

FNC88 manual

(V2.0)



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一、 Overview

FNC88 Type-C tester is a high-reliability, high-safety Type-C voltage and current detection meter and a fast charge trigger device for mobile communication terminals. With 0.96 inch TFT LCD display. Use an external 16-bit ADC, PD protocol physical chip. It can be used to measure the power supply or power consumption of Type-C interface, mobile phone chargers, U disks and other products; it can be used to measure the charging power of mobile phones, the input and output of mobile power; and it can be used to test the fast charging protocol of chargers..

This instruction manual includes relevant safety information, warning tips and solutions to common abnormal conditions, please read the relevant content carefully and strictly observe all warnings and precautions.

二、 Pay attention to safety matters

- 1、 Do not connect a power supply exceeding 24V to the tester.
- 2、 FNC88 supports high power input (such as $20V * 5A = 100W$).
- 3、 HID-USB interface is only used for data transmission.
- 4、 When using high voltage and high power work, the temperature of the tester will rise, please be careful to prevent burns.

三、 3. Appearance and structure diagram (see Figure 1)

- 1、 HID-USB data transmission
- 2、 Type-C male connector
- 3、 <Button, page / select button
- 4、 OK button, function button
- 5、 > Button, page / select button
- 6、 CC pull-down switch for PD protocol communication
- 7、 Type-C female connector

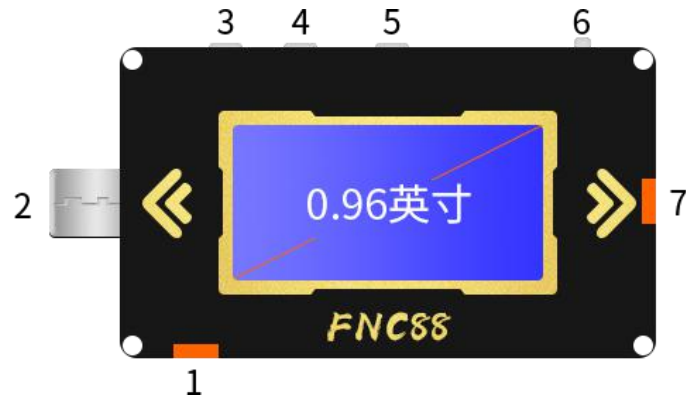


Figure 1

四、Technical index

Accuracy: $\pm (a\% (\%) \text{ reading} + \text{word count})$

Index	Range	Resolution	Accuracy
Input voltage	4~24V	0.1mV	$\pm(0.5\%+2)$
Input Current	0~5A	0.1mA	$\pm(1.0\%+2)$
input power	0~120W	0.1mW	$\pm(1.0\%+2)$
Load Equivalent Internal Resistance	0~9999.9 Ω	0.1m Ω	$\pm(1.0\%+2)$
D+ / D- voltage	0~3.3V	0.01V	$\pm(1.0\%+2)$
Equipment temperature	$^{\circ}\text{C}$	1 $^{\circ}\text{C}$	$\pm(1.2\%+3)$
	$^{\circ}\text{F}$	1 $^{\circ}\text{F}$	$\pm(1.2\%+4)$
Capacity	0~99999.9mAh	0.1mAh	for reference
Energy used	0~9999.999Wh	0.001Wh	for reference
Record time	999 hours 59 minutes 59 seconds	1 second	10 seconds / hour
Equipment runtime	999 hours 59 minutes 59 seconds	1 second	10 seconds / hour

五、Function page operation instructions

1、 Close-up page (see Figure 2)

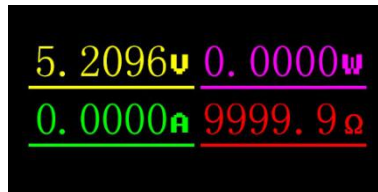


Figure 2

Description

Only the four key parameters of voltage, current, power, and load equivalent impedance are displayed. This page can change the display direction.

