



FP-ENVY-8K/10K/12K BATTERY-INVERTER INTEGRATION GUIDE



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Getting Started

Contact Support

Introduction

This integration guide will help set up the charge/discharge parameters of Fortress Power batteries and commission them as they relate to FP-ENVY inverters.

Tech-Support Contact Information

- **Phone:** (877) 497-6937
- **Support Tickets:** <https://www.fortresspower.com/support/>

Useful Links

- **Warranty Submittal:** <https://www.fortresspower.com/warranty/>

Note

Warning

Make sure to select “SET” for every parameter change that is made in the LCD screen Interface. Otherwise, adjusted parameters will not be saved and Inverter might fault.

Unpack Batteries + Check Voltage

1. Unpack the batteries and turn each battery on by itself.
2. Note the voltage of each battery and serial number. The serial numbers are useful during warranty submittal.
3. The batteries must be within +/-0.5V of each other before commissioning. Groups of 4 batteries or more may require a narrower voltage range to commission properly.
4. Turn off the batteries and install them in parallel.

Notes

If the battery voltages are significantly different, one technique is to finish battery installation and only turn on the lowest voltage battery using the pushbutton. Charge the battery, and when the charging voltage is ~0.2V above the resting voltage of the next lowest battery, turn it on too. Proceed until all batteries are turned on and at the same voltage level. If the batteries are below 51V, keep charging amperages below 10A per battery.

If the batteries are slightly more than +/-0.5V from each other, turning on the highest voltage batteries only will reduce their voltages, and turning on the lowest voltage batteries only will lower the highest voltage. Likewise, turning on the lowest voltage batteries as a group will raise the lowest voltage. Then, all the batteries can be turned on within a 0.5/V difference.

Use of the Fortress firmware update tool can help speed up commissioning times. Fortress installers should request a firmware update tool by filling out a support ticket at

<https://support.fortresspower.com>

Closed Loop Communication

eFlex 5.4kWh.

Communication instructions

NOTICE

RS485 communication from eFlex to FP-ENVY does not require any ethernet cable modification. Please use battery cable that is included with the inverter packaging.

Warning

**RS485 communication typically requires a firmware update.
eFlex 5.4 has two different firmware version series. Installers are required to determine this before updating the firmware.**

FAILURE TO DO THIS MAY CAUSE THE BATTERY TO STOP WORKING

**BMS which have 20XX and 30XX series firmware needs to be updated with 30XX series.
BMS which have 40XX series firmware needs to be updated with 40XX series.**

Visit the Fortress Power website and download the most recent eFlex firmware update software.

