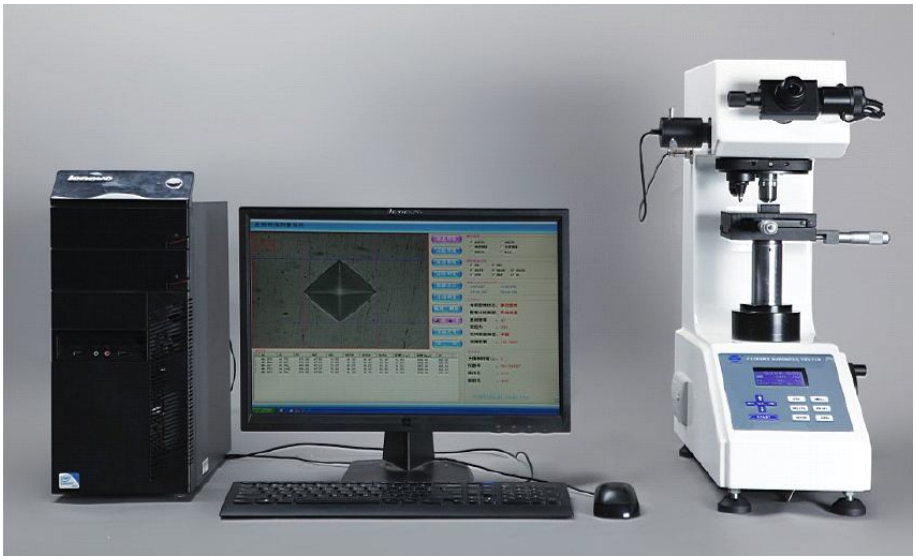
ECO INSTRUMENT (NS0081046-M)

Image Analysis Multi-Function Digital Micro Hardness Tester



The system is consisting of multi-function Auto Turret digital Micro Hardness Tester and hardness measuring image analysis software. Via the data line connect with computer, real time focus and the hardness indentation image can be displayed on the computer. Just through the mouse and keyboard can complete a variety of test requirements, greatly improve the working efficiency. So, it can provide the perfect solution for experimental analysis.

Main functions and features of software:

1. The image analysis software (which is developed by our institution) is easy operation with perfect function. And it can be customized various functions to meet the requirements of our most customers.
2. Can measure HV and HK hardness, switching the measurement mode easily from dynamic to static or static to dynamic.
3. The indentation image can be measured after magnified 1600 times. And when measuring will magnify the corner image, so more easy to measure and avoid the manual operation errors.
4. For smooth surface specimen, the software can automatically identify the indentation image and automatic measuring diagonal length.
5. Diagonal length, hardness value, the indentation depth, strength of materials and conversion hardness can be displayed in real time.
6. It can mark point testing or continuous testing, the hardness depth and gradient curve can be drawing out directly.
7. The unique Mark point positioning function makes the machine can measure the hardness and analysis material on the specified point.
8. The color, grayscale, contrast and brightness of the image can be adjusted.
9. With the function of diagonal fine-tuning, length measuring and angle measurement.
10. With measuring results statistic and analysis function, the hardness report can be generated directly in word / excel format (including indentation image). And the data can be print out by printer.
11. Support for Win7 64 bit computer system.

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Main functions and features of hardness tester:

1. The machine connects with computer just through one data line. And through image analysis software to analyzing the physical and chemical properties of the material.
2. Equipped with digital eyepiece and Data computing systems which accuracy can reach to 0.01um; Just click one button the hardness value will display on screen directly.
3. Main components adopted American 3M, Allegro, and Japanese Omron, NKK brand, ensure the instrument can stable working for a very long time.
4. The optical system designed by our senior optical engineer not only meet the definition of hardness testing requirements, but also can observe the micro structure of the material, image is very clear.
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6. With Vickers hardness and Knoop hardness testing capabilities, and testing force can be extended to 2KG (HV2). Automatic measuring the indentation diagonal length, the hardness and conversion hardness will show on the screen directly, no need to check hardness table.
7. Industrial digital screen can direct display hardness value, conversion hardness, testing method, testing force, dwell time, test number and testing process; The built-in printer can print testing times, hardness value, average value, Max. Value, Min. Value, Xmax-Xmin directly, easy for operator to save the data.
8. Equipped with data transfer software, all the testing data can be transfer to computer via RS232 port, then can edit and save the data on computer.
9. One-time casting aluminum molding shell ensure structure more stable; Adopted car painting technology, pure white color looking more decent; High scratch resistance capability, used for years still brightness like new.
10. Factory directly supplies, we have products develop &design & produce ability, and all the parts provide life-time replacement and maintenance service.

