Brinell Hardness Indentation Measurement System Operation Manual

Preface

Thank you for purchasing Brinell hardness indentation measurement system, to avoid any unnecessary damage and loss, please read this Manual carefully before operation and keep it safety for further study.

BrinScan applies advanced visual technology, shooting the indentation by portable digital microscope and identifying the indentation precisely even under complex background to measure Brinell hardness. Operator does not need predicate edge of the indentation, record indentation length, and check hardness table. BrinScan can realize auto-measuring, auto-recording, auto-saving and auto-generating hardness measuring chart.

Safety Notice

⚠**Danger :** 1. Dangerous: put the unit vertically or horizontally on the table, and avoid drop.

⚠**Danger :** 2. When heating, smoking or peculiar smell, please stop using and cut off electricity, and contact us

for after sales service.

⚠**Warning :** 3. Keep away with heating source, heating wire easily lead to damage isolation layer.

Notes before Using

⚠**Note :** 1. Avoid strong vibration.

⚠**Note :** 2. Avoid working in high temperature, high humidity and dust environment.

⚠**Note :** 3. Keep specimen in a stable table, no shake.

⚠**Note :** 4. Do not unpack, repair or modify the system.

⚠**Note :** 5. The system without waterproof function, keep away with water.

Maintenance

1. Keep clean the system and packing well after used.

2. Keep away chemicals.

3. Cut off power supply when long time no using.

Contents

1. Introduction of Components

USB Cable

Trigger

Up Cover

Up Shell

Middle Shell

Lower Shell
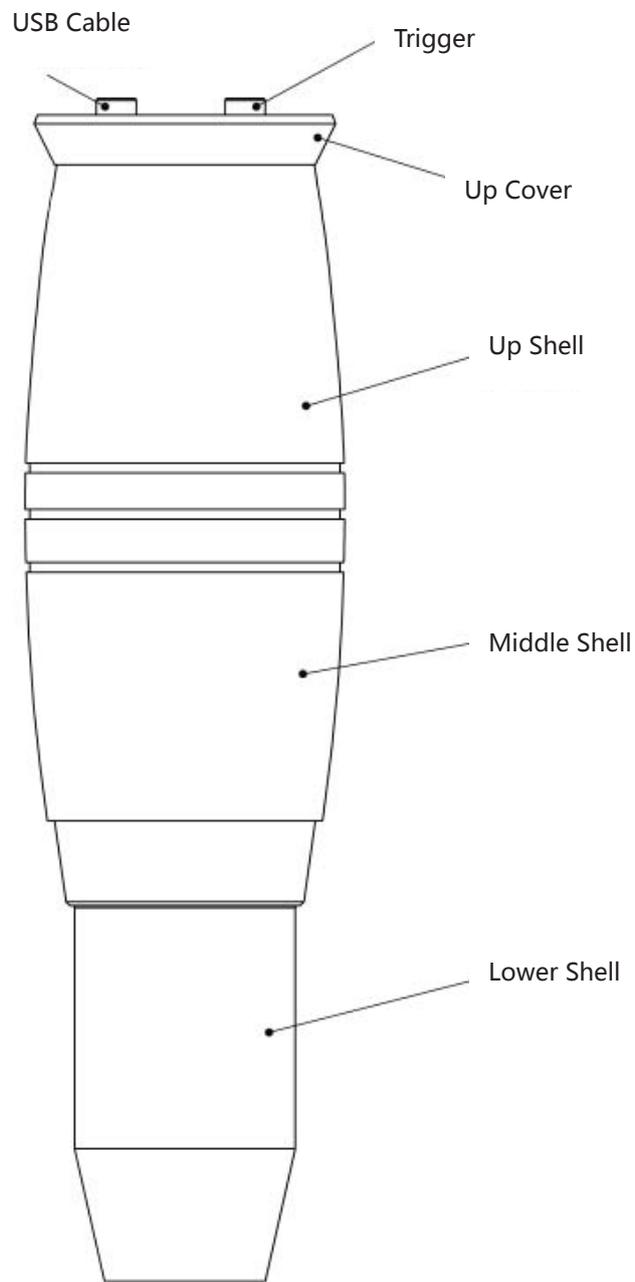
2. Operation Steps

1. Start Tablet.

2. Connect Brinell microscope with computer by USB cable.

3. Start software, Installed software is BrinScan3.0.

4. Select Camera, first start the software, have to manually select camera.

5. Camera Calibration：

① The recommended calibration is using indentation on Brinell hardness blocks, below is the reference table:

Microscope Type	Reference Substance	Microscope Measuring Range	Hardness Range
（0.5X）	Standard Brinell hardness blocks	2.4mm-6mm	（143-415）HBW10/3000
(1.0X)	Standard Brinell hardness blocks	0.6mm-3mm	（150-600）HBW2.5/187.5

②Note: During calibration, please move the indentation to the middle of software viewing window.

6. Calibration Measurement.

7. Generate Calibration.

8. Brinell Measurement, press trigger once to get result.

9. Generate Test Report.

Note: read carefully the software operation manual.

3. Technical Data

Name	Brinell Hardness Indentation Measurement System-BrinScan
Indentation Diameter Range	0.6mm-6mm
Brinell Hardness Resolution	1HB
Software System	BrinScan3.0
Operation System	Win8、Win10，32/64，office
Illumination	Ring LED
Working Environment	Temperature 0℃~50℃　　Humidity 30%~80%
Power Supply	USB Power Supply，DC5V
Dimension	24*24*176mm
Gross/net Weight	1.2Kg/1Kg

4. FAQ

NO	Phenomenon	Reason	Solution
1	Video is not Clear	Dirty on Surface of Specimens	Clean Surface of Specimen
2	Software interface shows no software dongle	Can not recognize software dongle	Shut down software and re-insert USB, then restart
3	USB cable can not recognize Microscope	Poor Contact	Check all the connection ports

5. After Sales Service

5.1 Warranty Steps

- One years warranty for main unit only for quality problem, the others accessories are not under warranty. Refer packing list of ultrasonic hardness tester.

- Please show invoice and warranty card in case need repair.

- We ask for charges for accessories not under warranty

6. Storage and Shipping Notice

- Storage should be far away from the vibration, corrosion, moisture, dust, also should be stored at a normal temperature and humidity. Please put in the original packing box before transportation to avoid any damage.

7. Software Introduction

7.1 Introduction

BrinScan3.0 the main functions of BH with automatic video image. It supports all operations with straightforward test process, precise and stability measuring result. By linking control the hardness equipment, the industrial camera obtain the image of indentation, automatic measuring HB and output the testing data.

