POWER-Z KING METER

user's Guide

V1.0

2017.5

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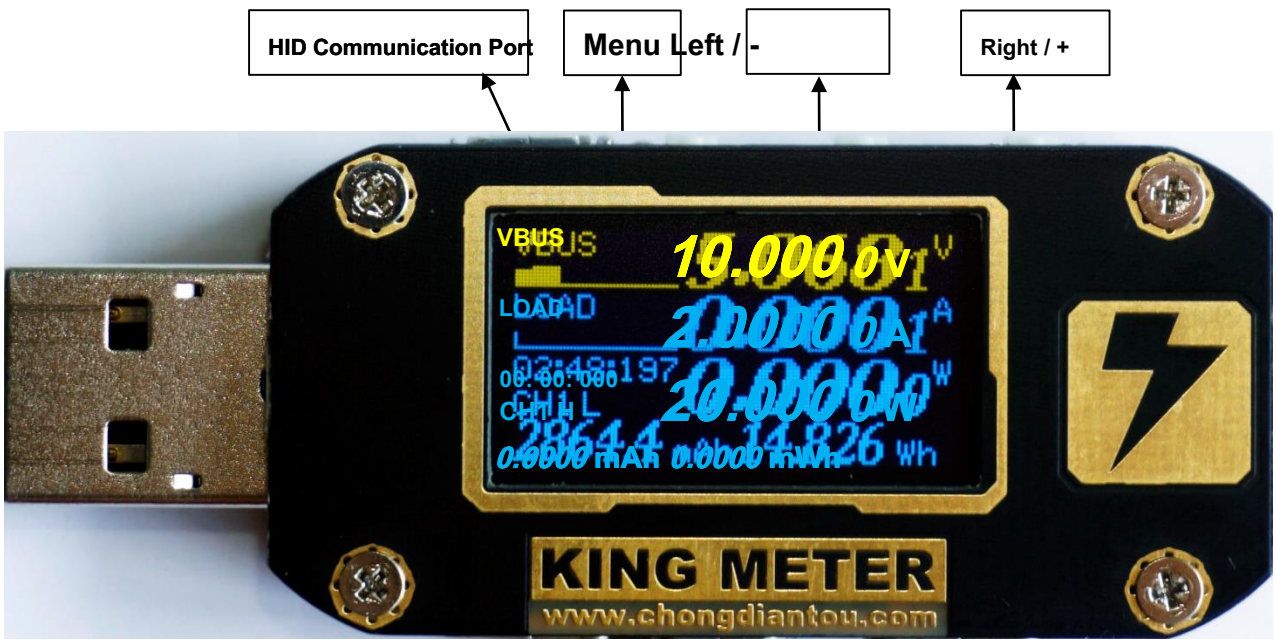

General Specifications	
Control IC	Cortex TM- M3 72MHz
Display	OLED 128X64 50Hz (refreshed 50 times per second)
Theoretical life of the internal memory	Random algorithm stored for about 30 years
Operating temperature	0-40 ℃
port	USBA, Micro USB, TYPE-C
The maximum annual temperature drift errors	± 50ppm
Volume (length X width X height)	62X24X12
weight	20g
Power supply type	HID port 5V, other self-created port electrical 3.7-24V
Except HID any port operating current of 24V maximum	
pressure	3mA @ 5V standby 4-15mA
QC2.0 QC3.0 sniff test	stand by
PD sniffing Communications	stand by Pro version supports protocol packet capture PD2.0
Typical interface contact resistance	TYPE-C to TYPE-C 28mΩ / TYPEA to TYPEA 30mΩ
Line resistance evaluation	stand by
Offline data	2560 X 5 groups own dedicated memory 512KBIT

Function Specifications Range		Resolution	The basic error
VBUS voltage	0-24V	0.1mV	± 0.05% + 5d (L)
Current LOAD	0-5A	0.1mA	± 0.05% + 5d (L)
Capacity / Energy	0-199999Ah / Wh 0.0001mAh / mWh ± 0.2%		
Once every 100mS accumulation write once memory every 3.6 seconds			
When L represents the lowest acquisition speed, the main interface to the data observed			

Features

A typical built-in high-precision measurement accuracy of 0.02% and a typical measurement error to a voltage drift of 10ppm

ADC ASIC flow, better performance than the MCP3421, and in order to ensure the accuracy of the current, a typical integrated drift is 20ppm, high quality power 3W sampling resistor. It can be up to 0.01% reading error.