Main Function & Features of software:

1. **Auto hardness measurement:** With a click of a button, the software automatically measures the diagonals of the indentation, calculates the hardness value and the statistics
2. **Hardness curve:** With the depths of test points by user input, the software automatically plots the hardness curve(s); User may save and load the depths in a depth template file for later testing for convenience
3. **Conversion, compensation, and validation:** Converts HV to other hardness scales； Validates the test results with sample dimensions; Compensates the test results with respect to sample cylindrical/spherical diameters;
4. **Statistics:** Automatically updates the statistical values such as average, min and max, standard deviation, Cp and Cpk;
5. **Auto-alarm:** Automatically marks the out of spec measurements;
6. **Test report:** Automatically generates WORD or EXCEL report with customizable template;
7. **Data archiving:** Measurement data and images can be saved in one file for later retrieval;

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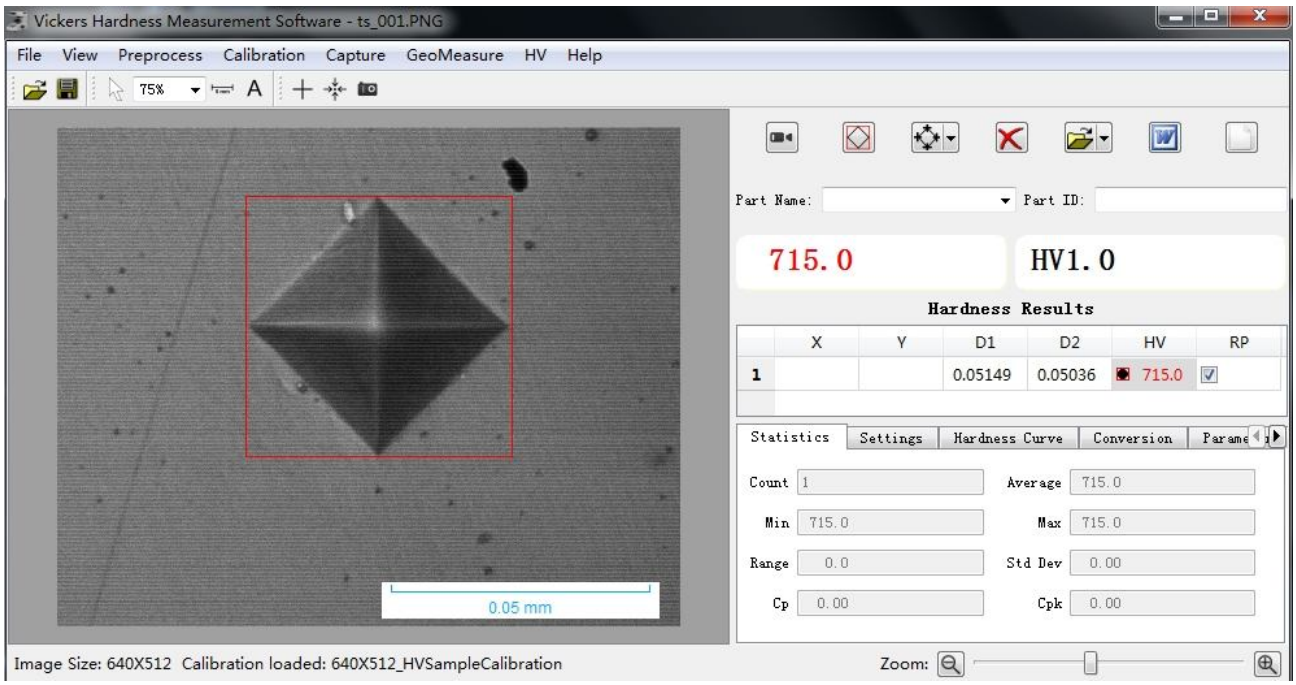
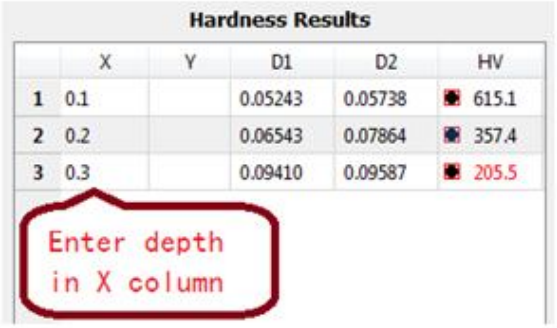
8. **Knoop Scale:** Can be configured for Knoop Scale measurement;
9. **Other Functions:** Includes the basic functions of imaging system such as image capture, camera calibration, image processing, geometric measurement, document labeling, album management, and printing with specified magnifications.

