INSTALLATION/USER MANUAL

COMPLETE YOUR SOLUTION WITH FORTRESS POWER BATTERIES

FP-ENVY-8K/10K

*Batteries are not Included

TABLE OF CONTENTS

Safety

Safety Instruction

General Safety Instructions

Safety regulations have been strictly observed in the design and testing of the inverter. Prior to any work, carefully read all safety instructions and always observe them when working on or with the inverter. The installation must adhere to all applicable national or international standards or regulations.

Incorrect operation or work may cause:

- injury or death to the operator or a third party
- damage to the inverter and other properties belonging to the operator or a third party.

Important Safety Notifications

There are various safety issues that must be carefully conveyed prior to during and after the installation, as well as during future operation and maintenance. The following are important safety notifications for the operator, owner, and user of this product under normal conditions of use.

⚠ DANGER

Dangers of High Voltages and Large Current

- Beware of high PV voltage. Please turn-off the DC switch of PV Panel output before and during the installation to avoid electric shock.

- Beware of high grid voltage. Please turn-off the AC switch at the grid connection before and during the installation to avoid electric shock.

- Beware of large current of the battery output. Please turn-off the battery module before and during the installation to avoid electric shock.

- Do not open the inverter when it's working to avoid electric shock and damage from live voltage and current from the system.

- Do not operate the inverter when it's working, only the LCD and buttons can be touched in limited cases by qualified personnel,
- Other parts of the inverter can be touched when the inverter is in a safe state (e.g., fully shutdown).

- Do not connect or disconnect any connections (PV, battery, grid, communication etc.) of the inverter when it's operating.

- Make sure the inverter is well grounded. An operator should make sure he is well protected by reasonable and professional insulation measurements (e.g., personal protective equipment (PPE).

- Inspect relevant existing wiring on-site of the installation is in good condition before installation, operation, or maintenance.

⚠ WARNING

Avoid Misoperation and Inappropriate Usage

- All the work of this product (system design, installation, operation, setting, configuration, and maintenance must be carried out by qualified personnel as required.

- All connections must be in accordance with local and national regulations and standards.

- The inverter and system can inter-connected with the utility grid only if the utility grid permits it.

- All the warning labels or nameplates on the inverter must be clearly visible and must not be removed, covered, or pasted.
- The installation should consider the safety of future users when choosing the right position and location as specified in this manual.

- Please keep the children away from touching or misusing the inverter and relevant systems.

- Beware of burning hurt, the inverter and some parts of the system could be hot when working, please do not

Notice

- Please carefully read this manual before any work is carried out on this inverter, the installation, please keep this manual carefully stored and easy to access at any time.

- The qualified personnel should have had training in the installation and commissioning of the electrical system as well as dealing with hazards, also they should have the knowledge of the manual and other related documents. As the installer or operator, they are required to be familiar with local regulations and directives.

Brief Introduction

System Solution

This product and its associated system are suitable for the following system applications (system diagram):

① PV Array — 48V Batteries OR — Generator — Load

② PV Array — Utility Grid — 48V Batteries OR — Generator — EPS — Load

③ PV Array — Utility Grid — 48V Batteries OR — Existing Solar Inverter — Load

④ PV Array — Utility Grid — Load

⑤ PV Array — Utility Grid — 48V Batteries OR — Smart Load — EPS — Load
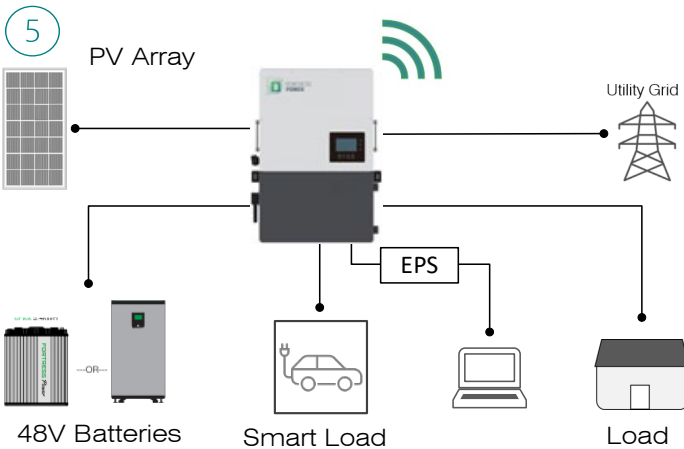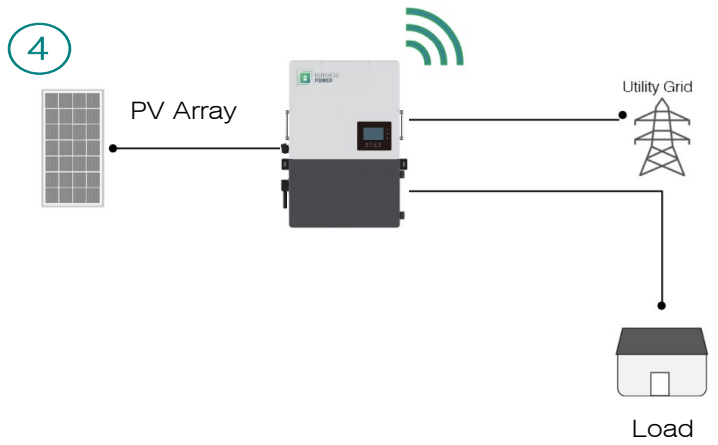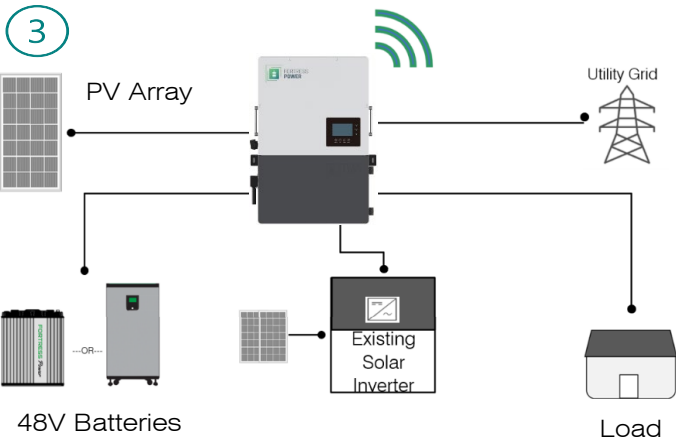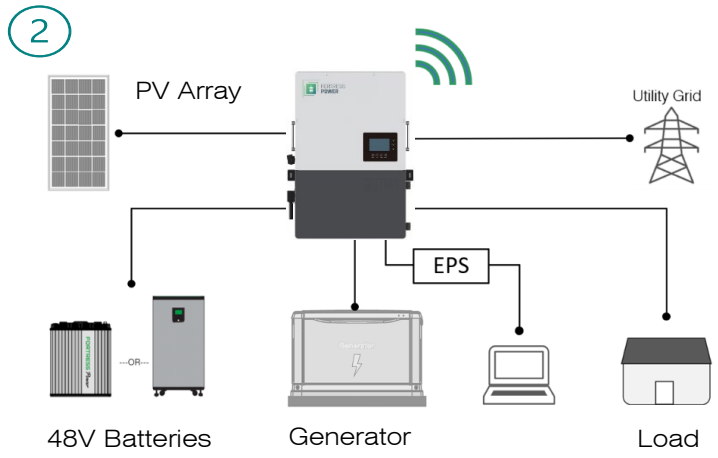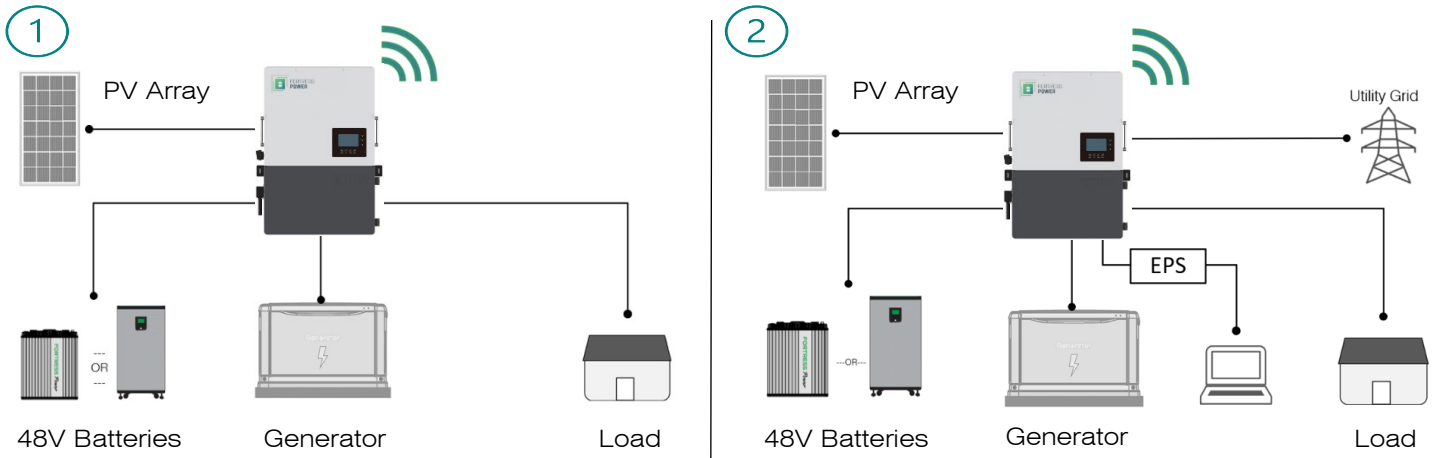
Diagram Number	Applications
1	Off-Grid
2	On-Grid, Backup, Net-Metering, Zero-Export
3	AC Coupling, AC /DC COUPLING
4	No Battery
5	Smart Load

Unboxing

When the packaging is unpacked, the inner components should match those listed in the list below. If any components are missing, please create a support ticket at www.fortrespower.com/support

Part Number	Part Name	Quantity	Checked by User/Installer
1	Envy Inverter	1	
2	Cabinet Keys	2	
3	Battery To Inverter Communication Cable	1	
4	Inverter To Inverter Communication Cable	1	
5	Current Transformer (CT)	2 (connected by one cable)	
6	Dongle	1	
7	Dongle Screws	4	
8	Mounting Screw for Wooden Platform	6	
9	Wall Mount Bracket	1	
10	RJ45 Terminals	4	
11	L-shaped Brace	2	
12	Nylon Lock Nut	10	
13	Expansion Screw	6	
14	Installation/ User Manual	1	
15	Knockout Wiring Template	1	

Overview and Requirements

Connection Overview

PV Array

Utility Grid

PV Fuse Disconnect

Main Panel

eFlex 5.4kWH   ---OR---   ---OR---   48V Lead Acid

eVault Max 18.5kWH

48V Batteries

Generator

Backup Panel
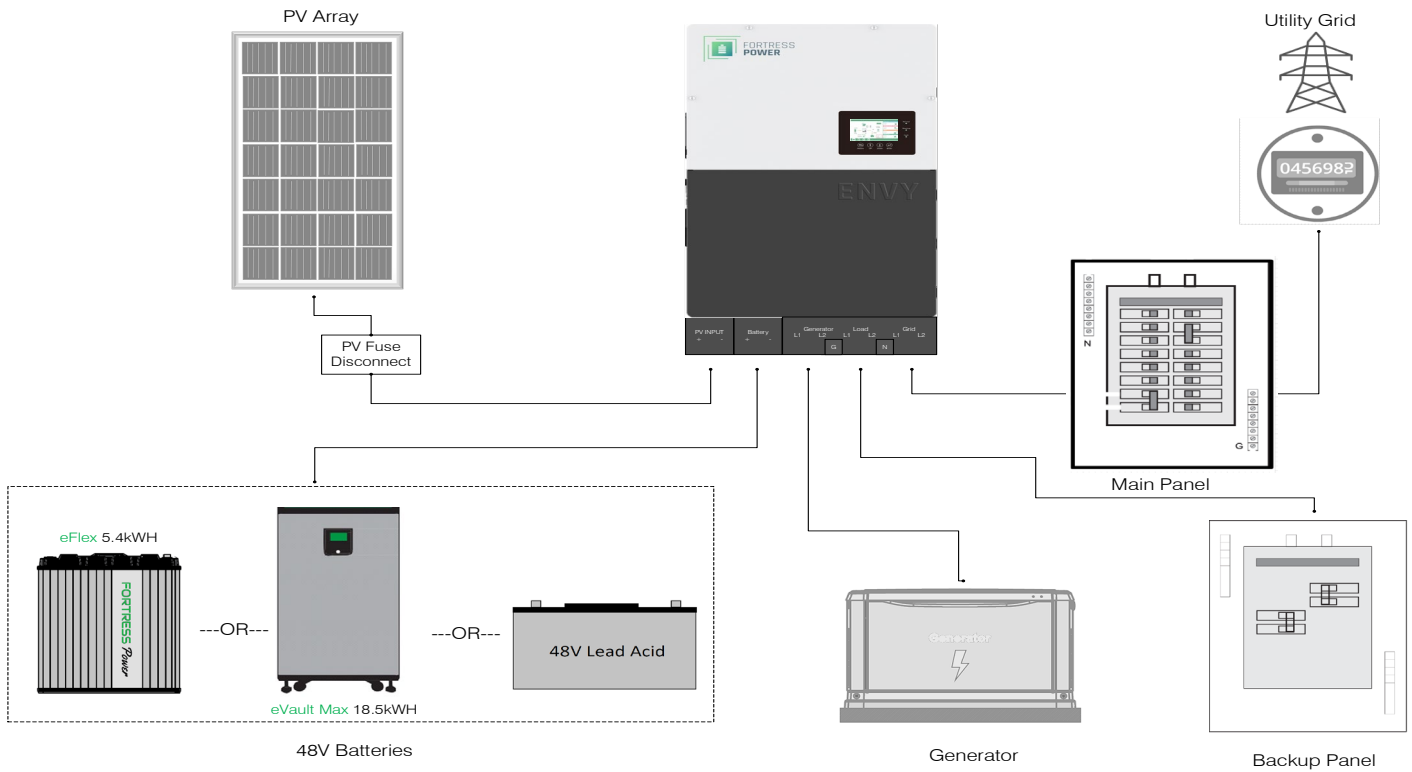
The Envy 8k has already built in breakers for all AC connections as well as the Battery connection. Please include the following PV Fuse breakers in accordance with the local jurisdiction.

Inverter model	12K
PV Fuse Breakers (1 Pole)	MPPT1 string 1: 600V/20Adc MPPT1 string 2: 600V/20Adc
	MPPT2 string1: 600V/20Adc MPPT2 string 2: 600V/20Adc
Integrated Grid Breaker (2 Pole)	1 qty 63Aac
Integrated Generator or AC Coupling (2 Pole) Breaker	1 qty 63Aac
Integrated Load Breaker (2 Pole)	1 qty 63Aac
Integrated Battery Breaker	1 qty 250Adc

Cable Requirements
Suggested Wire Gauge

Section	Cable Gauge (AWG)	Minimum Voltage (V)	Torque (N.M)	Length of Cable Insulation Removal	Terminal Type
Grid Input					
Integrated Breaker 63Aac	6	600	2	5/16-3/8 in (8~10mm)	Compression/Screw type
Load Output					
Integrated Breaker 63Aac	6	600	2	5/16-3/8 in (8~10mm)	Compression/Screw type
Battery Cable					
Integrated Breaker 250Adc	1/0-3/0	600	17	1/4-5/16 in (6-8mm)	Compression/Allen 5/16 SAE
Generator Cable					
Integrated Breaker 63Adc	Up to 4	600	2	5/16-3/8inch(8~10mm)	Compression/Screw type
PV Cable					
PV Input	10-8	600	N/A	1/4-5/16 in (6~8mm)	Spring Clamp

