Victron BT Smartshunt

KB7RHI

Power Management Problem When Using A Powerbox For Portable Operations In The Field

Powerbox can have multiple connection points

I can use an inline watt meter for loads all attached to a distribution block

I can use another inline watt meter for solar input to the battery

But what about the automotive connection port

What about the USB A or USB C port

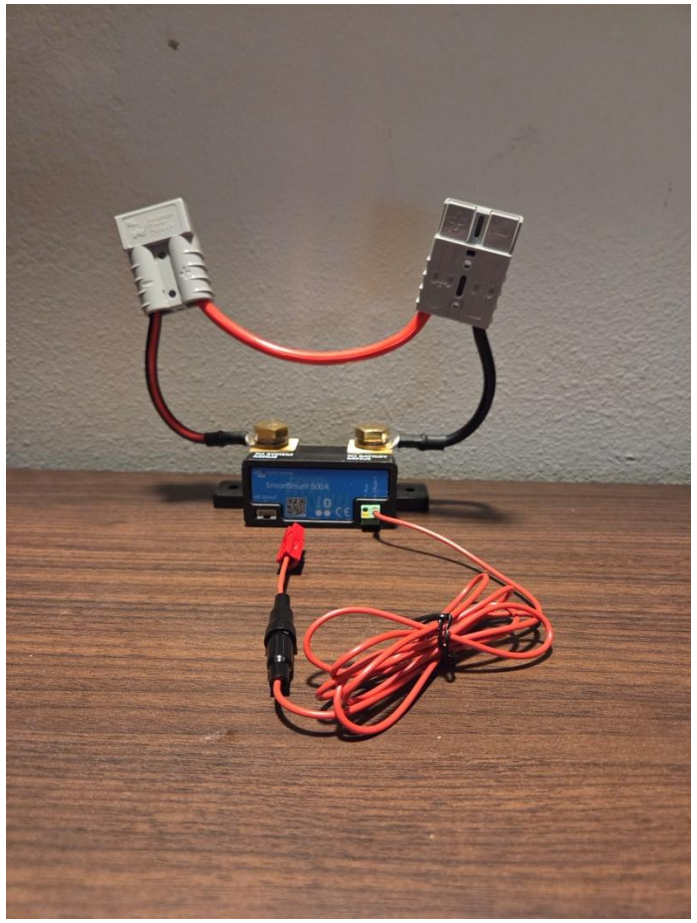
I could have multiple connections going at once

I needed a “Gas Gauge” type device to show my battery SOC

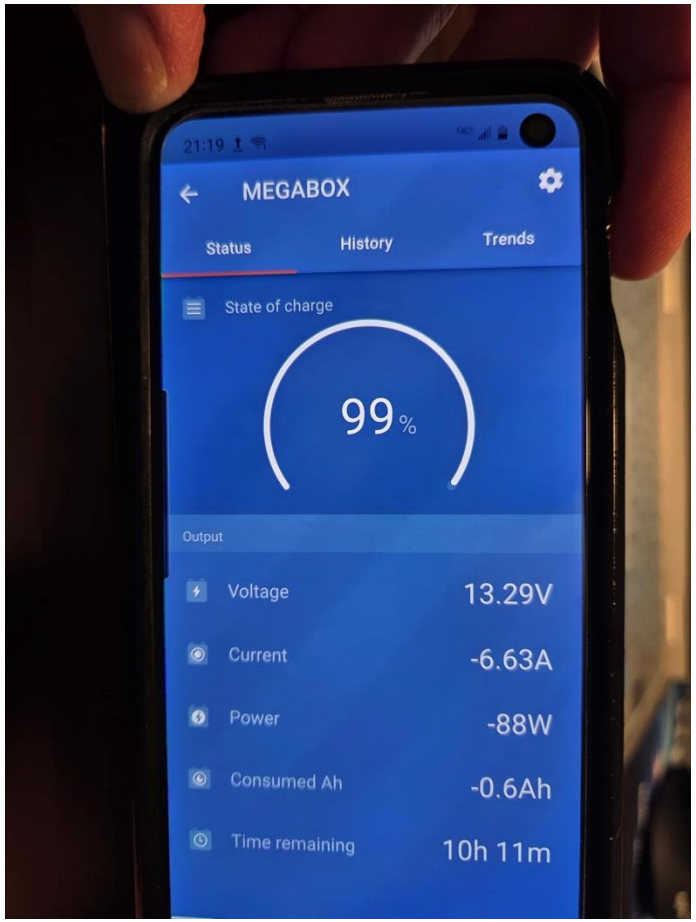
The Victron BT Smartshunt is a game changer for portable operations

- The Victron Smartshunt provides detailed information about your battery usage to your phone via BT…It is a “Gas Gauge” for your battery
- You can see your battery state of charge represented as a percentage of battery energy left
- You can see battery voltage
- You can see how many amps are going into or out of your battery
- You can see how many watts your battery is providing or being charged with
- You can see a Time To Go reading to show how long your battery will last if conditions stay the same for a window of time you select…say 3 minutes

Victron BT Smartshunt configured for a Powerwerx Megabox…Looks like a creature, SHU050150050 is the model I use, the PWRbox has the black wires facing inwards



Victron Smartshunt app connected to my Megabox with screen showing SOC, Voltage, Current, Power in watts, Consumed Ah, and Time remaining



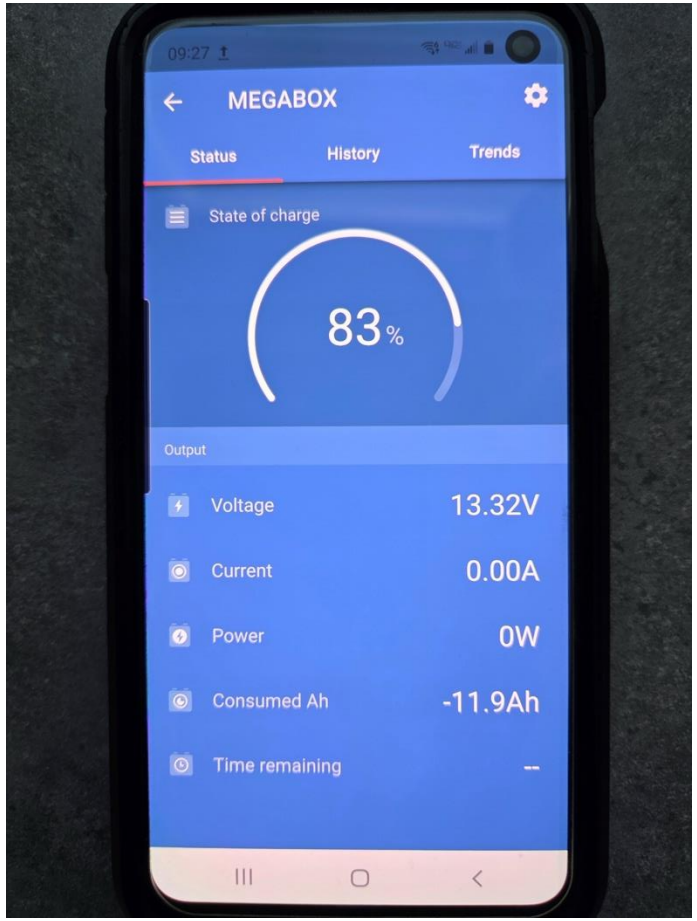
Live Demonstration using a Powerwerx Megabox, Powerwerx Pwrbox, and view of the shunt outside of a powerbox

