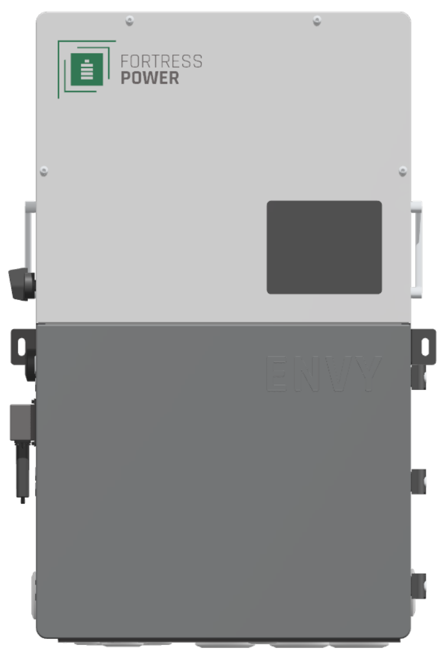
FORTRESS
POWER
Secure your energy

FP-ENVY-12KW

INSTALLATION/USER MANUAL

COMPLETE YOUR SOLUTION WITH FORTRESS POWER BATTERIES



System Design Tool
SCAN HERE

***Batteries are not Included**

Important*: Verify the system configuration before installing. A proper system design is required for warranty purposes. Improper system configuration will void the warranty."*

Table Of Contents

1. ABBREVIATIONS

A = Amperes

AC = Alternating Current

Ah = Amperes hour(s)

AWG = American Wire Gauge

BAT = Battery

BMS = Battery Management System

CAN = Controller Area Network

CC = Constant Current (Bulk)

CCV = Closed Circuit Voltage

°C = Degrees Celsius

CT = Current Transformer

CV = Constant Voltage (Absorption)

DC = Direct Current

ESS = Energy Storage System

EOL = End of Life

°F = Degrees Fahrenheit

HV = High Voltage

HVCO = High Voltage Cut-Off

I/O = Input or Output

ISC = Short Circuit Current

IP-Ingress Protection

in = Inches

lb. = Pounds

LED = Light Emitting Diode

LFCO = Low Voltage Cut-Off

LFP = Lithium Ferro Phosphate

LN1 = AC Line 1

LN2 = AC Line 2

LV = Low Voltage

m = Meters

mA = milliamperes

mV = millivolts

N = Neutral

NEC = National Electric Code

NEMA = The National Electrical Manufacturers Association

NFPA = National Fire Protection Association

NO = Normally Open

NC = Normally Closed

OCV = Open Loop Voltage

OSHA = Occupational Safety and Health Administration

OT = Over Temperature

OV = Over Voltage

PE = Protective Earth (Ground)

PV = Photovoltaic

R = Electrical Resistance (Ohms)

RS485 = Recommended Standard 485

SOC = State of Charge

SOC = State of Health

UT = Under Temperature

UV = Under Voltage

V = Voltage

VAC = Volts Alternating Current

VDC = Volts Direct Current

VPP = Virtual Power Plant

W = Watts (Power)

2. Change Log

VERSION	CHANGE DESCRIPTION
FP-12K-MV.11	• Inverter Includes a Battery Pinout Adapter • Knockout size and location • Added side and back Knockout holes • Added bottom lid for ease of wire accessibility and installation. Applicable using the eForce Battery, FlexTower Enclosure or any third party wireway manufacturer. • RSD installation configuration port change • UPDATED DATASHEET INFORMATION

3. SAFETY

3.1 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.

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.
- Inspect that connections are good between the inverter and PV, battery, and grid during installation to prevent damage or injuries caused by bad connections.

Important Safety Notifications

There are various safety issues that must be carefully conveyed prior to 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.

WARNING

Avoid Misoperation and Inappropriate Usage

- All the work of this product 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-connect 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 hot surfaces during inverter operation, the inverter and some parts of the system could be hot when working, please do not touch the inverter surface or most of the parts when they are working. During inverter working states, only the LCD and buttons could be touched.

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 a knowledge of the manual and other related documents. As the installer or operator, they are required to be familiar with local regulations and directives.

4. Introduction

4.1 About Fortress Power

Our mission is to provide compact, user-friendly, and affordable energy storage solutions using the latest technology for all homes and businesses. Fortress solar energy storage batteries can easily integrate with new and existing PV systems and work with a wide range of existing inverter and charge controller manufacturers for ease in system design.

Contact Information

Corporate Headquarter Address: 2010 Cabot Blvd West, STE L
Langhorne, PA 19047
United States

Website: www.fortresspower.com

Phone: US: (877) 497-6937
LATAM: (215) 710-8960

4.2 Warranty Support

Unless otherwise submitting a Fortress warranty through the Guardian hub, please submit your eForce 9.6 warranty here: https://fortresspower.com/warranty
Beyond this product manual, you may also find our inverter guides useful to system installation and commissioning: https://support.fortresspower.com/portal/en/kb/inverter-guides

Beyond that, please find additional resources within our Support Portal https://support.fortresspower.com/portal/en/kb

- Create a support ticket.
- Inverter Guides
- Product Manuals
- Firmware Updates
- Warranty Submittal
- System Design
- Application Notes
- Scheduled Meetings
- Accessories

4.3 System Solution

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

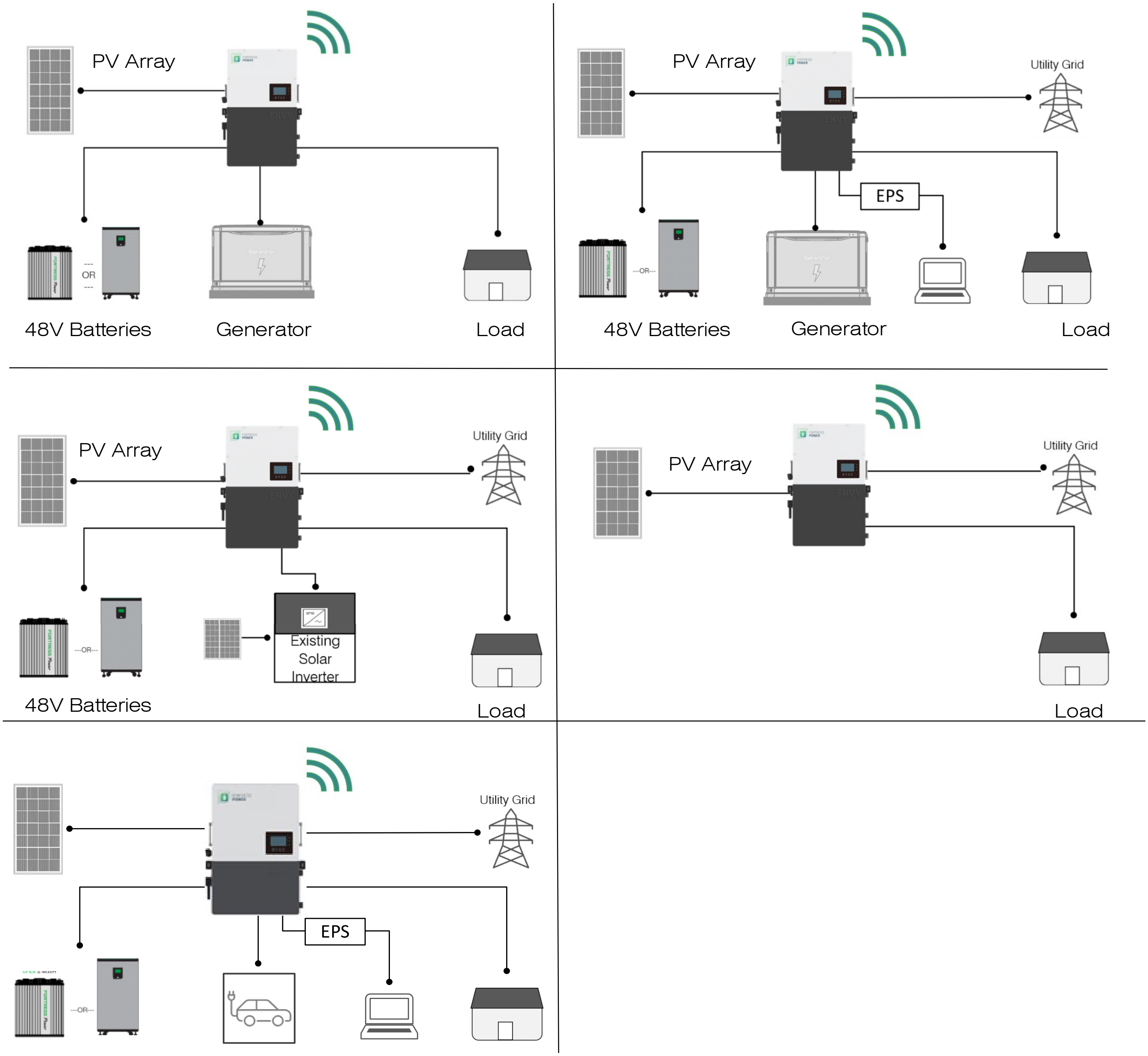


DIAGRAM NUMBER	APPLICATIONS
1	Off-Grid
2	On-Grid, Backup, Net-Metering, Zero-Export
3	AC Coupling, AC /DC COUPLING
4	No Battery
5	Smart Load

