

Measurement & Inspection Solutions
for High-Precision Applications

Precision

Accuracy

Submicron Applications

LUMINA™

High-precision System for Measurement and Inspection

PPL's **LUMINA** is a high precision
Video Coordinate Measurement System.

This fully automatic system combines
the unparalleled accuracy and repeat-
ability of our industry renowned
MIRAGE™ Tabletop Measurement
Systems with a large stage platform.

LUMINA is ideal for sub-micron critical
measurements on flat panel displays,
artwork, precision etched parts, MCM's
micro-medical devices, printed circuit
boards, solder paste, BGA and
Coplanarity measurements and many
other applications.

- Engineered and manufactured
for rugged reliability
- Expandable to meet your needs
- Wide spectrum of uses

**PPL Pacific Precision
Laboratories, Inc.**

Formerly J-MAR Precision Systems

ISO 9001 Certified

800-793-0179

www.ppli.com

E-Mail: sales@ppli.com



Standard Features at a Glance

- Scale resolution of 0.1 micron
- Equipped with high speed
Linear drives
(12"/sec) on x & y axes
- Flexible Precision Optical
components
- Windows® NT® and XP®-
based VCMMII™ software
- Standard stage sizes:
12"x12"x6", 18"x18"x6" and
24"x20" x6"
- Ergonomic/integrated design

VCMMII™ Software Features

- Powerful Image Processing
Algorithms
- Easy To Use & Text Editing Of
Programs
- Conditional branching/loops
- Full math expressions
- True FOV operations
- Image storing and processing

Options for Easy Expansion

- Wide range of optics
- Variety of lighting options
- Laser probes
- Touch probes
- Patented Light Calibration
- Statistical Process Control
- Form, Fit & Profile Analysis
- Simplified Operator Interface

LUMINA
Technical Specifications

Measuring Range	300mm x 300mm x 150 mm (12"x12"x6")	450mm x 450mm x 150mm (18"x18"x6")	600mm x 500mm x 150mm (24"x20"x6")
Platform	Granite base. Aluminum XY stage with linear motors and removable stage glass. Goose neck granite Z column with stepper motors. All systems have tapped holes for custom fixtures.		
Stage Drive System	Linear motors on X & Y axes and Micro steppers on Z axis PMAC Motion Controller with a max. velocity of 12"/sec and supports up to four axes.		
Stage Resolution	0.1 micron	0.1 micron	0.1 micron
Stage Error Mapping	Non-linear (segmented) 2D error correction in XY plane, linear/ non-linear correction in Z.		
Load Capacity	Nominal: 22 Kg (50 Lbs.) but can go up to 88 Kg. (200 Lbs.) depending on fixturing to avoid the load going to the glass plate		
Highly Flexible and Wider Choice of Optical Systems	<p>Standard: 2 Lens shuttle, premium microscope with full Koehler illumination, aperture and field diaphragms, filter holders, and one or more fixed objective lenses.</p> <p>Option: Accommodates single lens objectives, Micro objectives (2.5X to 150X), Macro objectives (3X, 5X and 10X Only), 4 Place or 5 Place manual and motorized turrets and 12X Zoom Optics (<i>for more details see Zoom Optics Optical Table</i>).</p> <p>Working distance, Field of view & Pixel size : depend on the type of optics (some restrictions may apply and the type of optics is selected based on the applications)</p>		
Coaxial Illumination Ring light Back light	<p>Standard: Coaxial and Back Lights are Included for all types of optics.</p> <p>Option: Ring light is an option and may vary in sizes and specifications</p>		
Standard Illumination intensity control Option: Light Calibration System	All light sources are automatically controlled by Video CMM II® software. Option: requires optical filters and light calibration software features		
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 (application-specific).		
Laser Options:	Laser Auto Focus Scanning Triangulation or Coaxial Laser Probes – 8 different types		
Software	JMAR Video CMM® II		
Accuracy	$U2(xy) = 1.7+2.9L/300$ $U1(z) = 1.5+L/150$ where U2 & U1 are in microns and L is in mm	$U2(xy) = 1.7+4.0L/450$ $U1(z) = 1.5+L/150$ where U2 & U1 are in microns and L is in mm	$U2(xy) = 1.7+5.2L/600$ $U1(z) = 1.5+L/150$ where U2 & U1 are in microns and L is in mm
Computer	Intel high-speed processor, hard disk, 17" SVGA monitor, Windows® NT or XP 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	3020 Lbs.	3625 Lbs.	4400 Lbs.
Footprint (XYZ) (excludes peripheral components):	49"x60"x66"	49"x66"x66"	61"x71"x66"

Options	1. Upgrade to optional premium microscope with full Koehler illumination, aperture and field diaphragms, filter holders, manual or motorized turret, DIC (Differential Illumination Contrast) control
	2. Statistical Process Control software (QC Calc) ® of ProLink Software
	3. IQ-Form Fit™ software , ® of IQ Metrology. 2D and 3D versions are available.
	4. Operator Interface Package. Provides access control to the various features in the Video CMM II ® software. Also provides a simplified interface for dedicated applications.
	5. Illumination upgrade , provides fine control of 3 channels of Fostec lighting, and better illumination stability.
	6. 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.
	7. Laser Options: A) High Speed Laser Auto Focus B) Scanning Triangulation or Coaxial Laser Probes
	8. Touch Probe Options: Custom integration for limited 3D measurements

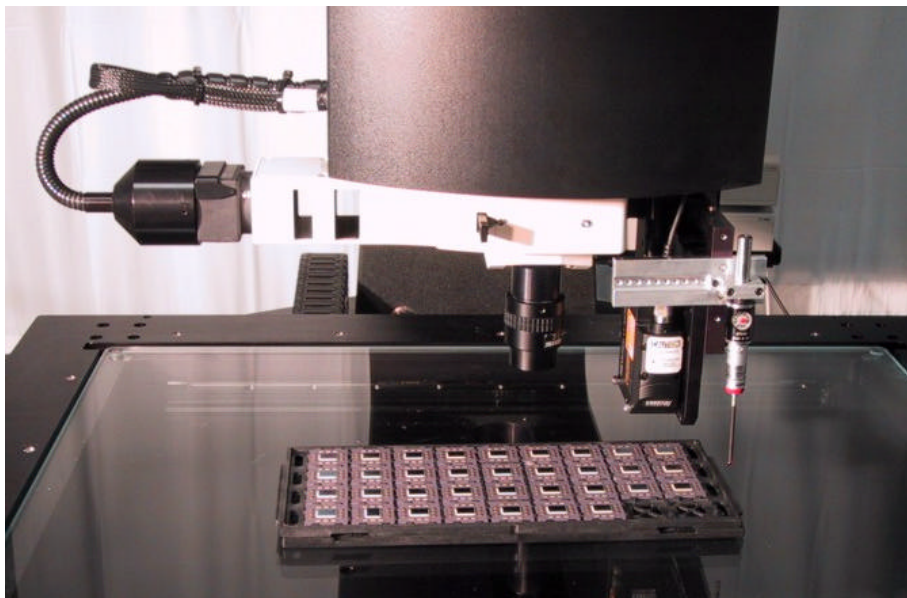
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Zoom Optics

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

(specifications are subject to change with out notice)



View of Laser and Touch Probes on Lumina