7.2 Operating Environment

Operation System：Microsoft Windows XP/ Windows 7/ Windows 8/8.1 / Windows 10(32/64Bit)

7.3. Interface Introduction

7.3.1 Interface

Main Contain 4 Pages: 1. Measuring Page;
2. Calibration Page;
3. Setting Page;
4. About Page;
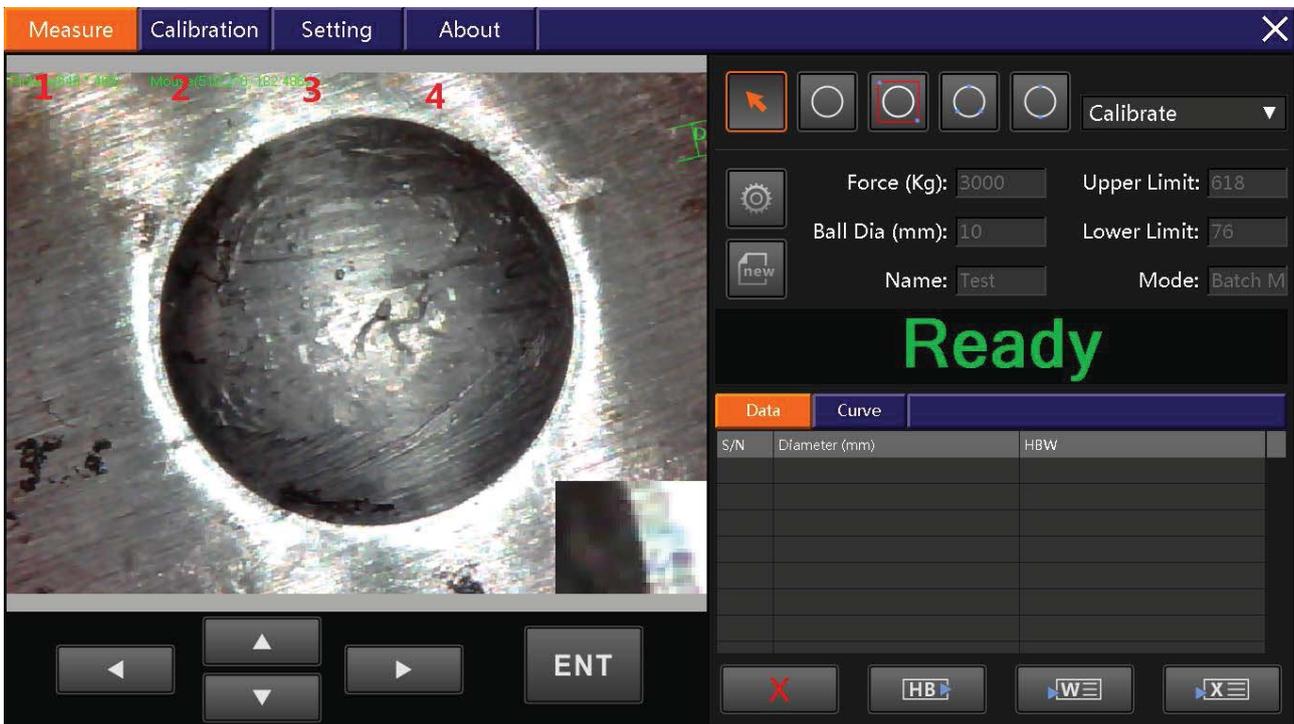
7.3.1.1 Measuring Page

Main function: Testing the BH indentation, Setting the parameter of measure, Display the test data and output data etc.

Main six region: 1. Video; 2.Measuring Instrument; 3.Calibration; 4.Setting and display the parameter of measure; 5. Display testing result and output; 6.Operating Measure.
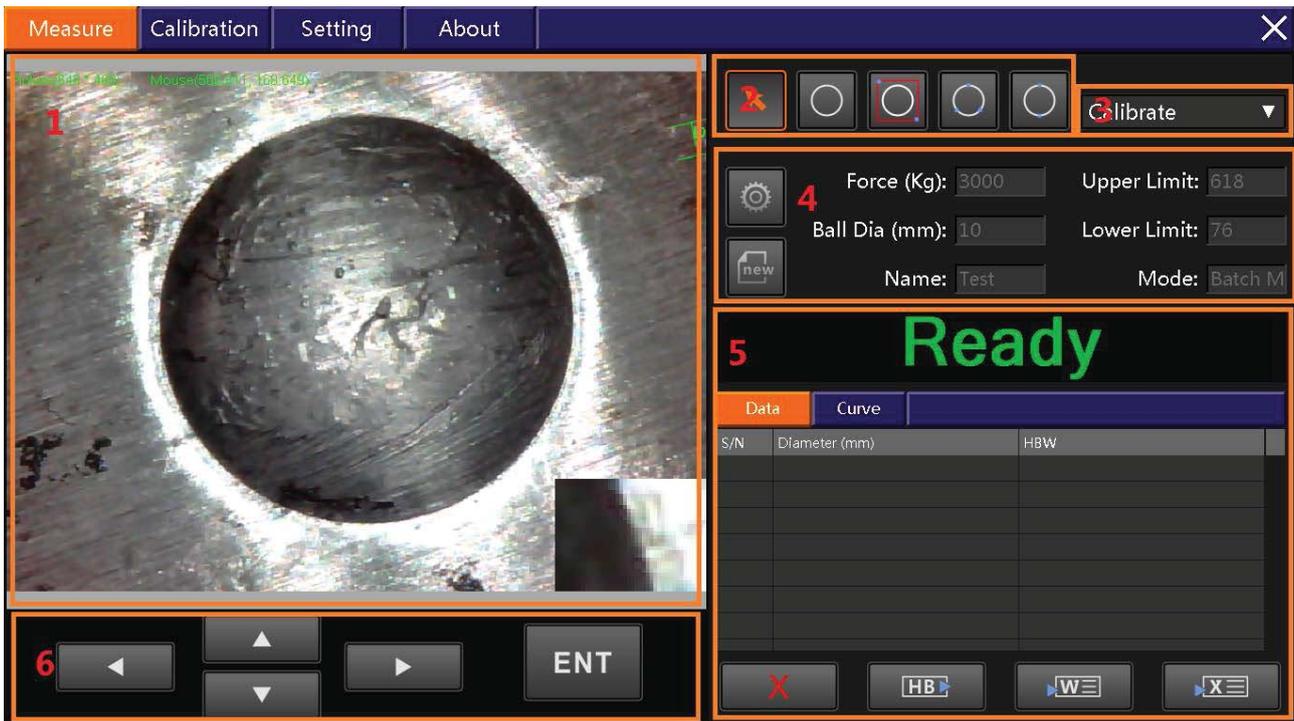
● **Video Display**

Display the real-time image of indentation, It is capable of setting point and testing on the region and make sure the result of measurement

● **Measuring Instrument**

Include:

Testing Circular By Automatic: Click "ENT", measuring the diameter of circular.

Frame Select Circular : Framing the circular, Click "ENT", Measure the diameter of circular during the video display region.

Three Points Select Circular: Click three points, Click "ENT" measure the circular diameter.

Two Point Measure Circular: Click two points, Click "ENT" measure the circular diameter.

● **Calibration Option**

Fast to option different rate of calibration .

● **Setting and display the parameter of measure**

Including Setting, Display, New Construction

1). Setting and display the parameter

Click "Parameter Setting" , as follow

Brinell Measurement Setting

Parameters

Ball Dia D (mm): 10

Force (Kgf): 3000

[Add] [Delete]

S/N	Hardness Scale	Ball Dia D (mm)	0.102F/D^2	Force (Kgf)	Force (N)
1	HBW10/3000	10	30	3000	29411.765
2	HBW10/1500	10	15	1500	14705.882
3	HBW10/1000	10	10	1000	9803.922
4	HBW10/500	10	5	500	4901.961
5	HBW10/250	10	2.5	250	2450.980
6	HBW10/100	10	1	100	980.392

Other Parameters

Standard: DIN18265 ▼   Upper Lim: 618

Dwell Time: 0.5 s   Lower Limi: 76

Mode

Mode: Batch Mod ▼   Average: 10

[Cancel] [OK]

This page have Force of HB, Standard of switch, Upper Lim, Lower Lim, Model etc.

