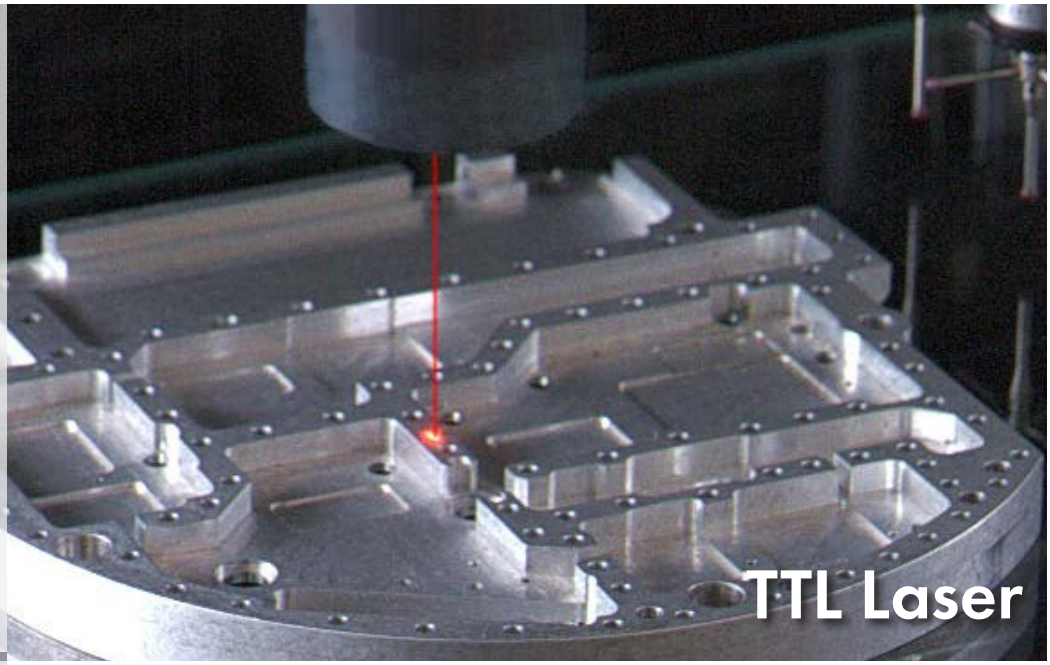
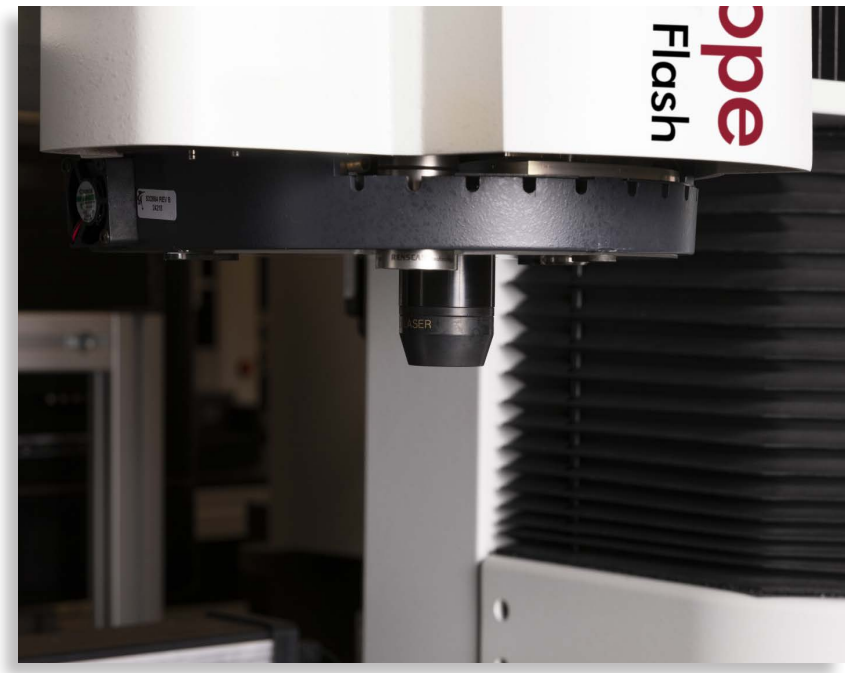