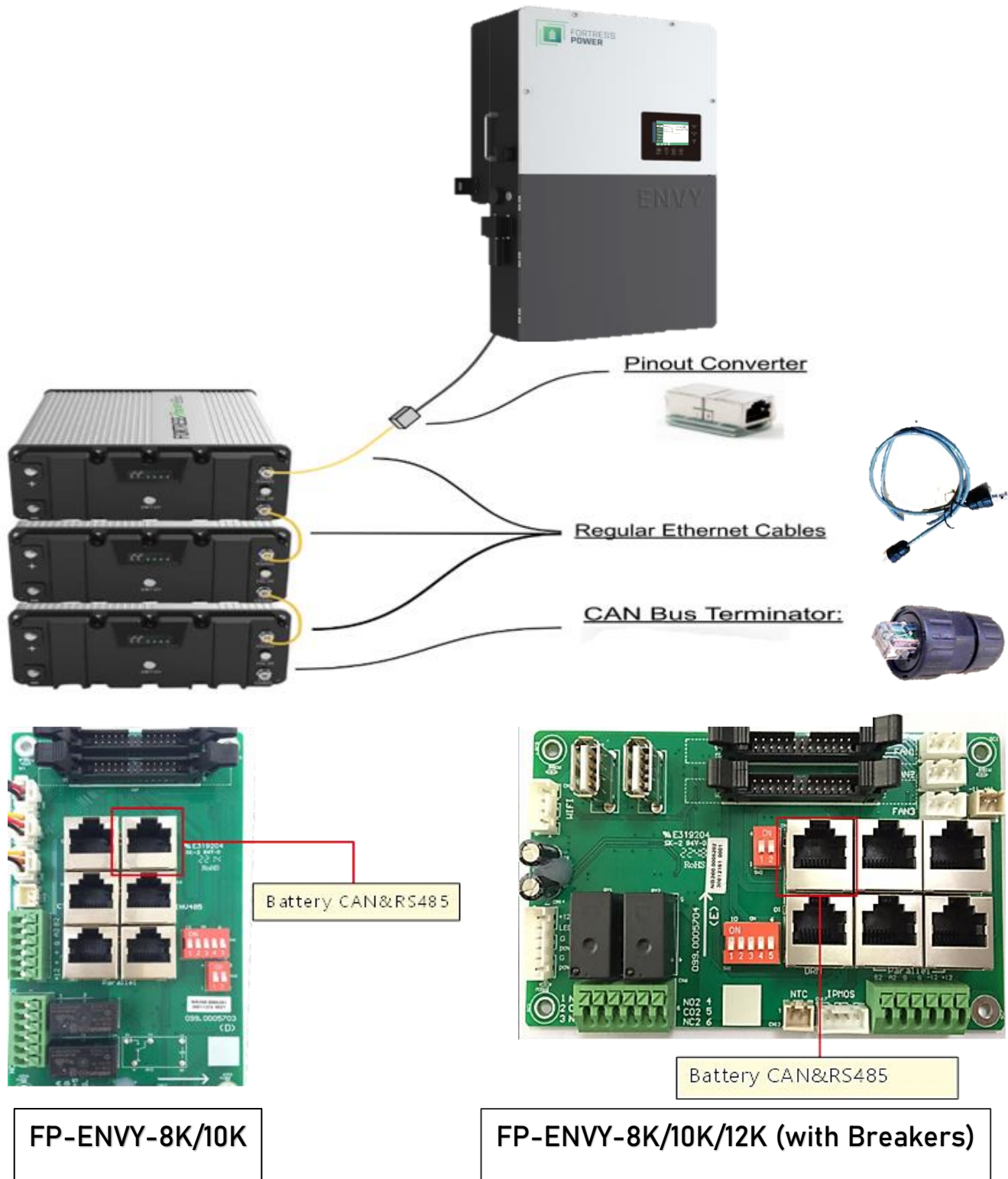
<https://fortresspower.com/firmware>

eFlex(es) have 2 CAN/RS485 port. These are used for both battery to battery communication and battery to inverter communication.

1. Install the battery-to-battery communication cables. Do not over tighten the IP65 weatherproof caps that cover the Ethernet ports.
2. After daisy-chaining the battery-to-battery communication cables, one empty Ethernet port remains on each side of the battery bank.
3. Use one (either) of the empty ports for the battery to inverter communication as described further.
4. Connect an unmodified Ethernet cable to the empty port. The other end of the unmodified Ethernet cable is plugged into a pinout converter (coupler resistor). Connect the unmodified cable included with the inverter into the pinout converter.
5. Connect the CANbus terminator to the other (remaining) empty port of the battery bank.
6. Refer to the diagram below for a visual insight.

eFlex-& FP Envy Inverter RS485 MODBUS Communication

The instructions given above must be followed precisely to establish closed-loop communication.



