

MBRV-250A

Intelligent Automatic Universal Hardness Tester



Video



Contact us

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Product Features and Application

Product Features

- Three testing methods: Brinell, Vickers, and Rockwell.
- Brinell test force range: 5 kgf - 250 kgf.
- Vickers test force range: 3 kgf - 120 kgf.
- Automatically applies initial test force and main test force.
- 8- inch touch screen for convenient operation.
- The test stage can be automatically lifted and also be manually fine-tuned. It is equipped with an anti - collision detection device and a Z - axis retraction system.
- Closed loop system with loading cell, equipped with a fully automatic high - precision sensor and a closed-loop feedback control system.
- An ultra - high - precision X/Y auto stage with a repeat positioning accuracy of 3 microns and a maximum travel of up to 200 mm (optional).
- Objective magnification: 2.5X, 5X (10X, 20X optional).
- Indenter specifications:
120° Rockwell diamond indenter.
Φ1.5875 mm Rockwell ball indenter (Φ3.175 mm, Φ6.35 mm, Φ12.7 mm are optional).
136° Vickers diamond indenter.
Φ2.5 mm, Φ5 mm Brinell ball indenter (Φ1 mm, Φ10 mm are optional).
- Brinell and Vickers tests can be automatically positioned to the measurement and observation positions.
- 5 - megapixel industrial camera.
- Supports hardness value conversion between multiple scales.
- Hardness measurement software supports automatic/manual measurement, report, export, printing, and data statistics.
- Automatically calculates the uncertainty of the hardness value (optional).
- Automatically generates documents required for CNAS review (optional).
- Executive standards: GB/T230, GB/T231, GB/T4340, JJG144, GB/T18449, ISO 6508, ASTM E 10, ASTM E92, ASTM E18, ASTM E384, ASTM E103.

Product Application

● Materials research:

It is used to evaluate the hardness characteristics of materials and provide data support for material selection, design, and development.

● Production quality control:

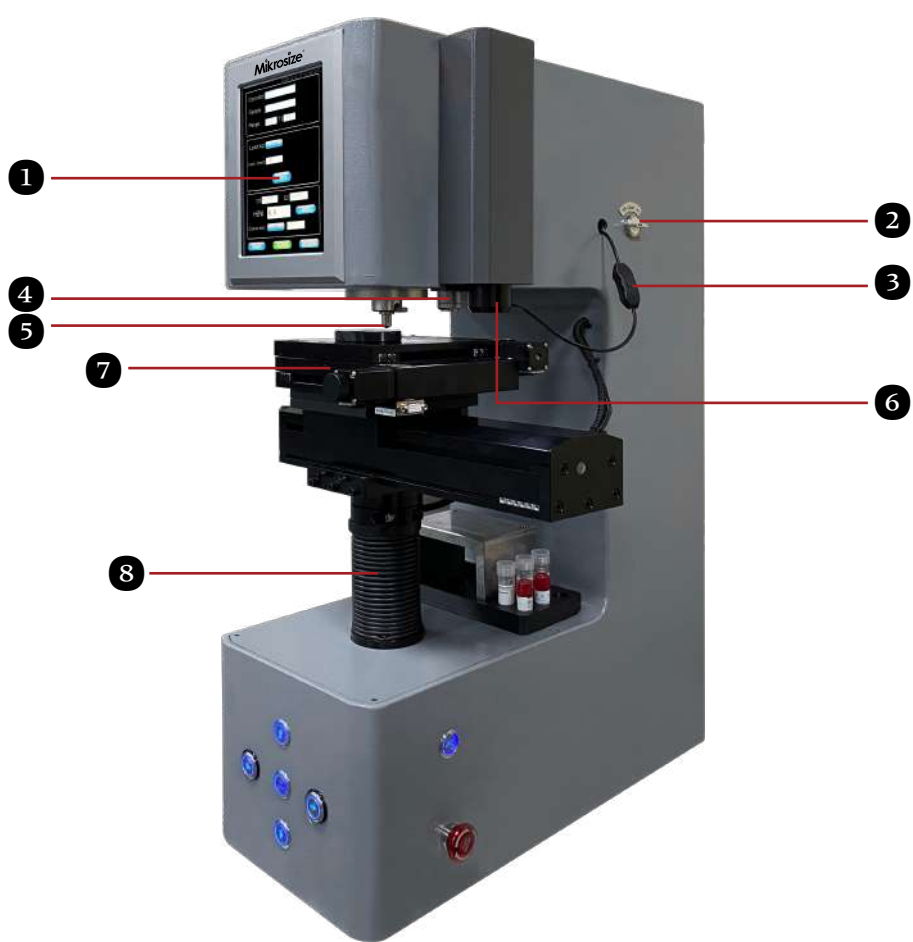
During the manufacturing process, it is used to detect whether the hardness of products meets the standards to ensure product quality.

● Failure analysis:

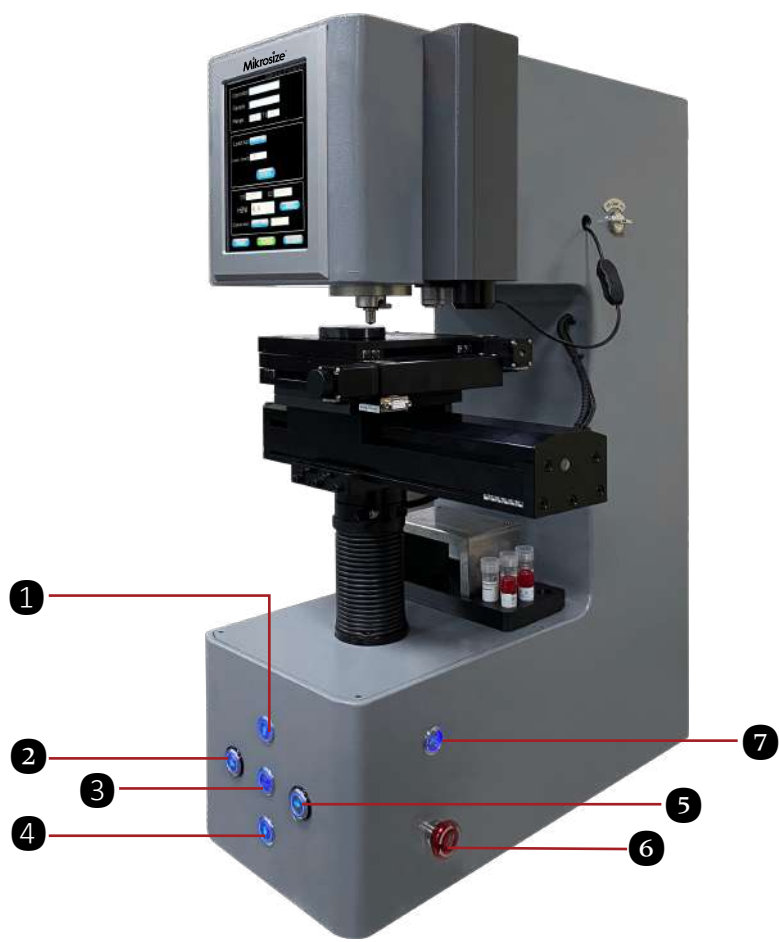
When equipment or parts fail, by analyzing the changes in their hardness, the causes and mechanisms of the failure can be inferred.