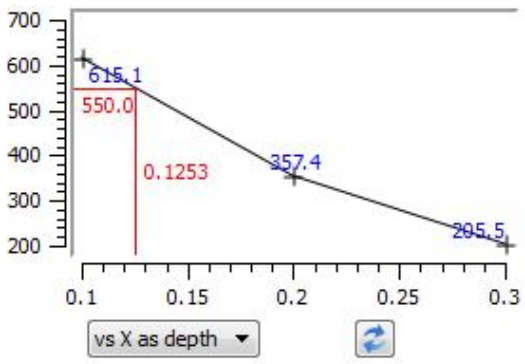
Main purpose and application:

1. Heat treatment material, nonferrous metals, steel.
2. Tinsel, cemented carbide, sheet metal, metallographic structure.
3. Carburization, nitriding and decarburization layer, surface hardening layer, galvanized coating, coating.
4. Glass, chip and ceramic material.



Automatic measuring software, operation more easy.





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Specification:

Model	EI-MVD1000IS
Hardness scale	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1, HV2
Testing force	10g (0.098N), 25g (0.245N), 50g (0.49N), 100g (0.98N), 200g (1.96N), 300g (2.94N), 500g (4.9N), 1000g (9.8N) Test force error: ±1.0%
Hardness conversion scale	HRA, HRB, HRC, HRD, HK, HBS, H15N, H30N, H45N, H15T, H30T, H45T
Loading speed	≤50μm/sec
Indenter	Standard Rectangular pyramid diamond indenter (136º±0.5º)
Min. Measuring Unit	0.01μm
Hardness Value Rang	1HV-4000HV
Hardness Value of Reading	Digital LCD screen (118x99mm) or Computer Screen
Total Magnification	100x, 400x (on computer screen can reach to 1600X)
Loading Method	Automatically (Load, dwell and unload)
Duration Time	1-99s (each step is 1 second)
Turret	Auto Turret
Maximum Height	85mm
Throat depth	115mm
Instrument size and Net weight	490 (L) × 185 (W) × 515 (H) mm
Net Weight	Approx. 43kg
Light Source	LED Cold light source (can be continuous use for 24 hours, no heat generate ensure stable working, servicing life can reach 100,000 hours)
Power Supply	220V + 5%, 50/60 Hz (110V is available)
X-Y Testing Table	Dim.:100×100 mm, Max. Travel Range: 25×25mm, Moving Resolution Ratio: 0.01mm

