Quesant
INSTRUMENT CORPORATION

Q-Scope™ 250

Designed for ease of use for industry and academia with non-destructive, large sample scanning, the Q-Scope 250 is a complete turnkey Scanning Probe Microscope (SPM). Its standard, user-friendly features provide the best SPM value in the industry. Utilizing a video microscope with a 90° top down view for easy laser alignment, it has the capability to quickly find sample features and align the probe over them. A manual X-Y translation stage can handle up to 6" diameter samples. Add options such as a sample heater stage, scanning in liquids, motorized X-Y translation stage, Magnetic Force Microscopy and extended Z range of 20μm and the Q-Scope 250 becomes customized for you.

NanoScanning *Your* World

Standard Features

- Scanning Modes: Contact AFM- Z Height and Lateral Force, Intermittent Contact AFM (WaveMode™) and Phase Mode.
- Isotopic Focal System™ allowing systematic laser beam tracking of the cantilever/probe during scanning. (Quesant Patent)
- Unique Broadband Feature, providing a broader frequency response and better image data by combining Z height and PID loop error signals.
- Computer-controlled Z-Axis approach - fully automated from any height.
- QLithic™ granite stage (65 lbs. of stability).
- Renowned ease-of-use (probe change/laser alignment, and PID loop gain optimization) within industry.
- A proven, simple and rugged, integrated design ensuring:
  - -Versatility for upgrades (common design)
  - -Reliability (years of problem free history)
- Analog PID loop (AnaLoop™) with digital input allows faster, more accurate data gathering. (Quesant Patent)
- Windows-based ScanAtomic™ control and analysis software.
- Complete turnkey system including state-of-the-art PC computer.

Available Options

Magnetic Force Microscopy

Electric Force Microscopy

LiquiScan™ Head (Capable of Scanning in Liquids)

Sample Heater with controller.
Range: Ambient to 250°C

Hysitron Interface™ for nanoindenting and nanoscratching (property of Hysitron Inc.)

Acoustic/Vibration Isolation Chamber (AVIC)

Motorized X-Y Translation Stage

Research Customization Package

Q-Analysis-Enhanced Analysis and Reporting Software.

Technical data

Component	Feature
AFM Scanning Head	
Scanning Part	Cantilever
Scanning Element	PZT Tube(s)
Scanning Range & Resolution	See scanning head specification
Sample and Probe Viewing	
Video Microscope	200X Magnification
Power Requirements	100-115v/60Hz/5A 220-240v/50Hz/3A
Stage Type	Granite
Maximum Sample Size	6" x 6"/150mm x 150mm
Maximum Sample Heights	2.5"/67mm
X-Y Translation Stage	Manual
X-Y Translation Stage Travel	0.5"/12.5mm
Z Translation Stage	Motorized and automated
Electronic Interface Unit	
PID Loop (AnaLoop™)	Analog
Digital Interface	16 Bit A/D and D/A
PC Interface	Digital Signal Processor
Maximum Image (Data) Resolution	1024 x 1024 pixels
Display Resolution	1024 x 768 pixels, 65,000 colors

Other Specifications

1. Motorized Translation Stage[2]
   - 1.1 X-Y Movement Accuracy: 4 to 5µm
   - 1.2 Translation: 0.5" in X and Y
   - 1.3 Working Area: 6" x 6"
   - 1.4 X-Y Movement Resolution: 2µm
   - 1.5 Repeatability: 95%
2. Enhanced Motorized Translation Stage[2]
   - 2.1 X-Y Movement Accuracy: 500nm
   - 2.2 Translation: 1.0" in X and Y
   - 2.3 Working Area: 6" x 3.5"
   - 2.4 X-Y Movement Resolution: 2µm
   - 2.5 Repeatability: 99%
   - 2.6 Separate programmable controller with manual front panel plus joystick control
3. Motorized Z
   - 3.1 Z Movement Accuracy: 10nm
   - 3.2 Z Movement Resolution: 20nm
4. Maximum Sample Size (X x Y x Z):
   - 4.1 Standard Translation Stage: 6" x 6" x 2"
   - 4.2 Enhanced Translation Stage: 6" x 4" x 2"
5. Maximum Number of Captured Simultaneous Images: 4
6. Number of Displayed Simultaneous Images: 2
7. Network Capability: The computer can be attached to a network but ScanAtomic software is not multi-user and can only be used to operate the Q-Scope on the Quesant-supplied computer system. However, additional copies of ScanAtomic can be installed on off-line computers attached to the network and used for post-processing images.
8. Footprint: 14"D x 10" W x 16" H (not including computer, monitor and Electronic Interface Unit).
9. Footprint of Acoustic/Vibration Isolation Chamber: 22"D x 22"W x 24" H.
10. Weight: 65 lbs. (all weights are approximate, and do not include computer, monitor and Electronic Interface Unit).
11. Power Requirements: Specify 110 volts/50 or 60 cycles, or 220 volts/50 cycles. A line filter is highly recommended.
12. Standard Warranty: 100% on parts and labor on workmanship for one year after installation.
13. Yearly Service Contract: Based on 10% of the product price, this service contract takes over after the first-year warranty; 100% on parts and labor on workmanship.

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