Mikrosize®

iBRV-187.5PC/250PC

Digital Universal Hardness Tester

Contact us

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Product Features and Application

Product Features

●Adopt 8-inch touch screen, rich display content, easy operation.
●Ready to use after power on, no need to install weights.
●Electronic loading, closed-loop force control, high precision, to ensure the stability and repeatability of test results.
●Three methods of Brinell, Rockwell and Vickers hardness test.
●Automatic hardness conversion.
●Equipped with high-precision optical system, can clearly present the indentation to ensure the accuracy of measurement.
●With large storage space, it can store a large amount of measurement data, and can be easily retrieved and printed. Users can view historical test data at any time, conduct data analysis and comparison, and provide strong support for quality control and research work.

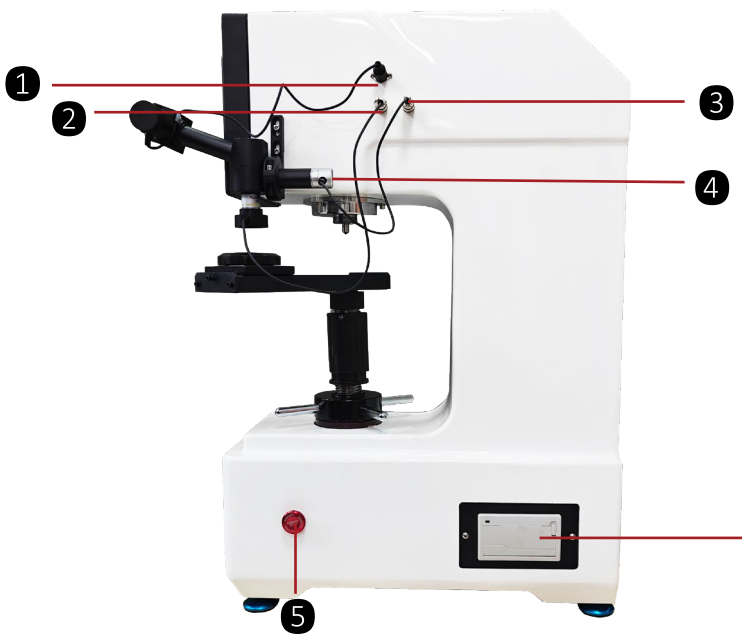
Product Application

●Material research:
Used to evaluate the hardness characteristics of materials and provide data support for material selection, design and development.
●Production quality control:
During the manufacturing process, it is used to detect whether the hardness of the product meets the standard and ensure product quality.
●Failure analysis:
When equipment or parts fail, by analyzing the change in its hardness, the cause and mechanism of failure can be inferred.

Instrument Appearance

Machine on the Front

1. Touch screen 2. Micrometer 3. Mirror frame 4. Objective lens 5. External lighting
6. Indenter 7. Sliding table 8. Screw 9. Handwheel



The Right Side of Machine

1. Micrometer interface 2. External lighting interface 3. Internal lighting interface
4. Internal lighting 5. Emergency stop button 6. Printer

Machine on the Back

1. Switch 2. Power cord interface 3. RS232 computer interface 4. USB interface

Instrument Appearance

Eyepiece

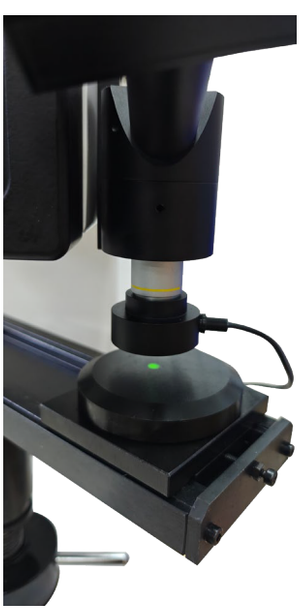
1. Left drum 2. Eyepiece 3. Encoder button 4. Right drum

The micrometer is part of the hardness tester's optical system. Its function is to observe the actual indentation and measure the diagonal length.

Product Details

Sensor Loading

The test force loading and unloading mechanism is driven by a stepper motor, cooperates with the load cell and microprocessor control system, and uses a special algorithm to precisely control the operation of the stepper motor, which significantly improves the test force control accuracy and is greatly improved compared to previous models.



Objective System

With two optical lighting modes, internal and external, it can automatically select the appropriate lighting mode according to the size of the indentation, making the indentation clearer and helping to improve the accuracy of the measurement. When measuring samples of different hardness and size, you can get the best observation effect.

Product Details

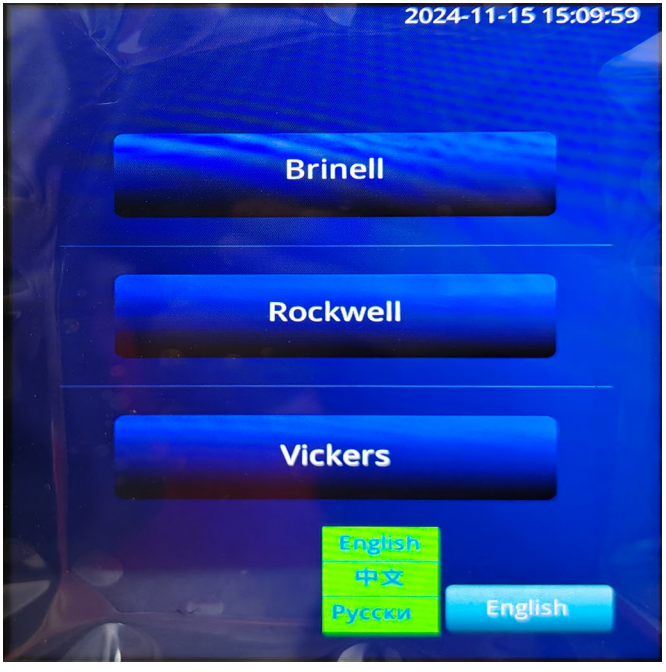
Printer

This device has a built-in thermal printer, so users can print out the required data at any time, which is convenient and fast.

