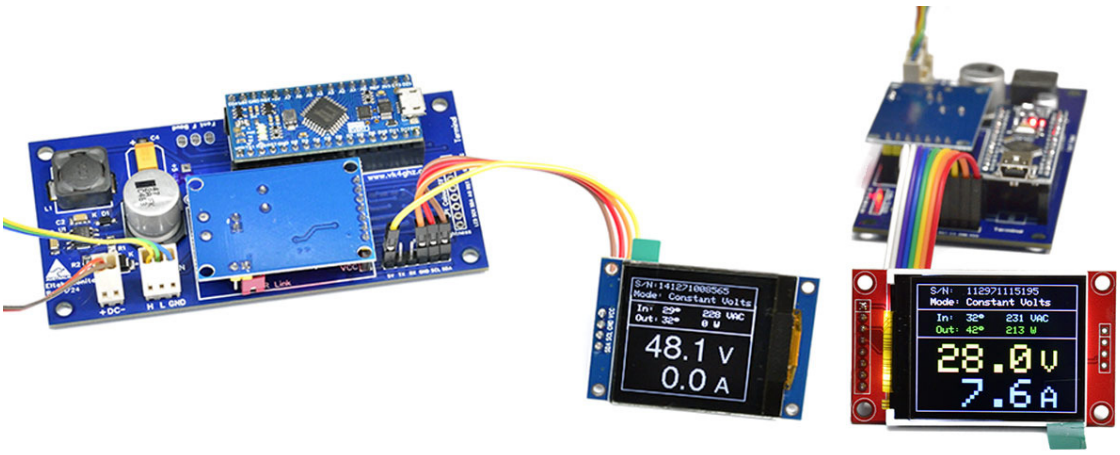
Eltek Flatpack2 Monitor Mono/Colour

Revision: 17 February 2024



This generic document covers two versions of Eltek Monitor

Eltek Monitor can be used to control & monitor a single Eltek Flatpack2 24 V or 48 V rectifier being used as a general purpose Power Supply Unit.

Two screen options are available: 1.8” colour TFT, and 1.5” mono OLED.

Skill level required: **MEDIUM**

Ability to solder connectors & wires to supplied connectors, connecting to your own Flatpack2 interface board.

Ability to drill, cut and file your enclosure’s front panel to mount the display.

Known to work with:

- Flatpack2 48/2000 HE 24115.105 Rev 3.2 (VK4GHZ)
- Flatpack2 48/2000 HE 24115.105 Rev 4 (Peter, VK5PW)
- Flatpack2 48/2000 HE 24115.105 Rev 5.4 (Colin, G4ERO)
- Flatpack2 48/2000 HE 24115.115SC Rev 3.2 (VK4GHZ)
- Flatpack2 48/2000 HE 241115.105 Rev 6 (Mike, G8PFR)
- Flatpack2 48/2000 HE 241115.105 Rev 9 (Colin, G4ERO)
- Flatpack2 24V/2000 24115.200 Rev 3.2 (VK4GHZ)
- Flatpack2 48/3000 HE 24119.105 Rev 3.1 (Craig Whiteside)
- Flatpack2 48/3000 HE 24119.105 Rev 3.4 (Tor, N4OGW)
- Flatpack2 48/3000 HE 24119.105 Rev 6 (Aaron Ramsdell)
- Flatpack S 48/1000 HE 241122.105 Rev 5 (Matija, S53MM)
- Flatpack S 48/1800 HE 241122.125 Rev 1.7 (Matija, S53MM)

Will it work with other FLATPACK2 rectifier variants not listed above?

What you see above is what it's known to work with – there is no need to ask!

Will it work with Eltek Chargers?

No.

This product is not intended to simultaneously control multiple rectifiers, nor be an intelligent battery charger controller.