2). New Measurement

Click "New Measurement" as follow:

New Measurement

Name: Test

[Cancel] [OK]

Import name "Test" and click "OK" will new building a test, and will be deleted of last data

● **Display Measure result and output**

Including : Display The Record , Delete, Hardness Conversion, Export Word, Excel, The Curve Of Hardness
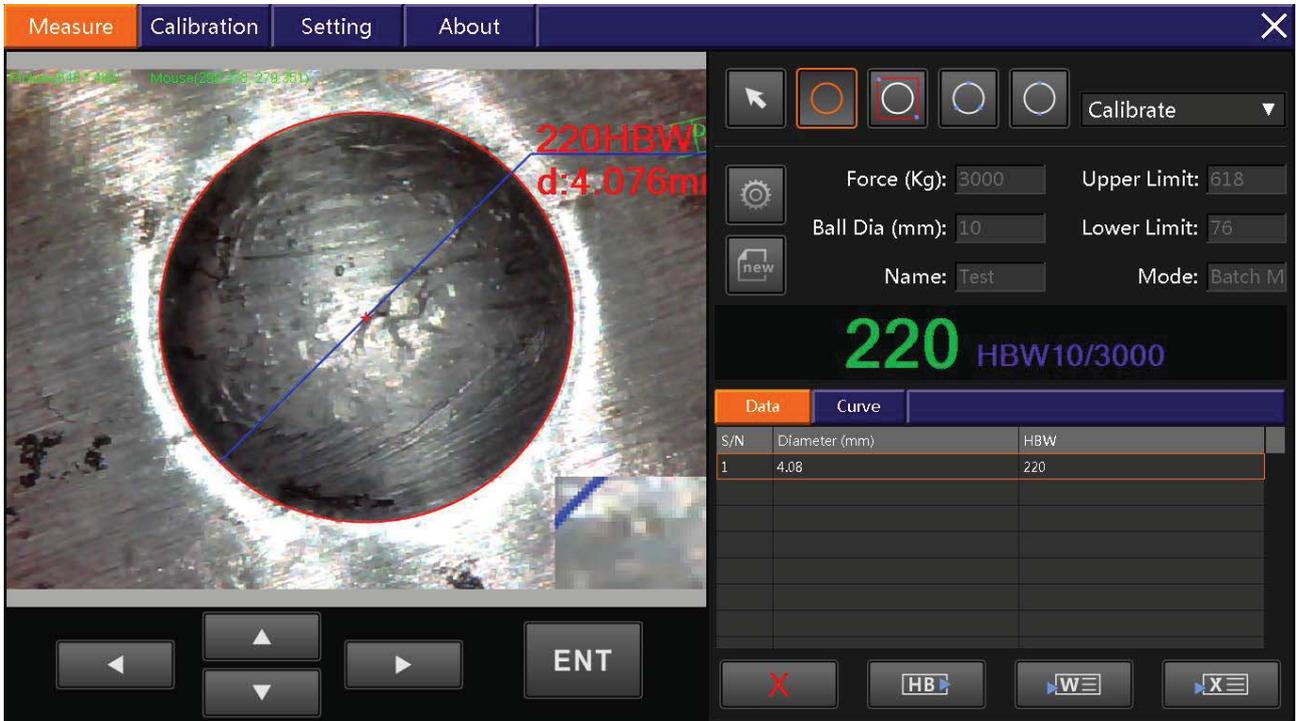
1).Delete:

Select measuring record, click "delete".

2). Hardness Conversion: (contain 17 types of hardness content)
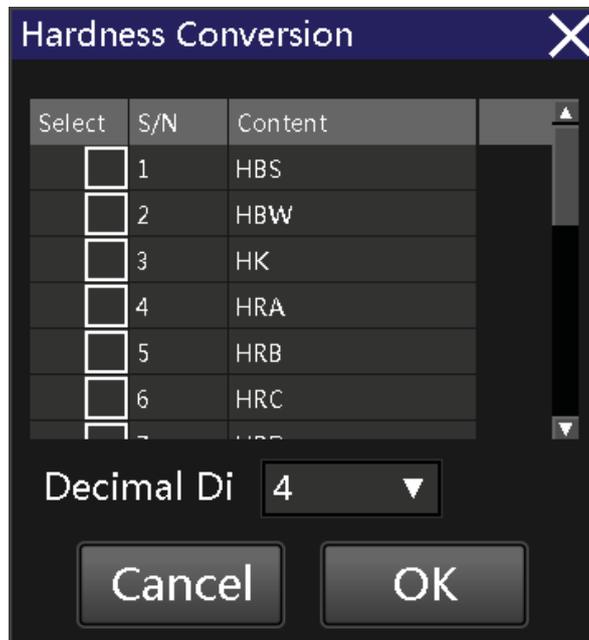
3).Export Word and Excel

Click "Output Word"/"Output Excel"

4).The curve of HBW:

7.3.1.2 Calibration

1).Video; 2). Measuring instrument; 3). Calibration operate
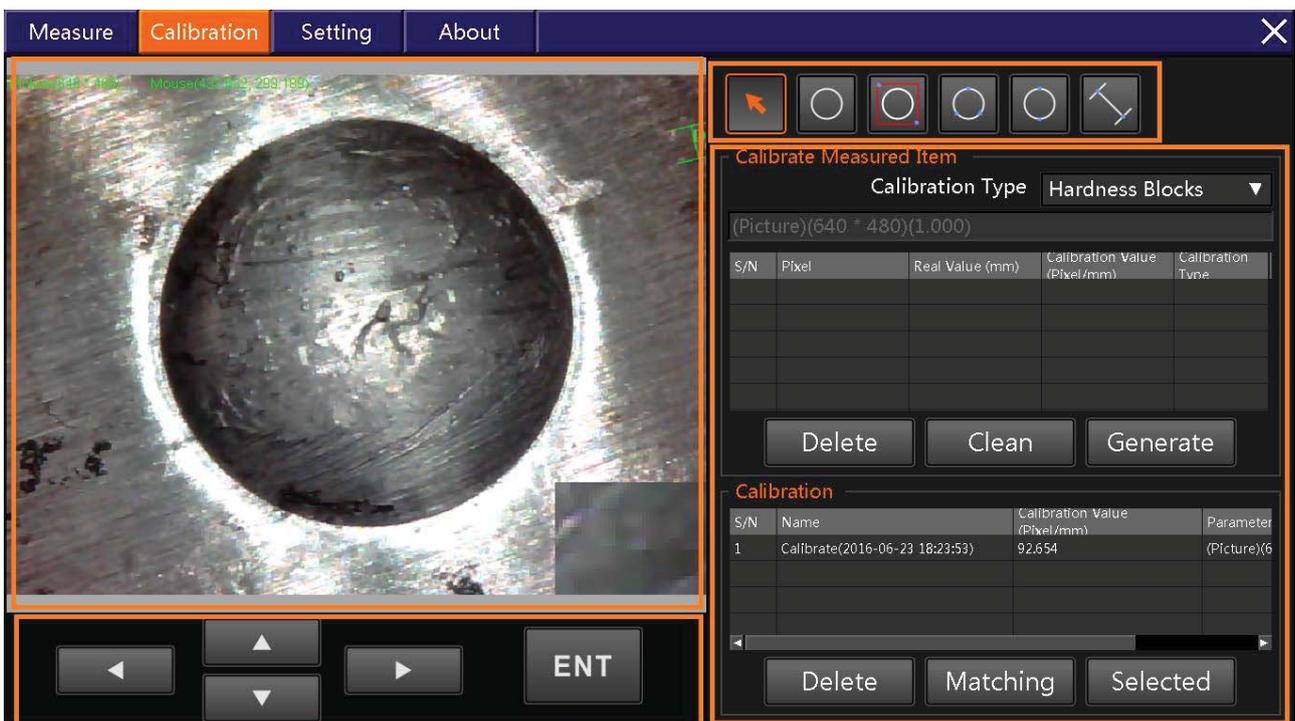
1).Video Display

