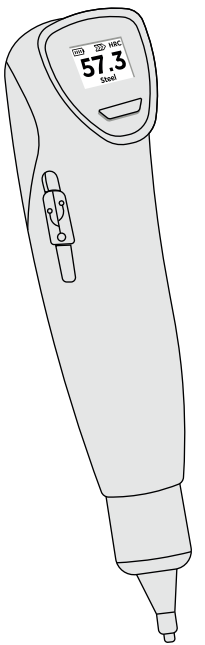
LAB UCI PRO

UCI Hardness Tester



User manual

NOVOTEST

Thank you for choosing NOVOTEST!

Please read this manual carefully before using the device.

1 Device purpose

The NOVOTEST Lab UCI Pro is a portable electronic device designed for fast and highly accurate hardness measurement of metal products using the Ultrasonic Contact Impedance (UCI) method.

2 Specifications

Scales	HV(UCI - base), HV, HB, HRC, HRB, HRA, HK, MPa
Materials	Steel, Alloy steel, Stainless steel, Cast iron, Nickel, Aluminum, Brass, Copper
Measurement uncertainty	4 %
Measurement range	0...1500 HV
Test load	HV1 (9.8 N) or HV5 (49 N), depending on the device type
Display	0.66" (64x48)
Interfaces	USB-C (charging and PC connection), Bluetooth BLE (for NOVOTEST Lab app)
Battery	Built-in lithium-ion battery, 3.7V 750mAh, Up to 24 hours of operation
Dimensions (mm)	153×40
Weight (g)	160
Compliance standards	ASTM A1038, DIN 50159, ASTM E140, ISO18265
Operating temperature range	from -20°C to +50°C

3 Safety precautions

General safety recommendations

- Use the device only for its intended purpose.
- Avoid impacts, drops, or mechanical damage.
- Protect the hardness tester from dust, moisture, and extreme temperatures.
- Do not disassemble the device or attempt to repair it yourself.

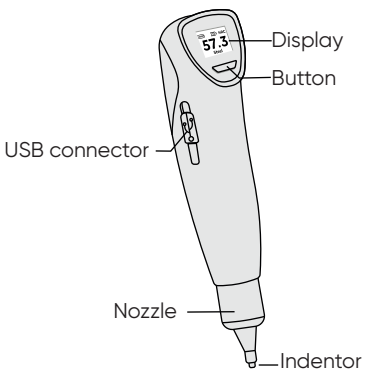
Storage conditions

- Temperature: from -25°C to +60°C
- Humidity: not more than 90%, non-condensing
- Store in a dry, well-ventilated area
- Avoid storage near chemically active substances

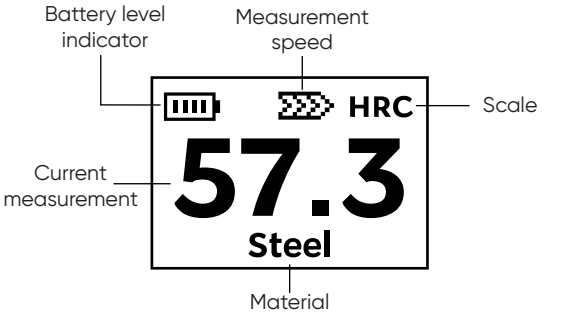
Battery requirements (Li-Ion)

- Charge via USB using the supplied charger
- Avoid deep discharge — recharge when the level reaches 20–30%
- Disconnect the device from the power supply after it is fully charged.
- Do not expose the battery to overheating (above +60°C) or freezing (below -20 °C).

4 Device overview and control elements



Symbols and indicators on the screen



Battery level indicator – a graphical icon consisting of four segments that shows the current battery charge level.

Measurement speed – an indicator of the force application speed. To achieve stable results, the force should be applied smoothly and at a moderate speed. If the speed exceeds 3 conditional units, a **FAST** message appears, indicating that the force was applied too quickly. It is recommended to maintain the speed within 1–3 units, as this range ensures the most stable measurements with minimal error.

Scale – indicates the selected hardness scale according to which the measurement is displayed (e.g., HRC, HB, HV, etc.).

Current measurement – the hardness value obtained from the most recent measurement performed by the user.

Material – the selected material type with predefined hardness conversion coefficients or calibrations.

The device periodically performs a frequency check in its initial (zero) position to account for environmental conditions and reduce the influence of air temperature on measurement results. If the indenter is in contact with any object during this check, the device cannot properly zero the frequency, and an **AIR** message will appear on the screen. In this case, you can continue witp the measurements, but it is recommended to keep the indenter free — not touching any surfaces or objects — between measurements.

5 Scope of supply

Standard package includes:

- NOVOTEST Lab UCI Pro Hardness Tester
- USB Type-C to USB Type-A Cable
- Power Adapter
- Carrying Case
- Operation manual

The standard package can be supplemented with hardness reference blocks of various scales and nominal values, special fixtures / devices for sample positioning and improved measurement accuracy, as well as a grinding tool for surface preparation before testing.