- Have three phones each connected to a different shunt
- Make manual load adjustments while monitoring each battery
- Open up the settings screen, go to “battery” and see where you adjust the settings

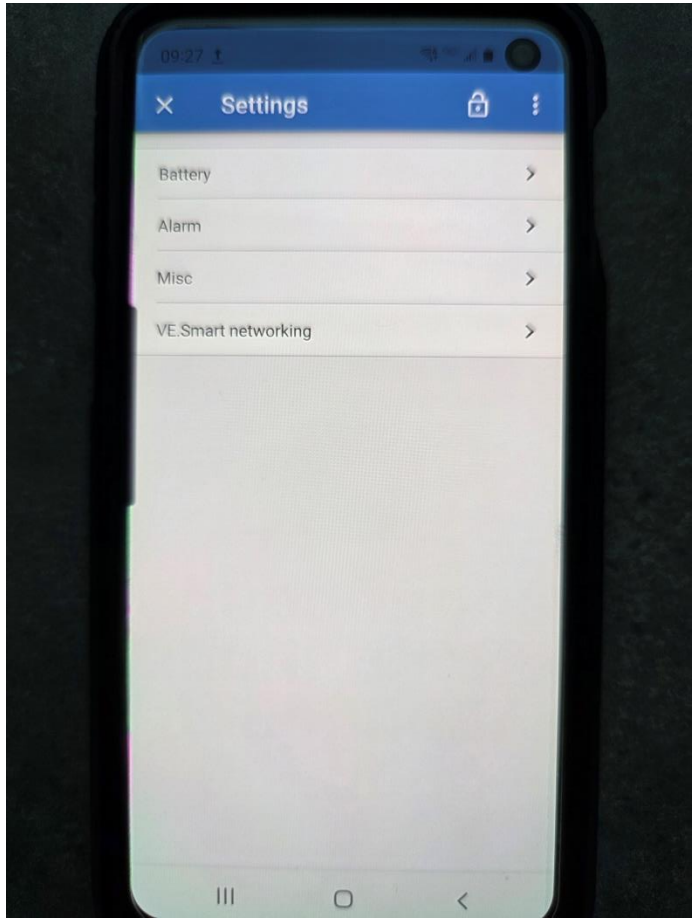
Set up the battery parameters

- Will show where to set up the specific battery parameters for the shunt to use for calculations

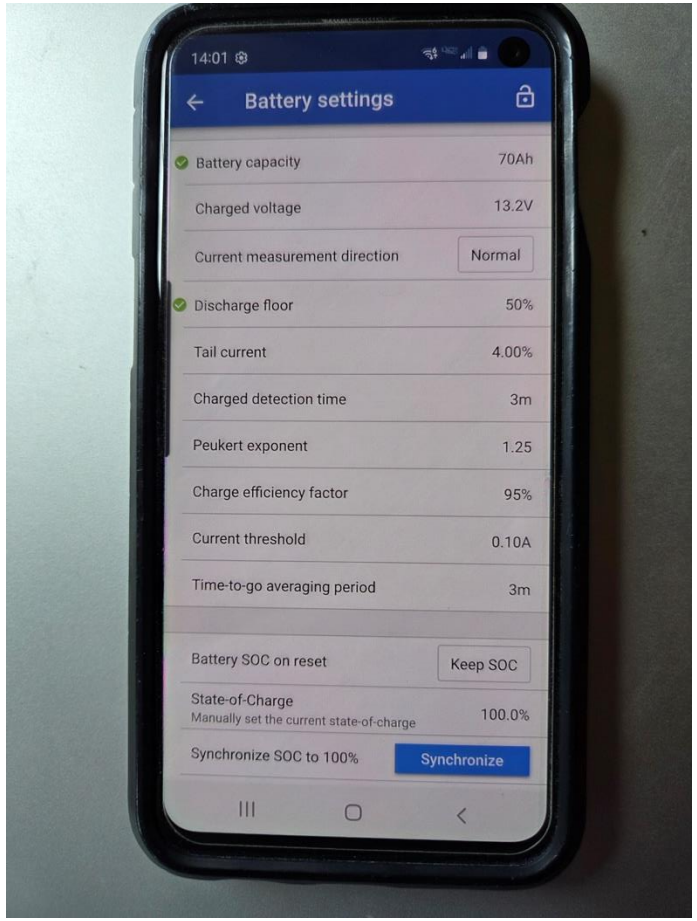
Once you come to the device main page, then click on the upper right gear symbol to get the Settings menu



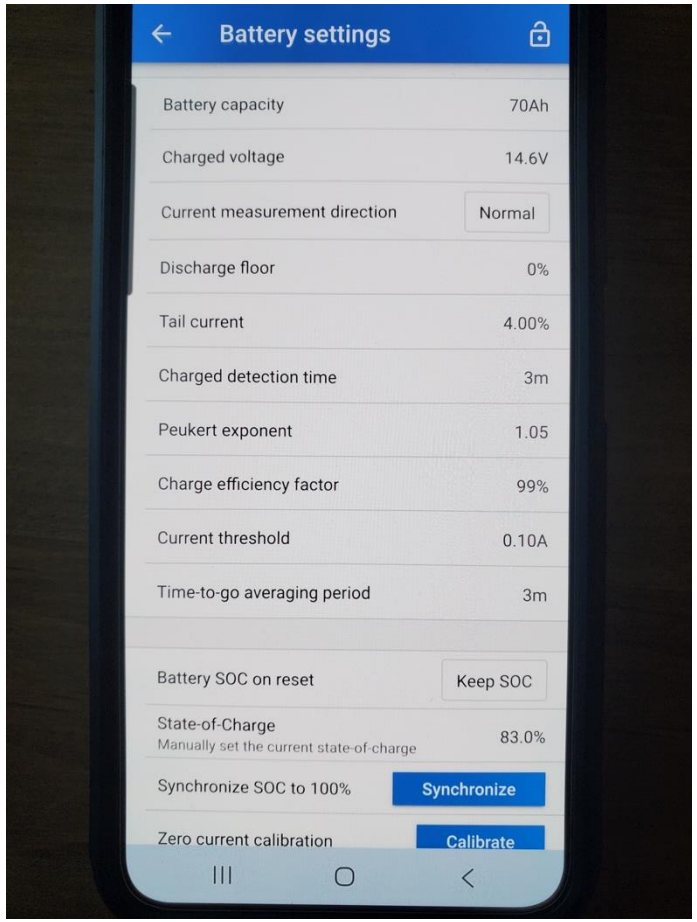
In the settings screen, select “Battery” using the right hand arrow