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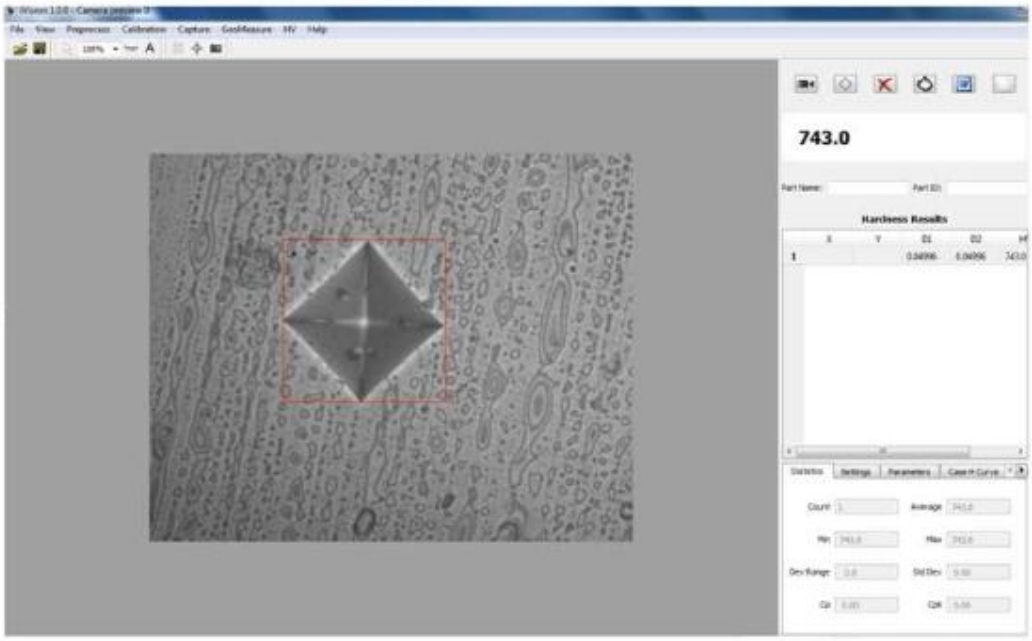
	(Digital X-Y Testing Table with digital LCD Screen for Optional)
Data Output	Testing data can automatically generate report in Word / Excel formats. And via an external printer to print an A4 report; Indentation image can be saved as JPG/BMP formats.
Executed Standard	GB/T4340, ASTM E384 & E92, EN-ISO 6507, JIS B-7734
Standard Accessories	1 Piece: 10X Digital micrometer eyepiece 10X and 40X objective lens Vickers indenter; X-Y Testing Table Flat fixture, Sheet specimen fixture & Small parts fixture Gradienter Power cable Dust-proof cover Manual Book Hardness Conversion Tables Accessory case Hardness measuring and analysis software CD-ROM Dongle, CCD camera, Accessory case Branded High Performance Computer System: ACER or Other branded - 2GB DDR Memory, 500GB HDD, 2pcs Com Port, 2pcs PCI Slot, DVD writer, P/S 2 keyboard & mouse, 19" LCD Screen, Microsoft Window OEM window license A4 Inkjet Printer **2 Pieces:** Standard Hardness Blocks, Data line **4 Pieces:** Horizontal adjusting screw

Software Accessories Parts:

Software Interface:



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Micro / Vickers Hardness (HV) Test Result:

Submitter		Date Submitted	
Part Name		Part #	
# of Sample		Sample Desscr.	
Qual. UL	650	Qual. LL	450
Machine ID		Meas. Standard	GB/T231. 1-2002
Sample Cyl. / Sph.diam (mm)	0	Force (g)	1000

Test Results

#	Depth	Y	D1	D2	Hard	Conver.	#	Depth	Y	D1	D2	Hard	Conver.
	µm	µm	µm	µm	HV			µm	µm	µm	µm	HV	
1.			49.96	49.96	743								

Case Hardness (HV)		Case Depth (µm)	

Indent Images

1. 

Statistics

Maximum	743.0	Minimum	743.0
Average	743.0	Std. Dev.	0.00
Cp	0.00	Cpk	0.00

Operator		Test Date	Auditor		Audit date
		2012.9.20			

Image analysis software can measuring the length of the indentation, and show hardness easily; and can generate the Hardness report directly in word format, easy edit

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