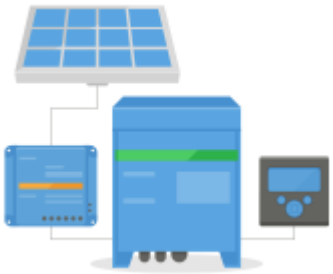
ESS Quick Installation Guide

This quick installation guide lists all the steps that are needed to install and configure a Victron Energy ESS system. It briefly explains each step. It also provides links to locations where more in depth information about each step can be found.

The full ESS manual can be found here: design-installation-manual



Step 1 - Understand how a Victron Energy ESS system works

Familiarize yourself with the Victron Energy ESS system.
A good place to start is to watch this video:

Video

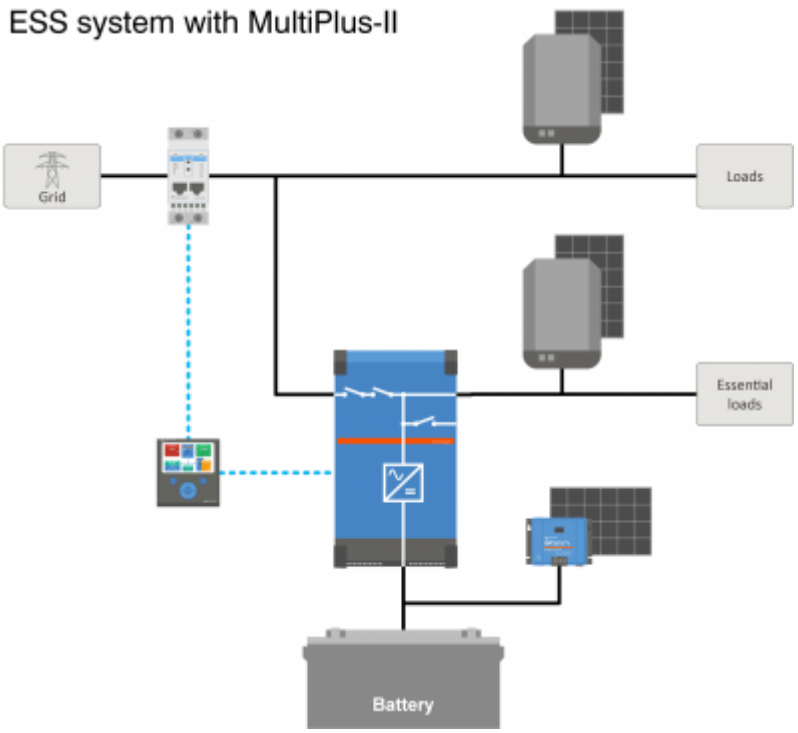
Step 2 - Decide what type of ESS

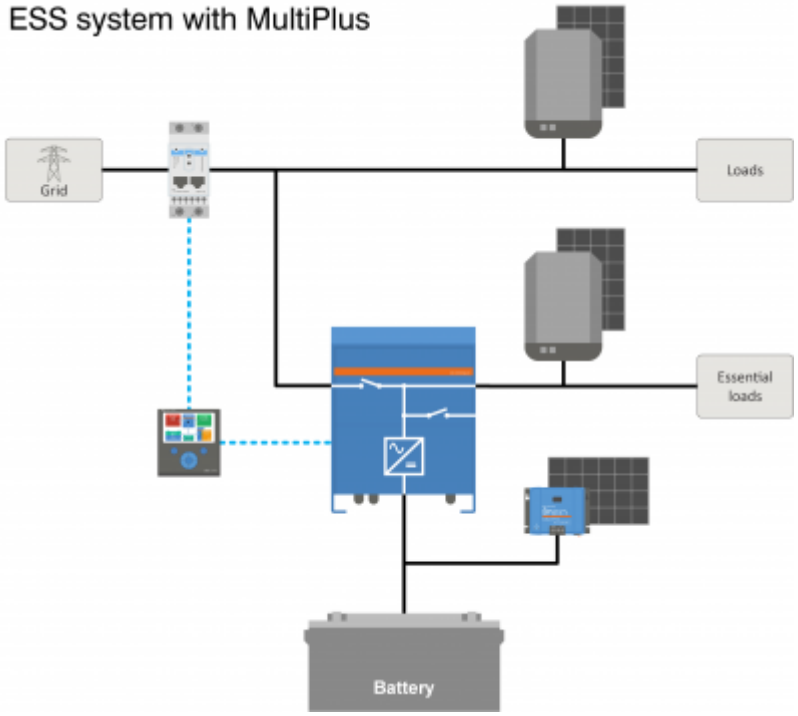
There are a few different ways to set an ESS system up. A combination of these are possible as well:

- DC coupled ESS
- AC coupled ESS
- Energy meter is used
- Grid parallel
- Essential loads are used

See below drawings to get an idea of all possibilities. The first drawing shows the wiring when a MultiPlus-II is used; and the second one shows how it is wired with a MultiPlus or Quattro.

Both drawings show all AC- and DC-Coupled combinations.





Step 3 - Select the system hardware

Please see below lists. links are provided to the relevant equipment product pages

You will need:

- Victron inverter/charger(s): https://www.victronenergy.com/inverters-chargers

- Victron Interface MK3-USB: https://www.victronenergy.com/accessories/interface-mk3-usb
- A Victron GX device such as the Cerbo GX or Venus GX: https://www.victronenergy.com/live/venus-os:start
- RJ45 UTP cable(s): https://www.victronenergy.com/cables/rj45-utp-cable
- Batteries

Note: This information does not apply to the Multi RS models, which use a VE.Can interface (not VE.Bus) see the RS product manuals for specific information on programming them for ESS.

