

JMHVS-1-XYZ

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Automatic Precision Micro Hardness Tester



Overview

Mitech JMHVS-1-XYZ automatic precision micro hardness tester, based on the mechanical principle of the positive quadrilateral pyramid diamond indenter into the sample surface to produce indentation. By measuring the diagonal length of the indentation to achieve the hardness of the material. It is designed for small specimens, thick workpiece, heat treatment of the workpiece surface (infiltration coating) Vickers hardness test. With high automation degree, accurate measurement, integrated electromechanical integration in one, and the use of photoelectric sensor system to high magnification optical measurement, it is equipped with automatic turret device, high sensitivity touch screen operation interface to achieve automatic loading and unloading, automatic indentation marks, micro-auto focus measurement indentation diameter, GB/ASTM hardness automatic conversion, automatic test report and other functions. With the function of easy to operate and high efficiency, it is widely used in metal processing, electronics industry, mold parts, watches and clocks manufacturing, engineering quality inspection, and other fields, scientific research institutions etc. and it is the ideal hardness test equipment for sophisticated manufacturing and quality inspection departments to test materials.

Technical Parameters

Technical specifications	Technical Parameters
Measuring range	5HV~2500HV
Initially test force	10gf (0.098N)、25gf (0.246N)、50gf (0.49N)、100gf (0.98N)、200gf (1.96N)、300gf (2.94N)、500gf (4.9N)、1kgf (9.8N)
Hardness mode	HV、HK
Conversion scale	HRA、HRB、HRC、HRD、HR15N、HR30N、HR45N、HR15T、HR30T、HR45T、HV、HK、HBW
Effective verification of hardness value	According to the measured hardness value, the minimum sample thickness, the test point and the distance from the sample edge can be calculated automatically
Applying way of test force	Automatic (plus, loading, unloading)
Magnification of measuring microscope	100X (Observation) 400X(Measurement)
The conversion mode of the lens of the head	Automatic
Minimum resolution	0.01μm
Maximum height of applicable materials	210mm
Maximum distance from head to the fuselage	320mm
Display characteristics	LCD large screen Display
Test force holding time	0~60s
Image focus	Manual operation or automatic operation
Camera (Pixel)	1.3 million
Indentation measurement	Manual operation or automatic operation
Data statistics	Automatically calculate the hardness of the average, variance, Cp, Cpk and other statistical values
Data storage	Raw measurement data, images, etc.which can be saved in the document
Hardening curve	Automatically draw the hardening curve
Suitable for material edge scan	Automatic (automatically scans along the edges of the test pieces and draws the edge overall diagram)
XYZ Sample Table	110mm*110mm
Mobile control	Manual operation or automatic operation
Test report	Automatically generate Word or Excel document reports in a format that can be customized (standard format includes hardness values, statistical values, indentation images, and hardening curves for each individual measurement point)
Power supply	AC220V±5% , 50~60Hz
Kirschner Hardness	It can be set to Vickers hardness measurement
Overall dimensions	490*320*530mm
Machine weight	45kg

The scope of application

- Small, thin-form specimens;
- Surface infiltration coating;
- Surface heat treatment workpiece ;
- Glass, ceramics, agate, artificial gemstones and other more brittle, hard non-metallic materials

Working Conditions

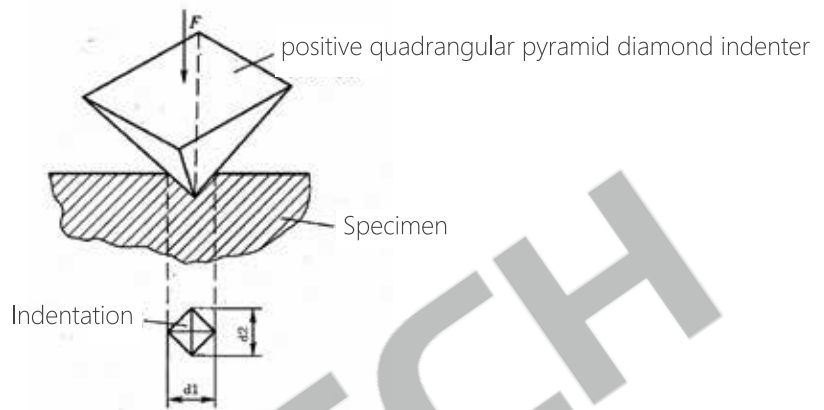
- Operation Temperature : 18 ~ 28°C ;
- In the absence of vibration, no corrosive media around the environment;
- Relative Humidity : ≤65% ;
- Install horizontally on a solid basis.

