Webster Hardness Tester

User Manual V1.02

Please read this manual carefully before using and reserve it for reference.

I. Product Introduction

The Webster hardness tester based on Webster hardness measurement principle, suitable for aluminum alloy, brass, copper, soft steel and other metal materials hardness measurement. It adopts eddy current induction principle measurement technology, with good repeatability and measurement accuracy. The instrument has a variety of built-in hardness systems, which can be converted between Webster (HWA), Rockwell (HRE), Rockwell (HRF), Rockwell (HRB), Vickers (HV) and Brinell (HB).

Standards for the product:

- *GB/T 32660.1-2016 Metallic materials -Webster hardness test - Part 1: Test method*
- *GB/T 32660.2-2016 Metallic materials - Webster hardness test - Part 2: Verification and calibration of hardness testers*
- *GB/T 32660.3-2016 Metallic materials - Webster hardness test - Part 3: Calibration of reference blocks*
- *GB/T 33362-2016 Metallic materials - Conversion of hardness values*
- *JJG 944-2013 Metallic Webster Hardness Testing Machines*

II. Parameters

Hardness Scales	HWA, HRE, HRF, HRB, HV, HB
Measurement Range	HWA(0-20), HRE(23.5-110), HRF(26.2-105.5), HRB(0-85.3), HV(49-155), HB(35.2-153)
Resolution	0.1HWA
Accuracy	±0.5HWA
Repeatability	0.5HWA
Thickness of measured material	0.6mm-8mm
Inner diameter of the measured material	>10mm
Display	128 * 64 dot matrix OLED
Power supply	Rechargeable lithium battery 3.7V@400mAh, full charge for over 5000 continuous measurements
Charging Port	USB(Type-C)

Size	203*97*30 mm
Weight	484g
Working Temperature Range	-10~50℃，0~85%RH（no condensation）
Storage Temperature Range	-10~60℃，0~85%RH（no condensation）
Supply Voltage	DC5V
Operating Current	10mA
Operating Power Consumption	50mW

III. Features

1. The instrument adopts eddy current induction principle, which has good repeatability and measurement accuracy.
2. Digital display Webster hardness tester, the top of the instrument comes with OLED screen, measurement results are simple and convenient to read.
3. Integrated handheld design, compact and portable.
4. Providing a variety of hardness scales to switch, no more tedious manual check table.
5. Users can calibrate the standard parts to eliminate the error.
6. Low power consumption, and it can work continuously for more than 5000 times.

IV. Operation

1. Power on/off

Power on:

Short press button, the version and the serial number of the tester are displayed on the screen after powering on, and then the instrument will enter the measurement interface and the measured values before powering off are displayed.

Power off:

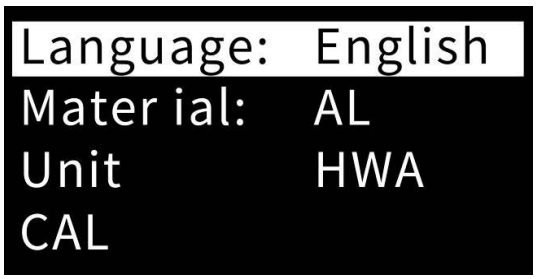
Long press the button to shut down the tester or the instrument will automatically shut down when the time without any operation is longer than 3 minutes.

2. Measurement

Place the material to be measured in the test groove (between the anvil seat and the indenter), press down the handle until the indenter barrel press to the bottom and keep it still, after hearing the beep, the value displayed by the instrument is the measured hardness value. Measurement should be made by applying sufficient grip force at once and pressing to the bottom, as slow application of force will affect the accuracy of the measurement.

3. Setup and Calibration

Press and hold the button for 3 seconds in the off state or short press the button in the measurement state to enter the Main Menu of the instrument with six sub-options, short press the to select [Language, Material, Unit, CAL, Factory Reset, Exit], short press the button to confirm the selection.



