

**Mikrosize®**

# MBrin-3000A

## Auto Touch Screen Brinell Hardness Tester



**Video**



### Contact us

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## Product Feature

### Product Feature

- The fully automatic Brinell hardness tester, with its unique automatic turret structure system, allows users to customize the measurement target to match the hard alloy indenter, test force, and dwelling time before starting the test.
- After the measurement is completed, there is no need to move the workpiece, and the CMOS directly captures the indentation image.
- The world's advanced digital imaging technology is used to automatically find the most suitable pixels on the indentation image, high-speed analysis, and automatic reading.
- Automatically measure standard block indentation, shaded indentation, background blurred indentation, and elliptical indentation.
- This instrument has 12 levels of testing force and 16 different Brinell hardness testing scales, which can be freely selected;
- Equipped with 4 sets of ball indentor, all of which can automatically participate in testing;
- Equipped with two sets of objective lenses, both of which can participate in the measurement of indentation diameter;
- According to the selected scale, the objective lens and indentor automatically switch;
- Preset test force dwelling time and adjust the strength of the indentation light source for measurement;
- Real time display of loading time;
- Display measurement indentation length, hardness value, measurement frequency, etc;
- Select the conversion values between various hardness scales;
- The hardness test results can be printed out

## Technical Specification

| Name                         | Specification  |
|------------------------------|--|
| Test Force                   | 29.42N(30kg) 306.45N ( 31.25kg ) 612.9N<br>(62.5kg) 、 980.7N (100kg) 、 1226N (125kg) 、<br>1839N (187.5kg) 、 2452N (250kg) 、 4903N (500kg) 、<br>7355N (750kg) 、 9807N (1000kg) 、 14710N (1500kg) 、<br>29420N (3000kg) |
| Test Scale                   | HB 10/3000、HB 10/1500、HB 10/1000、HB 5/750、<br>HB 10/500、HBW 10/250、HB5/250、HB 2.5/187.5、<br>HB 10/125、HB5/125、HB10/100、HB 5/62.5、<br>HB2.5/62.5、HB5/31.25 、HB2.5/31.25、HB1/30  |
| Measuring Range              | 8~650HBW   |
| Loading Mode                 | Worktable automatic lifting, loading, dwelling,<br>unloading, and measurement  |
| Maximum Test Height          | 500mm  |
| Max Test Throat              | 200mm  |
| Main Test Force Loading Time | 5~8S   |
| Dwelling Time                | 0~99S  |
| Indenter /Objective Switch   | Auto   |
| Dimension                    | 230*600*920mm  |

# Technical Specification

|                         |   |
|-------------------------|---|
| Weight                  | 130Kg   |
| Objective Lens          | 1X、2X   |
| Light Path Converting   | Auto  |
| Indenter Diameter (mm)  | Φ1、Φ2.5、Φ5、Φ10 Installed in the Same Turret   |
| Working Mode            | One-click operation, automatic lifting, loading, dwelling, unloading, CMOS measurement  |
| Indentation Image       | Automatic Measurement   |
| Measurement Method      |   |
| Indentation Image       |   |
| Repeated Measurement    | Repeatability ±0.8%   |
| Accuracy                |   |
| Data Display Mode       | 12.1 Inch Industrial Touch Screen   |
| Data Output             | Output report in WORD and EXCEL format, printable output; Graphics engine shows more features   |
| Data Statistics         | Hardness conversion: According to national standards, automatic Brinell - Rockwell - Vickers - Knob and other hardness numerical conversion, real-time display. |
| Light Source            | LED   |
| Functional Regulation   | Infinite-controlled light source strength   |
| Communication Interface | USB、RJ45LAN、WLAN、RS232  |
| Dimensions mm(L×W×H)    | 1000×595×350  |
| Supply Voltage          | AC 220V/110V±5%， 50~60 Hz   |