Display the real-time image of indentation, It is capable of setting point and testing on the region and make sure the result of measurement

2). Measuring Instrument

Include:

Testing Circular By Automatic: Click "ENT", measuring the diameter of circular.

Frame Select Circular : Framing the circular, Click "ENT", Measure the diameter of circular during the video display region.

Three Points Select Circular: Click three points, Click "ENT" measure the circular diameter.

Two Point Measure Circular: Click two points, Click "ENT" measure the circular diameter.

3). Calibration Operate

Calibration Method: By calibration screen and HB block

Calibration Item: One testing data one item.

How to creative calibration: By testing item and AVG

Calibration: a camera and a magnification correspond a calibration record

Automatic Calibrate and Manual Motive Calibrate

7.3.1.3 Setting Page

1).System Setting; 2). Camera Setting ; 3).Drewing Setting

1). System Setting
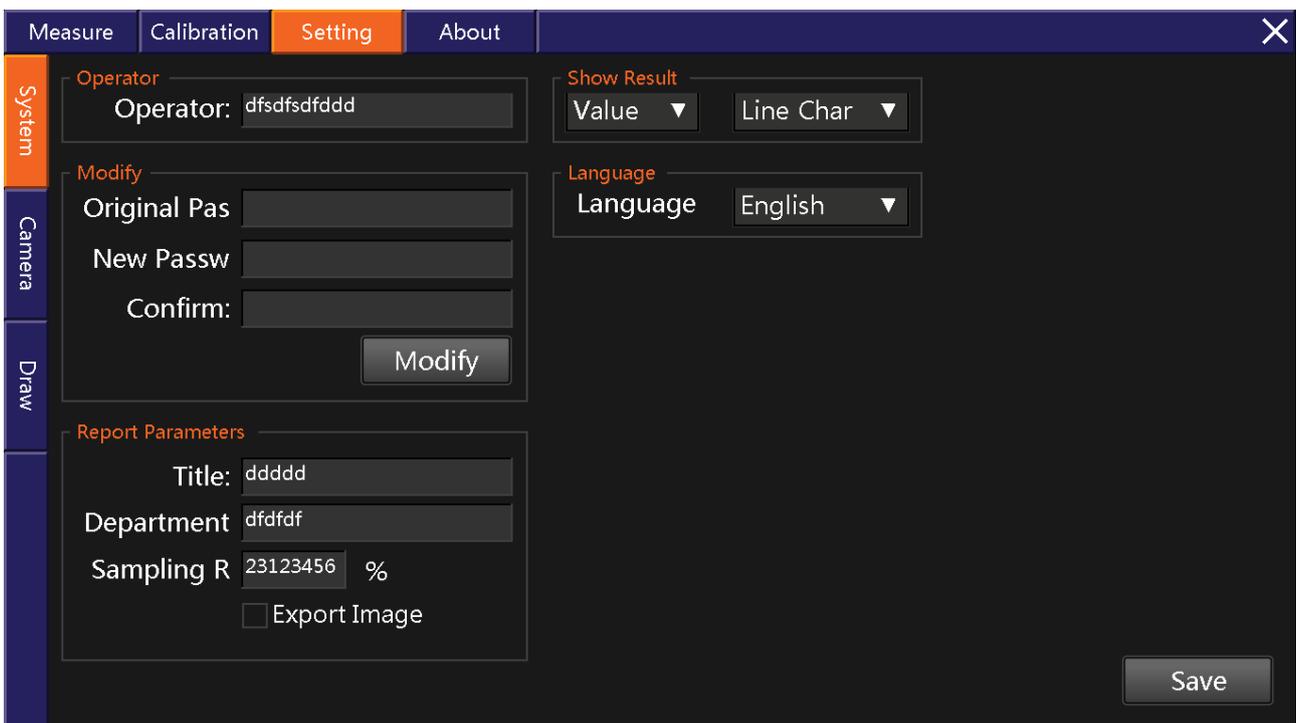
Operator Name Setting: Using operator name is ok；