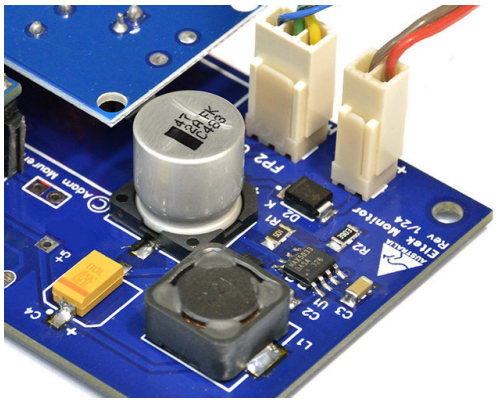
Controller Board SMPS Power Supply

A separate power supply is NOT required for this controller, nor should one be used.

Monitor has its own SMPS, and is powered directly from your Eltek's DC output, so no need for an external 5V regulator.

Input capacitor is a quality Panasonic aluminium 100V electrolytic.

SMPS chip is MAX5035 (or MAX5033), rated to 76V input.



CAN bus data displayed:

- PSU Serial Number
- Mode (Walk-in / Constant Volts)
- Intake temperature (°C or °F)
- Out temperature (°C or °F)
- Mains input voltage
- Output voltage
- Load current
- Output power (calculated from O/P volts & load current)

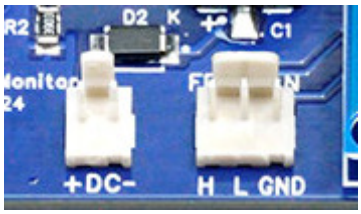
Connections to your own Eltek FP2 Breakout Board:

Power: Use supplied 2-way 0.1" polarised connector.

Connect to FP2 DC output

\+ > +ve

\- > -ve



CAN bus: Use supplied 3-way 0.1" polarised connector.

Connect to FP2 CAN bus

H > CAN High

L > CAN Low

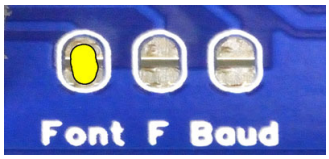
GND > CAN GND

Configuration Settings

Solder bridge links can be used to configure font, Celsius/Fahrenheit, and terminal baud rate.

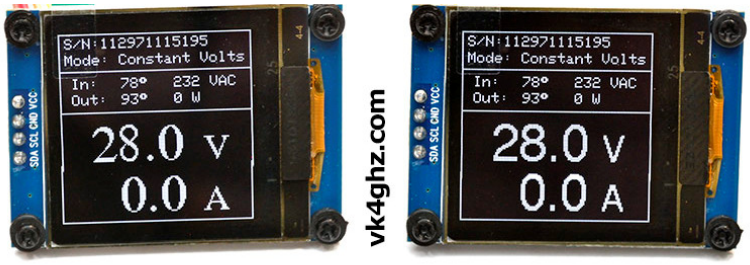
Carefully add a blob of solder across the solder pad pair, as per below.

Configuration – Font **Mono OLED display only**



Two crisp and classy fonts available, Serif and Sans Serif.

- No link: Sans Serif (default)
- Link: Serif

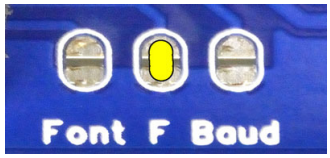


Serif font **Sans Serif font**

Colour TFT display only has one fixed basic font.

Configuration - F (Fahrenheit)

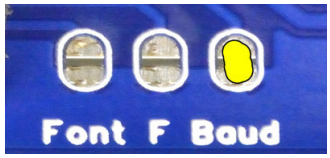
- No link: Celsius (default)
- Link: Fahrenheit



Configuration – USB Terminal Baud Rate

Set terminal baud rate to 19,200 or 57,600.

- No link: 57,600 (default)
- Link: 19,200



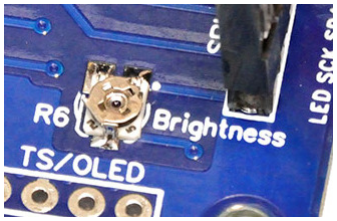
Backlight Brightness **Colour TFT display only**

TFT Backlight brightness can be adjust with SMD trim pot R6.

