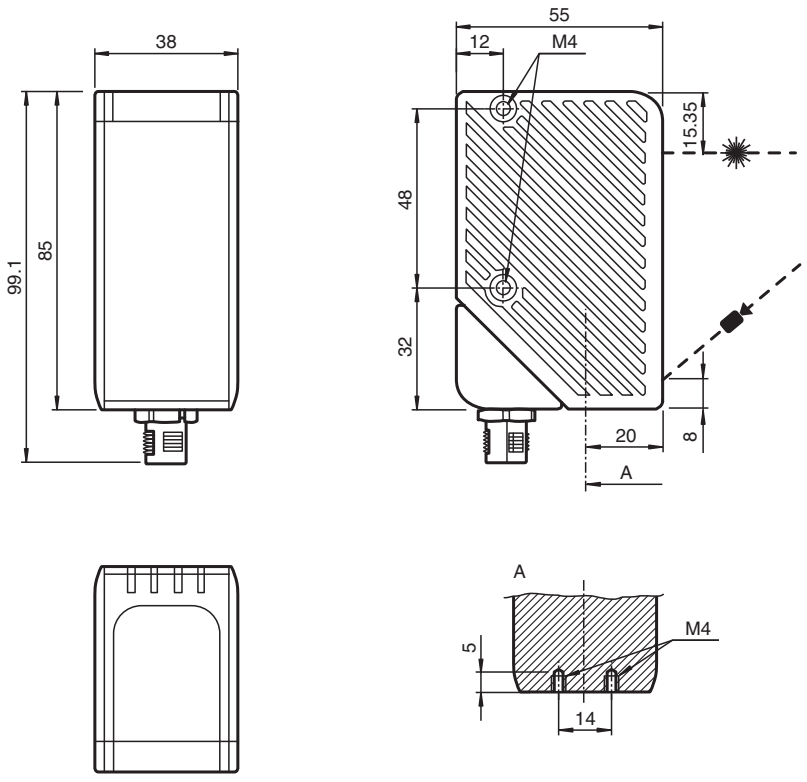
- Intelligent exposure time control
- Laser class 1, eyesafe
- Data Matrix control codes for parameterization

Laser light sensor for field monitoring; Resolution: 752 x 480 pixel; Measuring range: X = 40 ... 310 mm, Z = 60 ... 700 mm; Scan rate: 30 s-1; 2 digital outputs; RS-485 interface

Function

The SmartRunner Detector performs high-precision area monitoring and switches as soon as the smallest objects enter the field of detection. The detector 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 laser line 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		
Measurement range		X = 40 ... 310 mm ; Z = 60 ... 700 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: 2 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
Object size		> 0.1 mm at min. read distance
Scan rate		30 s^{-1}
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 in evaluation range : 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
Approvals		CE
Ambient conditions		

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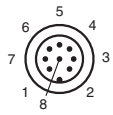
Technical Data

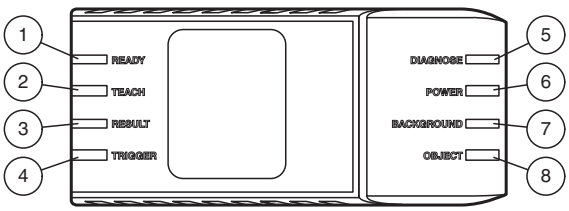
Operating temperature		-20 ... 45 °C (-4 ... 113 °F) , (noncondensing; prevent icing on the lens!)
Storage temperature		-20 ... 70 °C (-4 ... 158 °F)
Mechanical specifications		
Housing width		38 mm
Housing height		85 mm
Housing depth		55 mm
Degree of protection		IP67
Connection		8-pin, M12 x 1 connector (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	Background
7	GND
8	Object

Assembly



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

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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-MB1**	Mounting bracket
	**VLX-MB2**	Mounting bracket
	**PCV-USB-RS485-Converter Set**	USB to RS 485 interface converter
	**V19-G-BK0,6M-PUR-U-V1-G-SRDET**	Cordset for SmartRunner Detector M12 socket 8-pin to M12 plug 4-pin, PUR cable black
	**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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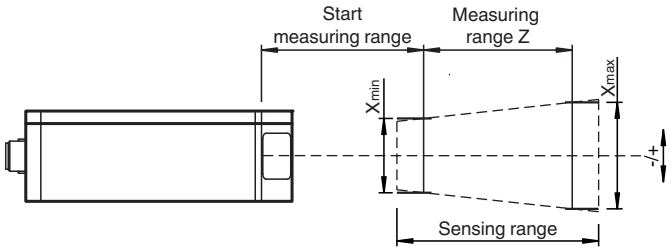
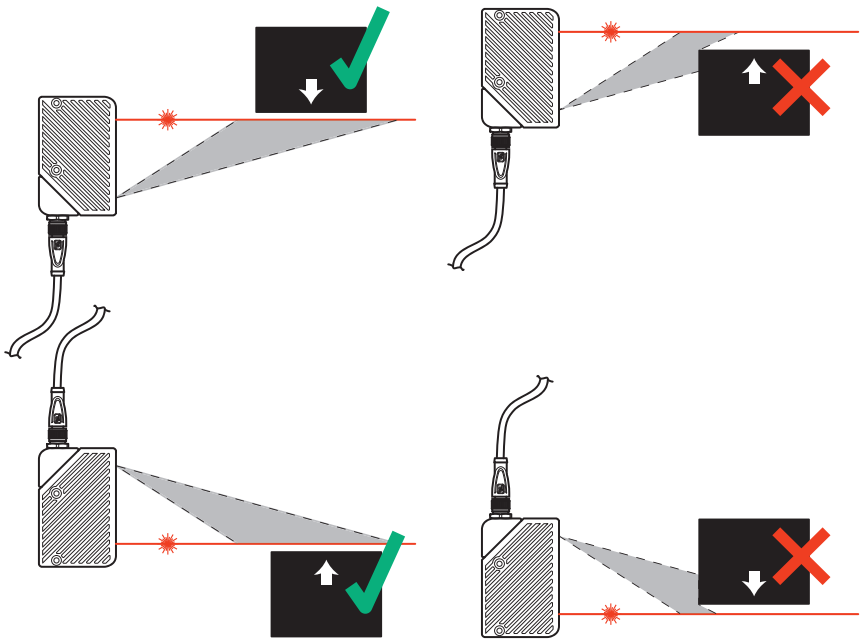
Installation Conditions

Measuring range



Installation Conditions

Positioning of SmartRunner to the Object for Detection



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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