Passport Setting

Report Parameters Setting

Show Result: Bar graphic and curve graphic

Language: Chinese and English

2). Camera Setting

Contain Settings : Camera Type; Virtual Camera; Real-time information; Light Source
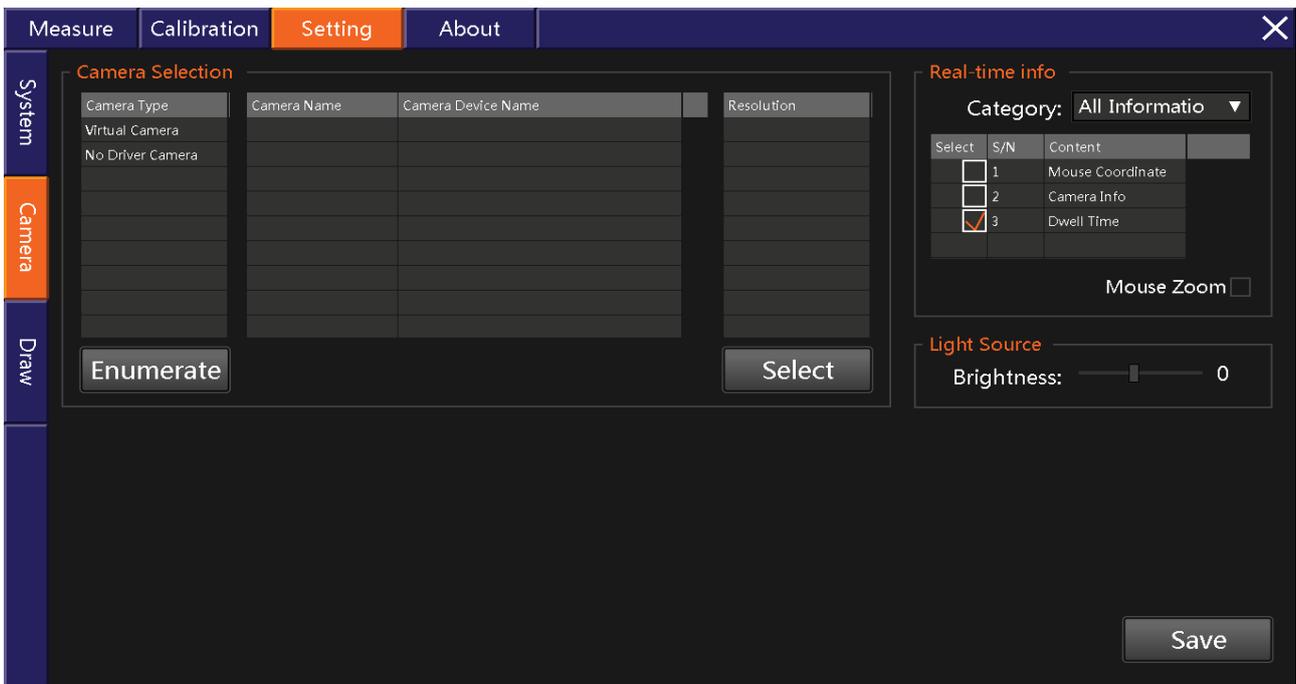
3). Drew Setting.
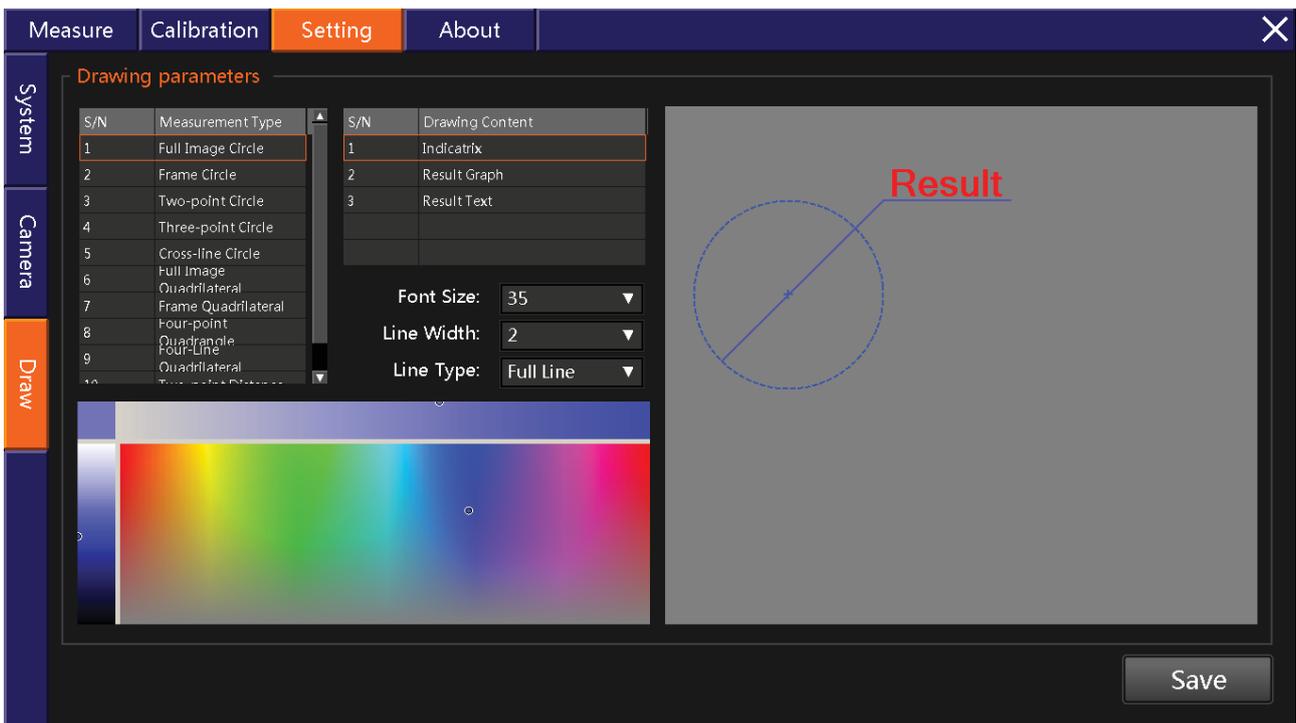
7.4. How To Operation

7.4.1 Camera Selection

First open the software or need change the camera, Please Click "Camera Selection" .Read picture as follow :
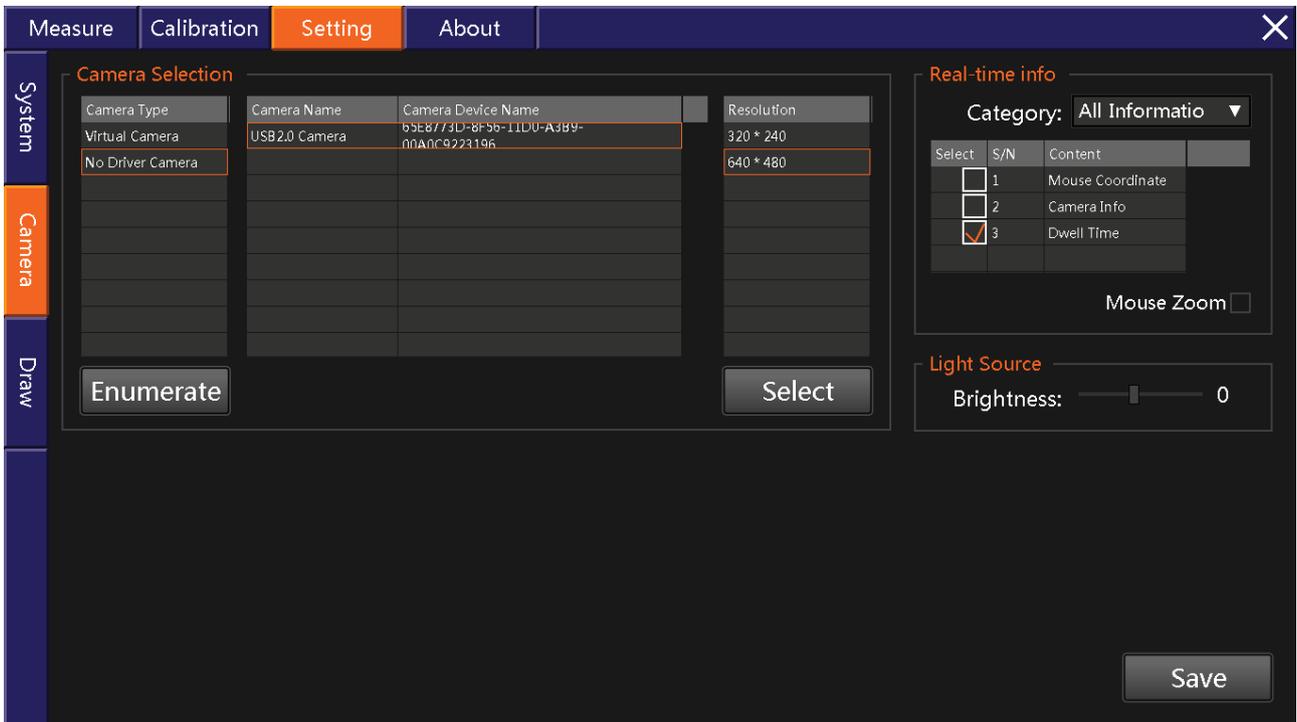
7.4.2 Camera Calibration