5. DATA SHEET

PV OUTPUT DATA	
NUMBER OF MPPT	3
INPUTS PER MPPT	2 strings on MPPT1/1 String on MPPT 3 /1 String on MPPT3
MAX. USABLE INPUT CURRENT(A)	25/15/15
MAX. SHORT CIRCUIT INPUT CURRENT(A)	31/19/19
START INPUT VOLTAGE(V)	100
FULL POWER MPPT VOLTAGE RANGE(V)	230-500
DC NOMINAL VOLTAGE(V) MPPT TRACKER	360
DC VOLTAGE RANGE(V)	100-600
MPPT OPERATING VOLTAGE RANGE(V)	124-500
MAX. POWER(W)	18000
AC GRID OUTPUT DATA	
NOMINAL OUTPUT CURRENT(A)	50
MAX. OUTPUT CURRENT(A)	50
RATED VOLTAGE(V)	120/240V, 120/208V
OPERATING VOLTAGE RANGE(V)	180-270
CONTINUOUS POWER OUTPUT(W)	12000@240V, 10400@208V
OPERATING FREQUENCY (HZ)	50/60
OPERATING FREQUENCY RANGE (HZ)	55-65
POWER FACTOR	0.99@full load
REACTIVE POWER ADJUST RANGE	-0.8~+0.8 leading Adjustable
THDI	<3%
SYNC INRUSH CURRENT(A)	35
BACKUP OUTPUT DATA	
NOMINAL OUTPUT CURRENT(A)	50
NOMINAL OUTPUT VOLTAGE(V)	(120/240V), (120/208V)
CONTINUOUS OUTPUT POWER (VA)	12000@240V, 10400@208V
OPERATING FREQUENCY (HZ)	60
PEAK POWER (VA)	2xPn, 0.5s
THDV	<3%
SWITCHING TIME (MS)	<20
EFFICIENCY	
MAX. EFFICIENCY PV TO GRID	97.5%
MAX. EFFICIENCY BATTERY TO GRID	94%
CEC EFFICIENCY	96.9%
BATTERY DATA	
TYPE	Lithium battery/ No Battery
MAX. CHARGE CURRENT(A)	250
MAX. DISCHARGE CURRENT(A)	250
NOMINAL VOLTAGE(V)	48
VOLTAGE RANGE(V)	40-60
MIN-MAX. VOLTAGE(V)	40-60
SAFETY	
PV REVERSE POLARITY PROTECTION	
DC SWITCH FOR EACH MPPT	
OUTPUT OVER-VOLTAGE PROTECTION VARISTOR	

OUTPUT OVER CURRENT PROTECTION		
PV GROUND FAULT MONITORING		
GRID MONITORING		
POLE SENSITIVE LEAKAGE CURRENT MONITORING UNIT		
AFCI		
RSD		
SURGE PROTECTION DEVICE (SPD): TYPE II DC PV , TYPE III AC		
REGULATION COMPLAINT AND CERTIFICATIONS		
RULE 21 PHASE I, II, III		
HAWAII RULE 14H & HECO SRD-IEEE-1547.1:2020 ED.2		
IEEE 1547.1: 2020: IEEE 1547: 2018		
LUMA PR		
UL1741B		
UL1741: 2021 ED3 PCS CRD		
UL9540 (EFLEX, EVAULT MAX)		
CSA C22.2#107.1		
CSA C22.2#330		
FCC PART 15, CLASS B		
GENERAL DATA		
PARALLELING CAPABILIY		Up to 10 units (120kW)
DIMENSIONS		34.2*20.5*11.2inch (870*520*285mm)
WEIGHT		121.25 lbs (55kg)
DEGREE OF PROTECTION		NEMA4X / IP65
COOLING CONCEPT		Smart Cooling Fans
TOPOLOGY		High Frequency Transformer-less
RELATIVE HUMIDITY		0-100%
ALTITUDE(M)		<6561ft. (<2000m)
OPERATING TEMPERATURE RANGE (℃)		-25~60℃,>45℃ Derating
NOISE EMISSION(DB)		<67dB
IDLE CONSUMPTION AVG, W		70W
DISPLAY		Touch color screen
COMMUNICATION INTERFACE		Rs485/ Wi-Fi/ CAN
STANDARD WARRANTY		10 Years
ALTITUDE LIMITATION PERFORMANCE *ALTITUDE LIMITATION PERFORMANCE INCLUDE MAX CHARGING, DISCHARGING, ACTIVE POWER AND BACKUP OUTPUT KW	0-2000M	12kW
	2000-3000M	10.2kW
	3000-4000M	8.4kW
	>4000M	Not allowable

6. Unboxing


1
FORTRESS POWER
2
3
4
5
FORTRESS POWER
INSTALLATION/USER MANUAL
COMPLETE YOUR SOLUTION WITH FORTRESS POWER BATTERIES
FP-ENVY-12KW
6
7
8
9
10
11
12
13
14
15
COM
GEN
PV INPUT
BAT INPUT
LOAD
GRID
Envy-12K

PART NUMBER	PART NAME	QUANTITY
1	Envy Inverter with Caps	1
2	Wall Mount Bracket	1
3	L-shaped Brace	2
4	Battery RJ45 Adapter	1
5	Installation/ User Manual	1
6	Current Transformer (CT)	2 (connected by one cable)
7	Dongle	1
8	Battery To Inverter COMM Cable & Inverter to Inverter Communication Cable	2
9	Cabinet Keys	3
10	RJ45 Terminals	4
11	Mounting Screw for Wooden Platform	6 each
12	Expansion Screw	6 each
13	Cross Head screws for L-Shaped Brace	4
14	Cross Head Screws for Dongle	4
15	Knockout Hole Template	

7. Requirements

7.1 Breaker Requirements

***Please include the following recommended breakers for each system connection in accordance with the local jurisdiction. Battery breakers and Load breakers are already integrated into the Envy inverter.**

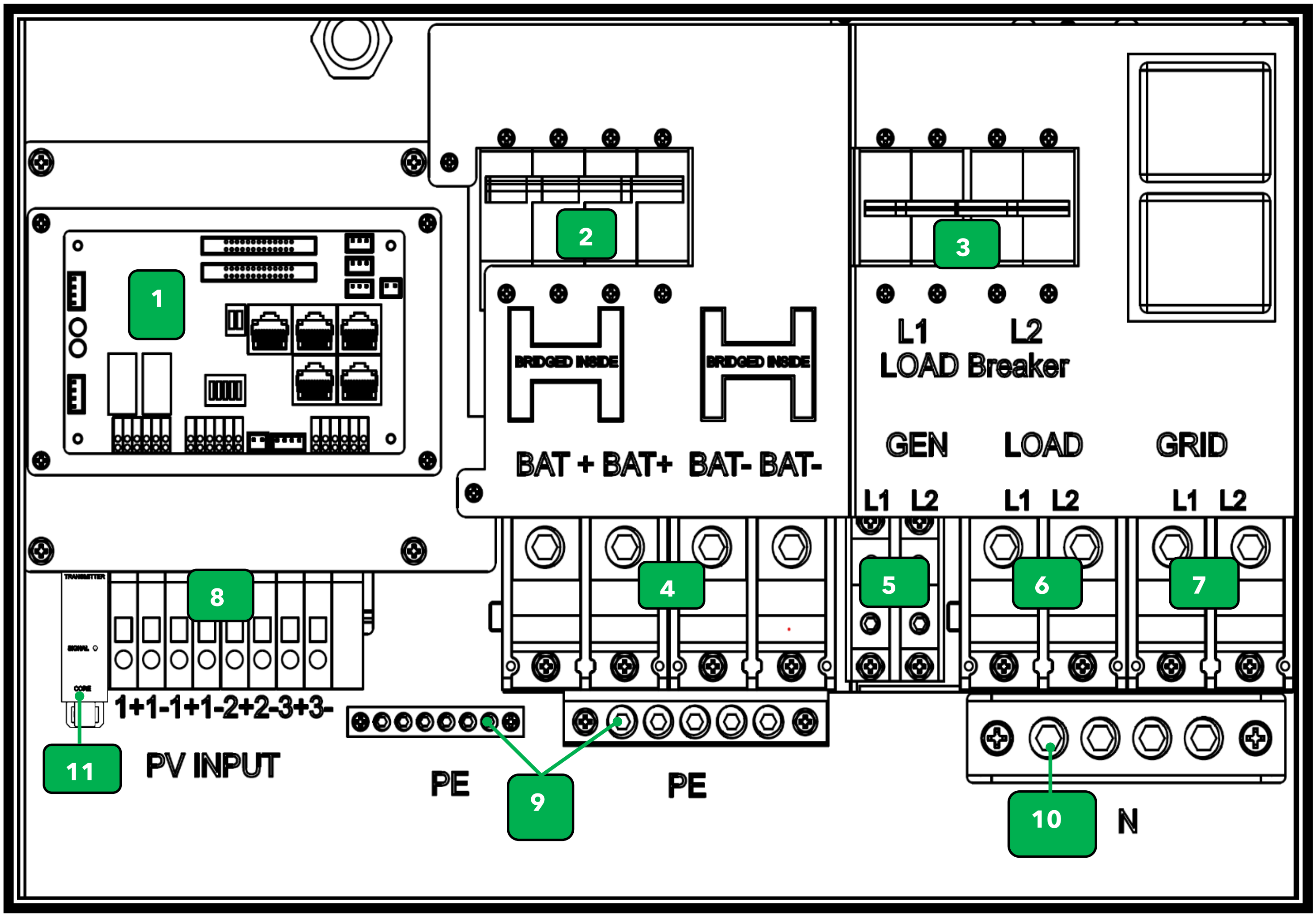
INVERTER MODEL	**12K**
REQUIRED	
*PV FUSE BREAKERS (1 POLE) (OPTIONAL)	MPPT1 string 1: 600V/20Adc MPPT1 string 2: 600V/20Adc. MPPT2: 600V/20Adc MPPT3: 600V/20Adc
GRID BREAKER (2 POLE)	200Aac when Whole Home AC Passthrough and or Whole Home Backup. 100Aac when Whole Home AC Passthrough and or Whole Home Backup 63Aac when EPS are used for Partial Backup.
GENERATOR OR AC COUPLING (2 POLE)	Up to 90Aac
INCLUDED	
OAD BREAKER (2 POLE)	1 qty 200Aac
BATTERY BREAKER	2 qty 200Adc

