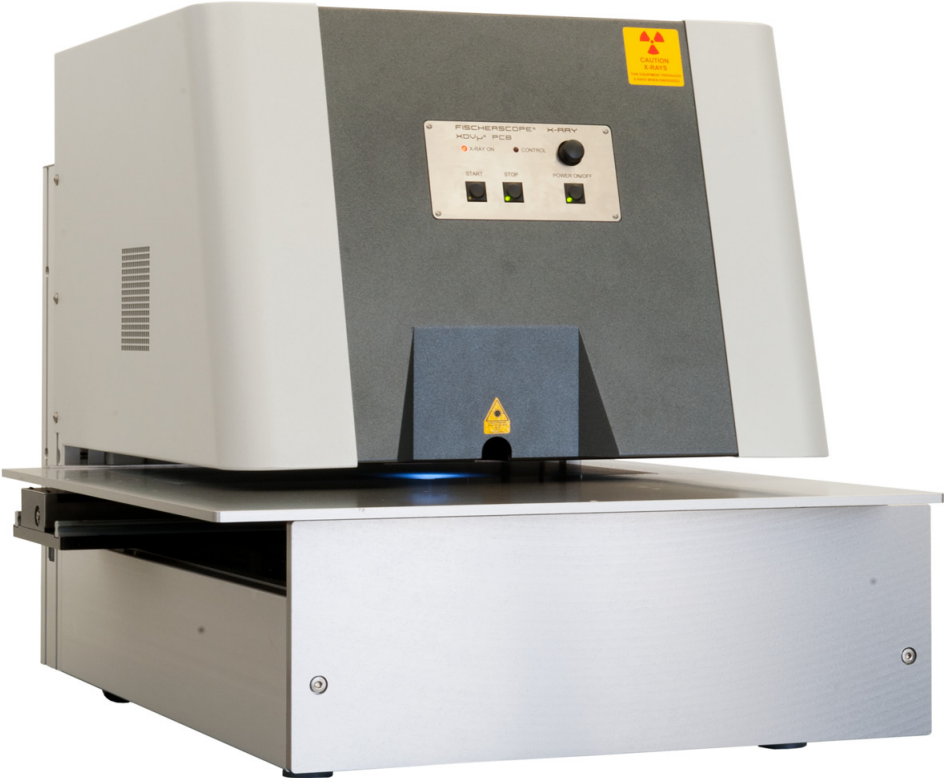


FISCHERSCOPE® X-RAY XDV®-μ PCB

Specific X-Ray Fluorescence Measuring Instrument with a Polycapillary X-Ray Optics for Measurements on Very Small Structures on Printed Circuit Boards and Components



Description

The FISCHERSCOPE X-RAY XDV- μ PCB is a specific x-ray fluorescence measuring instrument with a polycapillary x-ray optics. It has been specially developed for automated measurements and analyses of coating thicknesses and compositions on very small structures on printed circuit boards and components.

Typical fields of application:

- Measurements on very small flat components and structures on printed circuit boards in sizes up to 610 x 610 mm (24 x 24 in)
- Analysis of very thin coatings, e.g., gold/palladium coatings of $\leq 0.1 \mu\text{m}$ (0.004 mils)
- Automated measurements, e.g., in quality control
- With 10 μm option: Measurements with smallest possible measurement spot in combination with a large silicon-drift-detector.

To create ideal excitation conditions for every measurement, the instrument features electrically changeable primary filters. The modern silicon drift detector achieves high accuracy and good detection sensitivity. Due to the innovative polycapillary x-ray optics, the instrument measures using an extremely small measurement spot yet with a very high excitation intensity.

Outstanding accuracy and long-term stability are characteristics of all FISCHERSCOPE X-RAY systems. The necessity of recalibration is dramatically reduced, saving time and effort.

The fundamental parameter method by FISCHER allows for the analysis of solid specimens and coating systems without calibration.

Design

The FISCHERSCOPE X-RAY XDV- μ PCB is designed as a user-friendly bench-top instrument. It is equipped with a high-precision, programmable XY-stage and an electrically driven Z-axis.

A laser pointer serves as a positioning aid and supports the quick alignment of the sample to be measured. A high-resolution color video camera simplifies the precise determination of the measurement spot. The optics is equipped with an autofocus function. In order to focus difficult surfaces, the instrument can project a contrast grid onto the specimen surface.