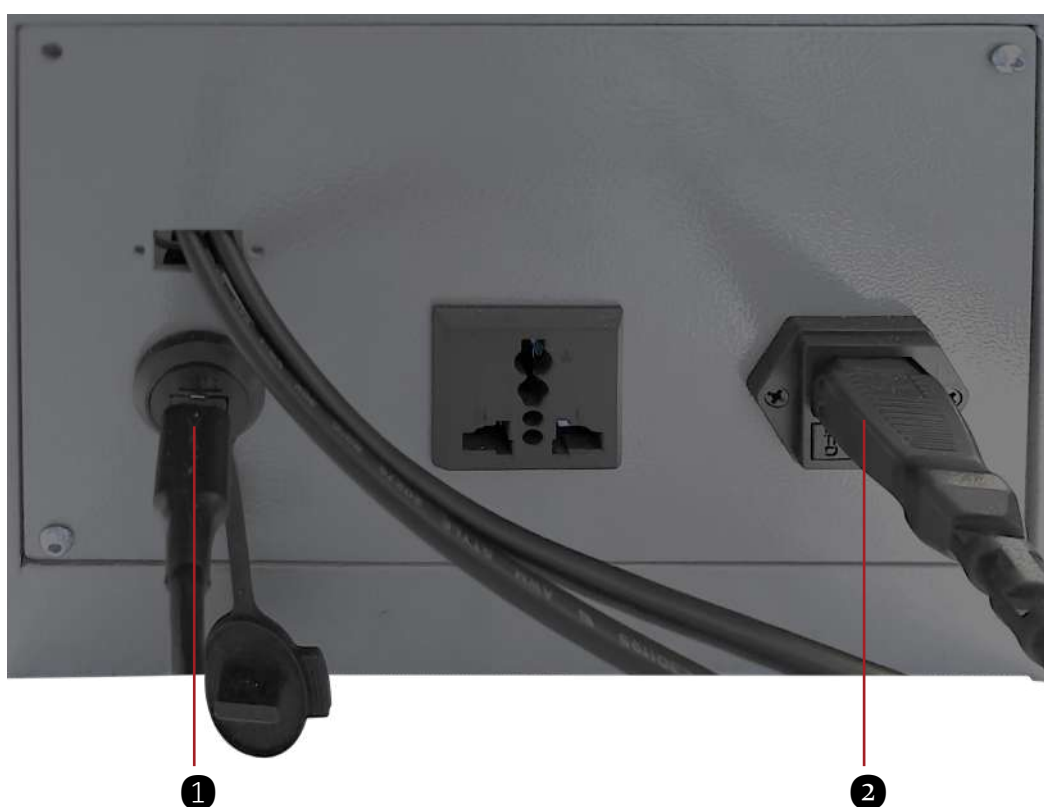
Instrument Structure



1.Display Screen 2.HB/HV Optical Conversion 3.Illumination Adjusting
4.Vickers Lens 5.Indenter 6.Brinell Lens 7.Test Stage 8.Lifting Rod



