

# FISCHERSCOPE® X-RAY XDL®/XDLM®



MEASUREMENT FROM  
TOP TO BOTTOM

The FISCHERSCOPE X-RAY XDL and XDLM series are closely related to the XUL and XULM series: Both use the same detectors, apertures and filter combinations. Thus, the XDL instruments are also outfitted with a standard X-ray tube and a fixed aperture that are very well suited for measurements on larger parts.

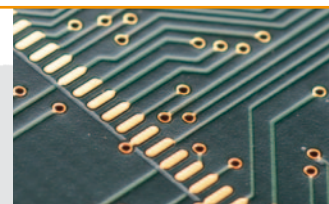
With the XDLM models, the X-ray source is a micro-focus tube that allows for measurements on small structures and a better excitation of the low radiation components. Additionally, the XDLM instruments feature automatically interchangeable apertures and filters to flexibly create the optimum excitation conditions for various measuring applications.

Both instrument models are equipped with a proportional counter tube detector. Even with small measurement spots, sufficiently high count rates can be obtained due to the large detector area, ensuring good repeatability precision.

In contrast to the XUL and XULM instruments, the XDL and XDLM series instruments measure from top to bottom. They are designed as user-friendly desktop units with a modular structure, which means that they can be furnished with a simple support, various XY-stages and Z-axes to accommodate various requirements.



Electrolyte solution analysis:  
Cu, Ni, Au (g/l)



Measuring PCBs: Au/Ni/Cu/PCB

In the version with a programmable XY-stage, the XDL series can be used for automated series testing. Surfaces can be easily scanned – and thus examined for homogeneity. For simple and quick sample positioning, the XY-stage travels automatically into the loading position when the hood is opened (pop-out function) and a laser pointer marks the measurement spot. For large, flat samples such as PC Boards, the housing has openings on the side (C-slot). Because of the large, easily accessible measurement chamber, the instruments are suited not only for measurements on flat, plane objects but also for larger specimens with complex shapes (sample heights up to 140 mm). For instruments with a Z-axis, the measuring distance can be selected freely within 0 – 80 mm, making measurements in indentations or on geometrically uneven objects possible (DCM method).



### Examples from practical applications

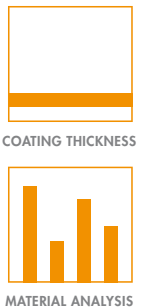
The XDLM measurement system is frequently used to measure coatings such as Au/Ni, Au/PdNi/Ni, Ag/Ni or Sn/Ni on various substrate materials (e.g. Cu or Fe alloys) on connectors and contacts. Often, the functional areas are small structures such as tips or peaks, for which either very small apertures or apertures fitted to the shape of the specimen must be used, in order to keep the influence of geometry to a minimum. For example, when performing measurements on oblong structures, slot apertures are used for maximum intensity.

### Characteristics

- X-ray tube with W-anode and glass window or micro-focus X-ray tube with W-anode and beryllium window. Maximum operating conditions: 50 kV, 50W
- Proportional counter tube as X-ray detector
- Aperture: fixed or 4-x automatically exchangeable, 0.05 x 0.05 mm to Ø 0.3 mm
- Primary filter: fixed or 3-x automatically exchangeable
- Adjustable measuring distance 0 – 80 mm
- Fixed sample support, manual XY-stage
- Video camera for optical observation of the measurement location along the axis of the primary X-ray beam. Crosshairs with calibrated scale (ruler) and display of the measurement spot
- Design-approved, fully protected instrument compliant with the German X-ray ordinance § 4 Para. 3

### Typical fields of application

- Measurements of mass-produced electroplated parts
- Corrosion protection and decorative coatings such as chrome on nickel/copper
- Bath analysis in the electroplating industry
- Measurement of e.g. thin gold, palladium and nickel coatings in the PC Board industry
- Measurement of coated connectors and contacts
- Measurement of functional coatings in the electronics and semiconductor industries
- Especially for measuring large and/or flexible PCBs optimised models with extended sample support are available



Corrosion protection: Zn/Fe



Connectors: Au/Ni/CuSn6



Showerhead: Cr/Ni/Cu/ABS