Instructions

(1) < > key

Short press: page turning.

(2) OK key

Long press: switch screen display direction.

2、 Capacity / power consumption observation page (see Figure 3)

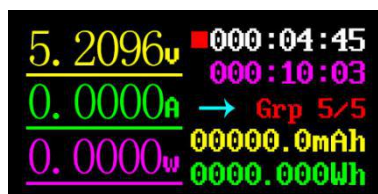


Figure 3

Description

FNC88 supports 5 sets of capacity / power consumption records.

XXX: XX: XX (white) indicates the capacity and power consumption recording time, corresponding to 5 groups of capacity, the power consumption has 5 groups of recording time, not lost during power failure.

XXX: XX: XX (magenta) indicates the running time after power on, reset after power on.

→ Represents the direction of current.

Instructions

(1) < key

Short press: page turning;

(2) > key

Short press: page turning;

Long press: switch record group.

(3) OK key

Short press: Pause / start recording when set to manual recording, invalid when set to automatic recording;

Long press: clear the current set of recorded data, including capacity, power consumption, and record valid time.

3、 Fast charge identification page (Figure 4)

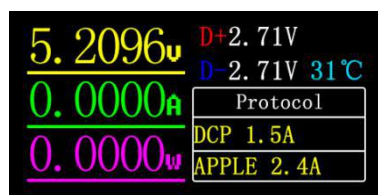


Figure 4

Description

The page is used to observe the current charging protocol, D + / D- voltage.

The list indicates the protocols that the current charging may be triggered, for reference only.

Instructions

(1) < > key

Short press: page turning.

4、 Fast charge detection and trigger page (Figure 5)

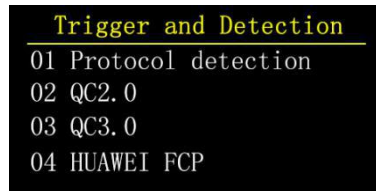


Figure 5

Description

Fast charge detection, fast charge trigger, short press OK to enter selection.

4.1 Fast charge protocol detection

After selecting Protocol detection protocol detection, press OK shortly to pop up **DANGEROUS !!!** (see Figure 6). At this time, if you press the OK button for a long time, it enters the state of automatic detection of the fast charge protocol; short press the OK button to cancel the detection.

After the test is completed (as shown in Figure 7), short press the OK key to exit the test interface; long press the OK key to repeat the test steps and retest.



Figure 6

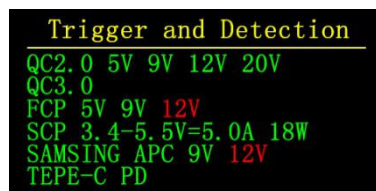


Figure 7

Note: Please turn on the CC pull-down switch and re-plug before using the detection function, otherwise the PD protocol cannot be detected. Do not connect any electrical appliances during the

test, otherwise the high voltage triggered during the test may burn the electrical appliances! ! ! ! !

4.2 QC2.0 trigger

Select QC2.0, press OK shortly to enter the QC2.0 trigger page (as shown in Figure 8), Failure will display **Trigger Failure!**



Figure 8

Instructions

(1) < >key

Short press: switch QC2.0 trigger voltage.

(2) OK key

Long press: Exit the current page. (Still triggering).

4.3 QC3.0 trigger

Select QC3.0, press OK key shortly to enter the QC2.0 trigger page (as shown in Figure 8), Trigger Failure will display **Trigger Failure!**

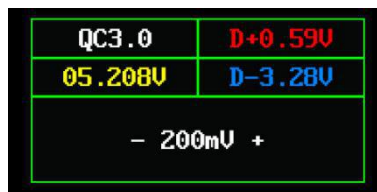


Figure 9

Instructions

(1) < >key

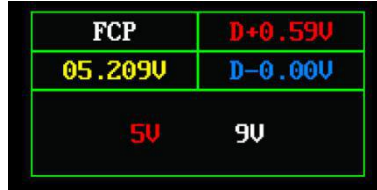
Short press: Decrease / increase QC3.0 trigger voltage.