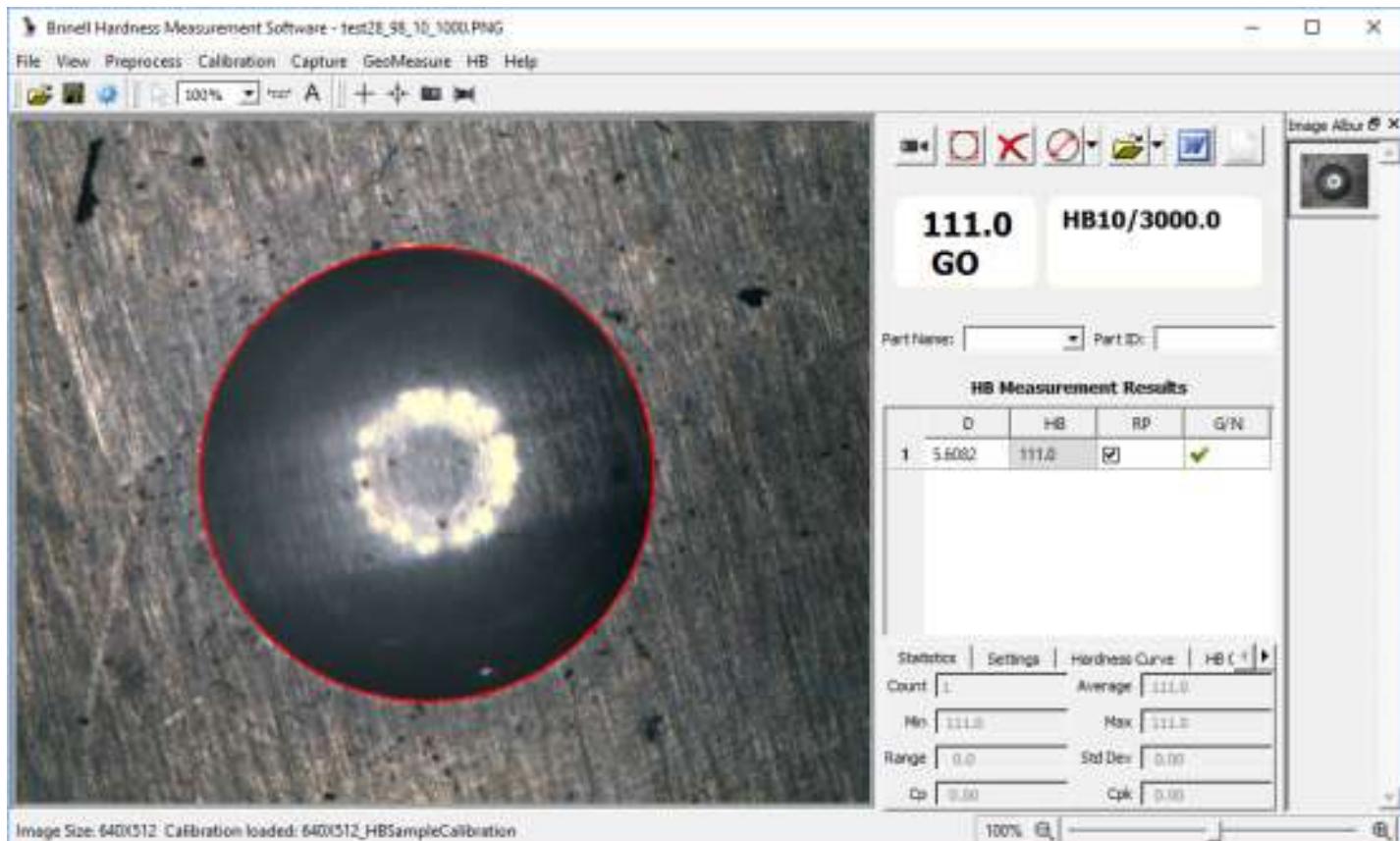
## Packing List

| Name                     | Specification                  | Quantity |
|--------------------------|--------------------------------|----------|
| Brinell Hardness Tester  |                                | 1        |
| Ball Indenter            | φ10、φ5、φ2.5、φ1                 | 4        |
| Objective Lens           | 1 <sup>×</sup> 、2 <sup>×</sup> | 2        |
| Accessory Case           |                                | 1        |
| Reading Microscope       | 20 <sup>×</sup>                | 1        |
| V-shape Test Stage       |                                | 1        |
| Large Test Stage         |                                | 1        |
| Small Test Stage         |                                | 1        |
| Dust Cover               |                                | 1        |
| Hex Wrench               |                                | 1        |
| Power Line               |                                | 1        |
| Fuse                     | 2A                             | 2        |
| Brinell Hardness Block   | (150～250)<br>HBW3000/10        | 1        |
| Brinell Hardness Block   | (150～250)<br>HBW750/5          | 1        |
| Brinell Measuring System | Integrated in the<br>Host      | 1        |
| Product Certificate      |                                | 1        |
| Instruction Manual       |                                | 1        |