7.2 Cable and Torque Requirements

SECTION	**CABLE GAUGE (AWG)**	**MINIMUM VOLTAGE (V)**	**TORQUE (N.M)**	**LENGTH OF CABLE INSULATION REMOVAL**	**TERMINAL TYPE**
GRID INPUT					
WHOLE HOME 100AMP AC PASSTHROUGH	3-2	600	5	5/16-3/8 in (8~10mm)	Included Mechanical Lug, Requires Allen 5/16 SAE
WHOLE HOME 200AMP AC PASSTHROUGH	2/0-3/0	600	9-18	5/16-3/8 in (8~10mm)	Included Mechanical Lug, Requires Allen 5/16 SAE
PARTIAL BACKUP	6-3/0	600	9-18	5/16-3/8 in (8~10mm)	Included Mechanical Lug, Requires Allen 5/16 SAE
LOAD OUTPUT					
INTEGRATED BREAKER 200AAC/240VAC	2/0-3/0	600	14	5/16-3/8 in (8~10mm)	Included Mechanical Lug, Requires Allen 5/16 SAE
BATTERY CABLE					
INTEGRATED BREAKER 200ADC	1/0-3/0	600	9-18	1/4-5/16 in (6-8mm)	Included Mechanical Lug, Requires Allen 5/16 SAE
GENERATOR CABLE					
UP TO 90A PORT	Up to 3	600	9	5/16-3/8inch(8~10mm)	Included Mechanical Lug, Requires Allen 5/16 SAE
PV CABLE					
PV INPUT	10-6	600	N/A	1/4-5/16 in (6~8mm)	Spring Clamp

Note: Cable gauge also will depend on connection distance

8. Inside the Envy Wire Cabinet

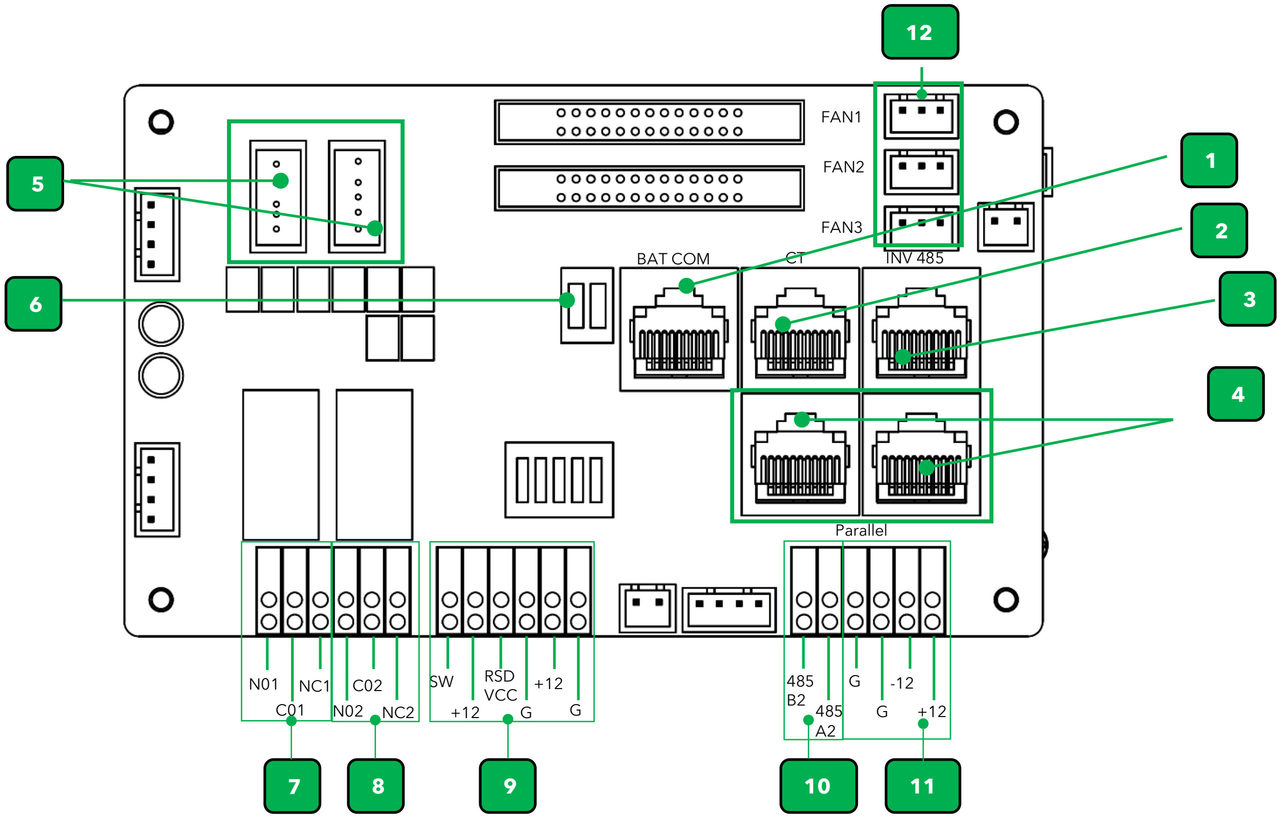


Do not use an impact driver to tighten or loosen fastener on any of the Envy port connections.

8.1 Connection Ports

AREA	DESCRIPTION
1	Communications Boards
2	2x 200A Battery Breakers included
3	200A Load Breaker included
4	Battery Connection Ports (Bridged)
5	Generator Connection Port (up to 90A) (AC Coupling Up to 12kW)
6	Load Connection Port
7	Grid Connection Port (Up to 200A)
8	PV Input Connection
9	Protective Earth or Ground Connection Bars
10	Neutral Connection Bar
11	Apsmart Transmitter (SUNSPEC Compliant)

8.2 Communication Board Ports Definition

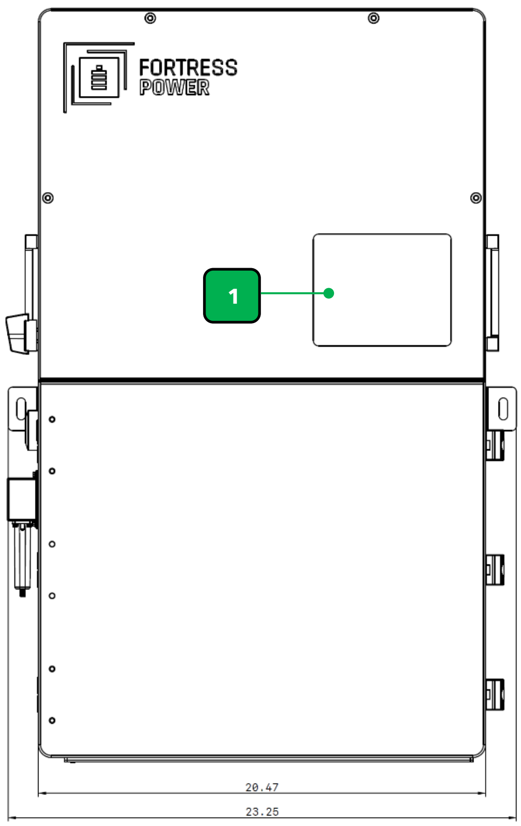


PORT	DESCRIPTION
1	Battery communication Port (CAN&RS485)
2	CT Port
3	INV 485: External Monitoring and Debugging port
4	Parallel communication port
5	LCD update Port via USB thumb drive. (Max 8gb) Format Fat 32
6	CAN Matching resistance: Set DIP switch when use inverters in parallel
7	GEN (NO, NC): Connection for generator auto-start function 250Vac/30Vdc/5A
8	NO2, NC2) Reserved as a secondary Dry Contact for multiple use cases. Available soon
9	Rapid Shut Down Connections
10	External Current Meter Sensor port. It Cannot be used In combination with included CT
11	12Vdc: Reserved for customer to use, Max 500mA. **Note, only use port +12V and G**
12	Fan Connection Port