1.Up 2.Left 3.Start 4.Down 5.Right 6.Emergency Stop Button 7.Switch



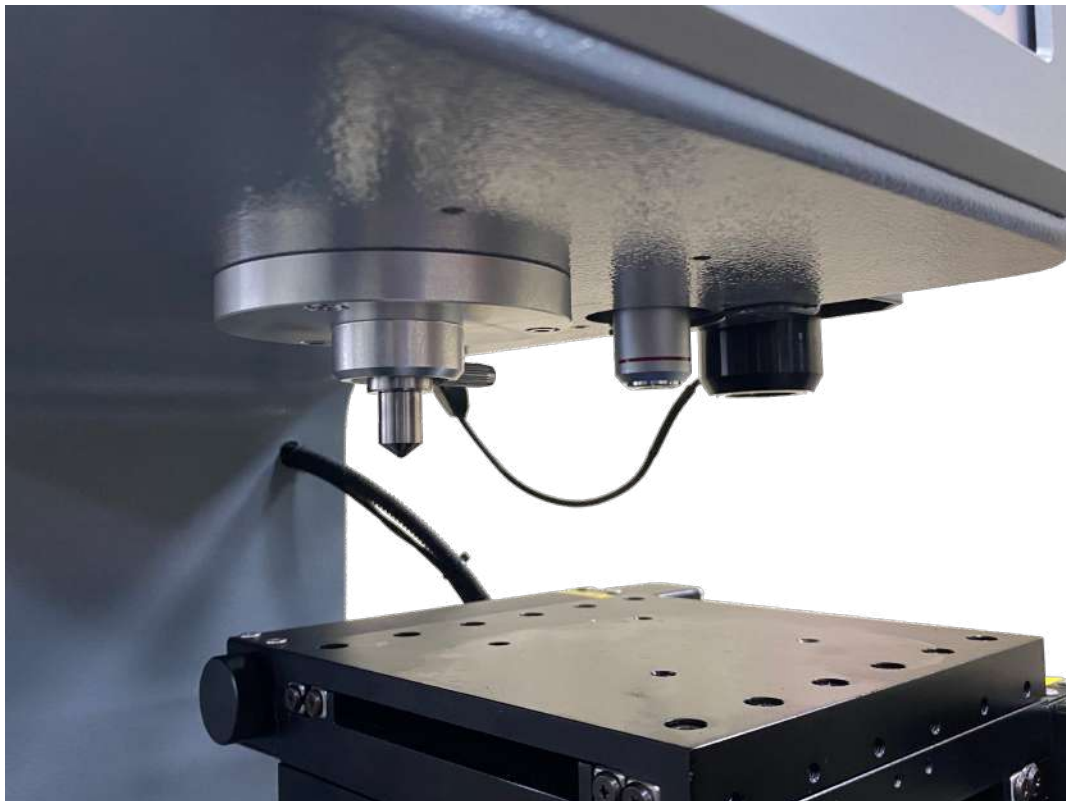
1.USB Interface 2.Power Cord Interface

Details Display



Test Stage

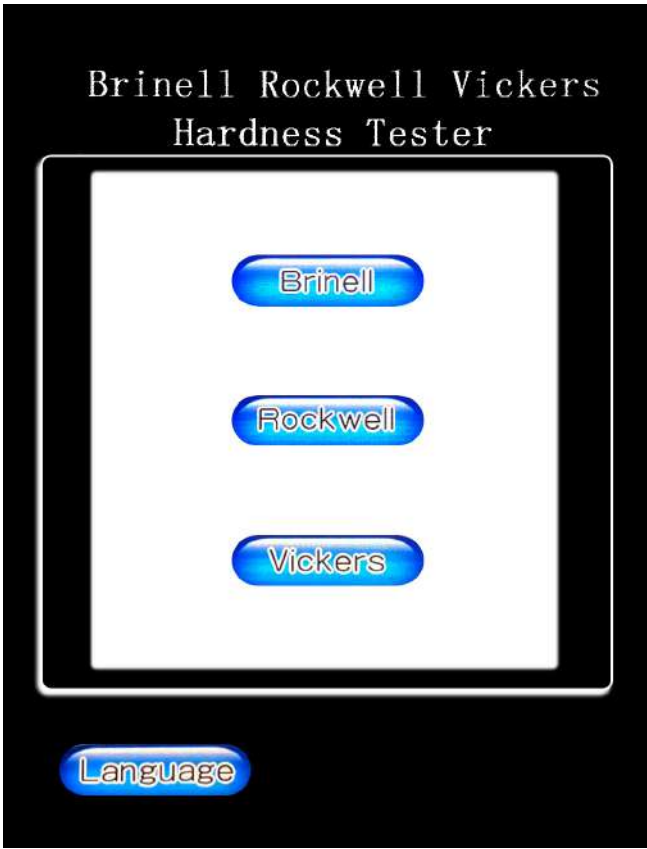
The test stage can be automatically lifted, and also be manually fine-tuned. It can automatically position to the observation and measurement positions of Vickers and Brinell lenses. The X-Y electric motorized test stage (optional) has a repeat positioning accuracy of 3 microns, and the maximum travel can reach to 200 mm.



Indenter & Objective Lens

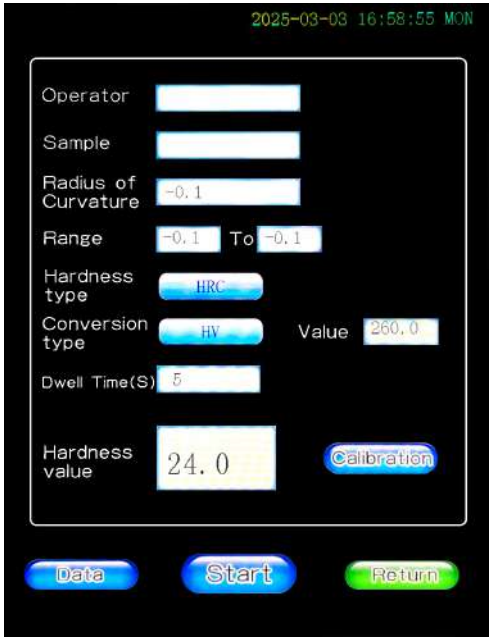
The indenter is replaceable. The Brinell lens and Vickers lens are integrally installed. Built-in optical system, and optical path can be switched.

Instrument Function

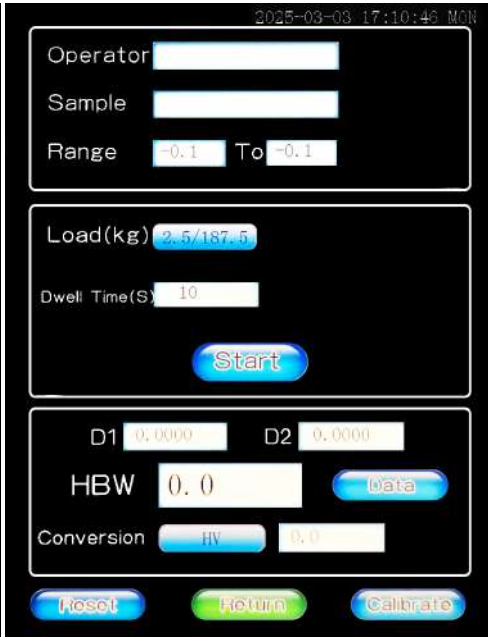


Testing Mode

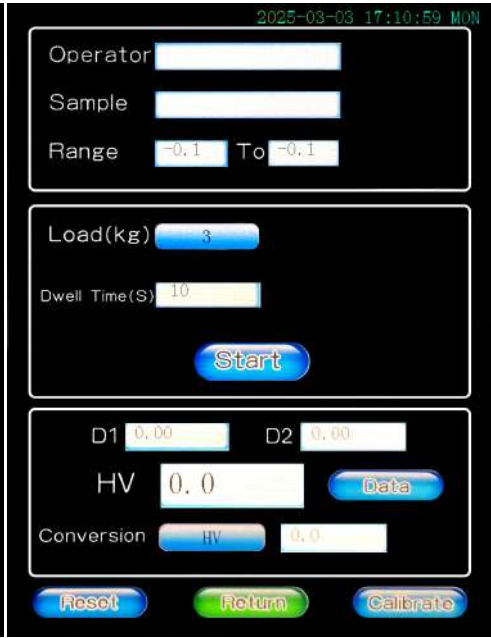
Test method selection: Brinell, Rockwell, and Vickers.
Language selection: Both Chinese and English are available. Customization of other languages is also supported.



