



**FORTRESS
POWER**
Secure your energy

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 $\pm 0.5V$ 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 $\sim 0.2V$ 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 $\pm 0.5V$ 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 0.5V 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.

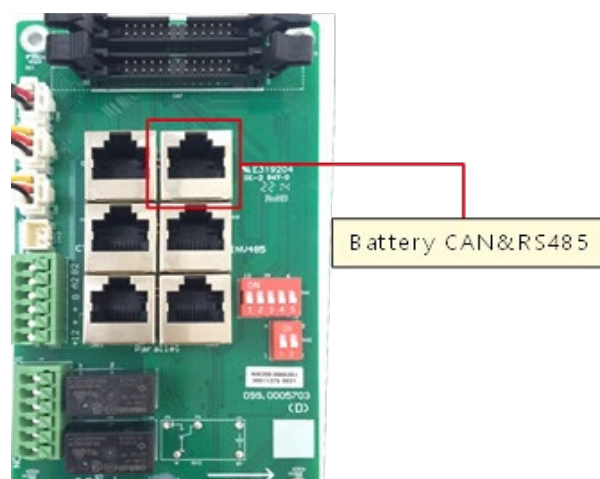
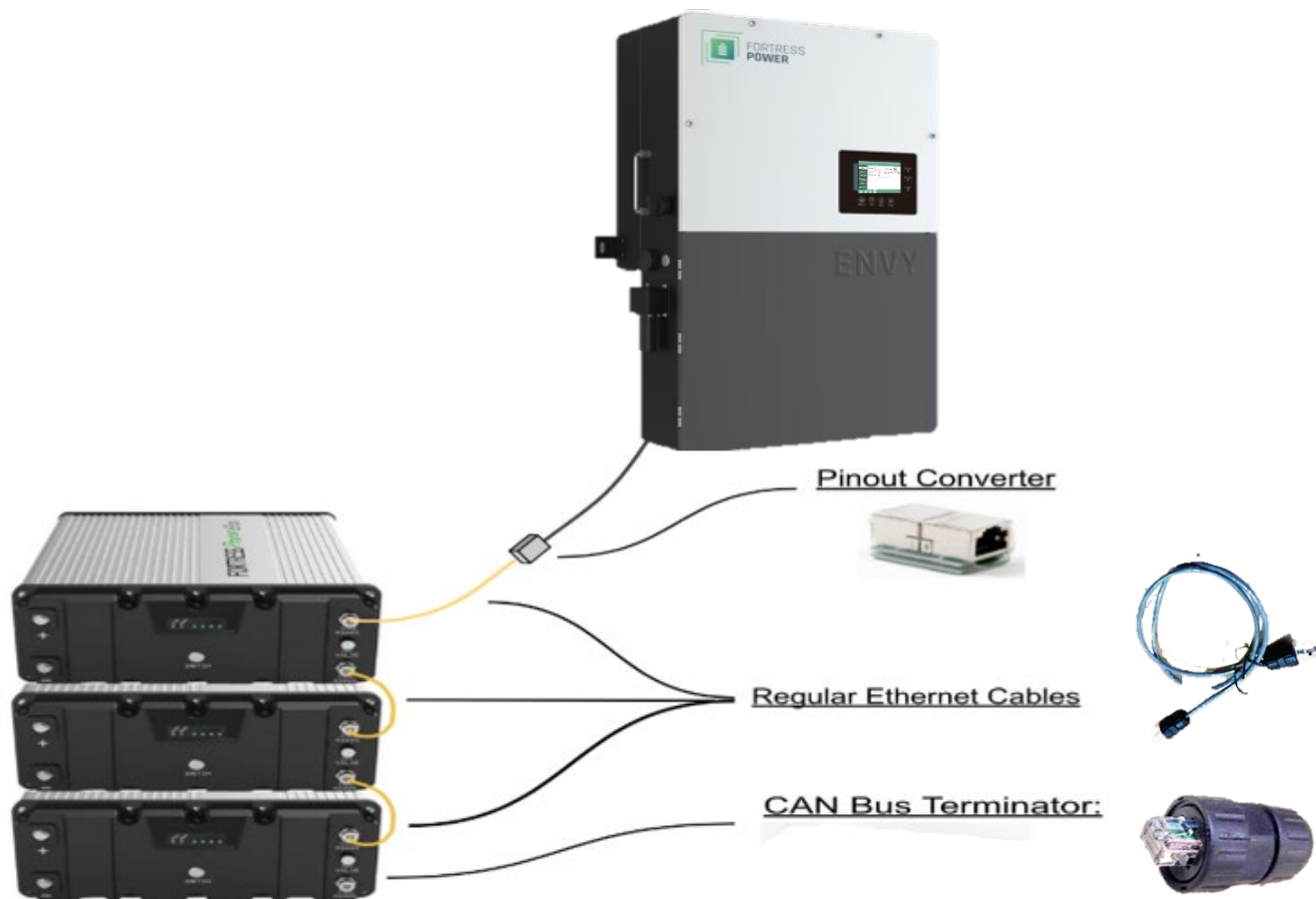
<https://fortresspower.com/firmware>