Default Victron Smartshunt Battery Settings. You Will Need To Make Some Changes, defaulted to a lead acid battery



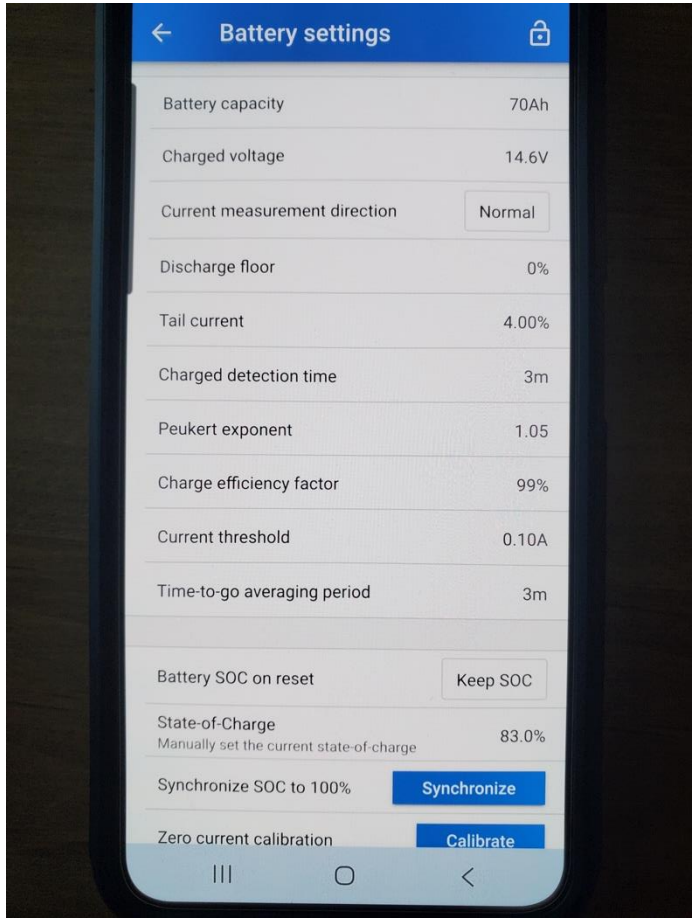
Battery Settings You Want For A Bioenno Power LFP Battery…70Ah Example



How calibrate your SOC (State Of Charge) with the Victron BT Smartshunt

- First step is charge up your battery to 100%
- If using a plug-in wall charger, you will see a **red** light on the charger while charging, when the charger detects a low enough current, the light will turn **green**
- LFP batteries need “cell balancing” from time to time
- Once the charger light turns **green**, wait about 20 minutes to complete cell balancing…each cell needs to come to the same SOC
- Two settings you need to select SOC menu setup

Note “Battery SOC on reset”



Menu choices with Battery SOC on reset

- Keep SOC, the default setting, will keep and remember last know value…this is the one I choose
- Clear…SOC will be unknown until the synchronization levels are reached (No thank you)
- Set to 100%…SOC is set to 100% (No thank you)

- I want my powerboxes to show me the last known SOC for my LFP battery, I can then decide to use it as is, or charge it up to 100% and synchronize the SOC

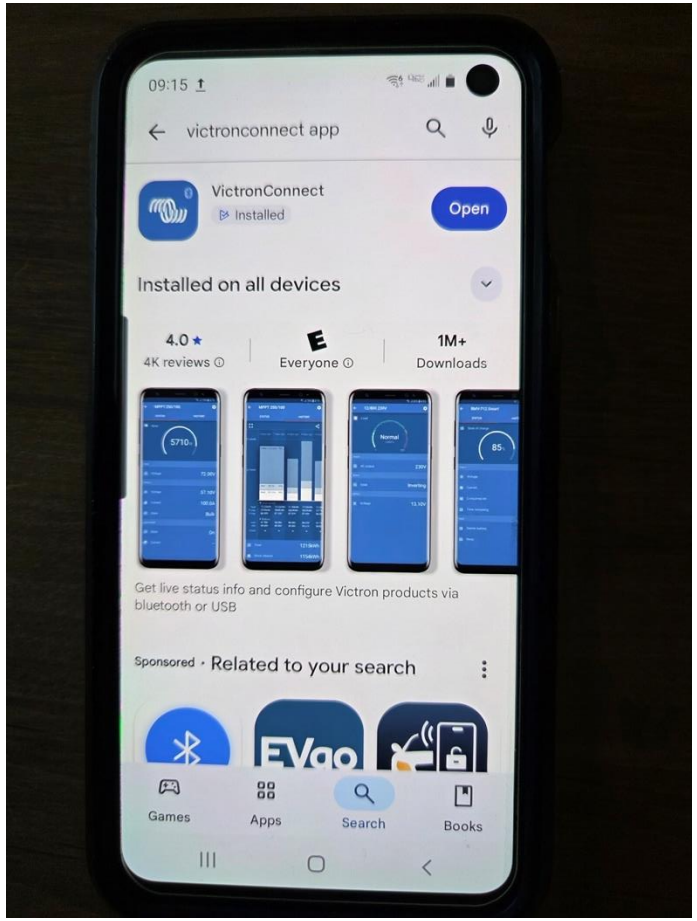
Note Synchronize SOC to 100%

- After you have fully charged your battery and given opportunity for your LFP battery to do cell balancing, then I press the **blue** “Synchronize” button…you now know the shunt is set to show the true SOC of your battery
- The current draw on the Victron BT Smartshunt is < 1mA
- If the shunt was left connected to the battery over a long period of time, the actual SOC could be less than the displayed SOC…
- If the powerbox has not been used in awhile, just top up the battery, allow 20 minutes for cell balancing and then press the Synchronize button and you are ready to go out and do portable ops

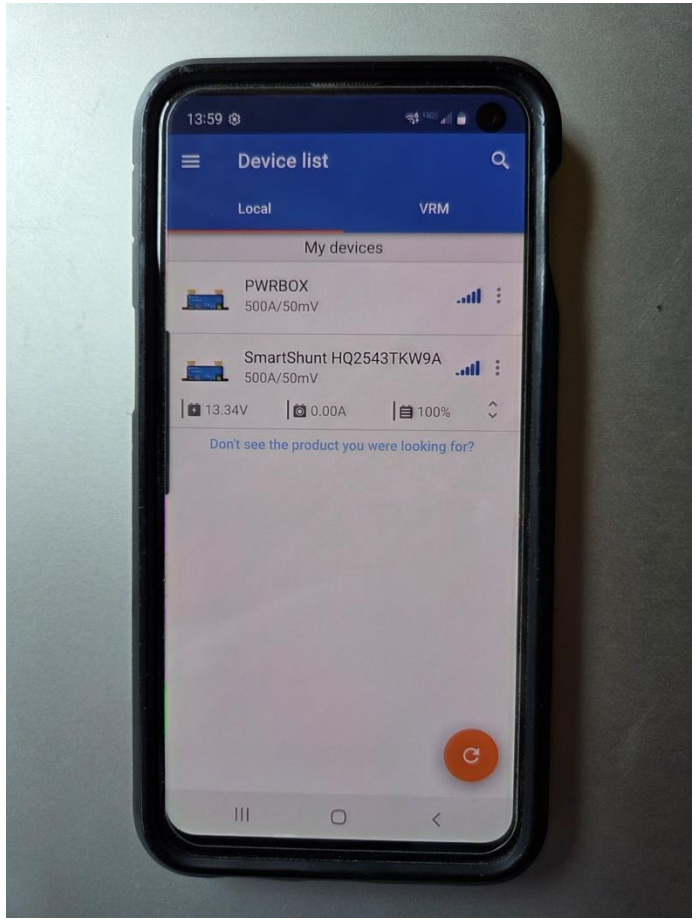
Download the Victron Connect App to your Android or Apple phone

