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# Instructions for USB Tester with Full Colour Display

-Model: UM34/UM34C

Date:2019.9.25

Dear Customer,

Thank you for purchasing this Full Colour USB Tester from Hangzhou Ruideng Technologies Co., Ltd. Prior to using this product we recommended that you briefly familiarize yourself with these instructions. In order to ensure the correct operation and use of the device. We also advise that you keep these instructions in a safe place for future reference as may be needed.



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## 1.1 Technical Parameters:

Model: UM34/UM34C

Voltage measurement range: 4-24.00V

Current measurement range: 0-4.000A

Capacity accumulation range: 0-99999mAh

Energy accumulation range: 0-99999mWh-999.99Wh

Load impedance range: 0.8Ω-9999.9Ω

Temperature range: -10°C~100°C/0°F~200°F

Screen brightness setting: Levels 0-5

Voltage graphing range: 4-24.00V

Product weight: 22.87g(UM34C)/18.39g (UM34)

(No packaging); 51.43g(UM34C)/46.95g (UM34)( With packaging)

Dimensions: 71.2mmx30.5mmx12.4mm(UM34C)/71.2mmx30.5mmx11.3mm(UM34)

Display screen: 1.44 Inch color LCD display

Voltage measurement resolution: 0.01V

Current measurement resolution: 0.001A

Voltage measurement accuracy: ± (0.2%+1digit)

Current measurement accuracy: ± (0.8%+3digits)

Time measurement range: 0-99h59min59s

Temperature measurement error: ± 3°C / ± 6°F

Delay off the screen time: 0-9minutes

Current graphing range: 0-4.000A

Refresh rate: 2Hz

Quick charge recognition mode: QC2.0、QC3.0、APPLE 2.4A/2.1A/ 1A/0.5A、Android DCP、SAMSUNG

*(Note: This quick charge agreement recognition model is for reference only, because cell phone upgraded quickly, it can't be absolutely accurate identification)*

USB port: USB 3.0 port , support OPPO phone VOOC, OnePlus DASH

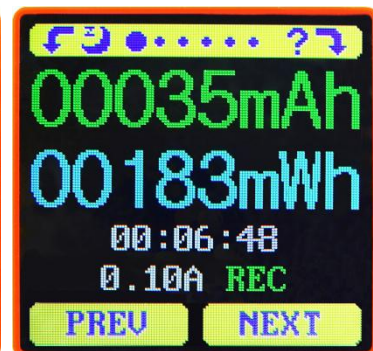
## 1.2 Function Interfaces



Measurement Main Interface



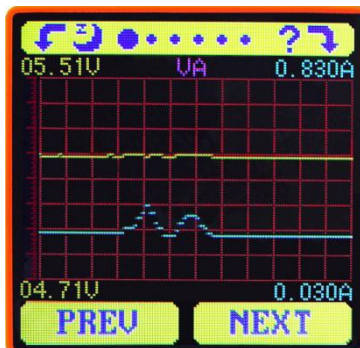
Quick Charge Recognition Interface



Charging Recording Interface



Data Connection Cable Impedance Measurement Interface



Measurement Graphing Interface



System Parameter Setting Interface

## 1.3 The Core Function:

USB 3.0 port

With Chinese and English help interface

Data Record and Store

Rotate the screen in 4 directions

Differential Voltage Method Measurement Cable Impedance

Load connecting detection function (screen auto off, plug the load, screen auto lighting)

Quick Charge Recognition

Android Phone APP Control

Capacity/Energy Detection

Voltage/Current/Power Detection



## 1.4 Device Layout

A: Micro USB Port

B: Multifunction buttons (4 pieces)

C: Bluetooth Switch

D: USB 3.0 A Female Port

E: USB 3.0 A Male Port


F: Type-C Input Port (Only VBUS、GND、CC1、CC2 four wires)


F: Type-C Input Port (only for USB to Type-c to measure cable resistance)


G: 1.44 Inch Color Screen


H: Bluetooth Indicator: When connected to the host computer control software, the Bluetooth indicator changes from flashing to steady state. When connecting, the Bluetooth icon is displayed on the screen. (Bluetooth communication version only).

## 1.5 Interface Prompt Representing Functions

I:  Press and hold the key to rotate the Screen Left

J:  Press the key to close the screen

K:  Press the key to open the help interface

L:  Press and hold the key to rotate the screen right

M:  Press PREV key to previous page

N:  Press NEXT key to next page



## 1.6 Operating Instructions

When the unit is first powered on the welcome screen is displayed followed shortly by the main interface screen.