7.4.2.1 Camera Calibration Info:
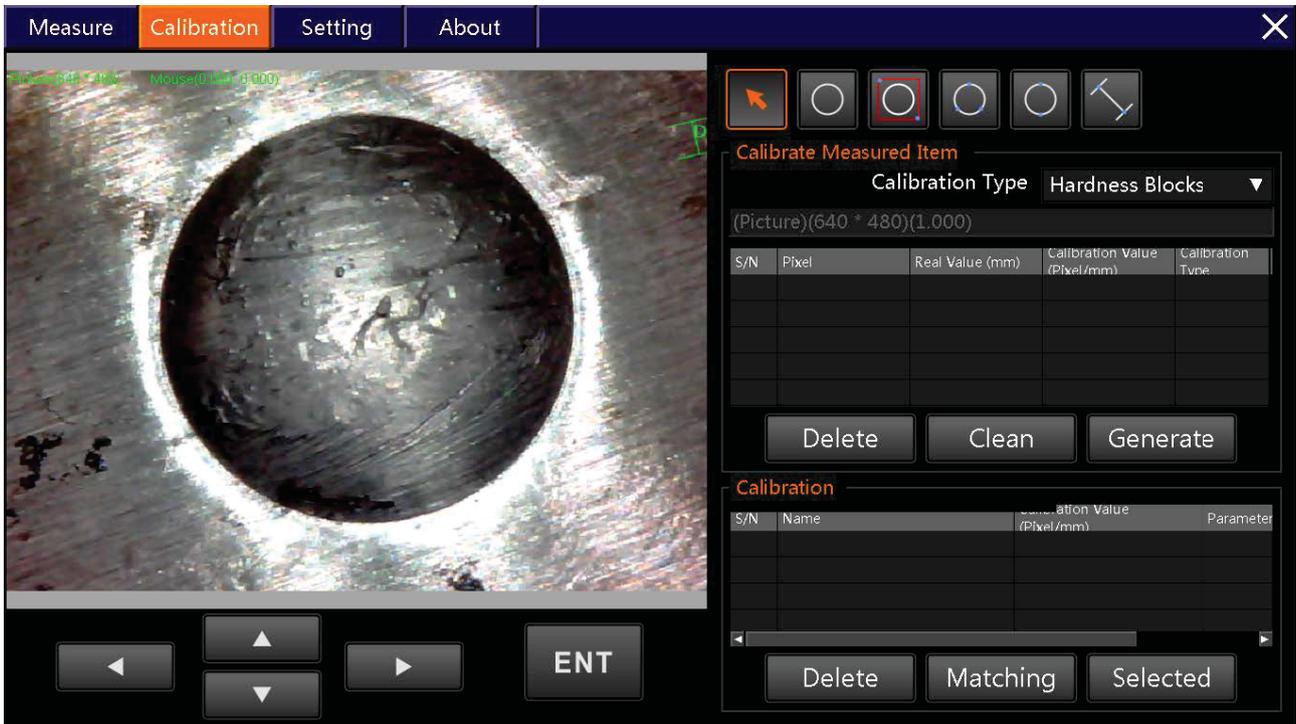
7.4.2.2 Calibrate Measured Item:

7.4.2.3 Calibrate Real Value:
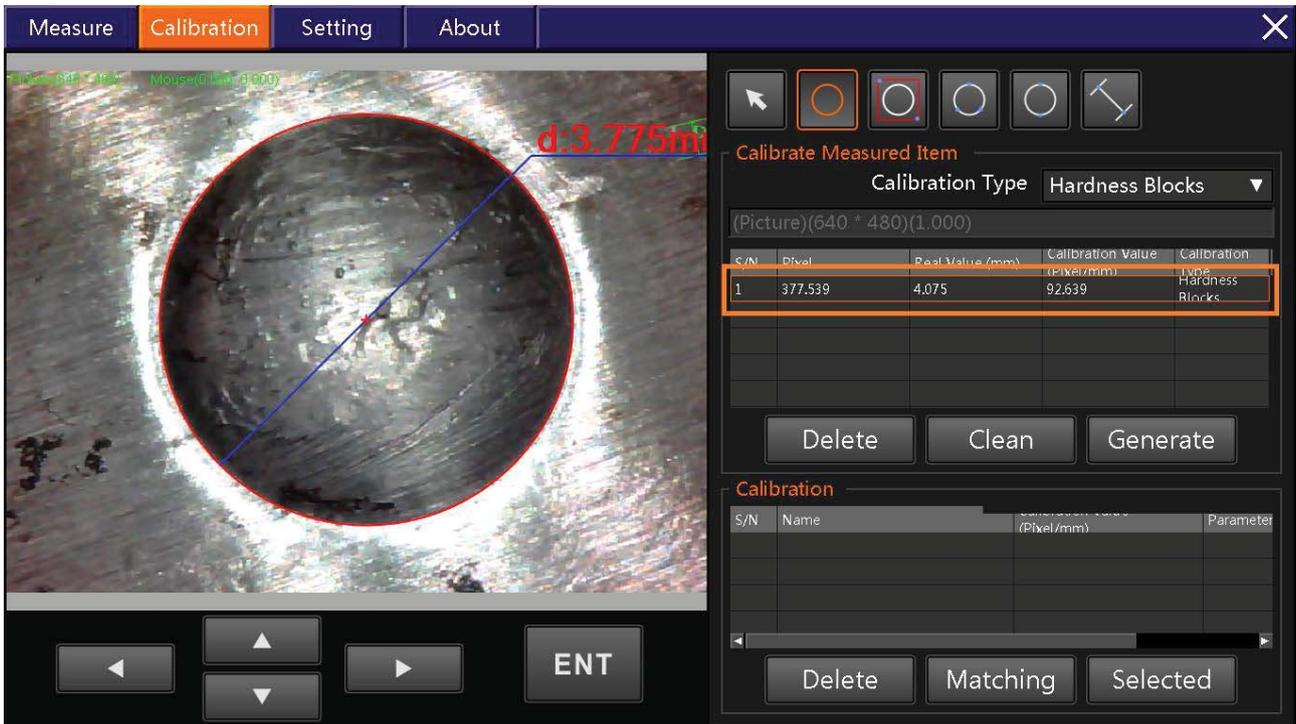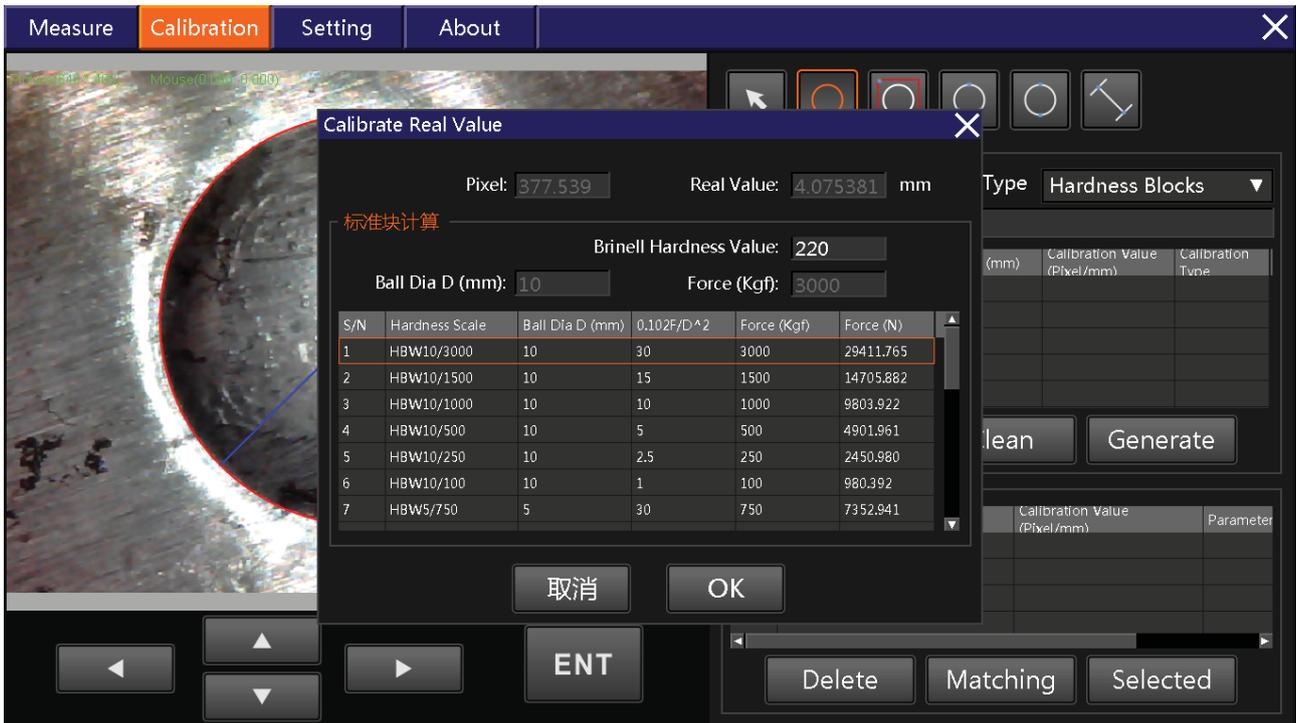
7.4.2.4 Create Calibration:
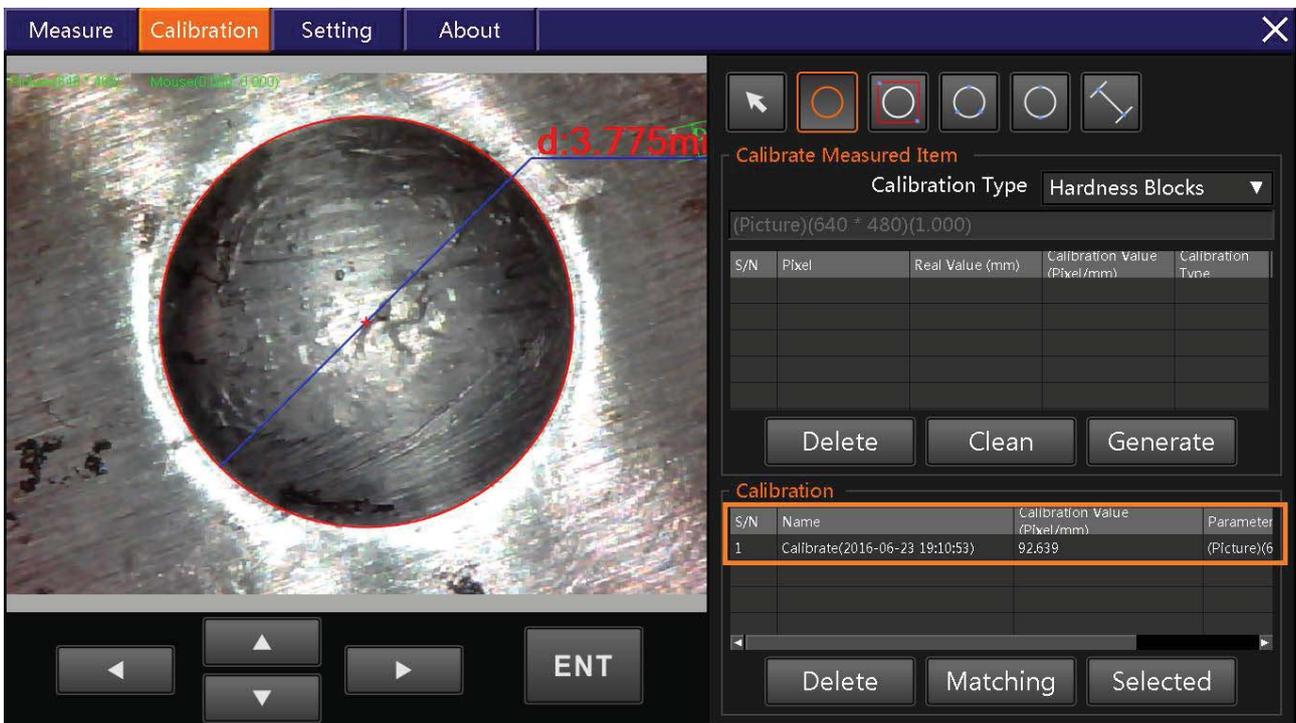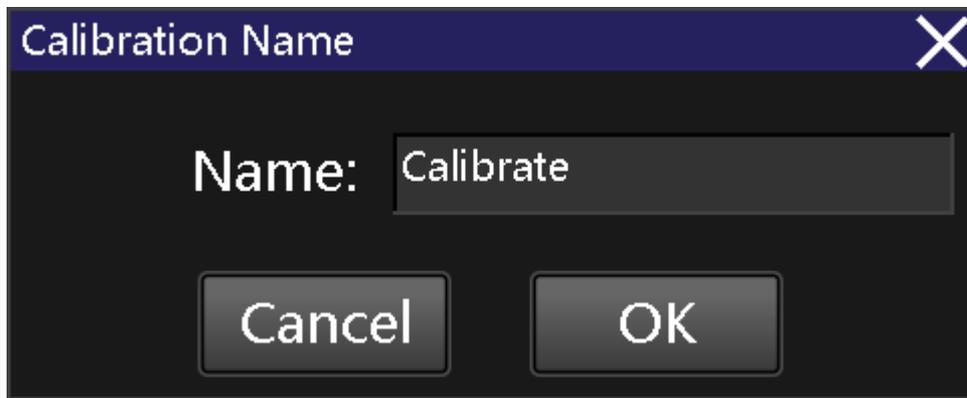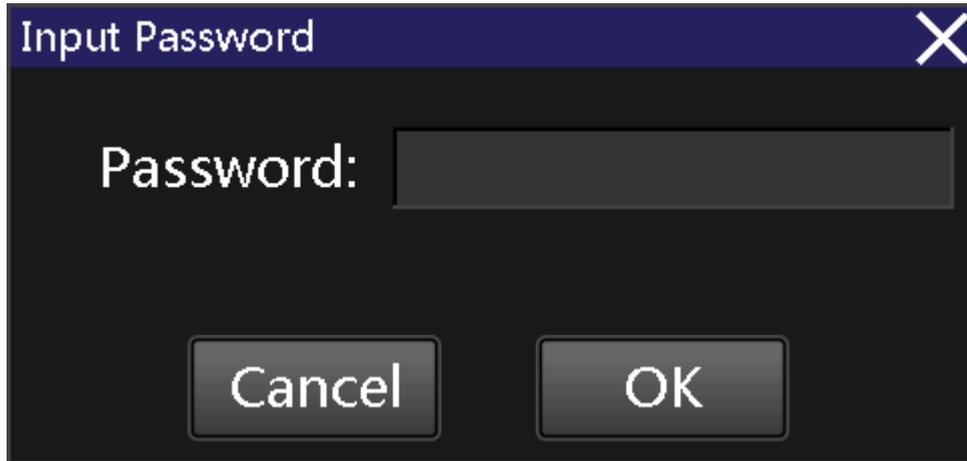
When you open the camera, the software will automatic load the calibration, If no matching will been hint as follow.
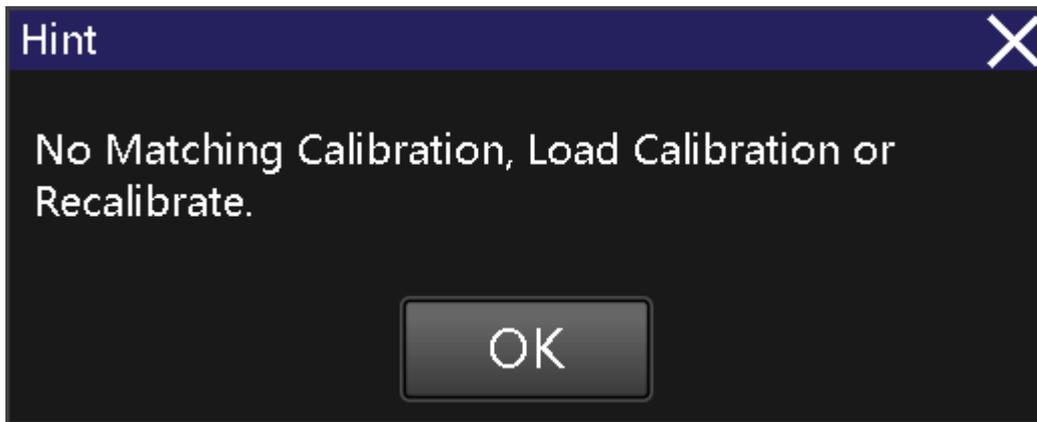
7.5 Measure HBW

