

## SmartScope® Vantage 650

- **Accurate video metrology –** TeleStar® telecentric 10:1 zoom optics for the highest level of optical performance
- **Multisensor versatility –** Optional touch probe, off-axis DRS™ laser, on-axis TeleStar TTL interferometric laser, micro-probes, SP25 continuous contact scanning probe, PH10 motorized probe head, and 4<sup>th</sup> and 5<sup>th</sup> axis rotary indexers
- **State-of-the-art software –** Choose from a variety of powerful QVI metrology, productivity and offline software applications, to suit your requirements

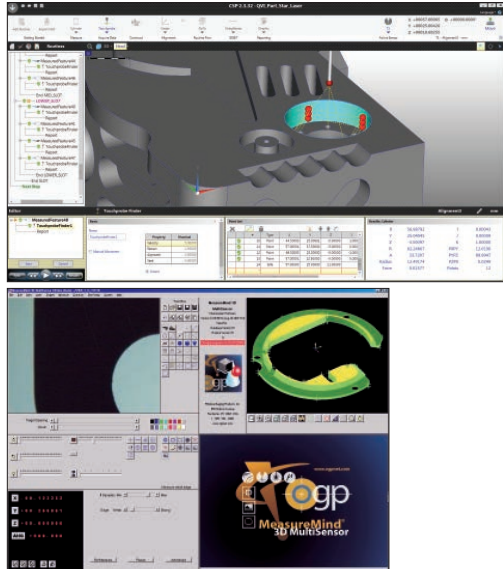
Axis	Travel (mm)
X axis	610
Y axis	660
Z axis	400

### The Ultimate Multisensor Dimensional Measuring System

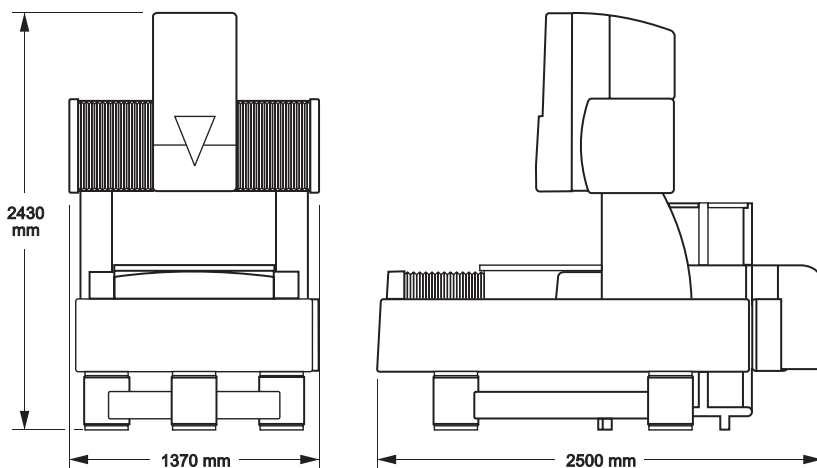


Shown with optional touch probe & change rack

# SmartScope® Vantage 650



Choose the QVI metrology software best suited to your manufacturing setting — CAD-based ZONE3® or MeasureMind® 3D.