Use a small flat blade screw driver to adjust **CAREFULLY**.

Do not wind past end stops – you may damage this trim pot.

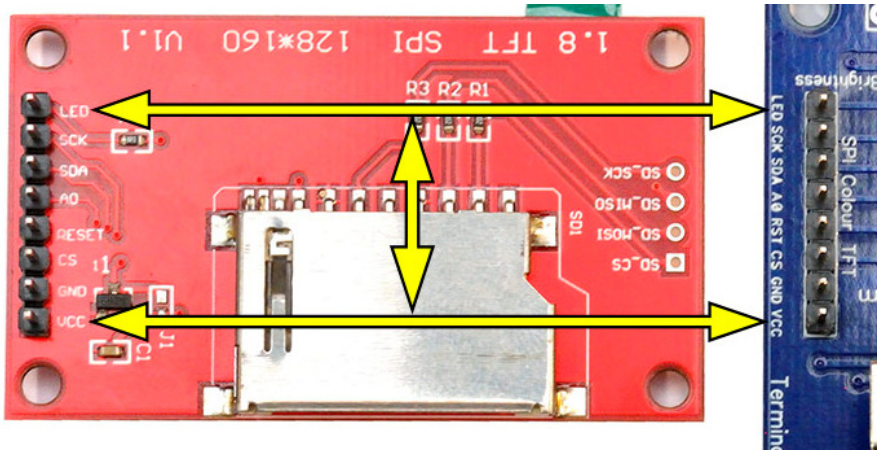
Brightness is pre-adjusted to maximum.



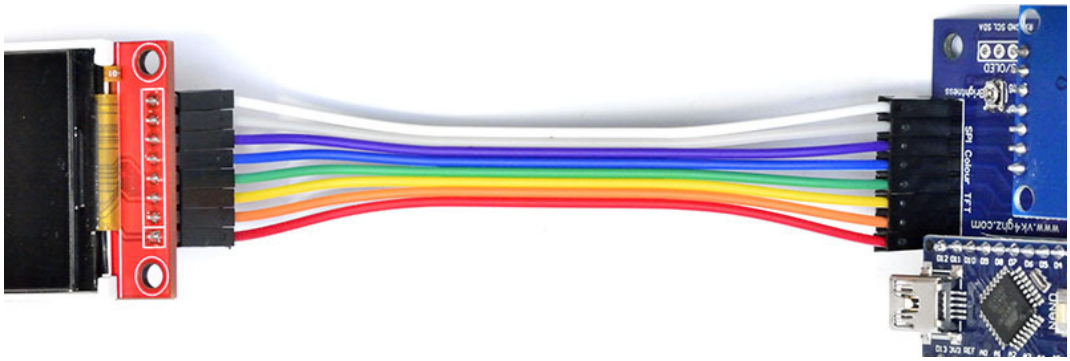
1.8" colour TFT 8-wire SPI display

Connect all 8 wires, like for like.

Controller <--> Display	
VCC	VCC
GND	GND
CS	CS
RESET	RESET
A0	A0
SDA	SDA
SCK	SCK
LED	LED



Actual colour of wires used is not important.



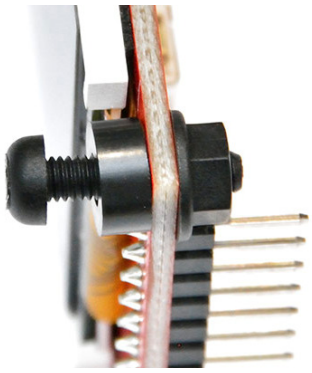
*** Failure to check wiring before applying power may damage screen and/or controller.**

1.8" Colour Mounting

Use supplied M3 nylon hardware, as depicted at right.

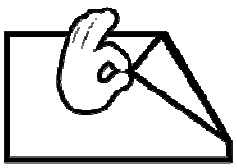
3mm spacer is used between front panel and PCB.

TFT display cut-out is approx 36mm (W) x 29mm (H).