- How to set up your Victron Connect app for your Victron BT Smartshunt

Android phone Victron Connect app downloaded, now “Open”



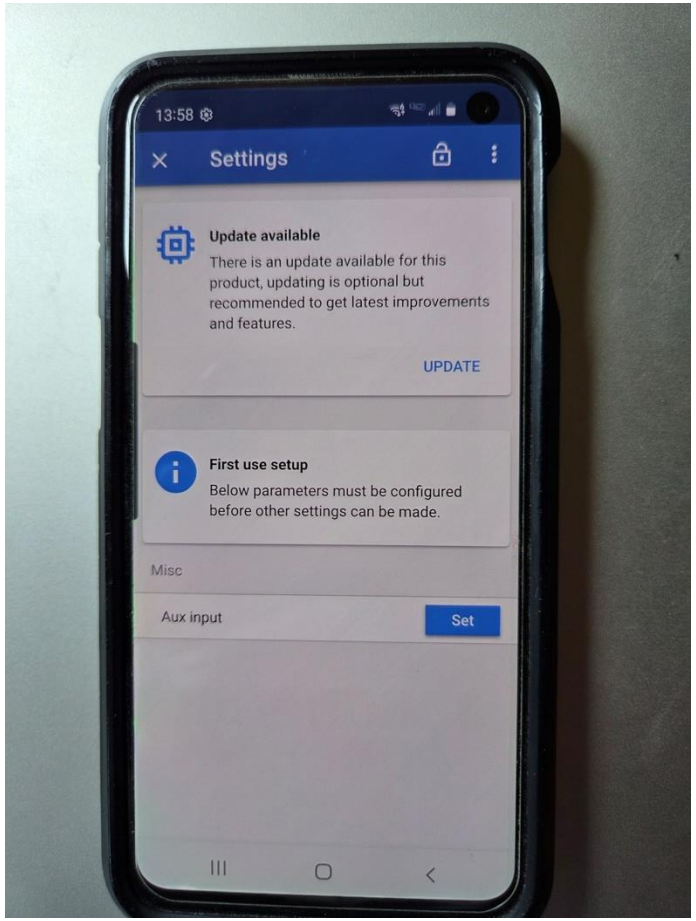
When You Open Up The Victron App You Will See A Device List…Just Click To Select A Device



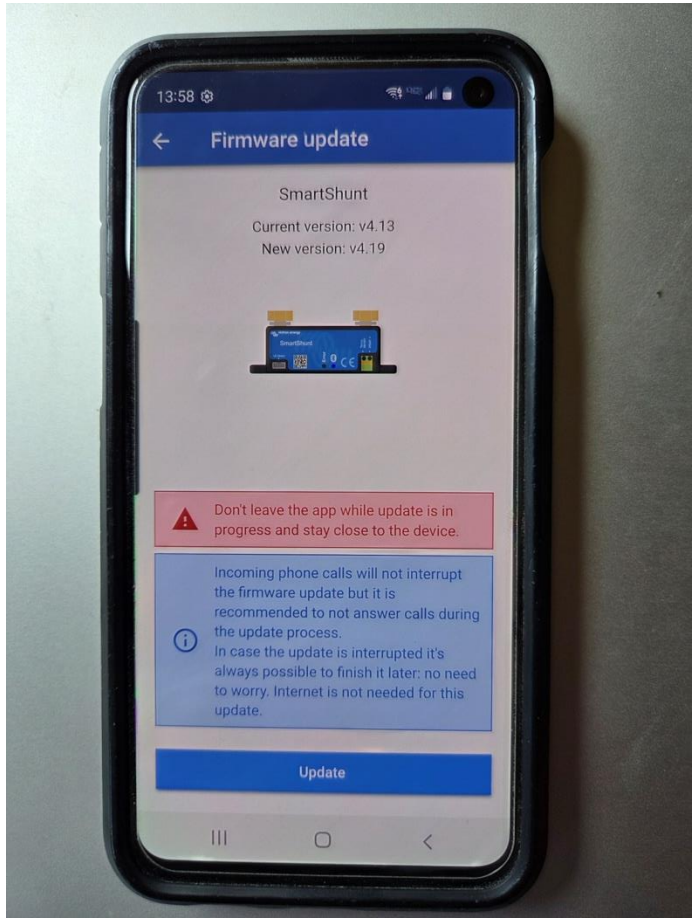
When Making A First Connection You Will Be Asked For A Pin Code (Android example) to pair the device

- The first connection screen will ask for a pin code and suggest 0000 or 000000. The newest Victron Smartshunt insert provided a printout showing a starting pin code, and the code on the side of the unit
- You can then change the BT pairing pin code in the menu system
- Will be showing how to give a custom name to each Victron BT Smartshunt device

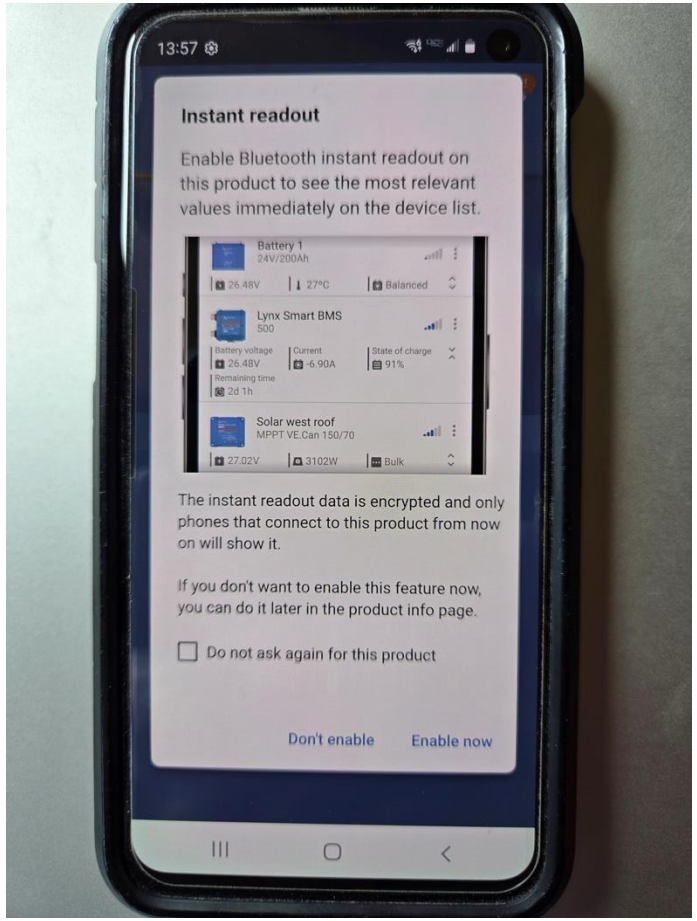
Once Connected, Setup Screen Asks For Battery Ah and Aux Input, I Already Answered Battery Ah, Then Took This Pic (Android Phone),Aux Input select “none”



