Hangzhou Ruideng Technology TC66 Type-C Tester with Full Colour Display Instructions

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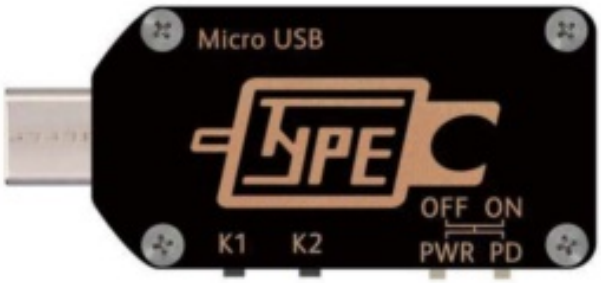
Instructions for Type-C Tester with Full Colour Display
-Version: TC66/TC66C(2020.6.5)

Dear Customer,
Thank you for purchasing this Full-Color Type-C Tester from Hangzhou Riding Technologies Co., Ltd. Prior to using this product, we recommend that you briefly familiarize yourself with these instructions to ensure the correct operation and proper usage of the device. We also advise that you keep these instructions in a safe place for future reference as needed. TC66 only supports USB communication while TC66C supports both USB and Bluetooth communication. (Please pay attention to the red font in this manual) Please be sure to turn off the hardware PD switch or software PD switch when taking charging measurements, and turn them on when using the trigger function and fast charge protocol detection.



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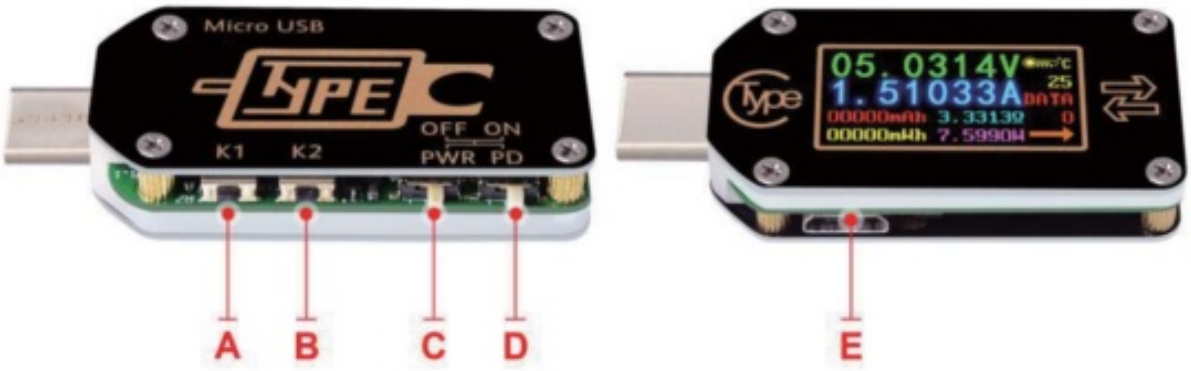
Technical Parameters:

Model: TC66/TC66-C	Display screen 0.96 Inch color
Voltage measurement range:0.0050-30.0000V	Voltage measurement resolutic
Current measurement range: 0-5.00000A	Current measurement resolutic
Supply voltage: 3.5-24V	Screen Resolution: 160*80
Capacity accumulation range: 0-99999mAh	Voltage measurement accuracy
Energy accumulation range: 0-99999mWh 999.99Wh	Current measurement accuracy
Load impedance range: 1Ω-9999.9Ω	Power measurement range:0-1
Temperature measurement range: 0 ~45 /32~113	Refresh rate: 2Hz
Working temperature range: 0~45 /32 ~113	Auto screen off time: 0-9mins
Dimensions: 49mmx22mmx8mm	Product weight: about 8g (with
Quick charge recognition mode QC2.0 QC3.0 Apple 2.4A/2.1A/ 1A/0.5AAndroid DCPSamsung	

Panel Introduction



A: button K1, short press to navigate to previous page/ change values or enter sub-menu, having a long-press function at some page.
B: button K2, short press to navigate to next page, long press to enter or exit menu.
C: **PWR** power supply switch button. When in the ON position, this device draws system power from the USB type-C male port; and there is about 20mA when there is no load connected when you connect the female port, you can put the PWR switch to the OFF position, and it will draw system power from the micro USB port, you can test from 0V when using the micro USB port, if the voltage is not 0, please turn off the PWR switch first.
D: PD Switch, place the switch on “OFF” for measuring a device in charging, PD function OFF, and place the switch to “ON” for decoy triggering operation, PD function ON.
E: Micro-USB port, use for the isolated power supply or connecting with PC software.

