

BOWMAN

Coating Measurement Instruments

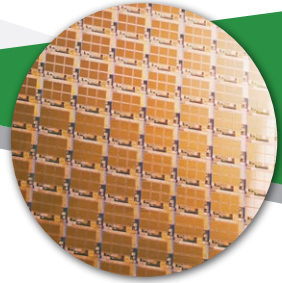
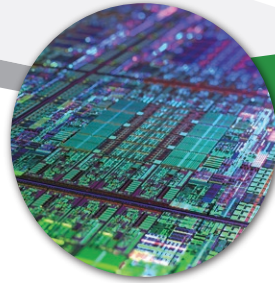
A SERIES MICRO XRF

High Precision Coating
Measurement System



Precise measurement of semiconductors & microelectronics

What's Distinctive:
Precise measurement of semiconductors & microelectronics



Who Benefits

The A Series Micro XRF was engineered for precise measurement of the smallest X-ray features found in semiconductors and microelectronics. It accommodates very large PCB panels, or wafers of any size for full sample coverage and multi-point programmable automation.

Key Features

Bowman's A Series uses poly-capillary optics to focus the X-ray beam to 7.5 μm FWHM, the world's smallest for coating thickness analysis using XRF instruments. A 140X magnification camera is used to measure features on that scale; it is accompanied by a secondary, low-magnification camera for live-viewing samples and birds-eye macro-view imaging. Bowman's dual-camera system lets operators see the entire part, click the image to zoom with the high-mag camera, and pinpoint the feature to be programmed and measured.

A programmable X-Y stage with movement of 23.6 in (600 mm) in each direction can handle the largest samples in the industry. The stage has precision less than $\pm 1 \mu\text{m}$ for each axis and is used to select and measure multiple points; Bowman pattern recognition software and auto-focus features also do this automatically. The system's built-in pattern recognition can be used to view the topography of a coating on a part such as a silicon wafer.

Configuration

A Series instruments include 7.5 μm optics with molybdenum anode tube (chromium and tungsten are optional) and a high-resolution, large-window Silicon Drift Detector (SDD) which processes more than 2 million counts per second. SDDs are the standard, industry-wide, for complex films. The high count rate capability is key to achieving a low minimum detection limit (MDL) and highest spectral resolution.

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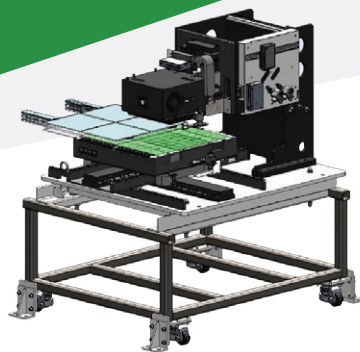
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Made
in the USA

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Rendering of A Series
for Incorporation with
Automated Wafer Handler

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A SERIES MICRO XRF

Superior technically.
Supported locally.

The A Series is the 8th model in Bowman's XRF instrument suite. Like others in the portfolio, it simultaneously measures up to 5 coating layers and runs advanced Archer software to quantify coating thickness. Archer software combines intuitive visual controls with time-saving shortcuts, extensive search capability, and "one-click" reporting. The software also simplifies user creation of new applications.

Specifications

X-ray Excitation

50 W Mo target Flex-Beam Capillary Optics @7.5 FWHM
Optional: Cr or W

Detector

Large window Silicon drifted detector with 135eV resolution or better

Output Focal Depth

Fixed at 0.08"

Video Magnification

140X Micro
7X digital Zoom
9X Macro & Table View

Working Environment

68°F (20°C) to 77°F (25°C) and up to 98% RH, non-condensing

Weight:

1000kg (2200 lbs)

Programmable XYZ

XYZ travel: 600mm (23.6") x 600mm (23.6") x 100mm (3.9")
XY tabletop: 560mm (22") x 585mm (23")
X & Y-axis precision: 1µm (40u")
Z-axis precision: 1µm (40u")

Element Range

Aluminum 13 to Uranium 92

Analysis Layers and Elements

5 layers (4 layers + base) and 10 elements in each layer
Composition analysis of up to 25 elements simultaneously

Primary Filters

4 primary filters

Digital Pulse Processing

4096 CH digital multi-channel analyzer with flexible shaping time.
Automatic signal processing, including dead time correction and
escape peak correction

Processor:

Intel, CORE i5 9th Gen. Processor (4.1 GHz), 16GB RAM,
Microsoft Windows 10 Prof, 64-bit

Camera Optics:

1/4" CMOS-1280x720 VGA resolution

Power Supply:

720W, 100~240 volts; frequency range 47Hz to 63Hz

Dimensions (WxDxH)

Internal: 1400mm (55") x 1470mm (58") x 100mm (4")
External: 1470mm (58") x 1575mm (62") x 1780mm (70")

Other New Features

Z protection array, Auto focus,
Focus laser, Pattern recognition,
Semi S2 S8 compliant-ready

The Bowman Partner Network

Bowman's Partner Service Network was established to facilitate large multi-national projects in the PCB industry. Today, it has become the model for XRF technical service worldwide, serving board shops, electronics manufacturers, automotive and aerospace OEMs, jewelry manufacturers, and contract metal finishers in all sectors.

The Bowman Partner Network enables XRF technical service experts worldwide to provide same-day response to every service, repair and upgrade requirement.



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