Screen Protective Layer

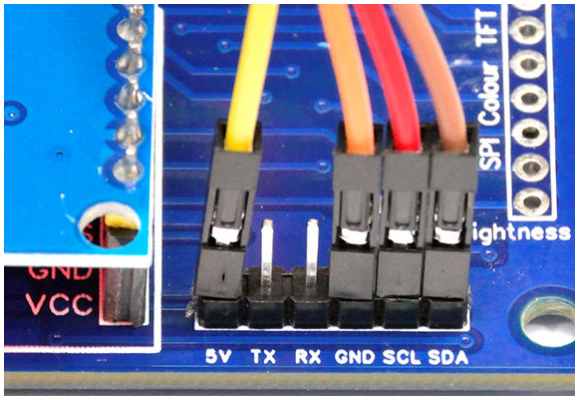
To prevent scratches, remove protective layer film **AFTER** the screen cut out and mounting holes have been prepared in the enclosure, and you are ready for final screen installation.

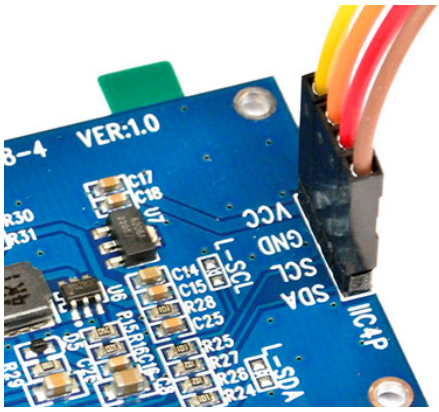


1.5” Mono OLED 4-wire I2C display

Connect all 4 wires as shown. Actual colour of wires used is not important.

Controller <-->Display	
5V	VCC
GND	GND
SCL	SCL
SDA	SDA
TX	Not used
RX	Not used





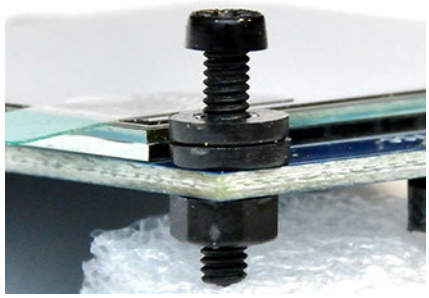
*** Failure to check wiring before applying power may damage screen and/or controller.**

1.5” Mono Mounting

Use supplied M2 nylon hardware, as depicted at right.

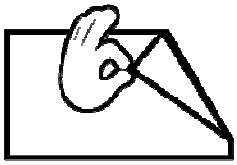
2mm spacer between front panel and PCB made from 2 x 1mm spacers.

OLED display cut-out is approx 28 x 28mm.



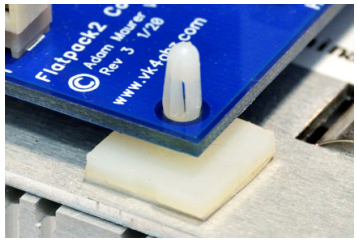
Screen Protective Layer

To prevent scratches, remove protective layer film **AFTER** the screen cut out and mounting holes have been prepared in the enclosure, and you are ready for final screen installation.



Controller board mounting suggestion

Use adhesive feet (4 supplied) to fix PCB to Flatpack2 enclosure.



120 ohm CAN bus termination jumper

As supplied, the 120 ohm CAN bus termination resistor is disabled.

To enable the 120 ohm termination on the CAN bus adapter board:

• Disconnect power.

