

JMAR's

Z-Scope

Manual and Motorized Z-Scope with 12X Zoom

JMAR Precision Systems, Inc. (JPSI) has developed both manual and motorized Z-Scope Systems with either manual zoom or automated 12X zoom optics. A manual system is a better economical choice in some cases than a motorized one and its simplicity offers added attraction to some users. Z-Scopes can be optically configured to produce exactly the right image for your measurement application and then perform that application with accuracy and reliability over and over again with out having to calibrate in between measurements.

The Zoom system comes with 1.5X and 2X objectives for more extensive magnifications. The implementation is unique compared with our competition and offers better accuracy because the zoom positions can be pre-programmed, calibrated and stored as though they are different lenses with varying magnifications. They are recalled in the measurement programs to create features and make specific measurements.

The motorized Z-scope has innovative options for special and simplified operator interfaces, Statistical Analysis of the data, Profile Analysis for Form-Fit and also JMAR patented Light Calibration Kit for correlation of measurements between different machines in production environment. These systems are metrology platforms with the smallest foot prints, flexible optics and easy-to-use software offered at very competitive prices of all the bench top models in its category.



12:1 Zoom Optics

courtesy of NAVITAR, INC

Manual Z-Scope Technical Specifications			
	Standard 8x8" system with back light	Solid Stages 6x6 Option (no back light)	Solid Stages 4x4 Option (no back light)
Measuring Range	200 x 200 x 150 mm (8 x 8 x 6 inch)	150 x 150 x 150 mm (6 x 6 x 6 inch)	100 x 100 x 150 mm (4 x 4 x 6 inch)
Platform	Granite base. Aluminum XY stage with removable stage glass. Aluminum Z column.	Aluminum	Aluminum
	All systems have tapped holes for custom fixturing.		
Positioning	Manual positioning with coarse and fine control knobs		
Focus	Manual focus. Optional: coarse and fine control knobs.		
Stage Resolution	1 micron		
Load Capacity	15 kg (35 lbs.)	55 kg (125 lbs.)	44 kg (100 lbs.)
Optical System (see Optical Table for more details)	Standard: 12X Zoom Microscope with detents. Working distance: 37mm to 86mm Field of view: 0.57mm to 13.8mm Pixel size: as low as 0.7 microns depending on magnification. Optional: Premium microscope with full Koehler illumination, aperture and field diaphragms, filter holders, and one or more fixed objective lenses.		
Coaxial Illumination	Included		
Ring light	Included		
Back light	Included	Not available with t 6x6 or 4x4 stage.	
Illumination intensity control	Manual		
Camera and Display	CCD camera with video monitor and crosshair generator.		
Measurement Interface	Quadra-Chek® 220, 2-axis geometric readout system with 6 inch LCD display including large Digital Read Outs, printer output ports, data output ports, SPC output, easy-to-use interface, and many other standard features. Measurements: point, line, radius, circle, angle (vertex point), distance, min/max distance between features, form information, data cloud, intersections and constructions.		
	Optional: Quadra-Chek® 330, 3-axis geometric readout system. Video CMM III®		
Electrical	120 or 240 VAC, 15A, single phase		
Environmental Requirements	20°C (68°F) ± 3°C, 20-80% Humidity (non-condensing)		
Weight	TBD	TBD	TBD
Metrology Platform Dimensions (excludes peripheral components)	51 x 69 x 100 cm	46 x 59 x 100 cm	46 x 56 x 100 cm
Options	1. Various zoom microscope configurations are available -- see optics table.		
	2. Upgrade to Quadra-Check® 330, 3-axis geometric readout system.		
	3. Upgrade to coarse and fine manual focus control knobs.		
Accuracy	U2(xyplane) = 1.8+3.5L/100; U1(z) = 1+13L/150 where U2 & U1 are in microns and L is in mm		

(specifications are subject to change with out notice)

(Quadra-Chek® is a registered trademark of Metronics, Inc. – Video CMM® of JMAR-PSI.)