Emergency Stop Button

There is an emergency stop button on the right side of the device. In case of emergency, you can press it to stop the device quickly, thus avoiding accidents or reducing the degree of harm caused by accidents. To restart the device, you must release the emergency stop button, that is, rotate it clockwise about 45° and then release it. The pressed part will pop up and the device can restart.

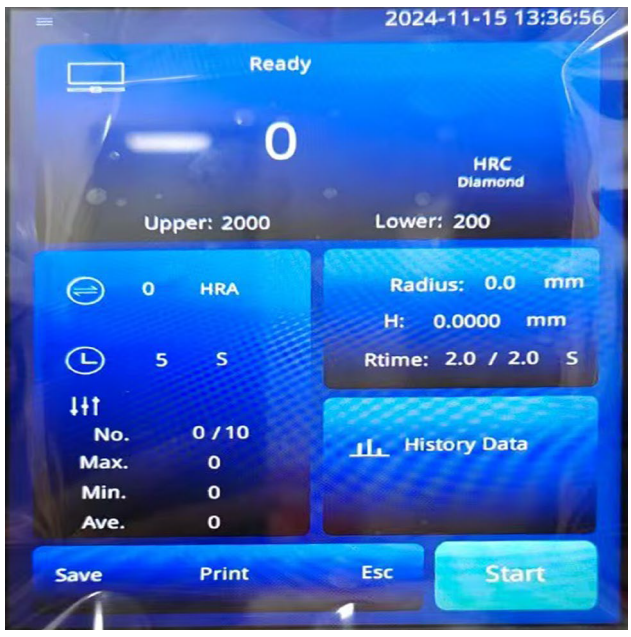
Screen Interface



Select Test Method/ Language

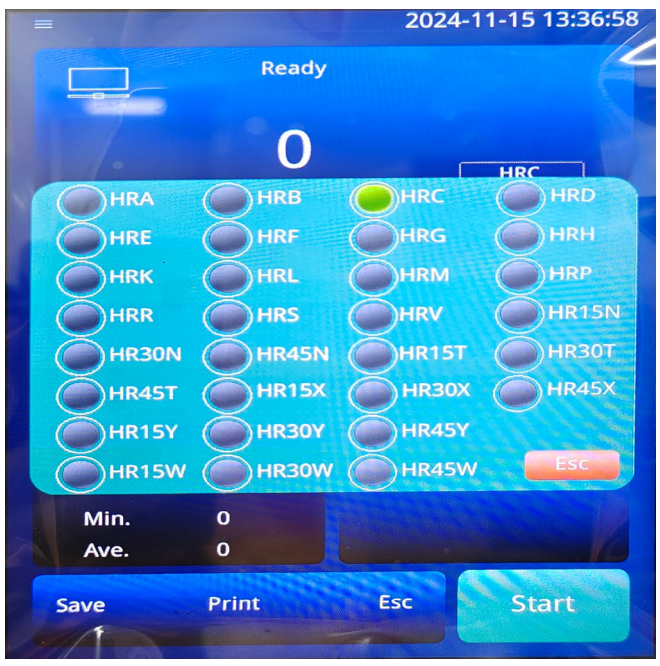
After powering on, the user can enter this interface and select the required method from three hardness test methods (Brinell measurement, Rockwell measurement, Vickers measurement). At the same time, this interface can also select the display screen language. This device supports Chinese, English and Russian.

Rockwell Measurement



Rockwell Interface

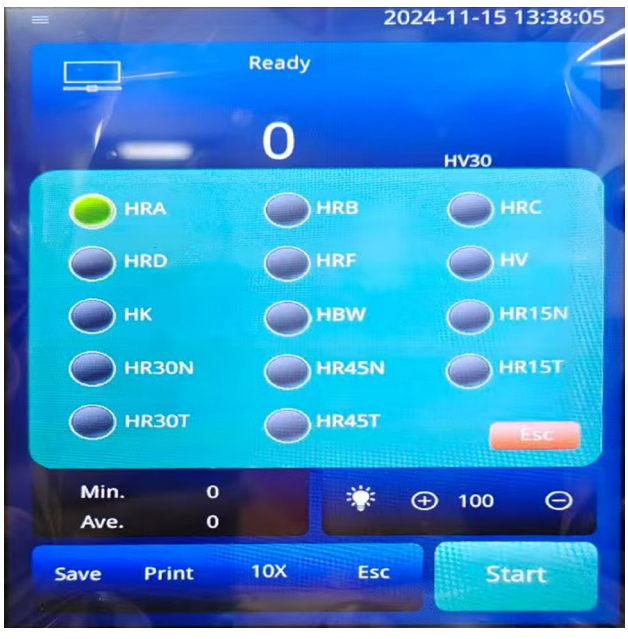
Click "Rockwell Measurement" to enter this interface, where you can select the Rockwell measurement scale, adjust the test parameters, start the experiment, and save, view, and print the experimental data.



Rockwell Scale Selection

Before starting the test, you must first select a suitable hardness scale. Click the "HRC" position to pop up the test scale selection dialog box. The user can select the required scale from the list.

