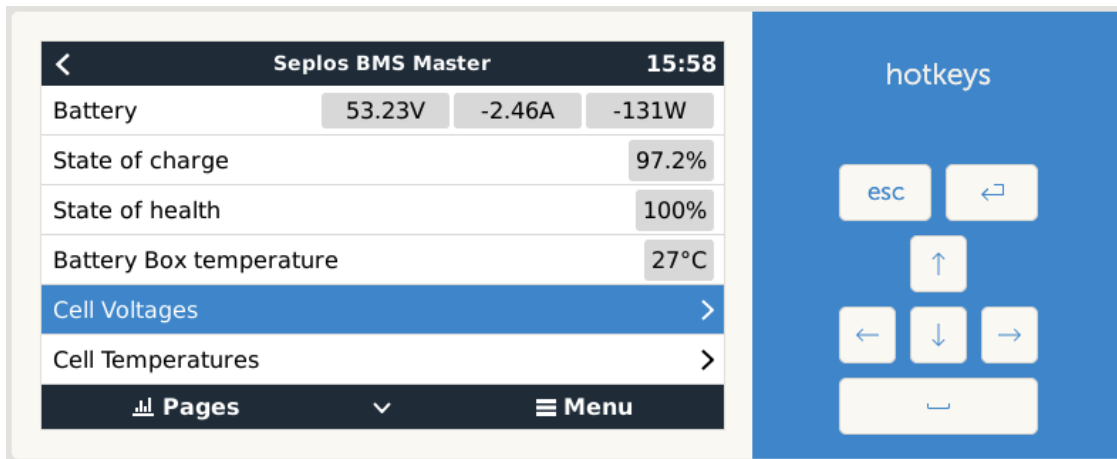




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# Welcome to dbus-seplos !



The basic idea is that dbus-seplos will generate a second path only readable to the seplos BMS and try to gather all further detailed information from the BMS like cell voltages and offer them in dbus of a venus system. Further it will add and change some venus UI pages to show these information.

This is a driver for Venus OS devices (any GX device sold by Victron or a Raspberry Pi running the Venus OS image).