Machine Weight: 4730 kg  
Crated Weight: 5857 kg

	Standard	Optional
<b>XYZ travel</b>	610 x 660 x 400 mm	
<b>XYZ scale resolution</b>	0.1 µm	0.05 µm; 0.04 µm
<b>Drive system</b>	XY liquid cooled linear motor drives; Z and zoom, DC servo with multifunction hand controller	
<b>Worktable</b>	Hardcoat anodized, with fixture holes, removable stage glass, 100 kg recommended max payload	
<b>Rotary axis</b>		Miniature Servo Rotary (MSR), MicroTheta Rotary (MTR), Heavy Duty Rotary (HDR), High Precision Rotary (HPR), Dual Rotary
<b>Optics</b>	Patented* 10:1 AccuCentric® TeleStar® auto-compensating, telecentric zoom, motorized; mag range 0.8x-8x, with up to 10 calibrated positions; 1.0x replacement lens	<b>Replacement lenses, optical:</b> 0.5x/130 mm WD, 2.0x/32 mm WD, 4.0x/20 mm WD <b>Replacement lenses, optical/laser:</b> 0.45x/200 mm WD, 0.5x/130 mm WD, 2.0x, 4.0x <b>Optical accessories:</b> LED grid projector, laser adapter (includes laser pointer)
<b>FOV size (std optical configuration)</b>	Measured diagonally, 8.9 mm (low mag) to 0.9 mm (high mag)	
<b>Illumination</b>	Patented** high performance substage profile (monochromatic), LED coaxial TTL surface (monochromatic), 8 sector/6 ring SmartRing™ LED (monochromatic)	
<b>Camera</b>	High resolution, black & white digital metrology camera	
<b>Image processing</b>	256 level grayscale processing with 10:1 subpixel resolution	
<b>Sensor options (contact OGP for possible combinations of sensors)</b>		Touch probe and change rack, SP25 scanning probe, patented*** on-axis TeleStar Plus interferometric TTL laser, off-axis DRS™ laser, Feather Probe™, Rainbow Probe™ scanning white light sensor, PH10 motorized probe head
<b>Controller</b>	Windows® based, with up-to-date processor and networking/communication ports	
<b>Controller accessory package</b>		24" flat panel LCD monitor, or dual 24" flat panel LCD monitors, keyboard, 3-button mouse (or user supplied)
<b>Software</b>	<b>QVI Portal, including:</b> • Portal Navigator • Independent Calibration Engine (ICE) • Multimedia Content Viewer • SmartLink™	<b>Metrology software:</b> ZONE3® Express, Prime or Pro, MeasureMind® 3D <b>Productivity software:</b> MeasureFit® Plus, SmartFit® 3D, SmartProfile® <b>Offline software:</b> ZONE3, MeasureMind 3D
<b>Power requirements</b>	230 vac, 50/60 Hz, 1 phase, 1550 W; Air - clean, dry air at 80 PSI min, 7 SCFM flowrate	
<b>Rated environment</b>	Temperature 18-22 °C, stable to ±1 °C; 30-80% humidity; vibration <0.001g below 15 Hz	
<b>Operating environment, safe operation</b>	15-30 °C	
<b>XYZ volumetric accuracy</b>	$E_3 = (1.8 + 5L/1000) \mu\text{m}^{1,2,4,5}$	$E_3 = (1.2 + 6L/1000) \mu\text{m}^{1,2,4,5}$
<b>XY area accuracy</b>	$E_2 = (1.5 + 4L/1000) \mu\text{m}^{1,2,3,4}$	$E_2 = (1.0 + 5L/1000) \mu\text{m}^{1,2,3,4}$ (with optional 0.05 µm or 0.04 µm scale resolution)
<b>Z linear accuracy</b>	$E_1 = (2.5 + 5L/1000) \mu\text{m}^{1,4}$	$E_1 = (1.5 + 5L/1000) \mu\text{m}^{1,4}$ (with optional 2.0x replacement lens and grid projector; on-axis TeleStar Plus TTL laser; off-axis DRS-300 or -500 laser, or TP20 or TP200 touch probe)

\*Patent Number 6,292,306 \*\*Patent Number 6,488,398 \*\*\*Patent Number 7,791,731

<sup>1</sup>Where L = measuring length in mm. Applies to thermally stable system in rated environment. Maximum rate of temperature change: 1 °C/hour. Maximum vertical temperature gradient: 1 °C/meter. All optical accuracy specifications at maximum zoom lens setting. Volumetric accuracy performance requires use of QVI 3D metrology software, such as MeasureMind 3D or ZONE3.

<sup>2</sup>With evenly distributed load up to 10 kg. Depending on load distribution, accuracy at maximum rated load may be less than standard accuracy.

<sup>3</sup>Measured in the standard measuring plane. The standard measuring plane is defined as a plane that is within 25 mm of the worktable surface.

<sup>4</sup>E<sub>1</sub>, Z axis linear, E<sub>2</sub>, XY area, and E<sub>3</sub>, XYZ volumetric accuracy standards are described in QVI Publication Number 790762. <sup>5</sup>On-site verification optional.



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