(2) OK key

Long press: Exit the current page. (Still triggering).

4.4 Huawei FCP trigger

Select Huawei FCP and press OK to enter the Huawei FCP trigger page (see Figure 10). Failed to enter will display **Trigger Failure!**



FCP	D+0.59V
05.209V	D-0.00V
5V	9V

Figure 10

Instructions

(1) < >key

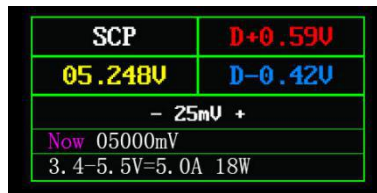
Short press: switch FCP trigger voltage.

(2) OK key

Long press: Exit the current page. (Still triggering).

4.5 Huawei SCP trigger

Select the Huawei SCP and press OK to enter the Huawei SCP trigger page (as shown in Figure 11). Trigger Failure will display **Trigger Failure!**



SCP	D+0.59V
05.248V	D-0.42V
- 25mV +	
Now 05000mV	
3.4-5.5V=5.0A 18W	

Figure 11

Instructions

(1) < >key

Short press: Decrease / increase SCP trigger voltage.

(2) OK key

Long press: Exit the current page. (At the same time exit the SCP trigger state).

4.6 Samsung AFC trigger

Select Samsung AFC, press OK shortly to enter the Samsung AFC trigger page (as shown in Figure 12), Fail Failure will display **Trigger Failure!**



Figure 12

Instructions

(1) < >key

Short press: switch AFC trigger voltage. (When the charger does not support the trigger voltage, the voltage will return to 5V)

(2) OK key

Long press: Exit the current page. (Still triggering).

4.7 PD protocol trigger

Select PD protocol, short press OK button to count into PD protocol trigger page (as shown in Figure 13). After the trigger fails, the page will not display voltage and other information, long press OK button to exit.

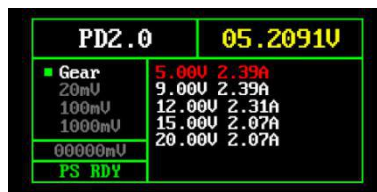


Figure 13

PD2.0 operating instructions

(1) < >key

Short press: select trigger voltage.

(2) OK key

Long press: Exit the current page.

PD3.0 operating instructions

(1) < >key

Short press: Select trigger voltage. When PPS is triggered, lower / increase voltage.

(2) OK key

Short press: When PPS trigger is selected, change the step voltage unit.

Long press: Exit the current page.

Note: PPS trigger needs continuous communication to keep, so the charger will restart for a period of time after exiting the interface.

5、 System information and settings page (Figure 14)

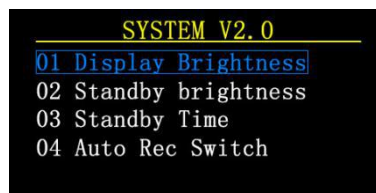


Figure14

Description

VX.X indicates the current firmware version.

Instructions

(1) < >key

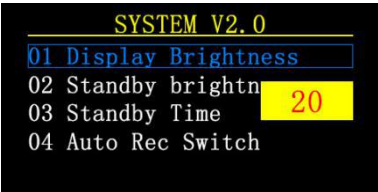
Short press: switch setting items.

