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Instructions for USB Intelligent electronic load

Applicable Model: HD25/HD35

Dear Customer,

Thank you for purchasing this USB electronic load 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.



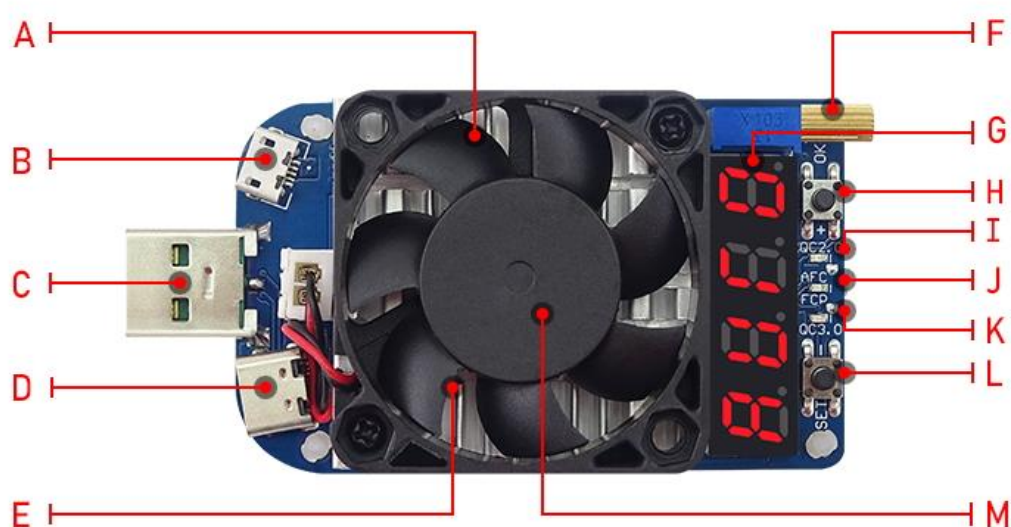
NOTE:

This product has no reverse connection protection, the input polarity cannot be reversed, otherwise the product is permanently damaged and cannot be repaired.

Technical Parameters:

Product Model	HD25	HD35
Rated operational voltage	DC4-25.0V	
Max discharging power	25W	35W
Rated operational current	0.25-4.00A (when fan don't work, adjust current from 0.05A)	0.25-5.00A (when fan don't work, adjust current from 0.05A)
Fan Speed	Oil bearing intelligent temperature control fan , speed $5800 \pm 10\%$ RPM	Hydraulic bearing intelligent temperature control fan , speed $8000 \pm 10\%$ RPM
Quick charge trigger mode	QC2.0 5V、9V、12V、20V, QC3.0, FCP, AFC9V	
Constant current resolution	$\pm (1\% + 3 \text{ digits})$	
Heat dispatch method	Intelligent temperature control fan + All aluminum fan	
Working temperature	$-10^{\circ}\text{C} - 40^{\circ}\text{C}$	
Adjustable potentiometer	Precision multiloop adjustable potentiometer	
Display mode	4 digit LED tube	
Expansion port	Micro USB port、Type-C port	
Product weight	About 52g	
Product size	84x41x28mm	
Application	Application suggestions: Charger, power supply and other device manufacturers want long-term discharge or batch aging test of products, please choose HD35 (HD25 is not applicable)	

Product Structure



- A. All aluminum heat sink
- B. Micro USB port: MAX current 2A, can't trigger quick charge

- C. USB male port : MAX current 5A, can trigger quick charge
- D. Type-C port: MAX current 5A, can trigger quick charge (this product don't support PD trigger)
- E. Intelligent temperature control fan
- F. Precision multiloop adjustable potentiometer
- G. LED display tube
- H. OK/+ button (two operation way, long press and short press, have different function at different mode)
- I. Red LED QC2.0 indicator
- J. Blue LED FCP/AFC indicator
- K. Green LED QC3.0 indicator
- L. SET/- button (two operation way, long press and short press, have different function at different mode)
- M. Two-dimensional code, scan code to check the latest manual

Trigger button on the back of products (two operation way, long press and short press, have different function at different mode)

Function Introduction:

a. Protection function:

OVP (over-voltage protection): there is OVP at 25-30V; it will be damaged permanently over 30V. at OVP, LED show OVP, as picture 1 show



picture 1

OTP (over-temperature protection): load temperature is over 80°C, the LED show OTP, as picture 2 show.



picture 2

OPP (over-power protection): the power is over 35W (25W for HD25), the LED show OPP, as picture 3 show.



picture 3

b. Set output recovery mode after load entering protection status, manual or automatic

c. View the voltage value, current value and power value of the load.

d. Intelligent temperature control fan. When the power is over 10W or the temperature is over 40°C, the fan will start.

e. Precision multiloop adjustable potentiometer: you can adjust the current precisely, upto 0.01A. so you don't need to adjust a big current mistakenly to damage the power supply. So the power supply will not be damaged due to mistakenly adjustment

f. you can set default boot status freely, open or close.

Trigger /Decoy Function:

1. Trigger function:

The charger can be used for QC2.0, QC3.0, Huawei FCP, Samsung AFC 9V and multiple fast charging modes for trigger.

2. Quick charge support detection function:

Use the AUTO mode to detect that the charger can support for fast charge mode or not.

3. Power-on automatic trigger function:

After power on, trigger automatically quick charge and automatically turn on the load, which is suitable for batch testing for aging chargers.

