YZXstudio USB 3.0 Power Monitor

User's Manual

(Red PCB, Firmware Version 2.1)

1. Specifications:

Input voltage	DC 3.5V-13V (silkscreen text on somedevices still says "3-7V" but the latest hardware version has actually extended that to 13V)
Input current	+- 3A
Voltage resolution	0.001V
Current resolution	0.0001A
Cumulative capacity	0-99999Ah; 0-99999Wh
Capacity resolution	0.0001Ah; 0.0001Wh
Accuracy	Voltage 1%+5d; Current 0.1%+2d; Ah capacity 0.5%
Display	0.91" 128x32 pixel OLED
Update rate	Every 0.36s
Idle current consumption	~6mA (with blank screen)
Current shunt resistance	10mOhm
Overall circuit resistive loss	~40mOhm (excluding USB connectors)
Memory	FRAM, good for 10 billion write cycles
Memory operation mode	Write on every update in cumulative capacity + load balancing technique

2. Display:

- Push the button to cycle through the different screens.

- First screen shows ***output current***, ***input voltage***, ***cumulative Ah*** and ***Wh***.

- Second screen shows ***output current***, ***input voltage***, ***output wattage*** and ***average voltage***

- Third screen shows voltages on the D+ and D- data lines, and tries to identify the type of charger it is connected to. Please note that the D+ and D- readings may be random and not meaningful if they are not connected to anything and are left "floating".

- Fourth screen shows ***current curve***, the divisions are 0, 1, 2 and 3A

- Fifth screen shows ***voltage curve***, the divisions are 4.8, 5, 5.2 and 5.4V

- The OLED display turns off automatically after a certain period of time to reduce power consumption. The length of this time can be set in the Settings menu (see below).

- There's a number (0-8) at the top right hand corner in the first 2 screens. This number indicates the current **data set** being used. The device can store up to 9 data sets (0-8).

3. Data Sets and Zeroing:

- There are 9 data sets (0-8) available for storing the cumulative capacity data. To move to the next data set, long press the button for about 2 seconds.

- To reset the cumulative readings of the current data set, long press the button for about 5 seconds.

4. ConfigurationSettings and Calibration:

- To enter configuration mode, long press the button while you see the YZXSTUDIO logo at power up, until you see "Settings" being displayed.

First screen you see should read:

10--
USB 3.0 Firmware: V2.1
Exit Settings

To exit configuration mode, long press the button for about 2 seconds.

Pushing the button would cycle to the next setting screen 11--, 12--, 0--, 1--, 2--, etc.

- **11--**: Font selection. Long press the button to select the display font.

- **12--**: Temperature drift compensation. This setting is used for compensating the drifting in readings due to temperature change. Long press to change the ppm/C value. The manufacturer suggests setting it to 40 ppm/C.

- **00--**: Voltage calibration. Without connecting any load, set the input voltage to an accurate 5.0V source and then long press the button to save. Please note, however, that the voltage reading after calibration, when connected to a load, may differ slightly from the actual input voltage, especially if the current is high. This is due to the voltage drop at the USB connector, resulting from the contact resistance as well as the resistance of the connector itself.

- **01--**: Current calibration. Connect a constant current load that draws 2A. Long press the button to save.

- **02--**: Current/Voltage curve refresh rate, in seconds.Long press the button to change.

- **03--**: Display brightness. Higher value = brighter display. Default is 31. Long press the button to change.

- **04--**: Rotate/Invert display. Long press the button to cycle through the different settings.

- **05--**: Autosave cumulative readings. Enabling this setting will allow for cumulative data to be retained even when the power source is disconnected (or has run out in case of a battery source). Long press the button to toggle between Enable and Disable.

- **06--**: Auto blank screen. This sets the duration (in minutes) before the screen switches off, after the last button push action.

- **07--**: Factory settings. Long press the button to reset to factory settings and clear all cumulative data.

- **08--**: Backup settings. Long press the button to backup the current calibration settings.

- **09--**: Restore settings. Long press the button to restore the previously saved calibration settings.