

1 Introduction to functional modules



2 Measurement module introduction



All setting is done. Start your measurement now!

3 Data manager



4 Customer Service Module



5 User management module



6 System setting module



TIME®5370 Smart Leeb Hardness Tester

The TIME5370 Leeb hardness tester is an intelligent Leeb hardness tester that relies on the "TIME Industrial Intelligent Testing Internet of Things Platform". It is the first step from the development of traditional portable instruments to the establishment of the TIME Intelligent Measurement System.

The product consists of one mobile phone and one smart Leeb probe, and the two communicate wirelessly through Bluetooth. The product combines the advantages of split and integrated Leeb hardness testers.

The smart phone with its own software, hardware, and network advantages can realize the function of a powerful Leeb hardness tester host. As an intelligent measurement terminal, it can also connect to the Internet of Things platform.

The design of the smart probe is focused on measurement, and a number of new technologies have been introduced in the product design. When equipped with a small support ring, it can partially replace the D+15 impact device, which is more suitable for measuring work pieces in grooves or concave surfaces; small size, no sensor cable, easy to carry and operate; wireless charging technology; remote software upgrade; high reliability.

The product has applied for one appearance patent and one utility model patent.

Working principle

The impact body of the specified quality is used to impact the surface of the sample at a certain speed under the action of elastic force, and the Leeb hardness value is calculated by the ratio of the rebound speed of the impact body at a distance of 1 mm from the surface of the sample to the impact speed. It is calculated as follows:

$$HL=1000 \times VB / VA$$

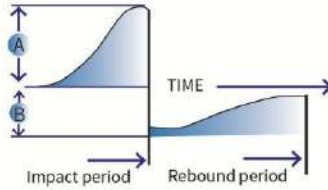
式中:

HL—Leeb hardness value

VB—the rebound speed

VA—the impact speed

The output signals of the impact device is as follows:



Technical parameters

- Impact device: type D
- The features and measuring requirements of the impact device are shown in Table 1, and the size of the indentation is shown in Table 2.

表1

Feature	Parameter
Impact energy	11mJ
Mass of impact body	5.5g
Test tip hardness	≥1600HV
Test tip diameter	3mm
Test tip material	Tungsten carbide
Max. hardness of sample	1600±100HV2
Roughness of sample surface Ra	≤1.6μm
Min. weight of sample	
Measure directly	>5kg
Need support firmly	2~5kg
Need coupling tightly	0.05~2kg
Min. thickness of sample	
Measure directly	>5mm
Need coupling tightly	≤5mm
Min. depth of hardened layer	0.8mm

表2

Hardness	Feature	Parameter
300HV	Indentation diameter	0.54mm
	Indentation depth	24μm
600HV	Indentation diameter	0.54mm
	Indentation depth	17μm
800HV	Indentation diameter	0.35mm
	Indentation depth	10μm

- Accuracy and repeatability of displayed value, see Table 3
- Measuring range: 170~950HLD
- Measuring directions: 360°

表3

Standard Leeb hardness block	Accuracy of displayed value	Repeatability of displayed value
790±40HLD	±6 HLD	6 HLD
530±40HLD	±10 HLD	10 HLD

- Display: mobile APP terminal
- Work voltage: 3.7V
- Charging: wireless charging
- Charging power:
- Charging time: about 3 hours

- Continuous work: ≥24h
- Wireless communication interface: Bluetooth 4.2
- Dimensions: 158mm×40mm×25mm
- Weight: 85g

Product features

- The product is composed of a smart phone and a smart probe, and the two are connected wirelessly via Bluetooth
- The hardness value measured by the smart probe can be wirelessly transmitted to the smart phone in real time
- The smart phone with the TIME Smart Testing APP (hereinafter referred to as APP), receives the measurement value and realizes other functions of the Leeb hardness tester.
- The APP assists users in quality management and after-sales service through the following six modules.
 - 1) Measure: measure and save; real-time display and voice broadcast of measurement data; data displayed in list, graph and other forms. Share current data anytime, anywhere in real time.
 - 2) Data: trace historical data. You can query historical data; create worksheets and reports with graphics, video, text, and measurement data.
 - 3) Customer: apply for after-sales service; one-key calling; the service is by your side.
 - 4) Device: manage the devices.
 - 5) User info: manage user information and user permissions.
 - 6) Setting: auxiliary measurement settings, software upgrades and other functions.
- The smart probe has good portability, small size, with a lanyard.
- The smart probe uses built-in rechargeable lithium battery, which can be charged indefinitely.
- The smart probe is IP54 dustproof and waterproof, which can adapt to the harsh environment; it has passed the system atic third-party reliability test.
- The software of the smart probe can be upgraded remotely
- The smart phone can be connected to the "TIME Industrial Intelligent Testing Internet of Things Platform" to achieve richer functions.
 - Automatically identify common impact directions
 - Preset upper and lower limits and alarm when out of the limits, which is convenient for batch tests.
 - With self-define material function, users can generate exclusive hardness conversion table through comparison test.
 - Can switch to foreign hardness conversion table
 - Measurement records can add pictures, videos, positioning and other types of additional information.
 - Rich post-data processing can be realized, such as cloud storage, customized work sheets, real-time data sharing, report generation, etc.
 - Automatic shutdown, and the duration of automatic shutdown is adjustable.

Specifications

5.1 Basic configuration

- TIME Smart Test APP
- Small support ring 1pc
- Cleaning brush 1pc
- Wireless charger 1pc
- Lanyard 1pc

5.2 Choice disposition

- Industrial smart phone
- Leeb hardness block
- Optional support rings

TIME Industrial Intelligent Testing Internet of Things Platform



Real-time measurement data

Bluetooth wireless transmission; real-time data output to the mobile phone APP; measured values are displayed in lists, graphs and statistical values; support voice broadcast.



Real-time data sharing

Real-time data sharing anytime and anywhere. You can collaborate with people in any location and share real-time data on site.



Automatically record measurement data

Automatically record measurement data; easily create, manage and access measurement records; pictures, videos, tests and etc. help trace quality management process.



Service by your side

One-key calling, quick submission of reports, service by your side.



Predictive maintenance

Implement predictive maintenance through analysis of collected data.



IP54 protection

IP54 protection