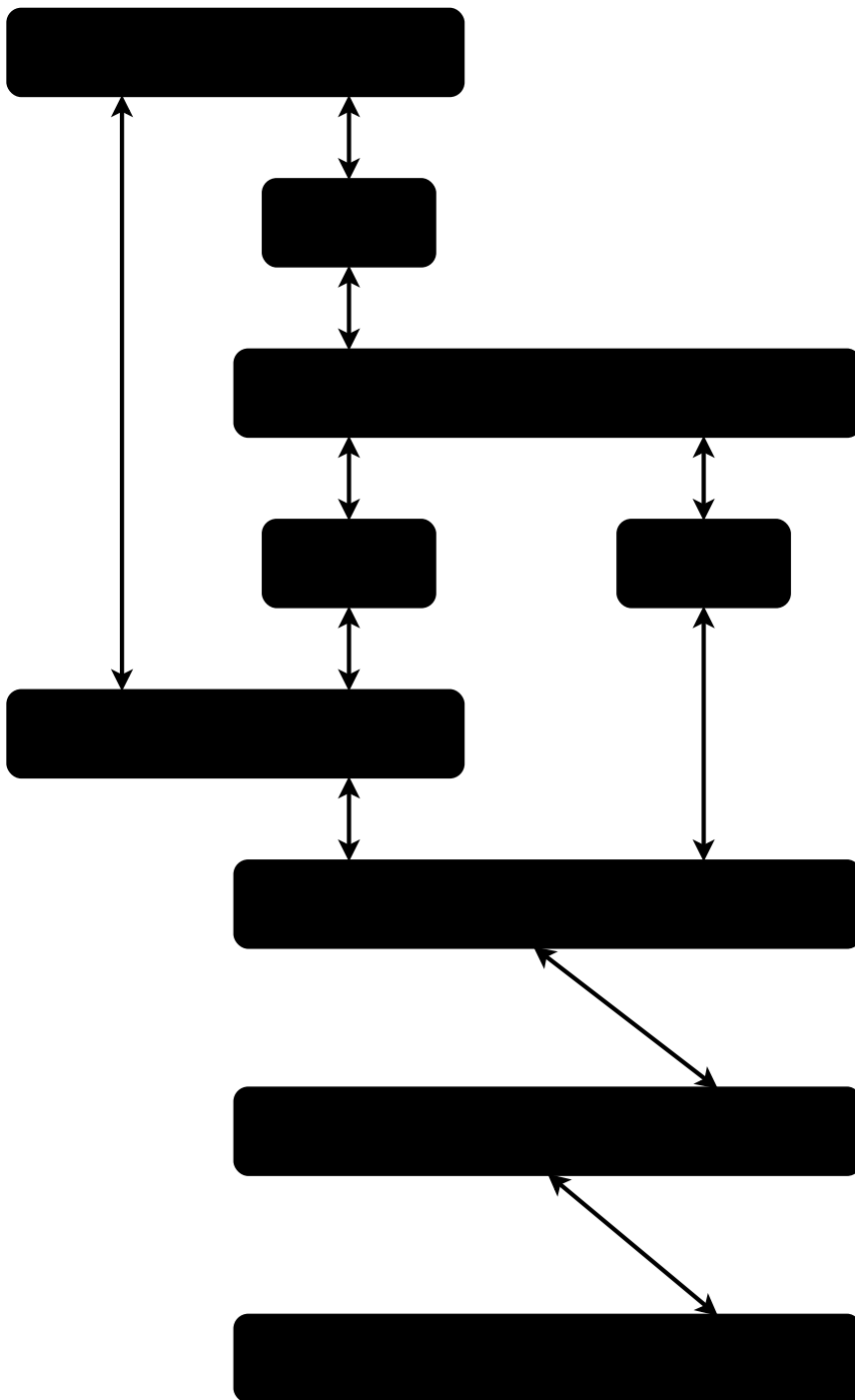
## Warning

Expert functionality! You should be sure about what you are doing. I do not take any responsibility for any damage or loss of data.

