Ultrasonic Hardness Tester

Code: 86256

User Manual V1.02

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

I. Product Introduction

The ultrasonic hardness tester adopts the UCI (Ultrasonic Contact Impedance) method to measure the hardness of various metal materials. With its minimal indentation, it causes little to no damage to the surface of the tested sample, making it ideal for applications where preserving surface integrity is important. It is especially suitable for measuring the hardness of metal coatings, platings, and hardened surface layers. The instrument supports multiple built-in hardness scales and allows automatic conversion between Leeb (HL), Vickers (HV), Brinell (HB), Shore (HS), and Rockwell scales, including HRA, HRB, and HRC.

Standards for the product:

- *GB/T 34205-2017 Metallic materials-Hardness testing-Ultrasonic contact impedance method*
- *GB/T 33362-2016 Metallic materials-Conversion of hardness values*
- *JJF 1436-2013 Calibration Specification for Ultrasonic Hardness Testers*

II. Parameters

Hardness Scales	HV、HRC、HRB、HRA、HS、HL、HB
Measurement Range	HV(50-1700), HL(170-960), HRC(20-70), HRB(13-100), HRA(60-85.8), HS(26.4-99.5), HB(30-651), HRE(20-70), HRF(60-100)
Resolution	1HV, 0.1HRC
Accuracy	±4%H+10HV，±2.5HRC (Probe fixture stand test, H as the standard value)
Repeatability	3%H+8HV，2HRC (Probe fixture stand test, H as the standard value)
Test Force	20N
Display	240 * 240 dot matrix LCD
Power Supply	Rechargeable lithium battery 3.7V@1000mAh, full charge for over 5000 continuous measurements
Charging Port	USB(Type-C)
Size	185*43*45 mm

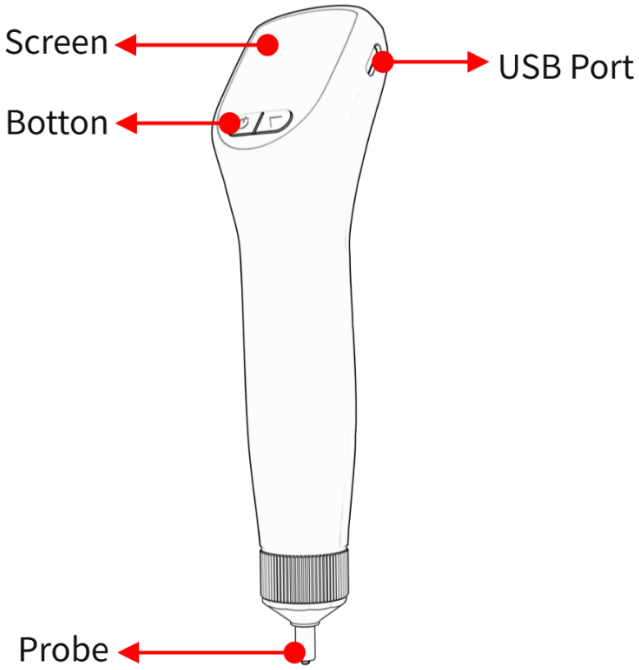
Weight	245 g
Operating Temperature Range	0℃~50℃, 0~85%RH(no condensation)
Storage Temperature Range	-10℃~60℃, 0~85%RH(no condensation)
Supply Voltage	DC5V
Operating Current	60mA
Operating Power Consumption	300mW

III. Features

1. Uses the Ultrasonic Contact Impedance (UCI) method with minimal indentation, suitable for non-destructive testing.
2. Comes with a stable base, offering good repeatability and high measurement accuracy.
3. Easy to operate with clear and readable results.
4. Compact, integrated design for easy portability.
5. Supports automatic switching between multiple hardness scales—no manual lookup needed.
6. Users can perform multi-point calibration; by calibrating at multiple points using standard reference artifacts, errors can be eliminated.
7. Ultra-low power design enables over 5,000 continuous measurements on a full charge.

