Mikrosize®

iMetal-40UP

Metallographic Microscope

Video

Contact us

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Features and Applications

The iMetal-40UP series, with its semi-refractive optical technology and multiple observation modes, has become an indispensable tool for industrial inspection. Its functions such as bright-field, polarized light, and DIC, when combined with high-resolution cameras, can clearly display microscopic details. The DIC technology can particularly highlight the subtle differences in height. The core application is in the semiconductor field, where it can detect wafer surface defects, grain distribution, analyze chip cutting edge burrs and packaging voids; it is also suitable for LCD conductive particle inspection and circuit board slice measurement. Combined with measurement software, it enables efficient analysis and is widely used in the electronics and materials industries, providing reliable support for quality inspection, research and development, and failure analysis.

Product Features

- Equipped with an infinite-distance chromatic aberration correction system and a semi-reversed objective lens, combined with multiple observation modes and a high-resolution camera, the imaging is clear and sharp, with both details and contrast.
- The differential interference function can convert minute height differences into three-dimensional relief images, accurately detecting hidden defects such as LCD conductive particles and wafer scratches.
- The Mikrosize software supports automatic measurement, image stitching and report generation. The dual-control design of the electric objective lens turntable enhances the detection efficiency.
- The ergonomic frame is equipped with a wide-voltage system, a 4-inch loading platform and a long-working-distance objective lens, which is suitable for various industrial samples and environments.
- The objective lens, camera pixels, observation tube, etc. can be selected as needed. It supports post-processing function upgrades to meet the customized requirements in various fields such as semiconductors and materials.

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Features and Applications

Product Applications

- Observation of dislocation pits and step flow defects on the external extension film, identification of nanoscale undulations using DIC technology, which helps improve yield.
- Inspect the sharp edges and burrs of the cut, as well as surface scratches, analyze the voids in the packaging material, and ensure the performance and lifespan of the chip.
- Adapted for MLCC slice detection, it enables observation of the distribution of the electrode layer and the interface with the dielectric, and helps identify potential short-circuit hazards.
- Perform microscopic observation on the circuit board slices to evaluate the quality of the solder joints and the defects of the substrate materials.
- Observe the grains and grain boundaries of materials such as metals and ceramics, evaluate the heat treatment effect, and provide a basis for material optimization.

Product Details

Structure

1.Camera 2.Adaptive Lens 3.Eyepiece 4.Lighting Fixture
5.Nosepiece 6.Objective Lens 7.Workbench 8.Light Source
9.X/Y Handwheel 10.Coarse-Fine Coaxial Focusing Knob
11.Light Source Adjustment Knob

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Product Functions

Eyepiece System

- Excellent field of view: There are 23mm and 25mm models with wide field of view. Compared to the conventional 22mm field of view, the 25mm model offers a more flat and expansive view, with clear and bright edge imaging. It provides a wide observation range and a great visual experience.
- Flexible refractive adjustment: Equipped with adjustable refractive function, with a wide adjustment range, it can meet the needs of users with different vision conditions and has strong adaptability.
- Function customization: In addition to the basic model, you can choose other magnification ratios and field of view. You can also add pointers, micrometers, etc. as needed to meet various observation and measurement requirements.

Objective Lens Converter

- Manual five-hole objective turret // Electric bright-field and dark-field 5-hole converter (with DIC slot), dual control by physical buttons and software

Product Functions

Lighting System

- Structural design advantages: The metallographic system microscope adopts a compact structural design. It has an elegant and stable appearance, eliminating the cumbersome nature of traditional metallographic microscopes. It is more flexible and convenient to operate, and saves operating space.
- Multi-functional observation integration: Integrates various observation functions such as bright-field, dark-field, polarized light, and DIC differential interference, allowing for flexible selection based on different actual application scenarios to meet diverse requirements for metallographic inspection.
- Lighting performance: Equipped with a bright-dark field reflection lighting device, which can be compatible with various observation functions. It provides appropriate and sufficient lighting for different observation modes in metallographic testing, helping to achieve clear observation results.

Product Functions

Polarization And DIC Components

- Strong polarized light detection capability: The polarization system includes a polarizer and a polarizer detector plate, which can eliminate stray light in semiconductor and PCB detection, making the details clearer. The 360-degree rotating polarizer also enables convenient observation of the specimen's state under different polarization angles.
- The DIC technology has remarkable effects: By inserting a DIC prism on the basis of orthogonal polarized light, it can create a distinct relief effect on the surface of the object, significantly enhancing the image contrast and facilitating precise observation.
- Wide application scope: The high-performance differential interference component can convert the difficult-to-measure minute height differences in bright field into high-contrast light-dark differences and present them in a three-dimensional manner. It is widely used in fields such as the detection of conductive particles in LCDs and surface scratches on precision disks.

