

CMX1000 User manual

Introduction

Description

The tester adopts a 160*128 dot matrix LCD screen display, which is rich in overall functions and easy to operate. The interface can display the current Leeb hardness value in real time, the Leeb average value of the current measurement group, the current hardness conversion value, and the current hardness conversion average value. Current measurement direction, conversion material code, you can get most of the measurement information and function settings in the main interface, built-in wireless printing function, can be matched with wireless printer to print measurement reports, the overall design of the instrument has low power consumption, using 3 sections 7 It is powered by a battery, the impact device and the host are connected by Remo head, which is convenient and durable for plugging and unplugging, and the failure rate of the instrument is low.

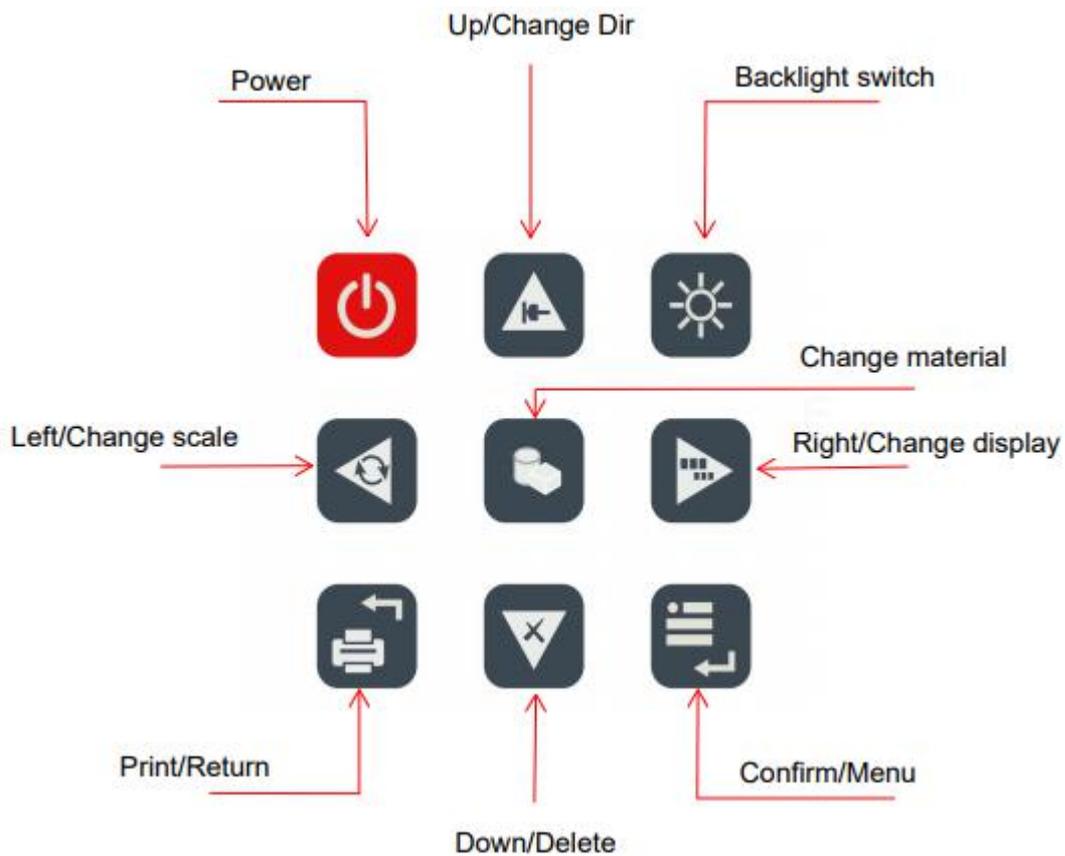
Main feature

1. High precision: $\pm 6\text{HLD}$
2. Standard D-type impact device, optional multiple impact devices.
3. Optional wireless printing function.
4. Low power design, Battery power.
5. Standard hardness block.
6. Applicable standards: GB/T17394, GB/T1172, ASTM A956 & DIN 50156

