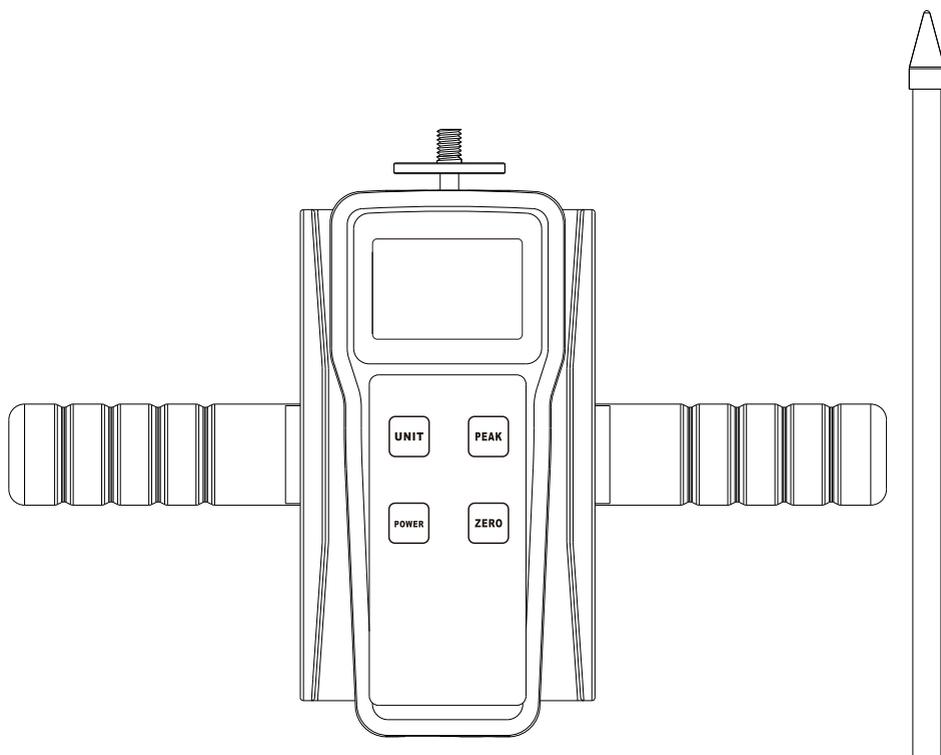


# SOIL HARDNESS TESTER

## FM-204TR



# User's Manual

Thank you for buying this instrument. This instruction manual briefly introduces the parameters of this machine, so that you can operate more quickly and conveniently, please read this instruction manual carefully before using, and keep it properly for re-reading.

## 1. Parameter

Display mode: LCD LCD

Measuring range: 0~1000N/cm<sup>2</sup> (Kg, Newton and pound three units in the instrument can be automatically converted)

Measuring depth: 0-450mm

Probe rod plus probe length: 25cm

Weight (excluding battery): instrument 390g, handle 260g, probe rod 105g.

Resolution: 1N/ word

Temperature drift: 0.2UV /°C (0-60°C); Zero drift: ≤ 0.1%/8 hours /FS

Power supply: 2 AA batteries

## 2. Characteristics

- It can be connected to the computer test, on which the test force curve diagram and the detailed test force record in the test process are displayed synchronously.
- Super memory storage function: Super memory storage function -- can store 896 test values.
- Large LCD display with backlight function.
- Setting of automatic shutdown time: setting of automatic shutdown time -- automatic shutdown can be set from 10 minutes to 90 minutes.
- Battery capacity display: divided into 3 cells, 2 cells and 1 cell, the instrument automatically shuts down when the power is too low.

## 3. Operating

3.1 First, level the soil surface to be measured, and then insert the tip part of the device into the soil (insertion depth according to customer needs).