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

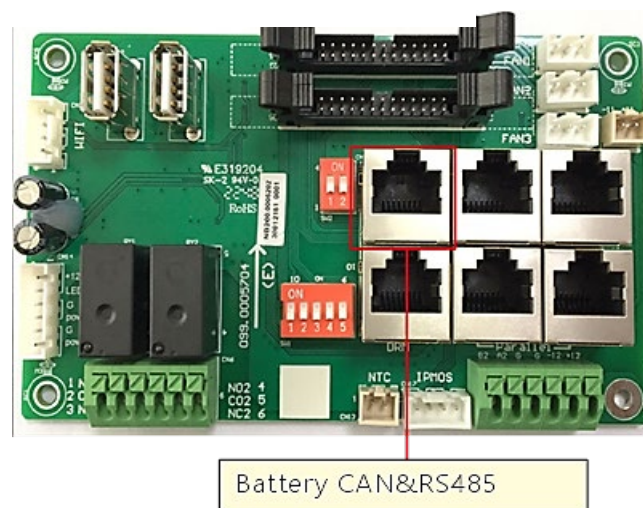
1. Install the battery-to-battery communication cables. Do not over tighten the IP65 weatherproof caps that cover the Ethernet ports.
2. After daisy-chaining the battery-to-battery communication cables, one empty Ethernet port remains on each side of the battery bank.
3. Use one (either) of the empty 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.



FP-ENVY-8K/10K



FP-ENVY-8K/10K/12K (with Breakers)