# Content index

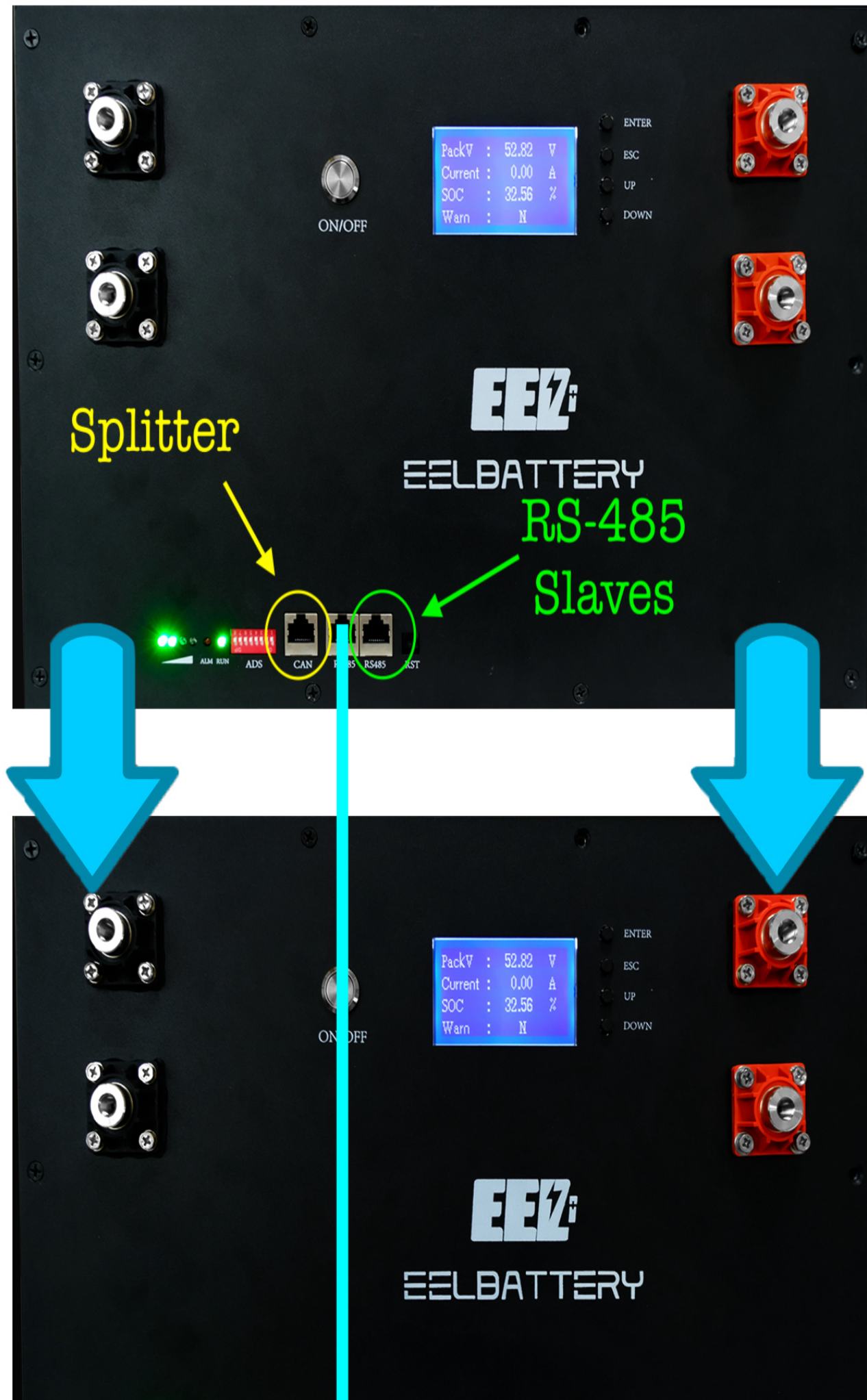
## Cable wiring

The wiring is pretty simple. See the following steps to connect the Venus GX to the Master Box and the Master Box to the other boxes.



## Step 1:

Basis is the wiring of a single or multiple BOX system based on a CAN interface to the Venus GX. The first step is to unplug the CAN cable and connect as splitter to the battery box.



If you have a multiple box system, you keep the addresses and the wiring of the other boxes to the first one like before. No change in DIP switching is needed.

I use the following splitter :

[https://www.amazon.de/dp/B002XRQHSC?ref\\_=cm\\_sw\\_r\\_cp\\_ud\\_dp\\_1SV54ZKSBCX76ZBWJSTK&th=1](https://www.amazon.de/dp/B002XRQHSC?ref_=cm_sw_r_cp_ud_dp_1SV54ZKSBCX76ZBWJSTK&th=1)

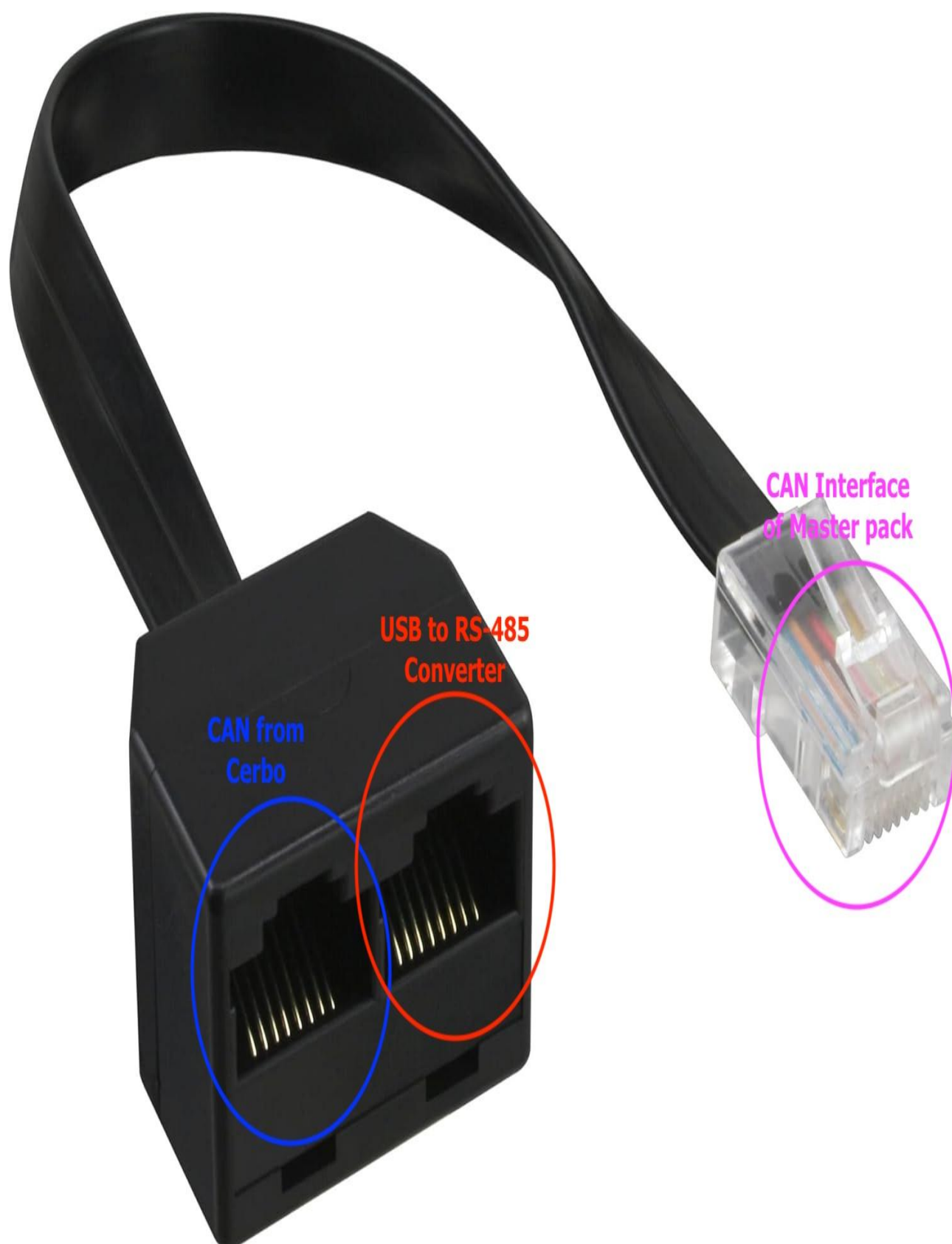
which worked for me perfectly.