- **Language**: Short press button to enter the language option and press button to select the right language, then press button to confirm your selection.
- **Material**: Short press the button to enter the material selection interface, short press button to select the corresponding material, then press the button to confirm the option.
- **Unit**: Short press the button to enter the hardness unit selection interface, press the to select the hardness unit, short press the button to confirm.
- **Calibration**: Short press the button to enter the calibration interface, the screen prompts “Test Standard” and flashes, then you can measure the standard hardness block (single or multiple times). If the measured value is not within the range of 0-20 HWA, the instrument indicates "Exceed the limit!” After measurement, the cursor moves to the real value area, then press or button to adjust the real value to the standard value of the hardness block. Long press the button to save

the value, and the instrument indicates “Calibration Succeeded!”, then exit to main menu interface. In addition, after entering the calibration interface, you can exit directly to the main menu interface by short pressing the or when there is no standard hardness block to be measured or the measurement data is invalid, and the screen will show “Calibration Failed!” (Note: The instrument need to be reference-calibrated before calibration)

- **Factory Reset:** Short press the button to enter the factory reset interface, it prompts "Factory Reset?", short press button to select "Yes" or "No" (the cursor defaults to "No" when entering the interface), and then short press the to confirm the selection. If you confirm to select "No", it will return to the main menu interface. If you confirm to select "Yes", it will prompt "restoration Succeeded!” The objects to be restored include: material, hardness unit, calibration coefficients, measurement records (language is not restored).

- **Exit:** Short press button to exit the main menu interface and enter the measurement interface.

4. Reference Calibration

When different users use the instrument for the first time or when the instrument is pressed without a material but it does not display 20 HWA, please follow the steps below to carry out the reference calibration.

1) The test slot is empty, directly press the handle to the bottom, then the instrument will display a measured value, keep the handle pressed state, short press the button, after hearing the beep, the instrument will prompt "Reference Cal Relax The Handle."

2) Relax the handle, the instrument displays "20.0 HWA" indicates that the calibration is successful,

"Calibration Failed!" indicates that the calibration has failed.

5. View measurement records

In the measurement mode, short press ▼ button to view the historical data in the browse interface. The instrument can store 9 sets of data totally, and the oldest recorded value is automatically deleted when there are more than 9 sets of data. Record 1 is the earliest test data, and so on backward. Recorded data will not lost when the instrument is turned off.

In the history view mode, long press the ▼ button and the screen will show a data deletion prompt, short press ▼ button to select “Yes” or “No”(cursor selects "No" by default when entering the interface), short press the ⏻ button to confirm.

V. Bluetooth communication

The instrument has built-in Bluetooth communication module, which can be connected via mobile APP.

1. Mobile APP installation and use

1) **Installation:** Use the mobile browser to scan the QR code on the cover, follow the prompts to download and install the APP. After the installation is complete, the “UT and HL” icon will appear as shown below.

APP icon

2) **How to connect the device:** Open the APP. If there is no bound Bluetooth device, then enter the Bluetooth setting interface. Click "Start Searching", prompt "Searching for device... " and list the available Bluetooth devices that are searched, click the "Stop Searching" button to stop searching for Bluetooth devices. Selecting gauge serial number will bind the selected gauge (prompt: each gauge has a unique serial number). After the connection is successful, it will automatically enter into the main measurement interface and Bluetooth icon will be displayed at the top right of the gauge screen. If the APP has a bound Bluetooth device, automatically search and connect the bound Bluetooth device. When the connection is successful, it will automatically enter the “Measure” interface.

VI. Attentions

1. The instrument should be pressed as little as possible without the subject being measured so that the

indenter is not damaged too quickly, which may affect the stability of the instrument and the accuracy of the data.

2. The surface of the test object should be clean, as dirt or coating on the surface may affect the accuracy of the measurement.
3. When measuring, the distance between any two indentations should not be less than 6mm, and the distance between the center of the indentation and the edge of the object to be measured should not be less than 5mm.
4. Measurement should be made by applying sufficient grip force at once and pressing to the bottom, please do not press slowly.
5. If the measured value is less than 0HWA, the instrument will display 0HWA. If the measured value is greater than 20HWA, and the selected hardness unit is HWA, the measured value will be displayed normally; if the measured value is greater than 20HWA, and the selected hardness unit is not HWA, the instrument will prompts "Exceed Range!" If the measured value is greater than 20HWA, the instrument should carry out the reference calibration.
6. Measurement accuracy will be reduced for hardness below 4 HWA or above 17 HWA.
7. When the device displays “Low Battery”, batteries should be replaced.
8. The battery needs to be charged regularly to prevent damage from excessive discharge especially there is no operation of the instrument over 6 months.

VII. Packaging details

No.	Product Name	Quantity	Unit
1	Webster Hardness Tester	1	Set
2	USB Data Cable	1	pcs
3	Standard Hardness Block	1	pcs
4	User Manual	1	pcs
5	Calibration Report	1	pcs

VIII. Services

1. The gauge has one-year warranty. If the gauge works abnormally, please send the whole gauge to our company for maintenance.
2. Provide users with spare parts and lifelong maintenance services.
3. Provide the users with the gauge calibration service.

4. Free technical support for the long term.