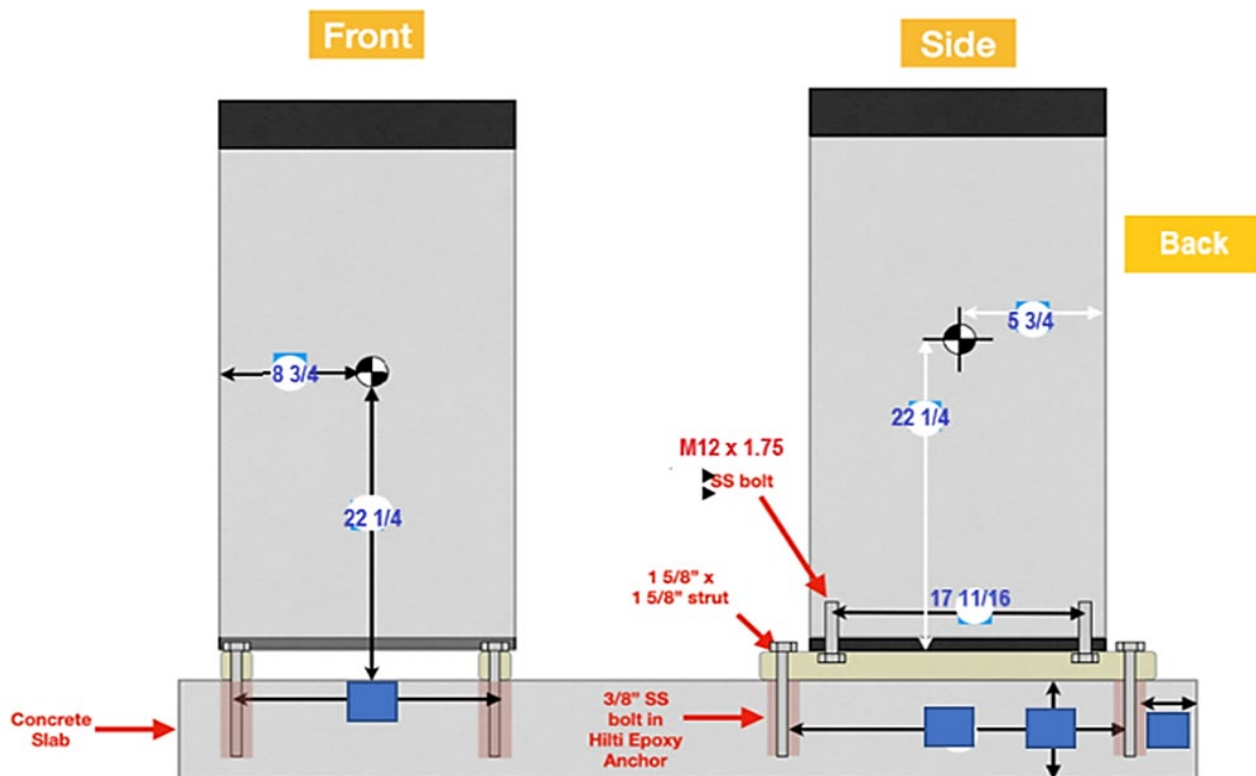
eVault 18.5kWh

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.

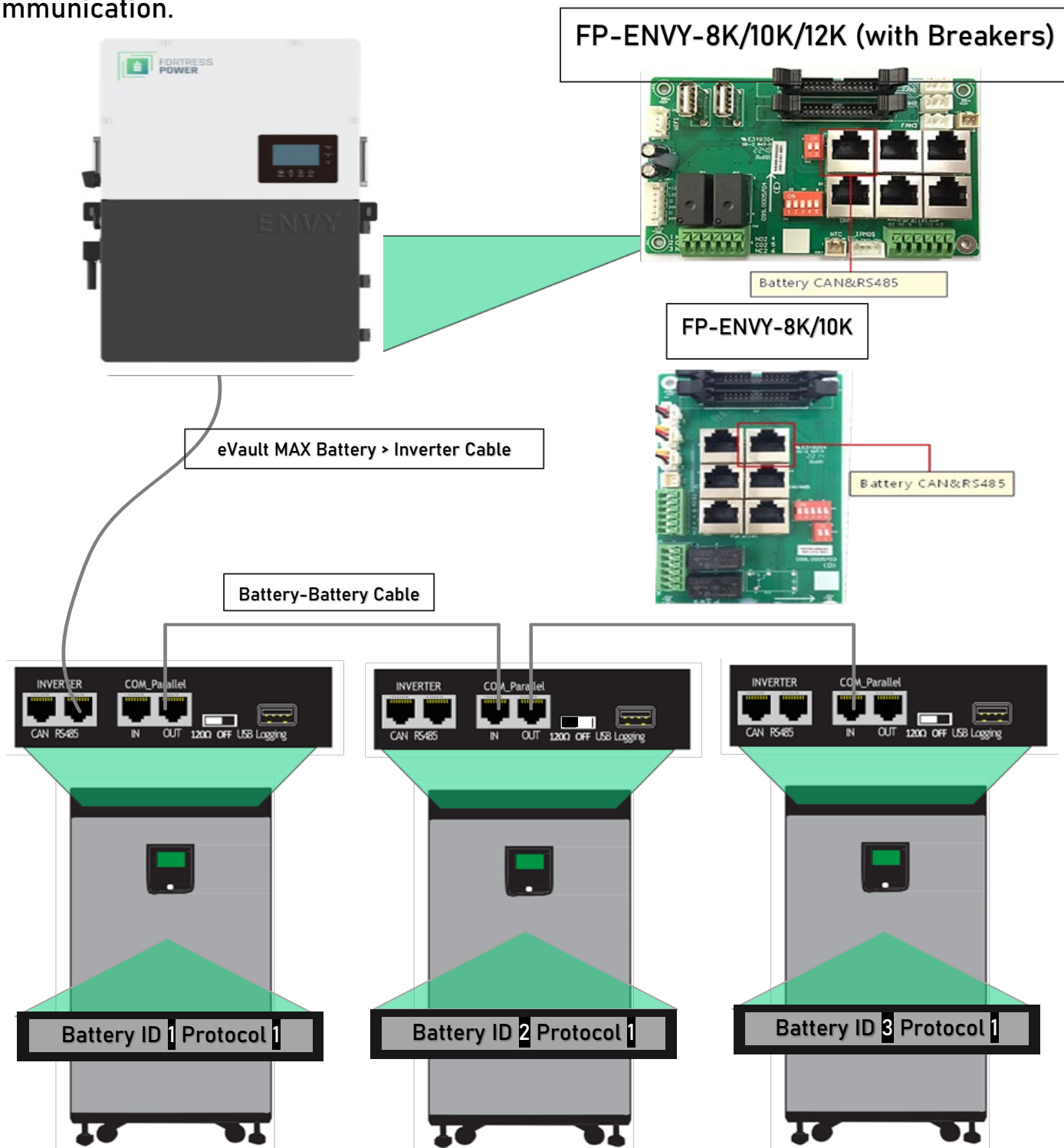
<https://fortresspower.com/firmware>

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.