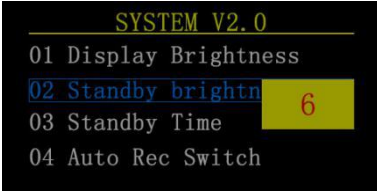
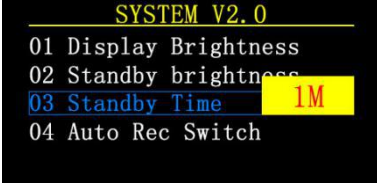
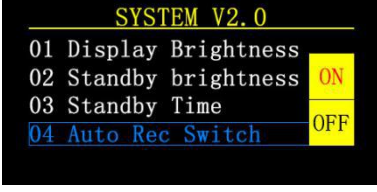
(2) OK key

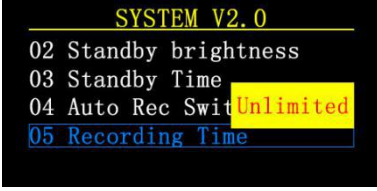
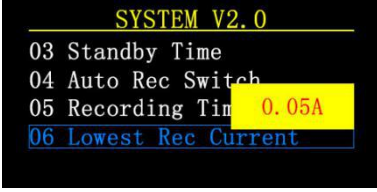
Short press: popup setting window.

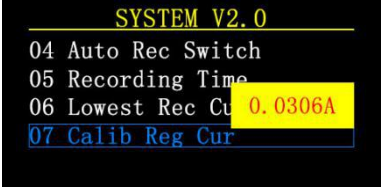
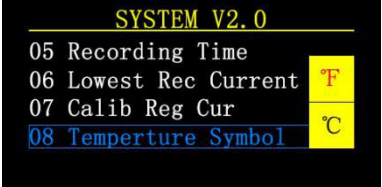
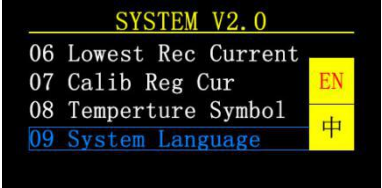
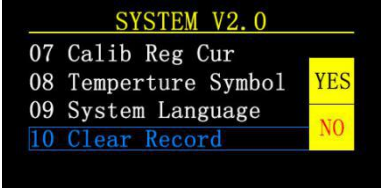
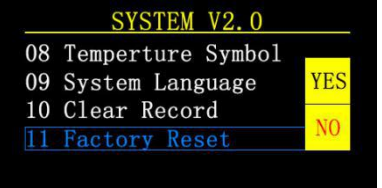
Long press: Exit the setting window.

Setting item description

	Screen display brightness setting, range 1-20 level.
	OK key: short press: OK, configuration takes effect.
	Long press: Cancel, configuration is invalid.
	< > key: Short press: adjust parameters.

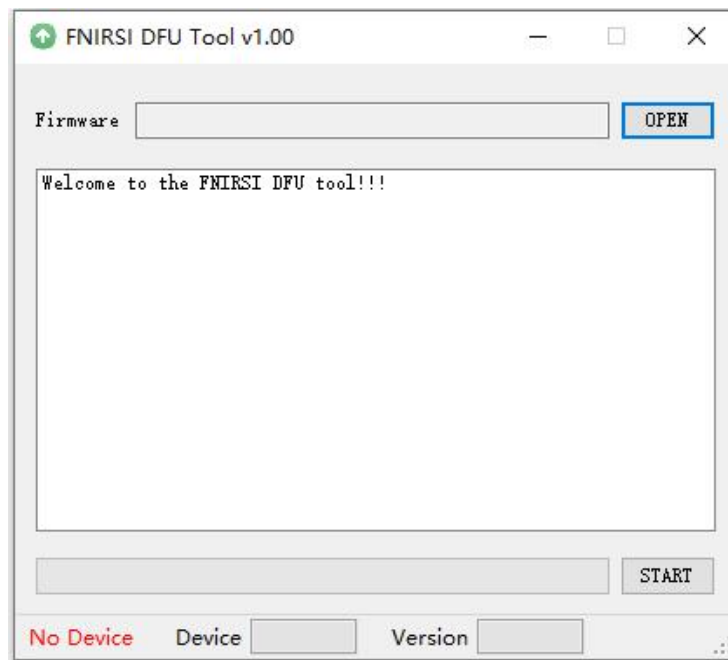
	<p>Standby screen display brightness setting, ranging from 0-20 levels, the backlight is turned off when standby is 0.</p> <p>OK key: short press: OK, configuration takes effect.</p> <p>Long press: Cancel, configuration is invalid.</p> <p>< > key: Short press: adjust parameters.</p>
	<p>Enter standby time, ranging from 0-30 minutes. No standby when OFF.</p> <p>OK key: short press: OK, configuration takes effect.</p> <p>Long press: Cancel, configuration is invalid.</p> <p>< > key: Short press: adjust parameters.</p>
	<p>Automatic recording switch: ON: recording when the current exceeds the threshold;</p> <p>OFF: The current threshold is invalid, and the record will be started and stopped by pressing the button.</p> <p>OK key: short press: OK, configuration takes effect.</p> <p>Long press: Cancel, configuration is invalid.</p> <p><> Key: short press: select.</p>

