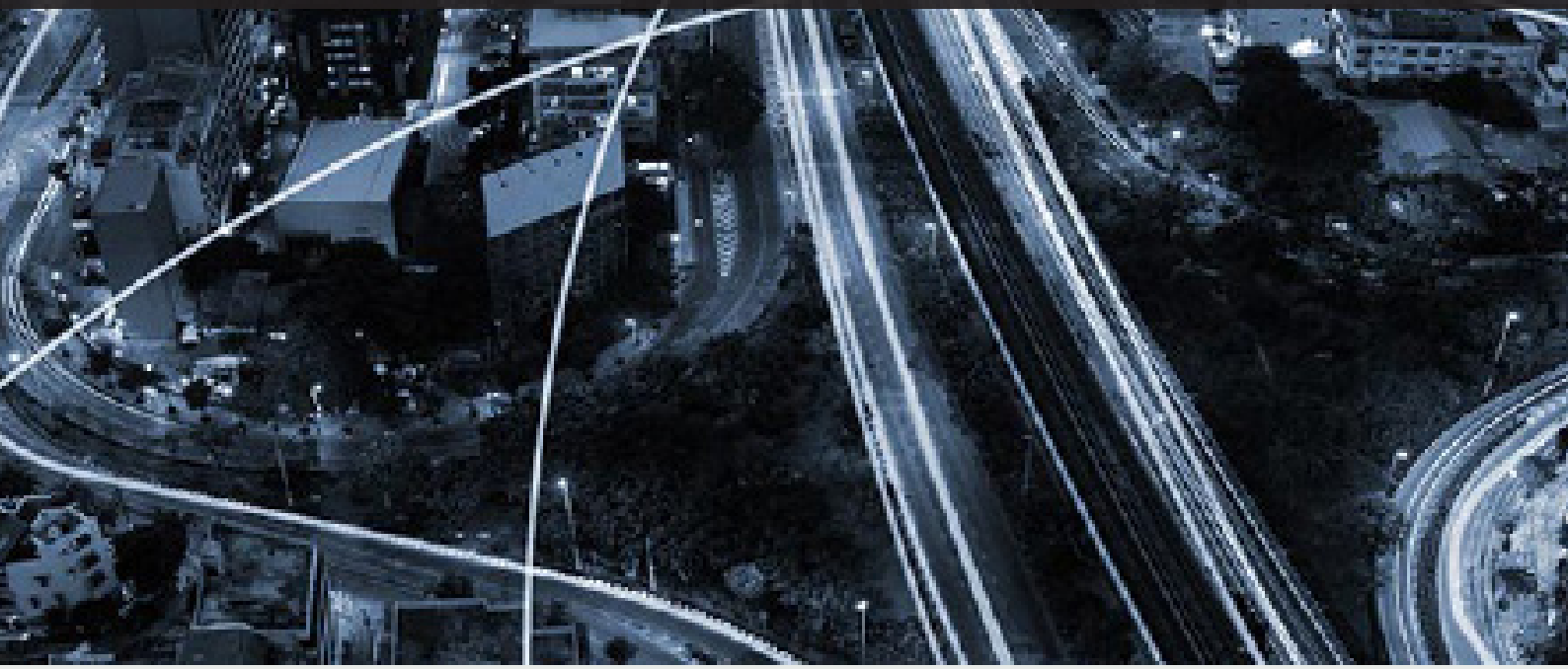
ZX10-M

DATASHEET



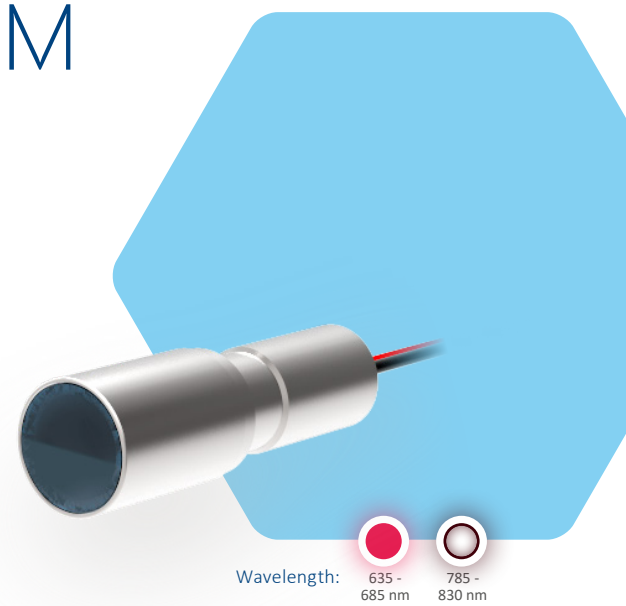
Sensor Partners BV
James Wattlaan 15
5151 DP Drunen
The Netherlands
+31 (0)416 - 37 82 39
info@sensorpartners.com
sensorpartners.com