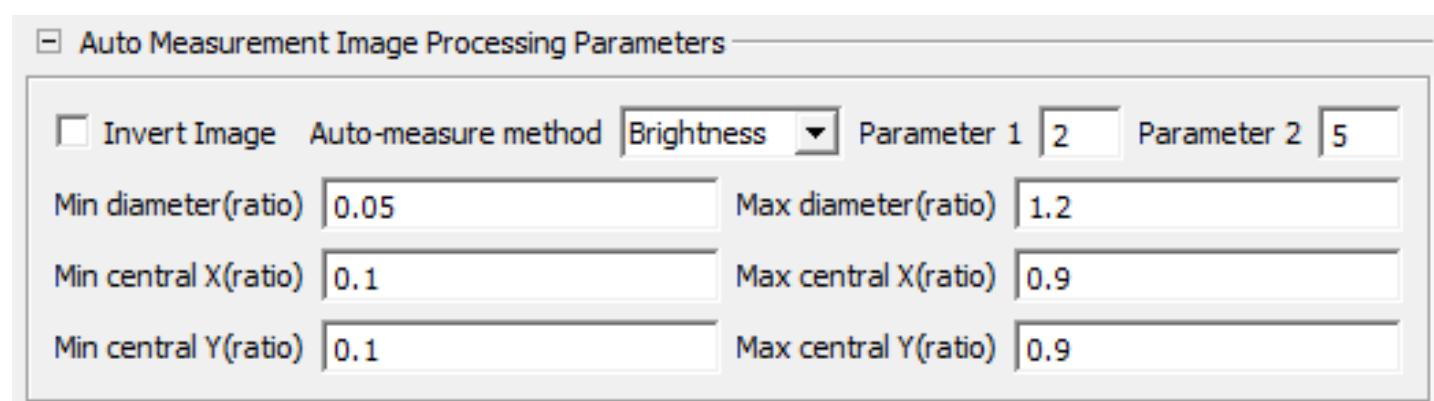
## Brinell Hardness Measurement Software

Brinell Hardness Measurement Software is mainly used in automatically measuring the Brinell indentations and calculate their hardness values. The utility functions include hardness conversion, report generating, and data archiving etc.

Main interface: At first time opening after installation, user will need to manually adjust the splitters to have the user preferred sizes among the displays. To do that, move the mouse cursor to the splitter region, the cursor shape should become a splitter, mouse drag move to adjust.



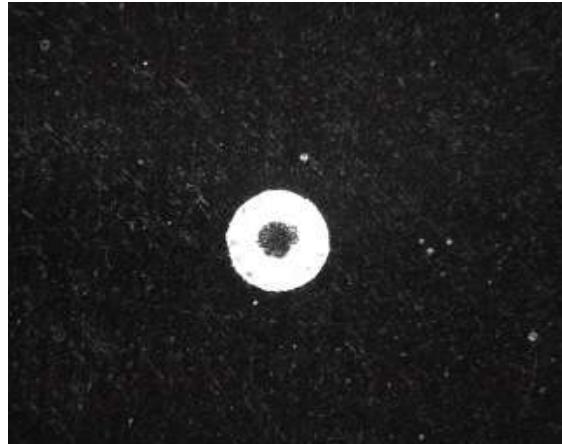
## Main Interface



## Auto Measurement Image Processing Parameters:

- Invert Image: Needs to be checked in cases the indentations on some test materials, as shown below, appears to be brighter than the sample surface.