**Hidden interface:** Pressing any button whilst powering on the module will display four options. Option 1 selects the Chinese Interface and option 2 selects the English interface.



Welcome Interface



Hidden Interface

The third option is to reset (after reset, system setting data was restored to the factory setting, all the stored data was not reset), The four option is to zero the Current reading (Ensure there is no load connected to the unit). Release the button at the desired selection. Pressing and holding the button after stepping to the four options will exit the hidden interface.

### 1.6.1 Interface 1: Main Measurement Interface.( As shown below)

- O: Voltage Measurement
- P: Current Measurement
- Q: Accumulated Capacity
- R: Accumulated Energy
- S: Temperature Measurement
- T: Number of the Data Group in use
- U: Load Equivalent Impedance
- V: Power Measurement



Press the '?' button to enter the interface as shown above:

Press and hold the 'NEXT' button to switch Data Group. The USB tester can provide a total of 10 groups of data to save and view. These are numbered 0-9.

With Data Groups 1-9 selected the current mAh and mWh are saved after power off. They will continue accumulating the next time the tester is powered on. When the data group selected is 0 then the current value of mAh and mWh will be temporarily saved at power off. When the device is next powered



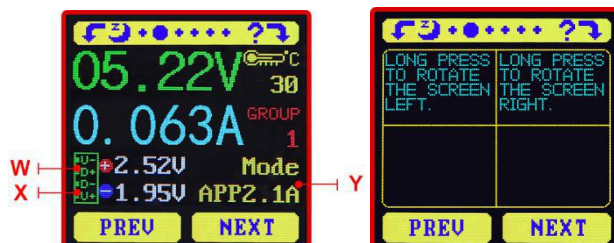
on these values will be recalled and will begin flashing. When the accumulated mAh exceeds 1 mAh, the previous data will be cleared and accumulation will restart.

With a Data Group selected, press and hold the 'PREV' button to clear the mAh and mWh. (As shown)

Press 'NEXT' to switch to the Quick Charge Recognition Interface.

### 1.6.2 Interface 2: Quick Charge Recognition Interface

- W: D+ (DP) data positive signal level.
- X: D- (DM), data negative signal level.
- Y: Mode display



The product will automatically identify a device with a supported fast charging mode. At this time the device supports the QC2.0、QC3.0、APPLE 2.4A/2.1A/ 1A/0.5A、Android DCP、SAMSUNG. **(Note: This quick charge agreement recognition model is for reference only, because cell phone upgraded quickly, it can't be absolutely accurate identification)**

Press 'NEXT' to switch to the Charging Recording Interface.

### 1.6.3 Interface 3: Charging Recording Interface

Z: Accumulated Capacity

AA: Accumulated Energy

AB: Time display: The total accumulated recording time.

AC: Capacity/Energy statistics trigger current

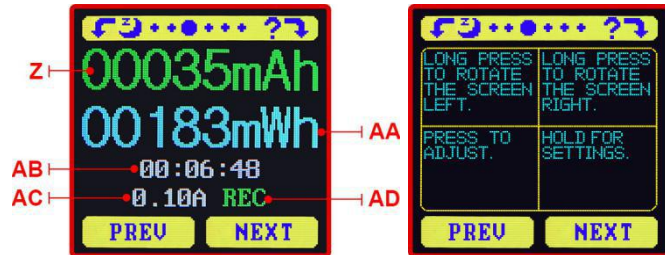
AD: REC: recording status indicator. 'REC' displayed in red indicates that

recording is stopped. 'REC' displayed in green indicates that recording is in progress.

After power on, when the current flowing is greater than the Low Current trigger value. The system automatically begins to record the accumulated capacity, energy, and time elapsed. The 'REC' indicator will change from red to green.

To set the Current trigger value, press and hold the "Next" button to highlight the value then press the 'PREV' button to adjust the value as required. The value can be set anywhere between 0.01A- and 0.30A. (10mA to 300mA).

Press "Next" button to switch to the Data Connection Cable impedance Measurement Interface.