Note: Cable gauge also will depend on connection distance

Inside the ENVY Cabinet

Connection Ports
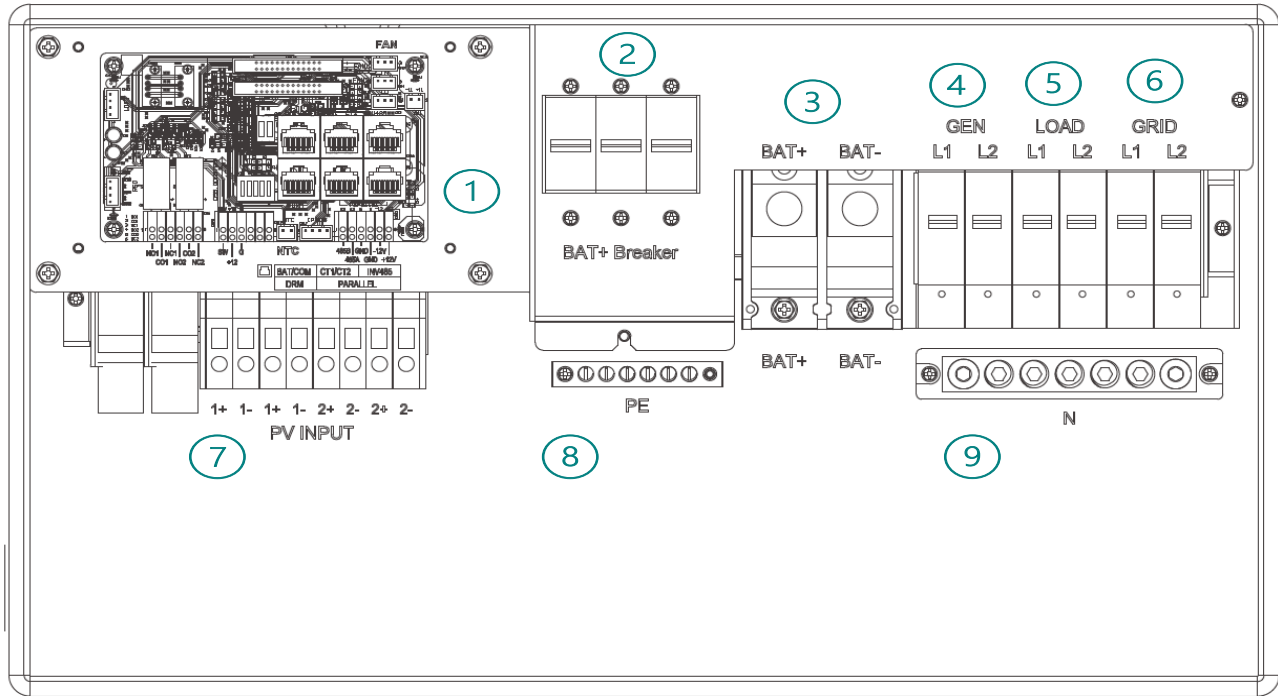
⚠️ *Do not use an Impact driver to tighten or loosen fastener on any of the Envy port connections.*

Area	Description
1	Communications Boards
2	250A Battery Breakers
3	Battery Connection Ports
4	63A Generator Breaker and Connection Port
5	63A Load Breaker and Connection Port
6	63A Grid Breaker and Connection Port
7	PV Input
8	Protective Earth or Ground Connection Bars Connection
9	Neutral Connection Bar

Communication Board Ports
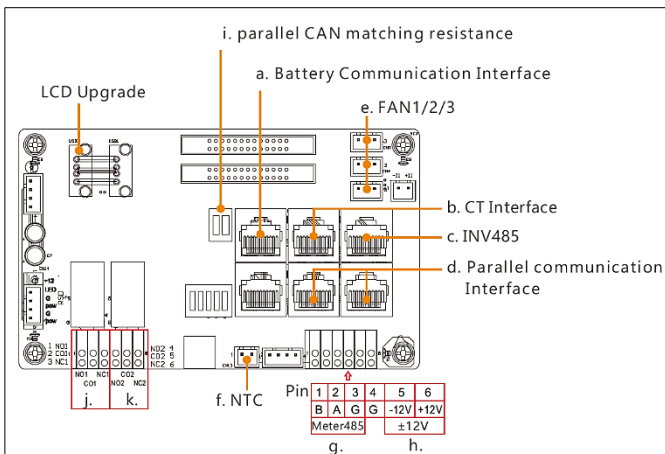
Port	Description
a.	Battery communication port (CAN&RS485)
b.	CT Interface Connection
c.	INV 485: Debugging port
d.	Parallel communication port
e.	FAN1/2/3 Connection port
f.	NTC: Connection for temperature sensor of lead-acid battery
g.	Meter 485B&485A: For Meter communication
h.	±12V: Reserved for customer to use, Max 500mA
i.	CAN Matching resistance: Set DIP switch when use inverters in parallel
j.	GEN (NO, NC): Connection for generator auto-start function
k.	DRY (NO, NC): reserved

Envy Dimensions

Case Specifications
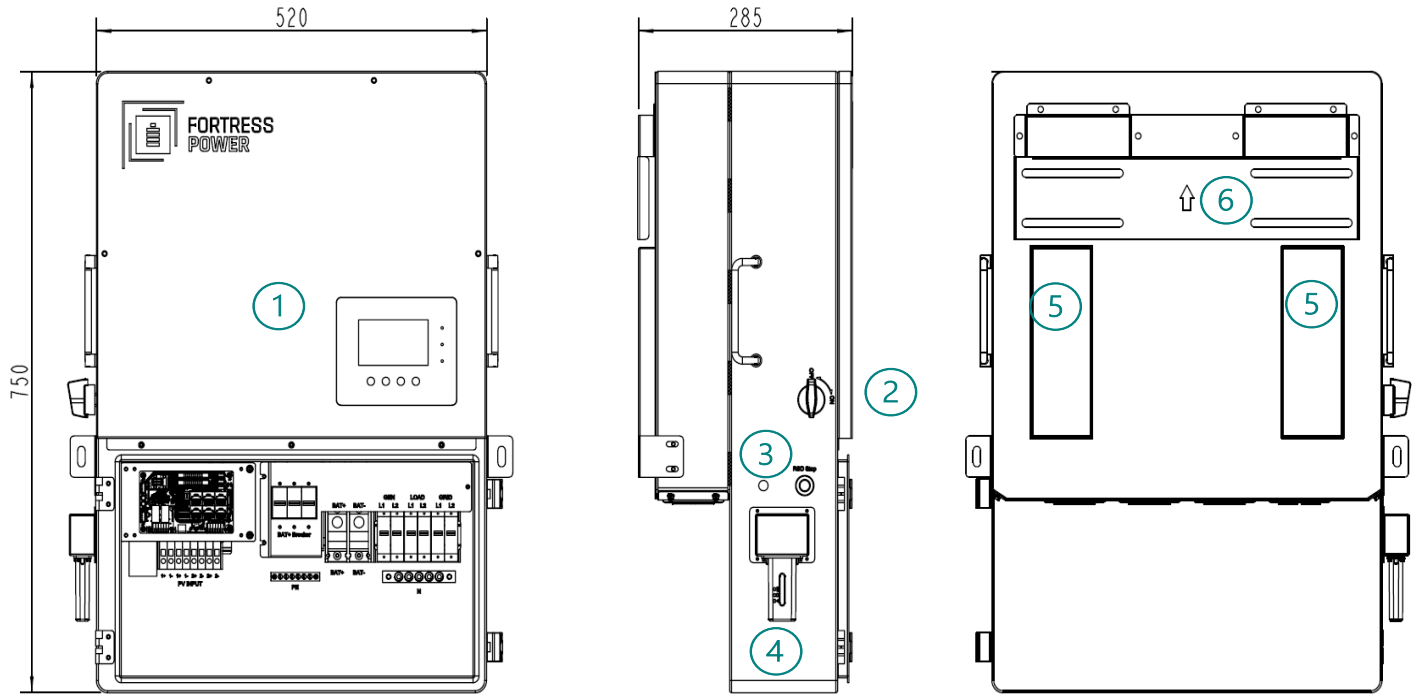
Area	Description
1	Touch LCD
2	PV Switch
3	RSD STOP button
4	Dongle Connection Port and Dongle
5	Leveling Wall Support
6	Bracket Support

Knockout Port Dimensions
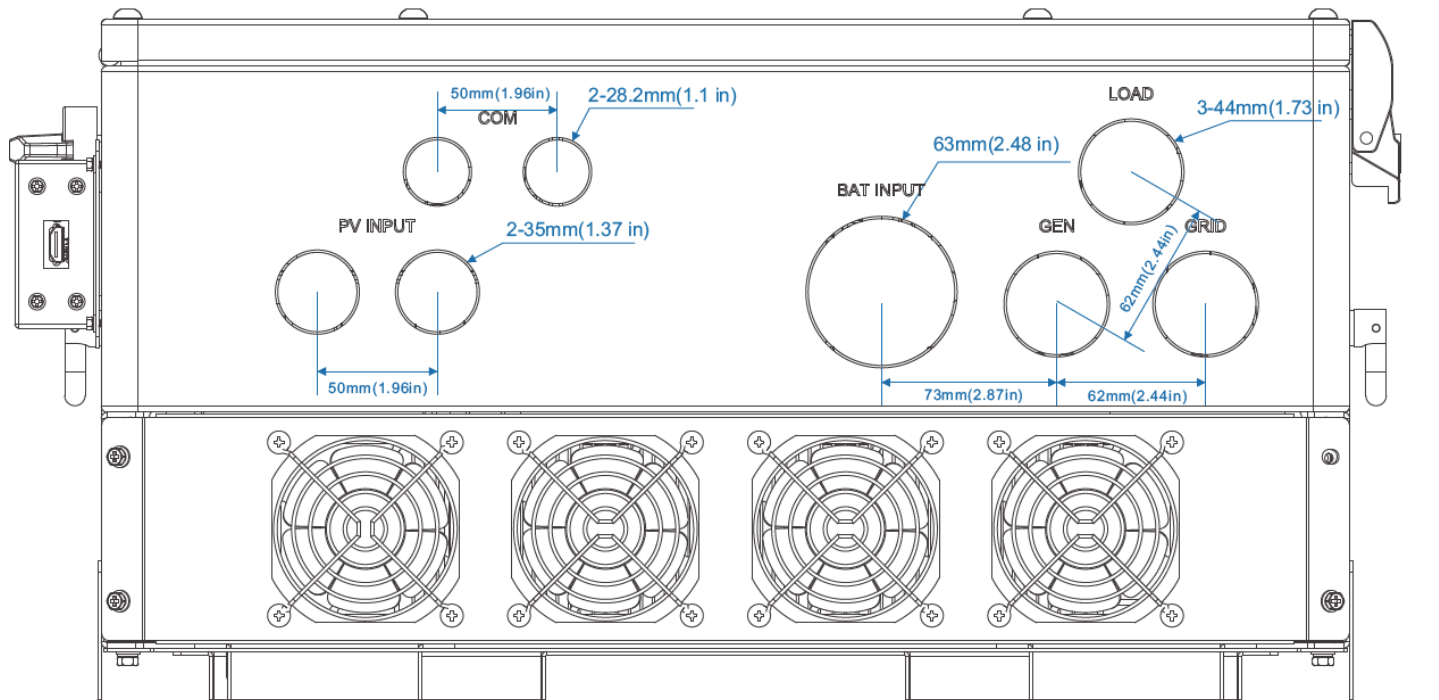
Installation

Mechanical Installation

Requirements for installation location

Location Selection and Installation

a) The mounting wall should be strong enough to bear the weight of the inverter. Please maintain the minimum clearances when using multiple inverters in parallel as presented below for adequate heat dissipation. Other electrical accessories such as the ENVY distribution Panel (EDP) may be mounted with a minimum 2-inch clearance on either side of the inverter. If a wireway, cabinet, EDP or any sort of equipment is mounted below the inverter fans, the minimum clearance shall be 15.8 inches (400mm) unless extended outside the wall to be below the inverter's knockout section without blocking the fans pathway.
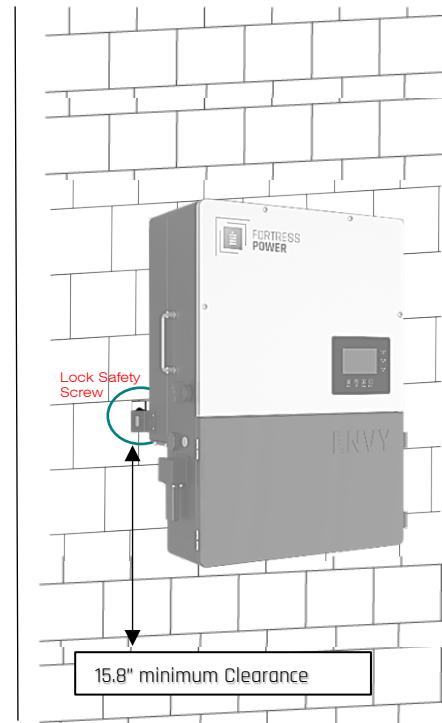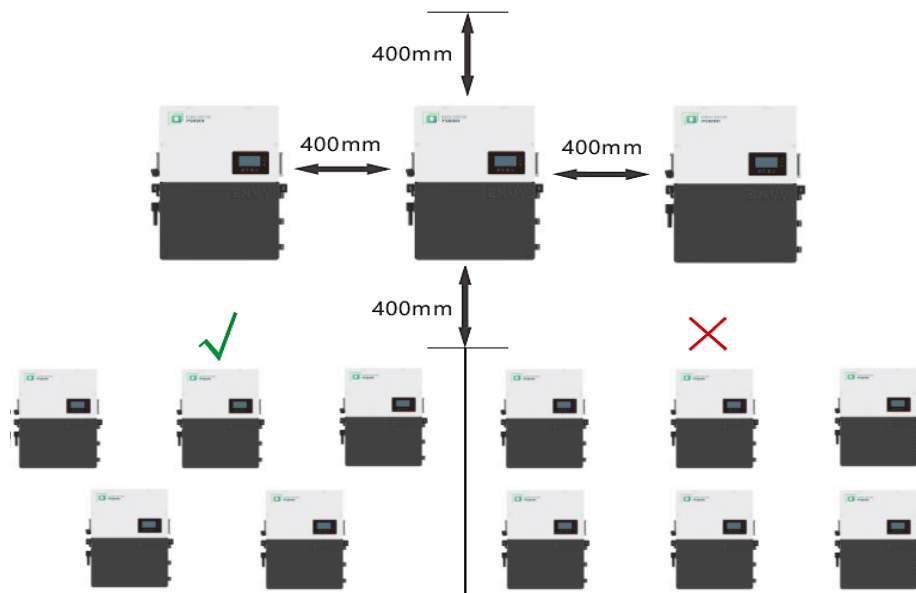
a) The inverter is allowed to be installed outdoors if it is withing operating temperature range. Never position the inverter in continuous sunlight, rain, or snow. To avoid continuous sunlight exposure, the inverter is allowed to be installed in the north, east, west side orientation of the property (in reference to the sun) as this might damage the LCD screen due to excessive UV exposure. If installed in the south side orientation, choose a well shaded site or a shed to protect the inverter from direct sunlight, rain, and snow etc. Otherwise install in the correct property side orientation as described in the figure below.

b) The inverter should be installed upright on a vertical surface.
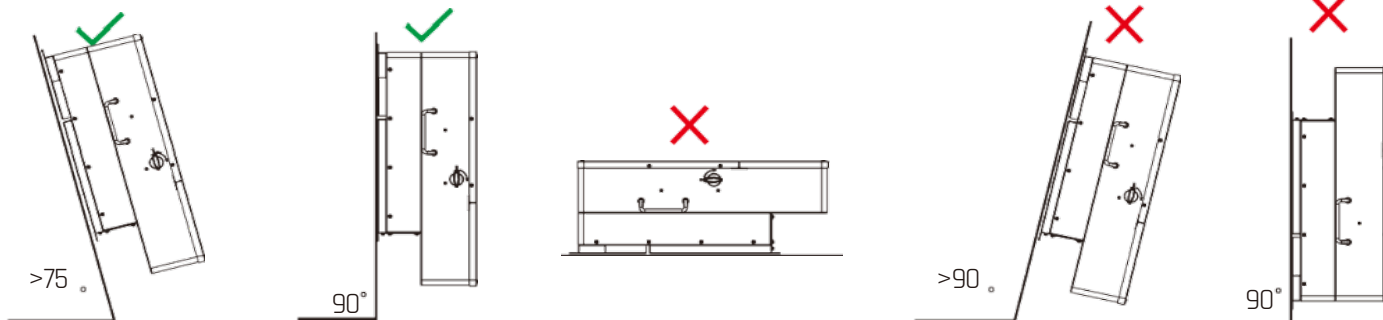
Wall Mounting the Envy