Rockwell Scales:	HRA, HRB, HRC, HRD,HRF, HRE, HRG, HRH,HRK, HRL, HRM, HRP,HRR, HRS, HRV, HR15N,HR30N, HR45N, HR15T,HR30T, HR45T, HR15X,HR30X, HR45X, HR15Y,HR30Y, HR45Y, HR15W,HR30W, HR45W



Conversion Scale

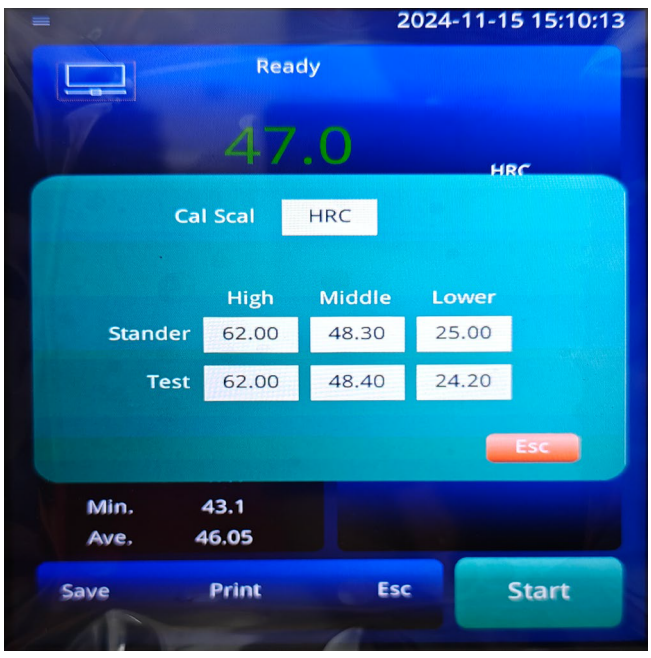
Click  to pop up the hardness conversion window. Users can select the hardness value to be converted from the list. The hardness conversion of the three hardness test methods is the same.

Hardness Conversion Scales:	HRA. HRB. HRC. HRD. HRF. HV. HK. HBW.HR15N. HR30N. HR45N. HR15T. HR30T. HR45T

Software Function

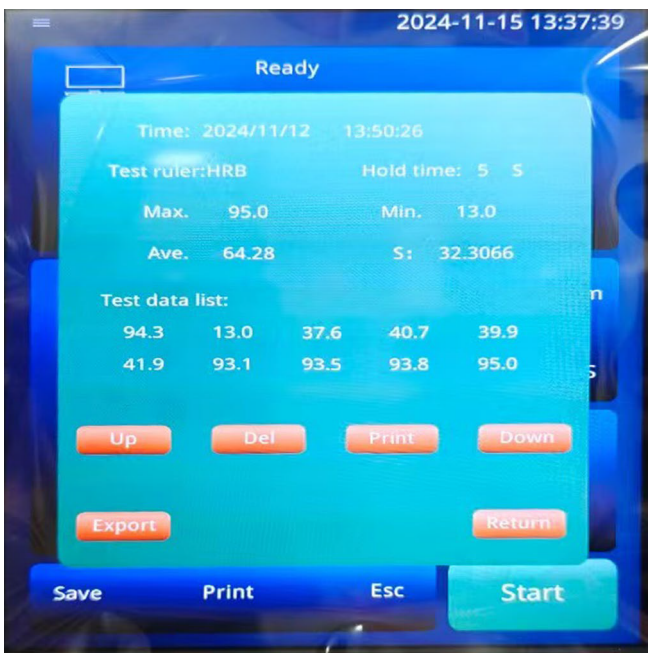
Curve Radius

When the sample to be tested is cylindrical or other curved, you need to enter the curve radius of the sample before testing.



Calibration

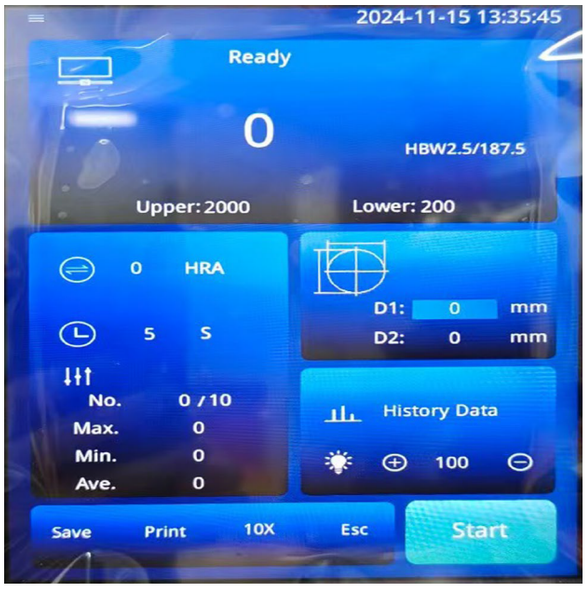
Click the upper left corner of the interface to enter the calibration window. If the hardness value tested deviates from the hardness value of the standard block by no more than 3 degrees, you can calibrate it through hardness calibration.



View Results

Click the historical data button to pop up the window, where you can flip pages, search historical records, delete and print test data.

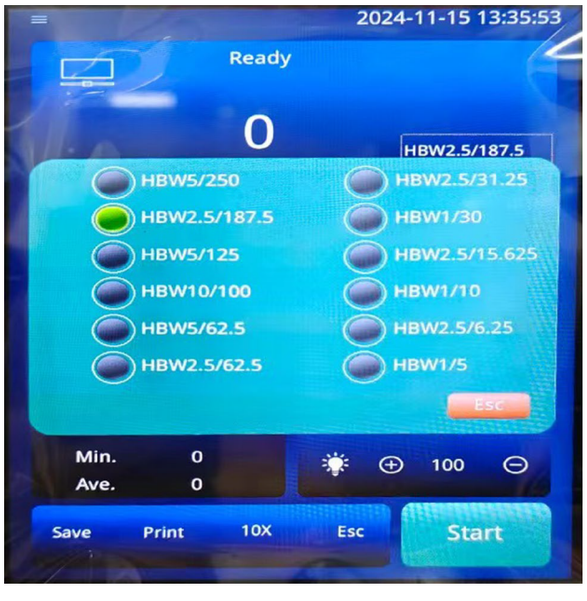
Brinell Measurement



Brinell Interface

Click "Brinell measurement" to enter this interface. Compared with Rockwell measurement interface, this interface has more objective lens magnification selection and light adjustment at the bottom. You can choose 2.5X; 5X; 10X three different magnification objective lenses by clicking. The magnification selection must be consistent with the lens magnification installed on the actual device. Otherwise, the measurement result will be wrong.