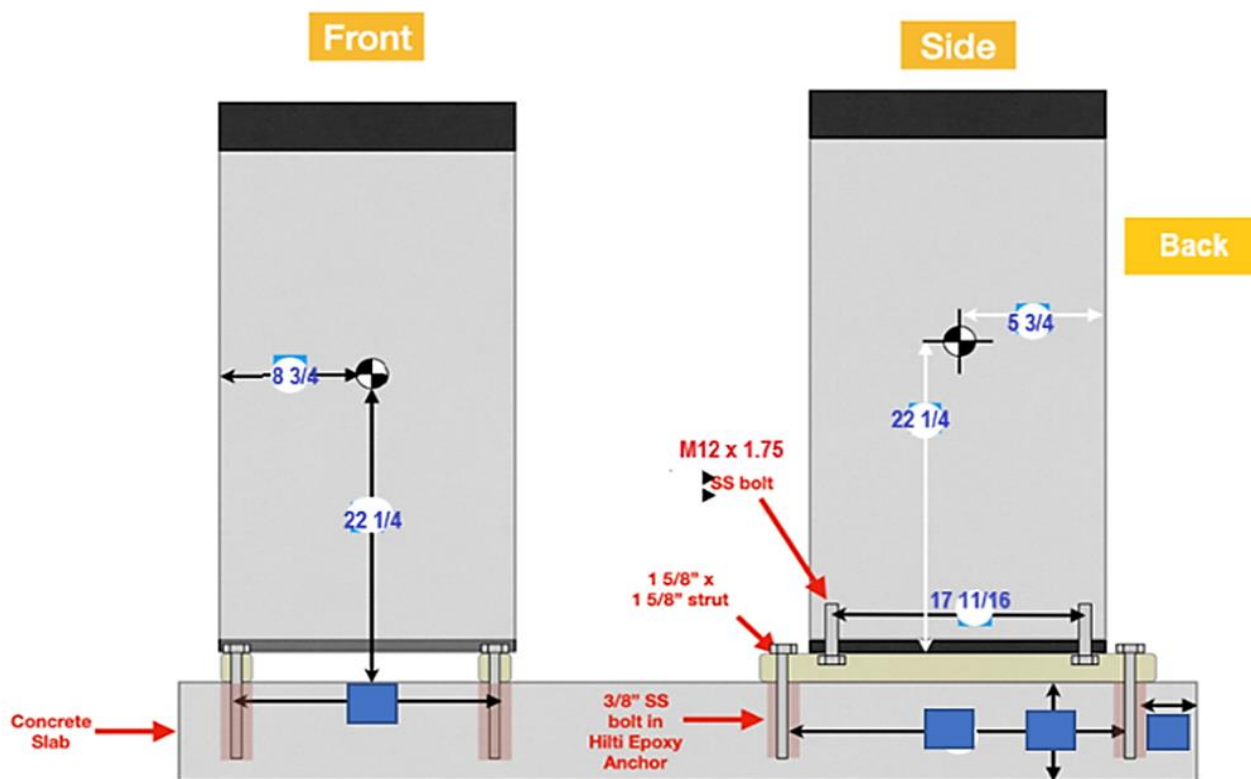
eVault 18.5kWh

Secure the Battery

The eVault MAX has wheels that assist with installation but is not a portable battery. It is intended to rest on its fixed support legs, using the included wall bracket if additional security is necessary.

Some jurisdictions may have seismic requirements which require bolting the battery to the floor. The eVault MAX can be mounted directly to floor by replacing the adjustable legs with pieces of Unistrut mounted directly to the eVault MAX frame using M12 x 1.75 bolts into the adjustable legs mount. A second piece of Unistrut or similar material is mounted to the floor that the eVault Frame mounted Unistrut sits on top of and is secured appropriately to the floor.

eVault MAX sold to distributors after September 2022 will have an additional floor mount bracket option included. It is not a retrofittable option. Please see digital eVault MAX manual for more information.



Communication Instruction

NOTICE

RS485 communication from eVault MAX 18.5kWh to FP-ENVY does not require cable modification. Please use the battery cable that is included with the eVault Max to establish closed Loop.

Warning

RS485 communication typically requires a firmware update. eVault MAX 18.5kWh has two different firmware version series. Installers are required to determine this before updating the firmware.

FAILURE TO DO THIS MAY CAUSE THE BATTERY TO STOP WORKING

BMS which have HEMB **ST series firmware version needs to be updated with ST series.

BMS which have GD series firmware needs to be updated with GD series.

Visit the Fortress Power website and download the most recent eVault firmware update software.