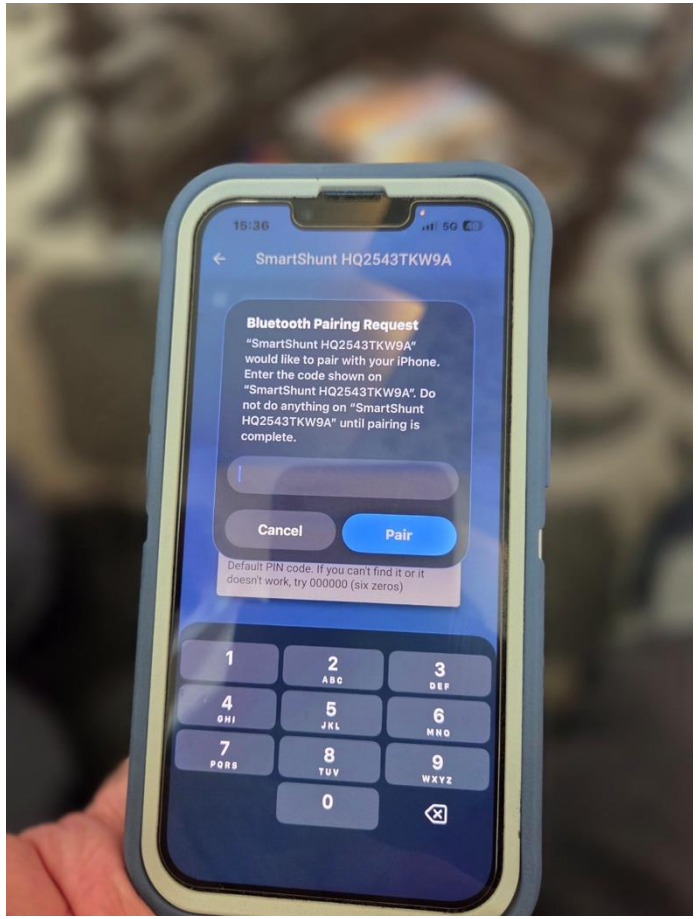
Firmware Update Screen



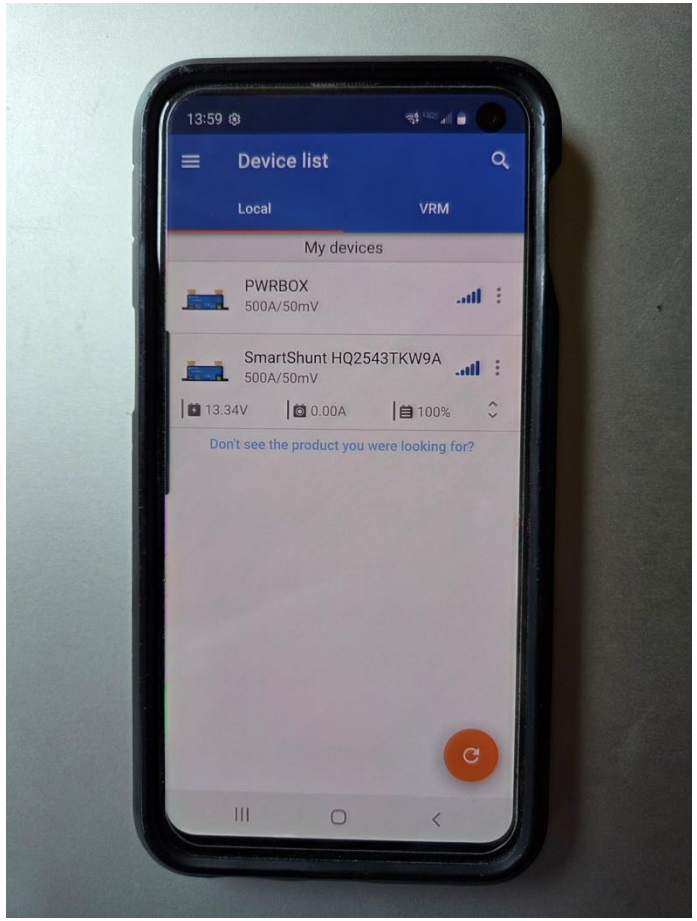
Instant Readout Option, I Would Say Yes



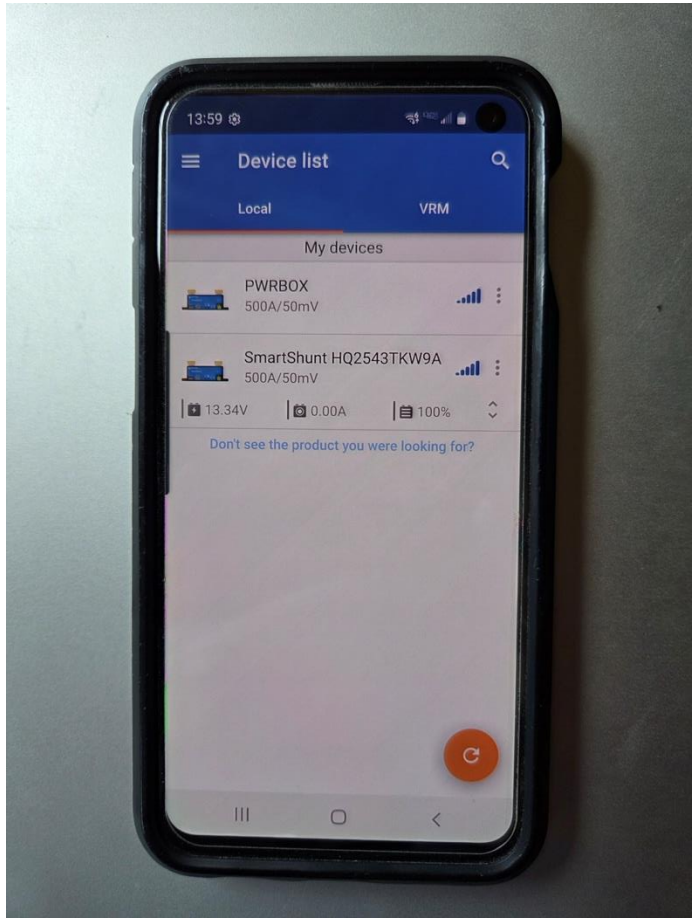
Apple Phone with Victron Connect app downloaded, device selected and then asks for the pin code to pair the device



