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HTX-01

Leeb Hardness Tester

User Manual

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

I. Product Introduction

The HTX-01 detects hardness based on the Leeb hardness measurement principle and can measure the hardness of a variety of metal materials. The probe has a built-in direction sensor, which automatically compensates for the measurement error in different impact directions. The instrument has a variety of built-in hardness systems, which can be converted between Leeb (HL), Vickers (HV), Brinell (HB), Shore (HS), Rockwell (HRA), Rockwell (HRB), Rockwell (HRC) and tensile strength (σ_b). The instrument adopts an impact device D suitable for assessing the hardness of common metal materials.

II. Parameters

Probe	Impact device D
Hardness Scales	HL, HV, HB, HS, HRA, HRB, HRC
Measurement Range	HLD: (170-960), HV: (83-976), HB: (30-651), HRC: (17.6-68.5), HS: (26.4-99.5), HRB: (13.5-100), HRA: (60-85.8)
Resolution	1HL
Accuracy	± 6 HL
Repeatability	6HL
Display	240 * 16 dot matrix LCD
Power Supply	2 AA alkaline dry batteries
Host Size	142 * 72 * 28 mm
Probe Size	148 * 31 * 25 mm
Weight	247g
Working Temperature Range	-10~50°C, 0~85%RH (no condensation)
Storage Temperature Range	-10~60°C, 0~85%RH (no condensation)


III. Features

1. The tester uses advanced digital probe technology, which is not easy to interfere with and provides excellent test accuracy.
2. A Built-in direction sensor automatically compensates for the measurement error of different impact directions.
3. Provides a variety of interchangeable hardness scales.
4. QC inspection, the tester can set upper and lower limits to determine whether the material is qualified and within specific boundaries.
5. Statistics function, the tester can automatically count the maximum value, minimum value, and average of the last 9 measured values.
6. Users can calibrate the standard parts to eliminate the error.
7. Low power consumption, powered by 2 AA alkaline batteries means it can work continuously for more than 100 hours.


IV. Operation

1. Power on/off

Power on:

A short press of the  Enter button and the serial number of the tester is displayed on the screen. The instrument will then enter the measurement interface.

Power off:

A long press of the  Enter button will shut down the tester or click the “Shutdown” option in the menu.

2. Measurement

Loading:

Push down the loading sleeve of the probe to lock the impact body.

Positioning:

Press the probe firmly against the surface of the object to be measured and keep it still.

Measurement:

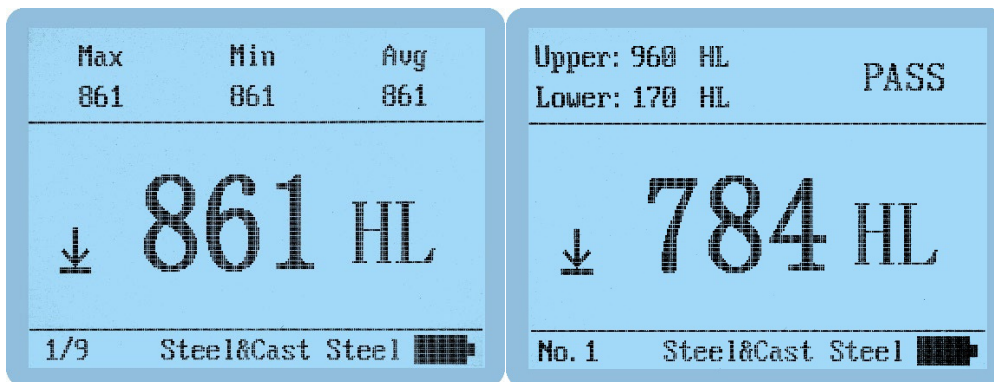
Press the release button on the top of the probe to measure the hardness of the object. There are two measurement modes:

(1) Statistics mode

The interface of statistics mode is shown below (left). The instrument displays the maximum value, minimum value, and average value of the last 9 results.

(2) QC mode





The QC mode interface is shown in the figure below (right), and the instrument judges whether the measured value is qualified according to the set upper and lower limits.