7.5.1 Click Measure

7.5.2 Brinell Measurement Setting

To better measure please select correct impression force:

Eg: Test Ball Dia:10mm   Force:3000kgf；So we would choice HBW10/3000

Brinell Measurement Setting

Parameters

Ball Dia D (mm): 10

Force (Kgf): 3000

[Add] [Delete]

S/N	Hardness Scale	Ball Dia D (mm)	0.102F/D^2	Force (Kgf)	Force (N)
1	HBW10/3000	10	30	3000	29411.765
2	HBW10/1500	10	15	1500	14705.882
3	HBW10/1000	10	10	1000	9803.922
4	HBW10/500	10	5	500	4901.961
5	HBW10/250	10	2.5	250	2450.980
6	HBW10/100	10	1	100	980.392

Other Parameters

Standard: DIN18265 ▼   Upper Lim 618

Dwell Time: 0.5 s   Lower Limi 76

Mode

Mode: Batch Mod ▼   Average: 10

[Cancel] [OK]

7.5.3 Select Measure

7.5.4 Measure

As follow picture our software could automatic find impression .
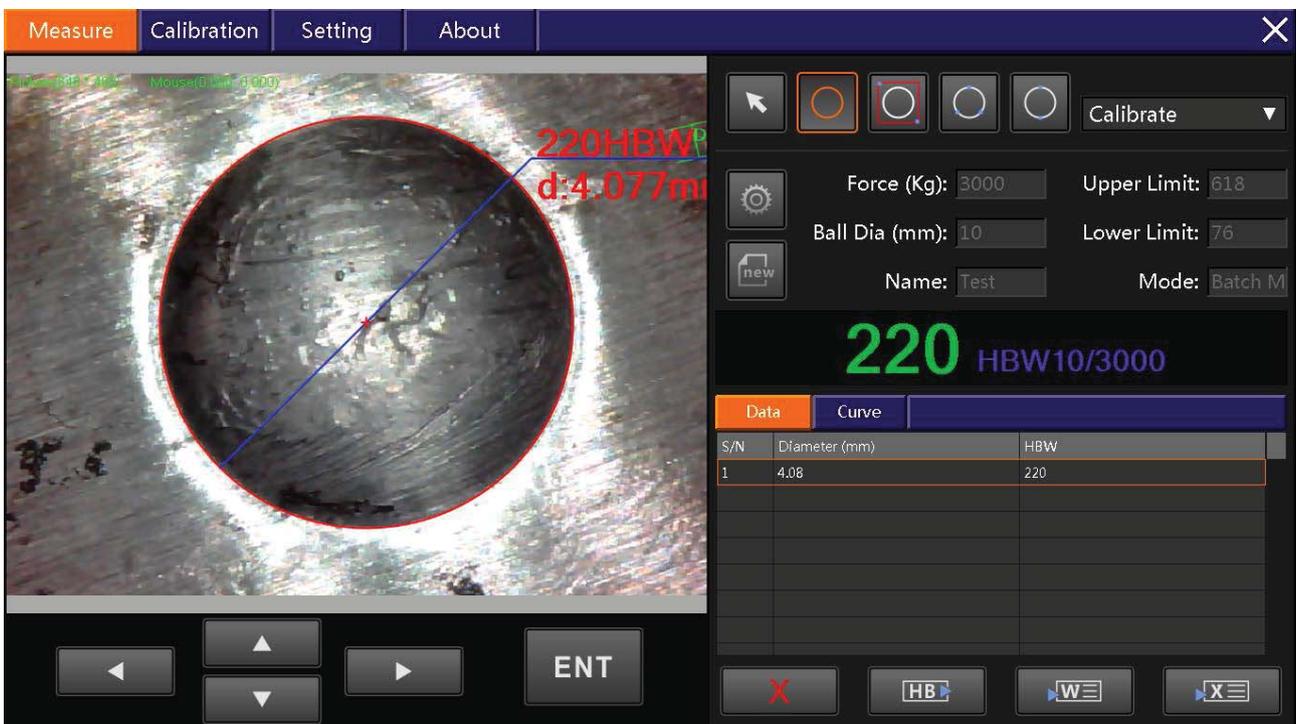
7.5.5 Output the data

After complete the testing , you could output the data by Word or Excel.

Measure   Calibration   Setting   About   ✕

220HBW
d:4.075mm

Calibrate ▼

Force (Kg): 3000   Upper Limit: 618
Ball Dia (mm): 10   Lower Limit: 76
Name: Test   Mode: Batch M

220 HBW10/3000

Data	Curve

S/N	Diameter (mm)	HBW
1	4.08	220
2	4.08	220
3	4.08	220
4	4.08	220

▲ ◀ ▼ ▶   ENT

X   HB▶   ▶W≣   ▶X≣

Brinell Hardness Report

Department:	DepartmentA			Date:	2016-06-23			Operator:	OperatorA
Specimen:	Test			Quantity:		4		Sampling Rate:	100%
Parameters:	Force (Kgf)	Ball Dia (mm)	Lower Limit	Upper Limit	Dwell Time	K=0.102F/D2		Standard	
	3000	10	76	618	0.5s			DIN18265	

S/N	Diameter (mm)	HBW	--	--	--	--	MPa	NG/Pass
1	4.08	220						Pass
2	4.08	220						Pass
3	4.08	220						Pass
4	4.08	220						Pass

1		2	
3		4	

Total	Average	Min	Max	Error Range	Deviation	CP	CPK	
4	219.948	219.7607	220.0276	0.2669	0.1254	0.355	-583.984	

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