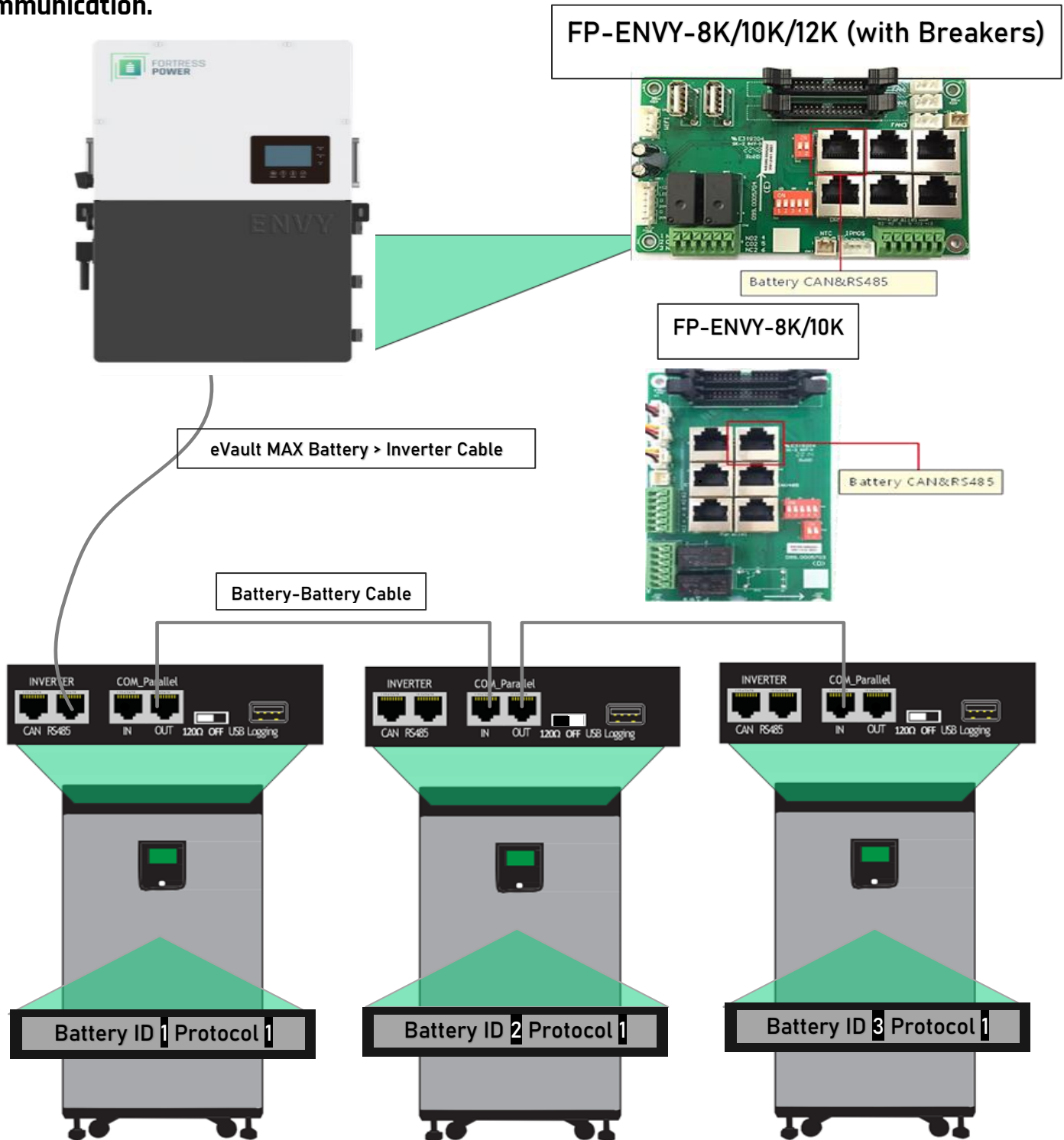
<https://fortresspower.com/firmware>

The **eVault Max** has four Ethernet ports: two COM Parallel Ports, CAN port, and RS485 port. CAN port, and RS485 are used for battery to inverter communication purposes, whereas the COM Parallel ports are bi-directional and are used to establish a battery-to-battery communication. CAN Bus terminators are built into the communication board and are applied as needed using a dipswitch. To set up an **eVault Max to FP-ENVY**, please follow the instructions and refer to the graphic below.

1. While having the batteries turned off and having their DC breakers in the off position, daisy-chain the battery-to-battery communication cables using the bi-directional COM Parallel ports (IN/OUT).
2. Make sure that the USB port is empty and always remains empty.
3. Turn on one battery at a time, enter the correct battery IDs and set the Protocol ID' to '1' on all batteries using the battery touchscreen. Starting with the battery that will be connected to the inverter via the battery-inverter communication cable, the battery IDs are to be entered in an ascending order (1 for the first battery, 2 for the second etc.). In systems with only one eVault Max battery, its battery ID must be set to zero. Once the battery IDs and protocol IDs are changed on the screens, restart the batteries. If the battery-to-battery communication is established, after the restart you will see no BMS red lights blinking.
4. Battery to inverter communication cable must be plugged in to the RS485 port of the first eVault max in the sequence and the other end of this cable must be plugged in to the Battery port on the FP (if you need to make a modified cable for battery to inverter communication, refer to the diagram given in the graphic below).
5. CAN Bus terminator switch must be in the "120Ω" position on the first and the last batteries in the sequence, having the switch in the "OFF" position on all other batteries. In systems with one eVault Max battery, CAN Bus terminator switch must be in the "120Ω" position.
6. Refer to the diagram below for visual insights.