	<p>Recording time: limited capacity, power consumption recording time, adjustable range: 0 ~ 8 hours. When Unlimited, the capacity is recorded until the maximum.</p> <p>OK key: short press: OK, configuration takes effect.</p> <p>Long press: Cancel, configuration is invalid.</p> <p>< > key: Short press: adjust parameters.</p>
	<p>Current threshold: effective when the automatic recording switch is ON, current \geq this value, recording capacity, power consumption.</p> <p>OK key: short press: OK, configuration takes effect.</p> <p>Long press: Cancel, configuration is invalid.</p>

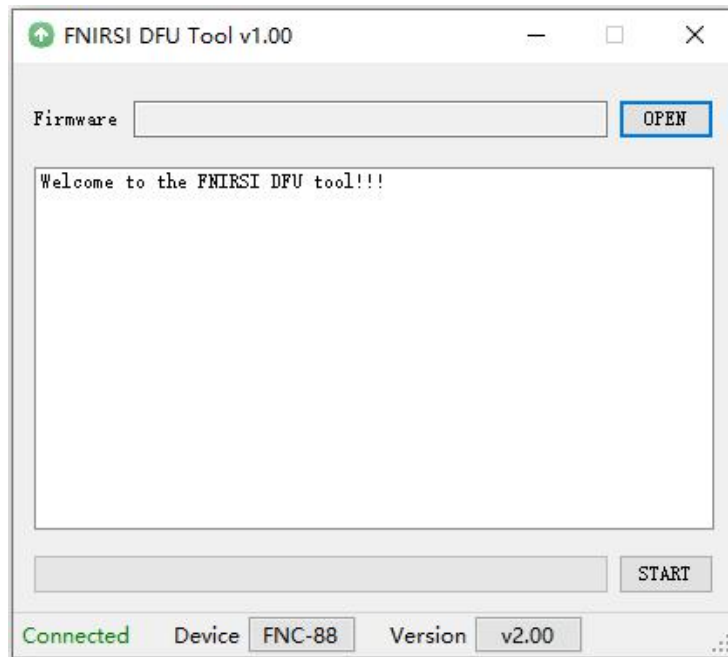
	<p>◇ Key: short press: adjust parameter.</p>
	<p>Reverse current calibration: Take Type-C female connector as input, the current is not 0 when not connected to the load, this calibration is required. During operation, use the female connector as the input to energize, without connecting the load. After restoring factory settings, this item needs to be recalibrated.</p> <p>OK key: short press: OK, configuration takes effect.</p> <p>Long press: Cancel, configuration is invalid.</p> <p>< > key : Short press: Get reverse current compensation value. (Multiple short presses until a more stable value).</p>
	<p>Display temperature symbol: ° F / °C</p> <p>OK key: short press: OK, configuration takes effect.</p> <p>Long press: Cancel, configuration is invalid.</p> <p>< > Key: short press: select.</p>
	<p>System language: EN / Chinese.</p> <p>OK key: short press: OK, configuration takes effect.</p> <p>Long press: Cancel, configuration is invalid.</p> <p>◇ Key: short press: select.</p>
	<p>Clear records: Clear the capacity, power, and recording time of all 5 groups.</p> <p>OK key: short press: OK, configuration takes effect.</p> <p>Long press: Cancel, configuration is invalid.</p> <p>< > Key: short press: select.</p>
	<p>Restore factory settings: This setting does not clear the recorded values.</p> <p>OK key: short press: OK, configuration takes effect.</p> <p>Long press: Cancel, configuration is invalid.</p> <p>< > Key: short press: select.</p>

