VIEW **Benchmark™ 450** A high value, high accuracy dimensional metrology system

VIEW
MICRO-METROLOGY

A Division of Quality
Vision International

B E N C H M A R K

*Ideal for measuring large footprint parts
such as Stencils, PCBs or nested groups of parts*

Featuring:
450 x 450 x 200 mm (18 x 18 x 8 in.) measuring range

E_2 (XY plane) = (2.5 + 5L/1000) µm

Sub-micron scale resolution

High-precision dual magnification
optical system

Optional Programmable
Multi-Color Ring Light (PRL)

Optional through-the-lens (TTL) laser
with autofocus and scanning capabilities

Advanced image processing for high speed,
accuracy and robustness

Subpixel accuracy of 1/10 to 1/50 pixel

Choice of powerful metrology software and data
analysis tools

MTBF   8,000 hours

QVI

*Photo Description: VIEW Benchmark 450
The product photo above displays the Benchmark 450 model with VMS
metrology software, and optional
integrated workstation. Additional options are listed in the technical
specifications and are not included in this photo.*

The VIEW Benchmark™ 450 delivers the performance and reliability you expect from VIEW Micro-Metrology in a large travel, non contact metrology system. It includes a large, 450 x 450 mm stage suitable for large footprint parts or nested groups of smaller parts. Advanced optics, illumination, and image processing make the Benchmark 450 a world-class metrology system.

Benchmark 450 is equally at home in the QA lab performing first article inspection or on the production floor providing precision measurements for process control.

Available optional software packages increase system versatility:

- CAD import (DXF/IGES) Software
- Form fitting and analysis Software
- Off-line Programming Software
- QC-Calc™ Statistical Process Control (SPC) — Real-time analysis and reporting software
- Elements™ CAD To Measure metrology software

Advanced metrology for leading technologies

Applications for Benchmark include:

SMT and Electronic Components
- PCBs and Stencils
- SMT component placement
- Solder paste/Epoxy glue dot
- Chip carriers and trays
- Inkjet printer cartridges
- Lead frames, wire bonds, flex circuits, connectors
- Fiber optic components and MEMs

Data Storage
- Wafer carriers and row bar pallets
- Slider and Head Gimble Assemblies (HGA)
- Suspensions

Precision plastic molded and machined parts
- Dies and tooling
- Medical devices
- Fuel injection components
- Watch components

Technical Specifications - VIEW Benchmark™ 450

○ Standard ● Optional

Specification	Details
Measuring Range	○ 450 x 450 x 200 mm (18 x 18 x 8 in.)
Resolution	○ 0.1 µm (0.000004")
Stage Drive System	○ DC servo motor control
Stage Drive Velocity	○ XY: 150 mm/sec; Z: 100 mm/sec.
Stage Error Mapping	○ Non-linear 2D error corrections in X-Y plane
Load Capacity	○ 65 kg (140 lbs) maximum load
Optical System	○ Dual magnification, fixed lens optical system with 1X and 4X internal magnifications

Objective Magnification	0.8x/3.2x	1x/4x	2.5x/10x	5x/20x	10x/40x	25x/100x
	●	○	●	●	●	●
Working Distance	84 mm	34 mm	32 mm	33 mm	30 mm	13 mm
Field of View (mm) Low ○	8.3 x 6.2	6.8 x 5.1	2.7 x 2.0	1.3 x 1.03	0.6 x 0.5	0.27 x 0.20
High ○	1.9 x 1.4	1.5 x 1.2	0.64 x 0.48	0.32 x 0.24	0.15 x 0.11	0.06 x 0.05

Specification	Details
Optical Accessories	● Ronchi Grid Projection
Illumination	○ Programmable LED Illumination system for stage backlight and coaxial surface light ● Multi-color (red, blue, green, and composed white) LED Illumination Programmable Ring Light (PRL) ● VectorLight™ programmable ringlight with white LEDs
Cameras	○ Dual, digital, 1.4 megapixel monochrome cameras; 4:1 ratio
Image Processing	○ Frame integration; 10:1 to 50:1 subpixeling ● CiC - Continuous Image Capture integrated with stage motion for on-the-fly high speed measurement
Sensor Options	● Through-the-lens (TTL) laser autofocus and scanning sensor ● SpectraProbe™ high resolution chromatic sensor
Controller	○ Dedicated system controller with embedded Intel® 2.66 Ghz Quad CPU Processor and Windows® operating system
Operator Workstation	○ Stand-alone Anthro Cart Operator workstation; 90 x 90 x 128 cm; 40 kg ● Integrated adjustable sit / stand workstation arm, with independent height adjustment for monitor and keyboard.
Display Monitors	● Single 20" LCD flat panel monitor, joystick, keyboard, and mouse ● Dual 20" LCD flat panel monitors, joystick, keyboard, and mouse
Metrology Software	○ VIEW Metrology Software (VMS) ● Elements™ CAD to Measure metrology software ● VMS Off-Line Workstation Software
Mechanical Options	● Certified calibration standards and accessories ● Fixture kits ● Rotary Indexers
MTBF	≥ 8,000 hours
Power Supply	115/230 VAC, 50/60 Hz, 700 W
Rated Environment	18-22°C, (65-71°F) 30-80% humidity (non-condensing), vibration <0.0015g below 15Hz
System Dimensions	(W x D x H) - 1380 x 1117 x 1700 mm (39 x 44 x 67 in.)
Weight	**Crated:** 750 kg (1,650 lbs) **Uncrated:** 610 kg (1,345 lbs)

Measuring Accuracy at 20°C (68°F)

○ E_2 (XY plane) = (2.5 + 5L/1000) µm[1,2,3,4]

○ E_1 (Z-axis) = (2.0 + 8L/1000) µm[1,2,5]

● E_1 (Z-axis) = (2.0 + 5L/1000) µm (with optional laser and 5x lens)

Where L = measuring length in mm. All specifications apply to a thermally stable machine and a certified artifact at 20°C.
1. Maximum rate of temperature change: 1° C / Hour.
2. Maximum vertical temperature gradient: 1° C / Meter
3. At rated velocity with an evenly distributed load of 5KG.
4. X,Y area accuracy artifact: QVI grid reticle or QVI linescale in the standard measuring plane. Standard measuring plane is defined as within 25mm of the worktable surface.
5. Z axis accuracy artifact: QVI step gage, interferometer or master gage blocks.