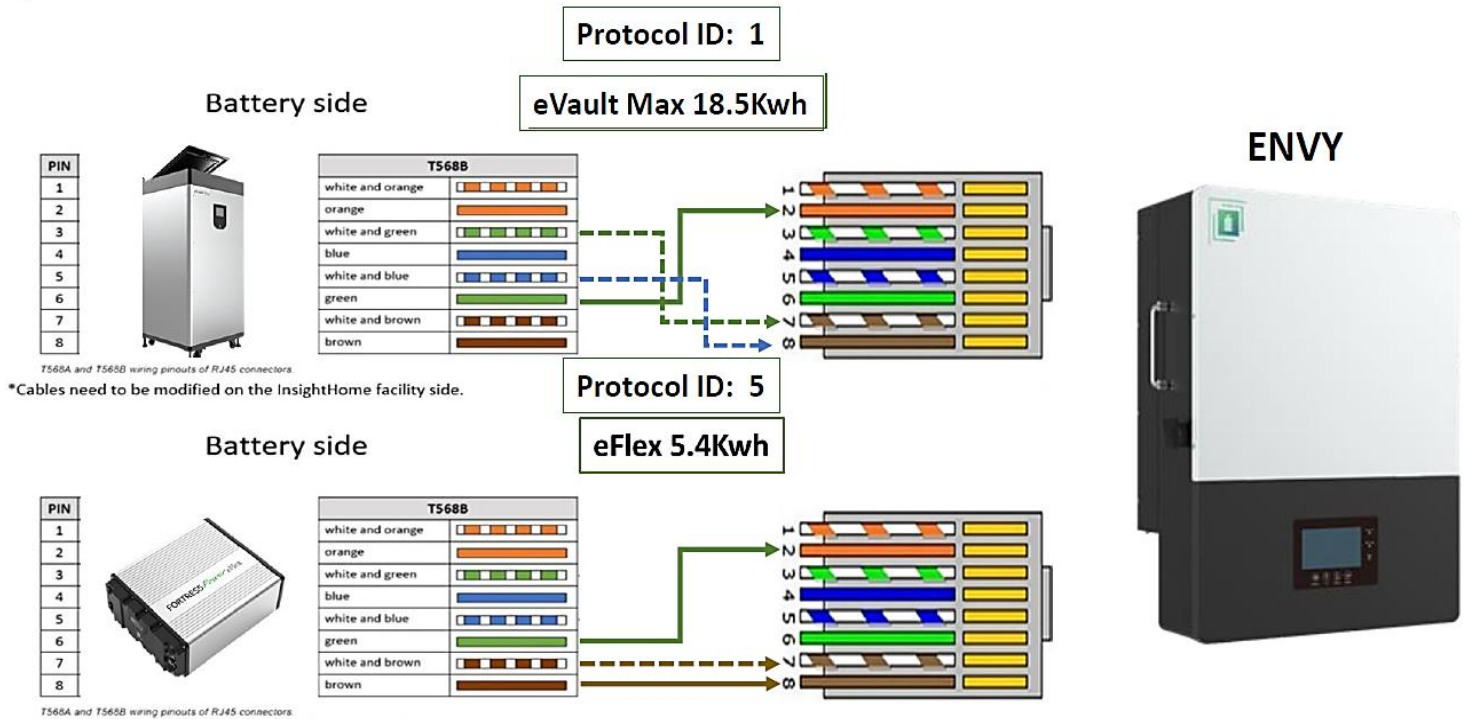
eVault & FP Envoy Inverter RS485 MODBUS Communication

The instructions given above must be followed precisely to establish a closed-loop communication.





& Closed Loop ModBus connection



Start-up and shut down the inverter

Start up the inverter

Step1. Turn on the battery system first, then turn on the DC breaker between battery and inverter.

Step2. Make sure the PV voltage of the strings are higher than 120V and check if the inverter works in PV charge or PV charge back-up mode.

Step3. Make sure step1 and 2 above work properly before turning on the grid power or generator breaker and check if the inverter can go to bypass mode and on-grid mode normally.