## Step 2:

Connect the CAN cable from Venus to the left port of the splitter. From then on the wiring is prepared to support additional RS-485 devices.

## Step 3:

To connect to the Master Box, please plug the RS-485 cable to the right port of the splitter and the second RS-485 cable to the left over connector on the master battery and plug the splitter in the CAN interface of the (Master) box.



If you have a single box system, you can connect the RS-485 cable to the splitter. If you have more than two boxes, no further wiring needed to be done as the master box will be the gateway for all other boxes as well.



# Driver installation

## Note

The driver does not do any setup of your BMS/Battery. You need to have a working battery system before you start.

## Note

The driver is not a replacement for a BMS. It is a tool to monitor your battery system. You should always have a working BMS based on CAN installed and active.

## Warning

The driver is only tested with Venus OS > 3.00 and < v3.3. It will not work with Venus OS other than that. Secondly it is only tested with Seplos BMS hardware v2 and firmware 16.06. I do not know if it works with version 3 of the hardware.

## Install or update over SSH

## Note

Requires root access.

Log into your Venus OS device using a SSH client like Putty or bash. Please change directory to /tmp and run these commands to start the installer:

```
wget -O /tmp/install.sh https://raw.githubusercontent.com/mworion/dbus-seplos/master/install-target.sh
bash /tmp/install.sh
```

The installer will download the latest released version of the driver and installs it on your system. The location of the install will be in

```
/data/etc/dbus-seplos
```

The installer will also create a service file for the driver and enable it. All the installations to the system will be done from this origin with symlinks.

In addition the installer will add lines to

```
/data/rc.local
```

to keep the installation persistent over reboots und firmware updates of the venus system. Uninstall will remove this entry.

Furthermore the installer will add the following file:

```
/data/conf/serial-starter.d/dbus-seplos.conf
```

to enable the serial starter daemon to recognize and integrate dbus-seplos auto-detect for the RS-485 interface.

Last the installer will backup / add some files to the GUI system to make the GUI aware of the more detailed information provided by dbus-seplos. Uninstall will remove these files and changes.

You could customize the installation by editing the script. All scripts are located in the same directory:

```
/data/etc/dbus-seplos/scripts
```

## Settings

Basically no settings could be made as the driver is designed to be plug and play.

## Behavior

dbus-seplos will start automatically after installation. The master battery will be detected and the driver will start to collect data. If you have multiple batteries, dbus-seplos will detect them and add as much Slave devices as needed. The addresses selected with the dip switches on the hardware will be used to identify the driver battery connection. Any change in DIP settings will change the order and ID of the driver data stored in the dbus system.

## Usage

Once installed and running, the dbus-seplos is shown in the Venus device beside the CAN driver, which handles all active topics. dbus-seplos does not write or actively change values. Just transferring BMS data to dbus.