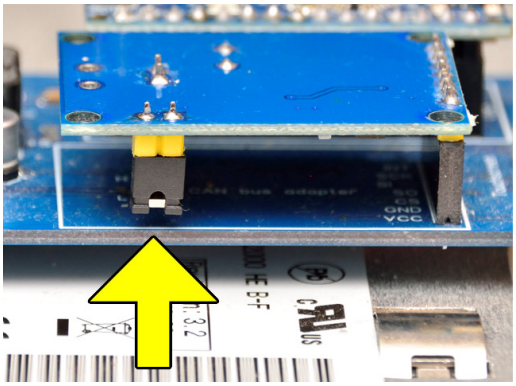
• Lift off CAN adapter board – lift straight up - do not bend the pins

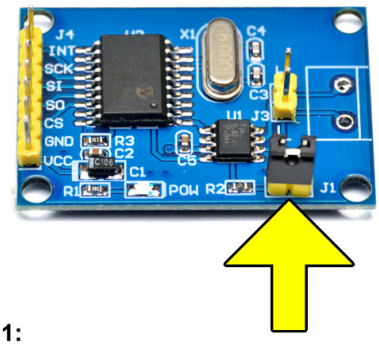
• Remove J1 jumper and refit across both pins

• Refit CAN board

If CAN bus lead is relatively short, then only one terminator resistor may be required.

Either use the 120 ohm resistor on your own FP2 breakout PCB (if fitted) or use the resistor on the CAN bus module.





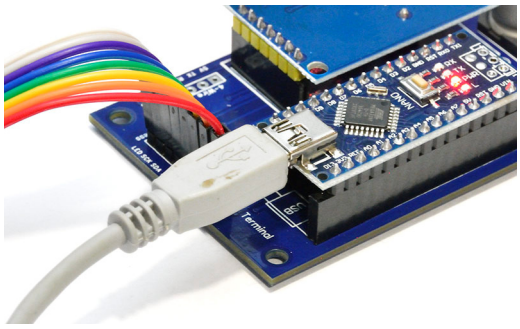
J1:
120 ohm termination jumper

Terminal Setup

To set the Eltek's default start up voltage, connect a suitable USB lead between the microcontroller and your PC/laptop.

Mono – USB Micro B

Colour – USB Mini B



Use any terminal program, although Termite (free) is recommended.

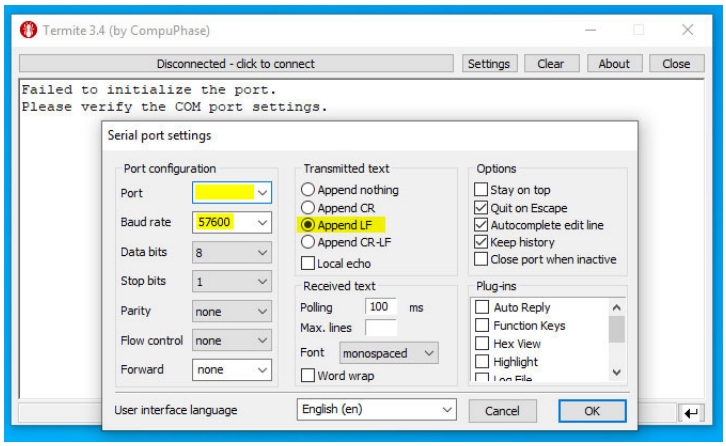
https://www.compuphase.com/software_termite.htm

• Select the correct COM port

• Match the baud rate to the configuration setting (default 57,600 baud)

• Select Append LF (CR or CR/LF is not recognised)

Power up Flatpack 2



Logging In

Devices connected to a FP2 must routinely “log in” to the FP2, otherwise a timeout occurs and control is lost.

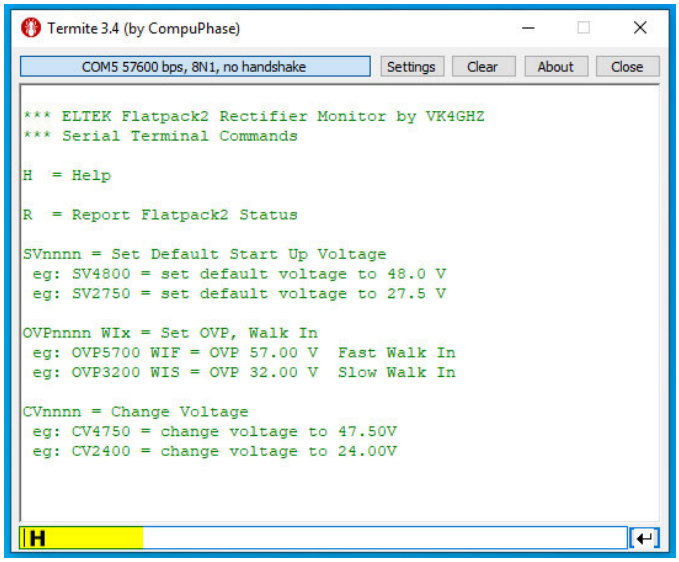
Timeout period is ~ 12 seconds.