Operation Instruction

Load function introduction:

The load is powered at the range of 4-25.0V (the input polarity cannot be reversed, otherwise the product is permanently damaged and cannot be repaired), the LED will be flashing to remind current setting value, waiting for output. Press ON/OFF button, open output to start work.

1. Adjust output current value.

Turning the rotary control clockwise increases the value and anticlockwise decreases the value. According to the needs of the situation, the potentiometer can realize coarse adjustment or fine adjustment. The fine adjustment can be accurate to 0.01A.

2, Adjust LED display status

Press "SET" to adjust the LED display status, default display output current value. Press "SET" button to display *.**A、**.P、**.V followed by recycling.

3. Open or close load output

Press "ON/OFF" button, you can open or close load output

4, Set load default boot status (open or close status, Factory default close status)

Press and hold "ON/OFF" button to set load default boot status freely. Press and hold "ON/OFF" button, if the LED will display "--ON", as picture 4, the load will open output when power on next time; If the LED display "-OFF", as picture 5 show, the LED will display current value flashing at last shutdown when power on next time, then press "ON/OFF" button to open output.



picture 4

5, Set the load output recovery mode after protection removed.

Press and hold "SET" button to set output recovery mode after protection removed. Press and hold "SET" button, if the LED will display "--ON", as picture 4, and the protection was removed, the load will recover to work; If the LED display "-OFF", as picture 5 show, and the protection was removed, the LED still show protection status, then press "ON/OFF" button, the display will display present setting current flashing, then press "ON/OFF" button again, the load recover to work.



picture 5

NOTE: Please check the output current of power bank carefully. The current of the general power bank is generally small, so adjust smaller current when the load was used.

Trigger function introduction:

The trigger/decoy function is the function of sending signals on D+D- to induce quick charging of the charger. Under this mode, the load cannot be switched on and off. But the current of the load can still be adjusted by the potentiometer. (except AUTO mode, other modes only send trigger instructions and do not judge whether the trigger is successful or not)

The mode corresponding to different display states in the trigger mode:

QC2.0 5V: LED tube displays -05.0, red LED indicator flashing

QC3.0: LED tube displays actual voltage, green LED indicator flashing

Samsung AFC9V: LED tube displays AFC9, blue LED indicator flashing

Huawei FCP: LED tube displays FCP9, blue LED indicator flashing

AUTO: LED tube displays AUTO

Button function at trigger function:

SET/- button:

Short press: begin to trigger or switch the voltage of current quick charge mode

Long press: record current quick charge state, and open or close auto trigger function

OK/+ button:

Short press: begin to trigger or switch the voltage of current quick charge mode

Trigger button:

Short press: switch trigger mode

Long press: switch to load mode

1, Entry/exit trigger mode

Long press the trigger button to switch between trigger mode and load mode, when trigger mode enters into the load mode, the trigger state stay.

2, Mode switch:

Short press the trigger button to switch between 4 modes, QC2.0, QC3.0, FCP/AFC and AUTO, In the same time, the LED indicator will light. When you switch mode, last mode trigger state will be closed.

3, QC2.0 trigger:

At QC2.0 mode, press OK button, after 2s corresponding LED will flashing to remind trigger complete, press + or – button to switch between QC2.0 5V, 9V, 12V and 20V.

4, QC3.0 trigger:

At QC3.0 mode, trigger operation is same with above. LED display the real voltage, press + or – button to increase or decrease voltage value

5, FCP/AFC trigger:

At FCP/AFC mode, trigger operation is same with above. Press + or – button to switch between FCP and APC.

6, AUTO trigger:

AUTO mode is used to detect the charger's support for the quick charging protocol. Short press "OK" button in AUTO mode for automatic load detection, and wait patiently for about 25 seconds, the LED indicates the quick charging protocol supported by the charger

7, Power on auto trigger:

Power on auto trigger can be used for batch aging chargers, automatically trigger preset mode after loading.

Set the load current and the boot automatically output of the load, adjust to the need of quick



charge mode, and then long press SET button, the preset is done. Long press SET button again to turn off auto trigger (QC3.0 can only remember positive bias value).

Q&A

Q: My charger nominal maximum support QC2.0 12V2A, how do I test if the charger is supported?

A: Insert load, long press the trigger button, then short press "OK" button, after the red light flashing, then short press twice to switch to QC2.0 12 v mode. Long press the trigger button to enter the load mode, and press the SET key to check whether the current voltage is around 12V. Turn on the load and slowly adjust the current to 2A. Check the voltage to see if there is a significant drop ($> 0.5v$), then let the load work for a while and measure the heating of the charging head. If the load is restarted or the voltage has a significant drop or the charging head has a sharp heating, the charging can not be fully loaded and must be used with reduced load.

Q: is my PD2.0 charger supported?

A: load can aging PD charger, but not trigger PD charger . Double head type-c line is connected with PD charger and load, and PD charger output 5V by default. If PD charger supports QC2.0 at the same time, high voltage aging can be achieved by trigger QC2.0.

Q: how do I get out of the trigger quick charge?

A: At trigger mode, short press trigger button to switch mode to exit; at load mode, long press the trigger button to enter the trigger mode and exit automatically.

Application

Assist to measure Micro USB cable good or not

Assist to measure Type-C cable good or not

Assist to measure output current capacity of charger good or not

The usage of large batch ageing test at the charger factory