Rockwell Interface



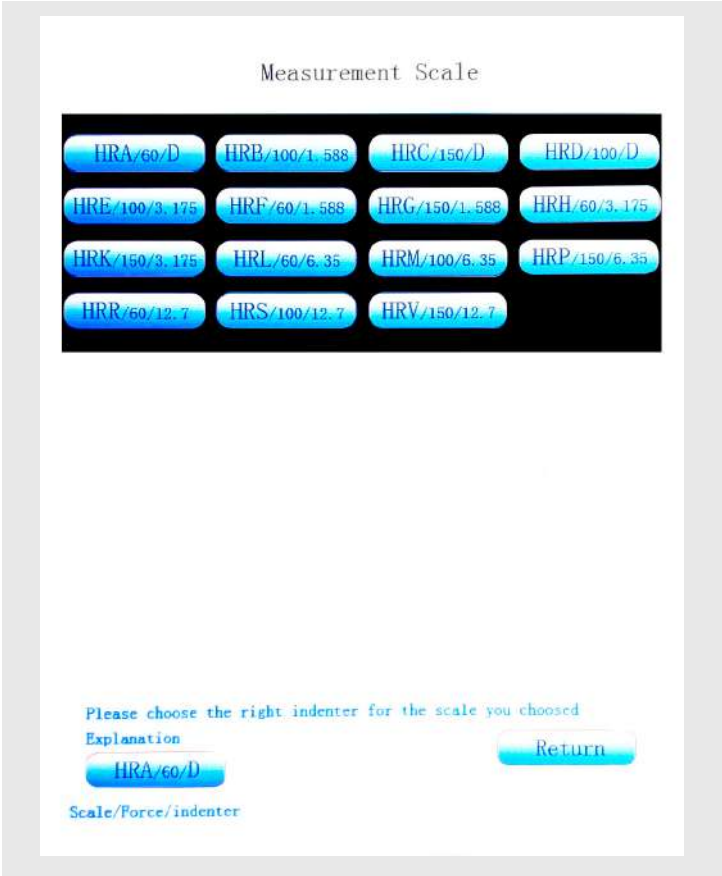
Brinell Interface



Vickers Interface

- Information such as operator details and sample names can be edited.
- It supports curved surface correction.
- The qualified range of hardness values can be set.
- Test stage can automatically move to the measurement position and the indentation position.
- It supports hardness value conversion.
- The loading time can be set.

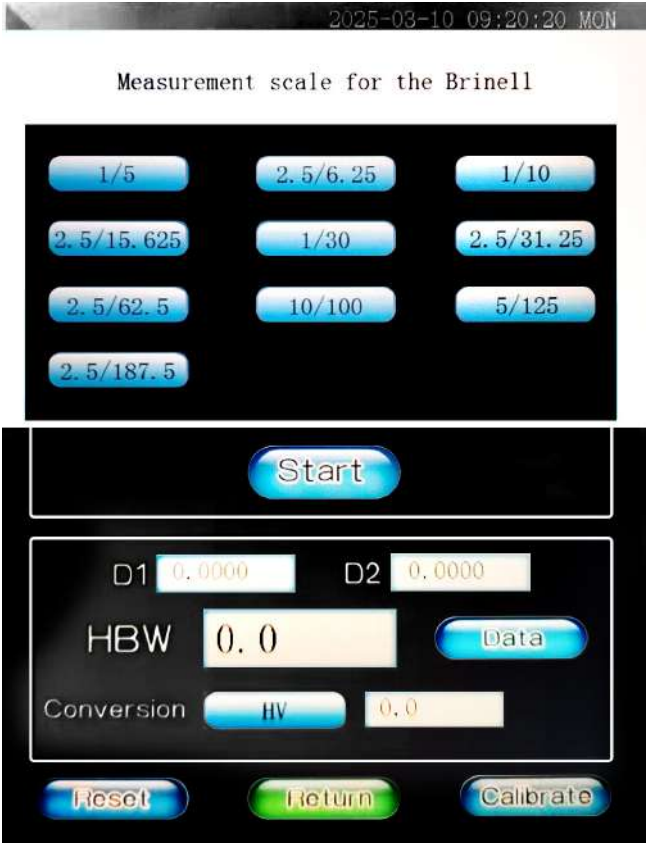
Instrument Function



Rockwell Scale

15 Rockwell scales, including common Rockwell scales and plastic Rockwell scales . The scale information includes test force and indenter specifications.

HRA、HRB、HRC、HRD、HRE、
HRF、HRG、HRH、HRK、HRL、
HRM、HRP、HRR、HRS、HRV

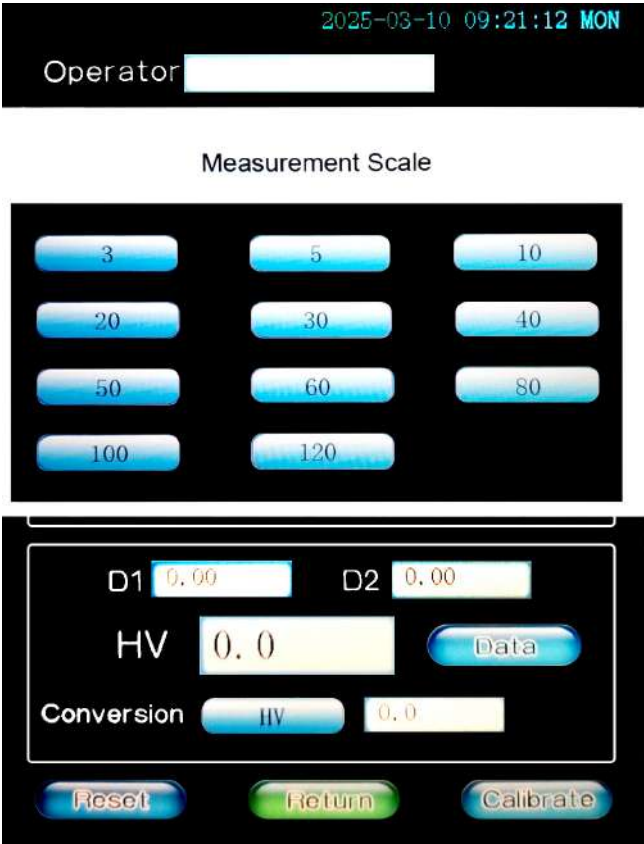


Brinell Scale

4 indenter sizes, 2.5mm and 5 mm brinell indenters are standard configurations, while 1 mm and 10 mm brinell indenters are optional.

