

USB Type-C **Multimeter**

This product is a USB Type-C meter with various functions.

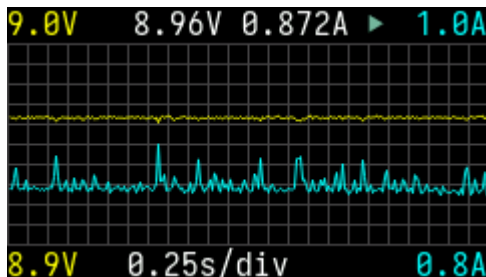
Warning

The seller is not responsible for any consequences produced by mistaken operations.

Main features

- Read the voltage & current
- Fast-charge trigger
- Fast-charge auto detection
- Current & voltage graphing
- E-mark reader
- Oscilloscope
- Statistics

Current & voltage graphing



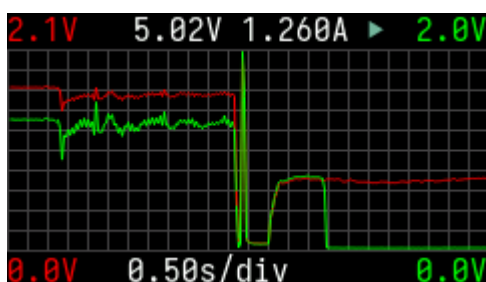
Double-click the middle button on the home panel to enter the current & voltage graphing panel, and you can see the graph of current and voltage on VBUS with time.

The readings in the four corners of the screen display the highest and lowest values in the chart respectively.

The real-time value of the current and voltage is displayed in the middle of the upper part of the screen; the time interval of each grid is displayed in the lower part.

Pause

The icon on the upper right side of the panel shows the current status (Paused or not), ► means it is continuously graphing, and || means the graphing is paused. To pause/continue the graphing, click the middle button.



Sampling rate adjustment

Press the left or right key to adjust the sampling rate, to the left is to decrease, and to the right is to increase. After adjustment, the sampling rate will be briefly displayed on the screen. The maximum sampling rate on this panel is 40 times per second.

Exit graphing

Double-click the middle key to exit graphing.

E-mark reader

The meter is capable of reading the E-mark information of Type-C cables. To use this feature, power the meter on with the host port, and do not leave anything plugged in on Type-C IN/OUT ports. Afterwards, you plug in one side of the cable to the OUT port (Female port) of the meter and leave the other side floating (As shown below). Finally, press and hold the right button on the home panel to enter the E-mark reader panel. The meter will communicate with the cable and show cable information.

E-mark Cable Info Dump	
Power Cap	20V 5A
Data Cap	USB2.0
I.Vconn	2.0mA
Cable Type	Passive
Vendor	YM Electric
FW [0H]	HW [0H]

Fast charge automatic enumeration

Connect the meter to the charger, press and hold the left button on the meter's home panel. The meter will ask whether to perform a fast charge enumeration. Before the enumeration, make sure no load devices (e.g., Smartphones, tablets) remain on the meter.

Warning

During fast charge enumeration, load devices (e.g., Smartphones, tablets) can be burnt if they are connected to the meter.

Select "Yes" on the confirmation panel to enter the fast charge automatic enumeration panel, and the meter will automatically detect the available fast-charge protocols. After the detection completes, the upper right corner will prompt "Complete", supported protocols are displayed in green, and the unavailable protocols are displayed in red.

```
Fast-Charge Enum
FCP-9V-12V-18W  Apple-2.4A
SCP
VOOC/DASH/WARP  AFC-9V-12V
SuperVOOC-65W   MTK-PE
QC2.0-9V-12V-20V
QC3.0            QC4.0
PD3.0-PPS-60W
```

Double-click the middle key to exit this panel.