Operation Introduction:

Please connect TC66(C) to the power charger first before connecting the load. There are eight pages by default. After power on, it resumes the active page before the last power off. Short press K1 or K2 to navigate the previous /next page. Long press K2 to enter or exit the sub-menu.
(Note: this instruction corresponds to the V1.14 version of the firmware. There may be differences between different firmware versions, please refer to chapter 4.3 for firmware updates)

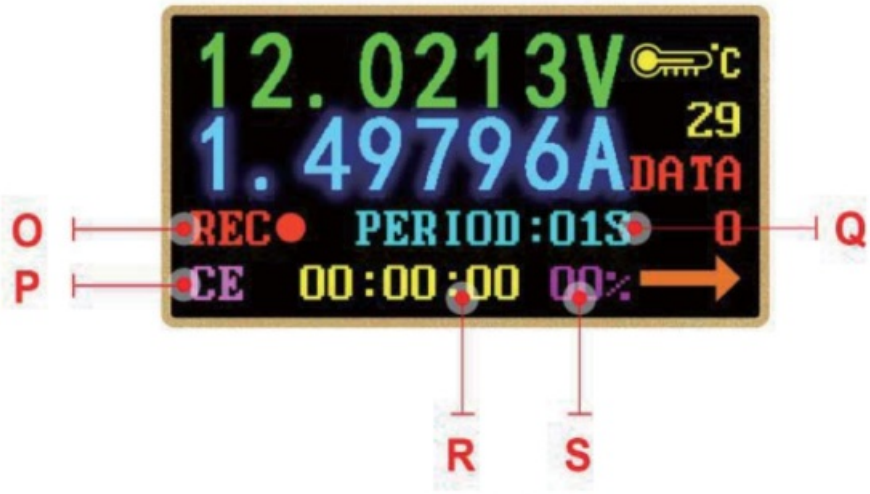
3.1 Main Page as Picture 3-1

(3-1)

F: Voltage measurement value
G: Current measurement value
H: Capacity accumulation measurement value
I: Energy accumulation measurement value
J: Temperature measurement value
K: Data group number
L: Load impedance value
M: Power measurement value
N: Current flow direction
At this page, press and hold K1 to clear the current data group value. Press and hold K2 to switch between data groups, When data group 1 is selected, the current capacity and energy will be saved after the power is off. They will continue accumulating the next time the tester is powered on. When the data group 0 is selected, the current value of mAh and mWh will be temporarily saved at power off. When the device is powered on again, these values will be recalled and displayed by blinking. When the accumulated mAh exceeds 1 mAh, the previous data will be cleared and accumulation will restart.

3.2 Offline Recording Page as Picture 3-2

O: Recording state icon
P: Recording data reset
Q: Data recording interval time
R: Recording time
S: Percentage of used record space



(3-2)

At this page, press and hold the K2 button to enter the menu, there is a small triangle pointing to the option to be operated. After entering the menu, short press K2 to choose among (O) (P), and (Q), and press K1 to activate the specified menu function. Red REC is to stop recording, green REC is recording.

PERIOD is the recording interval time, adjusting range between 1 to 60s, it can record 24mins to 24 hours, and CE is to clear offline storage data. After clearing the recording data, you can change the recording interval time, recording interval time cannot be changed after starting recording. After power off, the recording will be automatically suspended. Press and hold K2 to exist set. Press K2 to enter the quick charge recognition interface.

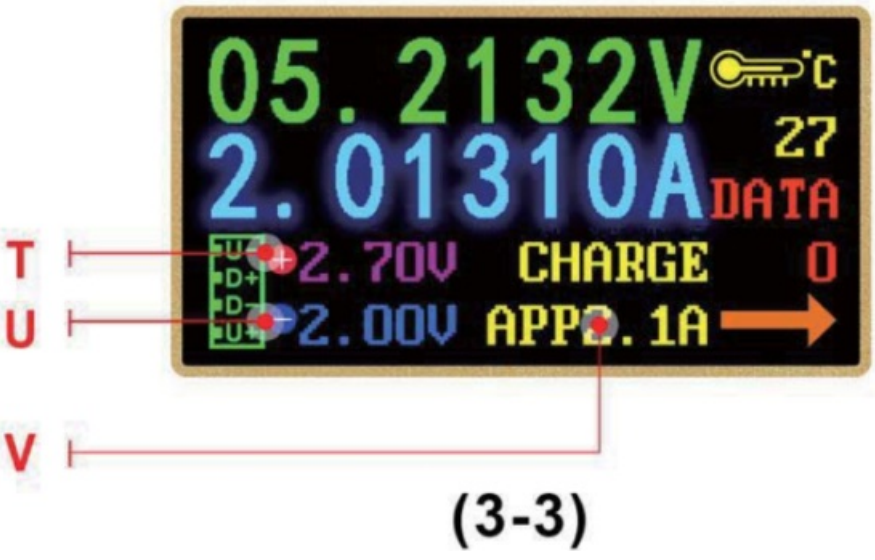
3.3Quick Charge Recognition Page as Picture 3-3