HBW1/5、HBW1/10、HBW1/30
HBW2.5/6.25、HBW2.5/15.625、HBW2.5/31.25、HBW2.5/62.5、HBW2.5/187.5
HBW5/125
HBW10/100

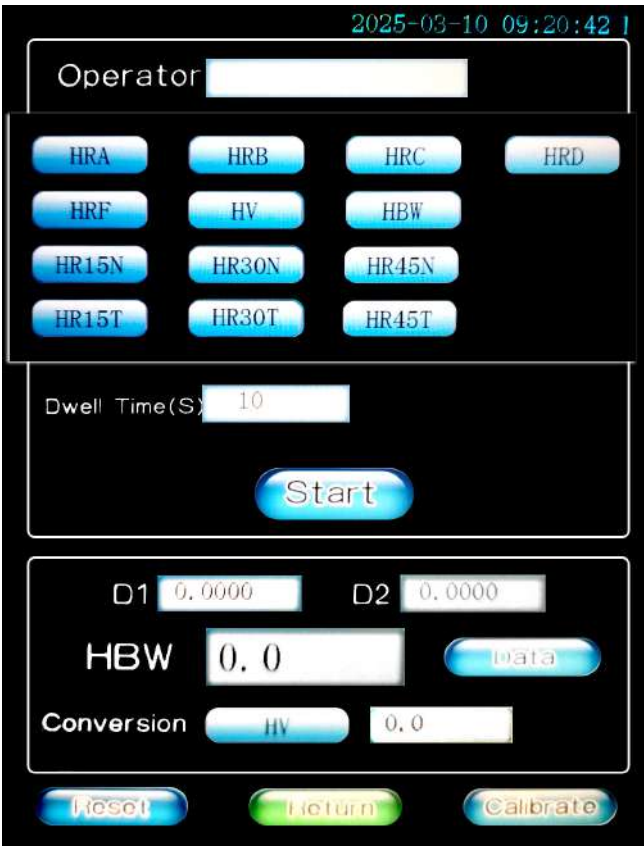
Instrument Function



Vickers Scale

Test Force: 3~120kgf

HV3、HV5、HV10、HV20、HV30、HV40、HV50、HV60、HV80、HV100、HV120



Conversion Scale

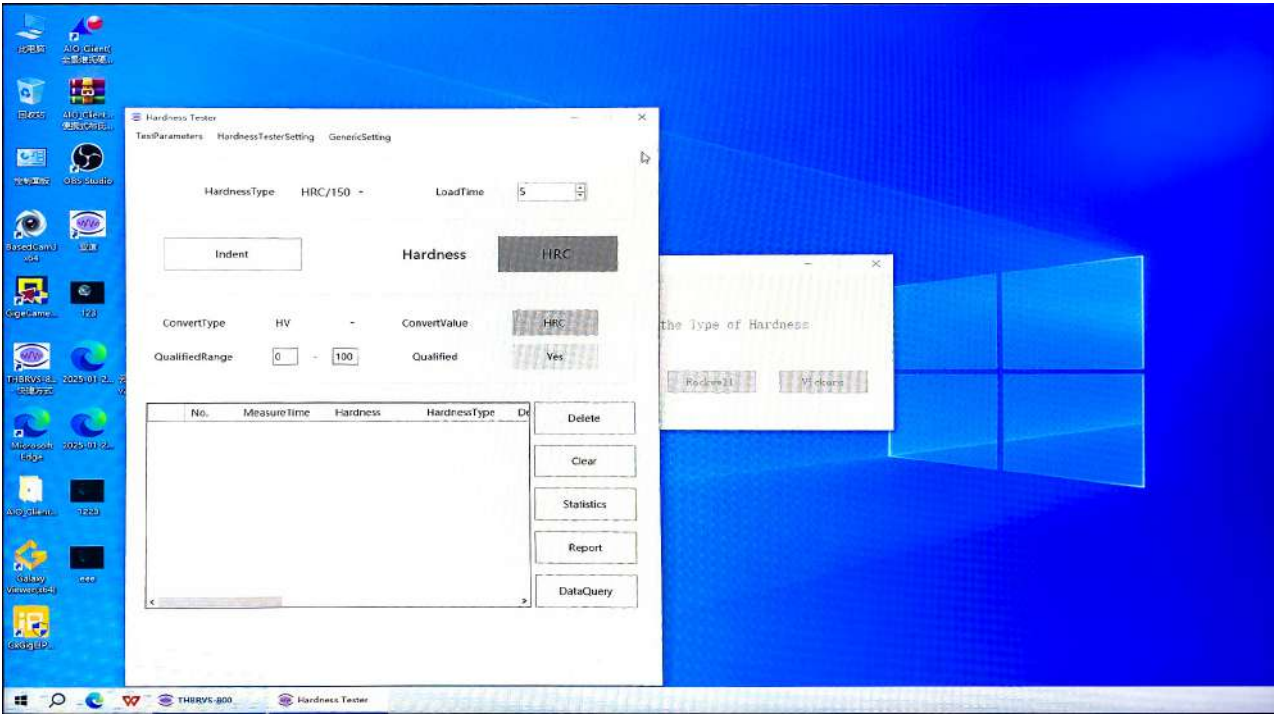
Hardness can be converted into other hardness values according to International standards and ASTM (American Society for Testing and Materials) standards.