The inverter is wall-mounted type and should be installed on a vertical, solid mounting surface, such as wood studs, brick, or concrete wall. Two or more people may be needed to install the inverter due to its weight. The slots on the mounting bracket can accommodate various stud spacings from 12inches(305mm) to 16inches(406mm).
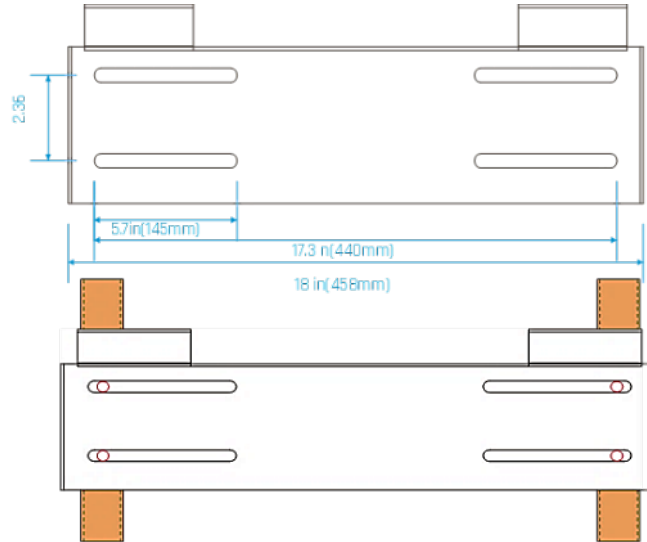
The mounting steps are as below: (Use brick wall as example)
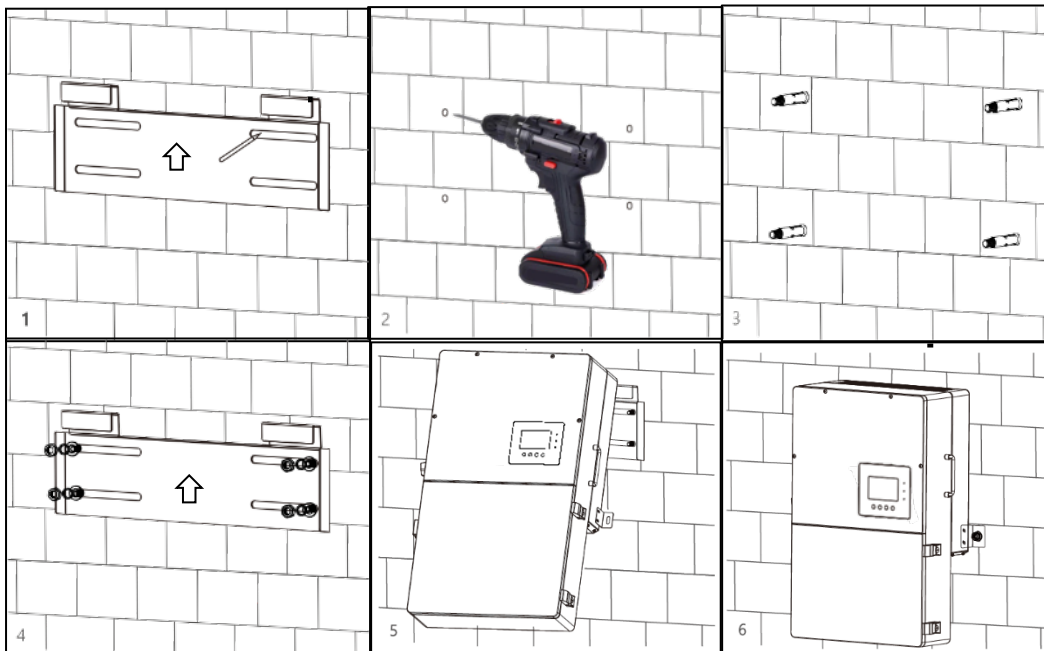
1. Mark the drill holes positions with the mounting bracket,

2. Drill four48mm(5/16inch) diameter holes, making sure the depth of the holes is deeper than 50mm(2inches).

3. Install and tighten the expansion bolts into the holes.

4. Then use the corresponding nuts and washers (packaged together with the expansion bolts) to install and fix the wall-mounting bracket on the wall.

5. Hang the inverter onto the wall-mounting bracket and lock the inverter on the wall using 2 self-tapping screws on the top of the inverter.

For installation on wood studs

Fasten the mounting bracket on the studs with 4 wood screws, then hang the inverter onto the bracket and lock the inverter on the wall with 2 self-tapping screws.

Please note that the wood screws and self-tapping screws are not provided with the inverter. Installers need to prepare the screws before installation.

Electrical Installation

PV Components and Connection

The PV connection of this hybrid inverter is the same as that of a traditional on-grid solar inverter (string inverter).

⚠ **WARNING**

- Please double check the lowest ambient temperature of the installation location. The rated Voc on solar panel nameplate is obtained at 25℃. As the ambient temperature drops, the Solar panel Voc increases. Please ensure the Maximum solar string voltage corrected at the lowest temperature does not exceed the inverter's maximum recommended input voltage of 550V. Over voltage will damage the inverter.
- Do not use a PV combiner. Using a PV combiner may affect or cause permanent damage to the inverter.

Component Requirement:

20A PV Fuse breakers per string (4 maximum)   **Depending on Local Jurisdiction**

NOTICE

1. The inverter has two MPPTs. For MPPT1, users can connect two strings. For MPPT2 users can connect two strings. Both MPPTs work independently. All these strings are to be connected directly into the Inverter. **Do not use a PV combiner as this may cause damage to the inverter.**
2. When users connect 2 strings to MPPT1, make sure the two strings have same quantity of solar panels. The inverter will limit the total MPPT1/MPPT2 input current to 25A/25A automatically.
3. The inverter will limit the max solar input power to 13kW totally.
4. Protect the MPPT inputs by installing 20-amp fuse breakers

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Facing the same direction with the same amount of modules per string

Facing the same direction with the same amount of modules per string

Steps for PV Connection
1. Strip off 1/4-5/16inch(6~8mm) insulation on the PV string's positive and negative conductors.
2. Use wire ferrules for PV string conductors if they are stranded wire type.
   Insert the conduit fitting into the opening for PV connection and tighten it from the inside using the counter nut.
3. Route the PV conductors through the conduit fitting and into the inverter.
4. Secure the cable gland in place.
5. Ensure that the cables are connected correctly and securely.
6. Then take appropriate measures to ensure that the conduit and conduit fittings are fastened reliably and seal the cable entry holes.

20A PV Fuse Breakers per String

Rapid Shut Down (RSD)

Overview Connection of RSD Receivers (RSD R)

APsmart Single Core Transmitter

PV INPUT
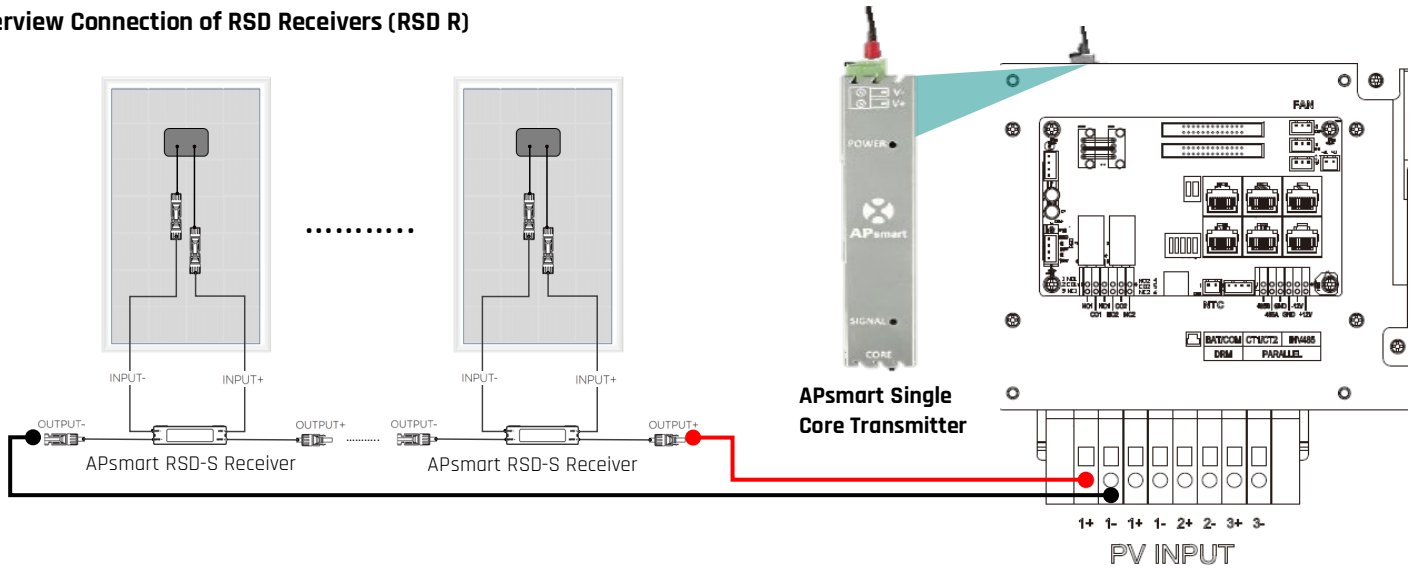
- The Envy Inverter already includes an **APsmart Rapid Shutdown Transmitter** located behind the Communication Board black plate.
- The APsmart Rapid Shutdown System Transmitter and APsmart RSD-S/RSD-D receivers (not included) work together as a rapid shutdown solution for PV modules.
- For more information on how to connect the APsmart receiver please refer to the RSD-S and RSD-D Installation Quick guide.
- The Transmitter sends a signal to the RSD-D units, enabling the PV modules to remain connected and continue supplying energy while the Transmitter is powered on.
- When the Transmitter is switched off by the Emergency RSD button, the RSD-D units automatically enter rapid shutdown mode, halting energy production.
- This solution is compliant with the **2017** and **2020** specifications of the **NEC 690.12** and supports **SunSpec** signaling for rapid shutdown.

If an emergency occurs, simply activate the **"RSD STOP"** button. This will immediately cease and the RSD power supply, causing the inverter AC output to cease, and reducing the voltage of the PV conductor to below **30V** within a timeframe of **30 seconds.**

PV DISCONNECT

RSD STOP BUTTON

DONGLE CONNECTION PORT
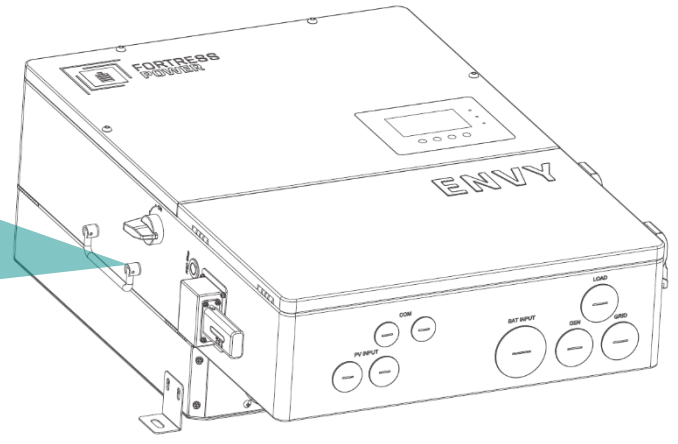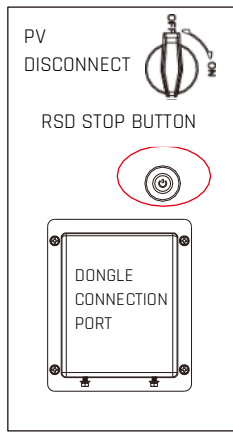
**Rapid Shut Down will be mandated depending on your local jurisdiction.

The APsmart Transmitter is connected to the inverters internal 12V power supply. The output current limit is 1A (12W). **Do not exceed this limit as this may cause damage to the inverter.**

Device	Voltage Rating (V)	Current (A)
APsmart Single Core Transmitter	12	0.5
Tigo RSS Transmitter	12	1

Battery Connection

Battery power cable connection

All batteries must be installed as a single battery bank when paralleling multiple inverters.
Cable mounting Instructions:

1. Strip 1/4-5/16inch(6-8mm) insulation from the cable end and crimp a ferrule to the cable ends.
2. Route the battery power cable, connect positive to BAT+, negative to BAT-.
3. Secure the conduit fitting to the enclosure using the counter nut.
4. Crimp the ferrules into the stripped and fasten the battery positive and negative cables into the battery bus according to the markings.
5. Fix the cable gland in place.

For best practice, install a Copper Busbar when paralleling two lithium batteries. Please Refer to the eFlex and evault Max manual for more details on installation and battery paralleling.

WARNING

- Polarity reverse will damage the inverter!
- Put the built-in battery breaker in the off position before connecting or disconnecting batteries
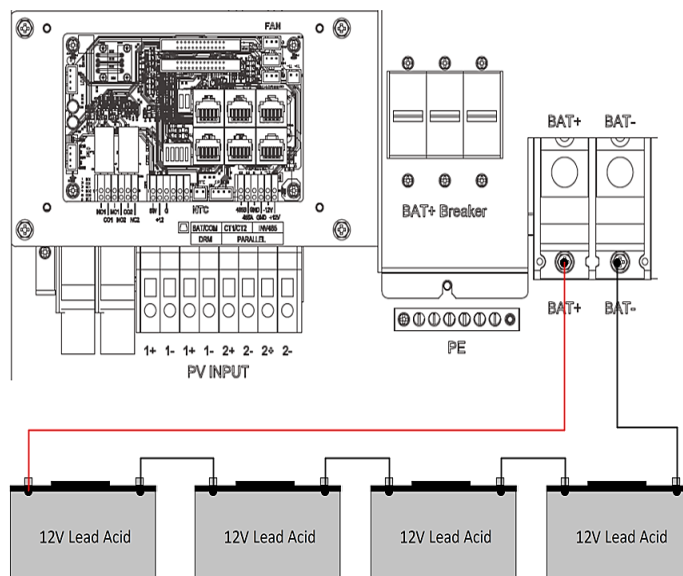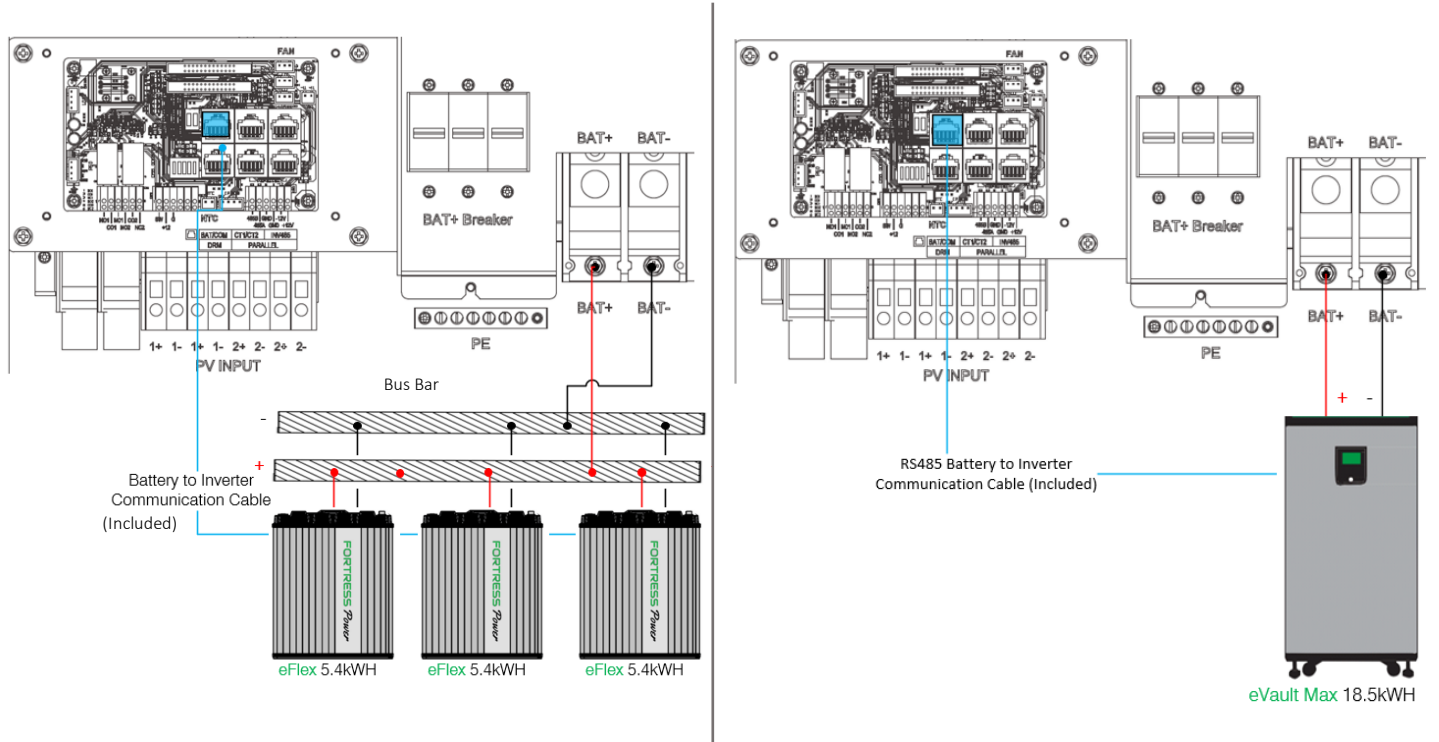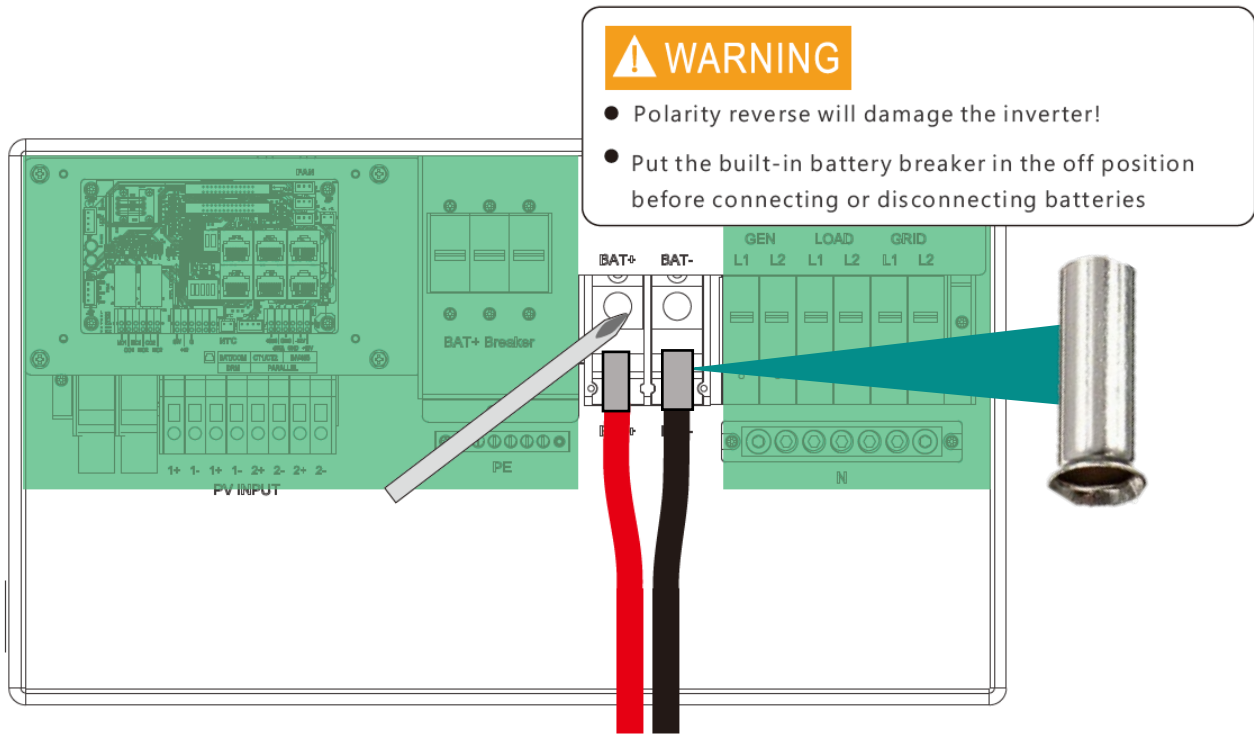
Envy Battery communication port Pinout

The battery communication port on inverter is an Rj45 socket, Pin for the RJ45 plug of the communication cable is as below. Make the communication cable according to the below inverter Pin and the correct pinout of communication port on battery. The inverter supports both CAN and RS485 communication. Use the communication cable included in the Envy Inverter packaging when using **eFlex 5.4kWh** batteries. Use the communication cable included in the **eVault Max 18.5kWh** packaging to establish battery to inverter communication.