Ensure accuracy high-speed measurements at the same time, the fast acquisition speed, voltage and current collected once every 10mS Nu

It is, 10 times faster than the acquisition speed peer manufacturers, to test for high-speed power supply output ripple, the response speed and noise data.

Ripple test is similar to a function of the oscilloscope, but still not the same speed as compared to the oscilloscope, you can

General meet the daily needs, you can test lower than the ripple of 50Hz.

Offline curve built large capacity memory, a total of five groups, each group of records can be maximum 50 hours. This feature

Charging profile test of electrical equipment, saving interval can be set.

PC APP powerful PC communication software, on-line data, offline data management, calibration, firmware upgrade set

In one, and the driver-free, plug and play, Pro version can also be tested PD2.0 protocol, above the line CC monitor and display the decoded data, such as recording the Mac Switched handshake packet 10, each data contents of the package can be reduced to written form, ideal for technology development.

Sniff test whether QC protocols or mobile power charger USB interface supports fast charge RA QC2.0,3.0

Meeting.

PD PD communications protocol test instruments from physical chip, in addition to the Pro version can be crawled in PC communications so

Outside data, Standard Edition also can monitor and sniffer mobile power charger or USB interface supports PD2.0 communication protocol.

Rich interface integrated instrument total of six USB ports, one of which is the HID communications and independent power supply,

TYPE-C USB two forming a pair to test TYPE-C and PD data communication line, retains a Micro USB input lines can be tested with the old standard data line, and the other two TYPE-A type interface is a common test interface.

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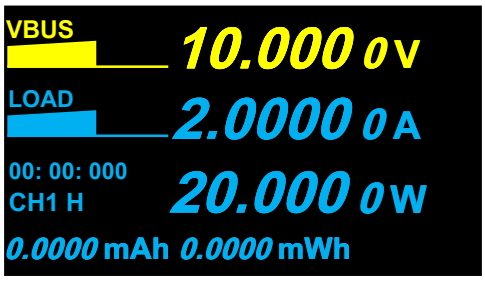
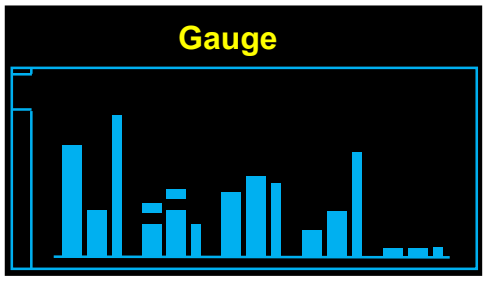


The main interface 1: Histogram display metering information characters

menu	Short press enter **Gauge meter** Setting interface, press Start to stop or continue the current memory channel measurement
Left | Right	Other main interface switching
00: 00: 000	Metering time, 100mS primary voltage and current cumulative
CH1	Dividing the inside of the channel 5 to the storage capacity, energy, metering time, off-line curve, i.e., channel 1 CHI
H	Can be set high (H), medium (M), low (L) voltage acquisition speed, increased power consumption of the high rate, fast response, low rates would ensure better accuracy and resolution.
VBUS, LOAD	It represents the voltage VBUS USB port, LOAD represents the load current

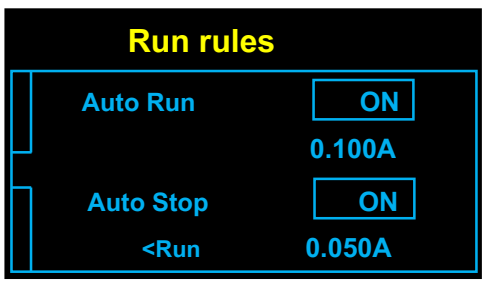


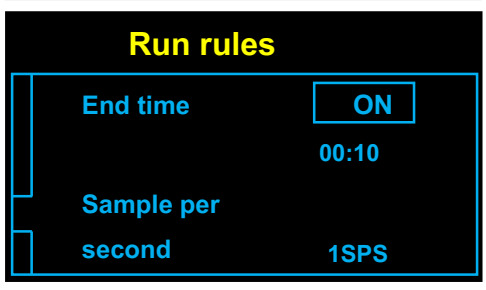
Menu interface 1: Gauge measurement

menu	① to switch to a lower level menu option ② Exit
Left | Right	① ② storage channel management start, pause, delete information ③