Fast-charge trigger

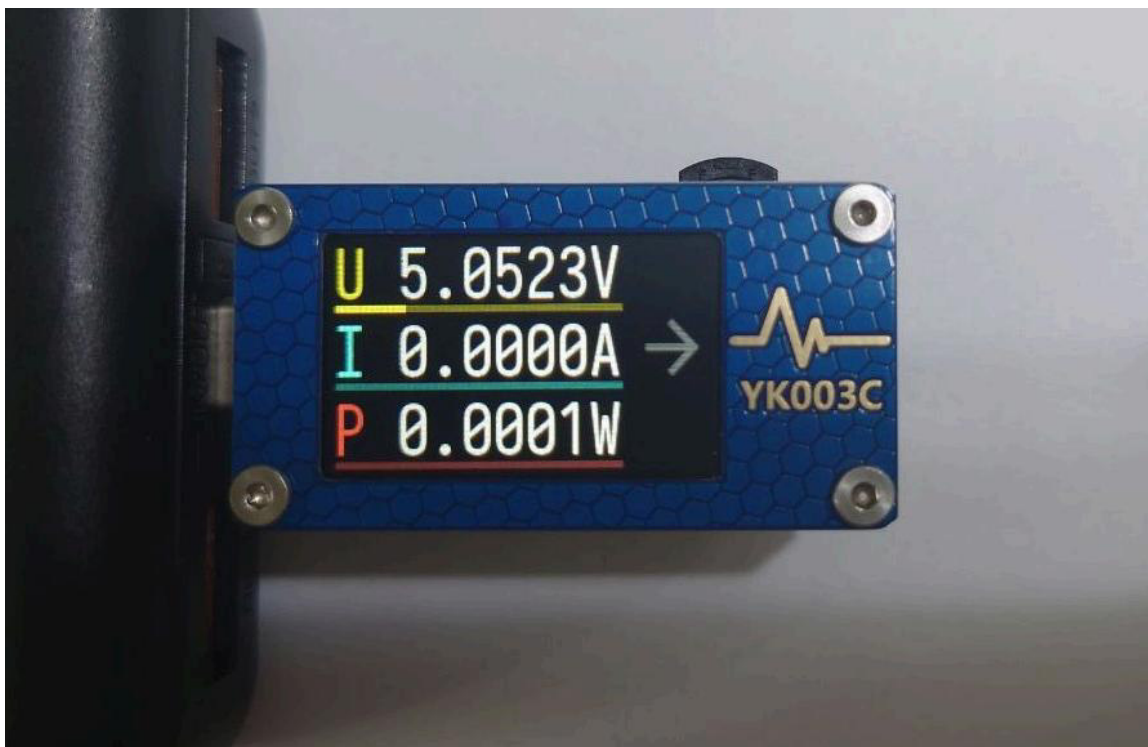
Power Delivery

The Power Delivery protocol (And its subsets, e.g., PPS) must be triggered at power-up time.

Connection

The meter can be connected to the charging port in two ways: direct connection and connection through cable. The sketches of the two methods are as follows:

Direct connection



If the meter is directly connected to the charging port, you can press any of the left and right keys to power the meter on.

Connect through a cable



If the meter is connected to the charging head through a cable, only one of the left and right keys can power on the meter. Press the button on any side and hold it for 3 seconds. If the screen does not light up, press it on the other side to power the meter on.

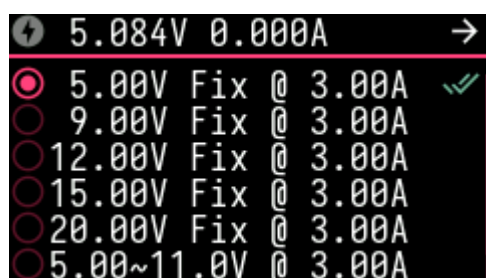
Power-on options

After power-on, you have three options; we explain them to you one by one as follows:

- **⏻ Keep Power Only** The meter won't respond to PD messages; it only pulls down the CC line. With this option, you cannot trigger PD fast charge, but you can start triggering other protocols.
- **⚡ Start PD Trigger** Pull down the CC line, respond to the PD message, and enter the PD trigger panel. If you want to trigger PD, you need to select this option within a certain period after power-on; otherwise, the communication could time out.
- **🔌 Power Off** Release the pull-down on the CC line. This option will stop the charging port from supplying power; thus, the meter will be shut down.

PD trigger panel

After entering the PD trigger panel, the meter displays the current and voltage supported by the charging port. Like the following example:



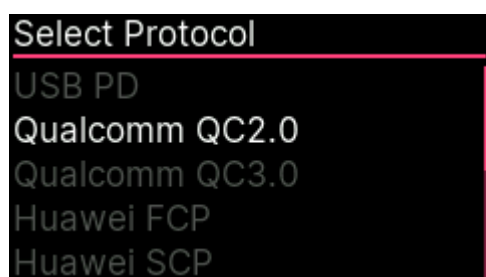
The items with "Fix" represent fixed voltage PDOs, and the items with a voltage range represent PPS PDOs with adjustable voltages. Scroll to the left or right to select an item, and then press the middle button to trigger this PDO.

For a fixed voltage PDO, after the voltage is triggered, there will be a tick ✓ on its right side indicating the trigger is successful.