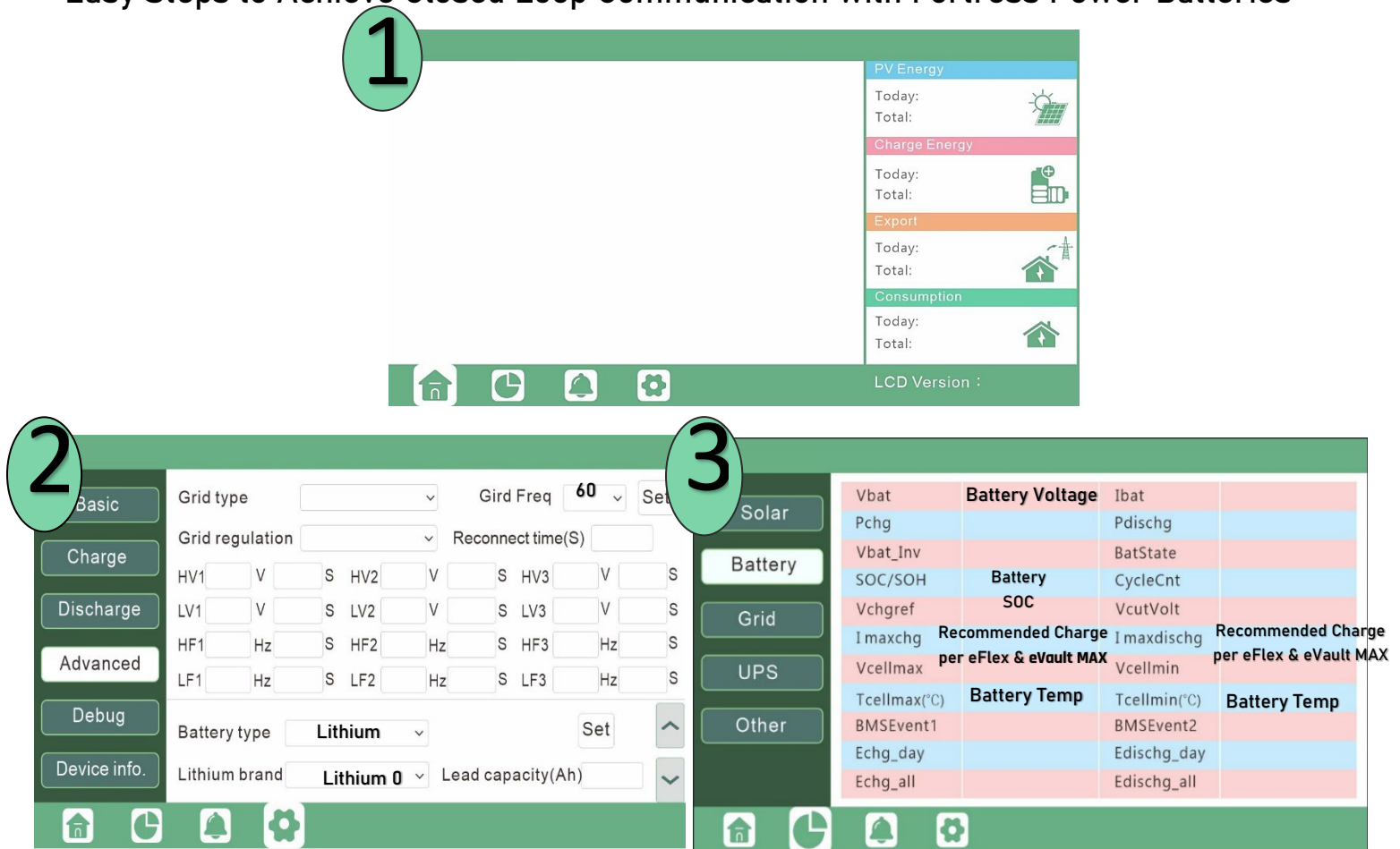
1. While having the batteries turned off and having their DC breakers in the off position, daisy-chain the battery-to-battery communication cables using the bi-directional COM Parallel ports (IN/OUT).
2. Make sure that the USB port is empty and always remains empty.
3. Turn on one battery at a time, 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 Envy Inverter RS485 MODBUS Communication