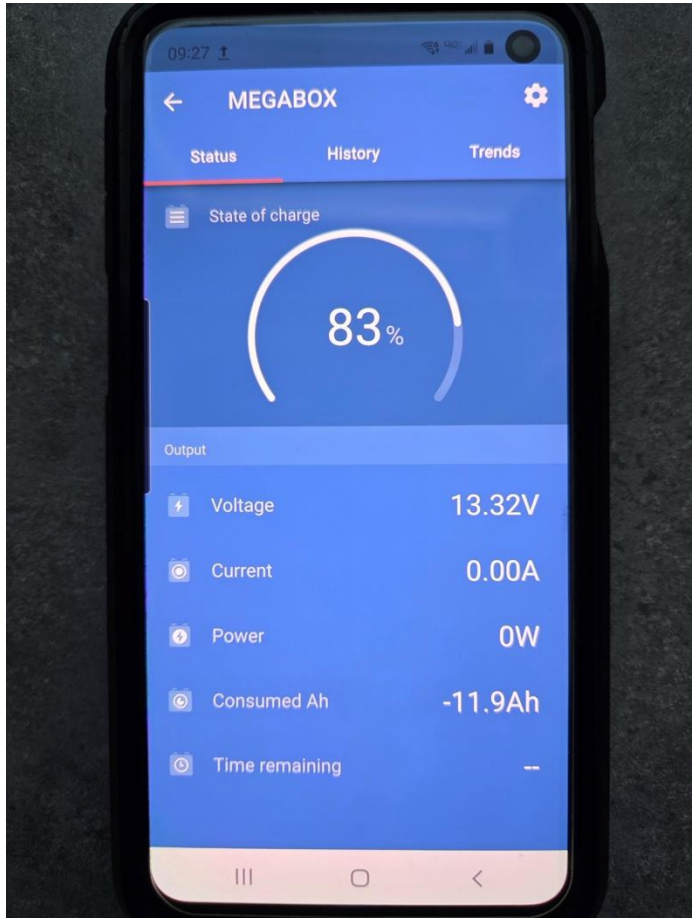
You can customize the name for each Smartshunt, one of these two devices has a custom name



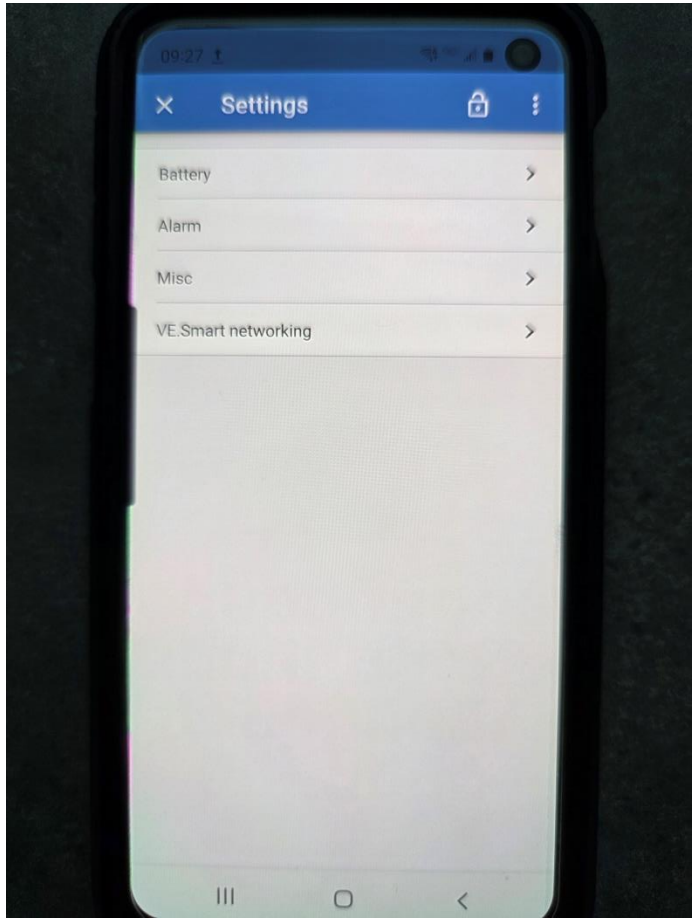
Steps to change the name for your Victron BT device…Go to the Victron Connect main screen and select a device



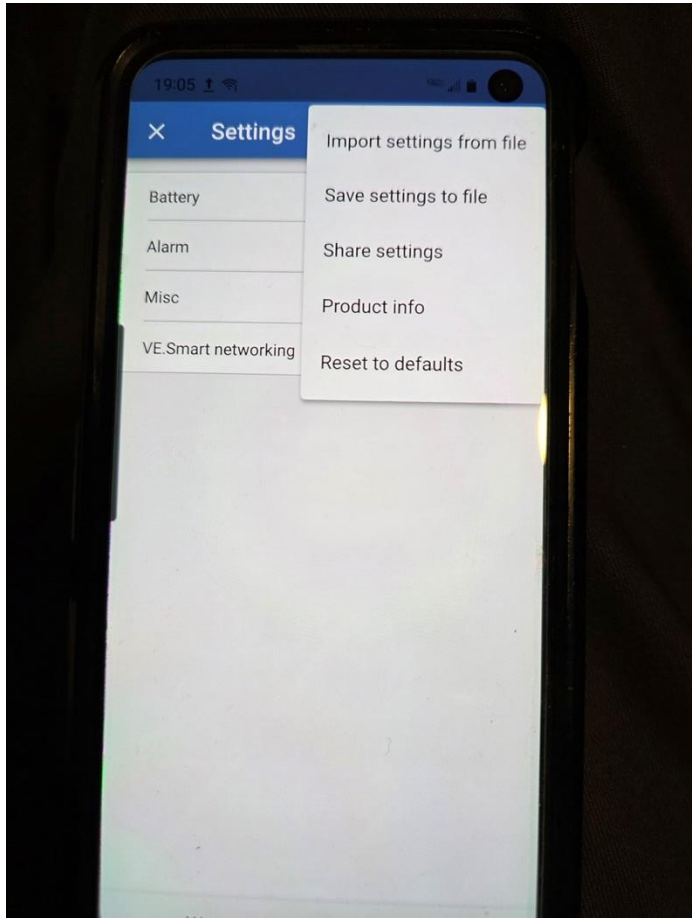
On the device main screen, click on the upper right gear symbol (Settings)