Pin	Description
1	NC
2	GND
3	NC
4	BAT CAN H
5	BAT CAN L
6	NC
7	BAT RS485 A
8	BAT RS485 B

T568B
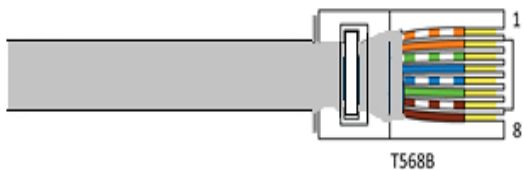
Please Refer to our minimum Battery Sizing Standard when sizing with the ENVY Inverter. Please Refer to the eFlex and eVault Max Installation Manual for more details.

AC Connection

Grid connection
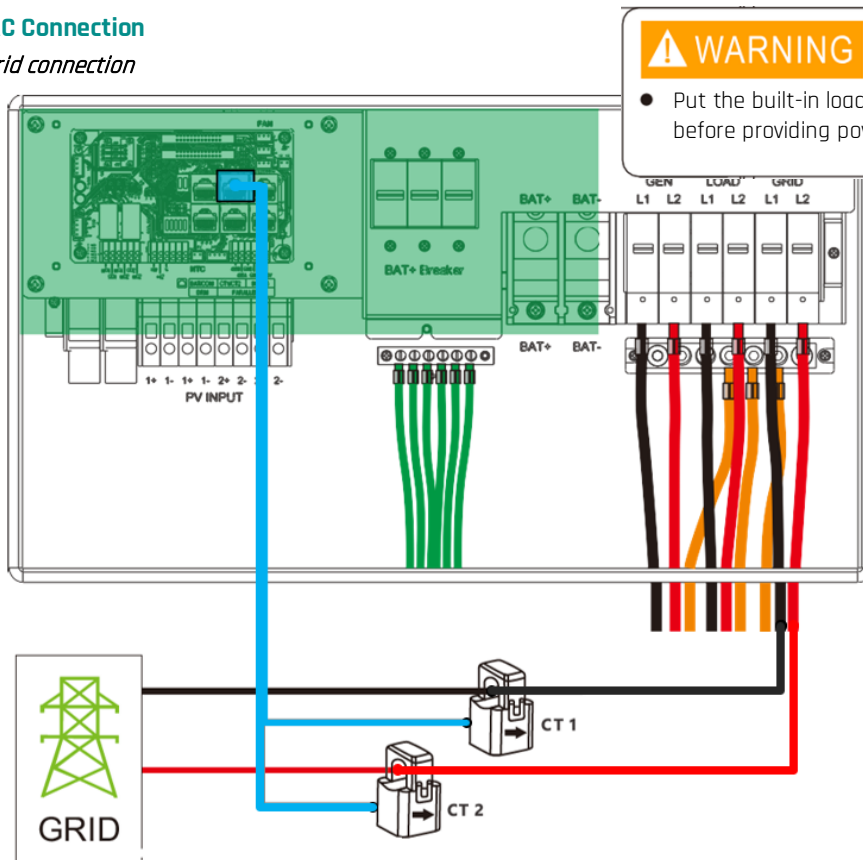
⚠ **WARNING**

● Put the built-in load breaker in the ON position before providing power to EPS load

a. Strip off 5/16-3/8inch(8~10mm) insulation sleeve on the cables.

b. Use wire ferrules if the cables are made of fine stranded wires.

c. Secure the conduit fitting to the enclosure using the counter nut of the fitting.

d. Fasten the grid and EPS load cables to the terminal block in accordance with the markings.

e. Secure conduit to the conduit fitting.

f. Check that the cables are connected correctly and securely, then take appropriate measures to ensure that the conduit and conduit fitting are secured reliably and seal the cable entry holes.

Ground Neutral Bond

Make a bond connection between the Neutral and Ground at the Main Breaker Panel or you may also only make the bond once at the Utility Meters with breaker attached if applicable.

CT connection

To measure the power imported from and exported to the grid, a pair of CTs or one three phase meter must be installed at the service entry point in or near the main service panel. We standardly supply 2 CT for one inverter. The CT interface for 2 CTs connection is an RJ45 port. We have made an RJ45 plug on those 2 CTs in advance, so you can connect it to the port directly. **Never put the CTs on the Load side, nor the generator side or inverter will not function properly. For Off Grid application, disregard the CTs.**

CT Clamp Ratio

The inverter supports 3 ratios of CT clamp- 1000:1, 2000:1 and 3000:1 . The CT ratio of the CTs in the accessory bag is 3000:1. If you are using a 3rd party CT, please ensure the CT ratio is one of them, and select the correct CT ratio setting in the inverter monitor page or on the inverter LCD.

Extend CT Clamp Cable

The CT wires can be extended with a common ethernet cable if the length is not enough. An RJ45 adapter is needed for the extension. The CT wires can be extended up to 300ft (around 100m).

Please refer to the connection diagram for the correct positions of CTs and clamp the 2 CTs on the L1 and L2 wires at the service entry point in the main service panel. CT1(label L1) should go to L1 and CT2(label L2) should go to L2. The arrow on the CT is pointing to the inverter. **(*** Incorrect install of the CT will cause The Display to show incorrect information's and features of the inverter will not function correctly)** If the CT are in a wrong direction, there is an option you can change the direction of the CT on your inverter call: **CT Direction Reversed** (Only for Direction not CT1 or CT2 Placement) in Advanced Tab of the LCD. You would not need to go change it physically.
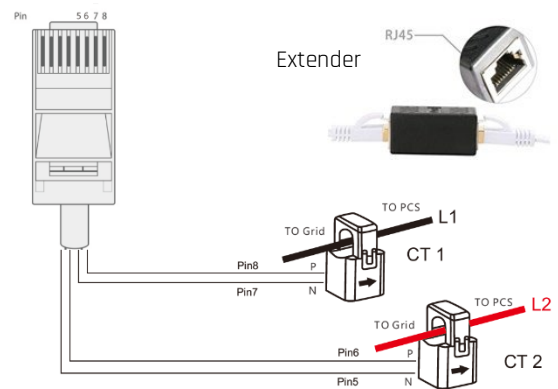
CT Port Pin Definition

Pin	Description
1-4	Reserved
5	CT2N
6	CT2P
7	CT1N
8	CT1P

Optional Meter Connection

If you need to use a meter for import/export detection instead of CTs, you need to connect it to the Meter 485A and 485B terminals on the inverter.

Generator Connection

When Using the Generator Connection, do not connect an AC Coupled system. Inverter and Generator Damage will occur.

This hybrid inverter can work with a generator. There are Gen ports on the inverter for generator connection. Generator requirements: the generator should be neutral bonded type, with **240V/120V** output. **Fault or Damage may occur if connecting a 208V Generator.**

When the generator is started, all the loads connected to EPS Load will be supplied by the generator. Meanwhile the battery will be charged.
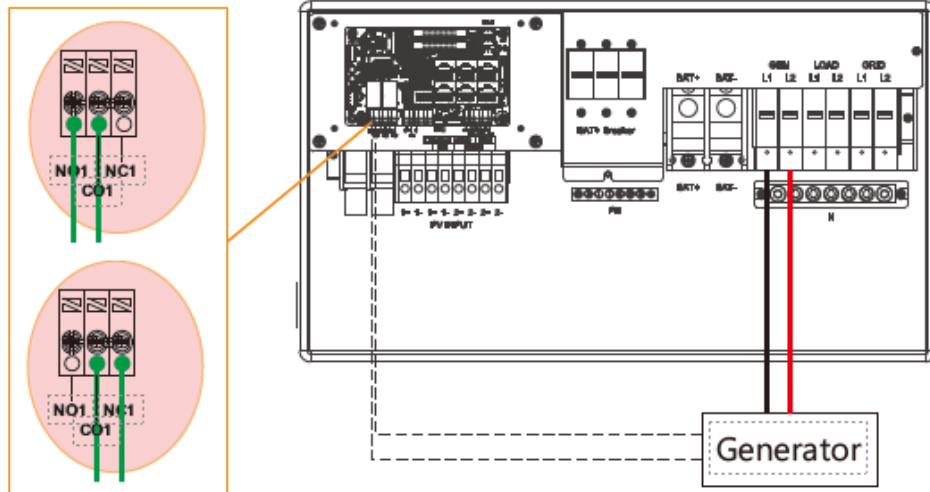
The pass-through relay on the generator port is 50A. When the generator is on, please ensure the total load and charge current will not exceed 50A.

The generator start signal shall be connected to the COM board GEN Nominal Open (NO1 and CO1), or Nominal Close (NC1 and NO1) port, if users want to start generator remotely.

AC Coupling Installation Connection

The inverter supports AC coupling connection with the existing grid-interactive solar system. The existing solar system is connected to the inverter's GEN port. **Make sure to add a fused disconnect switch between the Envy Gen Port and the Ac Coupled system. It is forbidden to connect the Generator in Gen Port when AC Coupled. Damage to the Generator or Inverter will occur.**

What is frequency shifting power reduction?

All UL1741SA compliant grid-interactive inverter has the Frequency-Watt feature, which requires the grid-interactive inverter to reduce power with the increasing of grid frequency. The power will drop to zero before the over frequency trip threshold is reached. When the Fortress Power hybrid inverter requires the grid interactive inverter to reduce power, it simply shifts the output frequency up a bit, the grid-interactive inverter will limit its output power accordingly after sensing this frequency shift.

Paralleling Multiple Inverters
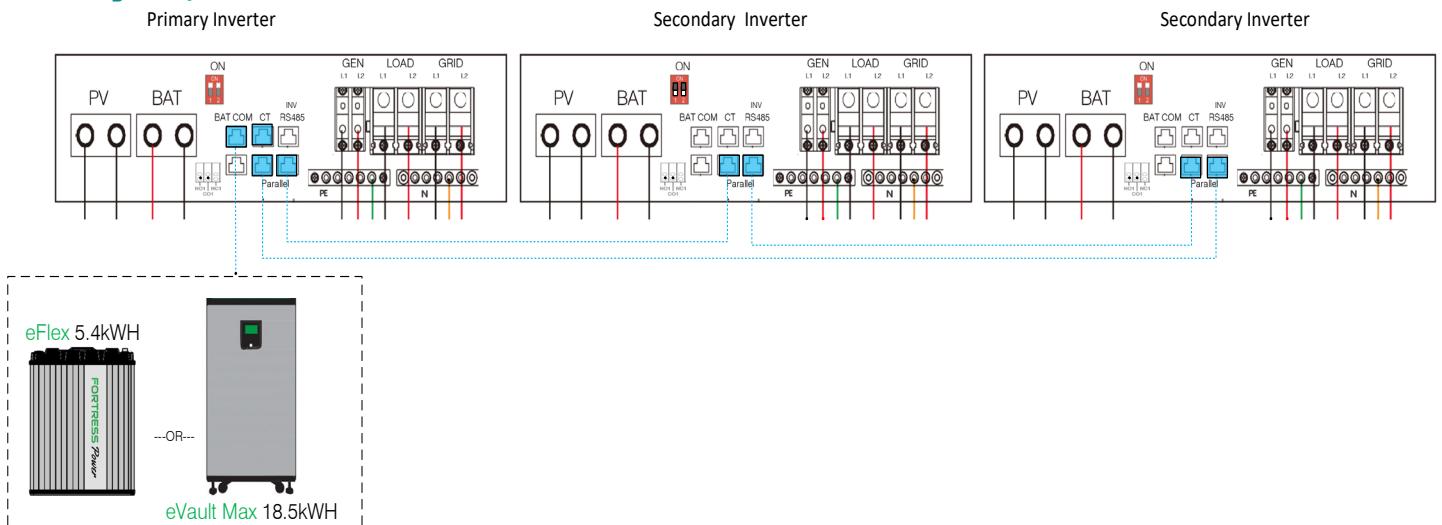
Use the Communication Cables included in the in the Envy Inverter along with those of the eFlex5.4kWh and eVault Max 18.5kWh.

The Envy paralleling communication cables measures 6.5ft. Therefore, installers might need to provide an extra longer communication cable to be able to make parallel connections if installed further apart. The battery communicates only with the Master Inverter through Modbus RS485.

Connect the communication cable to the BAT COM port. Proceed to the Advanced Section under the LCD programming segment to finish paralleling process.

Third party RS485 communication

Meter 485B&485A: are used when the Meter is not connected. These two pins can be used to communicate with the inverter using our Rs485 Modbus protocol.

INV485: This interface is shared with the WIFI module. If the WIFI module is not in use, users can use this interface to communicate with the inverter.

Pin	Description
1	485B
2	485A
3-8	/

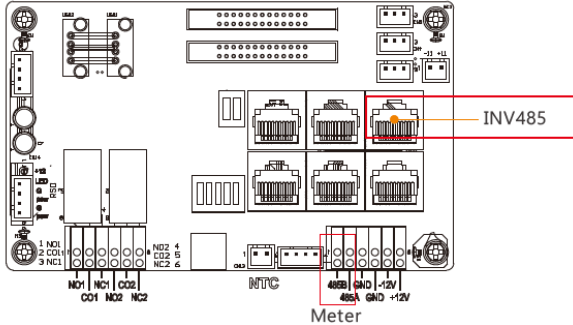# Commissioning and Powering Down Sequence

THERE ARE MULTIPLE LOCATIONS for these Breakers / Switches.

- **Battery and Load breakers are inside the Envy Wire Bay.**
- **PV disconnect switch is on the side of the Envy.**
- **Grid and Generator/AC coupled PV are external breakers.**

Start up the inverter

Before proceeding, place all AC and DC breakers off

1. Switch ON the Battery Breaker inside the inverter
   a. Turn on the battery system.
   b. Inverter will power up.
      i. If the Inverter does not power up Stop and correct the issue until it powers up
2. Place the Inverter in Standby mode.
   a. LCD screen - Basic section
3. Turn the PV Switch on the side of the inverter to On
   a. When commissioning, measure the PV and assure there is no reverse polarity prior to turning on.
4. Confirm the Inverter is setup and running.
   a. Inverter Programming
      i. The last settings are stored therefore reprogramming may not be necessary.
      ii. LCD programming is detailed in the user manual.
   b. Battery communication
      i. Confirm battery voltage, SOC.
   c. PV connection
      i. Confirm PV voltage per MPPT.
5. Switch ON Load Breaker inside the inverter
6. Exit Inverter standby mode.
   a. LCD screen - Basic section
   b. Confirm Loads are being powered.
7. Turn on the Grid Breaker
8. If AC Coupling or Generator Turn on This Breaker.

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 must shut down the inverter, please follow the steps as below.