### 1.6.4 Interface 4: Data Connection Cable Impedance Measurement

#### Interface.

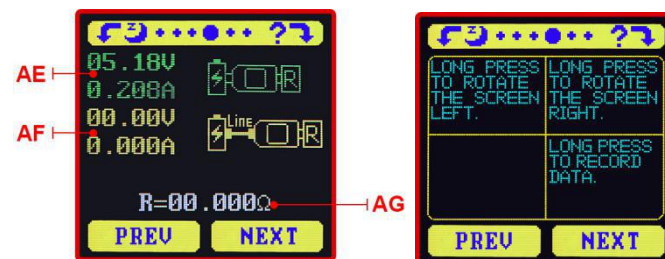
AE: USB Tester directly connected to the power supply with Voltage and Current values displayed

AF: USB Tester connected via a data connection cable with Voltage and Current values displayed.

AG: Data Connection Cable resistance. Measurement procedure:

First, connect the USB Tester directly to the power supply and adjust the appropriate load current (recommended value 1A) . Press and hold the 'NEXT' button to begin recording data. The indicator prompt will stop flashing .

Second, unplug the USB Tester and then reconnect it to the power supply via the Micro USB/Type-C IN data connection cable and adjust the load current to the same value as in the first step. Press and hold the 'NEXT' button to begin recording data. The indicator prompt stops flashing and the Data Connection Cable resistance measurement test is completed and the value



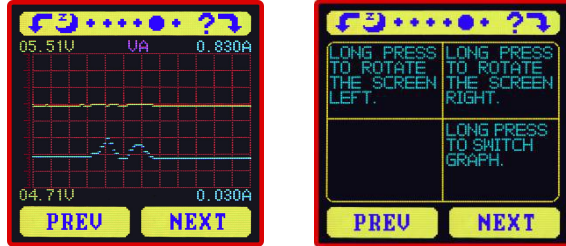
displayed.

**Note:** If during the second step the screen turns black, this indicates that the voltage difference is too high and the tester will enter the 4V power-down state. You can reduce the current and then re-start the measurement from the first step. After the Data Connection Cable resistance test is completed, the Tester needs to be powered off and then power on again to resume measurement.

Press the 'NEXT' button to switch to the Measurement Graphing Interface.

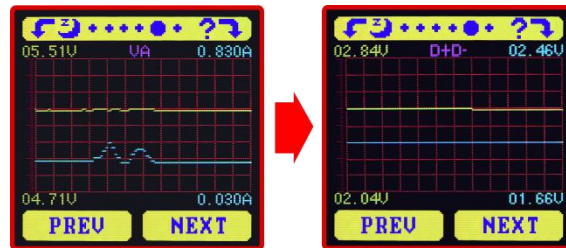
### 1.6.5 Interface 5: Measurement Graphing Interface

This interface displays the voltage measurement over time in the 4-24V range and will automatically adjust the displayed range in real time to account for voltage fluctuations. And the current measurement over time in the 0-5.000A range and will automatically adjust the display range in real time to account for current fluctuations.



Press and hold "NEXT" to switch to D+D- graphing, as picture show

This interface displays the D+ /D- voltage measurement over time in the 0-3.3V range and will automatically adjust the displayed range in real time to account for D+/D- voltage fluctuations.



Voltage Current Graphing

D+D- Signal Graphing

Press the 'NEXT' button to switch to the system parameter setting interface.

### 1.6.6 Interface 6: System Parameter Setting Interface

AH: Auto screen off time

AI: Screen brightness

AJ: Temperature display C /F

AK: Theme background color

AL: Theme foreground color



Press and hold the "Next" button to enter into setting state, press "NEXT"

button to step through the options of auto screen off time, brightness level, temperature display units, theme background color and theme foreground color. Stop on the value you wish to change then press the "PREV" button to change the setting.

For auto screen off time setting press 'PREV' to repeatedly step through the 10 options from 0 to 9 minutes. Default time is 1 minutes.

For the screen brightness setting, press 'PREV' to repeatedly step through the 6 options from 0 to 5 where 0 is the lowest brightness level and 5 is the highest. Default brightness is 4.

For the temperature display units, pressing the 'Next' button toggles the setting between C and F. default temperature unite is C.

For theme background color, press 'PREV' to repeatedly step through the 7 options from 0 to 6

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where the color sequence is red, green, blue, yellow, light blue, pink, white and black. Default color is 2, blue.

For theme foreground color, press 'PREV' to repeatedly step through the 7 options from 0 to 6 where the color sequence is red, green, blue, yellow, light blue, pink, white and black. Default color is 6, white.