Statistics mode














QC mode















3. Setup and Calibration

Press and hold the  button for 3 seconds when off or press the  button briefly when in the measurement state to enter the Main Menu. There are seven sub-options, press the  and  briefly to select [System Setup, Hardness/Strength, Material,




Hardness, Calibration, Exit, Shutdown]. A short press of the  button will confirm the selection.

(1) System Setup







- **Language:** Short press  button or  button to enter the language option and press the  or  button to select the right language, then press  button to confirm your selection.
- **Auto power off:** short press the  button or  button to enter auto-off, short press the  or  button to select the shutdown time.
- **Mode selection:** short press the  or  button to enter the mode selection, press  button to select the measurement mode, then short press the  button to confirm.

- **Limit setting:** Limit setting is only displayed in QC mode, short press the  or  button to enter the limit setting interface. Press the  or  button to select [upper/lower limit/return]. Another short press of the  will confirm your option. short press     to modify the value and then finally, a short press of the  button to confirm the whole setting.
- **Restore factory settings:** Press the  button briefly to enter the restore factory settings interface.   button can toggle the [Yes/No] option, press the  button briefly to confirm





(2) Hardness/Strength

Short press  button to enter hardness/strength selection interface, and short press the  or  button to select [hardness/strength],







(3) Material




Short press the  button to enter the material selection interface, short press the     button to select the corresponding material, then press the  button to confirm the option and return to the setting interface.

(4) Hardness Unit

The hardness unit is only displayed in the measurement mode, press the  button briefly to enter the unit selection interface, press the  or  to select then press the  button briefly to confirm.

(5) Calibration



Short press the  button to enter the calibration interface, the screen prompts [Please measure the standard hardness block], then you can measure the standard hardness block (single or multiple times). After measurement, the cursor moves to the actual value area, then press  or  button to adjust the actual value to the standard value of the hardness block. Short press the  button to end the adjustment, and press the  or  to select [Cancel]/[Back]/[Save] options.

- Select [Cancel] and press  button briefly to return to the calibration screen and wait for the measurement again.
- Select [Back], short press  button to not save the calibration data and exit the calibration screen.
- Select [Save], press  button briefly to save the current calibration data, and exit the calibration interface.

4. History Records

In the measurement mode, press ▲ or ▼ briefly to view the historical data in the browse interface. The instrument stores 9 sets of data, with the oldest recorded value automatically deleting when there are more than 9 sets of data. Record 1 is the earliest test data. Recorded data is not lost when the instrument is turned off.

When pressing ▲ button to view the data, the data record number is increasing from the first one to the last one; when pressing ▼ button to view the data, the data record number decreases from the maximum to the minimum.

In the history view mode or measurement mode, press  button briefly and the screen will show a data deletion prompt, press  button briefly to select [Yes] to delete all recorded data.

V. Notes

1. The surface of the material must not be too rough. It needs to be flat, smooth, free of oil and grease.
2. The minimum mass of the test object is 5Kg, and the minimum thickness is 25mm. For objects whose weight and thickness do not meet the requirements, the test must be coupled with solid bracing.
3. After use, the impact body should be loosened.
4. The use of various lubricants is strictly prohibited in the impact device.
5. When measuring, the distance between any two indentations should not be less than 3mm, and the distance between the centre of the indentation and the edge of the object to be measured should not be less than 5mm.
- 6.

VI. Packing list

No.	Product Name	Quantity	Unit
1	Leeb Hardness Tester	1	Set
2	Nylon Brush	1	pcs
3	Small support ring	1	pcs
4	1.5V AA alkaline battery	2	pcs
5	User Manual	1	pcs
6	Certificate / Warranty card	1	pcs

Standards for the product:

- GB/T 13794.1 Metallic materials-Leeb hardness test-Part 1: Test method
- GB/T 13794.2 Metallic materials-Leeb hardness test-Part 2: Verification and calibration of hardness tester
- GB/T 13794.2 Metallic materials-Leeb hardness test-Part 3: Calibration of reference blocks
- GB/T 13794.4 Metallic materials-Leeb hardness test-Part 4: Tables of hardness values conversion
- JB/T 9378-2001 Industry standard of Leeb hardness tester
- JJG 747-1999 Verification regulation of Leeb hardness tester