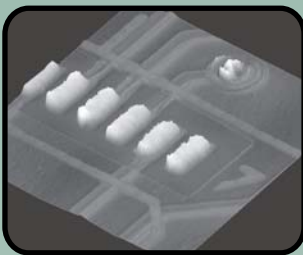


# VIEW Through-the-lens Laser

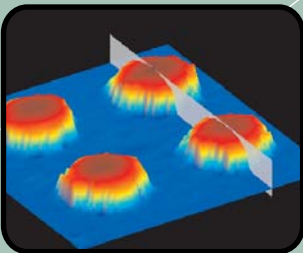
High accuracy surface metrology accessory sensor

## Measure & Characterize

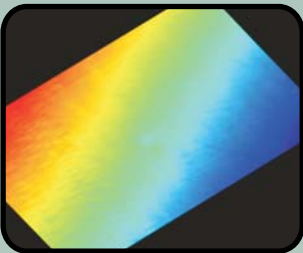
Solder Paste Volume



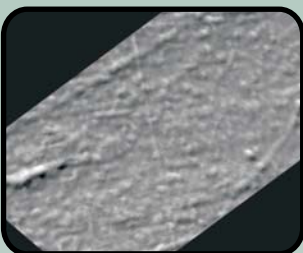
BGA Bump Height



Wafer / Substrate Warpage



Machined Surface Roughness



## TTL LASER THROUGH-THE-LENS

*VIEW's Through-the-lens (TTL) Laser Sensor is an optional high accuracy surface profiler integrated into the Benchmark, Summit, and Pinnacle optical systems. The TTL Laser provides high accuracy measurement of complex surfaces, and allows export of datapoints to off-line software for further analysis.*

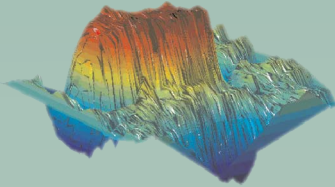
### Features:

- Fast autofocus measurements  
(4 times faster than video autofocus)
- Scanning mode for 3D surface profile measurement
  - Step height
  - Cavity depth
  - Slopes & angles
  - Volume
- Accuracy on a wide variety of target surfaces
  - Mirrored
  - Matte (down to 1% reflectivity)
  - Transparent
  - Textured
- No X-Y offset — laser spot is centered in the video field of view
- Built-in analysis tools for position, area, volume, and surface roughness measurements
- Output all datapoints for analysis & fitting using external software
- Sub-micron repeatability

### Benefits:

- Non-contact — no distortion of sensitive surfaces
- Accurate under all conditions
- Constant calibration
- High accuracy — to  $\leq 1.0$  micron
- High speed measurement

The VIEW Through-the-lens Laser Sensor scans part surfaces to determine profile, height, depth, flatness, and roughness. The TTL Laser is insensitive to variations in surface characteristics, making it ideal for highly reflective, matte, and rough surfaces. Select the TTL laser for measurement of height and volume of solder paste pads, BGA balls, wafer bumps, wafer warpage, and machined surface roughness.



## Advanced metrology for leading technologies

Applications for TTL Laser include:

### Electronic Assembly

- Epoxy/solder paste height & volume
- Stencil aperture release angle
- Component placement

### Packaged Electronic Devices

- BGA,  $\mu$ BGA, CSP, flip chip, MCM, & die bump height
- QFP pin alignment / seating plane
- Wirebond height
- Connector pin height
- Chip carrier & tray pocket dimensions

### Semiconductor Wafers

- Thickness & warpage
- Bump height

### Data Storage

- Suspension pitch, roll & flatness
- HGA pitch & roll

### Precision Plastic Molded and Machined Parts

- Dies & tooling
- Medical devices
- Soda can pull-tab tongue thickness & score depth
- Contact lens thickness & profile
- Groove depth & width

### Miscellaneous

- Coating thickness (even when wet)

## Technical Specifications for Through-the-lens Laser Sensor

### Laser Diode Specifications

|                        |                  |
|------------------------|------------------|
| Laser Diode Wavelength | 650 nm           |
| Laser Diode Power      | 0.3 mW, Class II |
| Sampling Frequency     | up to 10 KHz     |

### Performance vs. Objective Lens

|                     | VIEW 2.5X   | VIEW 5.0X   | VIEW 10X    |
|---------------------|-------------|-------------|-------------|
| Spot Size           | 20 $\mu$ m  | 15 $\mu$ m  | 7.5 $\mu$ m |
| Working Distance    | 34 mm       | 34 mm       | 20 mm       |
| Z Measurement Range | 1.0 mm      | 0.3 mm      | 0.08 mm     |
| Z Height Resolution | 0.1 $\mu$ m | 0.1 $\mu$ m | 0.1 $\mu$ m |
| Accuracy*           | 2.0 $\mu$ m | 1.0 $\mu$ m | 0.5 $\mu$ m |

\* Rated accuracy for VIEW Pinnacle 250 metrology systems only

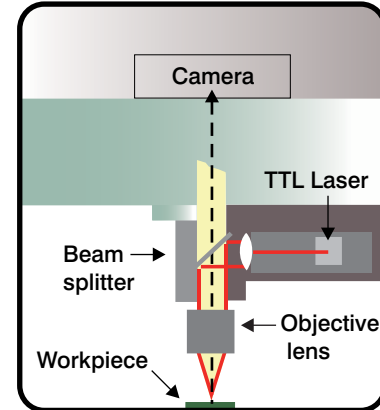
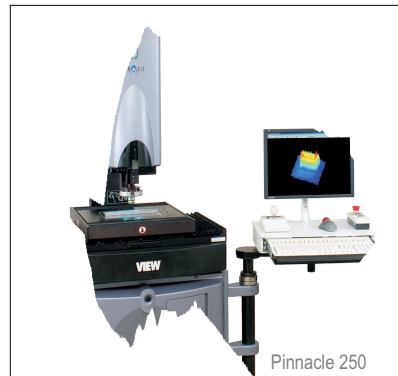


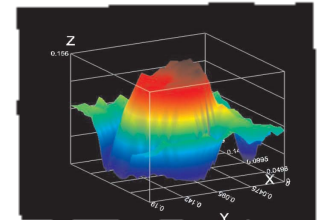
Illustration: Through-the-lens Laser Sensor

## VIEW Metrology System & VIEW 3D Software



Pinnacle 250

**VIEW Pinnacle™ 250** – with integrated TTL laser performs high accuracy surface metrology with exceptional throughput and world-class reliability. It delivers surface measurements with 1-micron accuracy and sub-micron repeatability.



**VIEW 3D™** – integral viewing software provides three dimensional viewing and analysis of surface measurements. VIEW 3D provides auto-scaling, aspect ratio control, sectioning, and integrated area, roughness, and volume measurements.



### Safety Considerations

This system is classified as a Class II laser device by the Center for Devices and Radiological Health (CDRH) and IEC 825 (1983). Do not stare directly into the laser source.



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