The image displays three sequential screenshots of the Seplos BMS Master interface, each showing a different data page. To the right of each screenshot is a blue overlay labeled 'hotkeys' containing a virtual keypad with the following buttons: 'esc', a left arrow, an up arrow, a left arrow, a down arrow, a right arrow, and a right arrow.

**Top Screenshot: Device List** (Time: 20:06)

| Device List        |     |        |          |
|--------------------|-----|--------|----------|
| Seplos BMS Master  | 89% | 53.09V | -8.82A > |
| Seplos BMS Slave 1 | 89% | 53.09V | -8.57A > |
| Seplos CAN EEL     | 89% | 53.09V | -17.5A > |
| T Busbar           |     | 20°C   | >        |
| T MP2 L1           |     | 28°C   | >        |
| T MPPT 1           |     | 22°C   | >        |

Navigation: Pages, Menu

**Middle Screenshot: Seplos BMS Master** (Time: 20:06)

| Seplos BMS Master       |        |        |       |
|-------------------------|--------|--------|-------|
| Battery                 | 53.10V | -8.71A | -462W |
| State of charge         | 89.1%  |        |       |
| State of health         | 100%   |        |       |
| Battery Box temperature | 26°C   |        |       |
| Cell Voltages           | >      |        |       |
| Cell Temperatures       | >      |        |       |

Navigation: Pages, Menu

**Bottom Screenshot: Lowest cell voltage** (Time: 20:07)

| Lowest cell voltage                        |          |           |  |
|--|----------|-----------|--|
| Lowest cell voltage                        | 0        | 3.318V    |  |
| Highest cell voltage                       | 4        | 3.319V    |  |
| Minimum cell temperature                   | 1        | 21°C      |  |
| Maximum cell temperature                   | 0        | 22°C      |  |
| Battery modules                            | 1 online | 0 offline |  |
| Nr. of modules blocking charge / discharge | --       | --        |  |