Applications

- Quality control links in metal processing manufacturing;
- Failure analysis test of metallic materials;
- Research teaching experiment in universities;
- Material hardness test of scientific research institution;
- Quality inspection departments of quality testing links.

Working Principle

The testing principle of Micro Vickers (or Knoop) hardness is the using of regular four-pyramid diamond pressure head, the selected fixed experimental force (load) is pressed into the specimen surface and maintained for a certain length of time (Paula), and then the experimental force (unloading) is removed. A positive pyramid or Knup indentation with a square on the surface of the specimen remains. The length of the diagonal is measured by the micrometer (0.020~1.400mm) to obtain the area of the indentation and to obtain the corresponding Vickers (or Knoop) hardness value.



Vickers hardness measurement schematics

Usually Vickers hardness values can be converted according to the following formula

$$HV = \text{constant} \times \text{test force} / \text{indentation surface area} \approx 0.1891 F / d^2$$

Note: HV, Vickers hardness symbols

F: test force d: the arithmetic mean of of the two diagonal d1, d2

Features

- It is widely applied to the Vickers hardness test of the surface (infiltration coating) of the specimen such as micro specimen, thin specimen and heat-treatment workpiece, which can meet the needs of research institutions, precision processing manufacturing and quality inspection departments, and microhardness testing;
- This product is the integration of High-tech innovative products, high degree of automation, accurate measurement, suitable for measuring the demand for large or high precision high-end users;
- With high rate optical sensor system and high-precision photoelectric sensor technology, the test point positioning is accurate, the test results more accurate;
- Using the adjustable cooling light source measurement system, and the software can control the intensity of the light source;
- Automatic turret device can convert the pressure head and the microscope eyepiece, and the test efficiency is high;
- The threshold of the automatic alarm function, making it suitable for batch of finished products or semi-finished products workpiece by piece inspection;
- Using large-screen LCD, simple and convenient to operate, and it can be intuitive to display the test results;
- With panel printer, you can print the test results in real time;
- Support the numerical conversion among Brinell, Vickers and other hardness standards;
- Meet the standards of GBT4340.1 , GBT4340.2 , ASTM_E92 and other relevant standards at home and abroad.

Configurations

	NO.	Name	QTY.	Remarks
	1	Main unit	1	Including micro-Vickers pressure head A, 10x, 40x objective lens
	2	Weight axis	1	
	3	Weight	6	
	4	Cross Test Stand	1	
	5	Thin Clamp Table	1	
	6	Flat-Mouth clamping platform	1	
	7	Filament clamp Table	1	
	8	Screwdriver Batch	2	A Phillips screwdriver, a screwdriver for a word
	9	Horizontal adjusting Screws	4	
	10	Digital micro-measuring eyepiece	1	10×
	11	Micro-Vickers Hardness block	2	
	12	Level meter	1	
	13	Spare core (1A)	2	
Standard Configuration	14	Spare bulb	2	6V12W
	15	XYZ Electric displacement worktable	1	
	16	XY connector	1	
	17	1.3 million dedicated camera	1	
	18	Encryption Dog	1	
	19	Z-AXIS Motor wiring	1	
	20	XY Stepper Drive Box	1	
	21	USB Connector line	1	
	22	RS232 Serial Line	1	
	23	Software Installation CD	1	
	24	Power cable	1	
	25	Plastic dust cover	1	
	26	Random information	1	
	27	Host accessories box	1	
Optional Configuration	1	Image analysis software	1	
	2	CCD Camera	1	
	3	Optical Access Rod	1	
	4	Computer	1	