Menu interface 2: Record Record curve

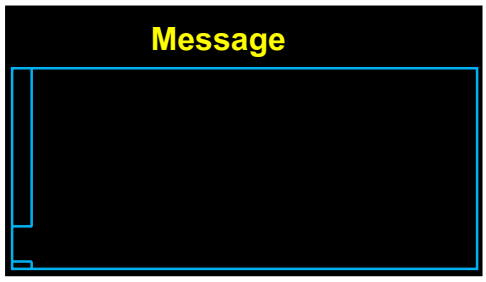
menu	① to switch to a lower level menu option ② Exit modification area
Left | Right	① changing the recording interval
Save space	Holds the interval time, 3.6 seconds minimum, maximum 72 seconds
Max record	The maximum recording time when recording reaches Save space X times during 2560, data will be discarded later.

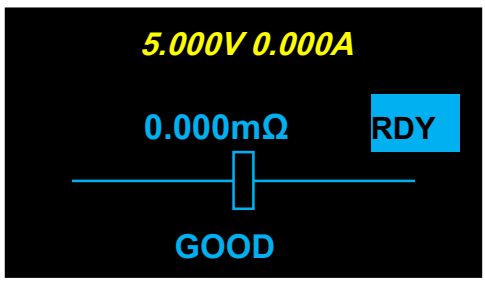




Menu interface 3,4: Run rules Operating rules

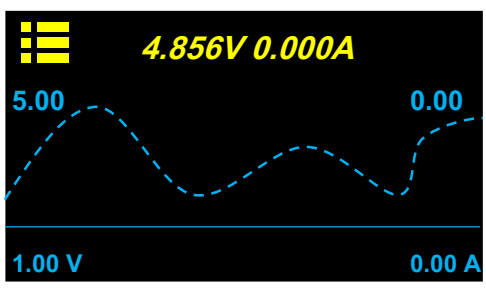
menu	Switching to a lower level menu option
Left | Right	① Open / Close ② change the current threshold
Auto Run	When opened, such as 0.1A it will automatically run measurement function, measurement of load current reaches the set does not create a new channel, but continue to Guage selected channel.
Auto Stop	Will automatically stop when the measurement of this parameter must be less than the constraint condition Auto Run, the load current is less than 0.05A as provided.
End time	Automatic ending time, this parameter can limit the maximum recording time, a maximum of 10 hours for precise control of the time measurement.
Sample per second	The number of data acquired per second, the number of actually filtering, the larger the value the faster refresh rate.





The main interface 2: Evaluation charging cable line resistance and the ability to ma

menu	ignore
Left | Right	Other main interface switching
RDY	Automatically calibrated current parameter data is 0, i.e. show the RDY ready to be connected to increase the load current is to evaluate the performance of the wire.
0.000mΩ	Measured resistance wire, the worse the larger the
GOOD	Common inferior Inferior Good Ordinary Very Good Quality Gold Artifact charging line was used to assess the complement function



The main interface 3: Micro oscilloscope displays a graph VBUS

menu	Adjustment profile display speed and the display type
Left | Right	Other main interface switching
Curve speed	There are four stalls to choose the highest sampling rate 100SPS
Curve Type	Display only the voltage or current, a reduction in display speed