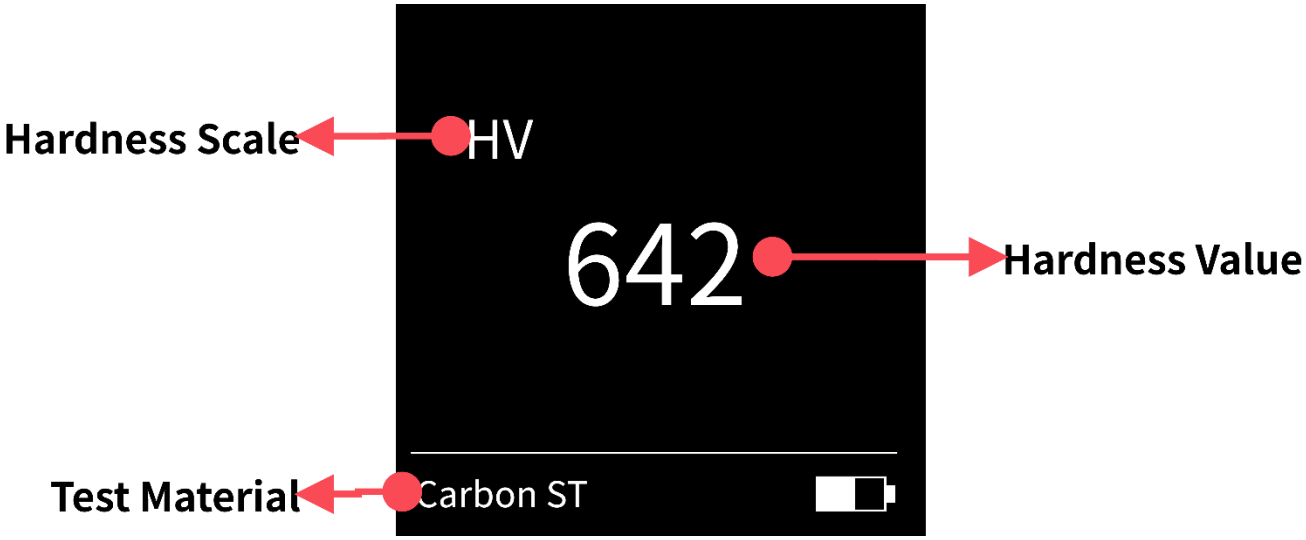
IV. Operation

1. Instrument Structure



2. Measurement

Place the test object on a stable surface. Hold the flat-head movable base and press it firmly against the surface of the object. Keep the instrument perpendicular to the test surface and press it down steadily until it reaches the bottom. Hold the position without movement. When the buzzer sounds, the measured hardness value will be displayed on the screen.

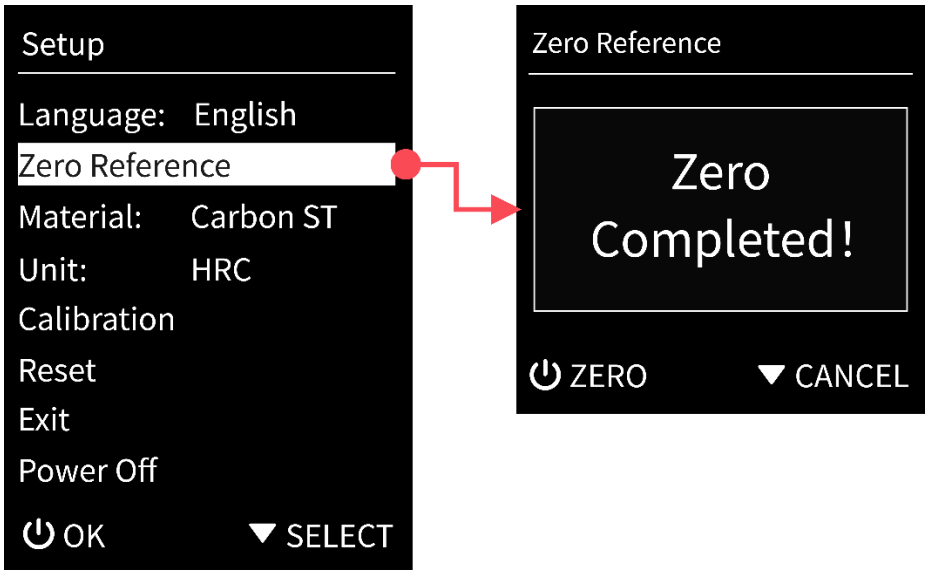


Note: *When measuring, press down all the way at once. Pressing down slowly will affect the measurement accuracy.*