Through-the-Lens Lasers offer a non-contact method for measuring surfaces, using point focus for single point measurements or scanning for multi-point measurements. The long working distance also scans surfaces without the risk of striking a part or fixture. Additional advantages include:

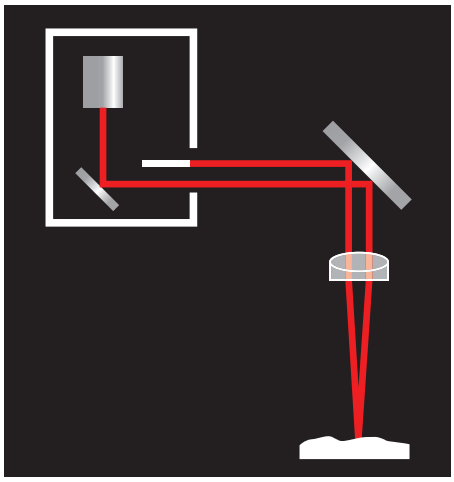
- **TTL Convenience –** The TTL laser is coaxial with system optics, allowing use over the full XY stage travel. Switch instantaneously between video and laser measurements for added convenience.
- **Auto Tracking –** The laser dynamically adjusts the Z-axis to track part contours automatically on SmartScope® systems.
- **Laser Lens –** A 2.0x laser lens that enhances laser and video performance is standard on SmartScope Flash™/ ZIP® systems and 2.5x is standard on Fixed Optics Systems.

An Integrated Laser Sensor for OGP Measurement Systems

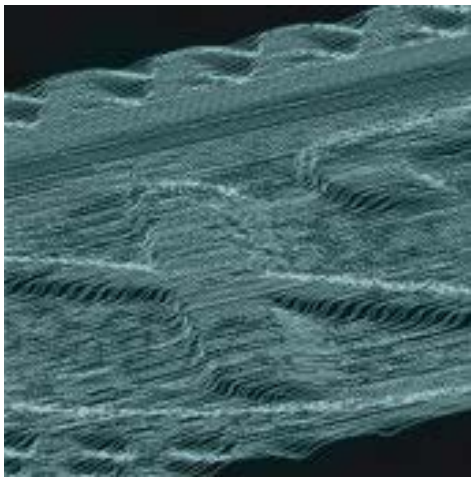


Machine shown with TTL Laser lens.

TTL Laser



The TTL laser can focus its light very precisely, providing a small spot size and accurate surface focus when measuring parts on OGP SmartScope Flash™, SmartScope ZIP, Benchmark™, Pinnacle™ or, Summit™.



TTL laser light is projected through the imaging optics to the surface being measured. The light reflects from the part surface through the lens into a dedicated detector. The steep imaging angle of TTL laser provides access to surface features that are recessed or located adjacent to vertical surfaces.

TTL Laser Specifications

Required Metrology Software	ZONE3®, Measure-X®, VMS™				
Available for	SmartScope Flash and ZIP systems		Benchmark, Pinnacle, and Summit Fixed Optics systems		
Laser Lens	2.0x (Standard)	5.0x (Optional)	2.5x (Standard)	5.0x (Optional)	10.0x (Optional)
Working Distance	38.0 mm	19.0 mm	34.0 mm	33.5 mm	20.0 mm
Measuring Range[1]	500 µm	80 µm	600 µm	280 µm	80 µm
Spot Size[2] (nominal)	8 x 6 µm	3 x 1.2 µm	16.3 x 8 µm	8.2 x 4 µm	4.5 x 1.3 µm
Resolution[3]	0.4 µm	0.2 µm	0.5 µm	0.2 µm	0.1 µm
Triangulation Angle	14°	35°	11°	21°	41°

[1]Measuring Range is the Z-range over which the performance of the sensor is linear and calibrated.
[2]With spot size at best focus.
[3]Using high quality specular (polished glass) surface, 1σ.

Safety Considerations

This system is classified as a Class II laser device by IEC 825 (2001). **Do not stare directly into the laser source.**

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