At any setting state, press and hold the 'Next' button to exit the settings menu.



# UM34C Android APP Instruction

## 2.1 APP Installation:

NOTE: The APP only support Android 5.0 and above

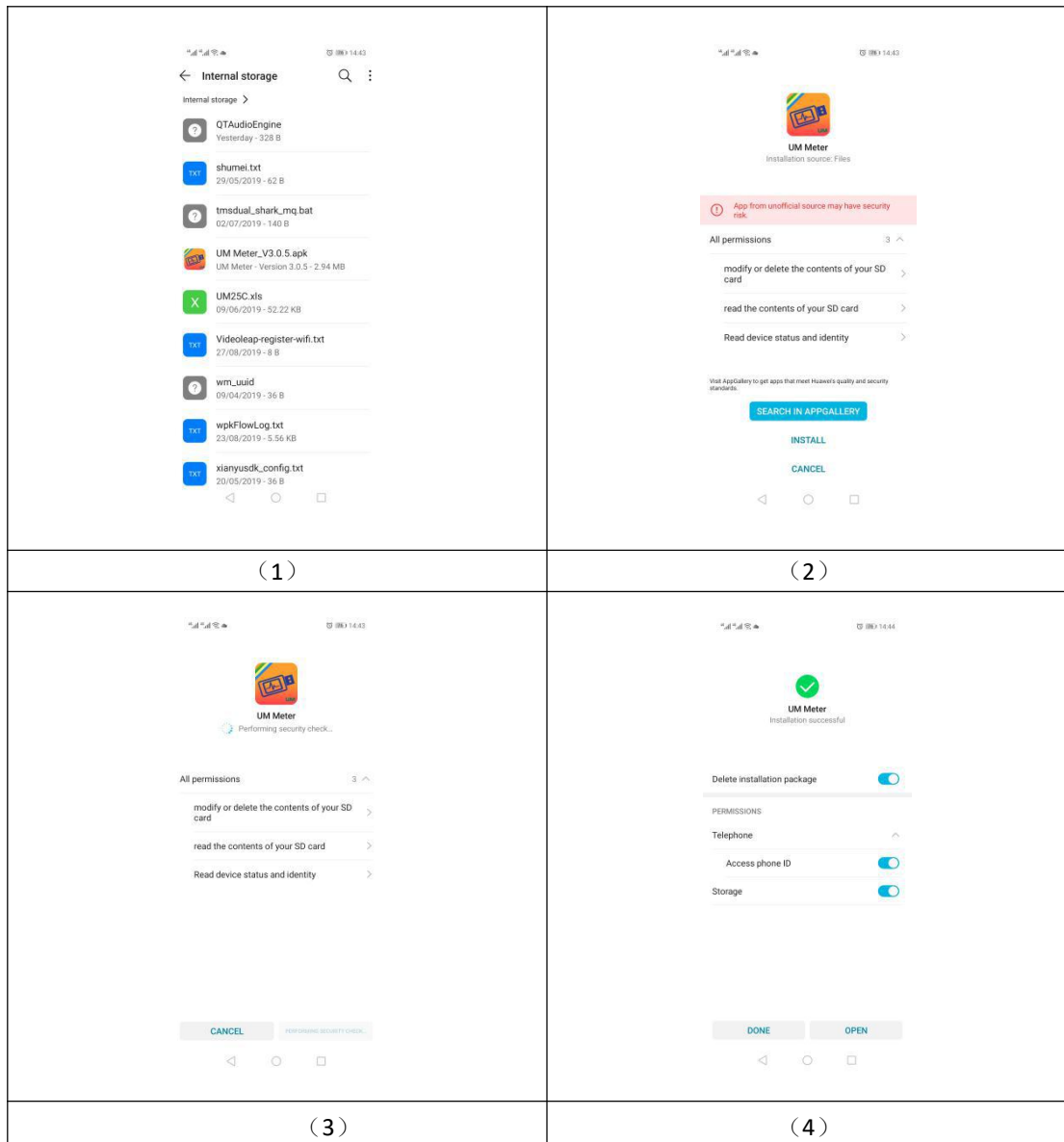
### 2.1.1 APP download

There are 2 download ways:

① APP download link : <http://www.mediafire.com/folder/5c877rc21tp1p/UM34>, choose UM34C android APP file to download, you can use the computer to download , then sent the phone, or use the phone download directly.

② Search “UM Meter” on Google Play and click download.