HRA、HRB、HRC、HRD、HRF、HV、HBW、HR15N、HR30N、HR45N
HR15T、HR30T、HR45T

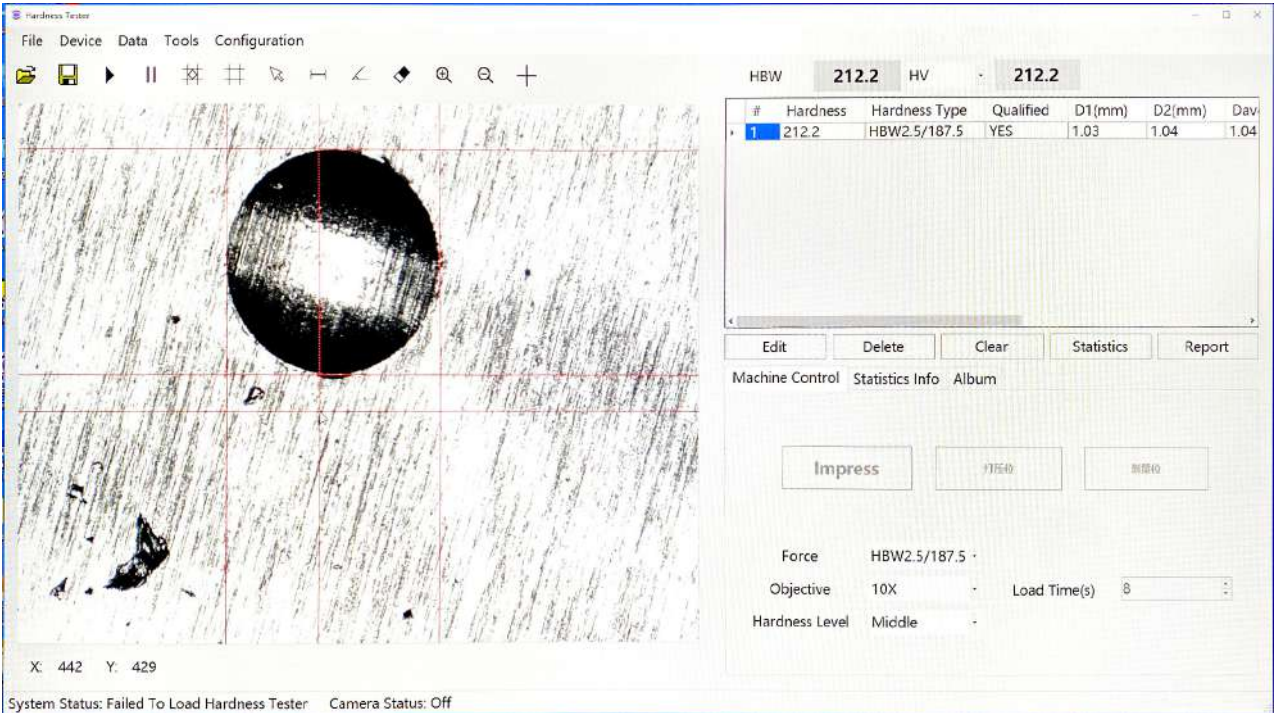
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Software

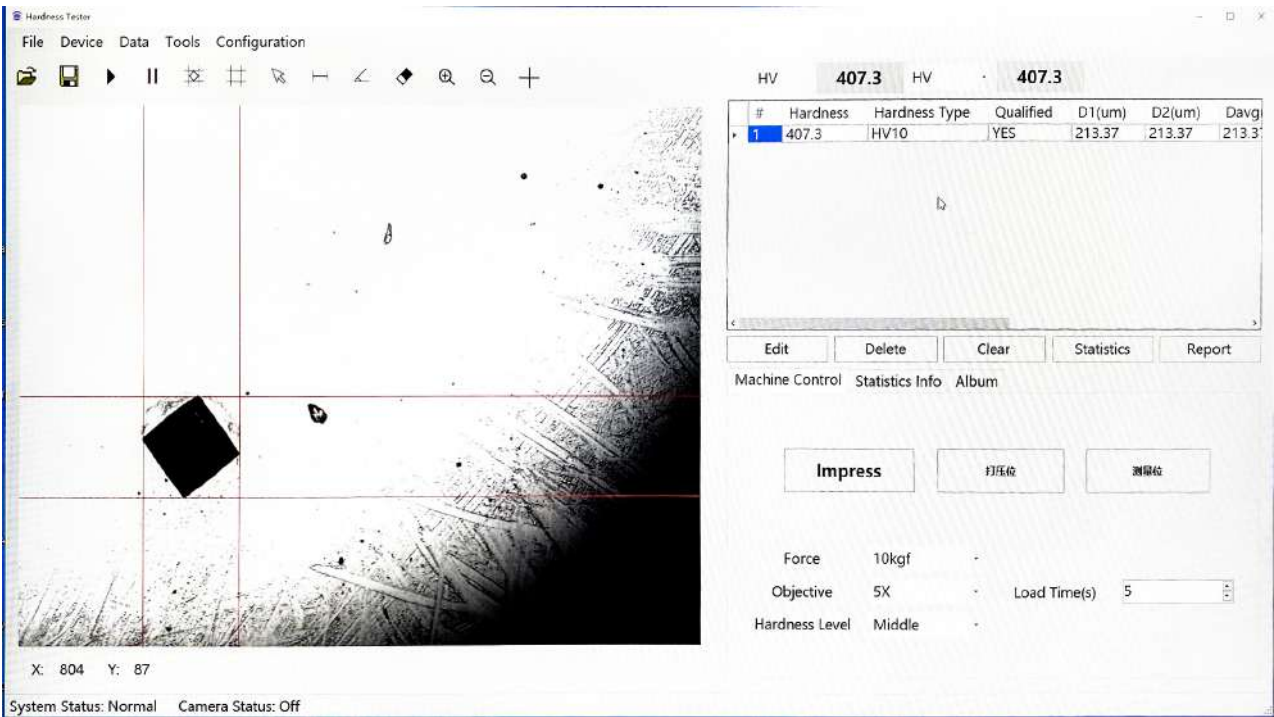
Rockwell



Brinell



Vickers



The software supports three testing methods: Brinell, Rockwell, and Vickers.
The hardness tester main unit can be controlled through the software for testing.
The testing scales and objective lens magnifications of the software can be selected.
The indentation images support both manual and automatic measurement.

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Software

HV

744.3

HV

744.3

#	X(mm)	Y(mm)	Hardness Type	Qualified	D1(um)
1	0.0000	0.0000	HV1	YES	49.56

HV

HK

HBW

HRA

HRB

HRC

HRD

HRF

HR15N

HR30N

HR45N

HR15T

HR30T

HR45T

EditDeleteClearStatisticsReport

Conversion Scales

The hardness value can be converted into the hardness of other scales according to the International standard and ASTM.