Motorized Z-Scope Technical Specifications			
	Standard 8x8" system with back light.	Solid Stages 6x6 Option (no back light)	Solid Stages 4x4 Option (no back light)
Measuring Range	200 x 200 x 150 mm (8 x 8 x 6 inch)	150 x 150 x 150 mm (6 x 6 x 6 inch)	100 x 100 x 150 mm (4 x 4 x 6 inch)
Platform	Granite base. Aluminum XY stage with removable stage glass. Aluminum Z column.	Aluminum	Aluminum
	All systems have tapped holes for custom fixtures.		
Stage Drive System	Micro steppers		
Stage Resolution	0.5 micron	1 micron	1 micron
Stage Error Mapping	Non-linear (segmented) 2D error correction in XY plane		
Load Capacity	15 kg (35 lbs.)	44 kg (100 lbs.)	55 kg (125 lbs.)
Optical System (see Optical Table for more details)	Standard: Motorized 12X Zoom Microscope. Working distance: 37mm to 86mm Field of view: 0.57mm to 13.8mm Pixel size: as low as 0.7 microns depending on magnification. Optional: Premium microscope with full Koehler illumination, aperture and field diaphragms, filter holders, and one or more fixed objective lenses.		
Coaxial Illumination	Included		
Ring light	Included with standard zoom microscope. Optional with premium fixed-objective microscope.		
Back light	Included	Not available with 6x6 or 4x4 stage.	
Illumination intensity control	All light sources are automatically controlled by VideoCMM II® software.		
Camera	Panasonic 1/2" machine vision CCD, 640x480 pixel array		
Image processing	8-bit grayscale gradient processing with 5:1 to 50:1 sub-pixeling (applicationspecific).		
Software	JMAR VideoCMM® II		
Computer	Intel high-speed processor, hard disk, 17" SVGA monitor, Windows® Operating System, CD ROM, 3.5" floppy drive, ethernet network adapter, image capture card. Call for current processor speed, memory, and disk capacity.		
Electrical	120/240 VAC, 15A, single phase		
Environmental Requirements	20°C (68°F) ± 3°C, 20-80% Humidity (non-condensing)		
Weight	TBD	TBD	TBD
Metrology Platform Dimensions (excludes computer and peripheral components): 8" x 8" platform, 51 x 69 x 100 cm 6" x 6" platform, 46 x 59 x 100 cm 4" x 4" platform, 46 x 56 x 100 cm			

Options	1. Various zoom microscope configurations are available -- see optics table.
	2. Upgrade to optional premium microscope with full Koehler illumination, aperture and field diaphragms, filter holders, and one or more fixed objective lenses. Optional manual lens turret.
	3. Statistical Process Control software (QC Calc) ® by ProLink Software
	4. IQ-Form Fit™ software , ® by IQ Metrology. 2D and 3D versions are available.
	5. Operator Interface Package . Provides access control to the various features in the Video CMM II ® software. Also provides a simplified interface for dedicated applications.
	6. Illumination upgrade , provides fine control of 3 channels of Fostec lighting, and better illumination stability.
	7. Patented light calibration kit . Allows the light sources to be calibrated. Allows compensation for lamp dimming and for variation among replacement lamps. Allows 2 or more JMAR metrology systems to be calibrated for optimal measurement correlation.
Accuracy	U2(xyplane) = 1.8+3.5L/100; U1(z) = 1+13L/150 where U2 & U1 are in microns and L is in mm

Optical Table							
	Working Distance (mm) with ring light removed	Optical magnification	Pixel size (microns)	Field of view (mm)	Numeric Aperture	Sparrow resolution (microns) at 660 nm wavelength	Depth of Field (mm)
12X Zoom Microscope, standard	86	0.58X - 7.00X	17.2 - 1.4	13.79 - 1.14	0.018 - 0.1	18 - 3	3.0 - 0.1
12X Zoom Microscope, (with 1.5X Auxiliary Lens)	50	0.87X - 10.5X	11.5 - 1.0	9.19 - 0.76	0.027 - 0.15	12 - 2	1.35 - 0.05
12X Zoom Microscope, (with 2X Auxiliary Lens)	37	1.16X - 14.0X	8.6 - 0.7	6.90 - 0.57	0.036 - 0.2	9 - 2	0.75 - 0.03
All zoom microscopes include coaxial illumination & a ring light. Back light included only on the 8" x 8" x 6" platform. Also available: premium microscope with full Koehler illumination, aperture and field diaphragms, filter holders and one or more fixed objective lenses							

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(QC Calc® by ProLink Software, IQ-Form Fit™ by IQ Metrology, Windows® by Microsoft Corp, Video CMM® by JMAR Precision Systems, Inc., are registered trademarks.)