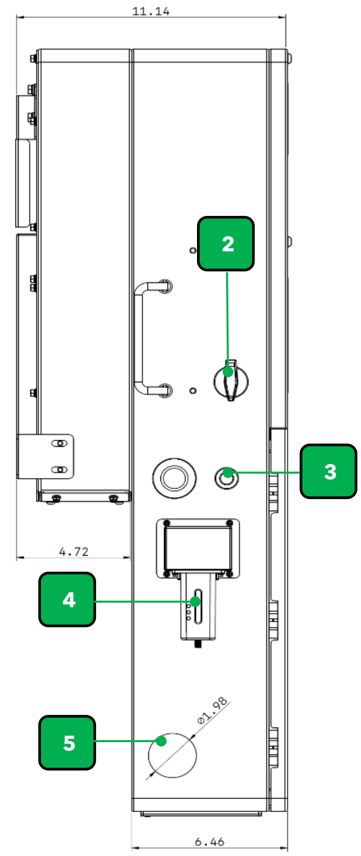
9. Envy Dimensions

9.1 Enclosure Specifications

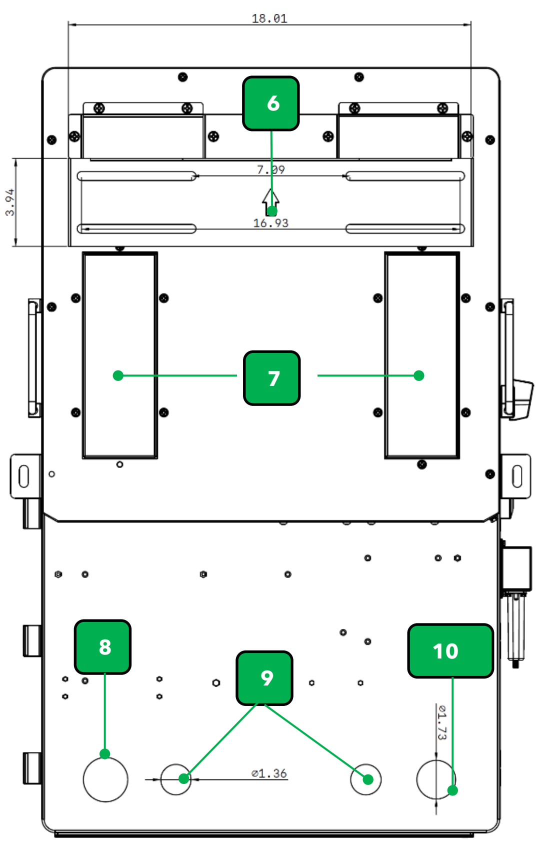
Front View



Left View

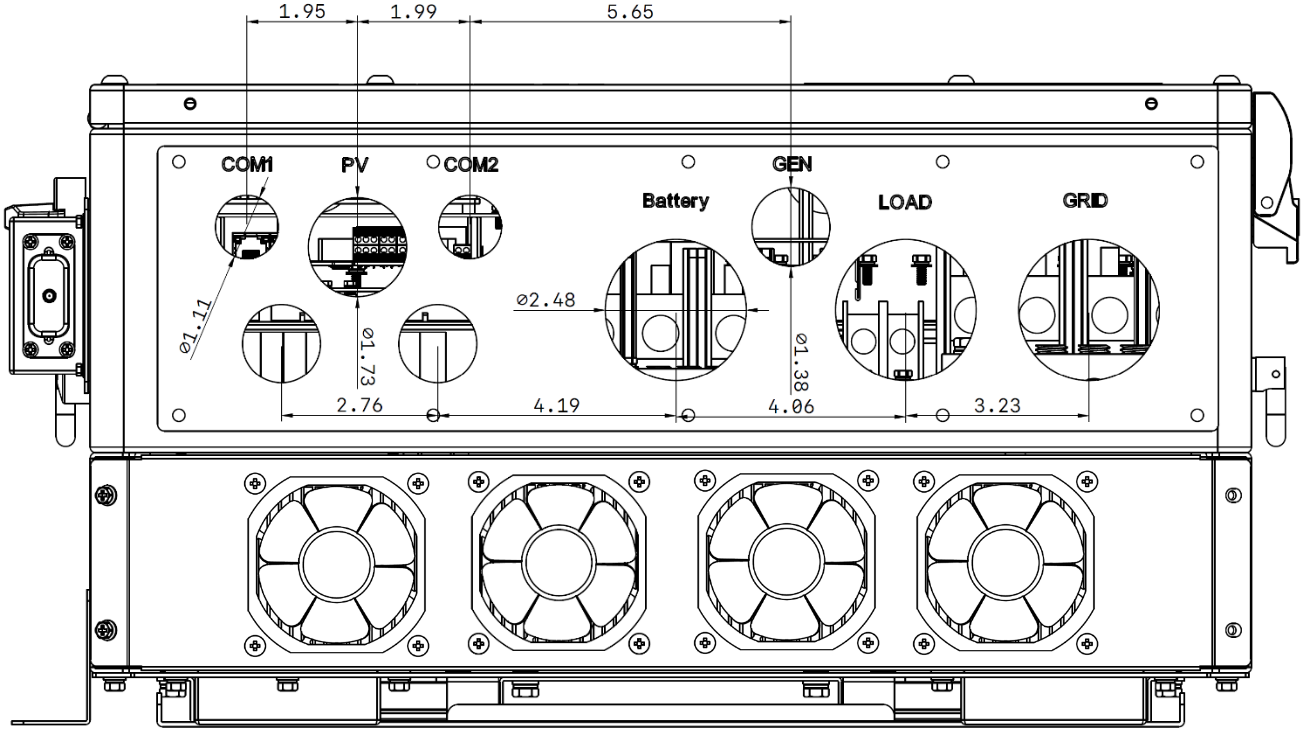


Back View



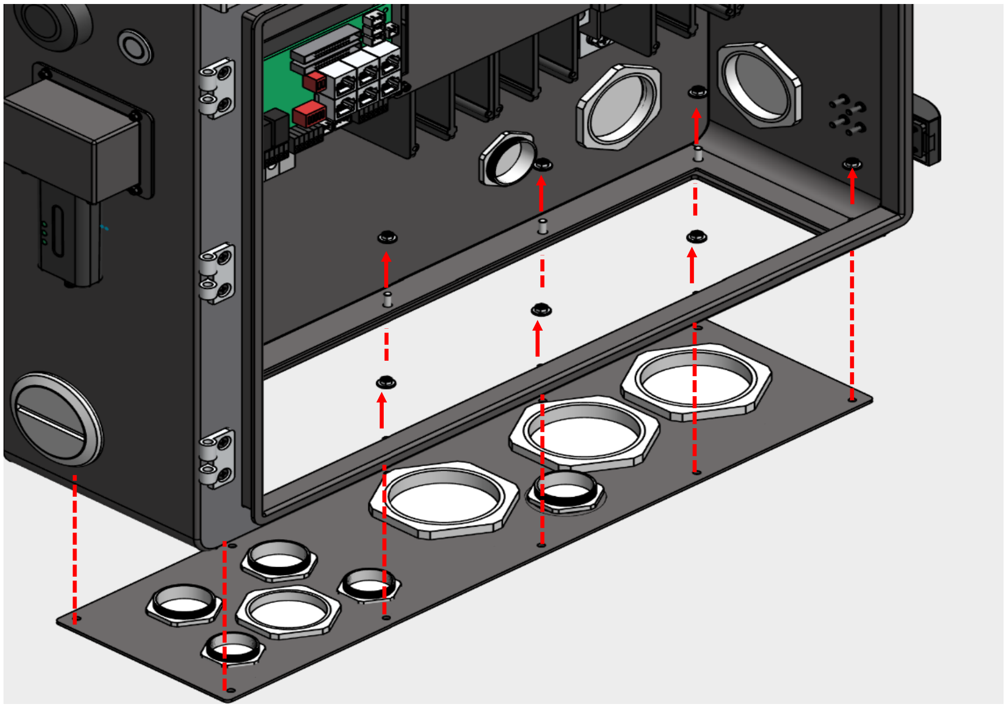
AREA	DESCRIPTION
1	Touch LCD
2	PV Switch
3	RSD STOP Push button
4	Dongle Connection Port and Dongle
5	Side knockout Hole for 1 ½ inch conduit
6	Leveling Wall Support
7	Bracket Support
8	Back side knockout hole for 1 ½ in. conduit
9	Back side knockout hole for 1in. conduit
10	Back side knockout hole for 1 ¼ in. conduit

9.2 Knockout Port Dimensions



The holes are labeled for a type of function only as guidance. You may the hole for other modular functions

HOLE DESCRIPTION	WHOLE SIZE (INCHES)	STANDARD CONDUIT SIZE NEEDED (INCHES)
COM 1& 2	1.11	¾
GEN	1.38	1
PV	1.73	1 ¼
BATTERY, LOAD, GRID	2.48	2



Referring to the provided drawing, the knockout section of the ENVY 12Kw inverter has been redesigned to be removable, facilitating a more straightforward installation process. The detachable bottom panel can be used as a template for marking knockout holes or a rectangular opening on your wireway to guide cutting.