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



Easy Steps to Achieve Closed Loop Communication with Fortress Power Batteries



The screenshot shows the Fortress Power LCD interface with three numbered steps:

- Step 1:** Select Settings > Advanced. The interface shows the 'Advanced' tab selected in the left sidebar.
- Step 2:** Make sure that frequency is set to 60Hz for US territory. The 'Grid type' is set to 'Solar' and 'Grid Freq' is set to '60'.
- Step 3:** Select Battery Type: Lithium, Lithium Brand: Lithium 0. Click SET. The 'Battery type' is set to 'Lithium' and 'Lithium brand' is set to 'Lithium 0'.

The right sidebar shows the 'Data' icon selected, displaying the 'Battery' tab with the following parameters:

Vbat	Battery Voltage	Ibat	
Pchg		Pdischg	
Vbat_Inv		BatState	
SOC/SOH	Battery SOC	CycleCnt	
Vchgrf		VcutVolt	
I maxchg	Recommended Charge per eFlex & eVault MAX	I maxdischg	Recommended Charge per eFlex & eVault MAX
Vcellmax		Vcellmin	
Tcellmax(°C)	Battery Temp	Tcellmin(°C)	Battery Temp
BMSEvent1		BMSEvent2	
Echg_day		Edischg_day	
Echg_all		Edischg_all	

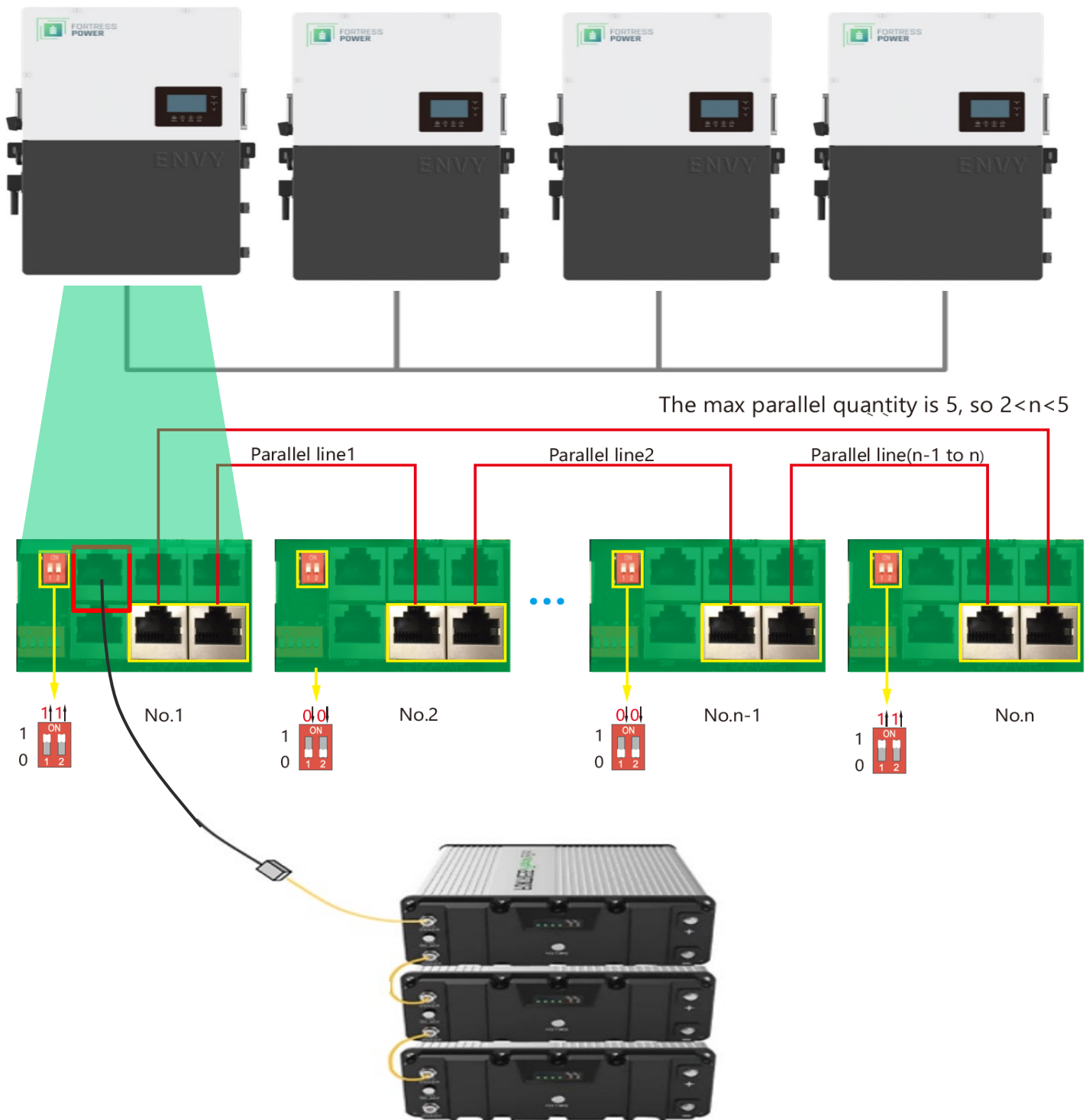
1. Select Settings>Advanced.
2. Make sure that frequency is set to 60Hz for US territory.
3. Select Battery Type: Lithium, Lithium Brand: Lithium 0. Click SET
4. Confirm battery parameters are being read by selecting the Data icon>Battery. Inverter will read internal battery parameters and set charging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

