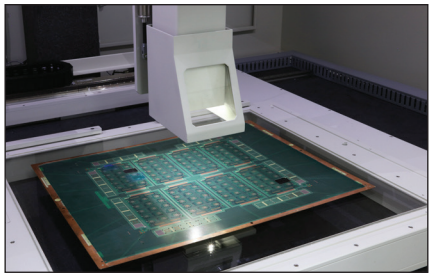
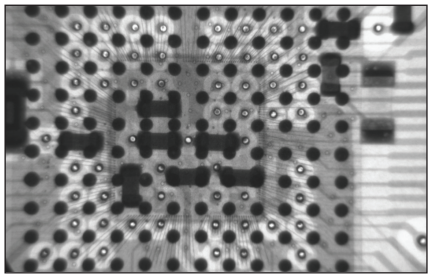
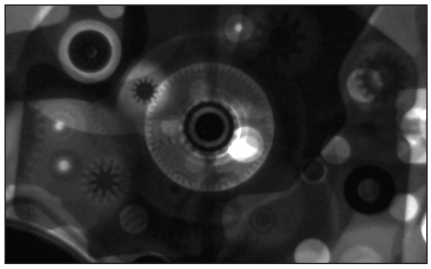
InnerVision® Systems







XA712
X-Ray Measurement System,
710 mm x 660 mm Range

Rapid, Non-Contact X-Ray Measurement Machines

Thorlabs' InnerVision® X-Ray Measuring Systems provide high-speed, non-contact coordinate measurement with industry-leading accuracy. These high-resolution measuring machines can easily verify critical dimensions on first articles, production samples, or entire runs. Automated inspection protocols utilize the system's large field of view and high-resolution sensors, allowing for the easy inspection of large volumes of parts either sequentially or simultaneously. With tolerance reports and export utilities, thresholds can be established to enable timely corrections to a production process or, when necessary, to interrupt production to minimize scrap. Images are relayed to a high-resolution flat panel detector and then to a computer, where sub-pixel algorithms enable micron-level measurements to be performed. Once measured, the feature's coordinates and statistics can be stored, analyzed, and exported to other software programs.

With a significant worldwide install base, modularity to tackle a wide variety of applications, and a proven track record of reliability, the InnerVision line of measurement systems is guaranteed to meet the quality assurance requirements.

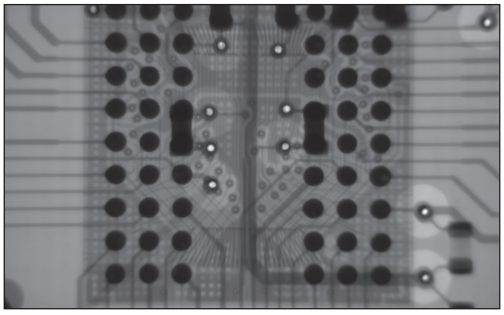
THORLABS

System Options

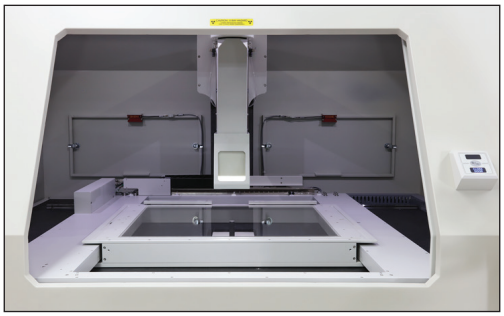
Our systems incorporate the finest in engineering designs to achieve the accuracy required for internal feature inspection of electronics and PCBs. Two models are available, each built upon a granite base and incorporating a compound stage design. This product line utilizes balanced linear motors with air bearings to precisely position each axis of travel. Technicians carefully assemble the motor axes to ensure extremely quiet, accurate, and stable positioning. A small spot-size X-ray source, combined with a large-field-of-view detector, produces the highest image fidelity. Lastly, the powerful M3 metrology software enables all the measurement, dimensioning, and reporting capabilities needed for the qualification of materials.