Sensor Partners BVBA
Z.1 Researchpark 310
B-1731, Zellik
Belgium
+32 (0)2 - 464 96 90
info@sensorpartners.com
sensorpartners.com

Product Family ZX10-M

Small size, high performance

The ZX-laser series offers diverse, application specific customization possibilities. The user can choose from IR and red wavelengths depending on the application and material to be inspected. The ZX-laser reaches an unrivalled accuracy with its boresight error of less than 0.8 mrad. The industrial-suited design along with stable performance works perfectly as an integrated module in machine vision applications, sensors or processing machines.



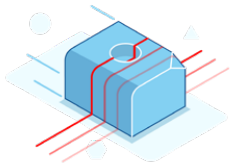
IP 50 (IP 67 optional)

Boresight Accuaracy

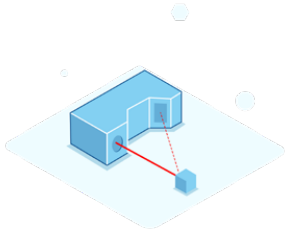
High Process Reliability

Highlights

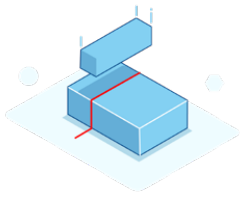
- Repeatable high product quality due to automated production processes
- Highest reproducibility of beam quality
- Optical output power up to 100 mW
- Wavelengths from 635 nm - 830 nm
- Fixed focus
- IP 50 (optional IP 67)



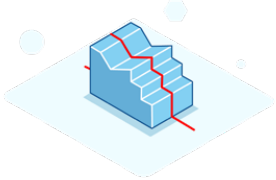
Machine Vision



Triangulation Sensors



Positioning Tasks



3D-Measurement

Order Code

Z??	-	X10	-	?	-	?	-	?
Power		Product family Size of head		Electronics		Wavelength		Optics

System specifications

Wavelength	nm	635-685 nm	785-830 nm
Wavelength tolerance	nm (typical)	±10 nm	±4 nm
Wavelength drift	nm / K (typical)	< 0,25 nm	< 0,25 nm
Output power	mW	≤ 100 mW	≤ 100 mW
Spatial mode	(typical)	Single transverse mode	
RMS noise	(20 Hz to 20 MHz, typical)	< 0.5 %	
Peak-to-Peak Noise	(20 Hz to 20 MHz, typical)	< 1 %	
Boresight error [1]	mrad (typical)	< 0.8 mrad	
Line orientation [2]	mrad	< 10 mrad	
Pointing stability	µrad / K	< 10 µrad / K	
Long-term power stability	(24 h)	±3 % over the entire temperature range	
Start-up time	µs	< 70 µs	
Laser operation mode		APC	

Electrical specification[3]

Operating voltage	VDC	3.5 - 5.5 VDC
Operating current	(max. at 25 °C)	< 250 mA
Protection		LED status indicator, reverse polarity protection, ESD
Electrical isolation		Potential-free housing
Connection		flying leads
Power consumption		< 1.5 W

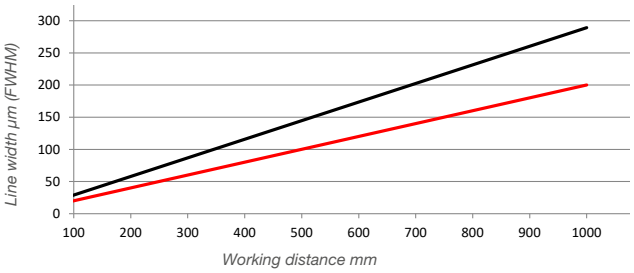
Optical specification

Fan angles [4]	Degrees	5°, 10°, 20°, 30°, 45°, 60°, 75°, 90° (homogeneous line) 90° (Gaussian line profile)
Line straightness [5]	% (of line length)	< 0.05 %
Line uniformity [6]	% (typical)	< 25 %
Dot		Point elliptical
DOE		Multi line, crosses, grids, etc.
Focus range	mm	< 100 mm up to 10,000 mm (only available as fixed focus)