Technical Parameters

Impact type	D, DC, DL, D+15, C, G	Scalas	HV, HB, HRA, HRB, HRC, HSD, MPA
Accuracy	±6HL	statistics	Avg
Display	160*128 TFT LCD	Connection	TYPE-C USB
Data	500 pieces of data	Print	Wireless printing (optional)
Power	3*AAA		
Punch material	Tungsten carbide ball		
Weight	230g		
Sizes	154*82*26mm		
Operating temperature	-10~40°C (14°F~104°F)		
Storage temperature	-30~80°C (-22°F~176°F)		

Bottom





1. Main interface display and key functions

Up arrow key: switch the direction of the value.

Down arrow key: delete the current measurement value

Ruler key: switch the ruler of the current material.

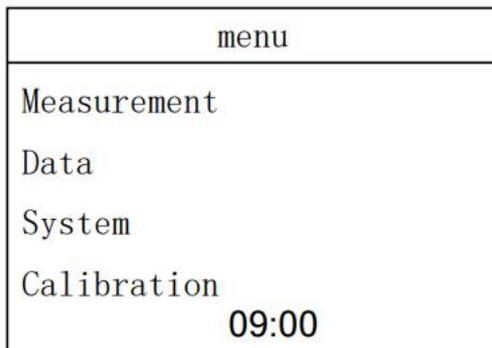
Material key: switch material.

Switch key: Switch the main display between Richter value and scale conversion value.

Print key: wirelessly print the current test value.

Menu key: Enter the main menu.

Backlight key: switch the Backlight.



2. Main menu display and main functions

Measurement: fine adjustments for measurement.

Data: browse, print, or upload the stored data.

System: adjust the usage environment.

Calibration: Carry out product calibration.

3.Measurement menu display and function

Measurement	
Material	Points
Scale	Tolerance
Impact dir	Groups

Material: The material selection of the current impact device.

Scale: The scale selection of the current material.

Impact dir: Switch the direction of impact of the impact device.

Points: Set the number of measurement values to be saved as a group.

Tolerance: set the allowable range of the hitting value or alarm.

Groups: Give the work piece the current measured value.

4.1. Data menu display and function

Data	
Browse	Upload
Print all	Delete all
Print data	Delete data

Browse: View the specific information of the saved data.

Upload: Upload all currently saved data to the computer.

Print all: Print all the data currently saved.

Print data: Print the required part of the currently saved data.

Delete all: Delete all the currently saved data.

Delete data: Delete part of the currently saved data.

001/125		
No.	Value	Dir
001	777 D	↓
002	776 D	↓
003	775 D	↓
004	778 D	↓
005	776 D	↓

001/125		
No.	Value	Dir
001	2021-01-15 09:00 steel&cast steel 57.6 HRC	↓
002		↓
003		↓
004	778 D	↓
005	776 D	↓

4.2. Browse menu view method

After entering the browsing interface, press up and down key to select the number of pages, press enter the current data page, press the up and down keys to select the desired to view the data of specific information, press the enter key to enter.

5. System menu display and function

System	
Time/Data	Backlight
Language	Power off
Sensor type	Information

Time: Set the system time and press the confirm key to save.

Language: switch between Chinese or English display.

Sensor type: switch the sensor type manually or automatically.

Backlight: Set the backlight on and off and the screen rest time.

Power off: Set the time for automatic shutdown when there is no operation.

Information: Check the machine serial number and software version.

HL

Cal scale			
HL	HB	HRB	HV
HRC	HSD	HRA	

Cal material	
Steel & Cast Steel	
Alloy Roll Steel	
Stainless Steel	
Grey Cast Iron	
Ductile Iron	1/2

6.1. Calibration menu display and function

Enter the calibration, first select the need to calibrate. Then select the material of the calibration block to enter the calibration interface.