While



Terminate communication on the inverter by putting the dip switches on an ON position (11). The rest should remain on an OFF Position (00). Attach battery communication cable only to the Master Inverter.

Master

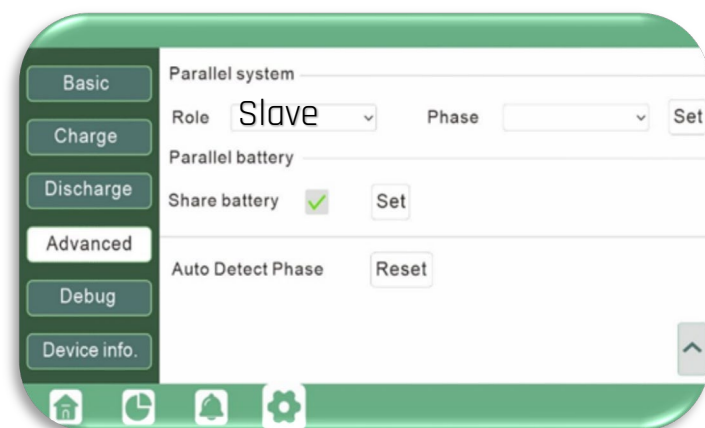
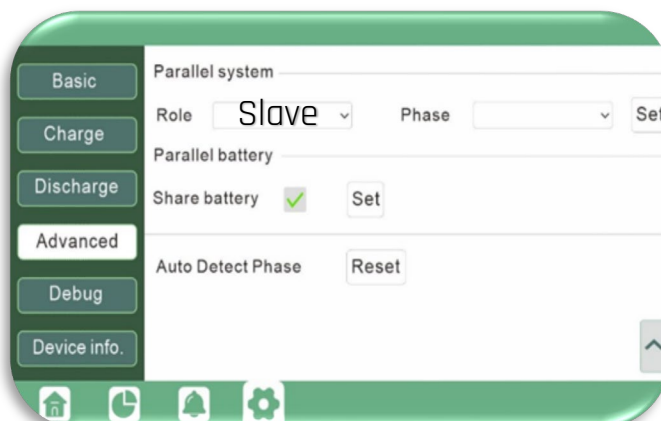
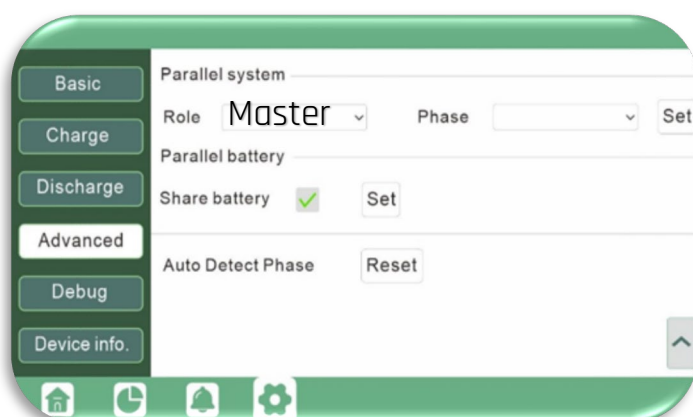
Slave

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 Manual Installation/User Guide**

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.1