



**OPTEK**  
OPERATIONS TECHNOLOGY INC

**InnerVision**

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## X-RAY INSPECTION AND MEASUREMENT SYSTEM

The OPTEK InnerVision is the world's first x-ray coordinate measuring machine. It measures and reports the positions of internal features such as coupon pads on inner layers of multi-layer printed circuit boards, reinforcements and fastener inserts in composite structures, and other such encapsulated or laminated features.

The images and measurements obtained by the InnerVision reveal and quantify offset, skew, stretch, shrink, and other distortions that may affect the location of internal details. The data provided allows fabrication processes such as lamination, molding, drilling, and machining to be controlled.

The InnerVision system is a unique combination of specialized real time x-ray imaging with automated positioning and precision video based metrology capabilities. The result is the most sophisticated x-ray inspection and measurement system available today.

## FEATURES

- Advanced metrology software provides a powerful programming environment and a high degree of control flexibility.
- System has versatile video tools such as Line Width, Circle, Center-of-Mass, and Buffer that speed the measuring process.
- Transports are driven quietly by sophisticated, no maintenance, linear motors which are close-looped to precision glass scales.
- The familiar Microsoft Windows operating environment is used with on-line help to ease training.
- The multi-tasking Intel Pentium series processor permits rapid feature detection and high-speed transport control.
- Network capability is standard. Electronic file or printout of dimensional data as well as images is available.
- The system reports position and size of features, allowing optimization of the user's fabrication process.
- System has integral SPC (Statistical Process Control) plus the ability to download dimensional data for storage or further analysis.
- Tolerancing to Cartesian, as well as True Position, LMC, and MMC is provided.
- Programs can be automatically created from CAD data or by recording steps while manually measuring a part.
- Twin (17") color monitors for display of metrology data, and x-ray image.
- Compact control panel and keyboard for machine control and data input.
- Massive granite base for superior machine stability.
- High resolution, intensified x-ray camera provides brilliant video image.
- Programmable X-ray settings for illumination of sub-surface features.
- Enhanced video edge detection (VED) for selective feature detection.
- Ergonomic workstation design maximizes operator performance.

## SPECIFICATIONS

Model	462X	712X	942X
X-Y Travel	460 X 300 mm (18" X 12")	710 X 660 mm (28" X 26")	940 X 660 mm (37" X 26")
Footprint Width	1.80 m (72")	2.20m (86")	2.65 m (104")
Footprint Depth	1.37 m (54")	2.00 m (78")	2.00 m (78")
Total Height	1.80 m (70")	1.80 m (70")	1.80 m (70")
Overhangs	220 mm (8.5") for control panel at front and 460 mm (18") for optional color printer at right side.		
Weight (approx.)	1800 kg (4000 lbs.)	2600 kg (5700 lbs.)	3000 kg (6500 lbs.)
Shipping Weight	Add 100 Kg / (220 lbs.) If palletized, or 160 Kg / (350 lbs.) if crated.		Add 150 Kg / (330 lbs.) If palletized, or 240 Kg / (550 lbs.) if crated.
X-Y Stage Velocity	300 mm (12") per second	300 mm (12") per second	300 mm (12") per second
X-Y Stage Accuracy	$U_{95} = (5.0 + L/200) \mu\text{m}$ Accuracy based on thermally stable system @ 20°C with a pixel value of 5 $\mu\text{m}$ or less		
Environment	19°-21°C (66°-70°F) Recommended temperature range. 18°-23°C (65°-75°F) Suitable temperature range. 0.5°C (1°F)/Hr. Maximum rate of change 30% - 80% RH non-condensing.		
Controller	High performance Pentium processor. Contact factory for latest configuration		
Electrical	115 VAC 15 A 50/60 Hz or 220 VAC 8 A 50/60 Hz Single Phase		
Training	Three to five days of on-site training by an OPTEK engineer. (Quoted Separately)		
Warranty	One Year Parts and Labor.		
OPTEK is committed to continuous improvement. Specifications are subject to change.			

## OPTIONS

- A selection of high current Mini-focus x-ray sources up to 75 kV provides the power to handle thicker, more dense materials.
- Micro-focus x-ray source with 90kV, 8 micron focal spot gives sharper imaging. Recommended for high magnification configurations.
- Large area intensified camera offers high-sensitivity imaging for challenging applications.
- Pneumatic tooling clamps hold flat samples of various thicknesses.
- Zoom Lens for high magnification work.
- Color Printer provides archived X-ray images and measurement reports.
- File Conversion Utilities import CAD files.
- Transport positioning resolutions of 1.0  $\mu\text{m}$ , 0.5  $\mu\text{m}$ , 0.25  $\mu\text{m}$ , 0.1  $\mu\text{m}$  are available.