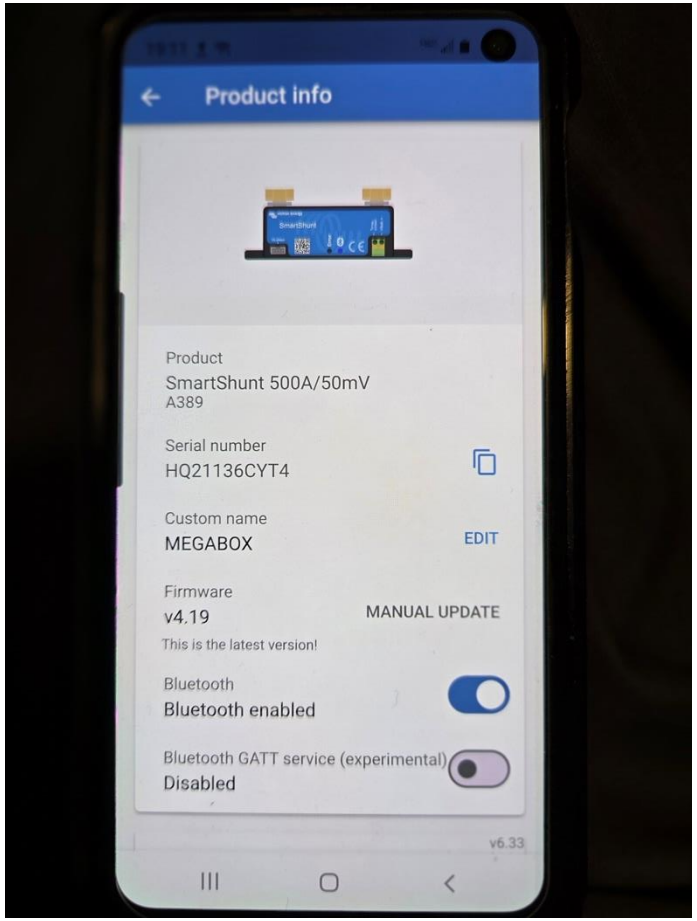
On the settings screen, click on the upper right three vertical dots



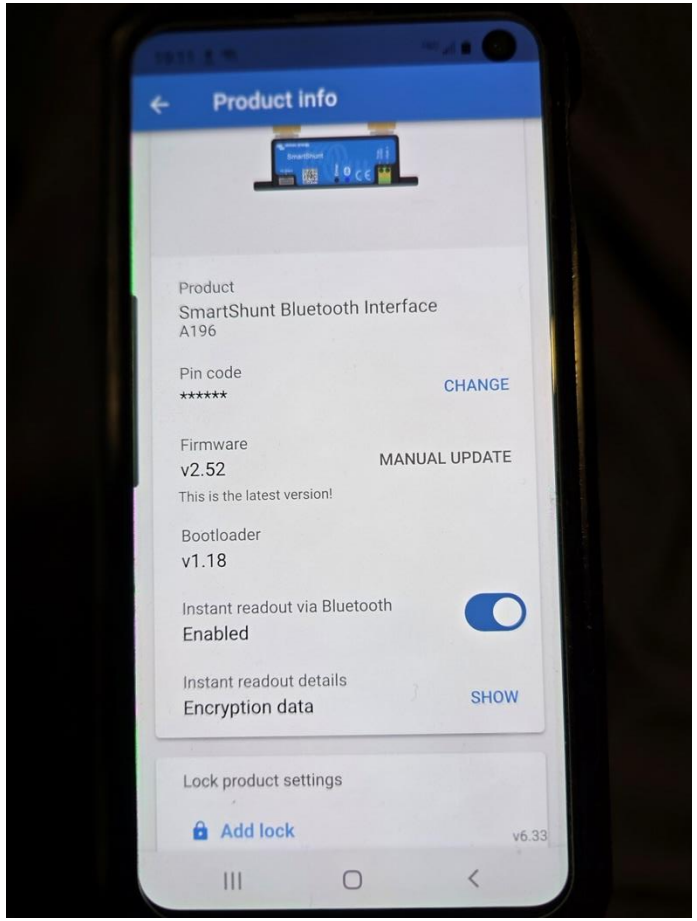
You will now see additional menu items from the “Settings” screen, select “Product info”



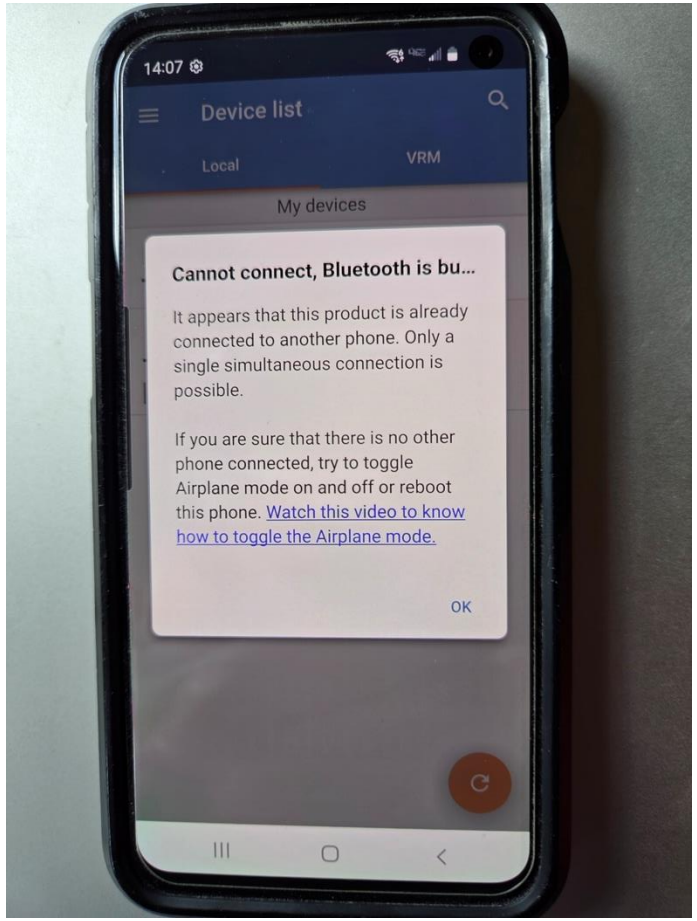
The “Product info” selection will show two screens, here is the upper screen, you select EDIT to create a custom name, right now is MEGABOX