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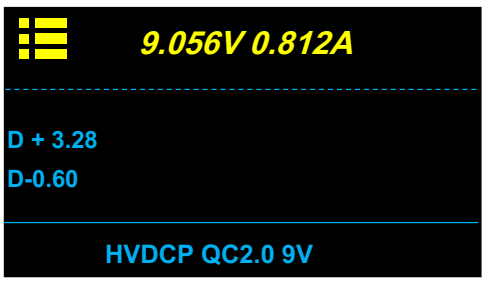
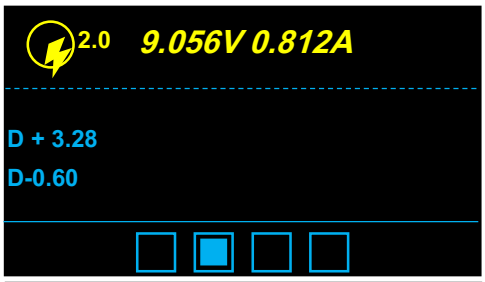
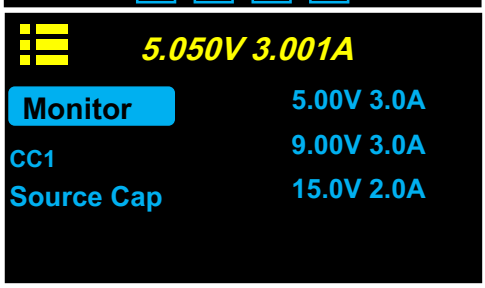
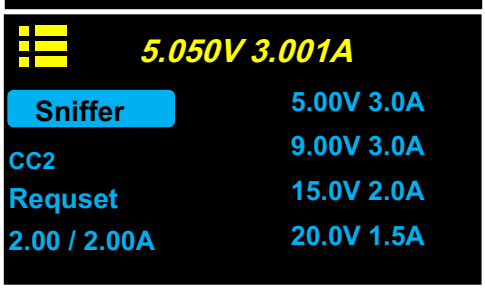
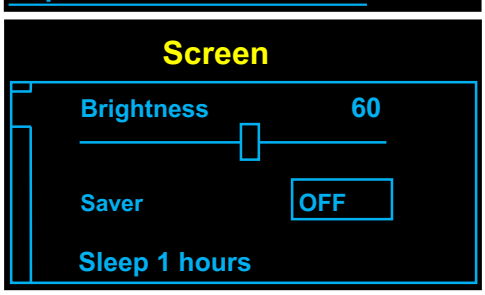
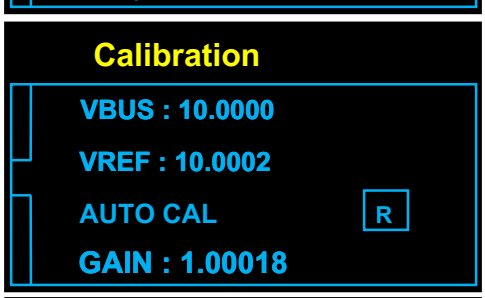


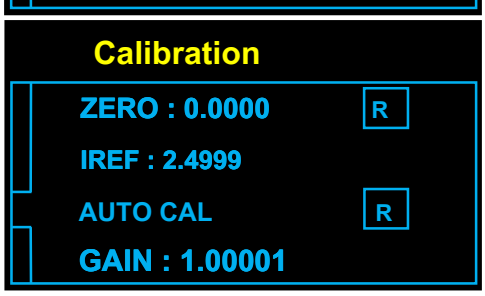












The main interface 4: Micro oscilloscope displays D +, D- curve

menu	After pressing the charging head can test protocol QC2.0,3.0
Left | Right	Other main interface switching
HVDCP	Charging protocol information
Sniffer mode	Currently only supports QC2.0, Q3. 0, the future will support more

The main interface 4: QC2.0 / 3.0 protocol test fast charge

menu	After pressing the charging head can test protocol QC2.0,3.0
Left | Right	Changing the voltage application
caveat 	When connecting the phone does not support the high-pressure or other USB-powered devices forced to apply a high voltage device will cause irreversible damage, serious direct burning equipment, test load at any output port.

The main interface 5: PD control protocol control interface

menu	Monitoring and sniffing mode switch
Left | Right	Other main interface switching
Monitor	Monitoring (default) listening only packet line CC, CC line connection will not be able to power down intermittently
Sniffer	Sniff mode, after pressing the menu key is automatically sent to PD charge k handshake protocol, and can switch the charging head of an internal voltage specification.
CC1, CC2	CC lines are communicating, automatic switching
Source Cap	Inside the PD protocol **Source or Sink Package**
Requset	in **Sniffer** The above voltage value of the request packet PD mode protocol

The main interface 6: About Logo Help

menu	Short press enter **System Settings** interface
Left | Right	Other main interface switching
Site	Access http://t.cn/RXN2NoR My blog address can get more help

System Settings interface 1: Screen Screen parameters

menu	Switching to a lower level menu option
Left | Right	① ② change screen brightness open screen saver standby time ③
Brightness	Step 5 screen brightness range 0-100
Saver	Screensaver mode
Sleep	Standby time, such as into the standby After 1 hour, the measurement does not stop