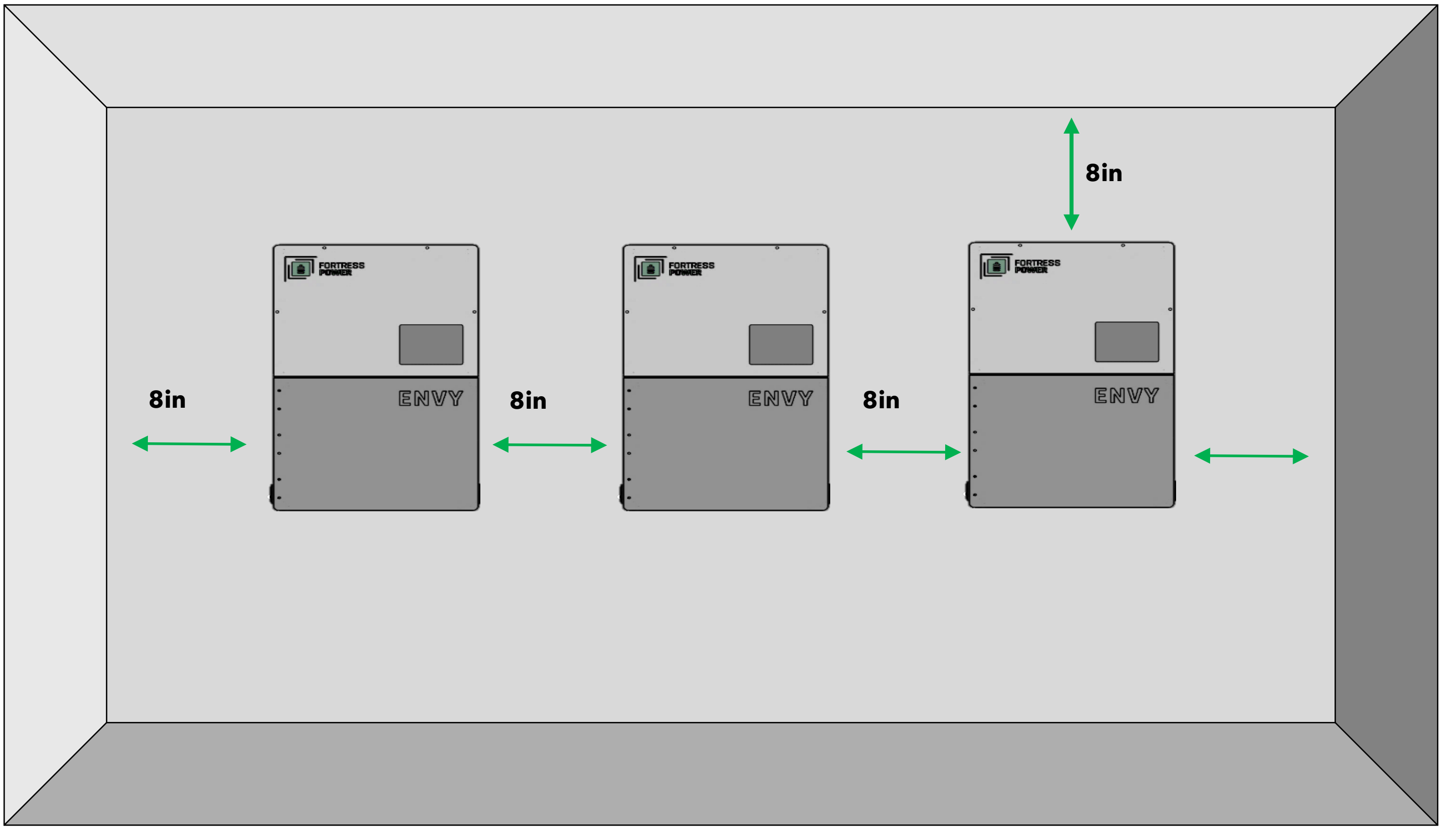
Please note that if the installation involves an outdoor setting do not create rectangular openings in the wireway but rather use the conduit that leads into the knockout hole section of the Envy.

10. Installation

10.1 Mechanical Installation

10.1.1 Spacing Requirements

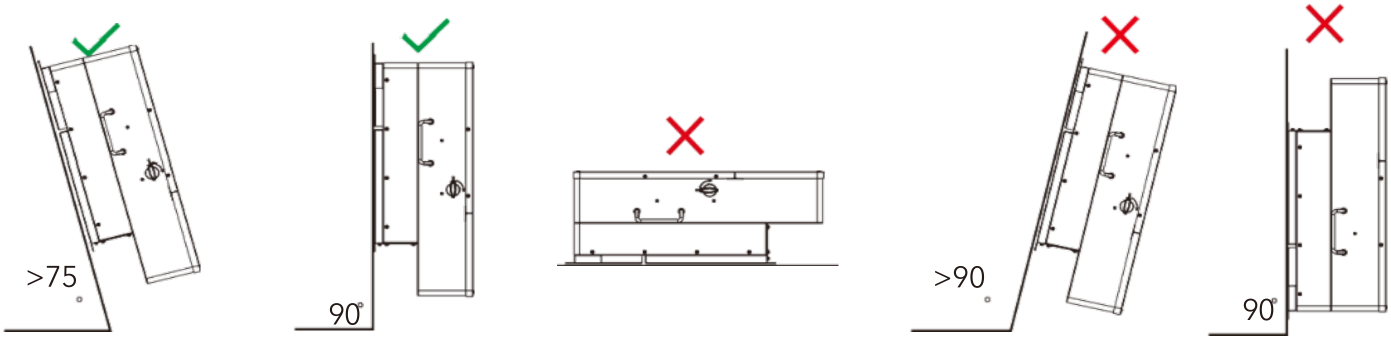
Please maintain the minimum clearances when using multiple inverters in parallel as presented below for adequate heat dissipation. Other electrical accessories such as the ENVY distribution Panel (EDP) may be mounted with a minimum 2-inch clearance on either side of the inverter. A wireway, cabinet, EDP or any sort of equipment can be mounted below the inverter's cabinet knockout section but not behind it to avoid obstructing the airflow from inverter's fans.



10.1.2 Location and Orientation

The inverter is allowed to be installed outdoors if it is within 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, and 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. **Consider Using Fortress Power Enclosure to mitigate extreme weather conditions.**

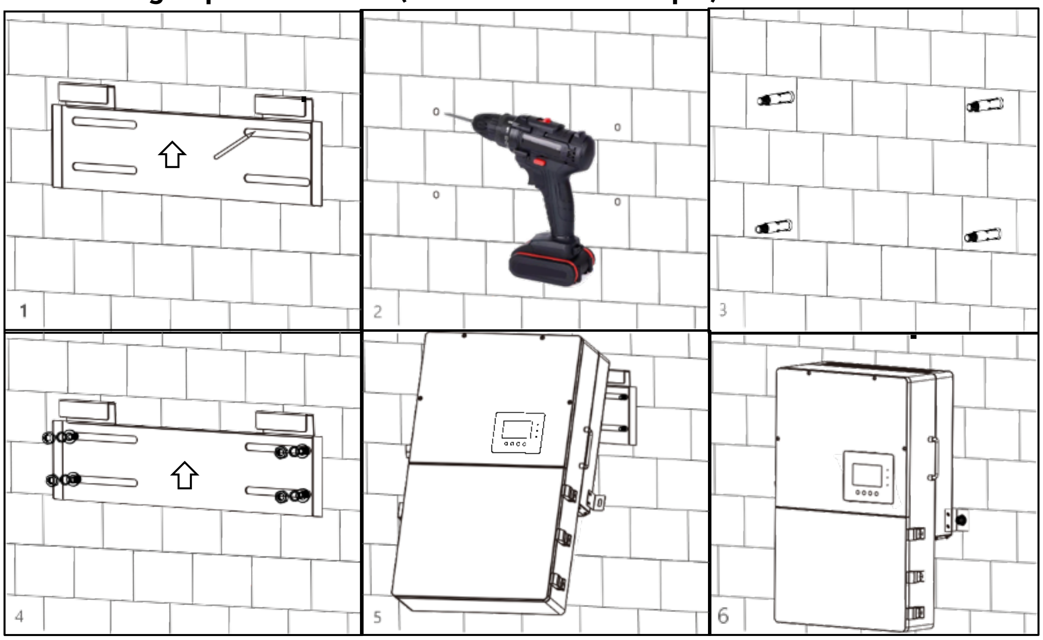
a) The inverter should be installed upright on a vertical surface.



10.1.3 Wall mounting the Envy

The mounting wall should be strong enough to bear the weight of the inverter.
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.
6. 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.

11. Electrical Installation

11.1 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). The inverter has three MPPTs. For MPPT1, users can connect two strings. For MPPT2 and MPPT3, users can connect one string. All three MPPTs work independently. All these strings are to be connected directly to the Inverter.

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.

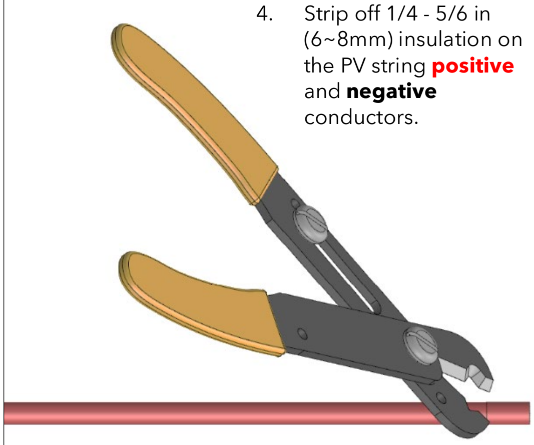
Over voltage will damage the inverter. Do not use a PV combiner. Using a PV combiner may affect or cause permanent damage to the inverter. Do not use a PV combiner as this may cause damage to the inverter.