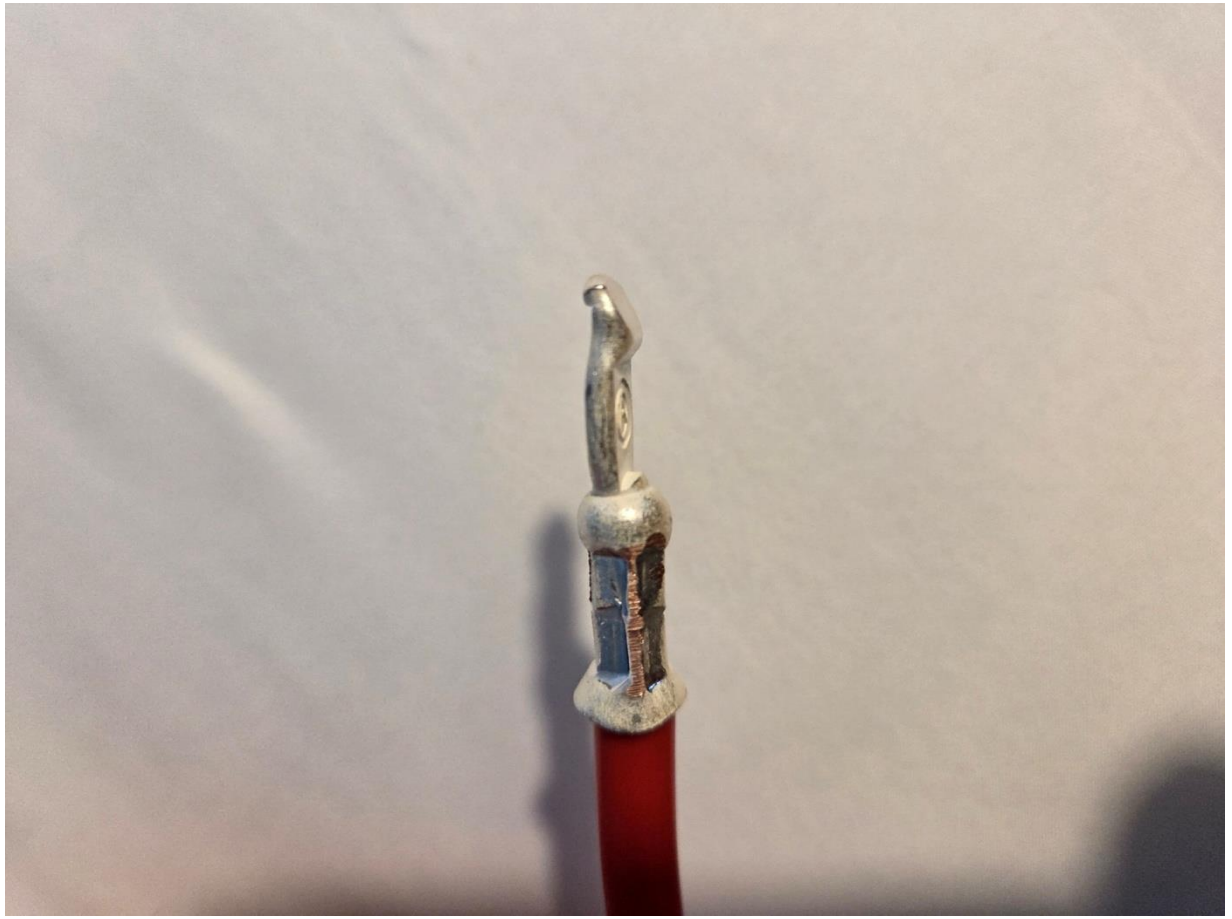
You can scroll down to the lower screen, here you can change the pin code



You Can Only Have One BT Connection At A Time…Otherwise You Will See This Screen



Set up wiring…note the small bulge to the right, the flat terminal contact point

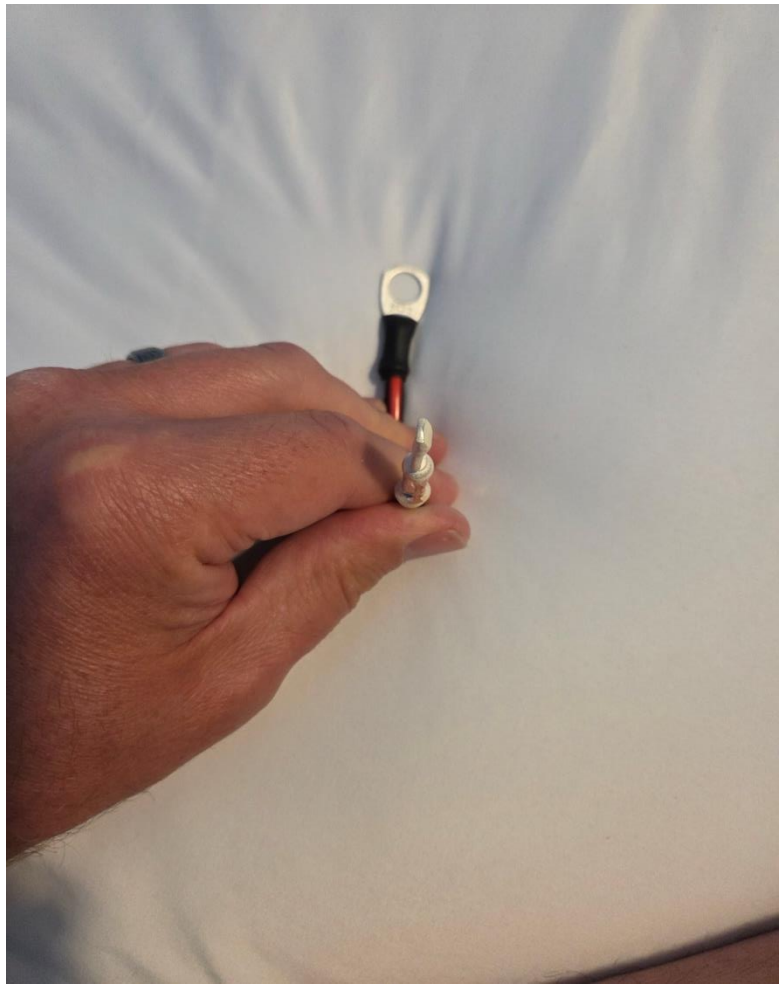


PWRbox wiring method I use

- Cut an 8AWG **Red** wire 5” long and strip back each end just enough to put on an SB50 contact
- Both contacts will share the same orientation, the flat point is facing the same direction
- Will cut two lengths of 8AWG **Black** wire to 4 ¼” and strip back enough wire to put a contact on one end and a 3/8” lug on the other end
- One black wire will have the flat end 90 degrees to the right of the lug
- The other black wire will have the flat end 90 degrees to the left
- Place the black wires on the shunt terminal facing towards the center of the box…PWRbox is not wide enough for wires to point outwards

Looking at the contact in front of the lug, the flat end is facing 90 degrees to the left of the lug

Other Black wire with flat end facing 90 degrees to the right of the lug



Megabox wiring instructions

- Cut an 8AWG Red wire 7” long
- Place an SB50 contact on each end, each contact will be 180 degrees different in orientation…if the wire is laying flat, one end has the contact surface facing up and the other end has the contact surface facing down
- Cut two 8AWG **Black** wires 4.5” long
- Place an SB50 contact on one end facing 90 degrees to the right of a 3/8” lug that would be behind it
- Do this for both **Black** wires, 90 degree turn to the right
- When connected to the shunt with the wires going away from shunt terminals, you will be able to

Final note

- Before you put your Victron BT Smartshunt in a powerbox, you will need write down and save the shunt PUK
- The PUK is the Personal Unblocking Key
- If you forget your BT pairing pin code, you will need the PUK to confirm you are looking at the device, and after entering the PUK, you can then reset the BT pin code
- Anyone nearby will be able to see your device name, but not be able to make a connection…they do not have your pin code or your PUK