Click the plus and minus buttons on the left and right sides to control the brightness of the light.

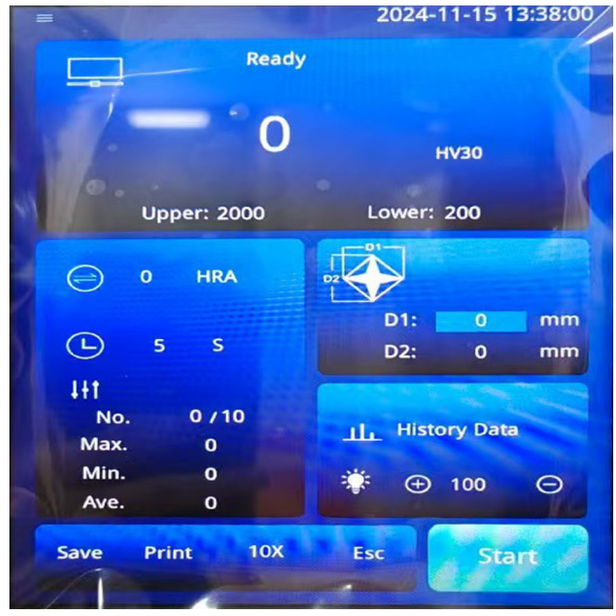


Brinell Scale Selection

Similarly, select a hardness scale before starting the test.

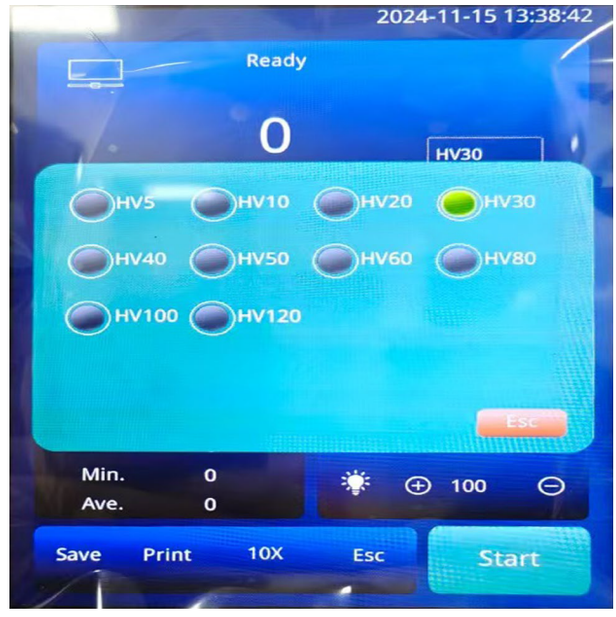
Brinell Scale	HBW1/5；HBW1/10；HBW1/30； HBW2.5/15.625；HBW2.5/31.25；HBW2.5/62.5； HBW5/62.5；HBW5/125；HBW5/250 HBW10/100；HBW2.5/187.5

Vickers Measurement



Vickers Main Interface

Click "Vickers measurement" to enter this interface. The interface layout and operation are the same as Brinell. The following is a brief introduction to the selection of Vickers scale.



Vickers Scale Selection

Choose a suitable scale before testing.

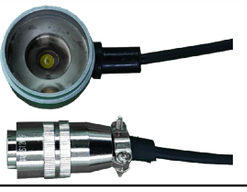
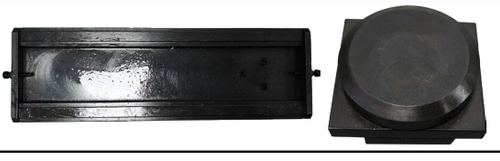
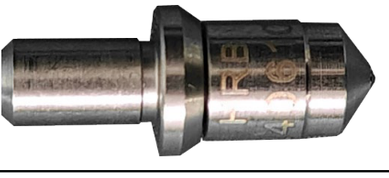
Vickers Scales:	HV5;HV10;HV20;HV30; HV40;HV50;HV60;HV80; HV100;HV120