Navigation: Pages, Menu

< Seplos BMS Master | Cell Voltages / Balance 20:06

Cells Voltage Sum 53.09V

Cells (Min..Max..Diff) 3.318V 3.319V 0.001V

Cells (1...4) 3.318V 3.318V 3.318V 3.318V

Cells (5...8) 3.319V 3.318V 3.319V 3.318V

Cells (9...12) 3.318V 3.318V 3.318V 3.319V

Cells (13...16) 3.318V 3.318V 3.319V 3.319V

Pages Menu

hotkeys

esc ↵

↑

← ↓ →

⏴

< Seplos BMS Master - Temperatures 20:06

Battery Box temperature 25.6°C

MOSFET temperature 21.5°C

Cell temperature 1 22.4°C

Cell temperature 2 21.2°C

Cell temperature 3 21.2°C

Cell temperature 4 21.6°C

Pages Menu

hotkeys

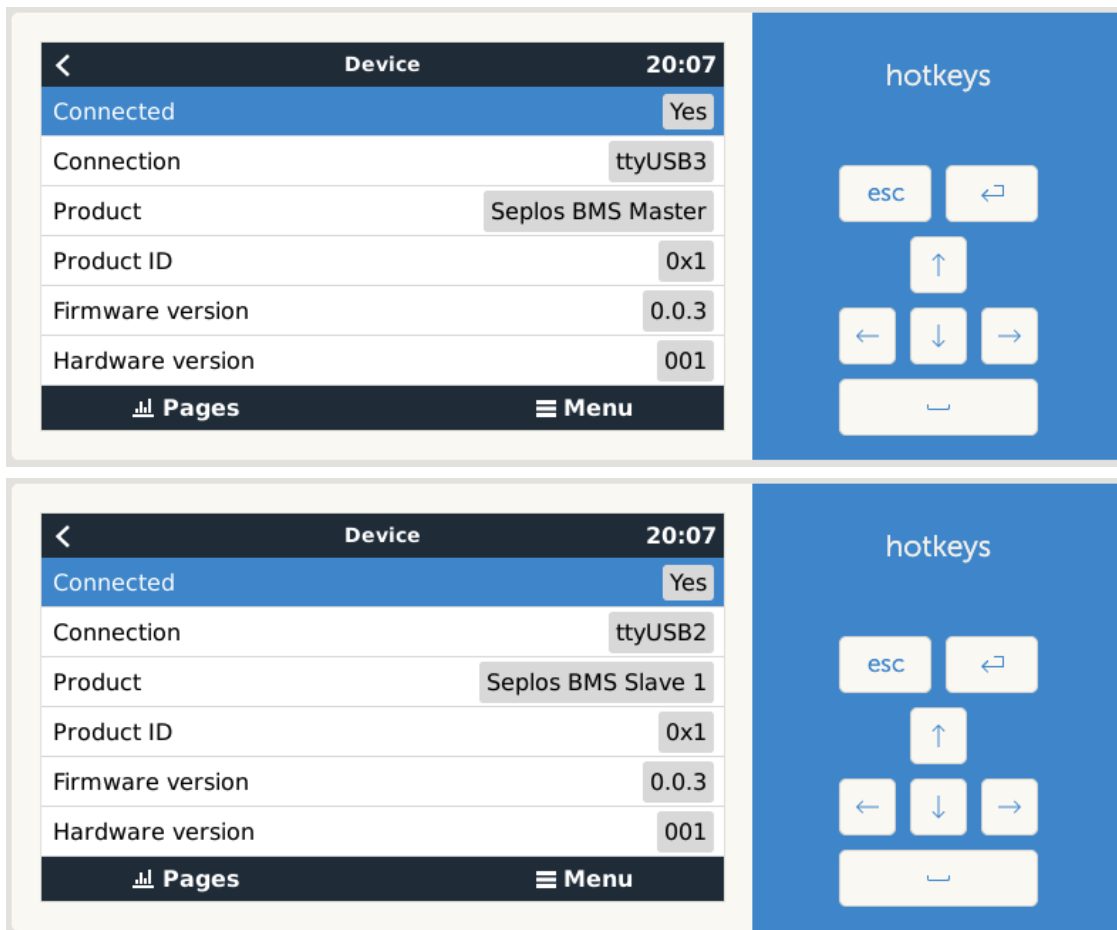
esc ↵

↑

← ↓ →

⏴

Master and Slave battery packs are defined automatically:



## Problem solving

Attached to this document you will find a list of common problems that you may use for troubleshooting. If you have any other problem that is not listed here, please contact me through github issues

## Device setup

The following devices are used in my setup:

Waveshare USB-HUB-7U-NP



Waveshare RS232/485 USB All



Ocnvia ADUM3160 USB Isolator module USB to USB Voltage Isolator module







InLine 69933 ISDN Splitter

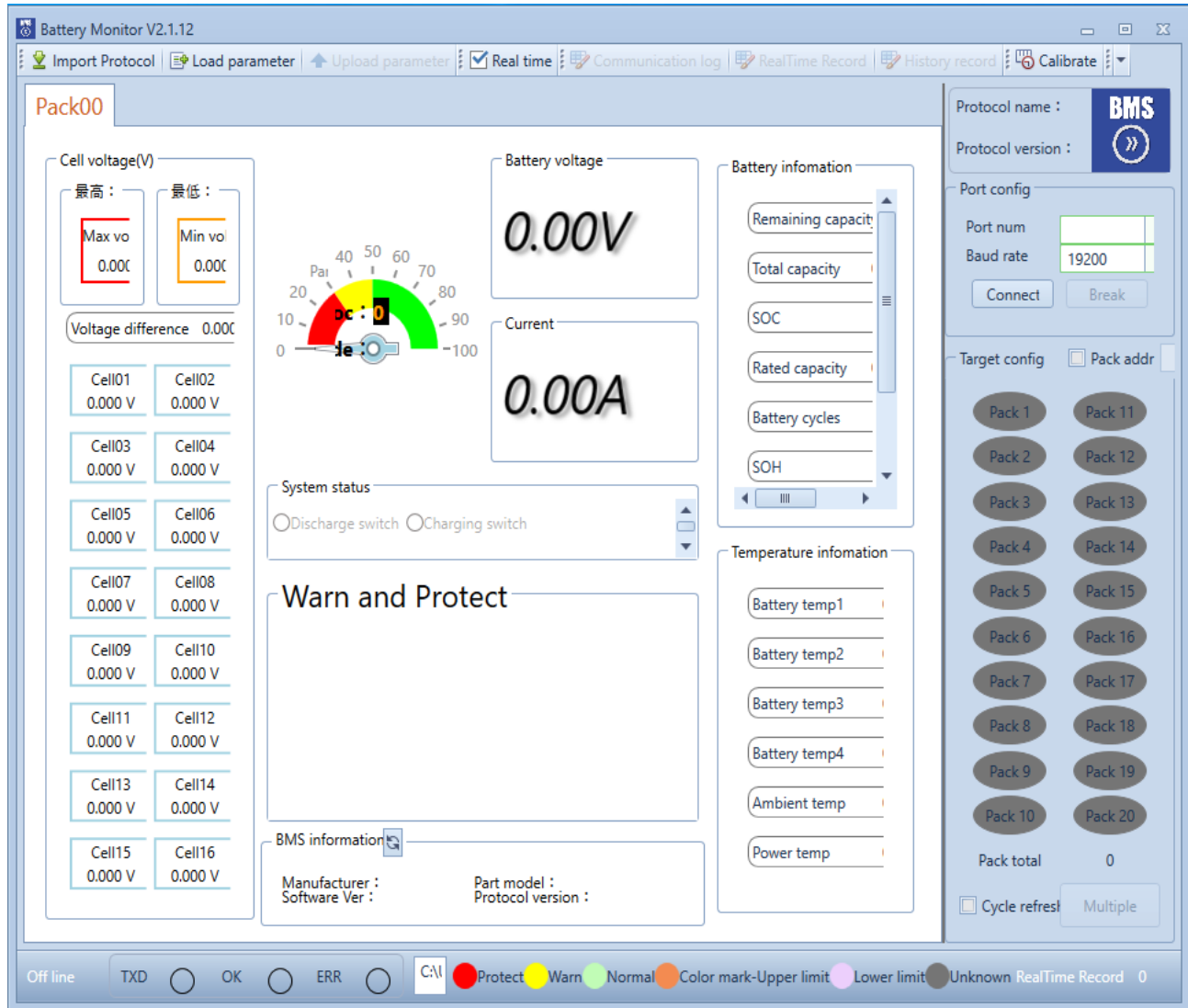




The wiring is done from Cerbo GX to the Isolator Module, the USB-HUB-7U-NP, then to the USB - RS485 converter and finally to the splitter and RS-485 port of the master battery pack. The CAN interface is connected to the splitter of the master battery pack as well directly from Cerbo.

## Checking Connectivity

Before you start investigating the problem, you should check the connectivity of the devices. You can use the Battery Monitor of Seplos to check if each connection is working properly.



Please take into account that the master pack (connected through the splitter) runs on 9600m baud rate, while the slave pack (connected through the RS-485 port of the master pack) runs on 19200 baud rate.

You should be able to see each pack separately when using the dedicated USB-RS485 converter. dbus-seplos later on chooses the correct port and speed for each pack.

## Checking the logs

You can check the logs of dbus-seplos to see if there are any errors or warnings. The location of the logs is in the following path:

/var/log/dbus-seplos.ttyUSBxy

where xy is the number of the USB port where the device is connected.

## Changelog

### Released versions of dbus-seplos

v 0.2.0

- added some more logging for problem solving
- increased the timeout for the dbus-seplos loading to 2s

v 0.1.6

- adjusted the polling interval to number of slave devices
- preparing adding support for self monitoring cpu load

v 0.1.5

- cleanup

v 0.1.4

- set logging level to warning

v 0.1.1

- corrected firmware version, added some timeout to the dbus-seplos loading

v 0.0.3

- initial release for beta testing

## Known limitations

This driver is developed and tested on a seplos v2 (FW 16.06) and a Venus GX (FW 3.x). It will not run on Venus OS version lower to 3.0 and does not support beta versions with the new UI from 3.20 on.

The driver is not tested on a seplos v3 system. There definitely the wiring has to be adjusted and checked if the driver is working.

The installation of the driver might interfere with other drivers. Especially having dbus-serial-battery installed at the same time causes conflicts

## Reporting issues

To improve quality and usability any feedback is highly welcome! To maintain a good transparency and professional work for my, please respect the following recommendations how to feed back.

### Note

Please report issues / bugs here:

<https://github.com/mworion/dbus-seplos/issues> .

And if you have feature requests discussions or for all other topics of interest there is a good place to start here:

<https://github.com/mworion/dbus-seplos/discussions>

In case of a bug report please have a good description (maybe a screenshot if it's related to GUI) and add the log file(s). Normally you just could drop the log file (or PNG in case of a screen shot) directly to the webpage issues on GitHub. In some cases GitHub does not accept the file format. In this case, please zip them and drop the zipped file. This will work. If you have multiple files, please don't zip them to one file! I need them separated and zipped causes more work.

If changes are made due to a feedback, new releases will have a link to the closed issues on GitHub.