Workbench

- Excellent carrying and moving performance: The platform area of the loading platform is 310*240mm, which can stably carry large or diverse test samples; the moving ranges in the X and Y directions are 100mm and 100mm respectively, and it supports coaxial adjustment, facilitating precise positioning of the samples and meeting the requirements for detailed observation.
- Advantages in structure and precision: Utilizing high-precision mechanical design, the structure is stable and reliable, maintaining excellent stability during sample movement. This provides a precise operational foundation for microscopic observation, facilitating the attainment of more accurate test results.

Product Functions

Focus Adjustment System

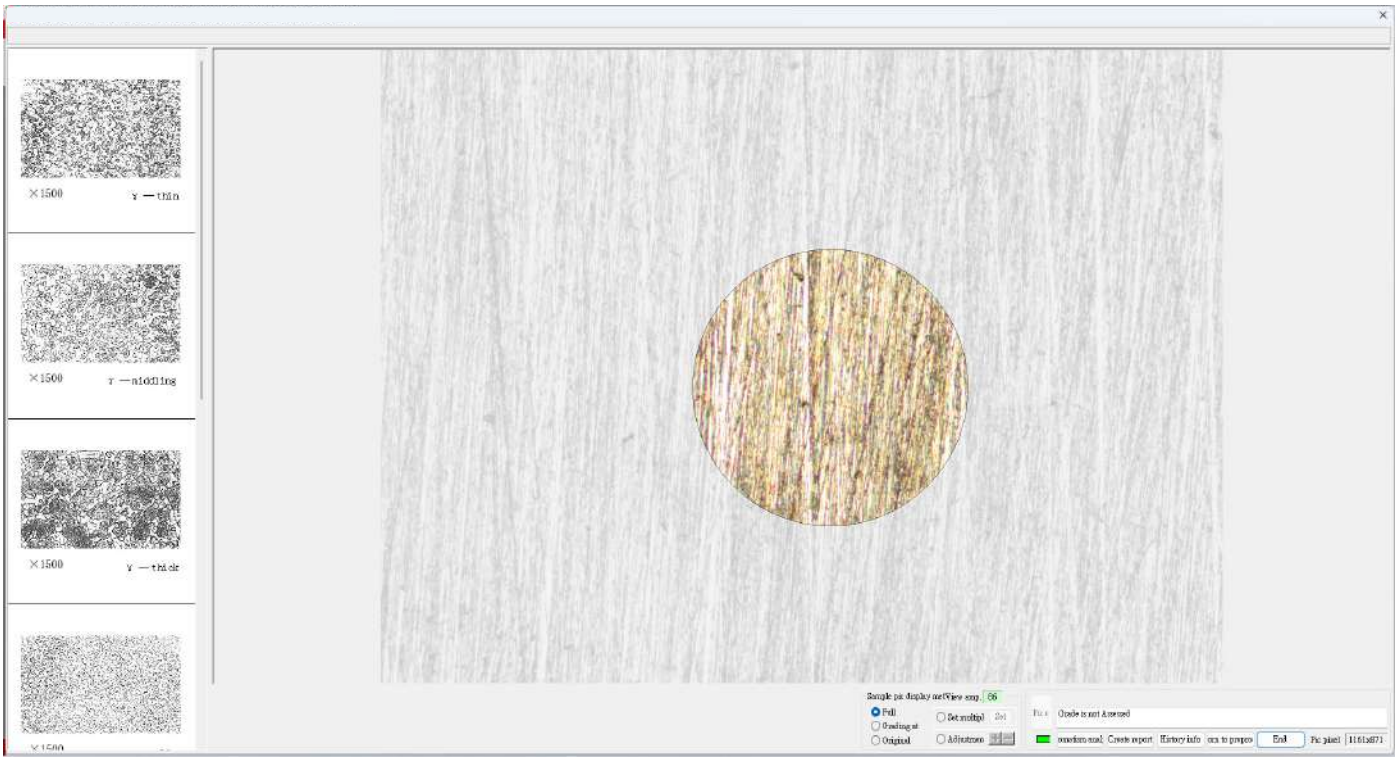
- Transmissive reflection frame, low-hand position coarse-fine coaxial focusing mechanism, coarse adjustment travel 35mm, fine adjustment accuracy 0.001mm. Equipped with a regulating tension device to prevent sliding and a random upper limit position device;

Light Source Adjustment

- 5W adjustable LED lighting chamber, suitable for both transmission and reflection, with a preset center.
  It is equipped with a 100-240V wide-voltage system and adopts digital dimming. It also has functions for setting and resetting the light intensity.