6 Operation

Operation of the device

To turn on the device, press and hold the button for approximately 2 seconds until the device powers on. A short press of the button changes the hardness scale.
Holding the button (about 1 second) changes the material.
Long pressing the button (about 3 seconds) turns off the device.

Test object requirements

To ensure the accuracy and reliability of measurements with the NOVOTEST Lab UCI Pro Hardness Tester, the test object must meet the following requirements:

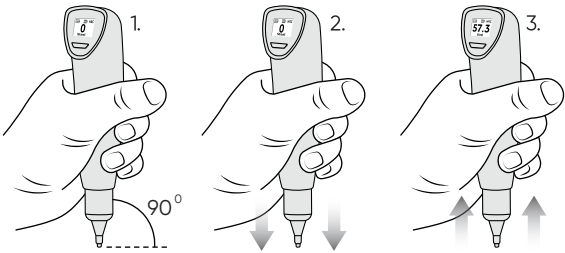
Device Type	HV1 (9.8 N)	HV5 (49 N)
Surface roughness, not worse than Ra*	5	10
Minimum thickness of the test object, mm*	1	1.5
Minimum mass of the test object, kg*	0.3	
Minimum surface curvature radius, mm	2.5	

* The values are given according to the recommendations of ASTM A1038 and may be improved when using special equipment and fixtures for hardness measurements of samples with various shapes.

Performing hardness measurement

1. Position the hardness tester perpendicular to the surface of the test object.
2. Apply pressure smoothly (for at least 0.5 seconds), maintaining perpendicularity and avoiding any tilting or shaking.
3. Once the hardness value result appears on the device, release the pressure.
4. Before the next measurement, move the probe at least 2 mm from the previous point.

It is recommended to evaluate hardness based on the average of a series of 5 or more measurements.



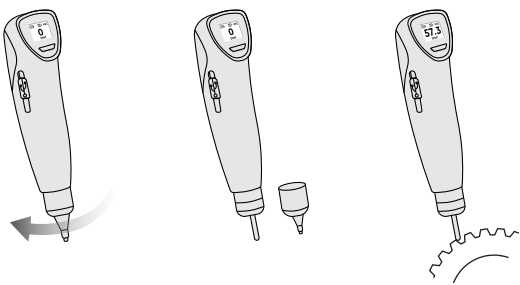
Sudden pressing or shifting of the probe is not allowed – this may lead to exceeding the permissible error margin and cause chipping of the diamond indenter.

The best stability and repeatability of measurement results are achieved when the indenter is positioned perpendicular to the surface, with no displacement or vibration during load application, and when the load is applied smoothly and evenly without jerks. Failure to follow these requirements may lead to unstable or inaccurate measurement results.

Measurements in hard-to-reach areas

For hardness testing in hard-to-reach areas such as grooves, gear teeth, internal hole surfaces, and other complex zones, it is possible to remove the standard nozzle and use the tester without it.

In this operating mode, the device must be handled with care, as impacts or drops may damage the indenter rod, affecting measurement accuracy and overall device performance.



Battery charging

To charge the battery, connect the power adapter from the device package to the USB port located under the rubber cover.

It is also permissible to use other chargers that comply with the USB standard.

Disconnect the device from the power supply after it is fully charged.

Operation with NOVOTEST Lab

To ensure full functionality of the device, you need to install the NOVOTEST Lab application on an Android-based device. The app provides access to the following features:

- Device calibration – precise adjustment according to reference samples and user requirements.
- Measurement archive – saving results with options for review and synchronization with cloud storage.
- Data analysis and processing – viewing, filtering, and exporting measurements in a convenient format.
- Flexible parameter settings – selecting hardness scale, material type, display mode, and more.
- Data transfer to other devices – export of measurement results.
- Firmware updates and additional features.

Download and install the NOVOTEST Lab app from the official Google Play Store to make full use of the device's capabilities.

7 Troubleshooting guide

Issue	Possible Cause	Solution
Device does not turn on	Battery is discharged	Connect the device to the charger and check the battery level
	Physical damage to the button	Inspect the device housing; contact a service center if necessary
Incorrect or unstable measurement results	Dirty indenter	Clean the indenter from dirt
	Improper measurement technique	Ensure measurements are performed according to Section 6 of this manualy
	Test object does not meet requirements	Verify compliance with requirements as described in Section 6
	Device is not calibrated	Perform calibration of the device
Device not connecting to NOVOTEST Lab app	Bluetooth is disabled on the device	Enable Bluetooth on your Android device
	Device is connected to another instrument	Disconnect the device from the other instrument
	Tester is connected to another Android device	Disconnect the tester from the other Android device

8 Warranty and service

NOVOTEST products are covered by a 1-year warranty. If a component fails due to a material or manufacturing defect, it will be repaired or replaced free of charge.
Spare parts replaced during warranty service remain covered until the end of the device's original warranty period.

The warranty does not cover normal wear and tear, damage caused by improper use, device modification, or the use of non-original spare parts.

NOVOTEST LLC

5 Spasskaya Street,

Samar, 51200, Ukraine

Phone / WhatsApp: +38 067 513 2094

E-mail: sales@novotest.biz

www.novotest.biz