



SMARTSCOPE QUEST



High Accuracy Multisensor Metrology System

	Travel	mm	in
Quest 450	X axis	450	18
	Y axis	450	18
	Z axis	250	10
Extended Y (option)	Y axis	610	24
Extended Z (option)	Z axis	300	12

Premium
performance
and superb
optics

Take the innovative TeleStar® optics — specially designed by OGP® for metrology — servo driven stages mated to a metrologically stable bridge platform, and the industry's favorite software and you get SmartScope® Quest™ 450 — the system of choice for measuring large, complex parts with tight tolerances.

SmartScope Quest 450 is more than a video measuring machine. It's designed from the ground up as a multisensor system. The patented Quest TeleStar zoom optics are diffraction limited, color corrected, and fully telecentric to provide superior imaging. Its popular and powerful MeasureMind® 3D MultiSensor metrology software easily handles video, the optional unique TeleStar interferometric TTL or off-axis DRS™ laser, touch probe, scanning probe, and micro-probe. All measurement data are calibrated to the same reference — even if the part is mounted on an optional compound rotary indexer. Count on Quest to do the whole job — accurately.

SmartScope Quest 450 features include:

- Continuously variable 10:1 zoom lens with high-resolution camera, stable bridge design, and 0.1 μm scales (0.05 μm optional) for high accuracy.
- Popular and powerful OGP MeasureMind 3D MultiSensor metrology software, featuring a flexible 3D datum environment with datum axis or datum plane creation in full 3D space.
- Exclusive OGP programmable illumination technology for true automation. Substage backlight with a moving array of green LEDs to synchronize illumination to zoom lens motion, coaxial surface light, and our patented SmartRing™ light are all standard on SmartScope Quest.



Technical Specifications

■ Standard ■ Optional

<ul style="list-style-type: none"> ■ Stage travel (XYZ): 450 x 450 x 250 mm (18 x 18 x 10") ■ Extended Y axis: 610 mm (24") ■ Extended Z axis: 300 mm (12") ■ Measuring unit dimensions (approx LWH): 165 x 100 x 190 cm, 1300 kg ■ Computer workstation dimensions (approx LWH): 91 x 61 x 80 cm, 36 kg ■ XYZ scale resolution: 0.1 μm ■ 0.05 μm ■ Interactive stage control: 4 axis (X,Y,Z,zoom) with ergonomic, multifunction hand controller ■ Motor drives: DC servo (X,Y,Z,zoom) ■ Liquid-cooled linear (X,Y), DC servo (Z,zoom) ■ Maximum stage speed: 200 mm/sec (XY); 75 mm/sec (Z) ■ Maximum stage speed/acceleration, with optional linear motor: 400 mm/sec (XY speed); 75 mm/sec (Z speed); 750 mm/sec² (XYZ acceleration) ■ Worktable: Hardcoat anodized with fixture holes and removable stage glass, 75 kg load capacity
<ul style="list-style-type: none"> ■ Zoom lens: Patented[†] 10:1 AccuCentric® TeleStar® auto-calibrating, telecentric, motorized, mag range 0.8x - 8x, 10 position ■ Replacement lens, optical: 1.0x ■ Replacement lenses, optical: 0.5x/120 mm WD, 2.0x/32 mm WD, 4.0x/20 mm WD (grayscale camera only) ■ Replacement lenses, optical/laser: 0.45x/200 mm WD (grayscale camera only), 0.5x/120 mm WD, 2.0x, 4.0x (grayscale camera only)
<ul style="list-style-type: none"> ■ Camera/Illumination: <i>Camera/</i> high resolution grayscale with 752 x 582 pixel array; <i>Illumination/</i> monochromatic, patented^{††} LED moving array substage (green), LED coaxial TTL surface (green), patented^{†††} 8 sector/6 ring SmartRing™ LED (green) ■ Camera/Illumination: <i>Camera/</i> high resolution color CCD with 768 x 494 pixel array (in lieu of grayscale camera); <i>Illumination/</i> substage backlight (collimated, green), coaxial TTL fiber optic surface, 8 sector/6 ring SmartRing LED (white) ■ Image processing: 256 level grayscale processing with up to 50:1 sub-pixel resolution ■ Optical accessories: LED grid projector, laser pointer (not available with TTL laser) ■ Multisensor options: Touch probe and change rack, SP25 scanning probe, TeleStar TTL laser, Feather Probe™, Rainbow Probe™ scanning white light sensor, PH10 motorized probe head (contact OGP for possible combinations of sensors)
<ul style="list-style-type: none"> ■ Power requirements: 115/230 vac, 50/60 Hz, 1 φ, 1200 W ■ Rated environment: Temperature between 18 and 22° C, stable to ± 1° C; 30-80% humidity (non-condensing); vibration <0.001g below 15 Hz ■ Operating environment: 15-30° C
<ul style="list-style-type: none"> ■ Metrology software: OGP MeasureMind® 3D MultiSensor ■ Computer: Minimum configuration Dual Core processor @ 1.8 GHz, 1.0 GB RAM, 80 GB hard drive, 1.44 MB floppy, DVD-RW drive, parallel, serial, and USB 2.0 ports, on board 10/100 LAN, 22" flat panel LCD monitor, keyboard, mouse ■ Monitor options: 24" flat panel LCD monitor (in lieu of standard 22"), or additional 22" flat panel LCD monitor for dual monitor display ■ Operating system: Microsoft® Windows™ XP Professional ■ Software: MeasureFit® Plus, SmartReport® powered by QC-Calc, SmartFeature®, QC-Calc™, TrueMap™, SmartCAD® 3D, SmartFit® 3D, SmartProfile™, SmartScript®, I++ DME, SmartTree™
<p>Where L=measuring length in mm. Applies to thermally stable system in rated environment. All optical accuracy specifications at maximum zoom lens setting.</p> <ul style="list-style-type: none"> ■ XYZ volumetric accuracy: $E_3=(2.5 + 5L/1000) \mu\text{m}^{1,2,3,5}$ ■ XY area accuracy: $E_2=(1.5 + 4L/1000) \mu\text{m}^{3,4}$ ■ Z linear accuracy: $E_1=(2.5 + 5L/1000) \mu\text{m}^6$ ■ Z linear accuracy: $E_1=(1.8 + 5L/1000) \mu\text{m}^6$ (with optional 2x or 4x replacement lens and grid projector) ■ Z linear accuracy: $E_1=(1.5 + 5L/1000) \mu\text{m}^6$ (with optional DRS-300 or -500 laser; TP-20 or -200 touch probe; or TeleStar TTL laser)
<ul style="list-style-type: none"> ■ Warranty: One year, on-site ■ Accessories and service: Fixtures and calibration artifacts, service and support contracts, computer workstation, single and compound rotaries

[†]Patent Numbers: 5,389,774 (AccuCentric); 6,292,306 (TeleStar) ^{††}Patent Number 6,161,940 ^{†††}Patent Number 5,690,417

1) Maximum rate of temperature change: 1° C/hour. 2) Maximum vertical gradient: 1° C/meter.

3) With evenly distributed load up to 5 kg. Depending on load distribution, accuracy at maximum rated load may be less than standard accuracy.

4) XY axis artifact: QVI 25 intersection grid reticle in the standard measuring plane. The standard measuring plane is defined as a plane that is within 25 mm of the worktable surface.

5) XYZ volumetric artifact: QVI linear linescale. 6) Z axis artifact: QVI step gage or master gage blocks.



Multisensor Measurements for Manufacturing Professionals

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