When users connect 2 strings to MPPT1, make sure the two strings have the same quantity of solar panels. The inverter will limit the total MPPT1/MPPT2/MPPT3 input current to 25A/15A/15A automatically. The inverter will limit the max solar input power to 18kW in total. It is optional to Protect the MPPT inputs by installing 20-amp fuse breakers

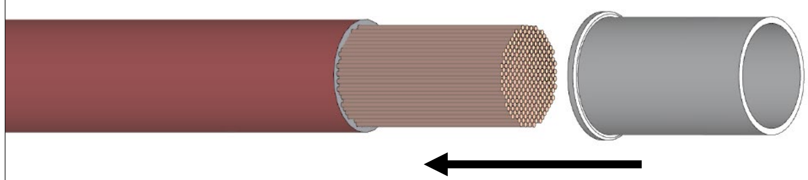
PV CABLE SIZE	MINIMUM VOLTAGE RATING
10-6AWG (DEPENDENT ON PV CURRENT)	600V

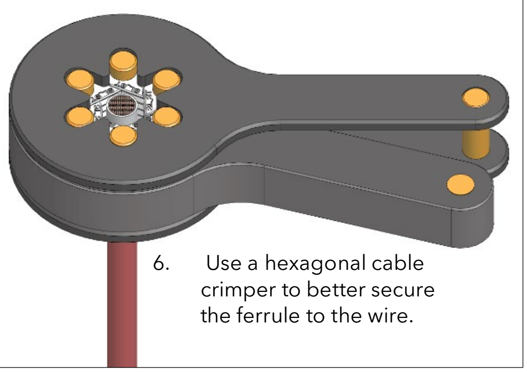
PV Connection Procedure
1. Take appropriate measures to ensure that the conduit and conduit fittings are fastened reliably and seal the cable entry holes.
2. Insert the conduit fitting into the opening for PV connection and tighten it from the inside using the counter nut.
3. Route the PV conductors through the conduit fitting and into the inverter.

4. Strip off 1/4 - 5/6 in (6~8mm) insulation on the PV string **positive** and **negative** conductors.

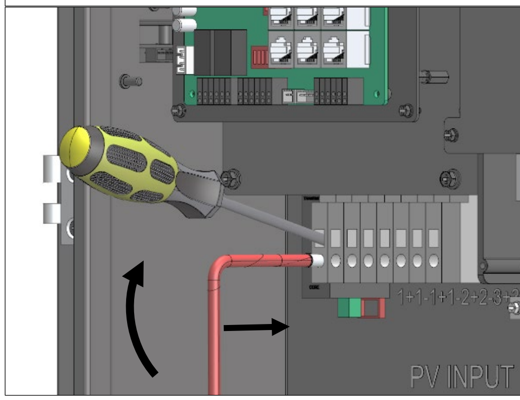


5. Use wire ferrules for PV string conductors if they are stranded wire type.





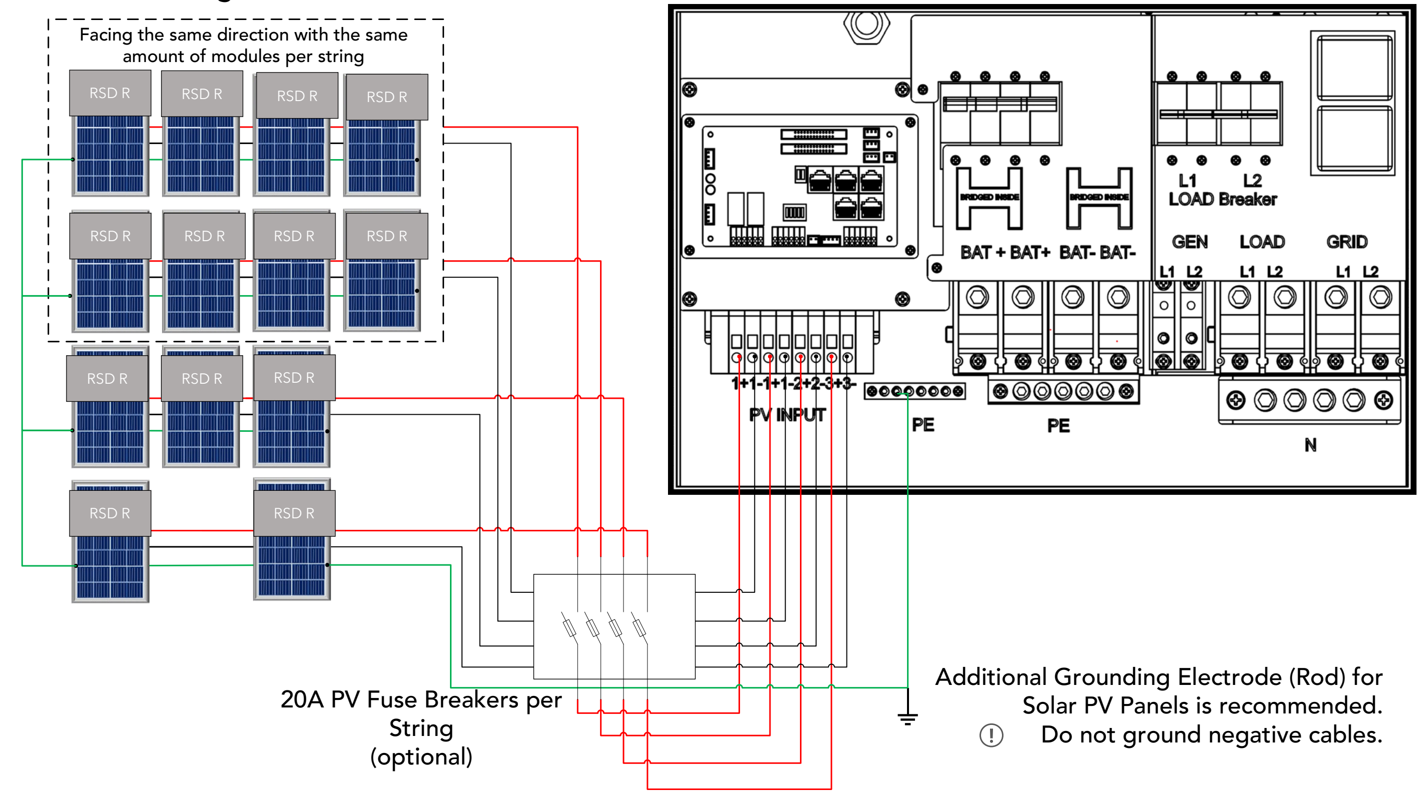
6. Use a hexagonal cable crimper to better secure the ferrule to the wire.



7. Use a flat head screwdriver and insert it on the square part of the PV input ports. Carefully push and lever up while simultaneously inserting the ferruled cable into the circular port. Ensure that the cables are connected correctly and securely by slightly pulling the cables.

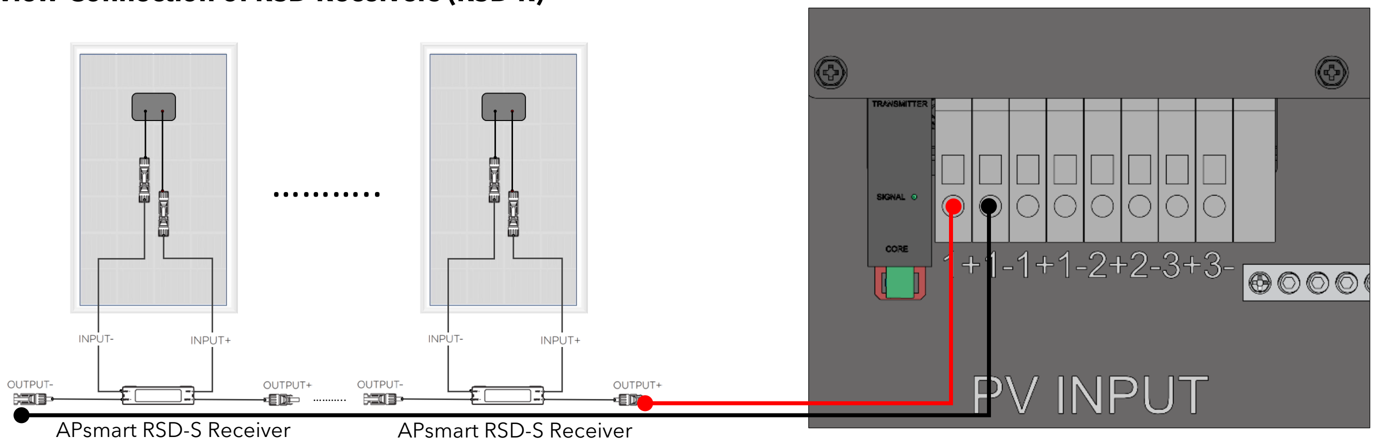
Improper connections may result in creating a hotspot or arcing point on the PV ports, damage the inverter and/or cause fire. Please double check that there are no loose fine stranded wires

PV Connection Diagram



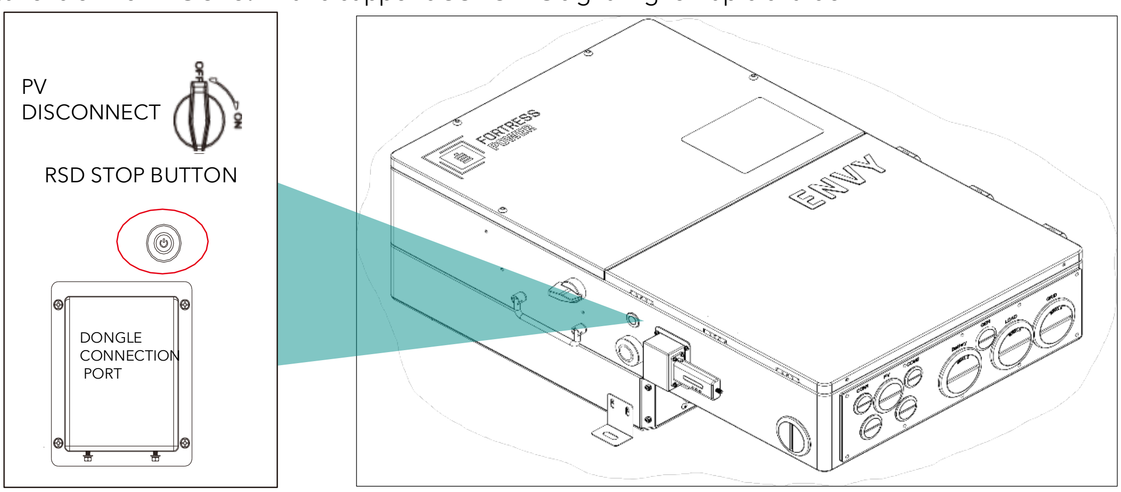
11.1.1 Rapid Shut Down (RSD)

