

Digital Force Gauge

User Manual

V1.1.1



A-1



B-1



C-1



C-2



C-3



C-4

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Safety precautions

Please read this document carefully before using the instrument to avoid operating errors, damage to the instrument or serious accidents.

Precautions

- Please operate the instrument correctly and use it under the conditions specified in the technical parameter table.
- Do not disassemble or modify the instrument without permission to avoid permanent failure of the instrument.
- When testing the shock load, please select a model whose maximum load value is twice as large as the test shock load.
- Do not use jigs that are damaged or severely bent. For self-made fixtures, please refer to the relevant dimension parameters in this manual.
- Do not use damaged or deformed hooks and test connectors.
- Do not use the instrument with over-range load, otherwise the sensor may be permanently damaged.
- The instrument is used to measure push and pull force. Do not apply force in the direction of bending or tightening the measuring rod.
- When cleaning the instrument, please immerse a soft cloth in water soaked in detergent, wring out the water, and then wipe the instrument.

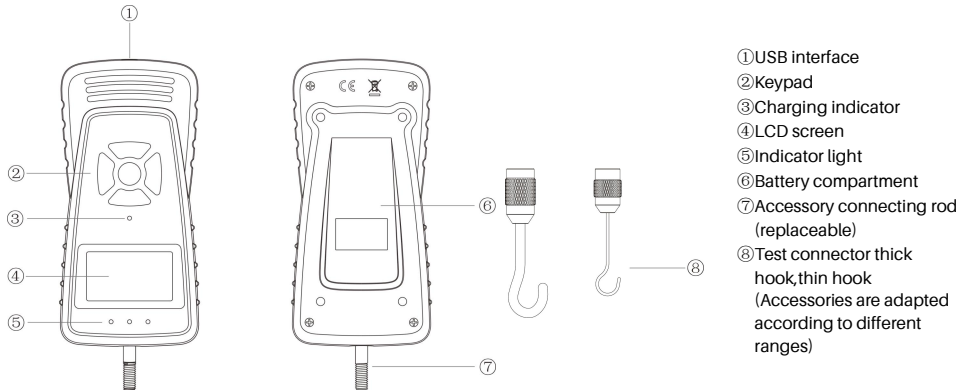
Safety Precautions

- When conducting destructive tests, please wear protective tools to avoid the splashes generated during the test from hurting the testers.
- Please use the matching charger for charging, so as not to cause the circuit failure of the instrument.
- Do not use a power supply other than the rated voltage of the charger, otherwise it may cause electric shock or fire.
- Do not plug or unplug the charger with wet hands to avoid electric shock.
- Do not pull out the plug by pulling the power cord of the charger, in order to avoid electric shock from being pulled off the power cord.
- Do not operate the instrument in a humid, dusty, oily and chemical environment, or in an environment with vibration sources around.

1. Product overview

This product is a mechanical measuring instrument for pushing and pulling force testing. Force test and failure test, etc.

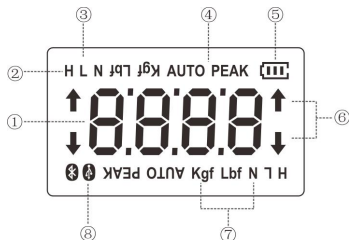
2. Product structure



Key Description

BUTTON	Function
UNIT	Switch the machine, switch the display unit, confirm, save
▲ PEAK	Switch measurement mode, page forward, increase value
LIGHT ▼	Switch backlight, Scroll back, decrease value
◀ SET	Enter menu, return
▶ ZERO	Move the cursor (the selected number flashes), restore the factory settings, switch the setting unit

LCD



① Measured value

② Over-limit prompt, the measured value is greater than the upper limit of the alarm

③ Over-limit prompt, the measured value is less than the alarm lower limit

④ Measurement mode (PEAK, AUTO PEAK)

⑤ Battery level reminder

⑥ Push and pull direction sign (↑ indicates push force; ↓ indicates pull force)

⑦ Unit

⑧ USB connection prompt

3. Technical parameter table

Model		A-1	B-1	C-1	C-2	C-3	C-4
Maximum load value	N	10	50	100	200	300	500
	kgf	1	5	10	20	30	50
	Lbf	2.2	11	22	45	65	110
Load Graduation value	N	0.001	0.01	0.1			
	kgf	0.001	0.001	0.01			
	Lbf	0.001	0.001(< 10Lbf) 0.01(≥ 10Lbf)	0.1			
Sensor		Built-in					
Indication Error		±0.5%					
Operating Environment		Temperature: -10~60℃; Humidity: ≤85%RH (no vibration source and corrosive medium around)					
Storage Environment		Temperature: -10~60℃; Humidity: ≤85%RH					
Power Supply		Built-in lithium battery					
Protection Class		IP20					
Shell Material		ABS; PC					
Dimensions/Weight		140*68*34mm; about 236g (including lithium battery)					

4. Function and operation

4.1 Charging

The instrument has a built-in lithium battery, which can be connected to USB for charging. When charging in the off state, the instrument prompts as shown below:

Note: When the instrument prompts "  ", please charge it in time.



Description of the charging indicator

Charging status	Indicator
Charging	Red
Charging completed	Green

4.2 Switch the machine on and off

Long press the "  UNIT" key to turn the instrument on or off.

Note: The instrument automatically shuts down in 10 minutes without any key operation by default (shutdown time can be set).