For a PPS PDO, click the middle button to enter the PPS trigger panel. On this panel, the upper two readings show the real-time voltage and current, and the lower-left represents the target voltage set by the current protocol communication. The lower-right represents a single adjustment interval. Scroll the key to the left or right to adjust the voltage. Double-click the middle button to return to the previous panel.

Other protocols

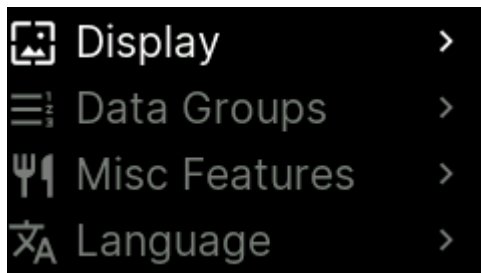
On the home panel, click the left button to enter the fast-charge trigger panel. Select the protocol you want to trigger on the trigger panel, and then press the middle button to enter.



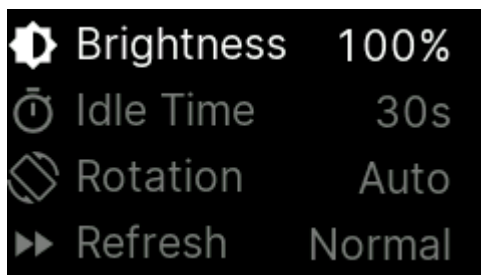
For example, if you want to trigger the QC2.0 protocol, select the QC2.0 protocol, click the confirm button, wait for the completion of the communication, and the meter will enter the trigger panel of the corresponding protocol. The specific panel of each protocol are shown in the figure below.

Main menu

Long press the middle button in any home panels to enter the main menu panel. There are multiple submenus in the menu. Scroll the key to the left and right to select a submenu item or adjust parameters, click the middle button to enter or save, and double click the middle button to exit.

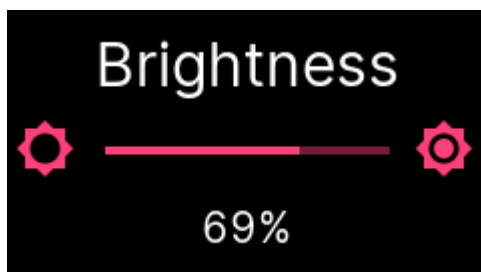


Display



Brightness

Select this to adjust the screen brightness. Click the middle button to save the change.



Idle Time

If there is no operation to the meter in a period of time, it will enter the idle mode and dim the screen. You can change the idle waiting time before the screen goes dark with this option.

Rotation

Change the orientation of the screen. Choose "Auto" to make the meter change the orientation automatically with the gravity sensor.

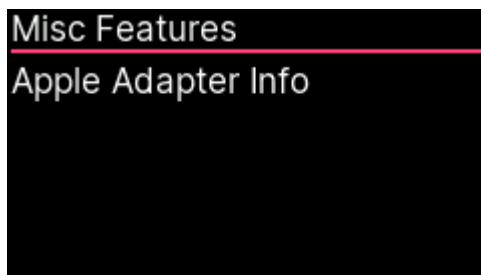
▶▶ Refresh and +1 taring

For details, see [meter settings](#).

Data Groups

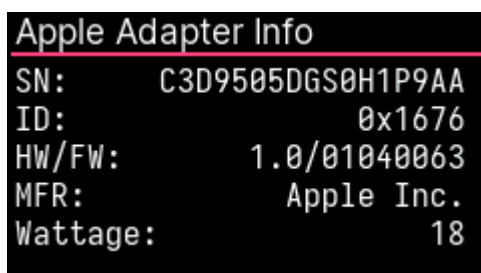
Make change to data groups, see [Statistics](#) for details.

Misc Features



Apple Adapter Info

Plug-in in to an Apple PD charger, and enter this option. You should be able to see the following:



Language

Set the language.

Debug

Show the debug menu of the meter

Information

Show device information.

Voltage & current measurement

Overview Panel

This meter can measure voltage and current. The main panel of the measurement is as follows:

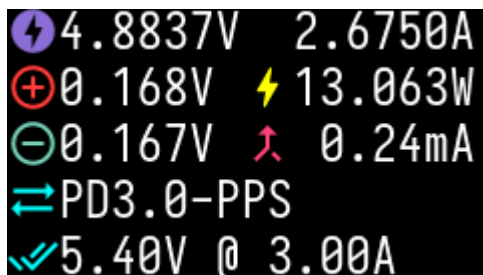


There are 3 readings shown in big fonts, **U** shows the voltage, **I** shows the current, and **P** shows the power. There are instantaneous bar graphs below the readings to catch faster movements.

Click the middle button to switch to other measurement panels.