Mikrosize®

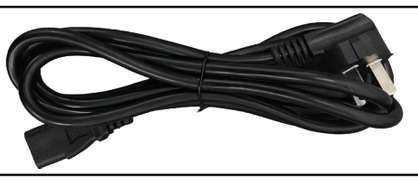
Technical Specification

Product Name	Digital Universal Hardness Tester	
Model	iBRV-187.5PC	iBRV-250PC
Initial Test Force	Rockwell: 10kgf(98.07N)	
Total Test Force	Rockwell：588.4, 980.7, 1471N (60, 100, 150Kgf)	Rockwell：588.4, 980.7, 1471N (60, 100, 150Kgf)
	Brinell：49, 98, 153.2, 306.5, 612.9, 1226, 1839, 2452N（5, 10, 15.625, 30, 31.25, 62.5, 125, 187.5Kgf）	Brinell：49, 98, 153.2, 306.5, 612.9, 1226, 1839, 2452N（5, 10, 15.625, 30, 31.25, 62.5, 125, 187.5, 250Kgf）
	Vickers：49.03, 98.07, 196.1, 294.2, 490.3, 980.7N（5, 10, 20, 30, 50, 100, 120Kgf）	Vickers：49.03, 98.07, 196.1, 294.2, 490.3, 980.7N（5, 10, 20, 30, 50, 100, 120Kgf）
Force Error	＜0.5%	
Hardness Scale	Rockwell：HRA, HRB, HRC, HRD, HRF, HRE, HRG, HRH, HRK, HRL, HRM, HRP, HRR, HRS, HRV	Rockwell：HRA, HRB, HRC, HRD, HRF, HRE, HRG, HRH, HRK, HRL, HRM, HRP, HRR, HRS, HRV
	Brinell: HBW1/5 HBW1/10 HBW1/30 HBW2.5/15.625 HBW2.5/31.25 HBW2.5/62.5 HBW2.5/6.25 HBW2.5/187.5 HBW5/62.5 HBW5/125 HB-W10/100	Brinell: HBW1/5 HBW1/10 HBW1/30 HBW2.5/15.625 HBW2.5/31.25 HBW2.5/62.5 HBW2.5/6.25 HBW2.5/187.5 HBW5/62.5 HBW5/125 HB-W5/250 HBW10/100
	Vickers：HV5, HV10, HV20, HV30, HV40, HV50, HV60, HV80, HV100, HV120	Vickers：HV5, HV10, HV20, HV30, HV40, HV50, HV60, HV80, HV100, HV120
	Knoop: HK3, HK5, HK10, HK20, HK30, HK40, HK50, HK60, HK80, HK100, HK120	Knoop: HK3, HK5, HK10, HK20, HK30, HK40, HK50, HK60, HK80, HK100, HK120
Hardness Conversion Scale	HRA, HRB, HRC, HRD, HRF, HV, HK, HBW, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T	HRA, HRB, HRC, HRD, HRF, HV, HK, HBW, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T
Hardness Range	Rockwell：20-88HRA, 20-100HRB, 20-70HRC	
Hardness Resolution	Brinell：5-650HBW Vickers：8-2900HV	
Indication Accuracy	0.1HBW, 0.1HR,0.1HV	
Repeatability	Brinell: ±2.5HB, Rockwell:±0.1HR, Vickers:±2 HV	
Magnification	Brinell:≤3.0HB, Rockwell: 0.5HR, Vickers: ≤2.5HV	
	Eyepiece: 15X,	
	Objective:2.5X(for Brinell), 5X(for Brinell and Vickers)10X(for Vickers)	
	Total Magnification:	
	Brinell:37.5X, 75X	
	Vickers: 75X,150X	
Dwelling Time	0～90s Adjustable	
Test Throat	160mm	
Test Height	Rockwell 180mm；Brinell, Vickers165mm	
Data Output	LCD display, U disk, Built-in mini printer	
Executive Standards	ISO 6508, ASTM E-18, JIS Z2245, GB/T 230.2	
	ISO 6506, ASTM E10-12, JIS Z2243, GB/T 231.2	
	ISO 6507, ASTM E92, JIS Z2244, GB/T 4340.2	
Power	AC110V/220V+5%, 50-60Hz	
Machine Dimension	550×230×750mm	
Net Weight	80kg	
Gross Weight	130kg	

Standard Delivery

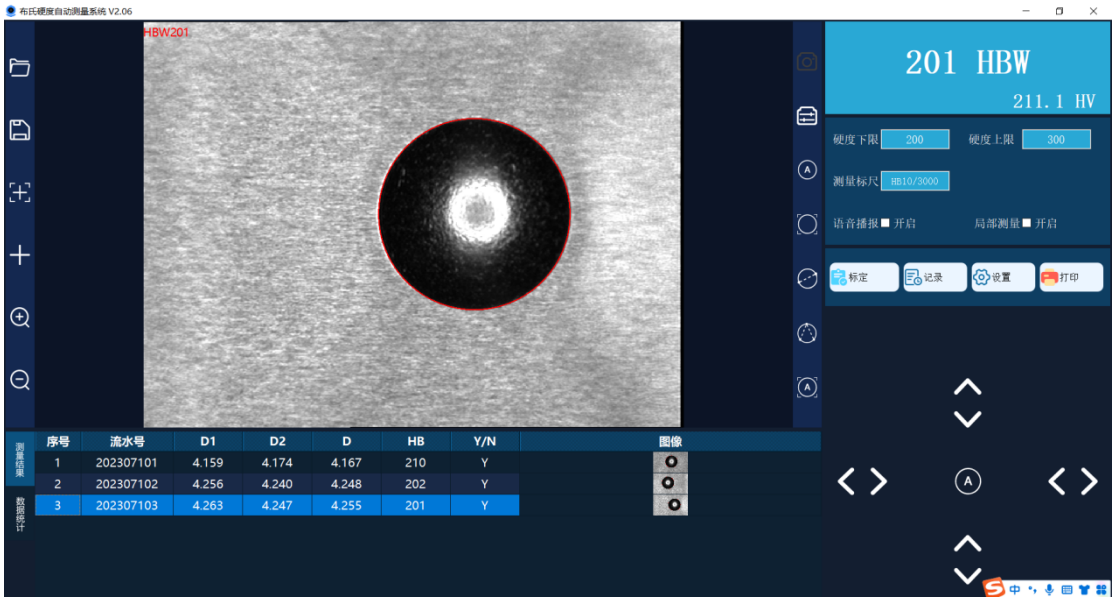
Name	Qty	Picture
Machine Mainframe	1 set	
Digital Micrometer Eyepiece	1 pc	
Microscope Stand (including internal lighting)	1 pc	
External Lighting	1 pc	
2.5X, 5X, 10X Objectives	1 pc ea.	
Large Test Anvil, Medium Test Anvil, V-shape Test Anvil	3 pcs	
Slide Test Anvil	1 set	
Diamond Rockwell Indenter	1 pc	
Diamond Vickers Indenter	1 pc	
φ1.5875mm Carbide Ball Indenter	1 pc	

