

X7056

In-line X-ray and Optical Inspection for Electronic Assemblies



AOI/AXI

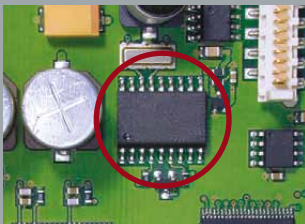
Leading Edge Inspection Technology

Optical and Simultaneous 2-D, 2.5-D and 3-D X-ray Inspection

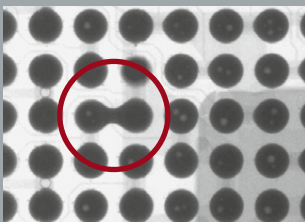
AOI – AXI compared:



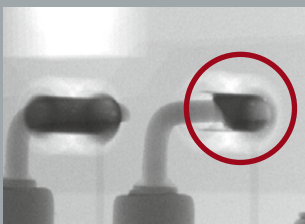
Only recognizable with
AOI: OCR application



Only recognizable with
AOI: SOIC polarity



Only recognizable with
AXI: BGA bridge



Only recognizable with
AXI: Defect in THT
connection

**Simultaneous optical and
X-ray inspection**

**3-D X-ray inspection
with selectable resolutions
of 5, 7 or 10 μm per pixel**

**High performance, tomosynthesis-
based 3-D X-ray back calculation**

**Optical inspection
with 11.7 and 23.4 μm resolution**

Short handling time

**Compact housing dimensions:
Only 1.3 m (X7056RS)
or 1.7 m (X7056RL) wide**

**Worldwide competent service:
on site, hotline and remote support**

Viscom Support Website

**Reduce false alarms
with AXI-OnDemand**

New electronic products are arriving to the market today at increasingly rapid cycles. Time allowed for development and modeling is getting shorter, as demands for top quality rise. The automatic optical inspection (AOI) of printed circuit boards is accepted worldwide. Manufacturers with miniaturized components such as BGAs, μ BGAs, CSPs and FlipChips require a positive and cost-effective quality inspection process that also locates concealed defects – with extensive inspection depth and high throughput.



X7056 – The new AXI standard, fast and flexible

The core of X-ray technology – a high performance closed **microfocus X-ray tube** provides selectable resolutions of 5, 7 or 10 μm per pixel for X-ray inspections. Depending on the application, 3-D, 2.5-D or 2-D X-ray technologies are employed to achieve the highest inspection depth and short cycle times.

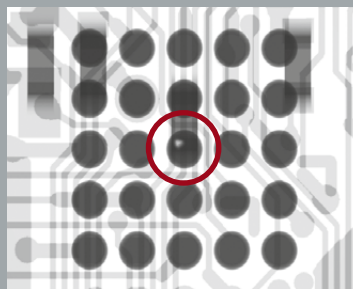
The 3-D results are based on tomosynthesis and facilitate an **outstanding image quality**. Thus, complex overlap on printed circuit boards populated on both sides can be resolved and easy-to-analyze features generated. Due to the integration of the optical **8M camera technology** the system offers additionally the high inspection depth of the Viscom AOI systems at comparable throughput. Within the **OnDemandHR function** the AOI resolution can be flexibly switched over from 23.4 to 11.7 $\mu\text{m}/\text{pixel}$ with the full image field size. In the angled view, a range of 16.1 $\mu\text{m}/\text{pixel}$ to 8.05 $\mu\text{m}/\text{pixel}$ is possible. In addition, the inspection system provides the option of **color evaluation**.

With its **simultaneous optical and X-ray inspection**, the high performance combo-system sets a new standard in quality assurance. Through this simultaneous inspection **very fast inspection** and **minimum handling times** are achieved. The system is **fully modular**, so it can be used as a combined system or as a pure AXI system. These different inspection concepts display the ultimate in flexibility that can be directly employed to customer requirements.

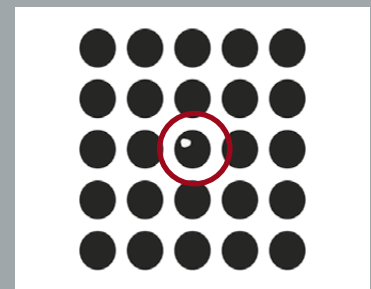
EasyPro presents a user interface that is concise and convenient in both AOI mode and X-ray operation. Program generation and optimization can be conducted quickly and easily, and is compatible with existing Viscom systems. As an option, high performance **SPC software** with a variety of filtering functions is available for process control and optimization.