6.2. Specific calibration process

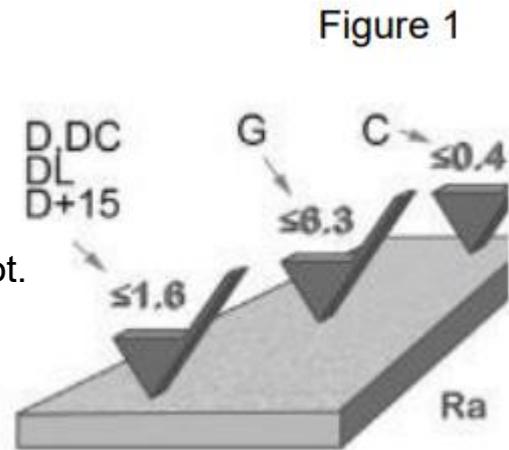
Calibration
000 HLD
0/5

After entering the calibration interface, hit the five-point pole. After a calibration value of no more than 6, enter the value of the corresponding calibration block, press Confirm key to complete the calibration, if the current calibration value entered is not suitable, you can delete the current calibration value by clicking the arrow keys, and re-enter the new calibration value.

7. Test

7.1 Instrument preparation

- ① Connect: Connect the impact device and the digital display device with the sensor wire.
- ② Power: The battery should be replaced when the battery is used for the first time.
- ③ Open the power: Press the power button to boot.
- ④ The accuracy of the hardness tester should be verified when it is used for the first time. The error can be calibrated if appear error.



7.2 Specimen preparation

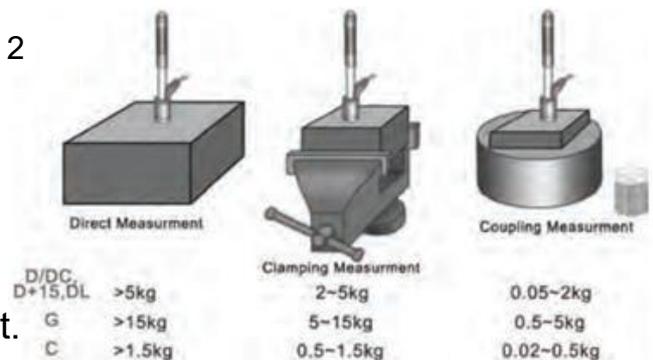
Improper sample conditions will often cause serious distortion of the measurement results, so it should be based on The original condition of the sample is subjected to the necessary processing and preparation work.

The preparation of samples and experimental surfaces should meet the following basic requirements:

- ① In the process of preparing the sample surface, try to avoid the influence of cold and hot processing on the surface of the sample.
- ② The test surface of the sample is preferably flat, and the test surface should have metallic luster, and there should be no dirt such as oxide scale.

③ The surface roughness requirements of the test surface are shown in Figure 1.

④ The sample must have sufficient quality and rigidity, as shown in Figure 2, For styles with a mass less than 0.05kg, Leeb hardness should not be used Test method to test.



- ⑤ The sample should have sufficient thickness and sufficient surface homogeneous layer, Requirements as shown in Figure 3.
- ⑥ When the test surface of the sample is not flat, the surface curvature radius of the test point and the adjacent area should be greater than 30mm. And should choose suitable support ring. ...

Coupling method

Prepare a flat and clean surface on the back of the test surface of the sample as a supporting surface, and evenly attach a small amount of couplant (the amount of industrial petroleum jelly that can be used should be greater than 5 kg).