### 2.1.2 APP installation



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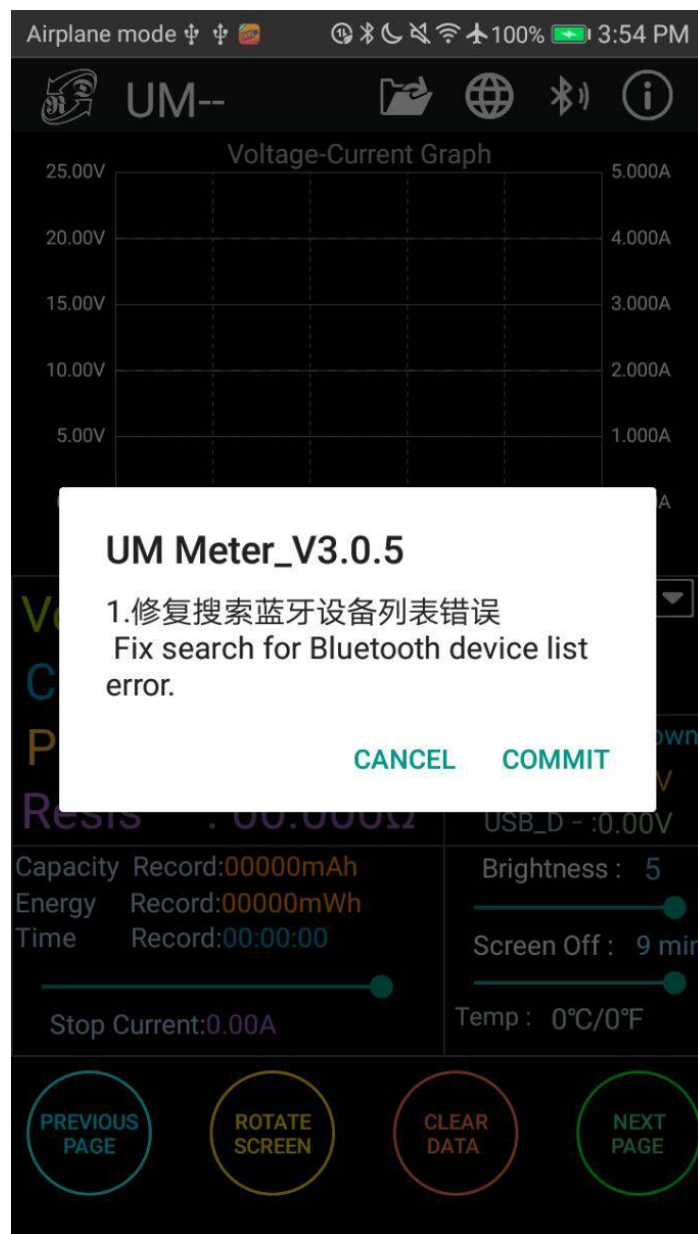
## 2.2 Installation succeed