Viscom's automatic analysis software algorithms, which include intelligent analyses for ball grid arrays (BGAs) and FlipChips, and for standard solder joints (voiding calculation), are also available for this system.

2-D X-ray – 3-D X-ray compared:



2-D image of a BGA:
Structures from the rear side
are present in the image



3-D image of a BGA:
Sectioned image without
interfering structures

Technical Specifications

X7056 variants

AXI

AOXI

Inspection concept	2-D-AXI	3-D-AXI	2-D-AXI + AOI	3-D-AXI + AOI
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X-ray technology

X-ray tube	Closed X-ray tube
High voltage	60 - 130 kV
Tube current	50 - 300 µA
Detector	Viscom 2-D, 2.5-D and 3-D detector, 12 bit grayscale depth
Pixel size	5, 7 or 10 µm per pixel, switchable
Z-axis adjustment	Powered Z-axis tube adjustment
X-ray cabinet	Designed as a full protection cabinet according to the RöV (German X-ray regulations) dated 30.04.2003 and US standard 21CFR §1020-40 and further international standards, leakage radiation < 1µSv/h

Optical camera technology

Camera module 8M	8M technology with OnDemandHR
Field of view	57.6 x 43.5 mm (2.3" x 1.7")
Number of mega pixel cameras	2 - 12
Resolution (orthogonal)	23.4 µm, 11.7 µm (switchable)
Resolution (angled view)	16.1 µm, 8.05 µm (switchable)

Software

User interface	Viscom EasyPro/vVision ready
Verification station	Viscom HARAN/vVerify ready
SPC	Viscom SPC (statistical process control), open interface (optional)
Remote diagnosis	Viscom SRC (software remote control) (optional)
Off-line programming	Viscom PST34 (external Programming Station) (optional)
Systematic Defect Analysis and Continuous System Monitoring	Viscom PDC (ProcessDataControl), TCM (TechnicalChainManagement)

System computer

Operating system	Windows®
Processor	Intel® Core™ i7

PCB handling

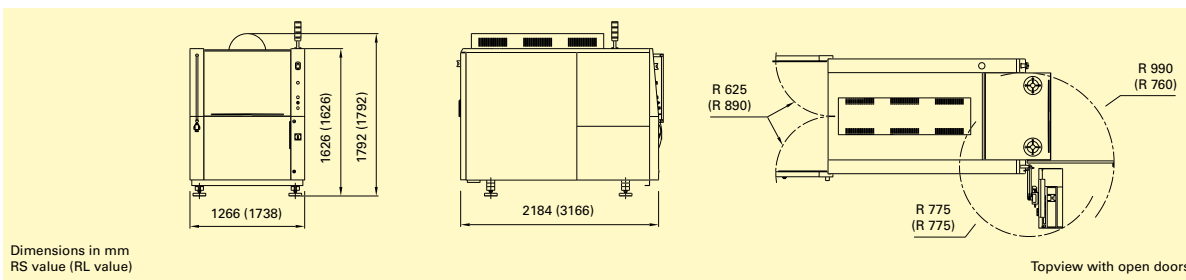
PCB dimensions*	X7056RS: 450 x 350 mm (18.0" x 13.8") (L x W) X7056RL: 610 x 508 mm (24.0" x 20.0") (L x W)
Transport height	870 to 960 mm ± 20 mm
Width adjustment	Automatic with set-up
Handling unit	Gantry system with maintenance-free high speed drives
Dual track operation	Optional with external PCB modules
PCB clamping	During inspection
PCB edge clearance	3 mm (0.12")
Upper transport clearance	35 mm (1.38")
Lower transport clearance	50 mm (1.97")

Inspection speed

AOI	Typical 20 - 40 cm²/s
AXI	Depends on application

Other system data

Interfaces	SMEMA, SV70, customer specific
Power requirements	230/400 V, different voltages by request, 3 phases, 50/60 Hz, 5 kW
System dimensions	X7056RS: Approx. 1266 x 2184 x 1626 mm (49.8" x 86.0" x 64.0") (W x D x H) X7056RL: Approx. 1738 x 3166 x 1626 mm (68.4" x 124.6" x 64.0") (W x D x H)
Line integration dimensions	X7056RS: +25 mm (1.0"), X7056RL: +25 mm (1.0")
Weight	X7056RS: Approx. 2500 kg (5511 lbs), X7056RL: Approx. 3200 kg (7055 lbs)



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