For a DC coupled ESS you will also need:

- Victron MPPT solar chargers: https://www.victronenergy.com/solar-charge-controllers
- Victron VE.direct cable(s): https://www.victronenergy.com/cables/ve.direct.cable
- Solar panels

For an AC coupled ESS you will also need:

- Grid tied inverter
- Solar panels

If the ESS needs an energy meter, you will need:

- Victron Energy meters: https://www.victronenergy.com/accessories/energy-meter

And one or more of the Energy Meter accessories:

- Victron ASS030572018 - RS485 to USB interface 1.8m: https://www.victronenergy.com/accessories/rs485%20to%20usb%20interface
- Victron Zigbee to USB and RS485 converter: https://www.victronenergy.com/accessories/zigbee-converters

To measure PV power coming from a grid-tie PV inverter of a type other than Fronius, SMA, ABB or Solar Edge, you will need one of these:

- Victron Current sensor: https://www.victronenergy.com/accessories/ac-current-sensor
- Victron Energy meters: https://www.victronenergy.com/accessories/energy-meter
- Details on how to measure grid-tie PV inverter output are in the GX device manual: https://www.victronenergy.com/live/ccgx:start#connecting_a_pv_inverter

To equip the system with WiFi you will need:

- Victron WiFi module: BPP900100200 or BPP900200200
- Details on connecting your GX device to the internet are in the GX device manual, chapter Internet

In case of a smart battery such as BYD, you might need:

- VE.Can to CAN-bus BMS cable: https://www.victronenergy.com.au/cables/ve-can-to-can-bus-bms

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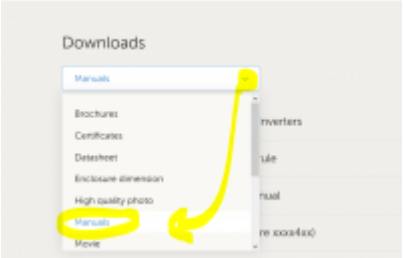
Step 4 - Install all equipment

- Install and wire all system parts according to their manuals.
- Do not connect communication cables between the various parts, this will be done at later stage

To find the applicable installation manuals see the links in the prevision steps. These links will direct you to the relevant product section. Then click on a the applicable product. On the product page scroll down to “Downloads”, and then select “manuals” from the drop down box.



Step 5 - Update firmware of all equipment

GX device

The easiest way is to let the GX device (Cerbo GX) do an automatic update. This can be selected from its menu, once it is connected to the internet. Alternatively update via a SD card. For instructions how to update see: How to update a GX device

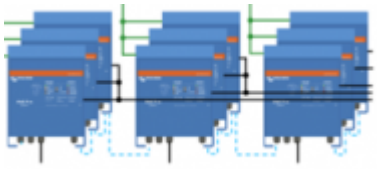
Inverter/chargers and MPPT Solar Chargers

Use VictronConnect; instructions are in the VictronConnect manual, section Firmware updates.

Step 6 - Set up parallel and/or 3 phase inverter/chargers

(skip this step if only a single inverter/charger is used)

If the ESS system contains multiple inverter/chargers, they first will need to be set up to run in parallel and/or 3 phase.



For instructions on how to do that see this manual: Parallel, split- and three-phase VE.Bus systems

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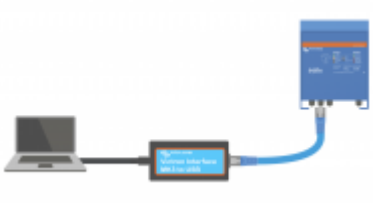
Step 7 - Configure the inverter/charger(s)

The inverter needs to be configured

- Download and install the VE Configure Tools software package from Software downloads section
- Connect computer via MK3 interface to the inverter/charger



See this video on how to use VE.Configure:

Video

The following settings are important:

- Battery monitor settings
- Charger settings
- AC input limit settings
- Grid settings

- Add ESS assistant to the Inverter/charger(s)

For details, see the relevant section in the ESS Design and installation manual.

Step 8 - Connect all communication cables

- Connect GX device to inverter/chargers use RJ45 cable
- Connect MPPT to GX device use VE.direct cable
- Connect energy meters to GX device using the USB to RS485 interface or Zigbee units
- Connect smart battery to GX device, use special RJ45 cable
- Connect GX device to internet via Ethernet cable or WiFi module

Step 9 - Make the GX device settings

- Go to ESS settings on GX device, make ESS settings
- Go to CanBus, select smart battery
- Find Fronius, SMA or Solar edge on GX device. assign correct role
- Find current sensor on GX device, assign correct role
- Find Energy meter(s) on GX device, assign correct role

For details, see the relevant section in the ESS Design and installation manual.

Step 10 - Set up VRM

- Go to Victron VRM
- Make a user account (in case you do not yet have account)
- Add the system to your account
- Check if logging is correct

For more information, refer to the VRM Portal documentation.

Step 11 - Commissioning

- Commission the system, see ESS manual, section Commissioning.
- Consider limiting access to end-user
- Consider turning automatic firmware updates off

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