1. Turn Off Generator/Ac Coupled PV external breaker.
2. Turn OFF the Grid breaker that feeds inverter.
3. Switch OFF the Load breaker inside the inverter.
4. Turn OFF PV Switch on the side of the inverter.
5. Switch OFF the Battery breaker inside the inverter.
   a. wait for the LCD to turn off.

Wiring Diagrams

Backup Applications with Backfeeder Connection (split-phase service 120/240V & 120/208V)

Connection diagram for 120/240V is as below. The connection diagram for 120/208V split phase service is roughly the same except that generator is not supported.
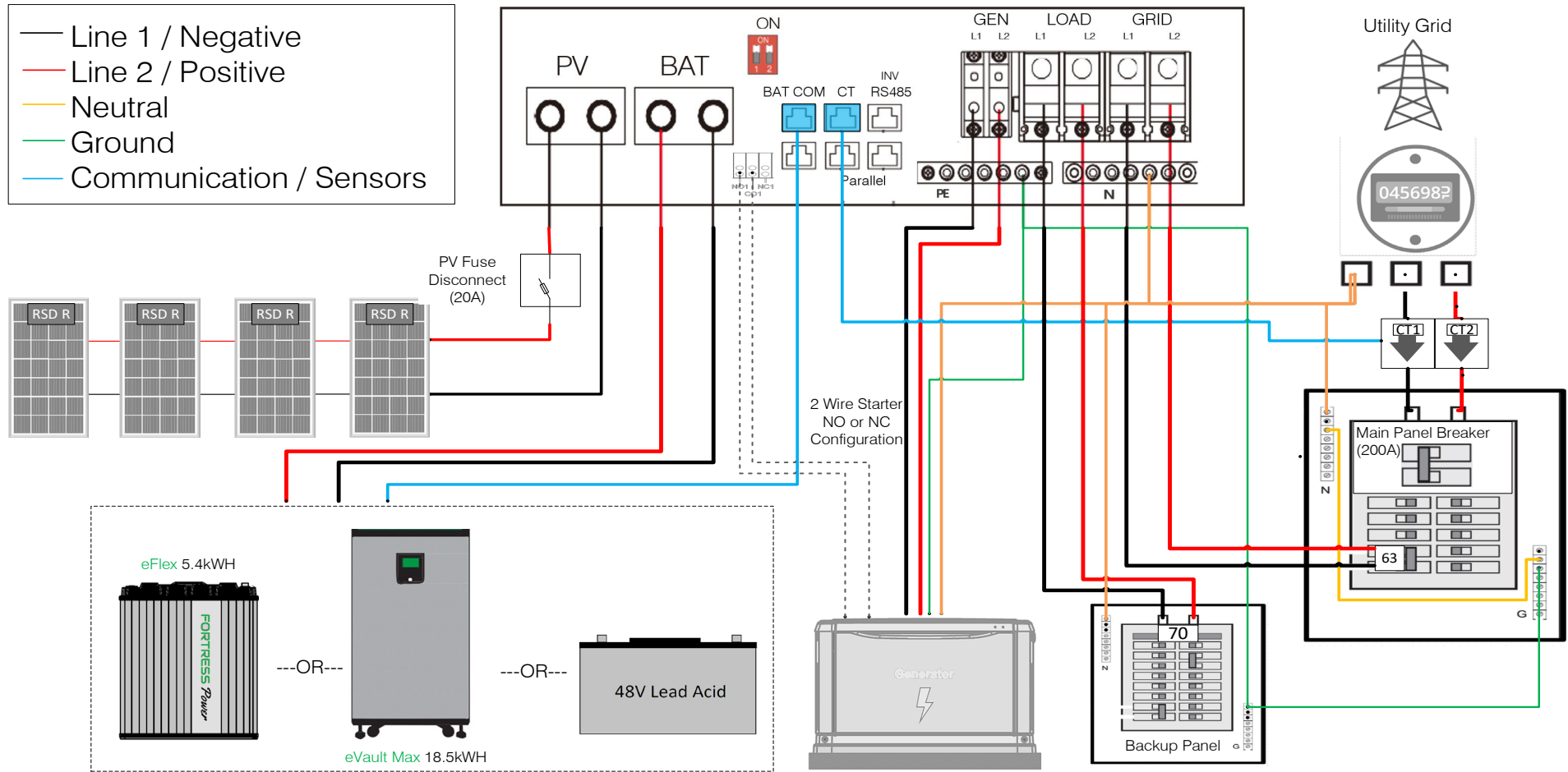
Line 1 / Negative
Line 2 / Positive
Neutral
Ground
Communication / Sensors

PV BAT

BAT COM CT INV RS485

Parallel

GEN LOAD GRID
L1 L2 L1 L2 L1 L2

PE N

ON
1 2

Utility Grid

0456982

CT1 CT2

Main Panel Breaker
(200A)

63

70

Backup Panel

PV Fuse
Disconnect
(20A)

RSD R RSD R RSD R RSD R

2 Wire Starter
NO or NC
Configuration

eFlex 5.4kWH

FORTRESS Power

---OR--- eVault Max 18.5kWH ---OR--- 48V Lead Acid

Generator

Only Bond Neutral once at the main panel

Always adhere to your local jurisdiction guidelines and make sure that an Electrician makes all electrical connections.

AC Coupling Applications with a Backfeeder Connection (split-phase service 120/240V)

Legend:
- Line 1 / Negative
- Line 2 / Positive
- Neutral
- Ground
- Communication / Sensors

PV   BAT

ON

BAT COM   CT   INV RS485

Parallel

GEN   LOAD   GRID
L1 L2   L1 L2   L1 L2

PE   N

Utility Grid

0456982

eFlex 5.4kWH

---OR---

eVault Max 18.5kWH

---OR---

48V Lead Acid

70

Backup Panel

Existing Solar Inverter or Microinverter

Main Panel Breaker (200A)

63

Only Bond Neutral once at the main panel

Always adhere to your local jurisdiction guidelines and make sure that an Electrician make all electrical connections.

Off Grid Applications Connection (split-phase service 120/240V)

Legend:
- Line 1 / Negative
- Line 2 / Positive
- Neutral
- Ground
- Communication / Sensors

PV

BAT

ON

BAT COM CT INV RS485

NOt NC1 Op1

Parallel

GEN LOAD GRID
L1 L2 L1 L2 L1 L2

PE N

PV Fuse Disconnect (20A)

RSD R RSD R RSD R RSD R

Manual Transfer Switch

2 Wire Starter NO or NC Configuration

2P Generator Breaker

eFlex 5.4kWH

---OR---

eVault Max 18.5kWH

---OR---

48V Lead Acid

Generator

Main Breaker Panel (70A)

N

G

WARNING: Make sure to turn off the Generator Breaker on the Envy before turning on the Generator and the PV system is bypassed. Fault or Damage will occur if power enters to the load side of the Envy.
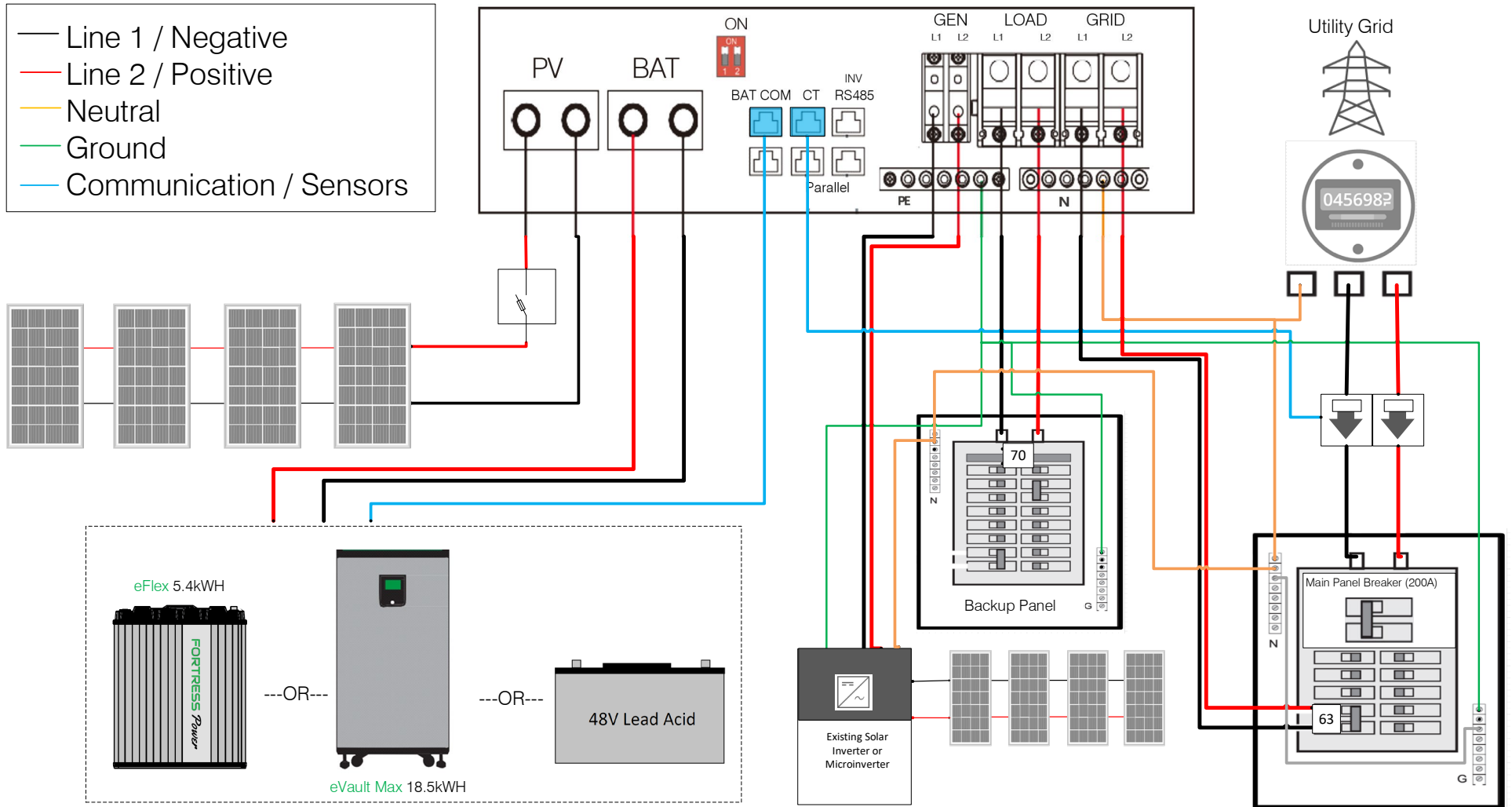
Only Bond Neutral once at the main panel

Always adhere to your local jurisdiction guidelines and make sure that an Electrician make all electrical connections.

Paralleled Systems Applications with a Feeder tap Connection (split-phase service 120/240V)
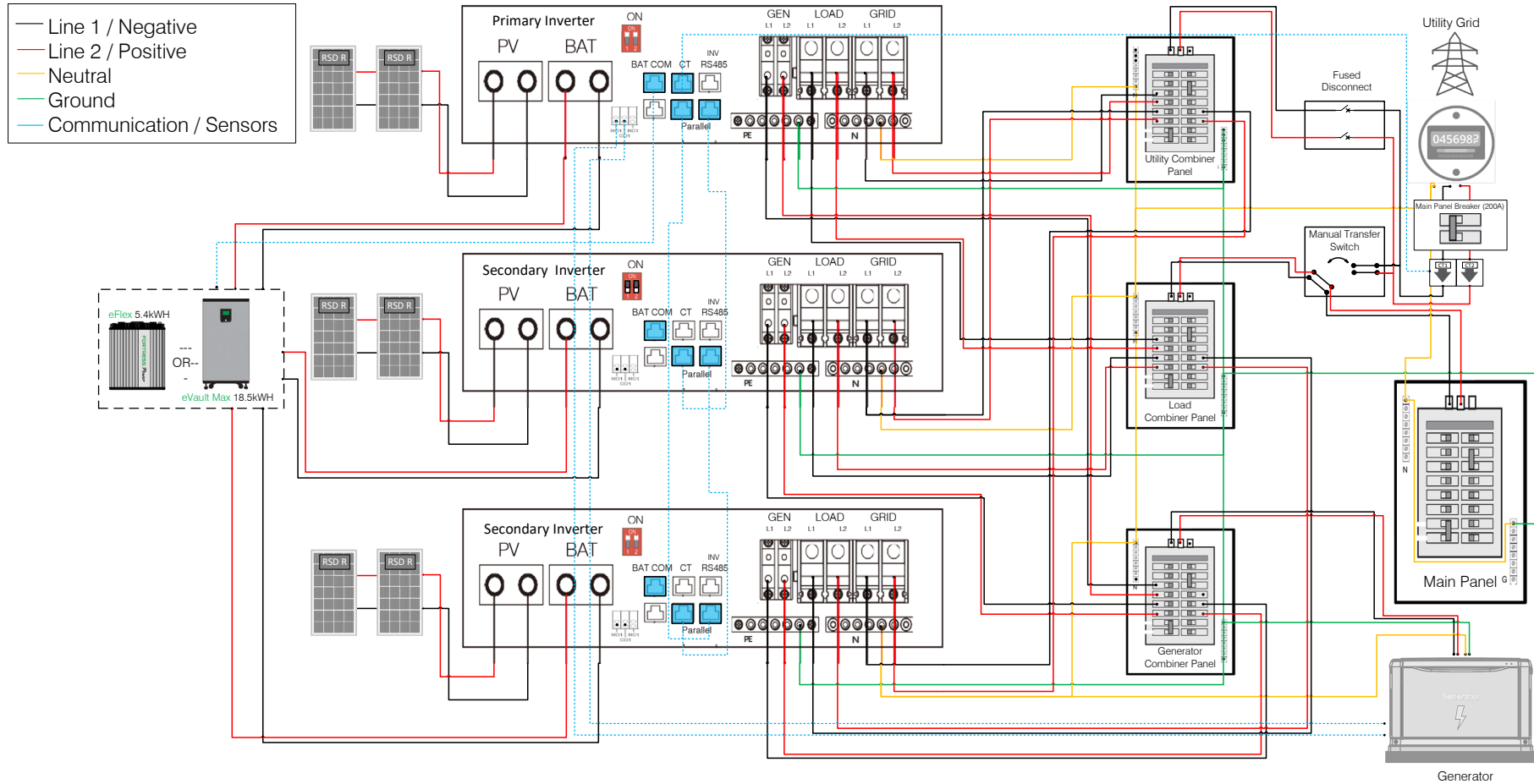
Legend:
- Line 1 / Negative
- Line 2 / Positive
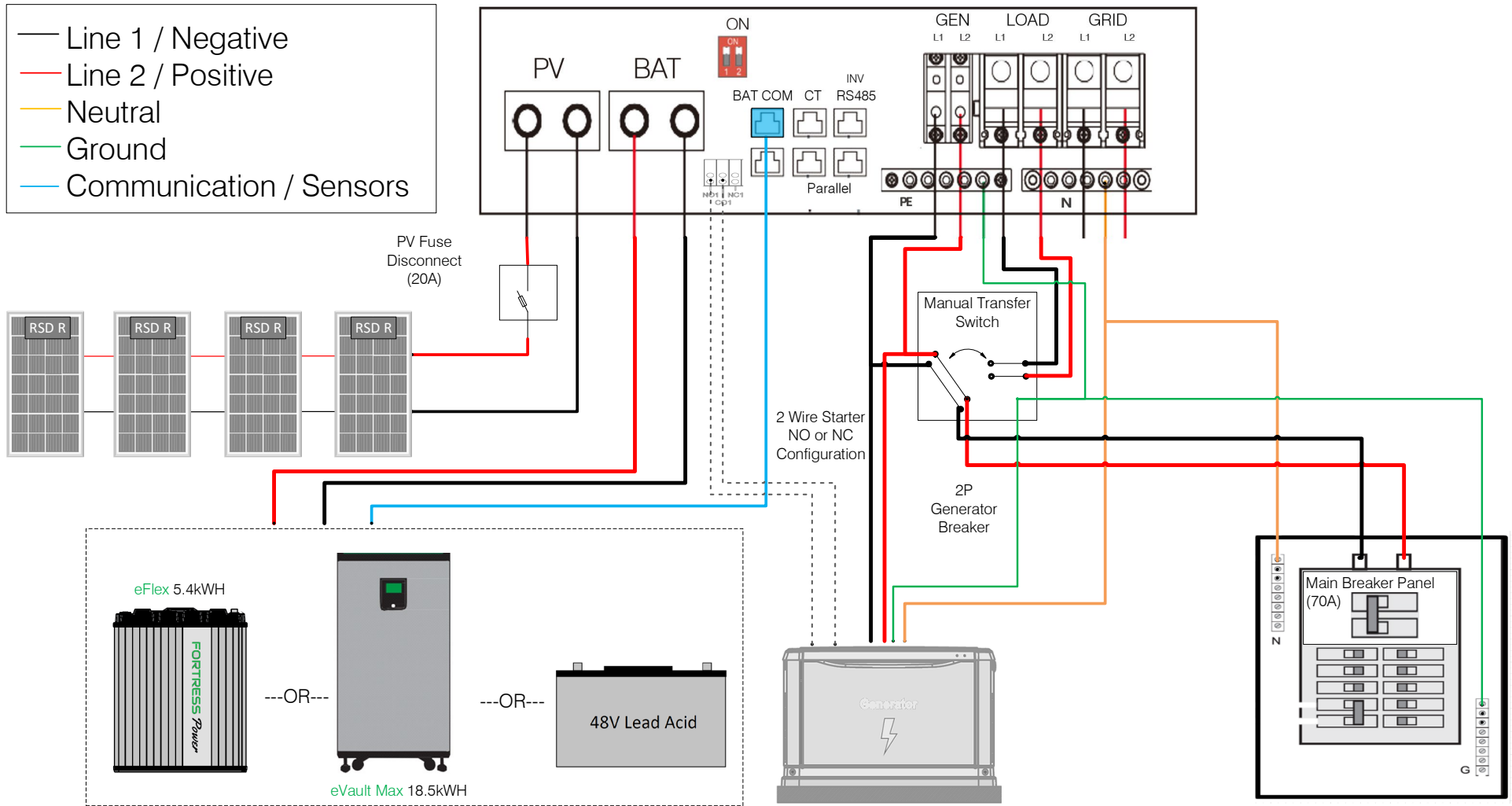- Neutral
- Ground
- Communication / Sensors

Only Bond Neutral once at the main panel

Always adhere to your local jurisdiction guidelines and make sure that an Electrician make all electrical connections.