Shut down the inverter

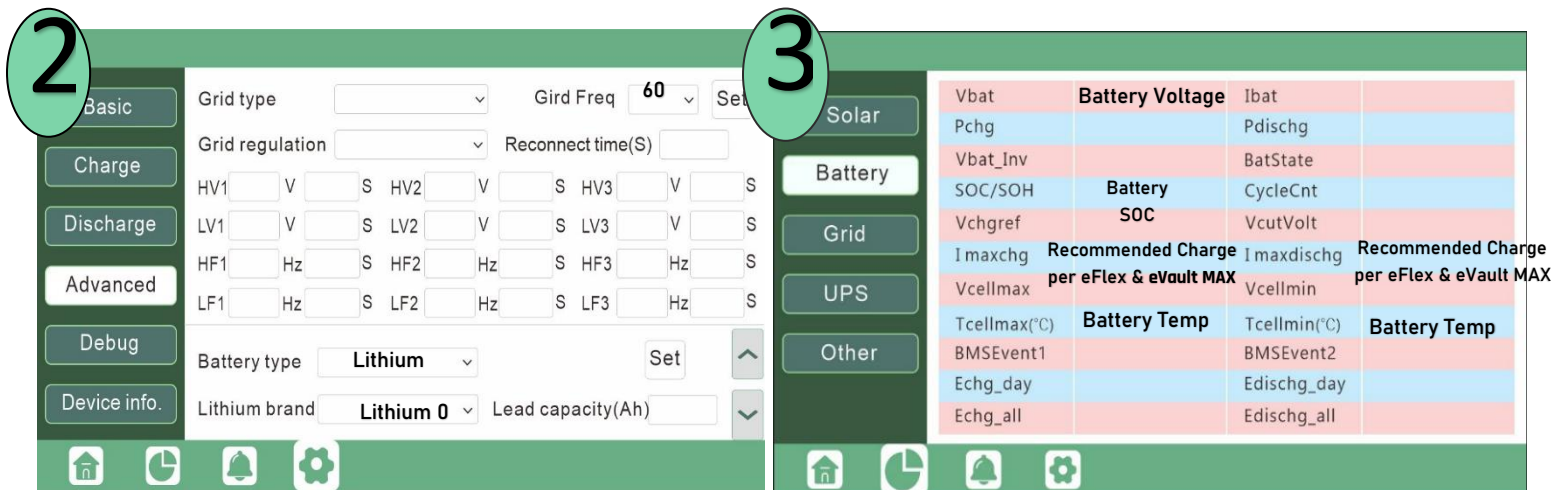
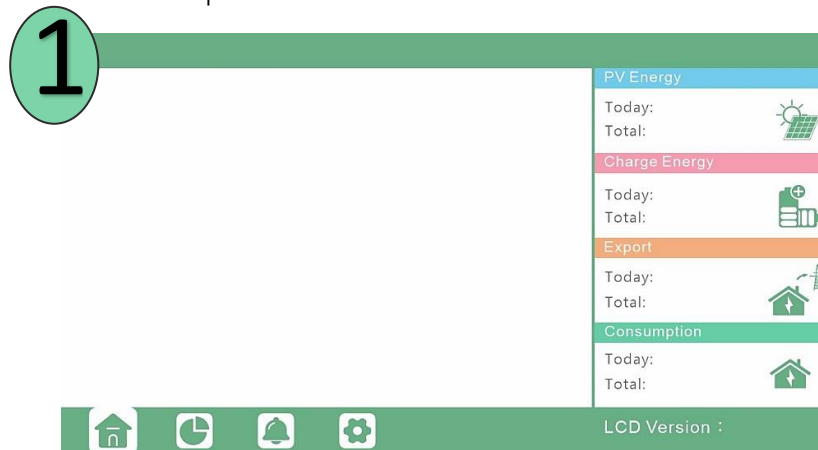
Danger: Do not disconnect the battery, PV and AC input power under load. If there is an emergency issue, and you have to shut down the inverter, please follow the steps as below.

Step1. Turn off the Grid breaker of the inverter.

Step2. Switch off the load breaker.

Step3. Turn off PV breaker and then battery breaker, waiting for the LCD to go off.