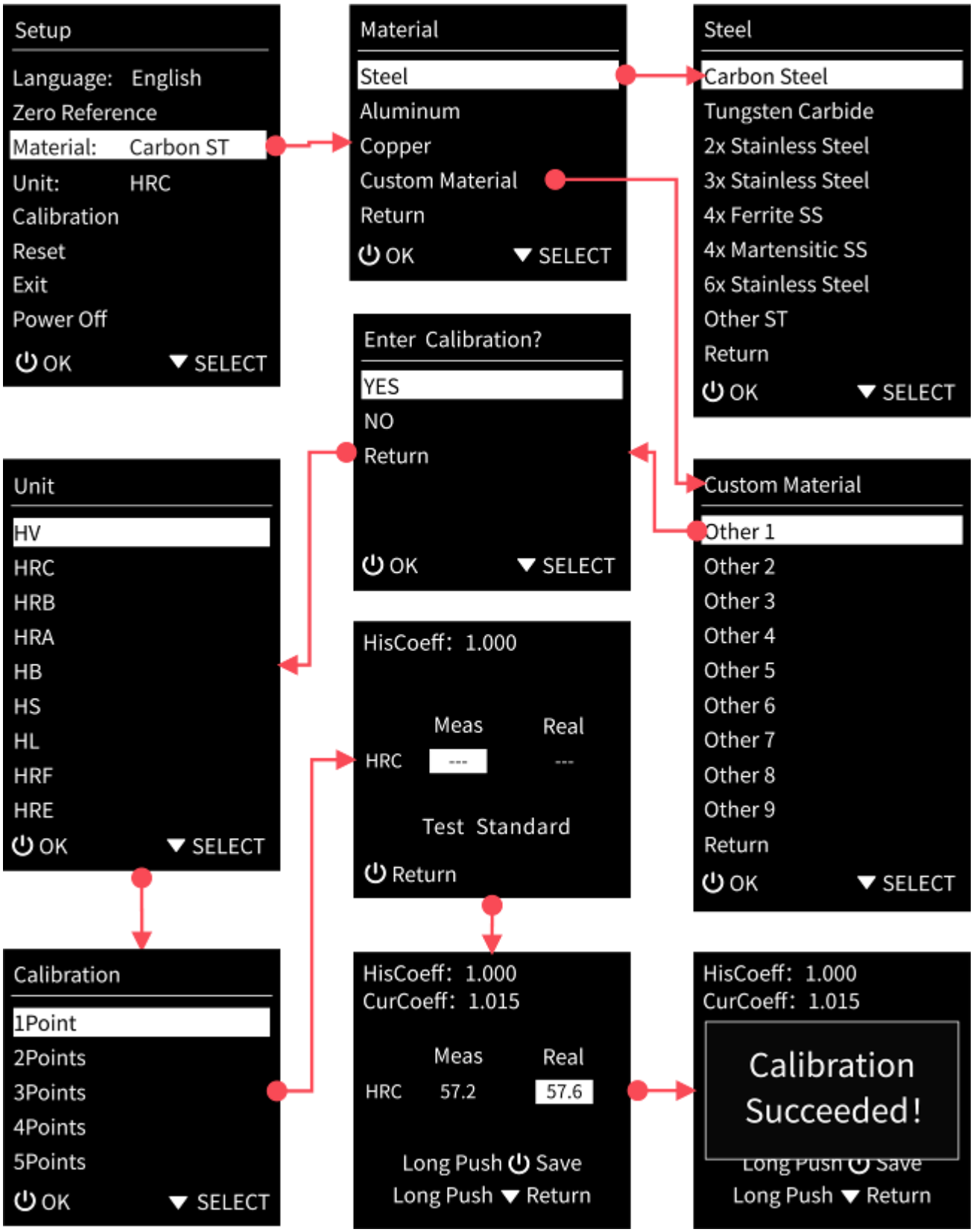
3. Setup and Calibration

Short press the button to enter the instrument [Setup], where you can perform operations such as language, zero reference, material, hardness scale, calibration, factory reset, exit, and shutdown. The button is for confirmation, and the button is for selection.