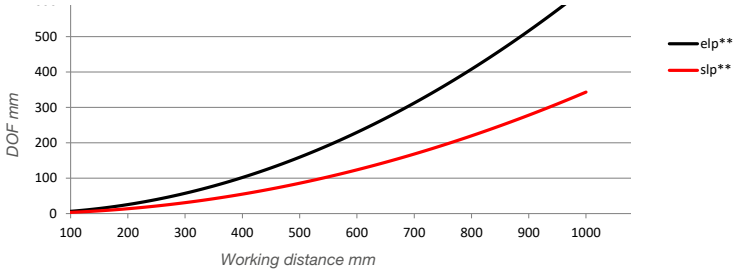
Keynotes

[1] Boresight error	Also known as pitch and skew
[2] Line orientation	Also known as line tilt (roll), with reference to the indentation in the clamping area
[3] In combination with M-electronic (M=mini).	Also available as ND-version (no driver) without driver electronics for OEM applications.
[4] Line length / fan angle	at > 13,5 % I_{max}
[5] Line straightness	Deviation from best fit line over the middle 80% of the line, for homogeneous lines
[6] Line uniformity	Maximum relative optical power variation over the middle 80% of the line, for homogeneous lines and fixed focus

Line thickness vs. working distance*



DOF vs. working distance*



Wavelength		Calculation factor for line width		Calculation factor for depth of focus	
		slp**	elp**	slp**	elp**
Red	640 nm	1.28	1.00	0.70	0.95
Red	660 nm	1.00	1.00	1.00	1.00
IR	830 nm	1.30	2.11	1.03	2.20

Optical configurations for several line settings are available.

- slp** = standard line Powell; standard setup with medium line thickness and depth of focus.
- elp** = extended line Powell; lines with advanced depth of focus and thicker lines. Recommended for fan angles > 75° at working distances < 500 mm.

The graphs above show the values for line width and depth of focus of a 660 nm laser. To get the values for a different wavelength the factor from the table above has to be multiplied by the values from the graphs.

Example: 660 nm laser focused at 1 m working distance:
line width approx. 200 µm (@ slp** optic); Depth of focus approx. 350 mm (values from the graphs)

Calculated: 830 nm laser focused at 1 m working distance:
line width approx. 200 µm x 1.30 = 260 µm; Depth of focus approx. 350 mm x 1.03 = 360,5 mm

* Values in the graphs for homogenous line profiles.

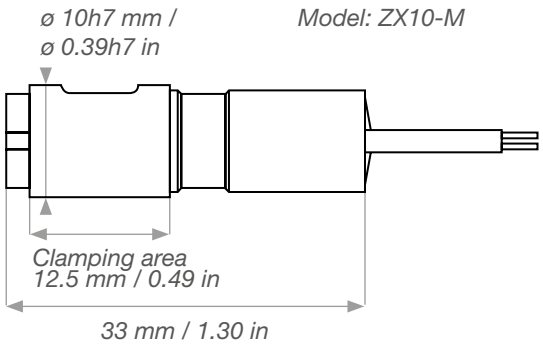
** Fan angle: 5° - 90°

Environmental conditions

Operating temperature	°C / °F	-10 °C to +50 °C / 14 °F to +122 °F
Storage temperature	°C / °F	-40 °C to +85 °C / -40 °F to +185 °F
Humidity	%	< 90 %, non-condensing
Dissipated heat	W	< 1 W
Shock and vibration		According to IEC EN 61373:2011, cat. 2

Mechanical specifications

Weight	g / lbs	30 g / 0.07 lbs
Length	mm / inch	33 mm / 1.30 in
Diameter head ø	mm / inch	10h7 mm / 0.39 in
Length of cable	mm / inch	2,000 mm / 78.74 in
Connection		2 flying leads (optional Texas plug)
Material		Stainless steel
Protection class		IP 50 (IP 67 optional)


ø 10h7 mm /
ø 0.39h7 in
Model: ZX10-M
Clamping area
12.5 mm / 0.49 in
33 mm / 1.30 in