Depending on your Local Jurisdiction a feeder tap breaker might be required between the Manual Bypass Switch and the feeder tap.

Envy Programming Through LCD Interface

Setting Parameters

- Always enable **Standby** when adjusting parameters and changes to the Inverter settings.
- Make sure to press **SET** on every change made, otherwise the value will revert to the default/previous parameter.
- **Password** to make Changes is **00000**
- Touch the screen to light it up if it's in sleep mode.
- Settings must be the same on all inverters when paralleled.
- Make sure that the Primary Battery is connected to the Master inverter when paralleling multiple inverters.
- Note: there are up to 3 time periods for Time of Use Settings (TOU) for each configuration. If used, always start with Time 1, use Time 2 then Time 3. Leave Time 2 and 3 blank if only a single time period is needed.

Clicking on the Home icon **at the bottom of the screen, you'll get into the Home Screen page of the inverter.**
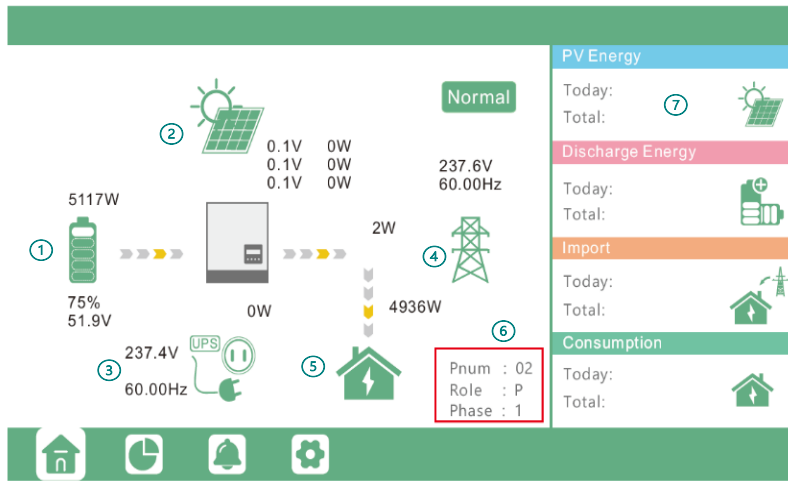
Figure#	Name	Displays
1	Battery	Voltage, SOC
2	Solar	MPPT Voltage & Power Production
3	Backup	Voltage, Power, and Frequency
4	Grid	Voltage, Power, and Frequency
5	Loads	Power
6	Inverter Identification	Qty. of Inverters, Role, and Phase (1~3, 1: R Phase, 2: S Phase, 3: T Phase)
7	Energy Usage Data	Daily and Historical Energy Production and Consumption, Import and Export Power

**Clicking on the gear icon** **at the bottom of the screen, you'll get into the parameter setting page of the inverter.**

Basic Section
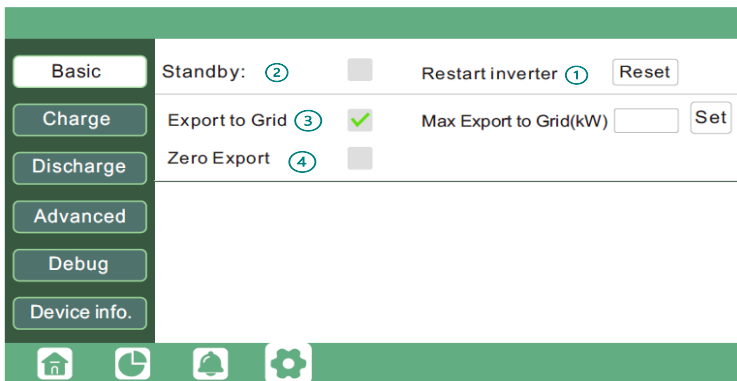
Figure#	Name	Function
1	Restart Inverter	Restart the system, please note the power maybe interrupted when restarted.

2	Standby	For users to set the inverter to normal status or to standby status. In standby status, the inverter will stop any charging or discharging operations, as well as solar-feed-in and will allow AC passthrough if Grid-tied.
3	Export to Grid	When enabled, Inverter will export excess energy production back to Utility using the set kW.
4	Zero Export (Self Consumption)	When enabling, Inverter will sense voltage and current every 20ms to prevent any solar being exported and at the same time allow solar production to supply power to the loads connected in the main panel and critical load panel. **Disable Export to Grid when using this function**

Charge Section
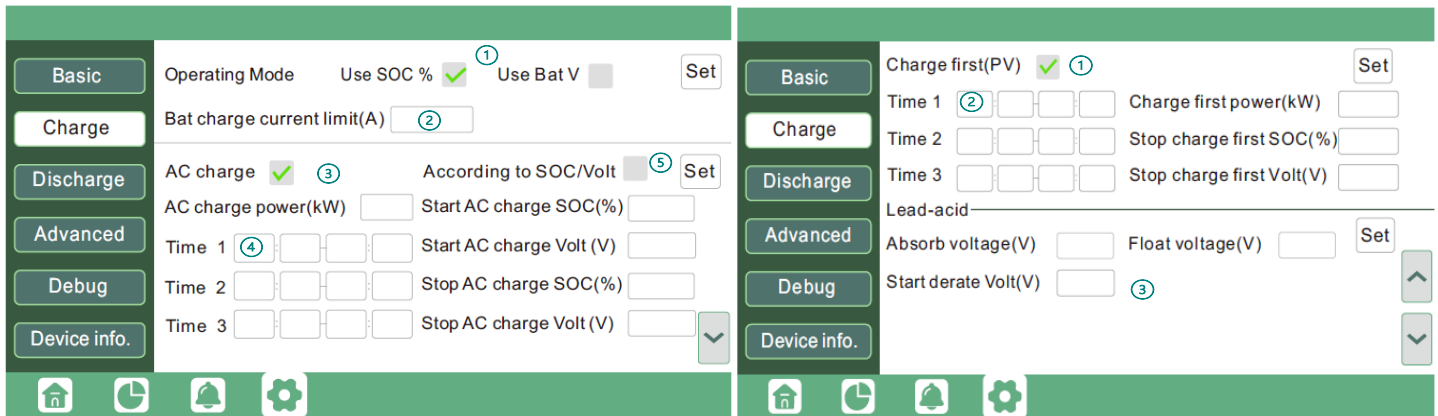
Figure#	Name	Function
1	Operating Mode	Enabling SOC or Bat V to control charge and discharge logic depending on battery type. Always use percentage settings when in Closed Loop Using lithium batteries
2	Bat Charge Current Limit(a)	Use to set the maximum charging current recommended by the battery manufacturer.
3	**AC Charge**	By enabling, inverter will use available AC to charge the battery. AC Charge power(kW) to limit utility charging power,
4	**TOU (Time of Use)**	AC Charge will obey the time ranges. Users can charge batteries with grid power when electricity prices are cheap, and discharge battery power to supply load or export to the grid when electricity prices are high.
5	According to SOC/Volt	AC Charge will adhere to charging based on SOC/Volt settings rather than TOU.
		Scroll Down ⌄
1	**Charge First (PV)**	Charge first: PV charge configuration. When using enable Charge first, PV will charge the battery as a priority, set time periods when PV charge can happen, charge first power(kW) to limit PV charge power, and "Charge first SOC (%)" as the target SOC for PV charge first. "Charge first Volt(V)" as the target battery voltage for PV Charge first
2	**TOU (Time of Use)**	AC Charge will obey the time ranges. Users can charge batteries with grid power when electricity prices are cheap, and discharge battery power to supply load or export to the grid when electricity prices are high.
3	**Lead Acid/Open Loop Settings**	When using Lead-acid battery or Open Loop Settings, you need to set parameters in these programs, Follow the battery manufacture recommendations.
		Scroll Down ⌄

Generator

Generator Start Conditions

1.　　When utility fails and
2.　　When battery is discharged to cut-off settings or there is force charge request from battery or when the battery voltage or SOC is lower than the Generator Charge start Volt/SOC settings,

Generator Stop Conditions

1.　　When battery voltage or SOC is higher than Charge end Volt/SOC settings value.

AC Coupling

Users need to enable AC coupling function. The inverter supports AC coupling connection with the existing grid-interactive solar system. The existing solar system is to be connected to the inverter's GEN port.

Figure#	Name	Function
1	Charge Current Limit (A)	Set the Max. battery charge current from the Generator. The Generator will start charging according to the Charge start Volt/SOC and stop charging when the battery voltage or SOC reaches the Charge end Volt/SOC value.
2	Gen rated power	Inverter has the peak-shaving function, when you need you can enable it and setup the Gen peak-shaving power(W)
3	Charge Start & End SOC/Volt	Depends on the Bat operating mode setting; The system will use either battery SOC or battery voltage to determine whether the system needs to start or stop the generator.
4	**AC Couple**	When the Grid is on, the GEN terminal is connected to the grid terminal inside the inverter. In this case the hybrid inverter will bypass the interactive inverter AC to the grid and EPS. When On-Grid and Export to Grid are enabled, the AC-coupled inverter will always be on, and it will sell any extra power back to the grid. Ensure you are allowed to sell power to your utility provider. When export to Grid is disabled, the AC-coupled inverter will stay at off mode and could not work at on-grid mode to sell power. When grid is off, The GEN terminal is connected to the EPS terminal inside the inverter. In this case, the loads will be first supplied by solar power. If solar panels are generating more power than load consumption, the excess solar power will be stored in the battery. When solar power exceeds the sum of load power and max battery charging power, e.g., when battery is nearly full. The inverter will signal the grid interactive inverter to reduce power via the frequency shifting power reduction mechanism, thus, to maintain the balance of generation and consumption of the micro grid system. **End SOC (%):** The SOC at which the AC coupled inverters are shut down when in off-grid mode. 90% recommended. **Start SOC (%**): The SOC at which the AC coupled inverters are turned on when in off-grid mode. 50%~70% recommended

Discharge Section

Figure#	Name	Function
1	Operating Mode	You can choose "Use SOC %" or Use Bat V" to control the battery discharge state

2	Discharge current limit(A)	Discharge current limit(A): The Max. discharge current from battery
3	Discharge start power(W)	The Min. value can be set to 50. When the inverter detects the import power is higher than this value, battery start discharging, otherwise battery will keep standby.
4	On-grid Cut-off (%)/V & Off-grid Cut-off (%)/V	When the On-grid value is reached. Inverters will stop discharging batteries and switch to grid power to supply loads. The maximum set value is 90%. When Off Grid value is reached, the inverter will stop discharging the battery. **Make sure to have an external power source like a generator so that the home does not lose power.**
5	Forced discharge	Settings for battery force discharge within certain the time period. The inverter will discharge battery to the loads and excess will sell back to the grid at set power rate until time or Stop SOC is reached.

Scroll Down ⌄

1	Grid peak-shaving & Grid peak-shaving power(kW);	Is used to set the maximum power that the inverter will draw from its grid power. The rest will be supplied with available solar and battery power.
2	Smart Load	This function is to make the Gen input connection point as a load connection point, if you enable it, inverter will supply power to this load when the battery SOC and PV power is above a user setup value. e.g., Smart load start SOC=90%, Smart load end SOC=85%, Start PV power=300W, it means: When the PV power exceeds 300W, and the battery system SOC gets to 90%, the Smart Load Port will switch on automatically to supply the load which is connected on this side. When the battery reaches SOC<85% or PV power<300w, the Smart Load Port switch off. **Note:** **If you enable the Smart load function, it's forbidden to connect the generator at the same time, otherwise the device will be damaged!**

Advanced Section

Figure#	Name	Function
1	PV Input	Provides Selection of the quantity of MPPTS being used
2	CT Configuration	The supported CT ratio is 1000:1, 2000:1, 3000:1. The Default **CT ratio** that is provided with your inverter is 3000:1. If 3rd party CT is to be used, please. ensure its CT ratio is one of them and set it accordingly. **CT direction reverse** is to correct the direction of energy flow if installers placed the CTs in the wrong orientation. **Meter type** should be 0:1 phase.
3	**Offgrid Output**	Enable to turn on Backup mode.
4	Seamless Switch	When enabled, the inverter will start inverting in less than 20ms when grid outage. Otherwise, it will inverter in less than 50ms.
5	**AC Couple**	Enable when user has AC coupling. AC coupled systems must always be connected in the Generator Port.
6	**Charge Last**	When enabled, solar will supple energy first to Loads>Export to Grid and charge battery with the remaining power.

|		
7	**EPS Output Without Battery**	When enabled, it will use solar power to supply load when the grid fails, or load-shedding happens.
8	**Micro-Grid**	Only needs to be set when the generator is connected to the inverter's grid port. With this option enabled, the inverter will use AC power to charge the battery and won't export any power through the grid.
9	**Smart Load**	Enable to Turn ON Smart Load function. **Do not connect an AC source when this function is enabled, or you may damage the inverter**
10	**Run Without Grid**	Enable when in Off Grid application. Do not place any AC Source on the grid port when this function is enabled.
	Scroll Down ⌄	
1	Grid Type	Choose 120/240V or 120/208V
2	Grid Frequency	Choose 60 Hz (US, PR, MX) 50Hz
3	Grid Regulation	UL1741 & IEEE, CA RULE21, HAWAII HECO, PR-LUMA. Voltage and Frequency codes will generate automatically.
4	**Battery Type**	NO, BATTERY, LEAD-ACID, LITHIUM
5	Lithium Brand	LITHIUM 0 (FORTRESS POWER Protocol). Confirm batteries are communicating in the Detailed System information Section.
6	Lead Capacity (Ah)	Set battery bank capacity for open loop settings or Lead Acid batteries. Leave default value if Closed Loop. **For Lead-acid battery** 1. The temperature sensor for the lead-acid battery is optional. If you need it, please contact the distributor for purchasing.
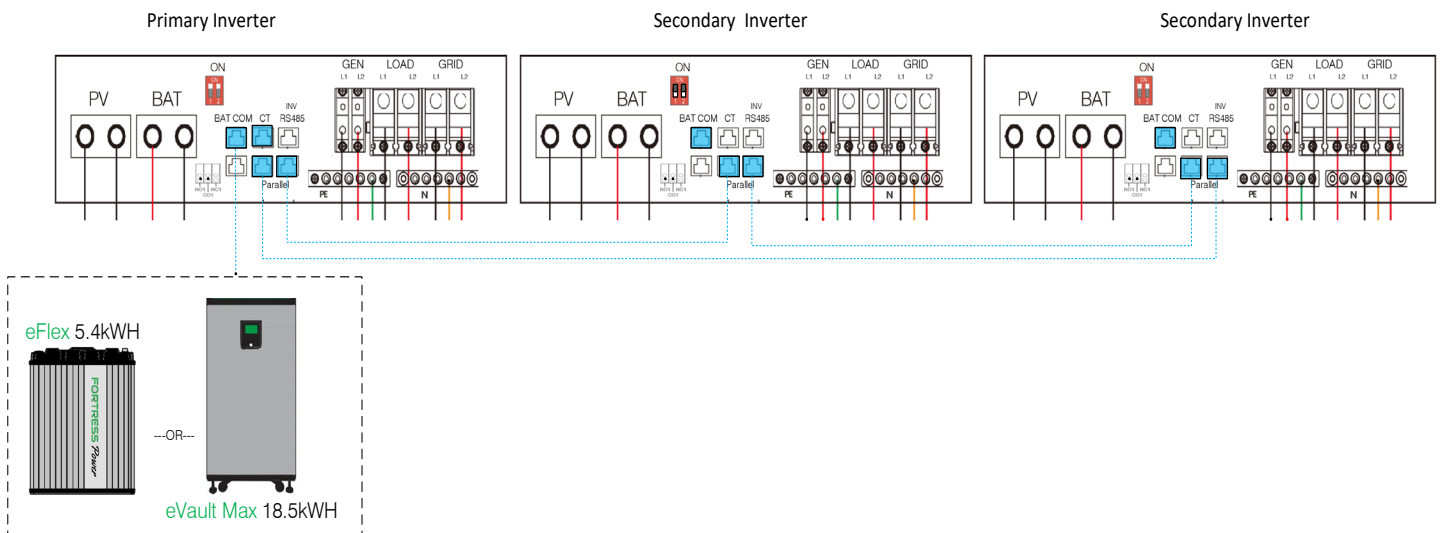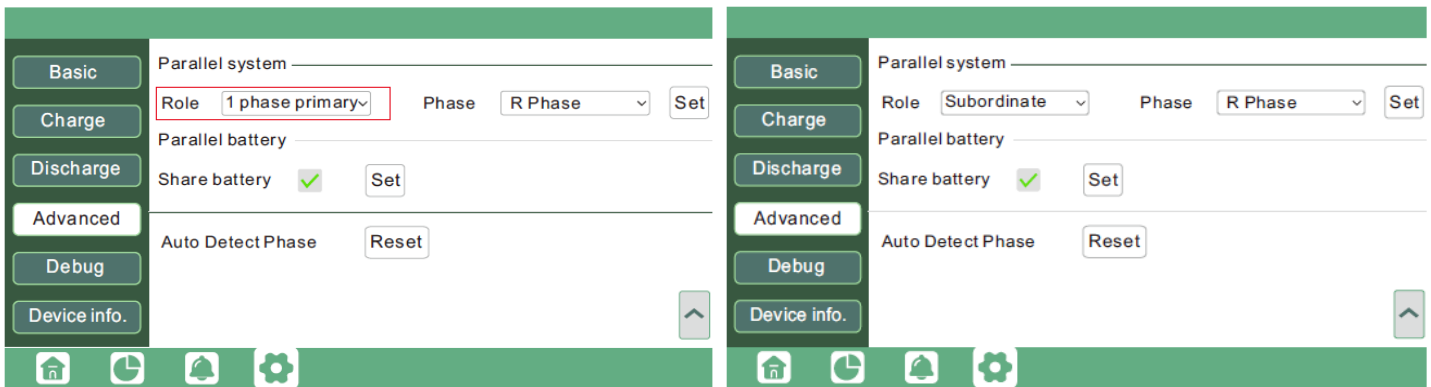
When paralleling multiple Inverters, make sure to complete paralleling process by identifying which is the Primary inverter and the secondary on Parallel System area under the Advance Section. You can confirm by Selecting the Home Icon and view how many inverters are in connection **(PNUM)** and which **Role** each has (**P=Primary, S=Subordinate)**