Eltek Monitor will log in every 5 seconds to maintain communications.

Logging in is indicated by * top right on the display.

Terminal Use

Once connected, position cursor into transmit window



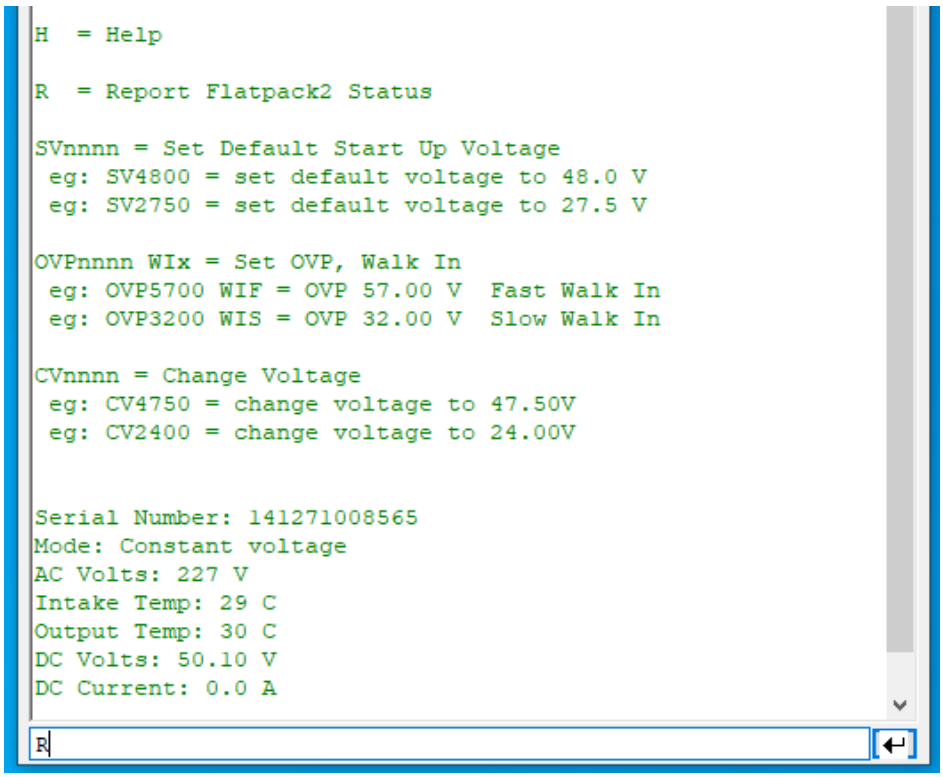
Available commands are shown on the Terminal.