Standard Delivery

Name	Qty	Picture
φ2.5mm, φ5mm Carbide Ball Indenter	2 pcs	
φ1.5875mm Carbide Ball Indenter	5 pcs	
Standard Rockwell Hardness Block	5 pcs	
Standard Vickers Hardness Block （HV30）	1pc	
Standard Brinell Hardness Block（HBW/2.5/187.5）	1 pc	
Gradienter	1 pc	
Level Adjustment Screw	4 pcs	
Hexagon Wrench 1.5MM	1 pc	
Power Cord	1 pc	
Fuse 2A	2 pcs	
Screwdriver	1 pc	
Anti-dust Cover	1 pc	
Instruction Manual, Product Certificate, Warranty Card	1 copy ea.	

Software

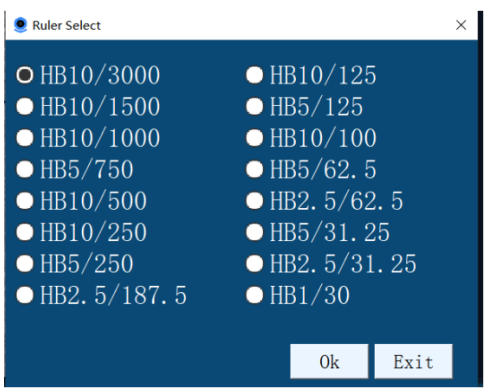
Brinell Hardness Software



1.Indentation image
2.Test results
3.Data statistics
4.Function Key
5.Fine-tune the buttons

Workpiece Parameter Setting And Measuring Scale

2 .Workpiece parameter setting



3.Measuring scale

●Click the edit box to edit the upper and lower hardness limits
●Click the measurement ruler to switch the measurement ruler, and the point is determined after selection

Software

Brinell Hardness Software

4.Function Key

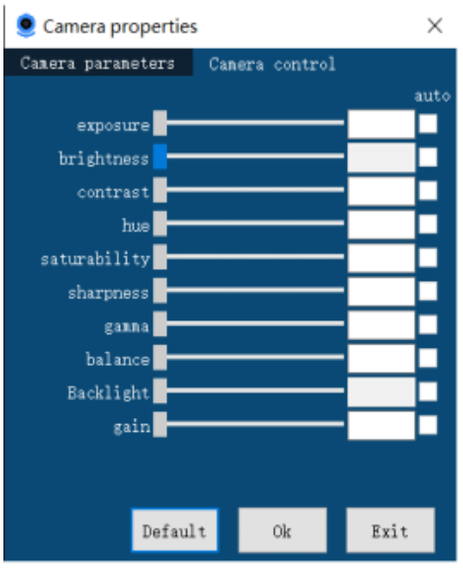
●Open Image: You can open the indentation image saved in the computer
●Save Image: You can save the collected image to the computer
●Cross line Reset: The cross line of the image area can be dragged to any position within the screen. Click Reset to restore the cross line to the center position
●Cross line show and hide: by switching to click this button to show and hide the cross line.
●Zoom in: Magnify the image
●Image Shrinks: Shrinks the image

5.Function Key

●Real-time image capture and fixed image button: Display the real-time image, and then click to fix the image to the display area
●Automatic measurement: according to the automatic measurement can be fixed image and fixed image for automatic measurement indentation
●Toggle box manual measurement. Cut the upper tangent line and the left tangent line to the edge of the indentation and then press and hold the left mouse button (do not release) to cut the right tangent line and the lower tangent line to the other two edges of the indentation. Release the mouse to get the hardness value
●Two-point circle manual measurement. Hold the mouse down one point on the edge of the indentation (do not release) and then release the mouse on the other edge of the corresponding diameter position to get the hardness value
●Three-point circle manual measurement. The hardness value is obtained by 3 one point at any point on the edge of the indentation
●Automatic area measurement. Suitable for the case of multiple indentations in the display area

Software

Camera Parameter Settings

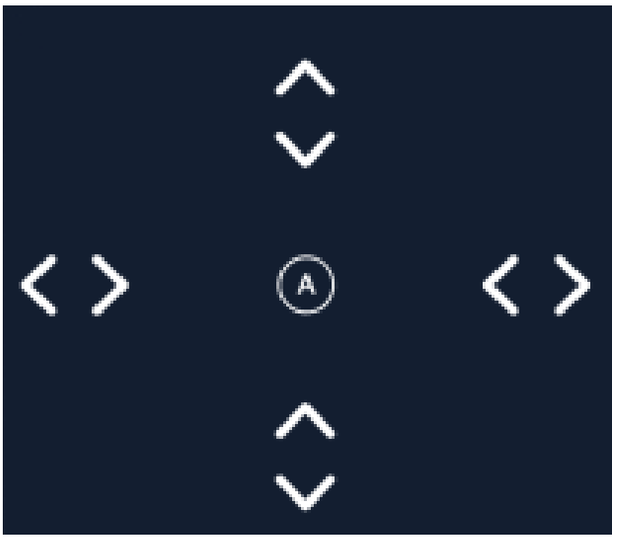


6.Camera Setting

7.Camera Setting

●Under normal circumstances, the camera parameters only need to be set when the software is installed for the first time. The system will then automatically save the parameter settings