Operation Interface

Metallographic Software Analysis And Measurement



Operation Interface

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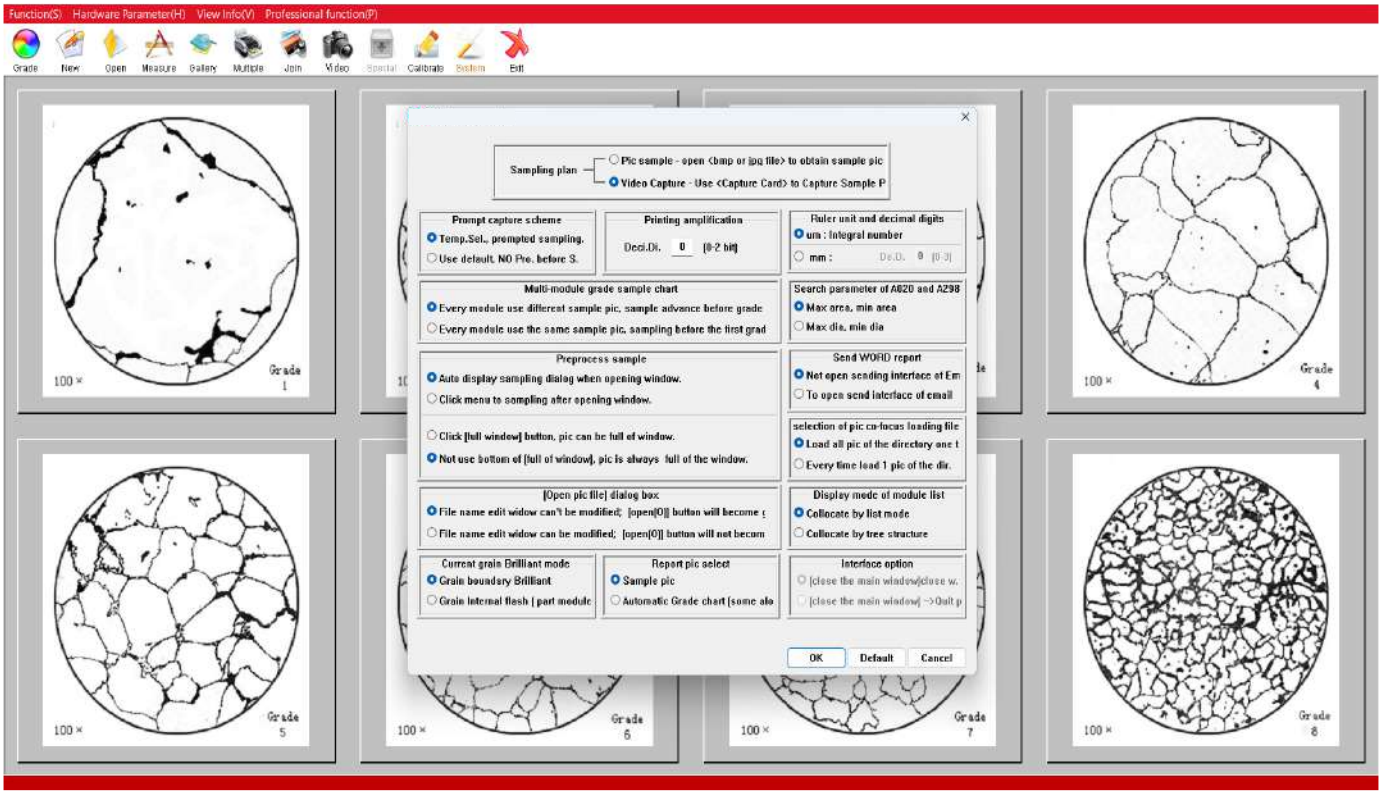