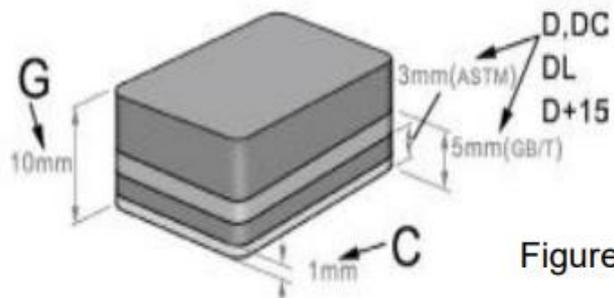


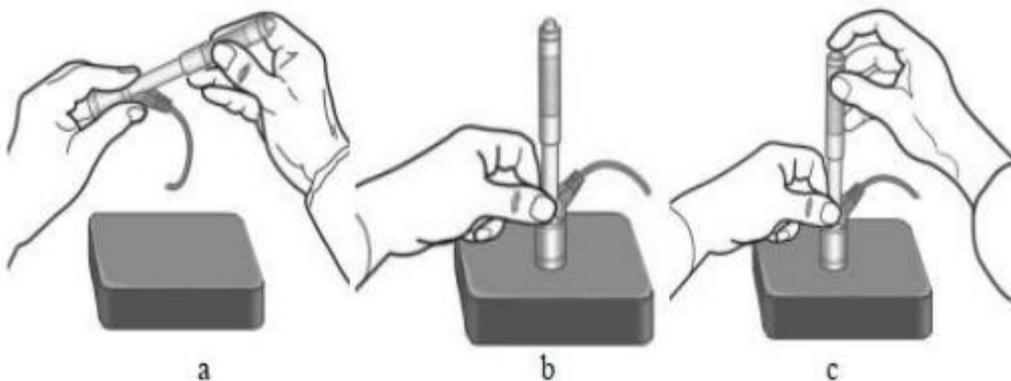
Figure 3

Experimental procedure

- ① Load, as shown in figure a.
- ② Positioning Place the hardness tester on the test point of the sample and press it tightly, as shown in Figure b.
- ③ Impact Press the release button, as shown in Figure c.
- ④ Read the hardness value.

Note: Usually 5 tests can be carried out for each sample,

The difference (extreme difference) between the maximum value and the minimum value should not exceed 12HL. The distance between the two impact points should not be less than 3mm, and the distance between the impact point and the edge of the specimen should also be greater than or equal to 3mm.



8.1 Appendix 1

Material		Scales	
Steel & Cast Steel	Low Carbon Steel	HRA	Mpa
Alloy Steel	High Carbon Steel	HRB	
Stainless Steel	Chrome Steel	HRC	
Grey Cast Iron	Cr-V Steel	HB	
Ductile Iron	Cr-Ni Steel	HV	
Cast Al Alloys	Cr-Mo Steel	HSD	
Brass	Ce-Ni-Mo Steel		
Bronze	Cr-Mn-Si Steel		
Copper	Hi Strength Steel		
Forging Steel			

8.2 Appendix 2

D-type conversion range of different materials

Material	HV	HB	HRA	HRB	HRC	HSD	Mpa
Steel&Cast Steel	83-976	140-651	60.2-85.5	59.6-99.6	19.8-68.5	26.4-99.5	
Alloy Tool Steel	80-898	140-651		59.6-99.6	20.4-67.1		
Stainless Steel	85-802	85-655		46.5-101.7	19.6-62.4		
Grey Cast Iron		63-336					
Ductile Iron		140-387					
Cast Al Alloys		30-159		23.8-84.6			
Cu-Zn Alloys		40-173		13.5-95.3			
Cu-Sn Alloys		60-290					
Copper		45-315					
Forging Steel	83-976	142-651		59.6-99.6	19.8-68.5	26.4-99.5	

C-type conversion range of different materials

Material	HV	HB	HRA	HRB	HRC	HSD	Mpa
Steel&Cast Steel	80-996	80-683			20.0-69.5	31.9-102.3	
Alloy Tool Steel	80-996	80-683			20.0-69.5	31.9-102.3	
Stainless Steel	80-996	80-683			20.0-69.5	31.9-102.3	

G-type conversion range of different materials

Material	HV	HB	HRA	HRB	HRC	HSD	Mpa
Steel&Cast Steel		90-646		47.7-99.9			
Grey Cast Iron		92-326					
Ductile Iron		127-364					

Mpa conversion range of different materials

Material	HV	HB	HRA	HRB	HRC	HSD	Mpa
Low Carbon Steel							375-788
Hi Carbon Steel							774-1710
Chrome Steel							742-1845
Cr-V Steel							736-2026
Cr-Ni Steel							782-2058
Cr-Mo Steel							747-1888
Cr-Ni-Mo Steel							850-1947
Cr-Mn-Si Steel							781-2045
Hi Strength Steel							1170-2639
Stainless Steel							740-1725