Fine-tune Function

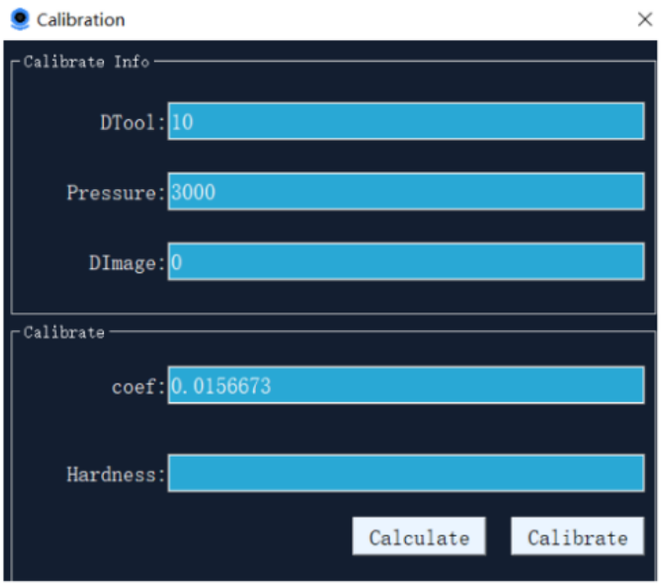


8.Fine-tune

● If the measured hardness value does not match the indentation, you can select the direction of the inconsistency for fine adjustment, or adjust it up or down

Software

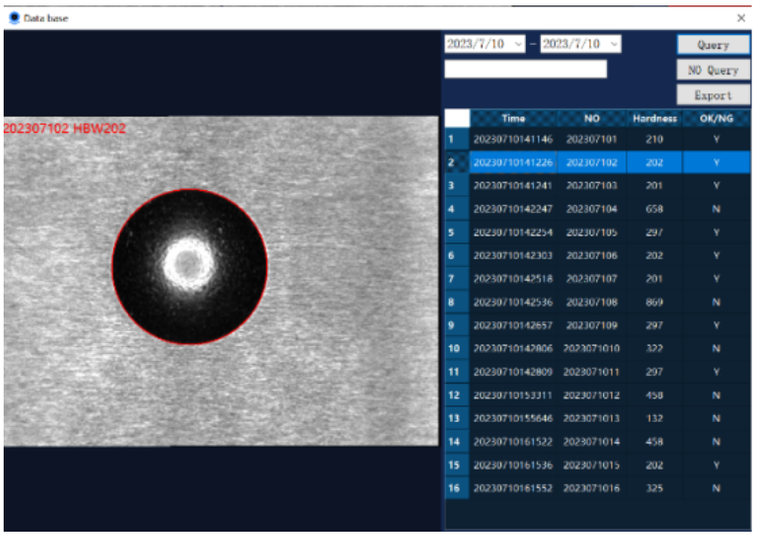
Calibration



9. Calibration

●First, use the camera to find a standard indentation on the standard block, select the measuring ruler, point automatic measurement, and measure the indentation. Click the calibration button to enter the calibration interface, fill the correct standard hardness value into the hardness of the standard block, click the calculation coefficient, and click the calibration

History



10.History record

●The hardness value of the workpiece measured before can be viewed in this interface.

Software

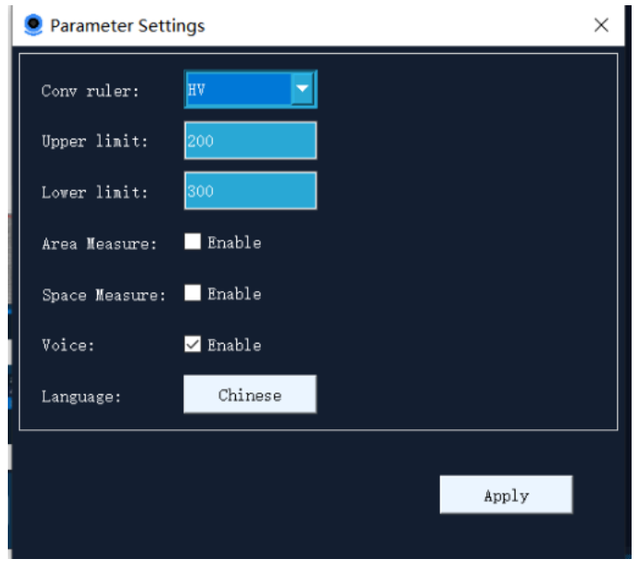
Export Records

	A	B	C	D	E	F
1	Hardness test record					
2	No	Time	Product ID	Diameter	Hardness	OK/NG
3	1	20230710141146	202307101	4.167	210	Y
4	2	20230710141226	202307102	4.248	202	Y
5	3	20230710141241	202307103	4.255	201	Y
6	4	20230710142247	202307104	2.391	658	N
7	5	20230710142254	202307105	3.530	297	Y
8	6	20230710142303	202307106	4.248	202	Y
9	7	20230710142518	202307107	4.255	201	Y
10	8	20230710142536	202307108	2.085	869	N
11	9	20230710142657	202307109	3.530	297	Y
12	10	20230710142806	2023071010	3.392	322	N
13	11	20230710142809	2023071011	3.530	297	Y
14	12	20230710153311	2023071012	2.858	458	N
15	13	20230710155646	2023071013	5.182	132	N
16	14	20230710161522	2023071014	2.858	458	N
17	15	20230710161536	2023071015	4.248	202	Y
18	16	20230710161552	2023071016	3.380	325	N

11. Export record

●You can query in chronological order or by workpiece code. After query, you can export EXCEL data table by Export Record.