All commands are finished with **<ENTER>**

For Help, press **H** followed by **<Enter>**

Or just press **<ENTER>**

To report status on the serial terminal, press **R** followed by **<Enter>**



Setting Default Start Up Voltage

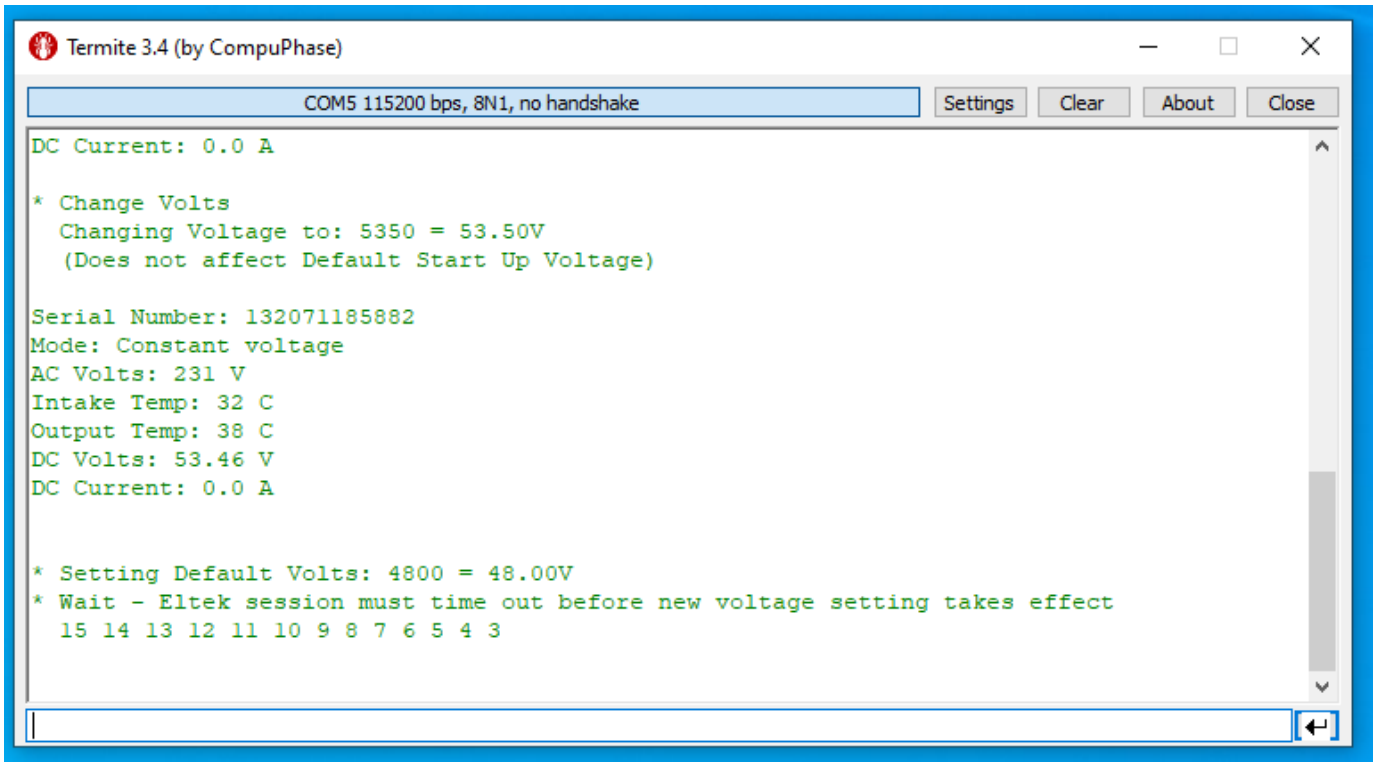
Example: 48 V model FP2

To set default start-up voltage to 48.0 V, enter **SV4800** followed by **<ENTER>**

For new voltage to take effect, a timeout must occur (minimum 12 second wait).

Eltek Monitor will wait 15 seconds to ensure a timeout, and then log back in again.

15 second countdown is seen on both terminal and OLED display.