Key Features

- Advanced Metrology Software with a High Degree of Flexibility for Programming
- Enhanced Video Edge Detection (VED) Allows for Selective Feature Measurement
- Program Creation from Automatic CAD Data Import
- Easy-to-Use Interactive Feature Creation for Manual Program Recording
- Report Generation with Drawing Markups and Customizable Output Table Information
- Data Compatibility with Advanced PCB Analysis Software (XACT PCB)
- Extremely Flat Granite Bases Provide an Ideal Plane for Stage Motion
- High-Speed Air Bearing Stage Positioning Permits Rapid Feature Detection and Program Execution
- Ø5 µm Spot Size Source for High Resolution X-Ray Projection
- 90 kV Source for Viewing Deep into Samples
- Large-Area Detector for 20 mm Diagonal Field of View
- High-Resolution Spotter Camera for Easy Sample Navigation



X-Ray Image of Ball Grid Array



Sample Stage and Detection Path

Accessories

Fixturing Options

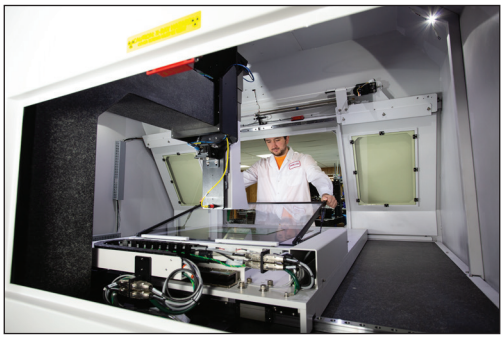
Thorlabs offers numerous options for fixing an object in place during inspection with our video coordinate measuring machines (CMMs). Fixturing is the process of securing an object prior to scanning with a CMM. Doing so allows for repeatable, accurate, and fast measurement scans of a large number of items from a production run. Custom mounting hole locations and interconnects are available and can be discussed at the time of purchase.

Hinged Polycarbonate Platen

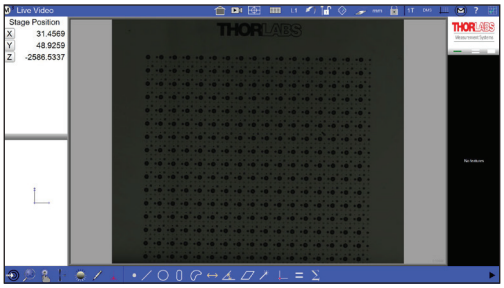
A pneumatic, hinged, polycarbonate platen can be added to any stage to secure smaller objects or circuit boards up to 0.25" (6.4 mm) thick. The system is programmed to ensure the detection path column is raised when the platen is opened, preventing unwanted collisions.

Software Options

Additional M3 software features can be purchased and enabled for profiling geometries and digital comparator capabilities.



Installation of the Hinged Polycarbonate Platen



M3 Metrology Control Software GUI

Specifications

Base Item #		XA712	XA1272
XY Control			
Stage Bearings		Air and Mechanical	
Stage Motors		Linear	
Measurement (Travel) Range		710 mm x 660 mm (28" x 24")	1270 mm x 915 mm (50" x 36")
U_{95} Accuracy[a]		(5.0 + L/200) µm	
Velocity		500 mm/s	
X-Ray Source			
Type		Sealed Tube with Integrated Power Supply	
Spot Size		Ø5 µm at 4 W	
Full Exit Angle		39°	
Voltage Range		20 - 90 kV	
Current Range		10 - 200 µA	
Max Electrical Power		8 W	
Electron Beam Power		8 W (Max)	
Focus-to-Object Distance (FOD)		9.5 mm	
Flat Panel Detector			
Sensor		CMOS	
Resolution		0.7 MP / 1.5 MP	
Pixels (H x V)		1032 x 688 / 1032 x 1548	
Frame Rate		66 fps / 30 fps	
Field of View (FOV)		20 mm Diagonal	
Scintillator Material		Gd_2O_2S	
Dynamic Range		3000:1	
Digitization		14 Bits	
Unit Dimensions			
Typical Unit Dimensions[b]		2206.8 mm x 2721.9 mm x 2060.2 mm (86.88" x 107.16" x 81.11")	2438.4 mm x 3425.7 mm x 1847.1 mm (96.00" x 134.87" x 72.72")
Rear Clearance		Allow Approximately 500 mm (18") for Servicing	
Approximate System Weight (Uncrated / Crated)		2600 kg (5700 lbs) / 2760 kg (6050 lbs)	5443 kg (12 000 lbs) / 5683 kg (12 550 lbs)
General			
Radiation Leakage (5 cm from Any Surface)		0.3 mR/hr Maximum	
Operating Temperature	Range	20 ± 0.5 °C (67 to 69 °F)	
	Rate	0.25 °C/hr (0.5 °F/hr)	
Relative Humidity (Non-Condensing)		30% - 80%	
Line Voltage		115 / 220 VAC, 50 / 60 Hz, Single Phase, 1.0 kW	
Air Supply (For Stage Bearings)	Velocity	85 L/m (3 CFM) Dry Air	
	Pressure	7 - 8.25 Bar (100 - 120 PSI)	

a. L is the point-to-point travel distance, or diagonal travel distance. This applies to a thermally stable system at 20 °C using a certified artifact.
b. Dimensions Include Typical Monitor Position

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