Settings

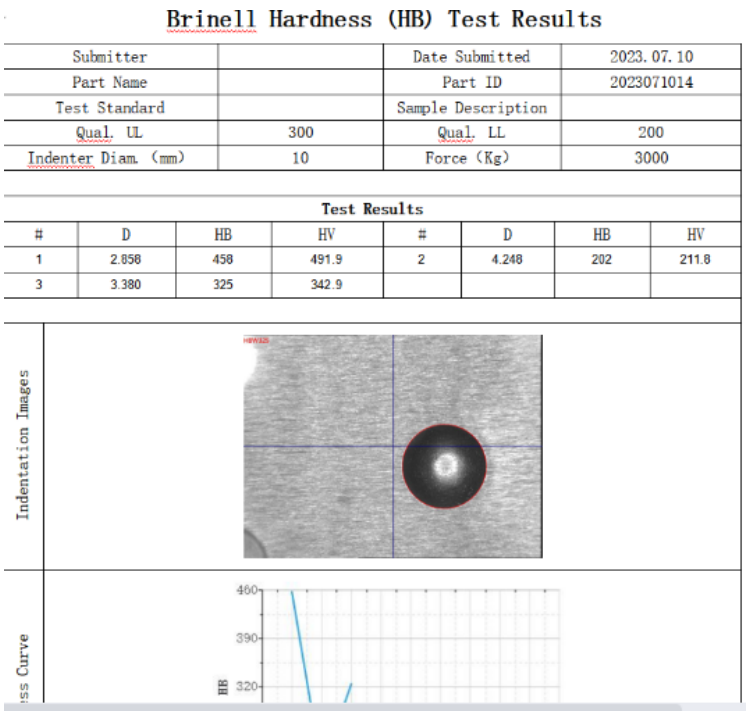


12.Setting

●Ruler conversion: You can select the ruler to be converted
●Hardness upper limit, hardness lower limit: fill in the hardness value range of the workpiece.
●Local measurement: suitable for the case of multiple indentations in the display area
●Space measurement: select on, press the space button to capture the image and measure, and then press the space bar to release the camera
●Voice Broadcast: Select on to broadcast the hardness value by voice after the hardness value is calculated
●Language switching: can be switched between Chinese and English. After selecting, confirm the exit and restart the software.
●Automatic area measurement. Suitable for the case of multiple indentations in the display area

Software

Output A Report



Brinell Hardness (HB) Test Results

Submitter		Date Submitted	2023.07.10
Part Name		Part ID	2023071014
Test Standard		Sample Description	
Qual. UL	300	Qual. LL	200
Indenter Diam. (mm)	10	Force (Kg)	3000

Test Results

#	D	HB	HV	#	D	HB	HV
1	2.858	458	491.9	2	4.248	202	211.8
3	3.380	325	342.9				

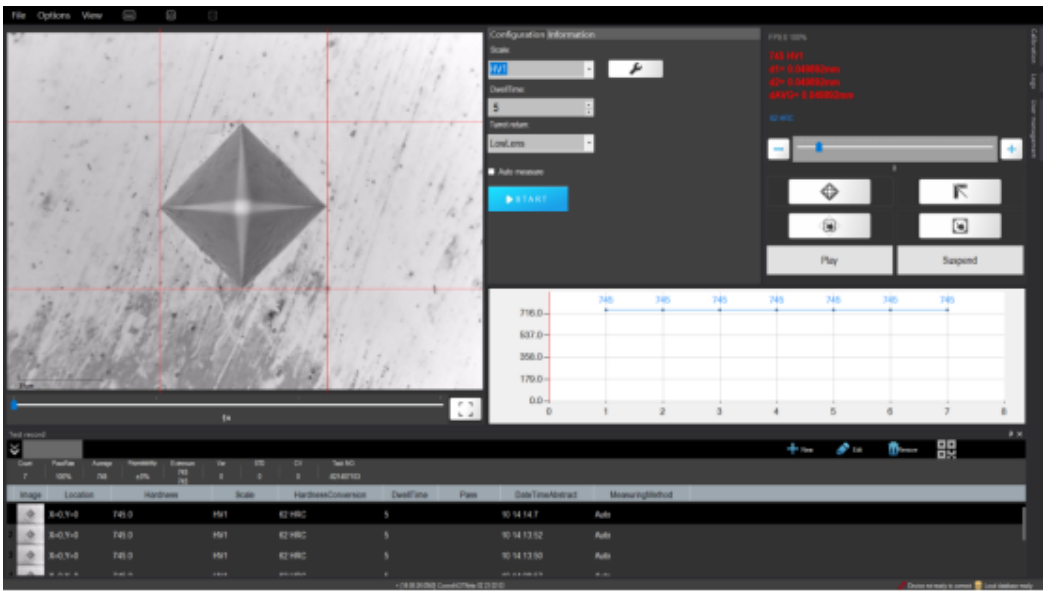
Indentation Images

460
390
320
HB

13. Report

●The results of the measured area can be output in word format.

Vickers Software



14.Main Interface

●Automatically or manually capture the indentation and measure the diagonal length of the indentation, and calculate the corresponding Vickers hardness value.
●Support manual tangent measurement and manual four-point measurement, automatic D2 (manual point setting)
●Support one-key start of hardness tester loading and unloading, turret homing, automatic fitting and indentation automatic measurement; Support separate control of hardness tester startup, turret position switching, and convenient sliding dimming.
●The system automatically calculates the average value of the measured hardness, repeatability error, variance and other statistical values.
●Automatically indicate the abnormal value, when the hardness exceeds the specified value, the automatic alarm
●Automatically generate reports in EXCEL/PDF/CSV and other formats. The report board can be customized
●Each form in the software interface can be arbitrarily adjusted in position and size, opened or hidden, and users can customize the software window layout according to their needs.
●The measurement image can be stored in a document, and the measurement results can be permanently saved.