六、Upgrade firmware instructions

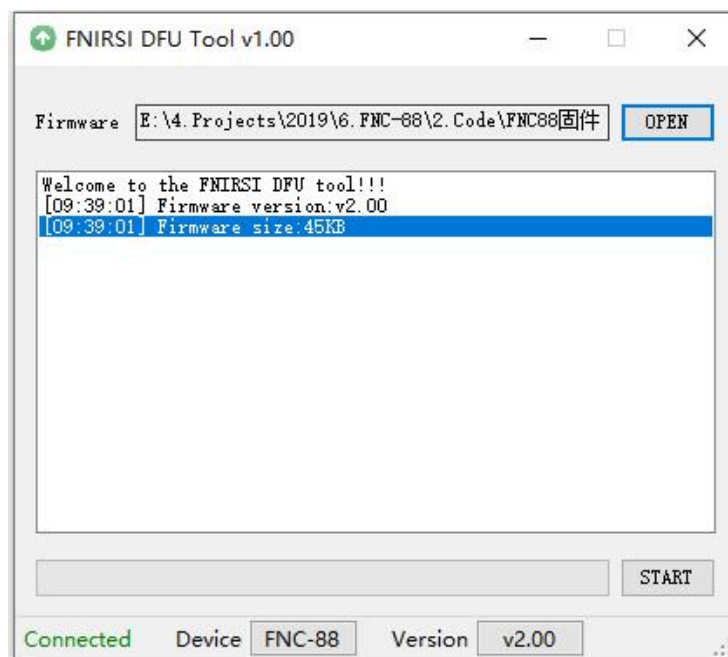
- 1、 Open the FNIRSI USB Meter upgrade tool.



- 2、 When FNB38 is in the off state, press the OK key to access the HID-USB interface, and it displays the connected, device model, and device firmware version.



3、 Click OPEN and choose to upgrade the firmware.



4、 Click START to start the firmware upgrade. After the upgrade is complete, FNC88 will restart automatically.

七、 Supplementary note

1、 About Type-C

The common TYPE-C lines only have single-sided CC. If the connected device is not bright, please flip the interface.

2、 About Huawei SCP

Huawei SCP protocol is invalid after exiting the interface.

3、 About PD protocol trigger

When the PD protocol triggers to a fixed voltage power supply, the PD protocol is still valid when exiting the PD interface; if PPS power is selected, the interface is invalid.

4、 About hardware PD switches

- (1) Some chargers need to turn on the PD switch to supply power;
- (2) When using the auto-detect fast charge protocol function, be sure to turn on the PD switch and then connect the tester;
- (3) If other protocols (such as QC2.0, etc.) are triggered after the PD protocol is triggered, the trigger is invalid (the PD has a higher priority), and the PD switch can be turned off at this time to trigger other fast charging protocols normally.

5、 About HID-USB interface

- (1) Data transmission with host computer;
- (2) Provide an independent power supply. Use of an independent power supply for high voltage and high power measurement can reduce the tester's heat and make the measurement more accurate.

6、 6.About reverse current measurement

When using the Type-C female connector as the input port, the current display is not 0A (about 30mA) even if no load is connected. You can perform reverse current calibration on the setting page (see the description on the setting page).