Overview Connection of RSD Receivers (RSD R)



The Envy Inverter already includes an **APsmart Rapid Shutdown Transmitter** located to the left of the PV INPUT ports. 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- receivers, 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 receivers 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 the RSD power supply, causing the inverter to shut down the AC output, and reducing the voltage of the PV conductor to below **30V** within a timeframe of **30 seconds.**



****Rapid Shut Down will be mandated depending on your jurisdiction.**

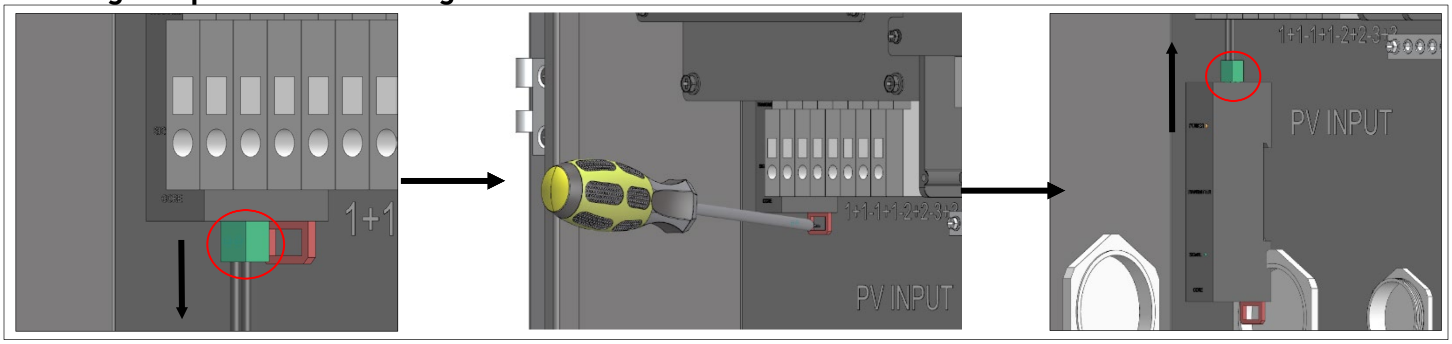
The APsmart Transmitter is connected to the inverter's internal 12V power supply. The output current limit is 1A (12W). **Do not exceed this limit as this may cause damage to the inverter. You may retrofit a Tigo Transmitter by simply disconnecting the 12V supply from the Apsmart Transmitter as shown in the picture below.**

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

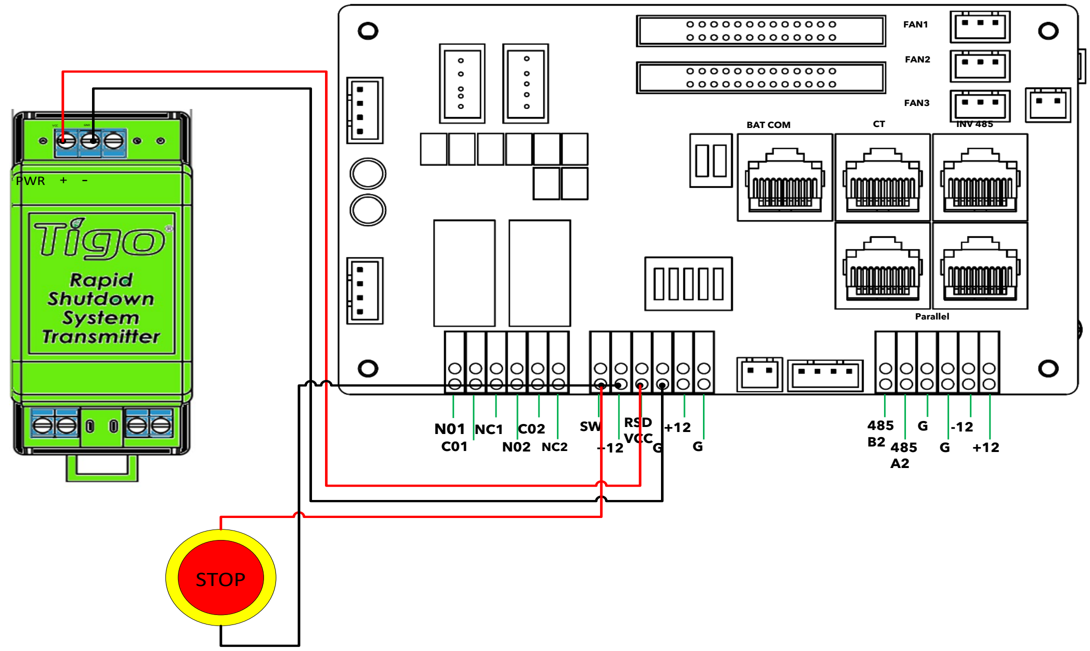
Retrofitting Tigo Products

When using TIGO products, remove the internal Apsmart Transmitter. Otherwise, PV will remain energized after RSD has been initiated.

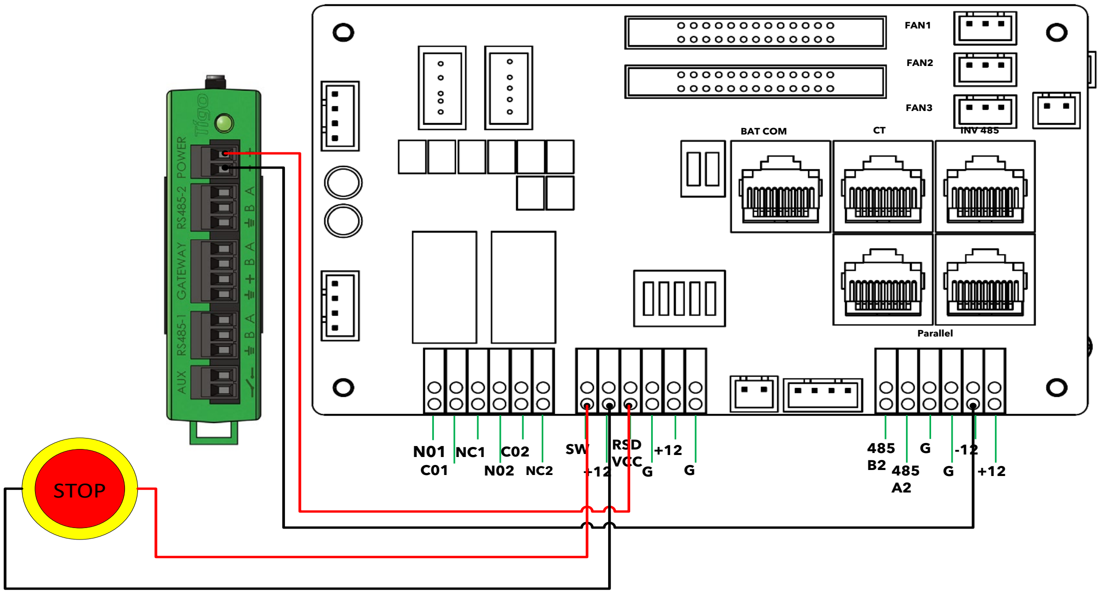
Removing the Apsmart Transmitter Tigo 12V Transmitter



Tigo Transmitter Connection



Cloud Connect Connection

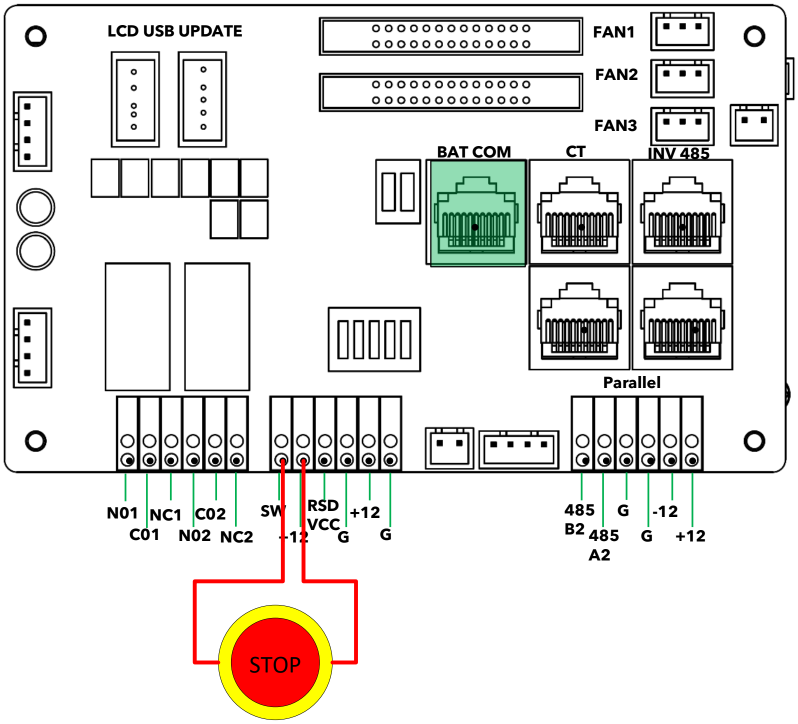


11.1.2 External RSD emergency Switch

The following images will describe the connection location of an added **normally closed** emergency switch for both standalone and paralleled inverters for external purposes. This device should be installed in an area that is accessible to first responders.