T: D +

U: D

V: Current fast charging mode display

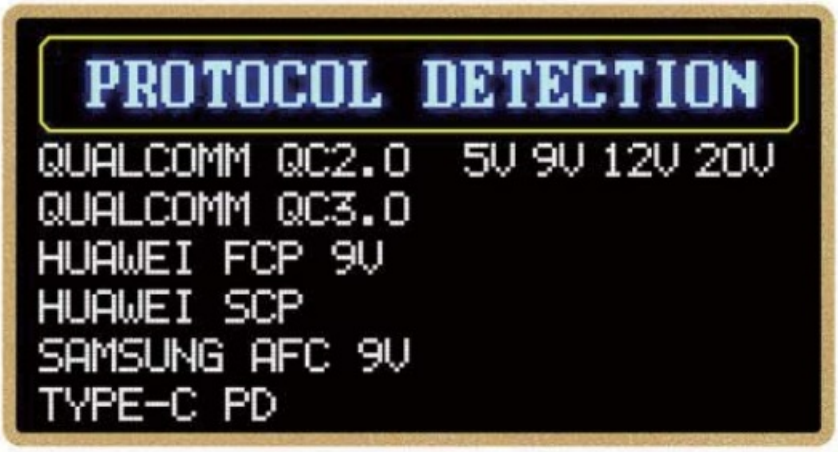
At this time the device supports the QC2.0, QC3.0, Apple 2.4A/2.1A/1A/0.5A, Android DCP, and Samsung. (Note: the D+ D- voltage and the fast charge protocol detected are for reference only Press K2 to enter the quick charge protocol detection Interface.



(3-3)

3.4 Quick Charge Protocol Detection Page as Picture 3-4

On this page, press and hold the K2 button, and it will show a warning “DANGEROUS”. Then press K1 and detection will begin. After detection, the supported protocol is shown in green and the unsupported protocol is shown in red. The Current protocols supporting automatic detection include



(3-4)

QC2.0, QC3.0, Huawei FCP, Huawei SCP, Samsung AFC, and PD. (Please look forward to more never protocol detection. This operation will make the USB-C port output high voltage, please unplug the load when using this function) Press K2 to enter the trigger interface.

3.5 Trigger Page as Picture 3-5-1

3.5.1 Trigger Operation:

At this page, press and hold the K2 button to enter the trigger menu, then Press K2 to scroll down for more selections. Once the choice is made, press K1 to enter the sub-menu. At the sub-menu,

(3-5-1)

press K1 or K2 to begin triggering or adjusting the voltage. Press K2 to return to the last menu. Except for Huawei SCP and PPS, the tester will keep the quick charging state after exiting trigger mode and it requires a re-plugin of the tester to restore to the 5V state. The current protocols supporting triggers are QC2.0, QC3.0, HUWEI FCP, Huawei SCP PD2.0, PPS, and SAMSUNG AFC. (This operation will make the type-c port output high voltage, please unplug the load when using this function)

3.5.2 PD trigger Operation

W Current PD mode

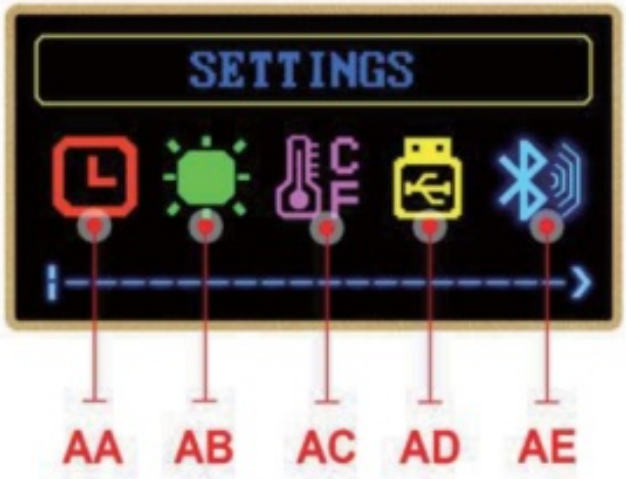
X: Actual output Voltage now YPPS Voltage step value cannot be chosen under fixed Voltage

(3-5-2)

