Automatic Burr Measurement System High Precision Optical Video Inspection Machine For Battery Electrodes And Precision Components

Item Number: DS15

Introduction

Accelerate precision quality control with this automated burr measurement system featuring natural granite stability subpixel edge detection and programmable LED illumination for micron level battery electrode cutting edge inspection and micro component metrology workflows worldwide.

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Application	Description	Key Benefit
Battery Electrode Slitting & Die-Cutting	Automated inspection of micro-burrs, edge roughness, and foil overhanging along slitted cathode and anode edges.	Prevents separator puncture and internal battery short circuits by enforcing strict micron-level burr tolerances.
Precision Metal Stamping & Lead Frames	High-speed boundary analysis of stamped connector pins, micro-brackets, and copper lead frames.	Eliminates manual microscope inspection bottlenecks while catching punch wear before tooling breaks.
Semiconductor & PCB Stencil Inspection	Non-contact aperture profiling, solder paste stencil opening verification, and micro-via edge clarity checks.	Guarantees consistent solder paste deposition volume by detecting microscopic wall roughness and burrs.
Medical Device & Surgical Blade Manufacturing	Sharpness verification, tip geometry validation, and bevel burr measurement on surgical needles, trocars, and micro-scalpels.	Provides 100% verifiable quality logs for critical medical cutting edges where mechanical contact would damage the part.
Precision Micro-Machined Components	Rapid multi-point dimensional checking of micro-gears, watchmaking parts, and miniature hydraulic valves.	Replaces multi-tool manual setups with a single automated visual routine, reducing cycle times by up to 80%.
Optical & Sensor Housing Assemblies	Step height, chamfer angle, and groove edge inspection on micro-molded polymer and lightweight alloy camera housings.	Ensures light-tight assembly fits and prevents optical misalignment caused by unseated mating faces.

Specification Parameter	Technical Data (DS15)
Model Identifier	DS15
Measuring Range (X × Y × Z)	300 mm × 200 mm × 200 mm
Worktable Structure	Monolithic Grade 00 Natural Marble Base
Granite Worktable Dimensions	500 mm × 380 mm
Precision Glass Stage Dimensions	440 mm × 240 mm
Maximum Stage Load Capacity	35 kg
Maximum Allowable Workpiece Height	200 mm
X / Y Axis Measurement Accuracy	2 + L/200 µm (where L is measuring length in mm)
Z Axis Measurement Accuracy	5 + L/200 µm (where L is measuring length in mm)
System Repeatability	3 µm
X / Y Axis Positioning Speed	0 – 300 mm/s

Specification Parameter	Technical Data (DS15)
Z Axis Positioning Speed	0 – 100 mm/s
Linear Feedback Grating Scale	0.0005 mm (0.5 μm) Precision Metal Optical Scale
Linear Guide Rails	Taiwan HIWIN Heavy-Duty Linear Guides
Transmission Screws	Taiwan TBI Precision Ground Ball Screws
Spindle & Axis Bearings	Japan NSK Matched Duplex Radial Ball Bearings
Drive Motors	Multi-Axis AC Servo Motors
Motion Controller	HZ4000 Full Closed-Loop Motion Controller
Manual Control Interface	Professional 3-Axis Precision Ergonomic Joystick
Primary Image Sensor	Hikvision High-Definition Color Digital Camera
Auxiliary Navigation Sensor	Ultra-Wide Field-of-View CCD Optical Sensor
Optical Zoom System	1490 High-Definition Continuous Zoom Optical Lens
Optical Magnification	1.4× – 9.0×
Total Video Magnification	48× – 500× (displayed on monitor)
Contour (Bottom) Illumination	Parallel Transmitted LED Cold Light with Integrated Condenser Lens
Surface (Top) Illumination	5-Ring 8-Segment Programmable Surface LED Cold Light
Specialized Electrode Tooling	YZ-005 Fully Automated Rotary Foil Inspection Fixture
Metrology Software Suite	YZ-CNC Automated Vision Inspection Software
Host Computer & Display	High-Performance Industrial PC with 27-inch HD LCD Monitor
Workstation Integration	Heavy-duty ergonomic desk with integrated power distribution, controller rack, e-stop, and leveling casters
Electrical Power Requirements	AC 220V ± 10%, 50 Hz, 3A
Machine Physical Dimensions (W × D × H)	860 mm × 660 mm × 1700 mm
Machine Net Weight	460 kg
Optimal Operating Temperature	20°C ± 2°C (Permissible: 15°C – 25°C; Max Variation: < 2°C/hr)
Operating Relative Humidity	30% – 70% (Optimal: 55%)
Cleanroom Air Quality Standard	Clean environment: < 45,000 particles/ft³ for particles > 0.5 μm
Vibration Isolation Limit	Ambient floor vibration < 0.5T