

# XRF-5000

## The World's Most Advanced XRF Coating Thickness Measuring System



- Microsoft Windows™ environment delivers unprecedented user interface flexibility with Veeco/UPA's Interface Designer.
- Proprietary single structure architecture ensures proper beam to optics alignment
- Exclusive point and shoot sample placement with visual cascade is the fastest motorized sample placement available
- Multi-planar optical system provides measurements in recessed areas
- Micro-beam collimation with Auto-Find allows measurement of the finest geometries
- Micro-focus molybdenum target beryllium window X-ray tube delivers unparalleled accuracy and precision
- Laser focusing with height gauge capability provides excellent reproducibility
- High precision servo stage provides the ultimate in fast, accurate sample positioning
- Language toggle allows instantaneous language conversions with a single mouse click
- Veeco/UPA's patented foil calibration standards are the most accurate and versatile standards available.

**Veeco** UPA Technology

*We Make The Process More Productive™*

# XRF-5000

# SPECIFICATIONS

## PHYSICAL DIMENSIONS

### CHAMBER DIMENSIONS

Choose between two single structure chambers, Low Profile (L) or High Profile (H)

#### L Series:

Exterior:	24"W x 29"D x 21.5"H	61.0cmW x 73.7cmD x 54.6cmH
Interior:	21.5"W x 28.5"D	54.6cmW x 72.4cmD
Chamber Weight:	200 lbs	90.9 kg

#### H Series:

Exterior:	24"W x 29"D x 28.5"H	61.0cmW x 73.7cmD x 72.4cmH
Interior:	21.5"W x 29"D	54.6cmW x 72.4cmD
Chamber Weight:	270 lbs	123 kg

#### Both L Series & H Series:

Door Opening		
Upper Door:	6"H x 21.5"W	15.2cmH x 54.6cmW
Lower Door:	6"H x 21.5"W	15.2cmH x 54.6cmW
Window Size	16"W x 3"H	40.6cmW x 7.6cmH
Beam-to-back-wall distance:	18.0"	45.7cm
Beam-to-front-wall distance:	12.0"	30.5cm
Slot width:	0.75"	1.9cm

### ANALYZER

- X-ray computing system 80386DX 40 MHz IBM compatible computer featuring 4MB RAM, 120MB hard disk, 1.44MB 3 1/2" floppy disk drive, 1.2MB 5 1/4" floppy disk drive, 1 parallel port, 2 serial ports, VGA color graphics, Multisync-type VGA monitor, Microsoft compatible mouse, MS-DOS 6.0, Microsoft Windows™ 3.1, Math Coprocessor (80387), XRF interface package (16280)
- 1024 channel multi-channel analyzer
- Spectroscopy preamp and amp with baseline restoration
- Dead-time correction and pulse pile-up rejection
- XPERT™ for Windows X-ray fluorescence software package

### POWER

- Line Voltage: 100/120/220/240v; 50/60 Hz max.
- Power Usage: 350W max.

## SYSTEM CONFIGURATION

Model	Motorized Stage Type	Motorized Stage Travel (In.)		Top-Plate Size (In.)		X-Ray Tube	Collimation	
		X	Y	Z	X			Y
5000L	Stepper	0	0	3	20	20	W, Glass	Motorized
5000H	Stepper	0	0	9	18	16	W, Glass	Motorized
5100L	Stepper	4	4	2.5	12	12*	W, Glass	Motorized
5100H	Stepper	4	4	6	12	12	W, Glass	Motorized
5200L	Stepper	8	8	1.5	12	12*	Mo, Be	Motorized
5200H	Stepper	8	8	6	12	12	Mo, Be	Motorized
5300L	Servo	8	8	0.5	12	12	Mo, Be	Micro-beam
5300H	Servo	8	8	6	12	12	Mo, Be	Micro-beam

\*Printed Circuit Top-Plate Available (X:20, Y:18)

Note: All UPA 5000 Series chambers are Single Structure Architecture

## USER INTERFACE

- XPERT X-ray fluorescence software operating under Windows
- Interface Designer
- 3D/2D Mapping and complete SPC package
- Language Toggle
- Single Screen or Dual Screen configuration
- Dual Station measurement controls

## SAMPLE PLACEMENT

- Exclusive motorized point and shoot sample placement with visual cascade
- XYZ programming modes
- Laser focusing with height gauge capability
- Electronic ruler
- Dual sample magnification (50x, 100x)
- Variable intensity dual fiber optics lighting
- Color CCTV camera
- Computer generated reticle/beam spot indicator
- Optional servo stage
- Mouse control and/or joystick control of stage
- Stationary system top-plate for optimum alignment

## SAMPLE MEASUREMENT

**Linear Excitation:** Extremely thin coatings (e.g., iron oxide/Al) Excitation: Single layer coatings above atomic number 21 (e.g., Au/Ni, Cu/Brass, Ni/Kovar)

**Absorption:** Single layer coatings below atomic number 21 on base materials above atomic number 22 (e.g., Al/Kovar)

**Dual Layer A:** Compensates for absorption of middle layer. Used when matrix effects are minimal (e.g., Au/Ni/Cu, Pd/Ni/Cu)

**Dual Layer B:** Compensates for matrix effects such as secondary fluorescence and peak overlap (e.g., Au/Ag/Cu, Au/Ni/W)

**Binary Alloy Thickness & Composition:** Thickness and composition of top layer (e.g., tin-lead, Pd-Ni, Ni-Fe)

**Relative:** Allows focus independent measurements

**Solution Analysis:** Determination of metal content in plating bath solution (e.g., Cyanide gold bath)

**Numerical (Peak Deconvolution) and Mechanical Filtering:** Can be used individually or in combination for the separation of elemental peaks

**Spectrum Analysis:** For elemental analysis

## X-RAY COLLIMATION

Programmable linear collimator slide and block assembly with four collimators and two internally mounted reference standards Circular and rectangular collimators available in various sizes

- Exclusive Micro-Beam collimation
- Automatic calibration with predefined coordinates
- Automatic adjust
- Automatic collimator alignment
- Advanced selection of single and multilayer free standing foil (U.S. Patent #4,646,341) and hard plate standard sets

## THICKNESS MEASUREMENT SPECIFICATION

XRF-5000 series uses the X-ray fluorescence test method in accordance with ASTM test method B568 and ISO test method 3497

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