System Settings interface 3: Calibration Calibration parameters

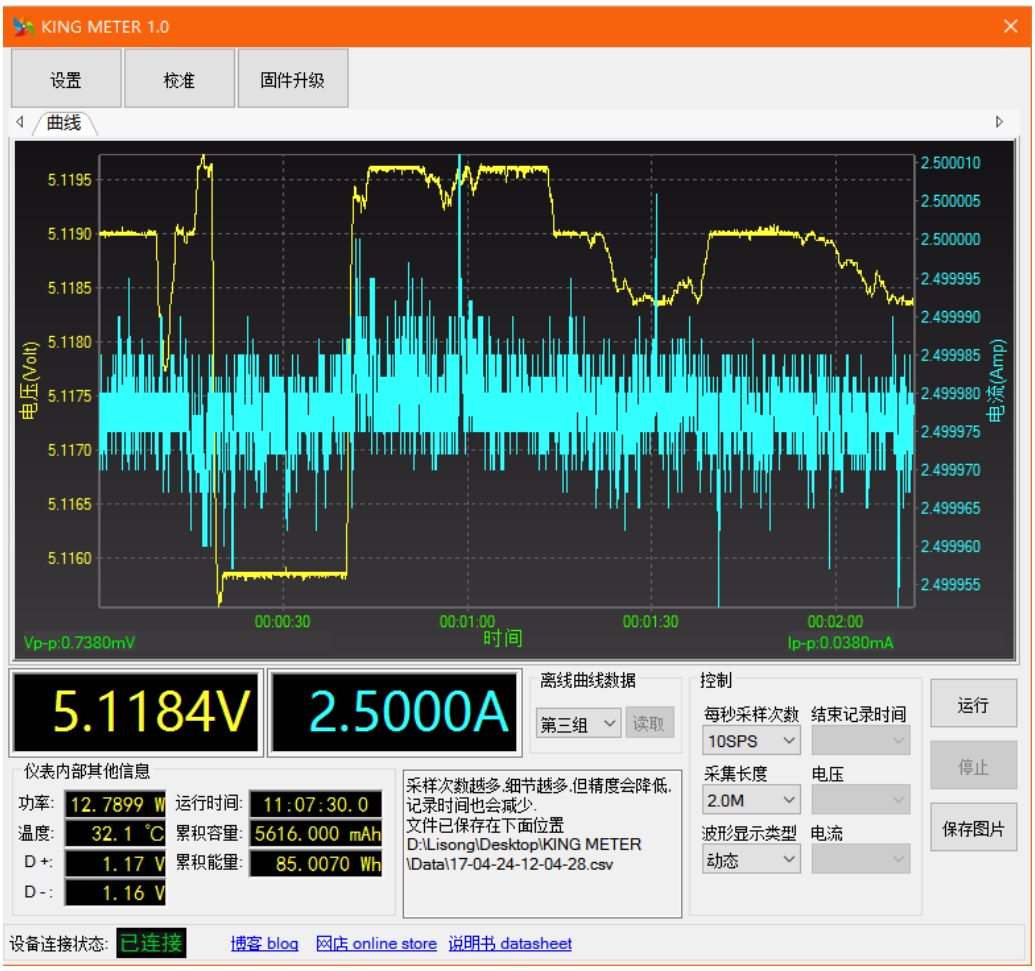
menu	Switching to a lower level menu option
Left | Right	Adjusting a reference voltage ① ② ③ manually adjust the gain calibration key
VBUS	Voltage measuring instrument
VREF	Standard input voltage source parameters, required very precise voltage source
AUTO CAL	Press **Right / +** After a key button calibration parameters
ZERO	Press **Right / +** A key after the key is set to 0 current
AMPS	Load current output port

System Settings interface 3: FactoryReset screen parameters

menu	Switching to a lower level menu option
Left | Right	**Right / +** Reference data, system settings back to the initial state

APP line introduction line curve is generated

Dynamic display waveform plot window area will be plotted in a dynamic axes, and calculates the window Maximum and minimum values (Vp-p, Ip-p), in accordance with the acquisition time curve scrolls from right to left, the figure shows a high-fidelity 2.50000A standard measurement noise current source, in fact, the noise meter 100SPS internal noise during high-speed acquisition, 10SPS when set, the noise can be controlled better.



APP introduction data read off curve is generated

Cumulative display time axis waveform curve is always 0, the curve will continue to compress. Applications

The following figure shows a section record charging mobile power curve.