4.3 Backlight

The instrument can only control the backlight by short pressing the backlight key in the measurement mode.

4.4 Measurement mode

Short press the "  PEAK" key to switch the measurement mode.

(1) Real-time measurement: Display real-time measurement value (default measurement mode).

(2) Peak measurement (PEAK): Display the maximum measurement peak value, and the displayed value changes according to

the real-time measurement results.

(3) Automatic peak measurement (AUTO PEAK): Displays the peak value measured in a period of time, and refreshes it every 5s.

4.5 Switch units

Short press the "UNIT" key to switch the units Kgf (kilogram force), Lbf (pound force) and N (newton).

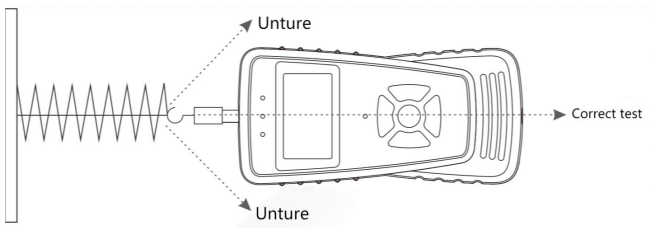
Note: The default unit is N.

4.6 Measurement method

Step 1: Power on and select the appropriate measurement mode.

Step 2: Install the appropriate test connectors and fixtures on the instrument. When installing, the test connector should be tightened to the connecting rod, and the test connector should cover the threaded part as much as possible.

Step 3: Hold the instrument firmly (or install the instrument on the test bench). During the test, the force under test should be aligned with the push-pull rod of the instrument in order to measure the accurate load value, as shown in the figure below:



Note:

In order to ensure the accuracy of the measurement, use a thin hook if it is less than 10N, and use a thick hook if it is greater than or equal to 10N.

Step 4: After the test is completed, remove the test load and shut down.

4.7 Alarm prompt

➤ **Over range alarm**

When the measured value exceeds the maximum load of the instrument, the instrument emits a beeping sound of "di.di.di. ". At this time, it is necessary to release or reduce the load as soon as possible to avoid damage to the instrument.

➤ **Overrun alarm**

When the measured value exceeds the upper and lower limits, the instrument triggers an alarm.

Alarm Condition	Screen	Beep	Indicator
The measured value exceeds the upper limit.	Prompt "H"	Long beep	Red (+NG)
The measured value exceeds the lower limit	Prompt "L"	None	Red (-NG)

Note: When the measured value is normal, the green (OK) indicator lights up.

4.8 Menu description

Long press the "◀ SET" button on the measurement interface to enter the menu. In the menu interface, short press the "▲ PEAK, LIGHT ▼" key to switch the menu; short press the "◀ SET" key to return to the measurement interface.

➤ Alarm upper limit value

In the interface shown in the figure below, short press the "⏻ UNIT" key to enter the setting interface.



Short press the "► ZERO" key (to move the cursor) and the "▲ PEAK, LIGHT ▼" key (to adjust the value) to set the integer part of the upper limit of the alarm; After completion, short press the "⏻ UNIT" key to set the value after the decimal point, as shown in the following figure:



After all settings are completed, short press the "⏻ UNIT" key to save.

Note:

- The upper limit of the alarm defaults to the maximum load value of the instrument, the unit is N.
- During the setting process, short press the "◀ SET" button to return to the previous step; long press the "◀ SET" button to return to the menu interface; long press the "► ZERO" button to switch the setting unit.
- When the current setting value is unavailable, the screen will prompt "Err".

➤ **Lower alarm limit**

The setting method is the same as the alarm upper limit value.



Note: The default alarm lower limit value is 0, the unit is N.

➤ **Gravitational acceleration**

The gravitational acceleration value can be set according to the location.

In the interface shown in the figure below, short press the "UNIT" key to enter the setting interface.



After entering, you can press "► ZERO" key and "▲ PEAK, LIGHT ▼" key to adjust the value. After the setting is completed, short press the "UNIT" key to save.

Note: The default value is 9.800, and the setting range is 9.700~9.999.

➤ **Automatic shutdown time**

The setting method is the same as the gravitational acceleration.



Note: The setting range is 0~99 minutes. When the value is set to 00, the instrument cancels the automatic shutdown.

➤ **Screen display orientation**

In the interface shown in the figure below, short press the "⏻ UNIT" key to enter the setting interface.



After entering, you can press the "▲ PEAK, LIGHT ▼" key to switch the setting options.



Screen display up



Screen display down



Automatically adjust screen orientation based on usage

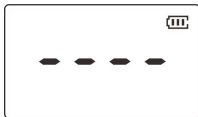
5. Check the instrument version number

When the LCD is fully displayed, short press the "◀ SET, ▶ ZERO" keys at the same time, the screen will display the instrument version number. Please refer to the actual display for the version number. The following figure is for illustration only.



6. Factory reset

When the instrument version number is displayed on the screen, long press the "▶ ZERO" key to restore the factory settings, as shown in the following figure:



Note: Factory reset will delete all user settings, please operate with caution.

7. Common problems and solutions

Problem	Cause	Solution
Won't turn on	Battery is too low	Plug in USB to charge
Unable to charge	Charger specifications do not match	Use the matching charger to charge
Parameter confusion	setting error	restore factory settings

8. Outline and installation dimensions