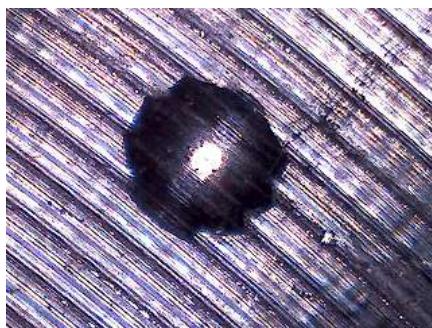
## Brinell Hardness Measurement Software



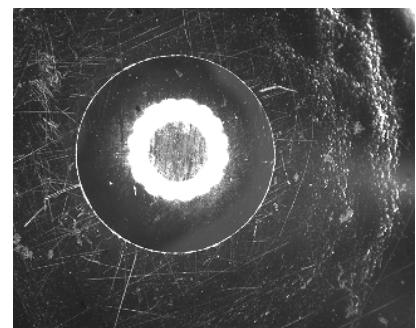
- Auto-measure method: Under typical circumstances, the indentation image shows brightness contrast between the indentation and the sample surface, the default Brightness method is used, and the parameter 1 is set at default 2. In some cases as shown in below #1, the sample surface shows shiny grain, this parameter should be set to 1. For sample surfaces with large scratches as shown below #2, this parameter should be set a large value, e.g. 6. If in cases there is no light intensity contrastas shown in #3, the Auto-measure method Edge should be chosen.



**1) Shiny spots on surface**



**2) Large scratches**

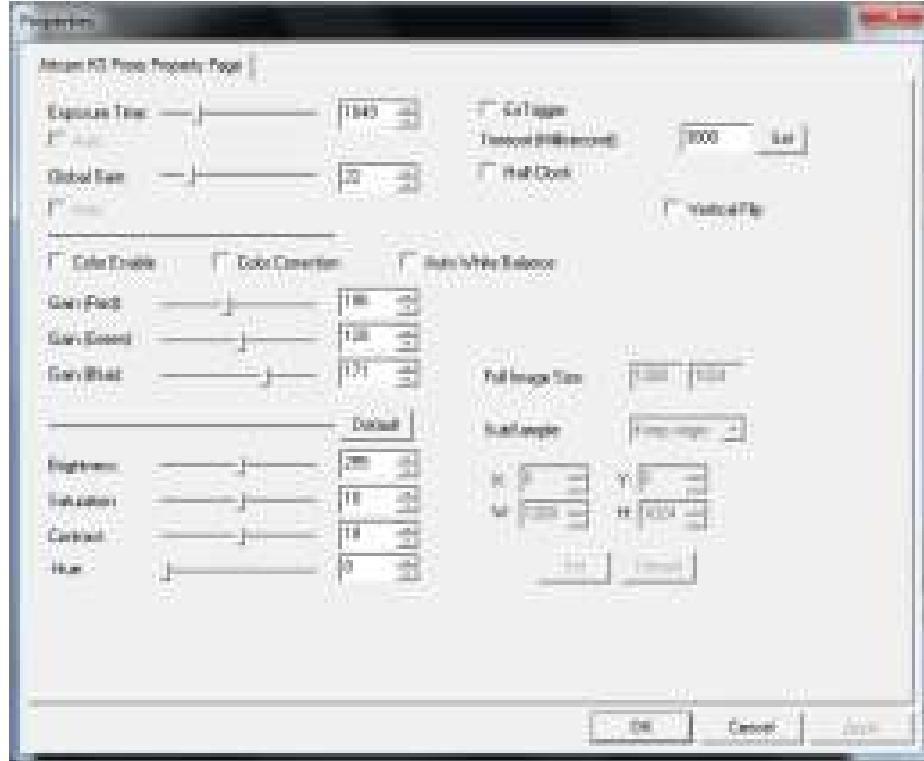


**3) No light intensity contrast**

## Brinell Hardness Measurement Software

### Camera Settings

Click  to bring out the camera setting dialog, user may change camera settings such as exposure time and global gain to adjust image light intensity