3.2 Pull out the soil hardness tester vertically and read the hardness indication value from the table.

3.3 Reading the measured value is completed.

## 4. Calibration

Press the "Memory" button for a long time and press the "Power on" button until a row of numbers is displayed on the machine. Press the "Set" button to display "FULL", then a row of numbers is displayed. Hang the corresponding weight of FULL range, press the "Set" button after stability, automatic shutdown, calibration is finished, calibration data is stored in the instrument. If the correction value is wrong, long press the "Set" key to restore the factory Settings; Long press the "Save" key to return to the last correction state.

## **5. Setting of gravity acceleration value**

The user of the machine can input the value of gravity acceleration. Press and hold the "peak" button and press the "Start" button to enter gravity acceleration value setting interface, input the new gravity acceleration value, press the "Set" key system shutdown. Reboot and use.

## **6. storage (memory) data**

### **1. Store data**

In PEAK state, after the test is completed, press the "AUTO PEAK" key and the data will be stored. The word "MEM" will be displayed on the display screen. The stored memory data can also be saved after the shutdown. When using the "memory" key to view the memory data, "MEM" flashes, the number of memory first appears, and the memory value automatically appears 2 seconds later. Press "peak" key to exit memory directly into the test. Data can also be entered into a computer for analysis. Machine storable 896 data points. When O.E is displayed, it indicates that the 896 th data cannot be saved.

### **2. Memory removal**

In general load display state, press the "clear" button for more than four seconds, all the memory data will be cleared, "MEM" words disappear. This machine can be connected to the computer, the test data input computer. View and print test times, average value, maximum value, minimum value and judge whether the test results meet the setting requirements.

## **7. Export to computer**

1. synchronous test software can be connected to the computer test, the computer synchronously display test force curve and test process detailed test force records, and can be saved,

Print, do all kinds of analysis (optional functions see cd-rom information).

2. Automatic storage of test value function In the state of "AUTO PEAK", the instrument will automatically store the test PEAK value, press the "Memory" key to view the stored data, or import the data into the computer through the "Data Export program" on the supporting CD. Program will automatically according to the maximum, minimum, average, deviation, qualified qualified qualified maximum, minimum, average, the number of tests, the number of qualified ", such as data analysis used by users connected to the computer (see the corresponding information on the CD) export data, friendly interface, by matching the data line machine, under normal boot interface can be used. At the same time

Provides both Chinese and English interface procedures.

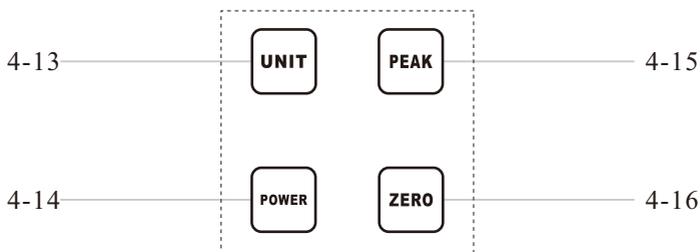
3. large memory storage function can store 896 test values. It can be manually saved in the state of "PEAK" (press the "PEAK" key once) or automatically saved in the state of "AUTO PEAK" (press the "PEAK" key twice). Press the "memory" button to check in sequence You can also import the data into the computer through the "data export program" on the supporting CD.

### 8. Print function

Connect the instrument to the computer, open the "Data Export software" on the computer when the instrument is turned on, and click "Receive" to save the test

The data is output to the computer through the data cable. After receiving the data, click "Print" and click "print" in the print text box to print.

### 9. operation buttons



## Operation buttons

4-13 (UNIT)

It is a unit conversion key for unit conversion operations.

4-14 (POWER)

It is the power switch, the return key in data browsing mode, and the action key to call up automatic shutdown Settings.