- Adheres to multiple national standards, incorporates 8 specialized metallographic analysis modules, supports comparison and automatic dual-rating modes, and takes into account both the authority of metal detection and different precision requirements.
- Provide three calibration methods, which can automatically calculate the resolution. Combined with the calibration verification function, it ensures the accuracy of microscopic measurement data and reduces errors.
- The geometric measurement tools are diverse, including 8 types such as distance and angle, and can conduct multi-dimensional measurements of the material's microstructure, meeting both qualitative and quantitative requirements.
- Supports full-process report management. You can customize the report format, input information, save it in a dedicated format or export it as a Word file, and it is compatible with archiving and sharing.
- It features image confocal technology and three-dimensional optical imaging capabilities, which can enhance image clarity, create a three-dimensional effect, and also enable image stitching to expand the analysis scope.
- Compatible with multiple systems and over 30 types of hardware, the core functions are integrated in the toolbar, providing a usage guide, etc., which lowers the operational threshold and is suitable for different devices.
- It allows setting the margins and printer parameters, supports fixed-scale printing, enables editing of the header and footer, ensures the standard format of the paper report, and is convenient for verification and archiving.

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Technical Specification

Optical System	Infinite distance chromatic aberration correction optical system
Optical Magnification	50X-500X(Optional 1000X)
Digital Magnification Factor	150X-1500X(21.5-inch monitor) combined with a 100X objective lens, the magnification can reach 3000X
Industrial Camera	5 million pixels, 1/1.8-inch color Sony industrial chip (optional 6.3 million and 20 million pixels)
Observation Tube	Inverted image, infinite distance hinge three-way eyepiece, interpupillary distance adjustment: 50mm - 76mm, two-stage light transmission ratio binoculars: 3 days = 100:0
Eyepiece	High magnification and wide field eyepiece SWH10X-H/23mm, with adjustable viewing angle
Objective Lens	Infinite long working distance bright-dark field half-complex achromatic metallographic objective 5X NA 0.15 WD 14.8
	Infinity long working distance bright-dark field half-complex achromatic metallographic objective 10X NA 0.30 WD 8.5
	Infinite long working distance bright-field and dark-field half-complex achromatic metallographic objective 20X NA 0.40 WD 11.9
	Infinite long working distance bright-field and dark-field half-complex achromatic metallographic objective 50X NA 0.75 WD 3.0
	Infinity long working distance bright-field and dark-field half-complex achromatic metallographic objective 100X NA 0.90 WD 1.0 (optional)

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Technical Specification

Nosepiece	Manual five-hole objective turret / Electric bright-field and dark-field 5-hole converter (with DIC slot), with physical buttons and dual control via software
Rack	Transmissive reflection frame, low-hand position coarse-fine coaxial focusing mechanism. Coarse adjustment travel 35mm, fine adjustment accuracy 0.001mm. Equipped with a regulating tension device to prevent sliding and a random upper limit position device. It is equipped with a 100-240V wide-voltage system and adopts digital dimming. It also has functions for setting and resetting the light intensity.
Workbench	4-inch worktable, platform area 310*240mm, moving range: 100mm X 100mm mechanical platform, X and Y directions are coaxially adjustable
Collimator	Swing-out type achromatic collimating mirror (N.A. 0.9)
Reflective Lighting Device	Ambient and shadow field reflective lighting device, with variable aperture diaphragm, field diaphragm, adjustable center position, with filter slot, with polarizer/linearizer slot
Lamp Chamber	5W adjustable LED lighting chamber, suitable for both transmission and reflection, with a preset center.
Video Interface	Photography and video accessory: 0.65X, C-type interface
Polarization Component	Polarizer plate, 360° rotating polarizing plate

Standard Delivery

Name		Qty	Photo
Host Machine		1pc	
SWH10X-H/23mm Eyepiece		2pcs	
Lighting Fixture		1pc	
Objective lens	5X NA0.15 WD14.8	1pc	
	10X NA0.30 WD8.5	1pc	
	20X NA0.40 WD11.9	1pc	
	50X NA0.75 WD3.0	1pc	
Nosepiece		1pc	
Lamp Chamber		1pc	

Standard Delivery

Name	Qty	Photo
Workbench	1pc	
Glass Workbench	1pc	
0.65x C-Type Camera Interface	1pc	
Polarization Component	1pc	
Trinocular Observation Head	1pc	
500,000 Units Of 1/1.8-Inch Color Sony Industrial Camera With Chip Technology	1pc	

Standard Delivery

Name	Qty	Photo
Instruction Manual	1pc	
Mikrosize Microscopic Analysis Software	1pc	
Hexagonal Wrench Set	1pc	
High-Precision Micrometer, With A Graduation Value Of 0.01mm	1pc	
Cleaning Set	1pc	
Dust Cover	1pc	
Power Cord	1pc