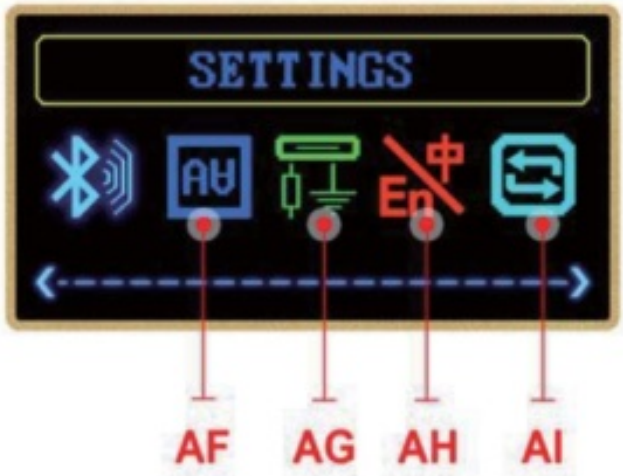
Z White options mean supported PD Voltage. The green option means current trigger Voltage.
The PD trigger effect is similar to picture3-5-2, press K1, and re-plug the interface according to the tips, then press K1/K2 to switch PD Voltage. Press and hold K1 to switch the Voltage step value under PPS mode. Press K1/K2 to increase/decrease the Voltage. Press and hold K2 to exit trigger mode. Because single-sided CC cable is commonly used, when connecting PD device with Type-C cable, try flipping the tester if it does not work.

3.6 System Setting Page as Picture 3-6-1 and 3-6-2.

AA: Delay off-screen setting
AB: Screen brightness setting
AC: Temperature unit switch
AD: PC communication switch
AE: Bluetooth switch
A: Screen Rotation
AG: PD software switch
AH: Language Choice
AI: Restore factory defaults



(3-6-1)



(3-6-2)

On this page, press and hold the K2 button to enter the setting menu, and short press the K2 to select the function option. After selected. Press K1 to change that function's data value. Press and hold the K2 button to save settings and return to the previous menu.
– Delay off-screen time can be set 1-9 minutes or lighting, 0 means never off.
– There are 10 levels of screen brightness;

– Temperature unit can adjust
– There is 180-degree rotation for the screen;
– When the CC pull-down is turned on, the screen will light up by default. If you need to measure PD charging, please turn off the CC drop down;
– Restore factory defaults only restore setting, not clear data group data and offline data.
For CC pull-down: PD stipulates that the Type-C interface has no output by default. When there is a drop-down on the CC line (pin in the Type-C interface), the PD charger thinks that the load is connected and then starts the 5V output. Therefore, it is normal for the tester to plug directly into the PD charger and not light when there is no load. If the CC drop-down is enabled in the setting of TC66 when you plug TC66, it will automatically brighten the screen after it is set as enabled, but it may affect the normal charging process. If protocol detection and trigger are to be exercised, CC drop-down must be enabled, and the back end shall not be connected with any load. If it is set to be off, the charging of the PD charger will not brighten the screen, and the charging process will not be affected. Please first plug the tester into the charger and then insert the load.
Press K2 to enter the system information interface.

3.7 System Information Page as Picture 3-7
AJ: Products series number
AK: Firmware revision number
AL: Boot times
AM: This time running time
Press the K2 button to the simple measurement interface.

(3-7)

3.8 Simple Measurement Page as Picture 3-8
This page only shows voltage, current, power, and current flow direction

(3-8)

3.9 Abnormal Status Solution
You can press and hold the K2 button and power on TC66 under abnormal status to restore factory settings, or you can press and hold K1 and power on TC66 to enter the boot mode and use PC software to update the

firmware.