Detailed System Information Section

To access the Detailed System Information, click on the pie icon ⊙ at the bottom of the screen and you'll be able to view the detailed real time solar information, batter information, grid information and EPS output information.

To confirm Batteries have been installed correctly and are communicating with the inverter, please refer to the Battery side of this section and note the **"Imaxdischg"**. For each **eFlex 5.4kWh** installed the value should be 60A. For each **eVault 18.5kWh** installed, the value should be 250A.

Solar	Vpv1		Ppv1	
Battery	Vpv2		Ppv2	
Grid	Vpv3		Ppv3	
UPS	Epv1_day		Epv1_all	
Other	Epv2_day		Epv2_all	
	Epv3_day		Epv3_all	

Solar	Vbat		Ibat	
	Pchg		Pdischg	
Battery	Vbat_Inv		BatState	
	SOC/SOH		CycleCnt	
Grid	Vchgref/Vcut		Bat capacity	
	Imaxchg		Imaxdischg	
UPS	Vcellmax		Vcellmin	
	Tcellmax(°C)		Tcellmin(°C)	
Other	BMSEvent1		BMSEvent2	
	Echg_day		Edischg_day	
	Echg_all		Edischg_all	

Solar	Vgrid		Fgrid	
	VgridL1N		VgridL2N	
Battery	Vgen		Fgen	
	Pimport		Pexport	
Grid	Pinv		Prec	
	Pload			
UPS	Eimport_day		Eexport_day	
	Eimport_all		Eexport_all	
Other	Einv_day		Erec_day	
	Einv_all		Erec_all	
	Eload_day		Eload_all	

Solar	Vups		Fups	
	VupsL1N		VupsL2N	
Battery	Pups		Sups	
	PupsL1N		SupsL1N	
Grid	PupsL2N		SupsL2N	
	Eups_day		Eups_all	
UPS	EupsL1N_day		EupsL1N_all	
	EupsL2N_day		EupsL2N_all	
Other				

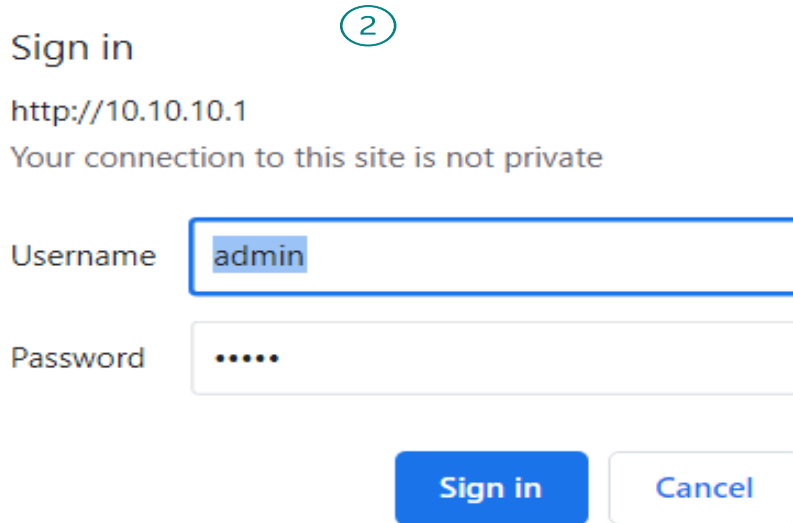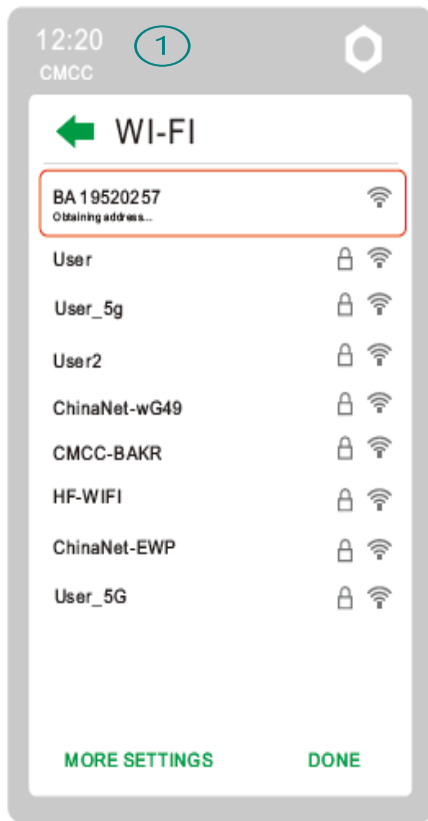| Solar	Status		StatusPre	
	SubStatus		SubStatusPre	
Battery	FaultCode		AlarmCode	
	Vbus1/Vbus2		VbusP/VbusN	
Grid	T0/T1(°C)		T2/T3(°C)	
	OCP/Grid OnOff Cnt		ExitReason1/2	
UPS	InnerFlag/Run Trace		NoDis/chgReason	
	Dis/chg LimitReason		Dis/chg CurrLimit	
Other	Inv/Rec LimitReason		Inv/Rec CurrLimit	
	Para status			

Monitor System Setup

Wi-Fi Dongle Connection and Registration

Users can use the Wi-Fi/ dongle to monitor their inverter and view the monitoring data on a computer or smart phone remotely. Connect the dongle on the inverter while it's energized. The Dongle has a wireless signal reach of up to **10 meters (approximately 30ft.) in an open space**. If the Internet Router is farther than this distance, it is recommended to install a WIFI extender. Make sure to keep the Dongle connected permanently as it also serves to provide a seal to the Dongle Port. Make sure to also install the **Nylon Lock Nuts** in the knockout holes that are not being used.
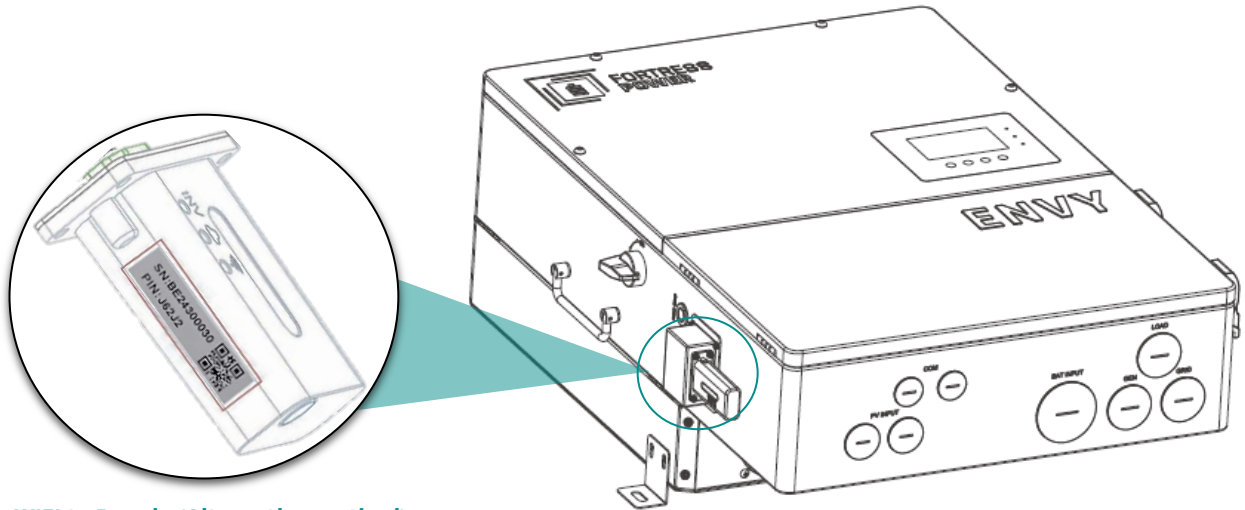
Attach home WIFI to Dongle (Alternative method)

Sign in

http://10.10.10.1
Your connection to this site is not private

| Username | admin |
| Password | ••••• |

Sign in   Cancel

MiCO™ IoTOS   中文 | English

	AP状态	
运行状态	功能	Enable
模式选择	IP地址	10.10.10.1
无线接入点设置	子网掩码	255.255.255.0
无线终端设置	**STA状态**	
串口设置	功能	Enable
网络设置	信道	1
模块管理		

MiCO laTOS

Run State
Wifi Mode Select
AP Mode Setting
Station Mode Setting
Uart Setting
Network Setting
Moduel Management

• 中文|English

Station Parameter Setting

④ SSID [   ]
                              scan

Encryption Mode [Enable ▾]
Password [   ]

                              save

Please select the wireless network you are currently using

Select	Name	Rss
○	NETGEAR26	-36%
○	DIRECT-9ED98899	-56%
○	CLARO6C1A58	-72%
○	NETGEAR39	-85%
○	Zorionak	-85%
○	Deco	-86%
○	Junior	-86%
○		-86%
○	ARRIS-D4CD	-87%
○		-87%

⑤

OK   **refresh**

Parameter configuration success! ⑥

Reboot module to take effect
whether to restart the module?

yes

Attention:

It will cost 3 seconds to restart module to stablize work! Please
be patient to wait for the completion of the restart!

Please do not click on any other commands during restarting
process to avoid errors.

⑦

Connect to the Wireless Network of the Dongle **BA******** using your phone or Laptop**>**type in a web browser **10.10.10.1>**Username: **admin** Password: **admin>** Select **English>** Select **Station Mode Setting>** Select **Scan** on **SSID>** Select your **Internet Wireless Network>**Enter your router's **Password>** Click **Save** and select **yes** to Reboot Dongle. Wait 1-2 minutes until the Dongle shows three solid green LED'S. **Success!**
Now you can disconnect your mobile phone from the "BAxxxxxxxx" wireless network.

LED Definitions	
INV LED	Communication between datalogger and inverter
Cloud Icon LED	Communication between datalogger and network
Wi-Fi Icon LED	Communication between datalogger and HomeWiFi

LED Status	Status	Troubleshoot
All LED's are solid green	Communication is Normal	
INV LED flashing	Communication Failure between Dongle and Inverter	Strictly Inspect the Connection between Dongle and Inverter
Cloud Icon LED Flashing	Communication Failure to the Internet	Check Router works normally. If not, Reset Router. **Note:** Dongle should be within 10 meters (approx. 33ft) distance from the router. Government issued Routers might not accept the dongle connection ex. Starlink. If this is the case, then add a compatible Wi-Fi extender and connect to it
WIFI LED flashing	Communication Failure between Dongle and Router	Check if Homewifi name and password are correct

Register Account

1. Download **Envy Fortress Power APP** from the **Google Playstore** or **Apple Appstore** .

2. On the Home Page, Select **Register** to register your Envy and create a User Account. You can also do this through the Web Portal at **envy.fortresspower.io**

3. Create and register the end-user's information and credentials. The "**customer code**" is a code we assign to your distributor or installer that will allow them to view each station and end-user created using this registration method. Installers can contact Fortress Power Tech Support to be assigned a code. For DIY users feel free to use the **Customer Code: Fortress.**

4. **Once registered, you can log in using the created credentials**. If you want to have more stations that need to be created, you can create them as stated in the image below. If there are multiple inverters being paralleled, then select **Add Wi-Fi Module** to the station created.

Envy Fortress Power

① ② ③ ④

⑤ ⑥ ⑦

5. Login on the APP with your account, you'll find the inverter information already appears. Now you'll be able to monitor and control the inverter remotely on any smart phone or computer that has an Internet connection.

6. When selecting the Data Section, User will be able to monitor daily Energy production, Consumption, and Distribution.

7. When Selecting the Monitor Section, It will inform the user of any Event/Alarms/Faults relevant to the inverter and/or battery.

Troubleshooting & Maintenance
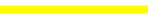
Regular Maintenance

Inverter Maintenance
a. Check the inverter every 6 months or 1 year to verify if there is damage on cables, accessories, terminals, and the inverter itself.
b. Check the inverter every 6 months to verify if the operating parameter is normal and there is no abnormal heating or noise from the inverter.
c. Check the inverter every 6 months to confirm there is nothing that covers the inverter heat sink, if there is, shut down the inverter and clear the heat sink.

Battery Maintenance
Follow the manufacturer's requirements on maintenance. When you carry out these works on batteries, please make sure to fully shut down the inverter for safety consideration.
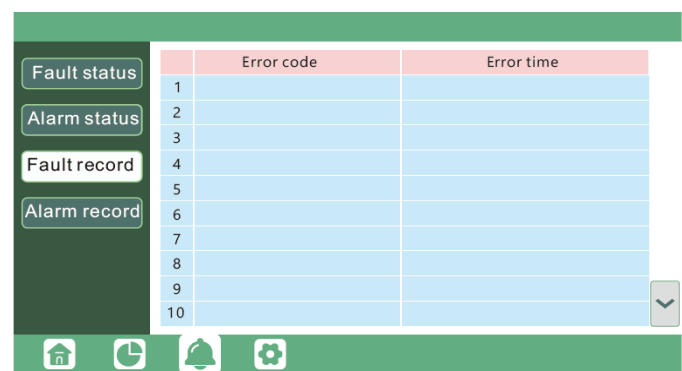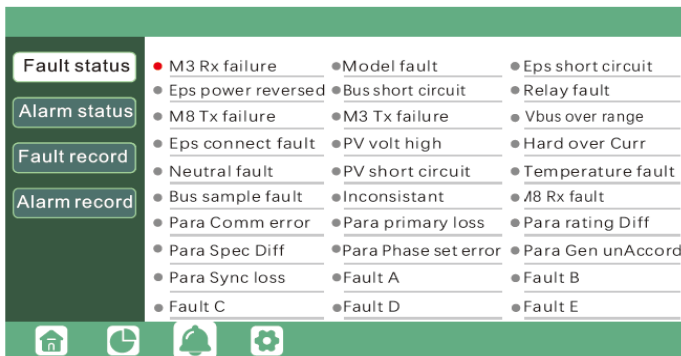
LED Displays

LED	Display		Description	Suggestion
Green LED	Solid lit		Working normally	
	Flashing		Firmware upgrading	Wait till upgrading complete
Yellow LED	Solid lit		Alarm, inverter is working but needs checked.	Wait for it to be clear up, If Alarm, remains it might need troubleshooting
Red LED	Solid lit		Fault, inverter stopped working	Need troubleshooting

Troubleshooting Based on LCD Displays

Once there is any warning or fault occurring, users can troubleshoot according to the LED status and the warning/fault information on the LCD.
Touching the bell icon at the bottom of the screen, you'll see all the current and historical fault & warning information on this page.