The entire operation and evaluation of measurements as well as the clear presentation of measurement data is performed on a PC, using the powerful and user-friendly WinFTM[®] software.

The XDV- μ PCB fulfills DIN ISO 3497 and ASTM B 568.

General Specification

Intended use	Energy dispersive x-ray fluorescence measuring instrument (EDXRF) to measure thin coatings and multi-layer systems on printed circuit boards and components
Element range	Aluminum Al (13) to Uranium U (92) – up to 24 elements simultaneously
Application	Optimal measurement conditions for applications with Au and Pd due to the specific excitation characteristics of the polycapillary optics. For further information contact your FISCHER representative.
Design	Bench-top unit with housing with a slot on the side, XY- and Z-axis electrically driven and programmable, Motor-driven changeable filters
Measuring direction	Top down

X-Ray Source/Detection

X-ray tube	Standard: Micro-focus tungsten tube with beryllium window Optional: Micro-focus tube with molybdenum target and beryllium window
High voltage	Three steps: 10 kV, 30 kV, 50 kV
Primary filter	4x changeable: Ni 10 μm (0.4 mils); free; Al 1000 μm (40 mils); Al 500 μm (20 mils)
X-ray optics	Polycapillary

	Standard Non halo-free*	Option 20 μm Halo-free*	Option 10 μm Non halo-free*
Measurement spot, fwhm at Mo-K α	appr. \varnothing 20 μm (0.8 mils)	appr. \varnothing 20 μm (0.8 mils)	appr. \varnothing 10 μm (0.4 mils)
X-ray detector	Peltier-cooled silicon-drift-detector (SDD)		
Effective detector area	20 mm ² (0.03 in ²)	50 mm ² (0.08 in ²)	50 mm ² (0.08 in ²)

* For halo-free capillaries, the radiation intensity for all energies of the x-radiation is concentrated on the nominal measurement spot. For capillaries, indicated as non halo-free, radiation intensity with high energies ($E > 20$ keV) can cover a significantly larger area than the nominal measurement spot.

Sample Stage

	Fast, programmable XY-stage with pop out function
Usable sample placement area	600 x 600 mm (23.6 x 23.6 in)
Width x depth	
Maximum travel	450 x 300 mm (17.7 x 11.8 in)
Max. travel speed XY	60 mm/s (2.4 in/s)
Repeatability precision XY	≤ 5 μm (0.2 mils), unidirectional
Max. sample weight	5 kg (11 lb)
Max. sample height	10 mm (0.4 in)

Video Microscope

	High-resolution CCD color camera for optical monitoring of the measurement location, manual focusing and auto-focus, with contrast grid Crosshairs with a calibrated scale (ruler) and spot-indicator, Adjustable LED illumination Laser pointer (class 1) to support accurate specimen placement
Zoom factor	Digital: 1x, 2x, 3x, 4x

Electrical data

Power supply	AC 115 V or AC 230 V 50 / 60 Hz
Power consumption	Max. 120 W
Protection class	IP40

Dimensions

External dimensions	
Width x depth x height	670 x 885 x 660 mm (26.4 x 34.8 x 25.9 in)
Weight	Approx. 156 kg (344 lb)

Environmental Conditions

Operating temperature	10 °C – 40 °C / 50 °F – 104 °F
Storage/Transport temperature	0 °C – 50 °C / 32 °F – 122 °F
Admissible air humidity	≤ 95 %, non-condensing

Evaluation unit

Computer	Windows®-PC
Software	Standard: Fischer WinFTM® BASIC including PDM® Optional: Fischer WinFTM® SUPER

Standards

CE approval	EN 61010
X-Ray standards	DIN ISO 3497 and ASTM B 568
Approval	Individual acceptance inspection as a fully protected instrument according to the German regulations „Deutsche Röntgenverordnung-RöV“.

Order

FISCHERSCOPE X-RAY XDV-µ PCB	605-040
Option 20 µm halo-free	605-404
Option 10 µm	605-405
Option Measuring Cell for Solution Analysis	603-216 Not suitable with Option 10 µm
Special XDV-µ PCB product modification and technical consultation on request	