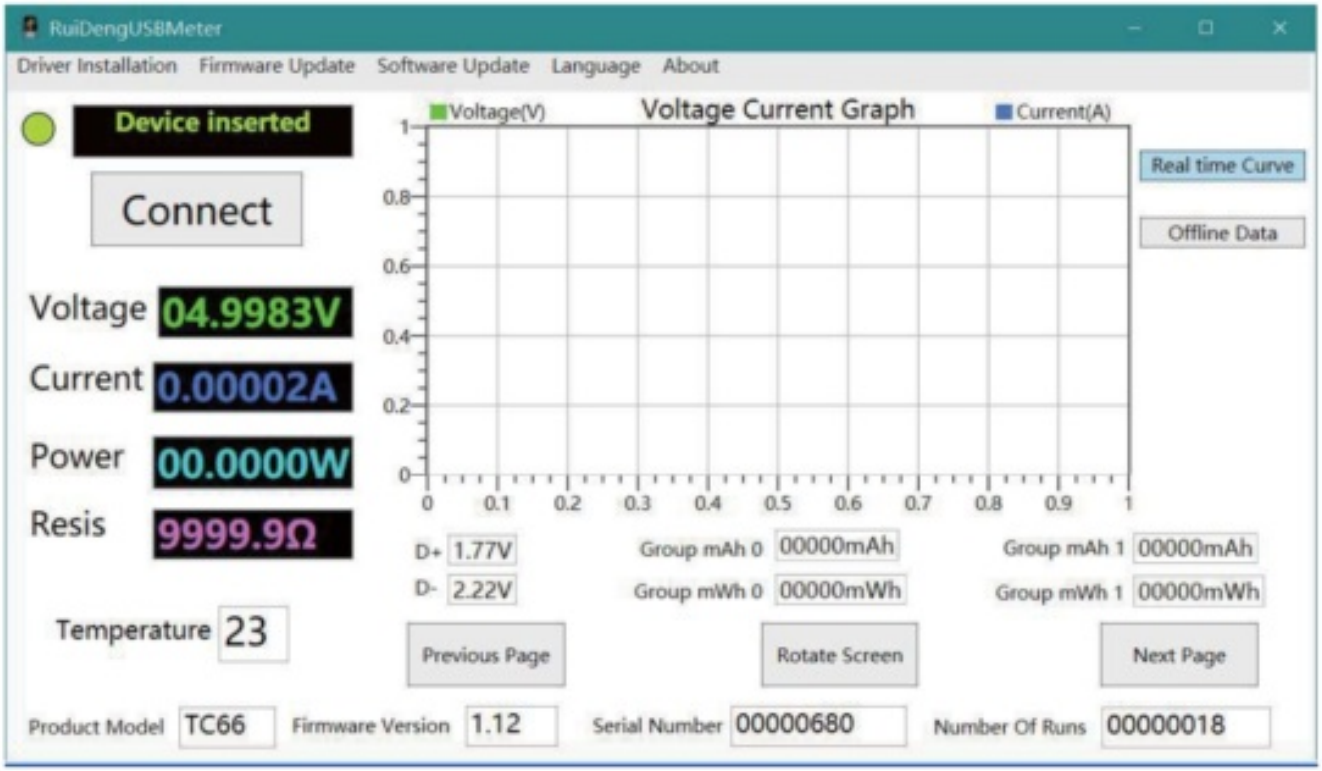
PC Software Installation Instruction

=Software installation environment requirements: WIN7 and above system, computer with networks. PC software can only communicate with TC66/TC66C by USB port.
This software is developed by Hangzhou RuiDeng technology co., LTD., without a virus. If the anti-virus software reminds, please allow all its functions, otherwise it will affect the normal operation of the software. Download link: **http://www.mediafire.com/folder/pqn0ybytqpy7n/TC66.**

4.1 Software Installation

名称	压缩前	压缩后	类型	修改日期
.. (上级目录)			文件夹	
driver			文件夹	2019-12-04 16:14
Language			文件夹	2019-12-04 10:43
temp			文件夹	2019-12-04 10:48
NET_Framework_4.6.exe	1.4 MB	1.3 MB	应用程序	2019-12-03 17:14
RuiDengUSBMeter.exe	2.6 MB	2.4 MB	应用程序	2019-12-04 15:26

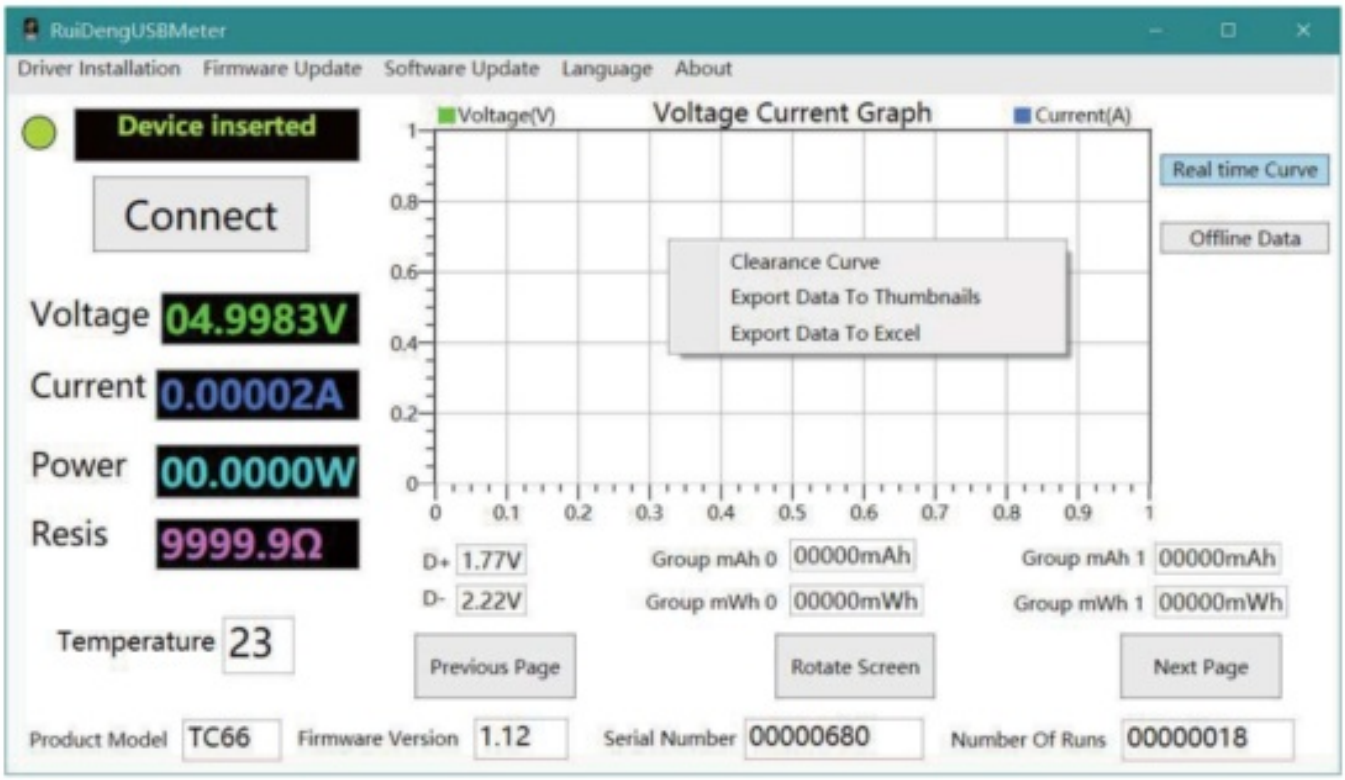
4.1.1. Download the file and open it. RunNET_Framework_4.6 to install .net.
4.1.2 After the installation, double-click the RuiDengUSBMeter to open software. Do not edit or delete other files.
4.1.3 For the first time to use, select the Driver Installation menu to install the driver first.
4.1.4. After installation, Connect the tester micro-USB port to a computer, the computer will automatically install the driver, then unplug and plug it again, the prompt on the upper left corner indicates that the device has been inserted, then click the “Connect” to use.