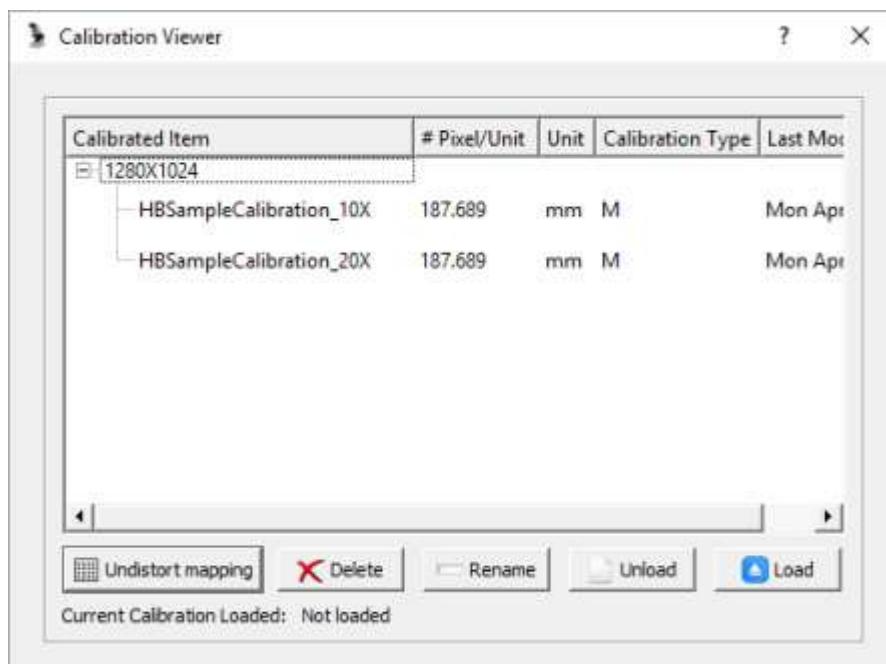


### Conversion

Select the conversion table and the test scale to be converted to, the converted results will be shown in the measurement result table in a separate column. To delete the column, just click on the Delete Converted Hardness Column button. 

### Calibration

Select main menu Calibration -> Calibration viewer, pass the password check (or click OK if no password is set). In the calibration viewer dialog, user may select calibration, rename a calibration, unload current calibration, or delete calibrations.



## Brinell Hardness Measurement Software

### Two ways to calibrate with

- 1) Standard test block: Unload current calibration if it is loaded, measure the indentation on the standard test block and enter the HB value of the test block. For better accuracy, system provides function to re-calibrate with average on multiple indentation points. To do this, measure on multiple indentation points on the test block, click on Recalibrate with sample average button  and enter the HB value of the test block, current calibration is re-calibrated and saved.
- 2) Optical ruler: Take a snap shot with the system camera on an optical ruler, click on the Select main menu Calibration -> Manual calibration, mouse drag move from one line to another (separated far enough), enter the physical distance between the two lines, and enter a name for the calibration.

### On-screen keyboard:

If the On Screen Keyboard is enabled and under Software on the dialog by selecting main menu File->View/Edit configurations, the software will invoke its built-in On Screen Keyboard whenever needed. Note if Use System On-Screen Keyboard is checked, then the On-Screen Keyboard by the operating system that comes with PC will be invoked, in this case IME for foreign language is accessible.



(a) PC system on-screen keyboard



(b) built-in on-screen keyboard of this software

## Brinell Hardness Measurement Software

### Automated Test and Measurement

After the test points are generated, click on the Auto Test Measure button  to start the automation process. To pause the automation, mouse click on the image. To resume, click on the Auto Test Measure button.

### Data Saving and Retrieval

Click on the dropdown arrow on the Open data file  /Save data file  tool button to select Open data file or Save data file to save/restore the measurement results. To save, select the path to store and name the data file.

### Hardness Test Report

An example WORD report is as shown below. The WORD and EXCEL report template files hb\_report\_en.doc and hb\_report\_en.xls are under the installation bin directory, and they can be customized, e.g, with LOGO and title etc.

#### Brinell Hardness (HB) Test Results

| Submitter                 |   | Date Submitted     |  |
|---------------------------|---|--------------------|--|
| Part Name                 |   | Part ID            |  |
| # of Samples              |   | Sample Description |  |
| Qual. UL                  | 280   | Qual. LL           | 120  |
| Machine ID                |   | Meas. Standard     |  |
| Indenter Diam. (mm)       | 10  | Force (Kg)         | 3000.0   |
| <b>Test Results</b>       |   |                    |  |
| #                         | D   | HB                 | Converted HRC  |
| 1                         | 5.6082  | 111.0              |  |
| 2                         | 4.0952  | 217.8              |  |
| <b>Indentation Images</b> |   |                    |  |
| 1.                        |  | 2.                 |  |
| <b>Statistics</b>         |   |                    |  |
| Maximum                   | 217.8   | Minimum            | 111.0  |
| Average                   | 164.4   | Std. Dev.          | 37.76  |
| Cp                        | 0.71  | Cpk                | 0.39   |
| Operator                  | Test Date   | Auditor            | Audit date   |
|                           | 2016.4.4  |                    |  |