Detailed measurement manual

There are more detailed data displayed in this panel:



- ⚡ The voltage and the current on the VBUS.
- ⊕ The voltage on the USB D+.
- ⊖ The voltage on the USB D-.
- ⚡ The power on the VBUS.
- ⬆ The self current consumption of the meter.
- ↔ The fast-charge protocol that has been negotiated between the charger and the load device.

- ✓ The voltage and the current that has been negotiated between the charger and the load device.

Measurement related settings

Taring

"Taring" is a patented feature of this meter, which allows the meter to accurately display the input or output current (the difference between the two is the meter's own power consumption).

Traditional Type-C meters cannot eliminate the impact of their own power consumption on the measurement. These meters will read out as 0mA when powered from one side, and read out their own power consumption when powered from the other side. The user cannot clearly determine whether the current is input current or output current.

Long-press the middle key on home panels to enter the main menu, select "Display", and then look down to the "Taring" option. In the "Taring" option, you can choose among "Tare to meet output", "Tare to meet input" and "Show raw readings". When "Tare to meet output" or "Tare to meet input" is set, the meter can display accurate current regardless of the actual power direction.

When the host power supply (PC port) is present, the meter itself stops taking power from the circuit to be tested and instead takes power from the host power supply port. This option has no meaning since the input and output currents are the same.

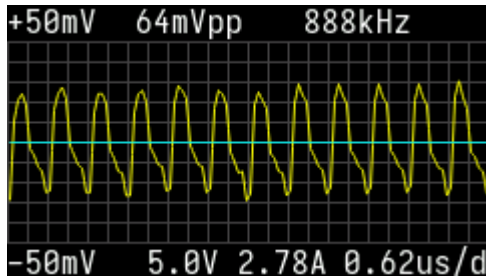
Refresh Rate

Long-press the middle key on home panels to enter the main menu, select "Display", and then look down to the "Refresh" option. In the "Refresh" option, you can choose among "Tare to meet output", "Tare to meet input" and "Show raw readings". When "Tare to meet output" or "Tare to meet input" is set, the meter can display accurate current regardless of the actual power direction.

This option sets the refresh rate of the meter's readings. There is a specific update rate for each choice. For example, `5sps` means readings update 5 times per second.

Oscilloscope panel

You can click the right button to enter the oscilloscope panel.



In the oscilloscope panel, you can see the ripple voltage on VBUS.

Values on the left side of the panel display the highest and lowest voltages in the graph respectively ("+50mV" and "-50mV" in this example).

The upper middle of the panel displays the peak-to-peak value of the voltage (64mVpp in this example) and the primary component frequency (888kHz in this example); the lower part displays the real-time DC current and voltage on the VBUS. The time interval of each grid is displayed in the lower right corner.

Pause

The icon on the upper right side of the panel shows the current status (Paused or not), ► means it is continuously graphing, and || means the graphing is paused. To pause/continue the graphing, click the middle button.

Sampling rate adjustment

Press the left or right key to adjust the sampling rate, to the left is to decrease, and to the right is to increase. After adjustment, the sampling rate will be briefly displayed on the screen. The maximum sampling rate on this panel is 8Ms/s.

Exit graphing

Double-click the middle key to exit graphing.

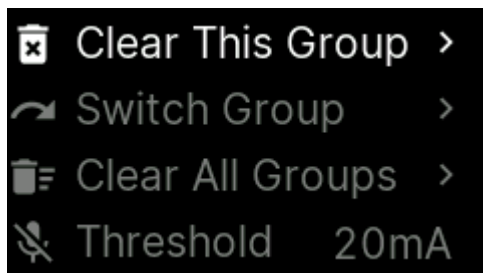
Statistics panel

On statistics panel, you can read out the statistics as follows:



- ⚡ Real-time voltage and current
- 🔋 Accumulated capacity
- 💡 Accumulated energy
- 🕒 Total time of accumulation
- ⚖️ Current data group No.
- ⚖️ Platform voltage
- 🌡️ Current temperature

Statistics related settings



Clear group

Long-press the middle key on home panels to enter the main menu, select "Data Group". Select "Clear This Group" to clear present group. Select "Clear All Groups" to clear all data groups.

Switch group

Long-press the middle key on home panels to enter the main menu, select "Switch Group", then choose the group you want to switch into.

Accumulation threshold

Long-press the middle key on home panels to enter the main menu and select "Threshold" to set the accumulation threshold. The accumulation keeps running when the current is greater than the threshold and stops when the current is smaller than the threshold. A threshold of 0mA means the meter keeps accumulating no matter how small the current is.