4.2 Software Operation

Connect the tester with the computer by micro-USB cable, when the show tester is plugged in, then press “Connect”, then the software will show real-time voltage, current and other data information. The right curve chart can be double-clicked to adapt to the size of the window, and the scroll wheel will zoom in and out. Rotating the scroll wheel between the X-axis, and Y-axis, the chart will have different scale effects. Right click on the chart to clear data, and export a table or picture. Click offline data and may take a few moment, offline data will enter the

table. When offline data is displayed, the real-time curve record will be suspended. Below are the recorded values of the two data groups and the voltage of D+D-.



4.3 Firmware Update

When there is a new firmware, the tester will remind you to update the firmware. Please follow the following steps to update the firmware

4.3.1. Clean up memory and turn off unnecessary software (or restart your computer).

4.3.2. Restart the software, and close all updates prompt.

4.3.3. Disconnect the tester from the computer. Press and hold K1 first before connecting tester micro-USB to computer, waiting for displaying device inserted, turn off pop-up firmware update prompt (don't click "connect" at this time).

4.3.4. Click on the firmware update, and then click update now.

4.4 Software Update

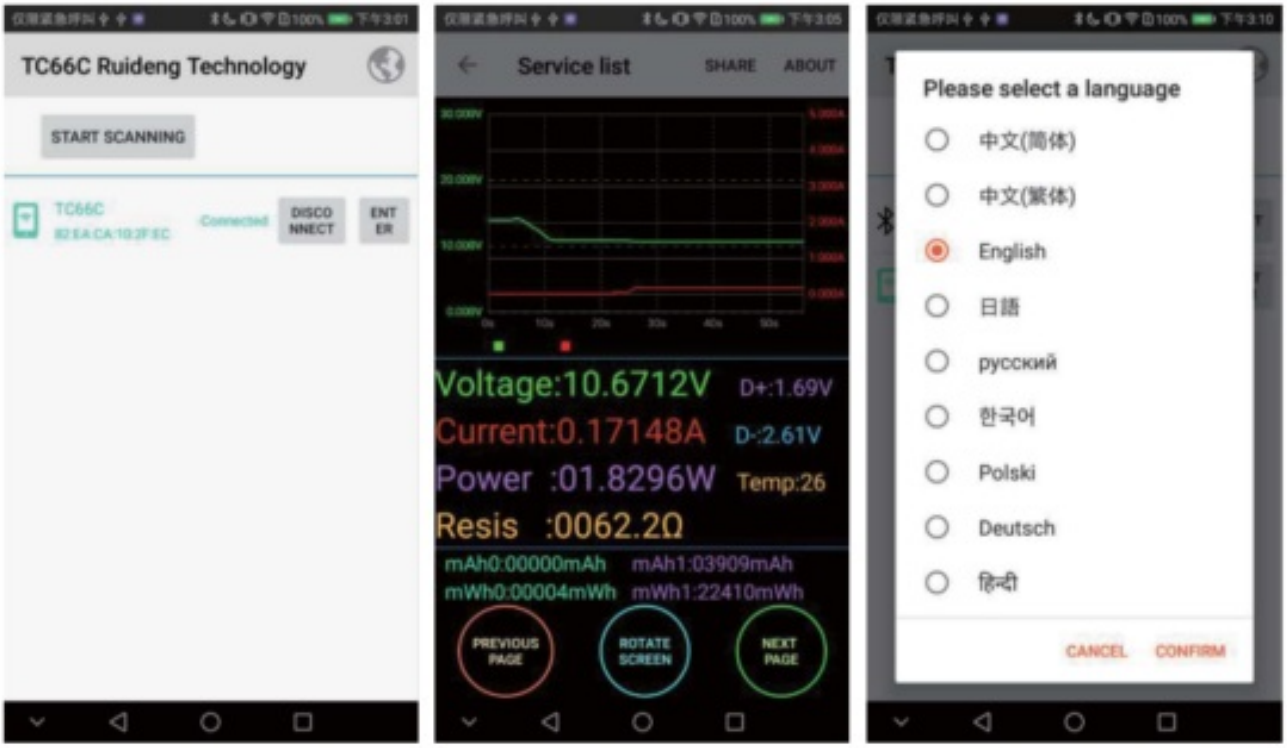
When there is new PC software, it will remind you to update, and you need to download and install the new software by yourself. The software version corresponding to the current manual is V1.0.0.5.