Edit Record

Index

2

Hardness Type

HV2

Measure Time

00:45:49

Hardness

736.9

D1(um)

70.682

Qualified

YES

D2(um)

71.211

Convert Type

HV

Davg(um)

70.946

Convert Value

736.9

Depth(mm)

0

Confirm

Cancel

Data Editing

Number	4	Variance	102.35
Min	709.30	StdDev	10.12
Max	736.90	CP	8.24
Average	724.68	CPK	2.48

Data Statistics

When a certain measurement record is selected, the measurement result can be edited and modified. For the results of multiple tests, the software will statistically calculate the maximum value, minimum value, average value, and standard deviation of the data.

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Software

Sample Info

Sample Name

Sample Name

Sample Sn

Sample Sn

Min Value

300

Max Value

800

Inspection Company

Inspection Con

Inspection Date

2024-11-19

Tester

Tester

Reviewer

Reviewer

Confirm

Cancel

Sample Information

Users can edit the information of the test samples, including the sample name, hardness range, tester, test date and other information, which is convenient for later management and query.

Camera Setting

Analog Gain

0.200

Exposure Time

4.48 ms

Contrast

95

Save

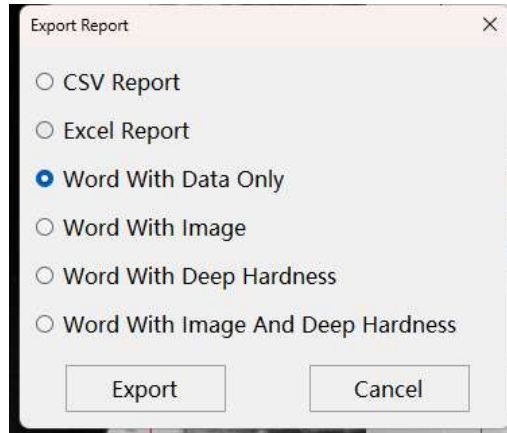
Cancel

Camera Setting

Adjust the camera settings parameters to improve the quality of the indentation image.

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Software



Report Format

2

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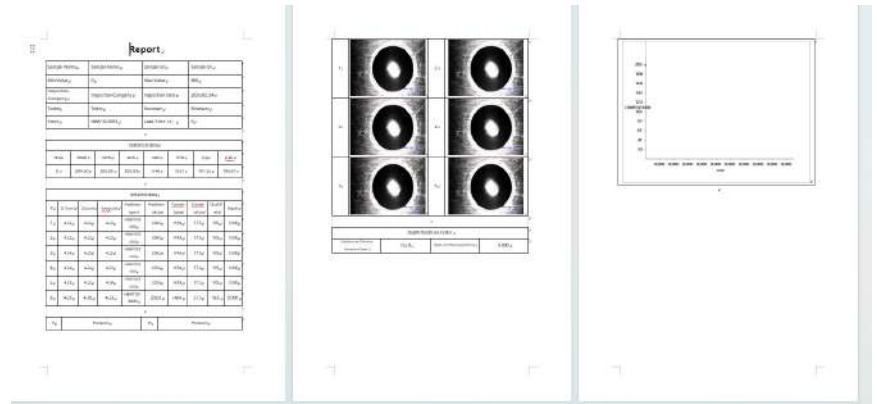
19

20

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Report											
Sample Info											
Sample Name	Sample Name	Sample Sn	Sample Sn	Inspection Company	Inspection Company						
Lower Limit	0	Upper Limit	800	Inspection Date	2025/1/17						
Tester	Tester	Reviewer	Reviewer	Force	HBW10/3000						
Statistic Info											
Number	2	Max	206.1	MIN	202.6						
Average	204.35	Variance	3.08	StdDev	1.75						
CP	76.19	CPK	38.92								
Detailed data											
#	X(mm)	Y(mm)	Depth	D1(um)	D2(um)	Davg(um)	Hardness Type	Hardness	Convert Type	Convert value	Qualified
1	0	0	0	4.25	4.22	4.24	HBW10/3000	202.6	HRA	57.3	YES
2	0	0	0	4.2	4.2	4.2	HBW10/3000	206.1	HRA	57.8	YES