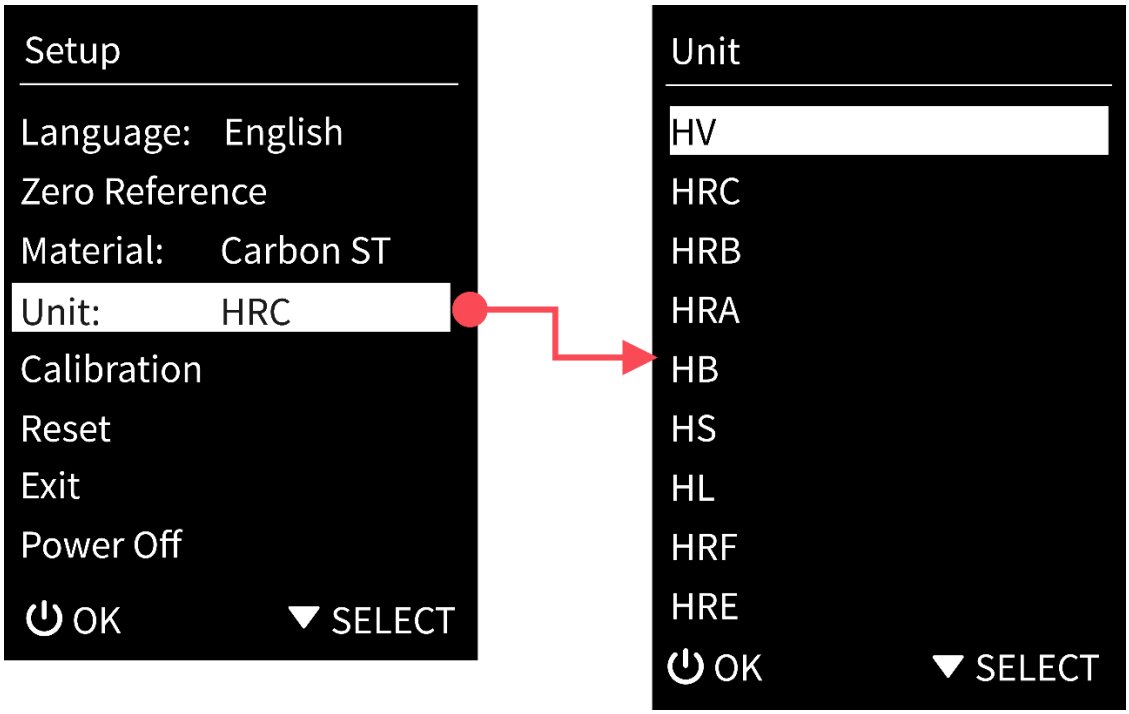
- **Zero Reference**



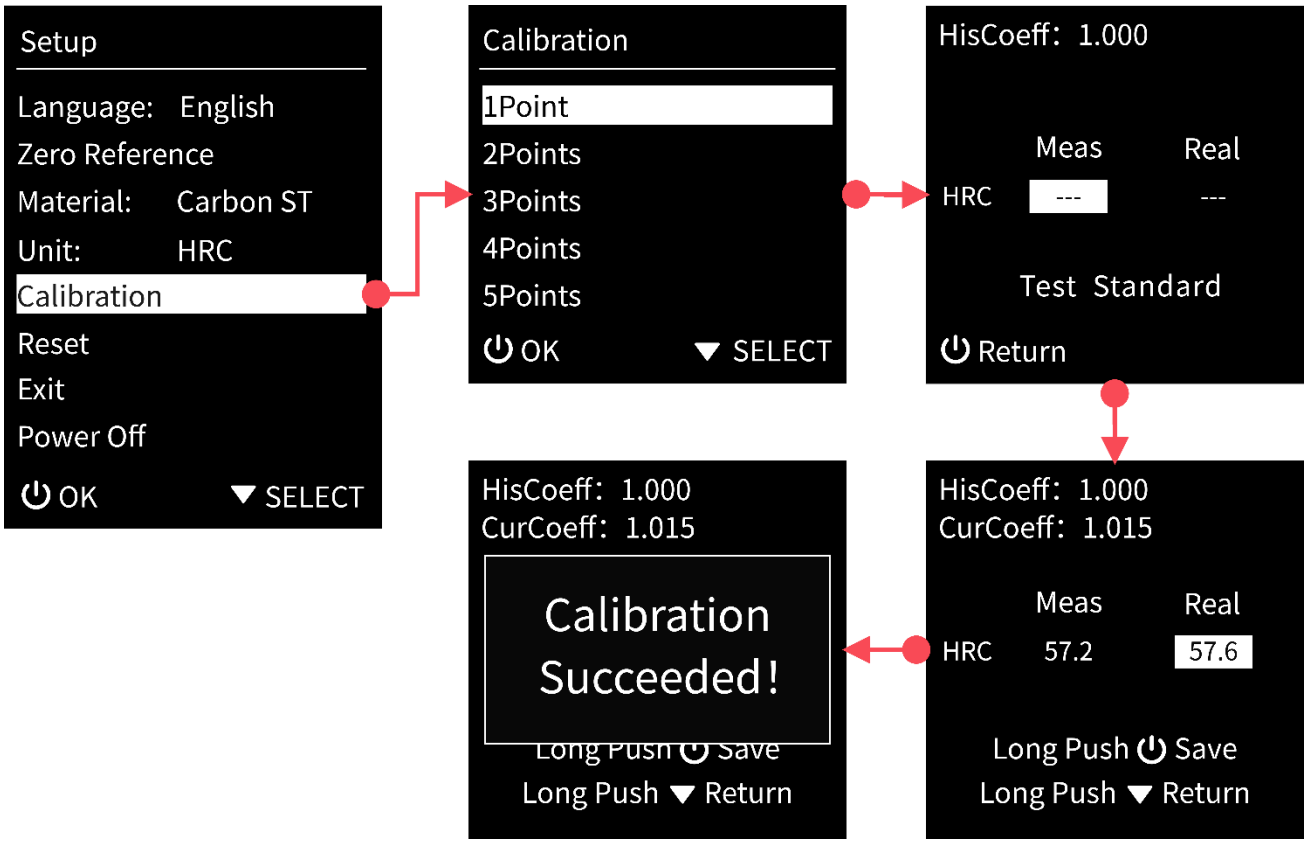
- **Material**



- **Hardness Unit**:



- **Calibration**:



Note: *Please follow the on-screen instructions. Short press* ⏻ *and* ▼ *to adjust the actual value. Long press* ⏻ *to save the calibration value.*

- **Reset:**

  Note: *When restoring to factory settings, the language item will not be restored.*

4. View measurement records

In the measurement mode, short press the ▼ button to view historical data. The instrument can store 9 sets of data in total and automatically deletes the oldest recorded value. Long press the ▼ button to display the data deletion prompt interface, and follow the prompt to delete the data.

V. Bluetooth communication

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

1) Scan the QR code on the back of the instrument, and follow the prompts to download and install the corresponding "UT and HL" APP.
2) APP Connect device: Open the APP, search for the device and establish a connection according to the prompts.

Note: ***The APP does not support iOS. Please allow all permissions when running the APP.***

VI. Attentions

1. When the instrument is turned on, the indenter should not touch any object to avoid affecting the calibration.
2. The minimum sample weight is 300g and the minimum thickness is 5mm. If the weight or thickness does not meet the requirements, it must be coupled to a firm support for testing.
3. The surface of the indenter and the sample should be clean. Surface dirt or coating will affect the measurement accuracy.
4. When measuring, the force should be steady and continuous to avoid the indenter sliding or swinging and affecting the measurement results.
5. When the indenter cover is removed, do not measure to avoid damaging the internal structure of the instrument.
6. When the battery of the instrument is empty, it should be charged in time.
7. If the instrument is not used for more than half a year, it needs to be charged regularly to prevent the battery from being over-discharged and damaged.

VII. Packing list

No.	Product Name	Quantity	Unit
1	Ultrasonic 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. Service

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.