

## Z-Trak LP1-1000

A Series of Factory Calibrated 3D Laser Profilers



### FEATURES

- » Robust FIR-Peak detector algorithm delivers high accuracy and stable operations
- » High accuracy available with Red and Blue lasers
- » Factory calibrated ready to deploy
- » Scheimpflug optimized optical path ensures sharp focus despite the height variations
- » Wide model selection covers measurement range from 40 mm to 1000 mm
- » Available in laser class 2M and 3 for wide operating conditions
- » Compact IP67 housing for harsh operating environment
- » Free License for Spera™ LT SDK, Spera Processing 8.0 RTL and Sherlock™ 8 3D
- » Supports GenICam® and compliant 3rd party software platforms

## High-Performance 3D Laser Profiler

Z-Trak laser profiler series delivers high resolution height measurements using laser triangulation techniques. These ergonomically designed, compact units feature powerful FIR-peak detector and are factory calibrated for rapid field deployment with minimal effort.

With its wide selection of models, Z-Trak covers measurement ranges from 10 mm to 1000 mm. Z-Trak delivers highly linear, repeatable results by combining reflectance based dynamic laser power control and an optimized optical path.

With sophisticated algorithms and a selection of blue lasers for highly reflected surfaces, or red lasers for complex surfaces made up of both high and low reflectance, Z-Trak capably handles virtually any inspection situation. High quality lasers and a Scheimpflug optimized optical path enables Z-Trak to produce consistent measurement across the entire field of view.

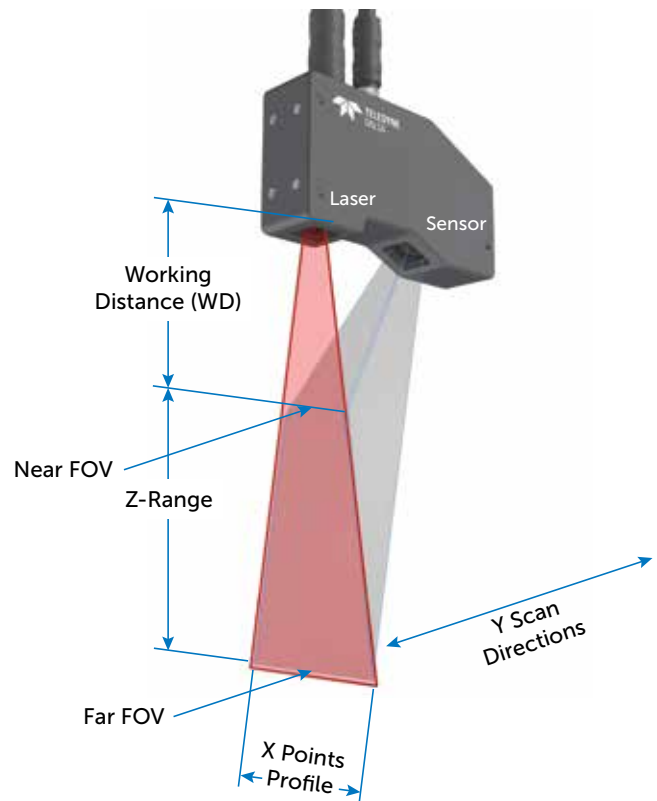
All this and support for GigE Vision standard allows Z-Trak series to work with both the Teledyne DALSA software packages as well as off-the-shelf 3rd party 3D image processing packages. Z-Trak series comes bundled with Spera LT SDK, Spera Processing 8.0 Group 1 run-time license or Sherlock 8.0 3D at no additional cost.