Android APP Instruction

Support Android 5.0 and above, and Bluetooth 4.0 above, and only support the TC66C version The Android application has been uploaded to google play, you can search "TC66C" in Google play. Domestic customers who cannot use Google play can also download the file with the extension APK and install it on the phone. You can get download it at **http://www.mediafire.com/folder/pqn0ybytqpy7n/TC66**.

5.1 Software Installation

Because TC66C adopted the BLE Bluetooth module, when the android 6.0 and above system connects to BLE, it needs location permission. So please agree with this permission when installing the APP. And BLE can't be connected by system Bluetooth, you need to open the APP to search and connect. There may be incompatibilities problems because there are too many phone types, if you really need this function, please download it first and check whether you can use the APP before buying.



5.2 Software Operation

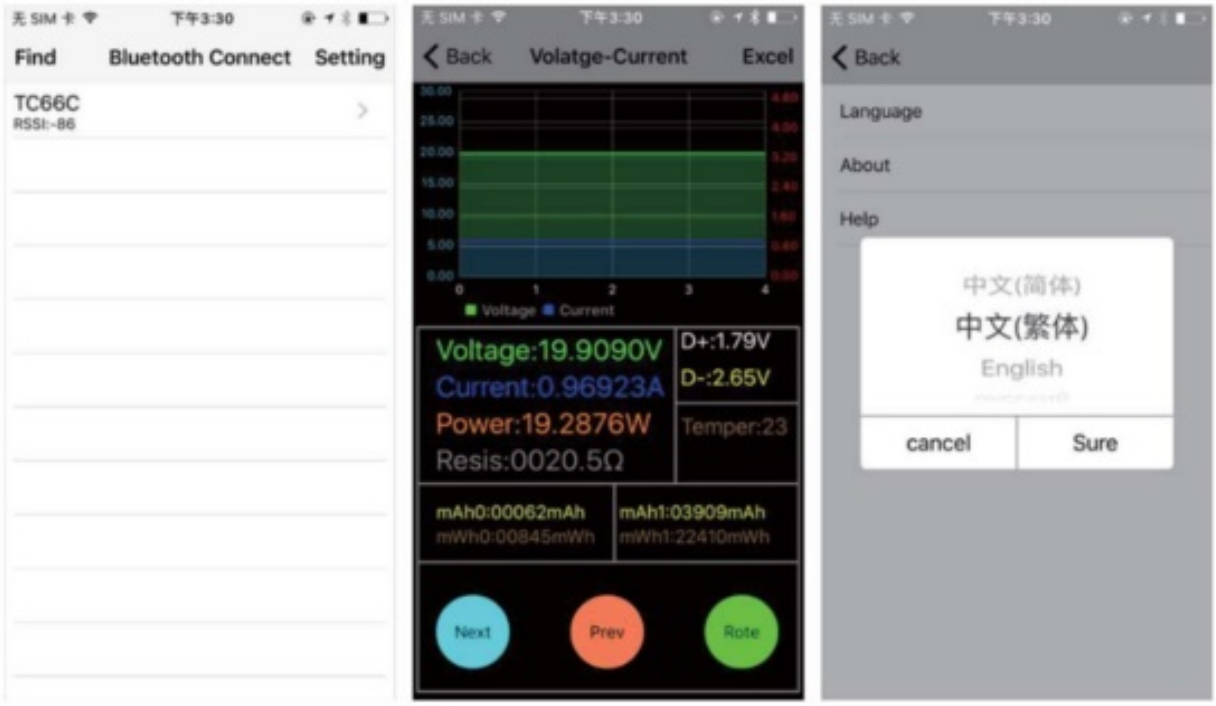
After connection, then click ENTER to enter the operation page as the right picture. Click SHARE to export all recording data as an EXCEL file. (More functions will be updated later, please look forward to it.)