Easy Steps to Achieve Closed Loop Communication with Fortress Power Batteries

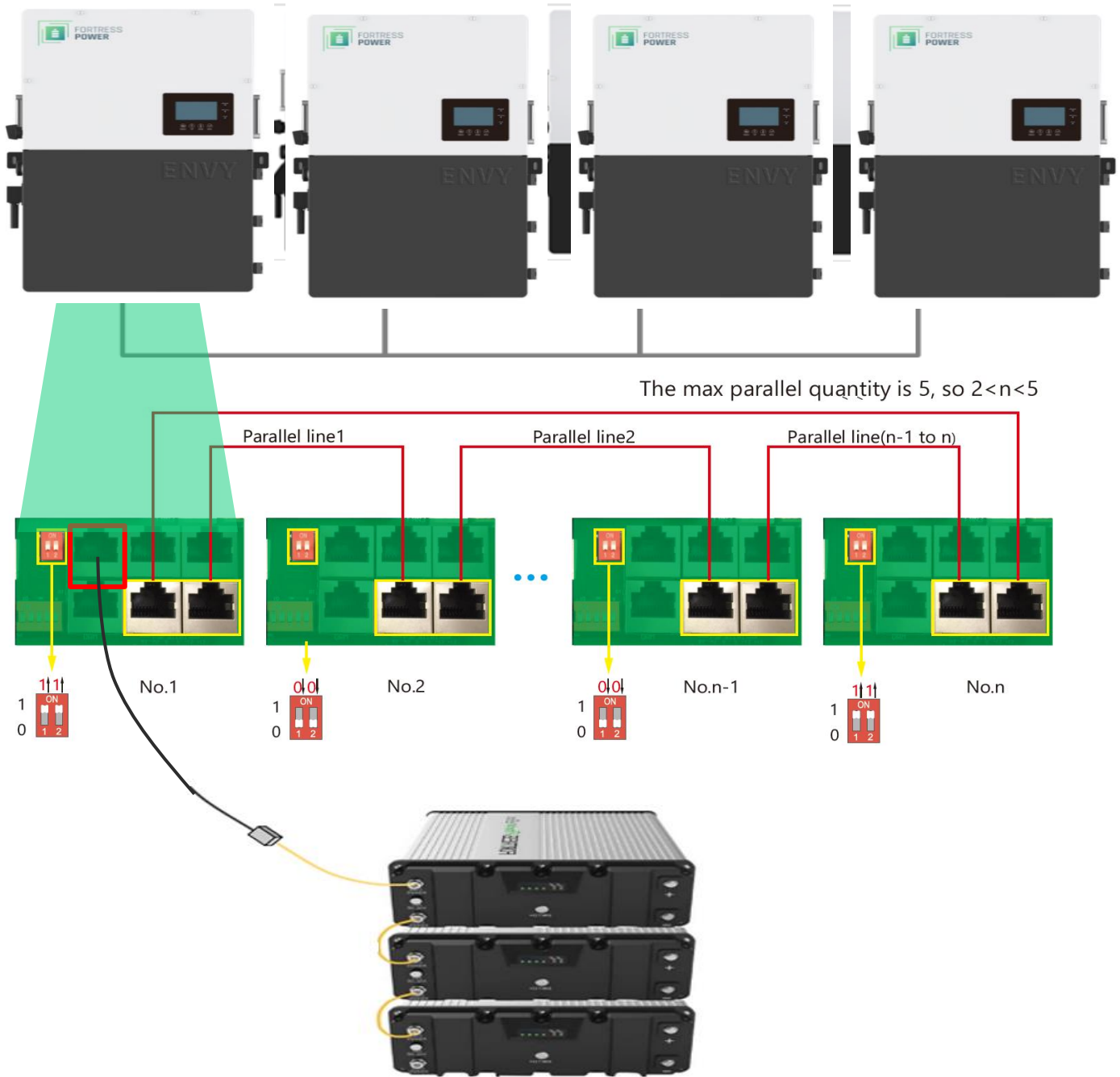


1. Select **Settings>Advanced**. Settings Password is **00000**
2. Make sure that frequency is set to **60Hz** for US territory.
3. Select Battery Type: **Lithium**, Lithium Brand: **Lithium 0**. Click **SET**
4. Confirm battery parameters are being read by selecting the **Data icon>Battery**. **The inverter will read internal battery parameters and set the charging profile accordingly.**

NOTICE

When in Closed loop, the Envy inverter only uses State of Charge (SOC) parameter values and will disregard any voltage settings. Time of use and power adjustments may be used in this configuration.