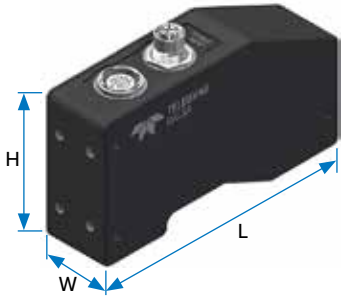


**SPECIFICATIONS<sup>1</sup>**

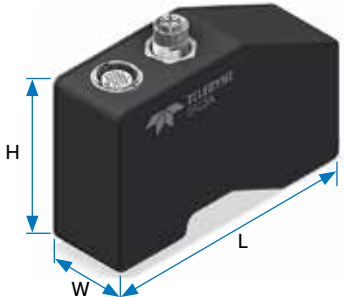
Function	Description
Profiles	<ul style="list-style-type: none"> <li>• 210 profiles/sec (Full resolution)</li> <li>• 800 profiles/sec (VGA)</li> </ul>
Input/Output	<ul style="list-style-type: none"> <li>• 1 x M16 24 connector – data and controls</li> <li>• 1 x M12 12-pin X-coded – Ethernet port</li> </ul>
Lasers	<ul style="list-style-type: none"> <li>• Red: 660 nm</li> <li>• Blue: 405 nm</li> <li>• Safety Class 2M : 15mW<sup>2</sup> for 660 nm, 10mW for 405 nm</li> <li>• Safety Class 3R: 25mW<sup>2</sup> for 660 nm, 20mW for 405 nm</li> </ul>
Laser control	<ul style="list-style-type: none"> <li>• Intensity: PWM duty cycle controlled from 0% to 100%</li> <li>• Reflectance based dynamic laser power control</li> </ul>
Output Format	<ul style="list-style-type: none"> <li>• Individual Profiles or Range Maps</li> <li>• Each point includes: Depth (Z), Lateral (X), Reflectance (R) and Laser Peak Width (W)</li> <li>• Output formats compatible with GenICam 3.0 (SFNC 2.3)</li> <li>• Native values and world units (microns)</li> </ul>
Temperature	<b>Storage:</b> <ul style="list-style-type: none"> <li>• -40° C to +80° C (-4° F to +176° F) temperature</li> <li>• 20% to 80% non-condensing relative humidity</li> </ul> <b>Operating:</b> <ul style="list-style-type: none"> <li>• 10° C (50° F) to 50° C (122° F)</li> <li>• Relative Humidity: up to 90% (non-condensing)</li> </ul>
System	<ul style="list-style-type: none"> <li>• 1 Gigabit Ethernet 1000BaseT port</li> </ul>
Requirements	<ul style="list-style-type: none"> <li>• 4GB or higher system memory</li> </ul>
Markings	<ul style="list-style-type: none"> <li>• FCC Class A, CE</li> <li>• ROHS, China RoHS</li> <li>• FDA, IEC (pending)</li> </ul>
Input/Output	<ul style="list-style-type: none"> <li>• 2 real time opto-isolated GPI (configurable)</li> <li>• 2 x 422/485 isolated quadrature shaft encoder inputs</li> <li>• 2 software driven opto-isolated GPO</li> </ul>
Communication	<ul style="list-style-type: none"> <li>• Ethernet</li> </ul>
Encoder Inputs <sup>3</sup>	<ul style="list-style-type: none"> <li>• RS422 quadrature (AB) shaft-encoder inputs for external web synchronization</li> <li>• Up to 20 MHz frequency, with built in bi-directional jitter tolerance</li> </ul>
Power Supply	<ul style="list-style-type: none"> <li>• PoE via 8-pin X-code circular connector (optional)</li> <li>• Separate power via 16M 24-pin connector</li> <li>• +12V to 36VDC +/-10% with surge protection</li> </ul>

Function	Description
Software	<ul style="list-style-type: none"> <li>• Microsoft® Windows® 7 and Windows 10 (32/64-bit) compatible</li> <li>• Fully supported by Teledyne DALSA's Software packages:               <ul style="list-style-type: none"> <li>• Sherlock<sup>3</sup> 8.0</li> <li>• Sapura Processing 8.03 (includes new 3D)</li> </ul> </li> <li>• 3rd party software:               <ul style="list-style-type: none"> <li>• MVTec® Halcon®</li> <li>• Stemmer™ Imaging Common Vision Block</li> </ul> </li> <li>• Application development using C++ and Microsoft</li> <li>• .Net languages(C++, C# or Visual Basic)</li> </ul>
Enclosure	<ul style="list-style-type: none"> <li>• Machined aluminum</li> <li>• IP67</li> <li>• 4 x mounting holes</li> </ul>