After Installation APP icon as the picture



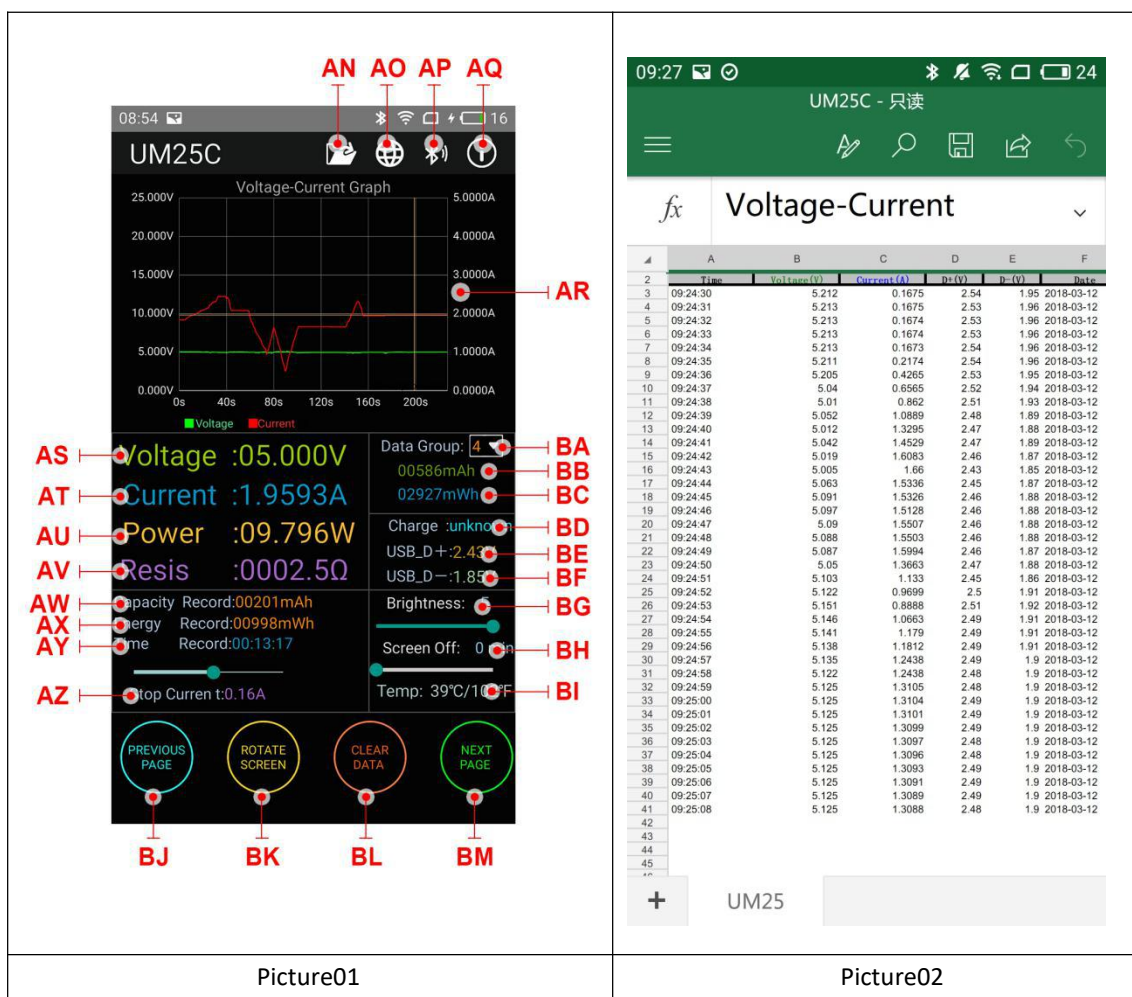
### 2.2.1 APP Connection & Operation

Click APP Icon, APP will start, the system will detect automatically that the App will be updated or not. There is popup to remind updating, as picture show.



## 2.2.2 APP interface

After update, APP main interface is as the following picture:



**AN:** Export data to the phone folder (mobile phone memory or SD card root directory, repeat writing, can directly generate graphs in Excel), and can share files to other APP (picture 2)

**AO:** Multi-language option, click to select languages, currently 22 languages (简体中文 / 繁体中文), English, русский, Polskie, español, हिन्दी, Slovenskýjazyk,Latvietis, 日本語, Deutsche, Nederlands, 한국어, Français, Türk, ไทย, Bahasa Indonesia, čeština, Українська, Ελληνικά, Magyar, Português...), more languages are constantly being updated.

**AP:** Bluetooth connection: Click to enter the device selection, search for the Bluetooth name of the device, enter the pairing code 1234, click the connection (first connection, first set the Bluetooth connection on the phone, then open the APP and click the Bluetooth icon to connect.)