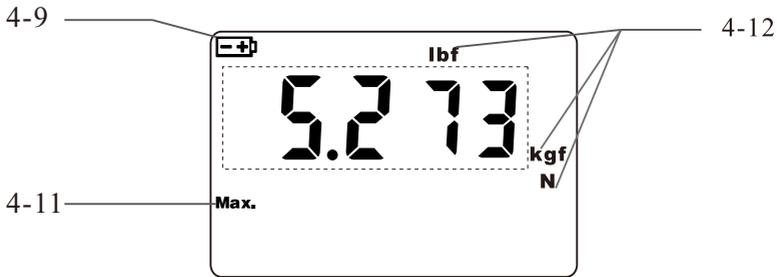
4-15 (PEAK)

It is a switch button between peak holding mode and real-time measurement mode.

4-16 (ZERO)

Instrument zero operation button.

## 10. Display function description



Screen display

### 4-9 Battery indicator " "

If the battery voltage is too low, "  " appears in the upper left corner of the screen, indicating that the battery voltage is insufficient and the battery needs to be replaced.

### 4-10 Peak indicator MAX.

When MAX. Is displayed, it indicates the peak holding mode, and the screen displays the peak value. If MAX. Does not appear, it indicates the real-time measurement mode, and the value displayed on the screen changes with the load.

### 4-11 Units of measurement

Indicates the current measurement unit, including KGF, N, and LBF. Only one of these units is displayed.

## 11. Safety introduction Matters needing attention

1. Do not operate the machine in humid (dust-rich, oil or chemical, earthquake source) environment
2. Dip a soft cloth into water soaked with detergent and wring it out before removing dust and dirt.
3. Digital soil hardness tester has many specifications for users to choose, users can choose the corresponding specifications of the instrument according to the required test product force value. Scientific use of the test range is 10% to 100% of the full range, the metrology department recommended not to use less than 1% of the full range.
4. Please use and store within the specified temperature and humidity range, otherwise the instrument may fail.
5. Do not disassemble, repair or modify the machine by yourself. These actions may cause permanent failure of the instrument.
6. Other matters not mentioned in safe production.

## **Cautions**

1. Do not use the instrument beyond the maximum range. Otherwise, sensor damage or even accidents may occur.
- 2, when the test value exceeds 105% of the range, the buzzer will beep continuously, at this time, please quickly remove the added load, or reduce the load.

### **Dangerous items**

1. Please use the matching charger to charge, otherwise it may cause circuit failure or even fire.
2. Do not use the power supply beyond the rated voltage of the charger, otherwise it may cause electric shock or fire.
3. Do not pull out or insert the plug with wet hands, otherwise it may cause electric shock.
- 4, do not pull the power cord of the charger to pull out the plug, so as not to be broken and electric shock.

## **Other**

### **1, the backlight**

New backlight function when pressing the button or the instrument is stressed, the backlight will automatically light up, and automatically turn off the backlight if there is no action in 10 seconds. You can also press the "Set" button 6 times to enter Enter the "Light" state, select "NO" to turn off the backlight, select "YES" to turn on the automatic backlight function.

### **2, turn over**

LCD Flip display Press the "Print" button to reverse the reading 180 degrees, which is convenient for viewing the test value from different angles.

### **3. The peak value shows the residence time**

AUTO PEAK Value Press PEAK value 2. AUTO PEAK is displayed on the screen. Press Save to enter the AUTO PEAK value setting screen "Print" button to set the automatic peak time (that is, the time for the test value to remain on the screen) from 1 to 9 seconds. After selecting the time, press "Set" "Save and exit auto peak time setting. The default time of the instrument is 3 seconds.

### **4, automatic shutdown**

Automatic shutdown time setting can be set to 10 minutes to 90 minutes automatic shutdown, also can be set not automatic shutdown. Press "Set" button 7 times to enter "OFFT." On the screen, press "Print" to select the automatic shutdown time, select "00" not automatic shutdown, press "Settings" to save the selection and exit. Instrument's Set it for 50 minutes.

### **5. Battery capacity**

Battery capacity display is divided into 3 cells, 2 cells, 1 cells, the instrument automatically shut down when the power is too low.

### **6. Reset the forced shutdown**

Accident crash quick reset arranged reset key in the side, press reset switch with hard objects, can be shut down.

# Installation drawing