1. Fault on the LCD If the dot on the left of fault item is red, it means the fault is active. When it is grey, it means the fault is inactive.

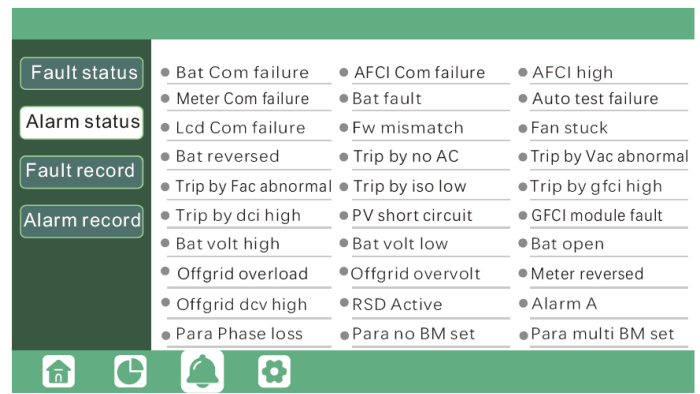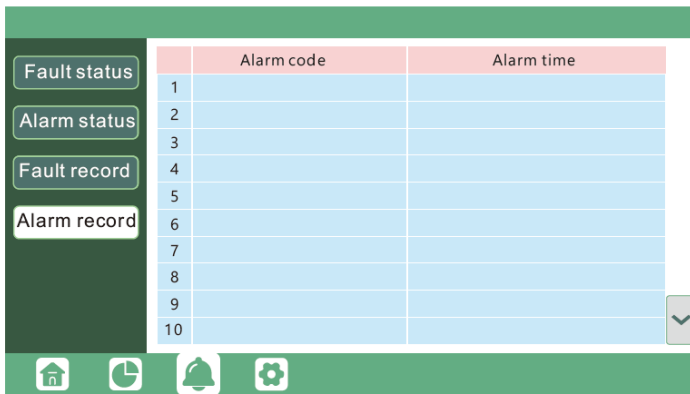| Fault	Meaning	Troubleshooting
M3 Rx failure	M3 microprocessor fails to receive data from DSP	Restart inverter, if the error still exists, contact Fortress Power service or your inverter supplier.
Model fault	Incorrect model value	
Eps short circuit	Inverter detected short-circuit on EPS Load output terminals	1. Check if the L1, L2 and N wires are connected correctly at inverter EPS Load output port. 2. Disconnect the EPS Load breaker to see if fault remains. If fault persists, contact Fortress Power service or your inverter supplier.

EPS power reversed	Inverter detected power flowing into EPS Load port	Restart inverter, if the error still exists, contact Fortress Power service or your inverter supplier.
Bus short circuit	DC Bus is short circuited	
Relay fault	Relay abnormal	
M8 Tx failure	DSP fails to receive data from M8 microprocessor	
M3 Tx failure	DSP fails to receive data from M3 microprocessor	
Vbus over range	DC Bus voltage too high	Please check if the PV string voltage is within the inverter specification. If string voltage is within range, and this fault still appears, contact Fortress Power service or your inverter supplier.
EPS connect fault	EPS Load port and grid port are connected mixed up	Check if the wires on EPS Load port and grid port are connected correctly. If the error exists, contact Fortress Power service or your inverter supplier.
PV volt high	PV voltage is too high	Please check if the PV string voltage is within the inverter specification. If string voltage is within range, and this fault still appears, contact Fortress Power service o your inverter supplier.
Hard over curr	Hardware level over current protection triggered	Restart inverter, if the error still exists, contact Fortress Power service or your inverter supplier.
Neutral fault	Voltage between N and PE is greater than 30V	Check if the neutral wire is connected correctly.
PV short circuit	Short circuit detected on PV input	Disconnect all PV strings from the inverter. If the error persists, contact Fortress Power service or your inverter supplier.
Temperature fault	Heat sink temperature too high	Install the inverter in a place with good ventilation and having no direct sunlight. If the installation site is okay, please check if the NTC connector inside the inverter is loose.
Bus sample fault	Inverter detected DC bus voltage lower than PV input voltage	Restart inverter, if the error still exists, contact Fortress Power service or your inverter supplier.
Inconsistant	Sampled grid voltage values of DSP and M8 microprocessor are inconsistent	
M8 Rx fault	M8 microprocessor fails to receive data from DSP	
Para Comm error	Parallel communication abnormal	1.Please check whether the connection of the parallel cable is loose, please connect the parallel cable correctly Please check and make sure the PIN status of CAN communication cable from the first to the end inverter is correctly inserted
Para master loss	No master in the Parallel system	a. If a master has been configured in the system, the fault will be automatically removed after the master works. If so, you can ignore it. b. If a master has not been configured in the system, and there are only slaves in the system, please set the master first. Note: For single unit running system, the role of the inverter should be set as "1 phase master"

Para rating Diff	Rated power of parallel inverters are inconsistent	Please confirm that the rated power of all inverters are the same, or you can contact Fortress Power service to confirm
Para Phase set error	Incorrect setting of phase in parallel	Please confirm that the wiring of the parallel system is correct first. In this case, then connect each inverter to the grid, the system will automatically detect the phase sequence, and the fault will be automatically resolved after the phase sequence is detected.
Para Gen un-Accord	Inconsistent generators connect in parallel	Some inverters are connected to generators, some are not. please confirm that all inverters in parallel are connected to generators together or none of them are connected to generators
Para sync loss	Parallel inverter fault	Restart inverters, if the error still exists, contact Fortress Power service or your inverter supplier

2. Alarm on the LCD

If the dot on the left of the alarm item is yellow, it means the alarm is active. When it is grey, it means the alarm is cleared.

| Alarm	Meaning	Troubleshooting
Bat com failure	Inverter fails to communicate with battery	Check if communication cable is correct, and if you have chosen the correct battery brand on inverter L If all is correct but this error persists, please contact Fortress Power service or your inverter supplier.
AFCI com failure	Inverter fails to communicate with AFCI module	Restart inverter, if the error persists, contact Fortress Power service or your inverter supplier.
AFCI high	PV arc fault is detected	Check each PV string for correct open circuit voltage and short circuit current. If the PV strings are in good condition, please clear the fault on inverter LCD.
Meter com failure	Inverter fails to communicate with the meter	1. Check if the communication cable is connected correctly and in good condition. 2. Restart inverter. If the fault persists, contact Fortress Power service or your inverter supplier.
Bat Fault	Battery cannot charge or discharge	1. Check the battery communication cable for correct pinout on both inverter and battery end; 2. Check if you have chosen an incorrect battery brand; 3. Check if there is fault on battery's indicator. If there is fault, please contact your battery supplier.

| Auto test failure	Auto test failed	Only applied to Italy model
Lcd com failure	LCD fails to communicate with M3 microprocessor	Restart inverter. If fault still exists, contact Fortress Power service or your inverter supplier.
Fwm mismatch	Firmware version mismatch between the microprocessors	
Fan stuck	Cooling fan(s) are stuck	
Trip by gfci high	Inverter detected leakage current on AC side	2.Check if there is ground fault on grid and load side; 3.Restart inverter. If the fault remains, contact Fortress Power service or your inverter supplier.
Trip by dci high	Inverter detected high DC injection current on grid port	Restart inverter. If the fault remains, contact Fortress Power service or your inverter supplier.
PV short circuit	Inverter detected short circuited PV input	c. Check if each PV string is connected correctly; d. Restart inverter. If the fault remains, contact Fortress Power service or your inverter supplier.
GFCI module fault	GFCI module is abnormal	Restart inverter. If fault still exists, contact Fortress Power service or your inverter supplier.
Bat volt high	Battery voltage too high	Check if battery voltage exceeds 59.9V, battery voltage should be within inverter specification.
Bat volt low	Battery voltage too low	Check if battery voltage is under 40V, battery voltage should be within inverter specification.
Bat open	Battery is disconnected from inverter	Check battery breaker or battery fuse.
Offgrid overload	Overload on EPS port	Check if load power on inverter EPS port is within inverter specification.
Offgrid overvolt	EPS voltage is too high	Restart inverter. If fault still exists, contact Fortress Power service or your inverter supplier.
Meter reversed	Meter is connected reversely	Check if meter communication cable is connected correctly on inverter and meter side.
Offgrid dcv high	High DC voltage component on EPS output when running off-grid	Restart inverter. If fault still exists, contact Fortress Power service or your inverter supplier.
RSD Active	Rapid shutdown activated	Check if the RSD switch is pressed.
Para phase loss	Phase losing in parallel system	Please confirm that the wiring of the inverter is correct. If the master is set to 3 Phase master, the number of parallel inverters needs to be ≥3. (And the grid input of each inverter should be connected with Grid L1,L2,L3 rightly). If the master is set to 2x 208master, the number of parallel inverters needs to be ≥2. (And the grid input of each inverter should be connected with Grid L1,L2,L3 rightly)
Para no BM set	Master isn't set in the parallel system	Please set one of the inverters in the parallel system as the master
Para multi-BM set	Multiple Masters have been set in the parallel system	There are at least two inverters set as Master in the parallel system, please keep one Master and the other set as Slave

Fan maintenance and Replacement

Please check and clean the fans regularly. The recommended period is 6 months.

Please replace the fan following up the below diagram if there is problem with the fans. Turn off the system and wait for more than 5 minutes before disassembling the machine.
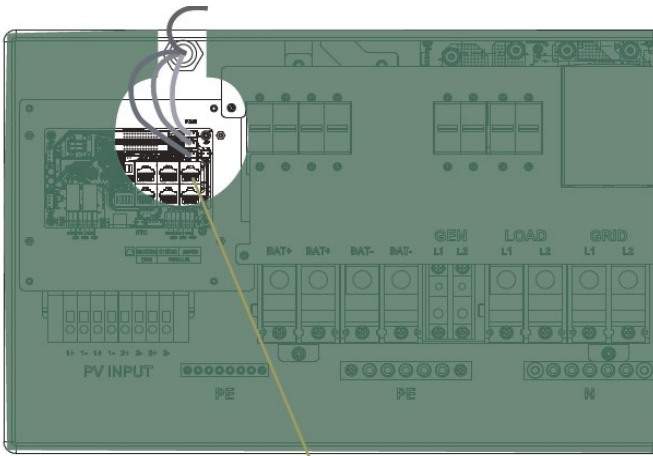
a. Open the wiring cover.

a. Unplug the fan cable.

b. Loosen the screws and remove them.

c. Remove the fan fixing.

d. Loosen the waterproof connector.

e. Remove the fan and replace it

g. After the fan is installed, follow the steps just now to push back and assemble it back.
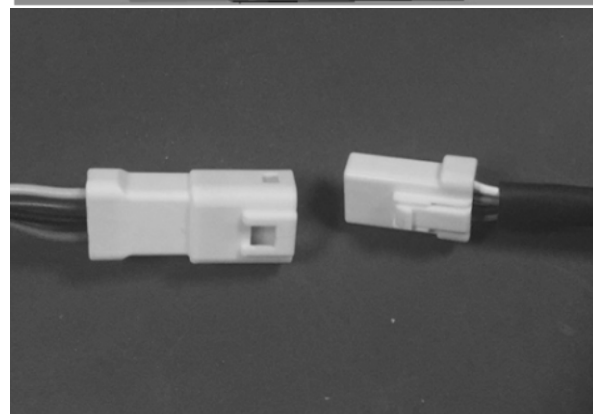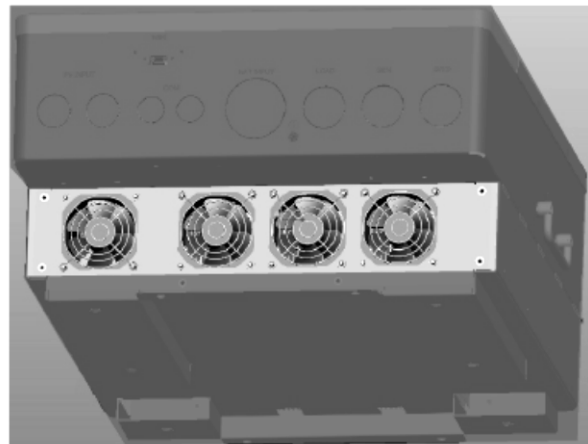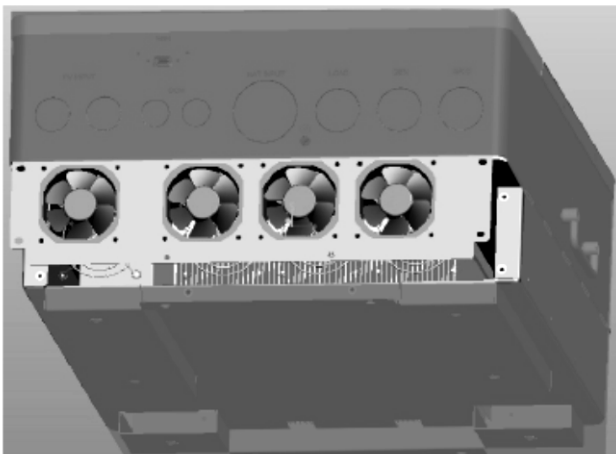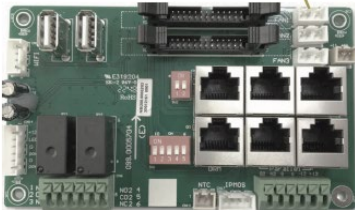
	FP-ENVY-8K	FP-ENVY-10K
PV output data		
Max. usable input current(A)	25/25	25/25
Max. short circuit input current(A)	31/31	31/31
Start input voltage(V)	100	100
Startup voltage(V)	140	140
Full power MPPT voltage range(V)	170-480	200-480
DC nominal voltage(V) MPPT tracker	360	360
DC voltage range(V)	100-600	100-600
MPP operating voltage range(V)	120-480	120-480
Max. power(W)	12000	15000
Number of MPPT	2	2
Inputs per MPPT	2/2	2/2
AC Grid output data		
Nominal Output Current(A)	33.3	41.6A
Max. Output Current(A)	37	46
Rated voltage(V)	240	240
Operating voltage range(V)	180-270	180-270
Continuous power output(W)	@240V 8000	@240V 10000
Operating frequency (Hz)	50/60	50/60
Operating frequency range (Hz)	55-65	55-65
Phase shift	0.99@full load	0.99@full load
Reactive power adjust range	-0.8~+0.8 leading Adjustable	-0.8~+0.8 leading Adjustable
THDI	<3%	<3%
Sync inrush current(A)	35	35
EPS AC output data		
Nominal output current(A)	33.3	41.6
Nominal output voltage(V)	(240V) (120/240V) (120V/208V)	(240V) (120/240V) (120V/208V)
Continuous output power (VA)	8000	10000
Operating frequency (Hz)	60	60
Peak power (VA)	2xPn, 0.5s	2xPn, 0.5s
THDV	<3%	<3%
Switching Time (ms)	<20	<20
Efficiency		
Max. Efficiency @ PV to grid	97.5%	97.5%
Max. Efficiency @ battery to grid	94%	94%
CEC Efficiency	96.9%	96.9%

Battery data

Type	Lead-acid battery/Lithium battery/No Battery	Lead-acid battery/Lithium battery/No Battery
Max. charge current(A)	167	210
Max. discharge current(A)	167	210
Nominal voltage(V)	48	48
Voltage range(V)	48-56 Fortress Power Batteries	48-56 Fortress Power Batteries
Min-Max. voltage(V)	40-60	40-60

General Data

Integrated disconnect	DC switch	DC switch
Reverse polarity protection	Yes	Yes
DC switch rating for each MPPT	Yes	Yes
Output over-voltage protection varistor	Yes	Yes
Output over current protection	Yes	Yes
Ground fault monitoring	Yes	Yes
Grid monitoring	Yes	Yes
Pole sensitive leakage current Monitoring unit	Yes	Yes
AFCI	Yes	Yes
RSD	Yes	Yes
Dimensions(mm)	750*520*285mm (29.5*20.5*11.25 inch)	750*520*285mm (29.5*20.5*11.25 inch)
Weight(kg)	50kg(110 lbs)	50kg(110 lbs)
Degree of protection	NEMA4X / IP 65	NEMA4X / IP 65
Cooling concept	FAN	FAN
Topology	Transformer-less	Transformer-less
Relative humidity	0-100%	0-100%
Altitude(m)	<2000m	<2000m
Operating Temperature Range (℃)	-25~60℃,>45℃ Derating	-25~60℃,>45℃ Derating
Noise emission(dB)	<50dB	<50dB
Internal consumption (W	15	15
Display	Touch color screen	Touch color screen
Communication interface	Rs485/ Wi-Fi/ CAN	Rs485/ Wi-Fi/ CAN
Standard warranty	10 Years	10 Years

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

Useful Links
· Phone:
Tech Support (877) 497-6937
Tech Support (Spanish) (215) 710-8960

· Support Tickets: https://www.fortresspower.com/support/

· Warranty Submittal: https://www.fortresspower.com/warranty/

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