**AQ:** Program information: version number description, assist developer information

**AR:** Voltage-current measurement curve

**AS:** Voltage Measurement

**AT:** Current Measurement

**AU:** Accumulated Capacity

**AV:** Load Equivalent Impedance

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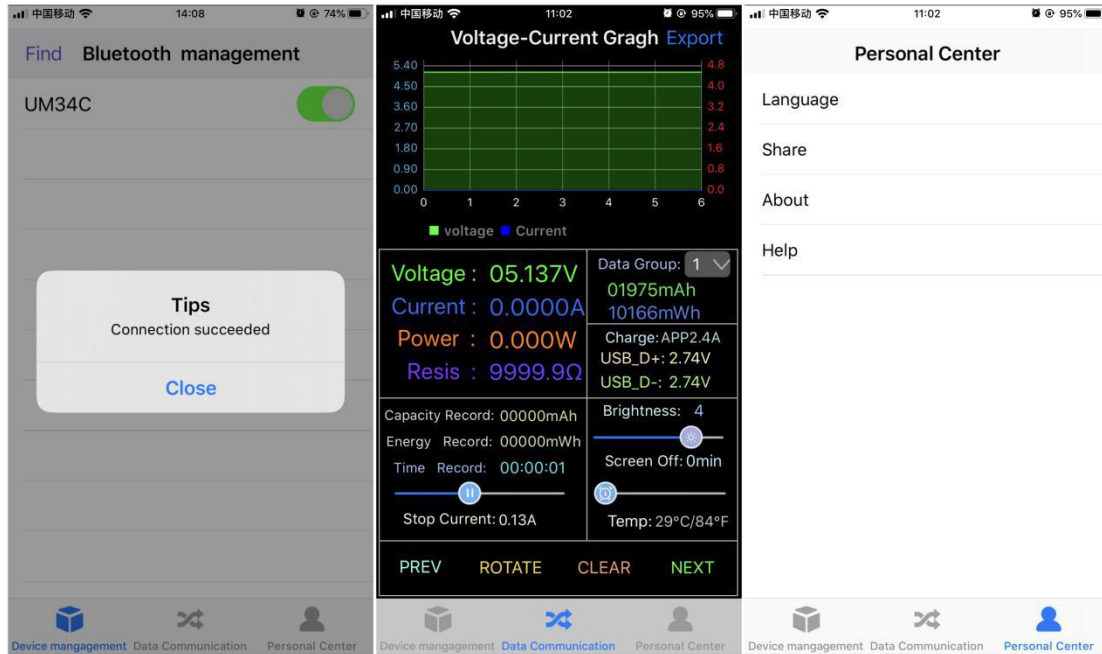
**AW:** mAh  
**AX:** mWh  
**AY:** recording time  
**AZ:** Off current  
**BA:** Data group number(click the triangle to switch data group)  
**BB:** Accumulated capacity  
**BC:** Accumulated energy  
**BD:** Quick charge recognize mode  
**BE:** Voltage on D+ data cable  
**BF:** Voltage on D- data cable  
**BG:** Screen brightness adjustment  
**BH:** Screen off delay adjustment  
**BI:** Temperature display( $^{\circ}\text{C}/^{\circ}\text{F}$ )  
**BJ:** Switch to previous page  
**BK:** Rotate key: rotate the screen  
**BL:** Delete key: clean the data group being used  
**BM:** Switch to the next page

**Note:**

1. Due to the wide variety of Android phones, the UI interface is displayed differently on different scale screens of Phones.
2. Application permission requirements, allow the necessary permissions when the program is installed (allow background running, allow Bluetooth, allow operation of the folder, allow reading of the application list, etc.) and also set the permissions of the program in the phone after installation: Allow background running, The lock screen operation won't shut down the APP, self-starting is allowed, etc. (the system is prevented from forcibly exiting the APP when data is continuously recorded).
3. Language selection memory, you only need to select the language when you open the app for the first time.

## UM34C IOS APP Instruction

Apple APP only supports the official version system of **IOS8.0 or above**. Search "UM Meter" in the Apple Store to download.



### 3.1 APP Connection & Operation

After opening the app, click **"Find"** to search a nearby Bluetooth device. After the screen prompts the connection is successful, click the **"data communication"** to go to the second page. The table can be zoomed in and out. Other functions are the same as [Android APP](#). After clicking **"Export"**, the curve can be exported to a form file. Click **"Share"** in the **"personal center"** to copy the form file to other apps to open or share. Click **"Language"** on the personal center to choose language, you can choose English, Simplified Chinese, Traditional Chinese, Russian, Japanese, German, Korean, French, Spanish, Polish, Hindi, Slovak, Latvian, Dutch, Turkish, Ukrainian, Ukrainian, Thai, Indonesian, Czech, Hungarian, etc. Click **"Help"** to learn about simple operation.

### 3.2 APP update

When there is a large version update, the software will automatically prompt for the update, or you can get the latest software from the Apple Store. The IOS APP version corresponding to the current manual is 1.2.1

## Appendix 1: Explanation of terms

Quick charge: fast charging, modern fast charging mostly refers to the charging process when the charging current is greater than 2A or the charging power is greater than 10W.

Quick Charge Protocol Detection: Detect which quick charge protocols are supported by the charger.

Quick Charge Protocol/Quick Charge Mode Recognition: Identify what fast quick is currently in progress.