Excel Format

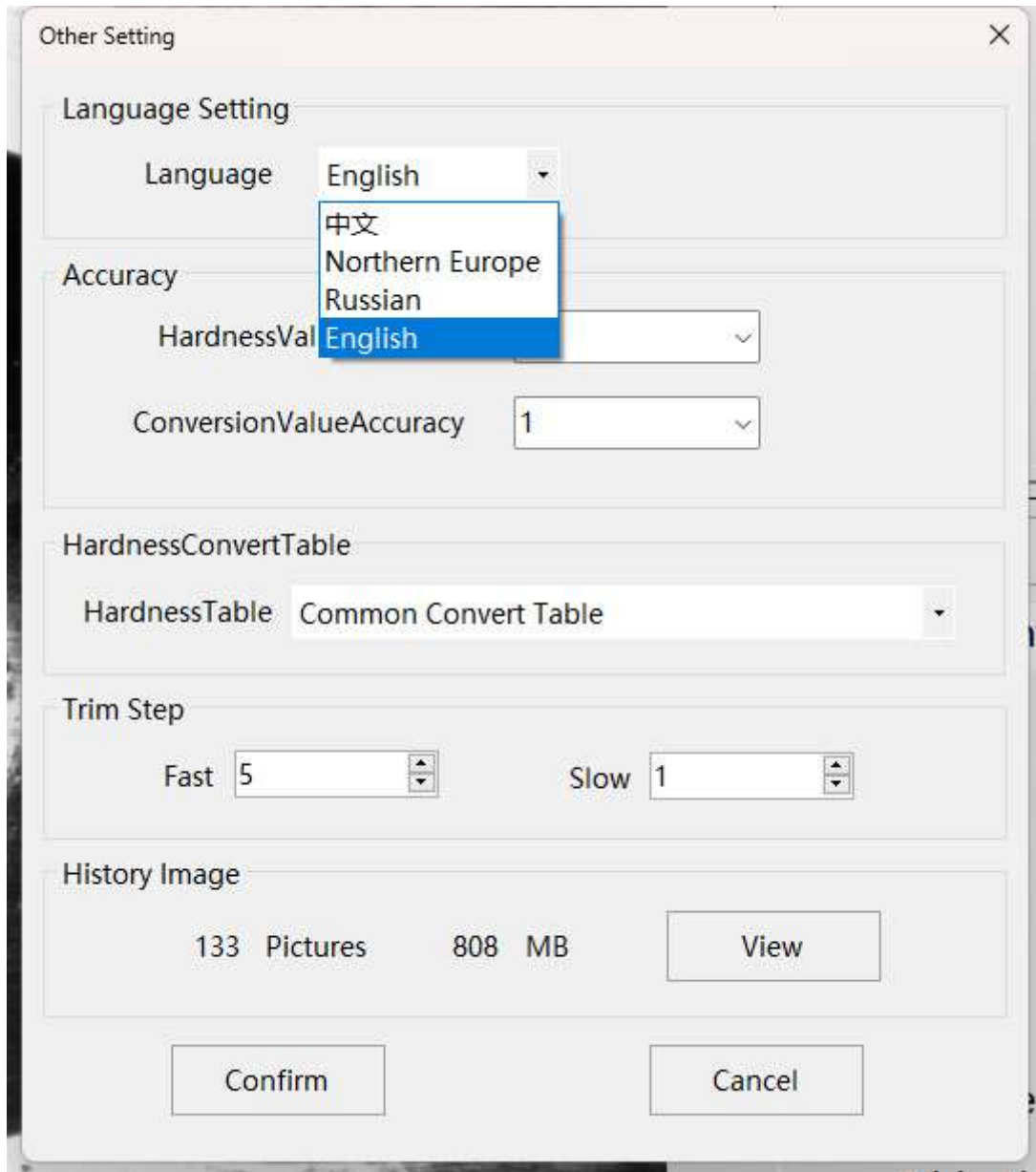
#	Hardness	Hardness	Qualifiec	D1 (mm)	D2 (mm)	Davg (mm)	Convert T	Convert V	Measure Time
1	204.5	HBW10/300	YES	4.22	4.22	4.22	HRA	57.5	#####
2	204.5	HBW10/300	YES	4.22	4.22	4.22	HRA	57.5	#####
3	204.2	HBW10/300	YES	4.24	4.2	4.22	HRA	57.5	#####
4	203.4	HBW10/300	YES	4.24	4.22	4.23	HRA	57.4	#####
5	202.6	HBW10/300	YES	4.25	4.22	4.24	HRA	57.3	#####
6	203.8	HBW10/300	YES	4.25	4.2	4.23	HRA	57.5	#####

CSV Format

It can export reports in three formats: Word, Excel, and CSV.

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Software



Language Selection

Multiple languages are available, and customization of other languages is supported.

Technical Specification

Model	MBRV-250A
Name	Intelligent Automatic Universal Hardness Tester
Hardness Scale	Brinell, Rockwell, Vickers
Test Force	3～250kgf
Brinell Scale	HBW1/: 5、10、30kgf HBW2.5/: 6.25、15.625、31.25、62.5、187.5kgf HBW5/: 125kgf HBW10/: 100kgf
Rockwell Scale	HRA, HRB,HRC, HRD,HRE,HRF,HRG, HRH, HRK, HRL, HRM, HRP, HRR, HRS, HRV
Vickers Scale	HV3、HV5、HV10、HV20、HV30、HV50、HV100、HV120kgf
Conversion Scale	HRA、HRB、HRC、HRD HRF、HV、HBW HR15N、HR30N、HR45N HR15T、HR15T、HR15T
Measuring System	Automatic
Objective Lens Magnification	2.5X、 5X（Optional 10X、20X）
Camera	5 Megapixel
Data Display	Computer Screen
Loading Method	Auto Loading/Dwelling/Unloading
Indenter	Diamond Rockwell Indenter:120° Rockwell Ball Indenter:Φ1.5875mm,(Optional Φ3.175mm, Φ6.35mm, Φ12.7mm) Diamond Vickers Indenter:136° Brinell Ball Indenter Φ2.5mm, Φ5mm（OptionalΦ1mm, Φ10mm）
Illumination	LED
Executive Standards	GB/T230、GB/T231、GB/T4340、JJG144、GB/T18449、ISO 6508、ASTM E 10、ASTM E92、ASTM E18、ASTM E384、ASTM E103
Total Test Force Dwelling Time	1 - 99 s
Test Sample	Test Space: 220x200mm(HxD) Cylindrical Specimen: The Minimum Diameter of The Uter Surface of The Cylindrical Specimen is 4 mm.
Test Height	Rockwell : 220mm Brinell/Vickers:150mm
Test Throat	200mm
Machine Size L*W*H（mm）	500*260*750
Net Weight（kg）	70
Power Supply	AC220V+5%, 50-60Hz
Package Size L*W*H	710*430*980（mm）
Gross Weight（kg）	102

Standard Delivery

Name	Qty	
Machine Mainframe	1 pc	
USB Flash Drive (Measurement Software Included)	1 pc	
Dell Computer	1 pc	
5-megapixel Industrial Camera	1 pc	
Dongle	1 pc	
Lighting Source	1 set	
Electric Motorized Sliding Test Stage	1 pc	
Objective Lens (2.5X、 5X)	Each 1 pc	
Rockwell Diamond Indenter	1 pc	
Rockwell Ball Indenter Φ1.5875mm	1 pc	
Vickers Diamond Indenter	1 pc	
Brinell Ball Indenter Φ2.5mm	1 pc	
Brinell Ball Indenter Φ5mm	1 pc	
Test Anvil Φ150mm	1 pc	

Standard Delivery

Name	Qty	
Test Anvil Φ60mm	1 pc	
V-shape Test Anvil Φ38mm	1 pc	
Rockwell Hardness Block High Value HRC	1 pc	
Rockwell Hardness Block Low Value HRC	1 pc	
Rockwell Hardness Block HRB	1 pc	
Brinell Hardness Block HBW2.5/187.5	1 pc	
Vickers Hardness Block HV30	1 pc	
Level Gauge	1 pc	
Anti-dust Cover	1 pc	
Power Cord	1 pc	
Product Certificate	1 pc	
Warranty Card		
Instruction Manual	1 pc	



Optional Delivery

Optional Delivery

10X、20X Objective Lens

1/8"、1/4"、1/2" Rockwell Ball Indenter

Φ1mm、Φ10mm Brinell Indenter

X-Y Auto Test Stage

Other Test Anvil

Other Hardness Block

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