5.3 Software Update

After open APP, check for new versions automatically, when there is a new version, the software will automatically prompt an update, this manual corresponds to the android software version for V1.1.1.

iPhone APP Instruction Only supports TC66C

APP can work on IOS 8.0 or above system and only support TC66C version. You can search “TC66C” to download it at the APP store.



There may be incompatibilities problems because there are too many phone types, if you really need this function, please download it first and check whether you can use the APP before buying.

6.1Software Update
When there is a new version, the software will automatically prompt an update, or you can download the latest version at IOS APP STORE, The software version corresponding to the current manual is V1.2.0.

Others

If you have product hardware and software technical problems, please contact us email **1749808860@qq.com**.

Appendix 1: Explanation of terms

Fast charging: fast charging, mostly refers to the charging process with a charging current greater than 2A or charging power greater than 10W.
Fast charging protocol detection: detect which fast-charging protocols the charger supports.
Fast charge protocol/fast charge mode identification: Identity what fast charge is currently in progress.
Decoy/trigger: Simulate the fast charge protocol to enable the charger to output high voltage/large current.
Fast charge simulation: simulate the protocol that the charger does not support, and improve the compatibility of the charger.
A common part of the fast charge protocol:
Qualcomm: QC2.0, QC3.0, QC4+
MediaTek: PE2.0, PE3.0
Huawei: FCP SCP
OPPO: VOOC, Super VOOC
OnePlus: DASH, Warp
USB Type-C: PD2.0, PD3.0, PPS mAh, mWh: namely milliampere-hour, milliwatt hour, milliampere hour is the unit of capacity For a battery, mAh*voltage=mWh

Appendix 2: Basic operating knowledge

1. Capacity measurement of power bank
Preparation: power bank to be tested, USB tester, HD35 electronic load or mobile phone, charger.
Data to be checked: the capacity &energy value of the power bank (mAh Wh), the voltage and current value of the power bank when output.
Fully charge the power bank first, then adjust the tester to a non-zero data group, then clear the current data set, and use the power bank to charge the mobile phone or use HD35 electronic load to discharge until the power bank automatically shuts down, use the charger to power the tester, and then record the test data: mAh and mWh on the meter.
Method 1: Compare the tester's display of mWh divided by 0.9 and the power bank's Wh. If the difference is small, it means the power bank has the right Wh value (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 9V charging, the tester displays mAh multiplied by 2.7. If the difference is small, it means the power bank has the right capacity(suitable for a power bank with no Wh power bank)
Since many mobile power batteries now have over 10000 mAh, if you simply rely on charging your mobile phone to measure the capacity of the power bank. You need to charge the phone many times, so it takes even a week to measure a mobile power source. In order to quickly release the energy of the power bank, you can use constant voltage and constant current load to discharge:
Take the new Mi Power Bank 2 as an example, it can support 5V2A Output, 38.5Wh/(5V*2A)=3.85. It takes about 4 hours to discharge the power of the power bank. If you use the trigger function of HD35 electric load, you can use 9V/18W fast discharge, 38.5Wh/(9V*2A)=2.13h. It takes a little more than two hours to discharge the power bank, and quickly identify whether the mobile power supply has a false capacity value (high power during discharge, the conversion rate will decrease, and the actual measured capacity will be smaller).

Appendix 3: Knowledge points

The standard Type-C equipment normally has no voltage output, because some Type-C ports are sometimes the power supply end and sometimes the power reception end. For example, the power bank with the Type-C interface can not only charge the mobile phone but also use the charger to charge the power bank. Or Mac Book,

you can use the charger to charge the mac book and the mac book can also charge the iPhone.
TC66 is equivalent to a load when the PD switch is turned on, so it can be lit when plugged into the charger. There is only one CC signal line inside the double-headed Type-C line. If it is not lit, the tester terminal needs to be turned 180 degrees.
It is necessary to turn off the PD switch when measuring the charging current of the mobile phone, otherwise, it may affect the communication. The PD switch must be turned on when measuring fast charging protocol and using the trigger function This device complies with part 15 of the FCC Rules. Operation is subject to the following two
conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for help.
The device has been evaluated to meet general RF exposure requirements. The device can be used in portable exposure conditions without restriction.

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Documents / Resources

	Hangzhou Ruideng Technology TC66 Type-C Tester with Full Colour Display [pdf] Instructions TC66C, 2A5Y7-TC66C, 2A5Y7TC66C, TC66, Type-C Tester with Full Colour Display, TC66 Type-C Tester with Full Colour Display

References

- My Files