Decoy/trigger: Simulates a quick charge protocol sequence that allows the charger to output high voltage/high current.

Quick Charge Simulation: Analog protocols which chargers do not support to improve charger compatibility.

Common part of the quick charge agreement:

Qualcomm: QC2.0, QC3.0, QC4+

Media Tek: PE2.0, PE3.0

Huawei: FCP SCP

OPPO: VOOC, Super VOOC

One plus: DASH, Warp

USB Type-C: PD2.0, PD3.0, PPS

mAh, mWh: milliampere hour, milliwatt hour, milliampere is the capacity unit. Milliwatt hours is the unit of energy.

## Appendix 2: Basic Operational Knowledge

### I: measure the capacity of power bank

Preparation materials: power bank to be tested, USB tester, HD35 electric load or mobile phone, charging head.

**the data need to view: the capacity energy value of the power bank (mAh mWh), the voltage and current value of the power bank output**

First charge the power bank, then adjust the current meter to the non-zero data group, then use the power bank to charge the mobile phone or use the HD35 electronic load to discharge to the power bank to automatically shut down, use the charging head to supply power to the tester, and then Record the mAh, mWh values on the tester.

Method 1: The comparison tester shows that the mWh is divided by efficiency (like 90%) and the power bank mWh. If the difference is not large, the capacity of power bank is real (the most accurate method).

Method 2: If the mobile phone is 5V charging, the tester displays mAh multiplied by 1.5. If the mobile phone is a 9v charging tester, the mAh multiplied by 2.7. If the value is not much different from the technical parameter of power bank. The power bank's capacity is real. (only applicable to power bank without mWh).

Since many mobile power sources are currently tens of thousands of mAh, if you simply charge the mobile phone to measure the capacity of the power bank. You need to charge the mobile phone many times. It takes even a week to measure the capacity of power bank, in

order to quickly discharge the power of the power bank. Test with a constant current load. Take xiaomi power bankII as an example, it can support 5V/2A output,  $38.5\text{Wh}/(5\text{V}\cdot 2\text{A})=3.85$ . It can discharge the power of power bank in about 4 hours. If you use HD35 electronic load, it can be triggered 9V. Thus 18W quick discharge,  $38.5\text{Wh} / (9\text{V} * 2\text{A}) = 2.13\text{h}$ , so that it takes only two hours to complete the power bank capacity test, quickly identify whether the capacity of power bank is false (high power discharge, inversion rate will decrease and the actual measured capacity will be smaller).

## II. Measuring the quality of data cable

The quality of the data cable directly affects the speed of charging, even worse the inferior data cable has the risk of burning the phone, so measuring the quality of the data cable is also a necessary function. We have two ways to measure the quality of the data cables, each with its own advantages and disadvantages, you can choose the better way which suits you . The common data cable length has a great influence on the actual test results. Generally speaking, the shorter cable 's performance should be better.

### 1. Current measurement method:

Test materials: mobile phone, original charger, original data cable, USB tester, data cable to be tested.

Test procedure: Discharge the phone to between 50% and 60% power. Use the original charger, USB tester and original data cable to measure the charging current and record this current. Then replace the original data cable with the data cable to be tested, and record the charging current again. The time between the two measurements should not be too long. The higher the charging current, the better the quality of the line. If the charging current values differ a lot, it may indicate that the quality of the cable is very bad or the mobile phone is not supported to the cable(Note: you must use UM25 to test Huawei Super Quick Charge).

### 2.Cable resistance measurement method:

Test materials: charger, UM series tester, constant current load (such as HD35), data cable to be tested.

Test procedure: Insert the tester into the charger,switch to the line resistance measurement interface, plug in the load, adjust the current to about 1A, hold the button and wait for the tester to flash, then remove the tester.

Connect the data cable. Plug it into the charger, plug the other end of the data cable into the tester input, turn on the load, and hold the button. The resistance of this cable will be displayed on the tester.

Advantages of current measurement method: It can intuitively judge whether the data cable supports the fast charge and fast charge current value, and you only need to buy a USB tester.

Disadvantages of current measurement method: relying on mobile phones and original accessories of the phone as a comparison.

Advantages of line resistance measurement: It is possible to measure the actual parameters for comparison between different wires. Generally, the micro data line resistance will be above 400mΩ, and the Type-C data line can be made smaller. No need to use a mobile phone for measurements

Disadvantages of line resistance measurement: the tester and load are required to measure, and the price is higher.