Paralleling Inverters



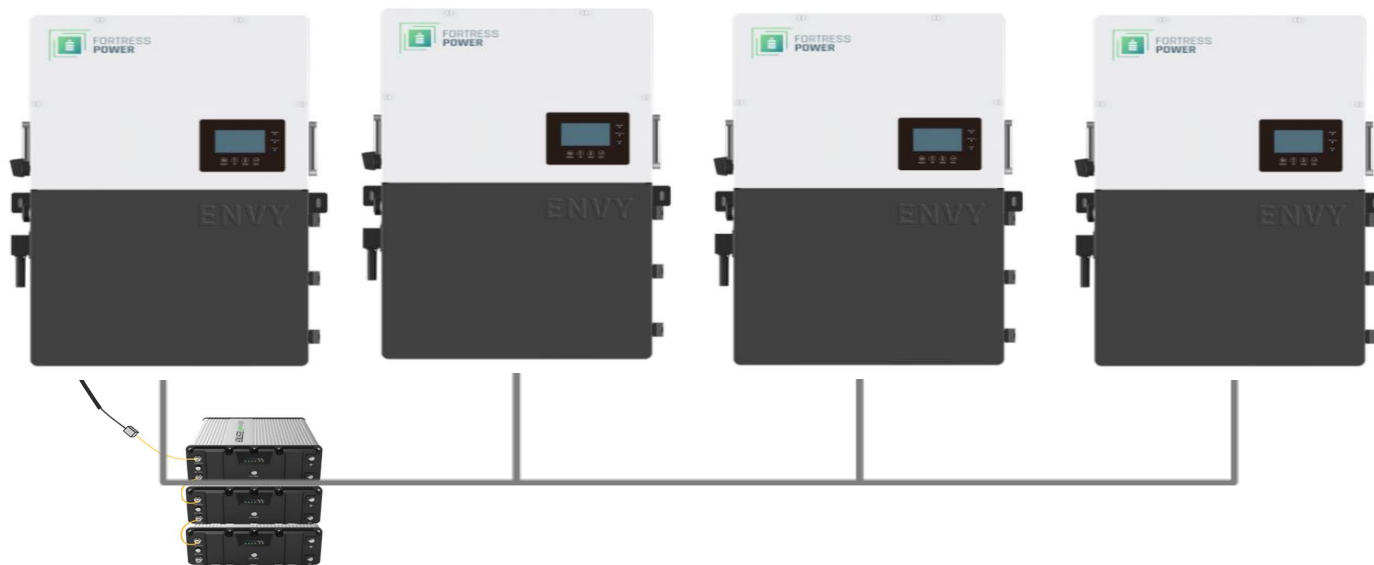
Terminate communication on the inverter by putting the dip switches on an ON position (11). The rest should remain in an OFF Position (00). Attach battery communication cable only to the Master Inverter. Connect the inverter-inverter communication cable in the paralleling ports as depicted in the image above. The installer must provide a 8pin to 8pin CAT5 cable if the inverter paralleling port connection from inverter 1 to inverter N is more than 6'9" spread from each other. The installer shall provide one 8 pin-8 pin cable when using with eFlex batteries.

Master

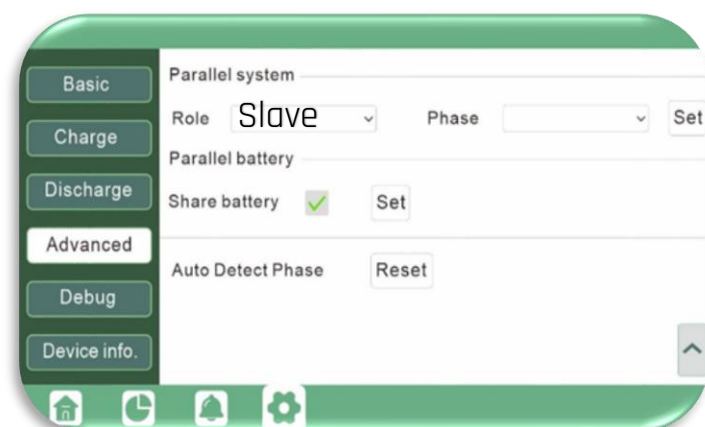
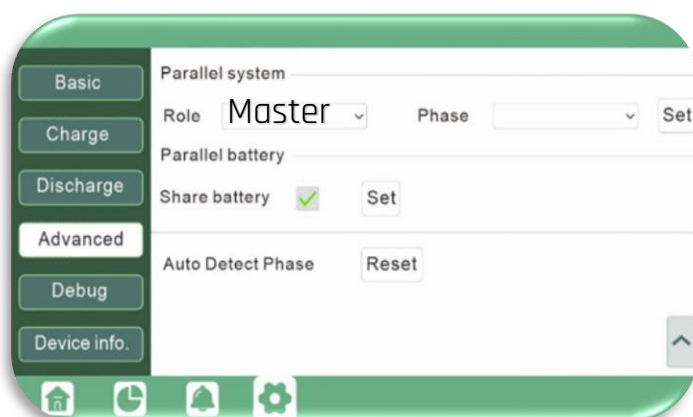
Slave

Slave

Slave



Configure Master/Slaves accordingly. Designate Master to the inverter with battery-inverter communication cable. The rest should be slave.



**For More Details, Please Refer to the Installation/User Manual

Contact Information



FORTRESS POWER

For Technical Support Please Contact us at Tech-Support Contact Information

Useful Links

- Phone: (877) 497-6937
- Support Tickets: <https://www.fortresspower.com/support/>
- Warranty Submittal: <https://www.fortresspower.com/warranty/>

FP-ENVY-IGV.2