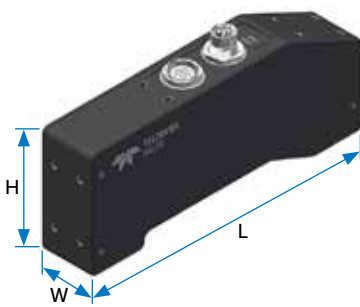
**MEASUREMENT SETUP**


**SPECIFICATIONS<sup>1</sup>**


Model	LP1-1040-B2	LP1-1060-R3 <sup>3</sup>	LP1-1120-R3	LP1-1200-R3 <sup>3</sup>
Z-Range (mm)	40	60	120	200
Working Distance (mm)	45	66	86	150
Field of View (X) (mm)	22-27.6	25.7-39	42.8-80.8	63.7-134.9
Profile Rate (profiles/sec)	VGA: 840; Full: 210			
Accuracy (µm)	3.0	5.0	8.0	12.0
Repeatability <sup>4</sup> (µm)	0.8-1.2	1.3-2.0	1.5-3.0	3.0-12.0
Linearity <sup>4</sup>	< 0.02%			< 0.03%
Z Res. (height) (µm)	8-12	15-35	20-60	50-200
X Res. (µm)	20-28	26-40	44-83	65-139
Laser (nm)	Blue:405		Red:660	
Laser Safety Class	2M		3R	
Case (mm)	X20: 36 (W) x 78.4 (H) x 138.6 (L)			



Model	LP1-1010-B2 <sup>3</sup>	LP1-1025-B2 <sup>3</sup>
Z-Range (mm)	10	25
Working Distance (mm)	30	24
Field of View (X) (mm)	8.4-9.7	13.9-18.6
Profile Rate (profiles/sec)	VGA: 840; Full: 210	
Accuracy (µm)	1.0	2.0
Repeatability <sup>4</sup> (µm)	0.5-0.7	0.7-0.9
Linearity <sup>4</sup>	< 0.02%	
Z Res. (height) (µm)	5.0-7.0	7.0-10.0
X Res. (µm)	8.6-10	14.3-19.1
Laser (nm)	Blue:405	
Laser Safety Class	2M	
Case (mm)	X10: 36 (W) x 84.8 (H) x 125.8 (L)	

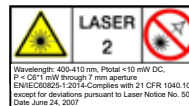
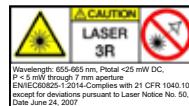


Model	LP1-1250-R3 <sup>3</sup>	LP1-1300-R3 <sup>3</sup>	LP1-1400-R3 <sup>3</sup>	LP1-1800-R3 <sup>3</sup>	LP1-11000-R3 <sup>3</sup>
Z-Range (mm)	250	300	400	800	1000
Working Distance (mm)	175	200	250	400	1500
Field of View (X) (mm)	131.1-262.2	192.9-408.5	228-522.5	332.5-950	931-1520
Profile Rate (profiles/sec)	VGA: 840; Full: 210				
Accuracy (µm)	17.0	20.0	35.0	40.0	60.0
Repeatability <sup>4</sup> (µm)	4.0-20.0	6.0-30.0	10.0-60.0	20.0-250.0	25-400
Linearity <sup>4</sup>	< 0.03%		< 0.04%		< 0.05%
Z Res. (height) (µm)	80-300	80-300	100-600	200-2200	500-1800
X Res. (µm)	135-270	198-420	235-537	342-976	957-1563
Laser (nm)	Red:660				
Laser Safety Class	3R				
Case (mm)	X30: 36 (W) x 78.4 (H) x 189.6 (L)				X50: 36 (W) x 74.3 (H) x 502.2 (L)

<sup>1</sup> Subject to change without notice

<sup>2</sup> For fan angle of 30°

<sup>3</sup> Contact Teledyne Imaging – DALSA sales for availability

<sup>4</sup> Mean ±2σ

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