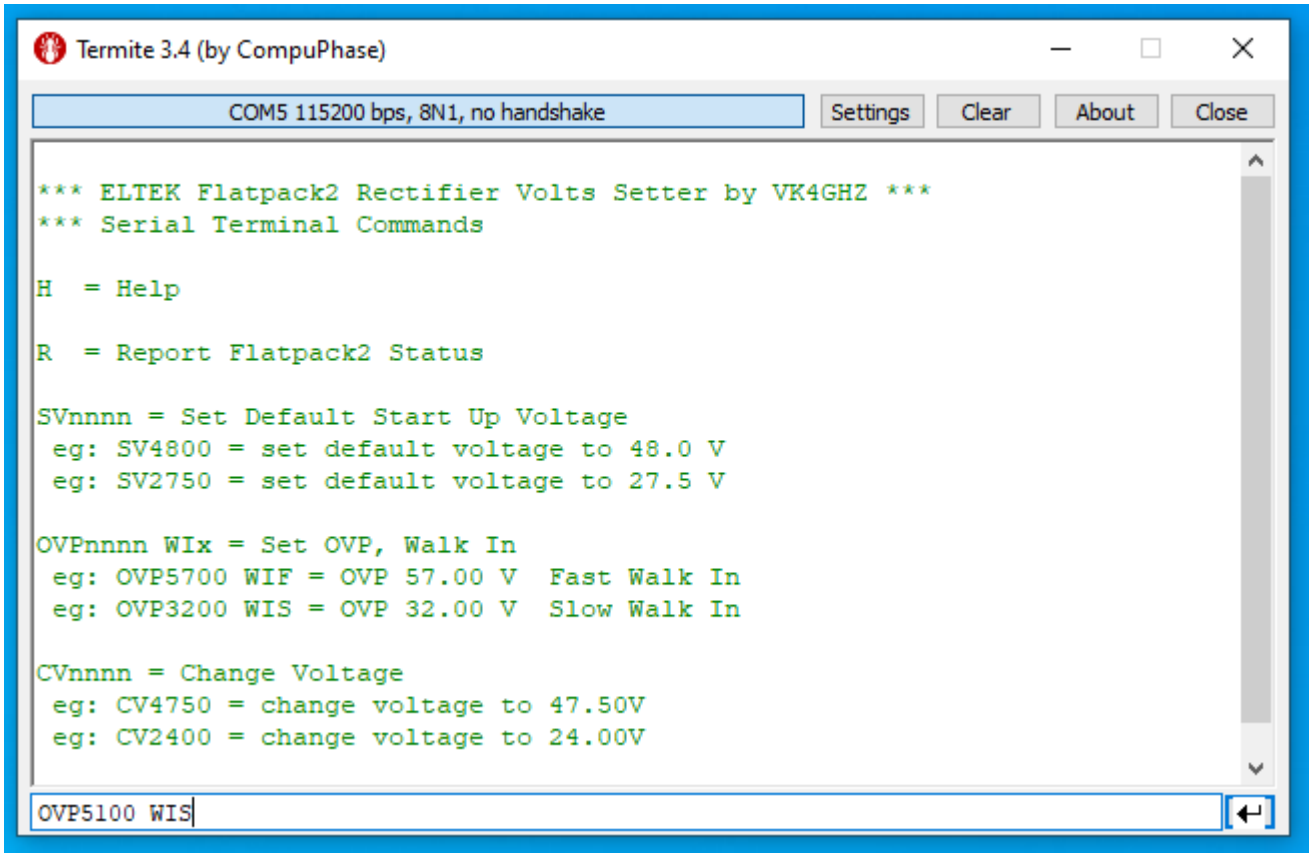
		Voltage Adjustment Range	
FP2 Model	**Default**	**Min**	**Max**
24 V	26.75 V	21.75 V	28.8 V
48 V	53.5 V	43.5 V	57.6 V

Once the default start-up voltage has been set to your requirement, you can disconnect the terminal forever.

The terminal is only required to change the default start-up voltage, set the Over Voltage Protection, and set the walk In.

Setting Over Voltage Protection and Walk In

Example: 48 V model FP2



To set OVP to 51.0 V and Walk In to Slow, enter **OVP5100 WIS** followed by **<ENTER>**

(Note single space between **zero** and **W**)

Changing Voltage

Real-time changes can be made to the output voltage using the CV command.

These voltage changes will not affect the default start-up voltage previously set.

OVP and Walk In must be set before Change Voltage tweaks can be made.

Warnings & Alarms

If an alarm state or warning state (or both) is available, the appropriate message will flash on the display.

Obviously, a serious FP2 failure could mean there is no DC voltage output, and connected equipment (including the Monitor) will cease to work.

www.vk4ghz.com YouTube **VK4GHZ**