Standalone external RSD Button wiring instructions.

Connect a normally closed button to the SW and+12 port. If rapid shutdown is not required, then leave the included jumper.



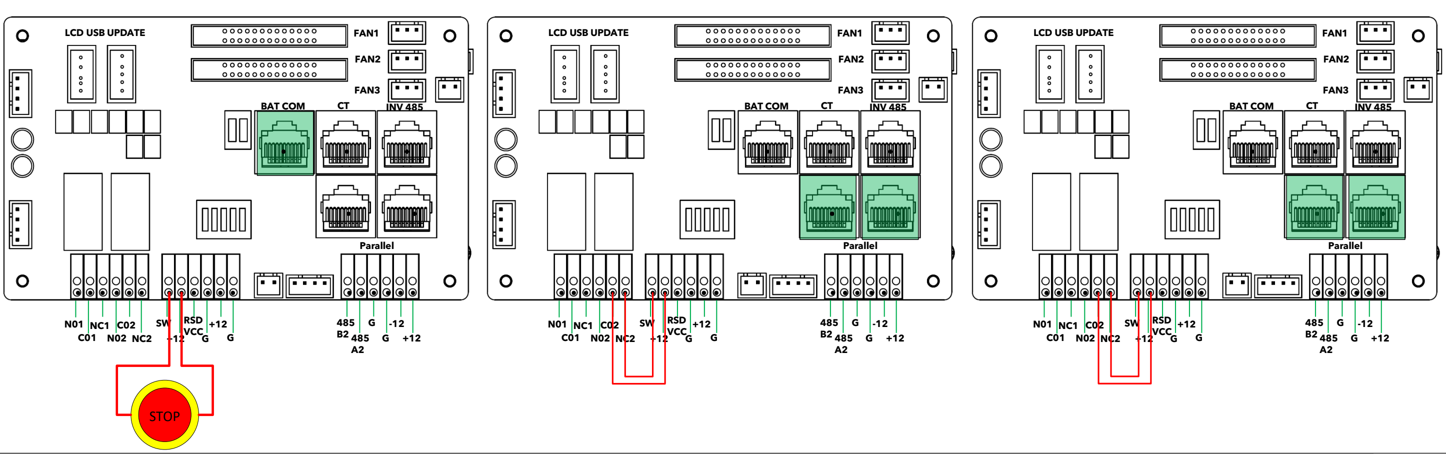
For Multiple inverters in parallel

RECOMMENDED JUMPER CABLE SIZE

22-14 AWG

When parallel multiple inverters RSD function insure to install 2 short jumper cables on all the secondary inverters. Due so on the following ports.

FROM	TO
CO2 PORT	+12 port
NC2	SW



11.2 Battery Connection

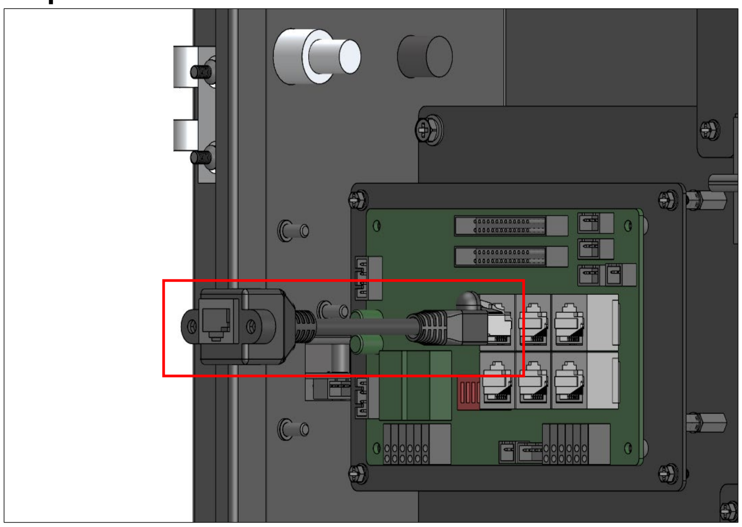
All batteries must be installed as a single battery bank when parallel multiple inverters unless you use the **Do not share battery** feature

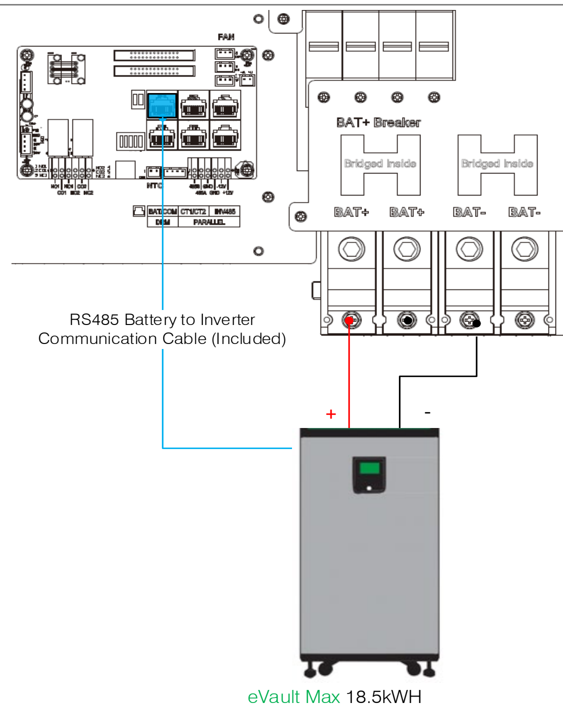
11.2.1 Connection requirements:

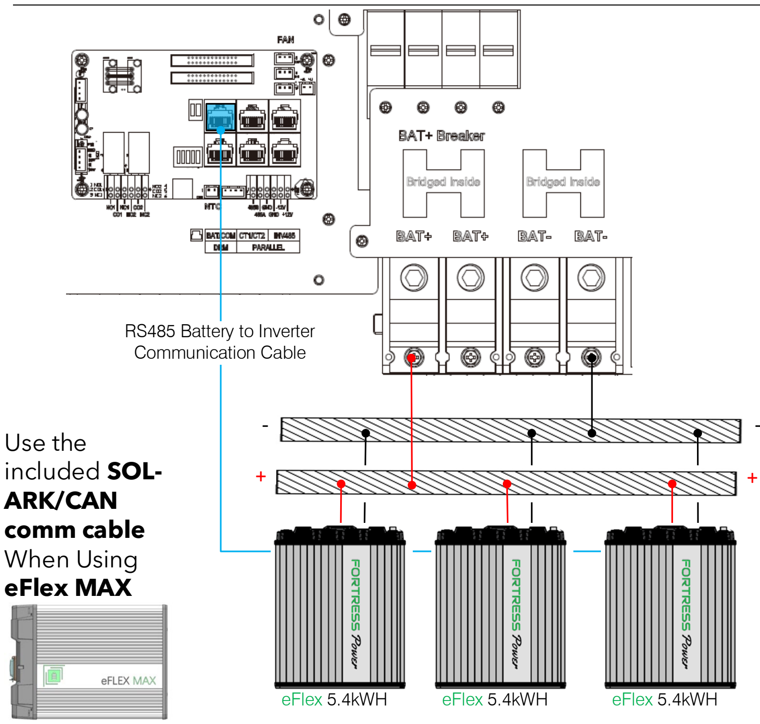
1. Strip 1/4-5/16inch(6-8mm) insulation from the cable end and crimp a ferrule to the cable ends.
2. Route the battery power cable, connect positive to BAT+, negative to BAT-.
3. Secure the conduit fitting to the enclosure using the lock nut.
4. Fasten the battery positive and negative crimped cables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

For best practice, install a Copper Busbar when paralleling more than two lithium batteries. The internal Envy's internal Battery Busbar is bridged to provide the full 250A charge and discharge capability of the Envy 12k in any of the two ports.

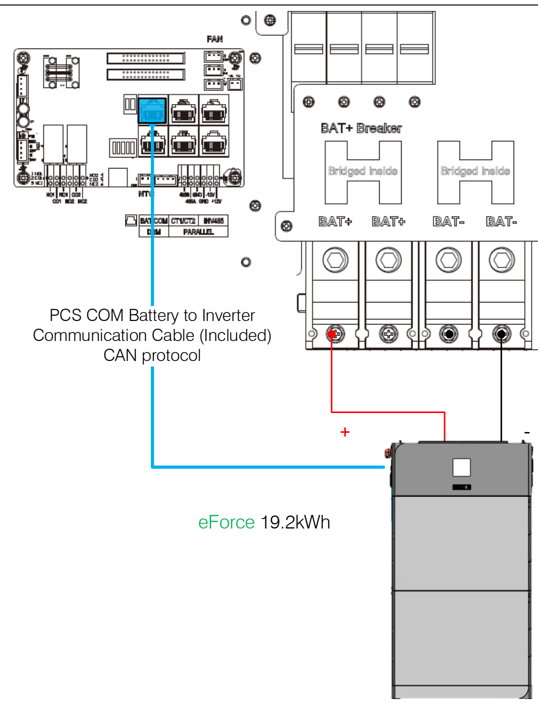
Connect the included adapter to the BAT COM port **ONLY when using RS485**. Then connect the cable with the side labeled **battery** to the battery and **inverter side** to the **Battery Comm Adapter.**



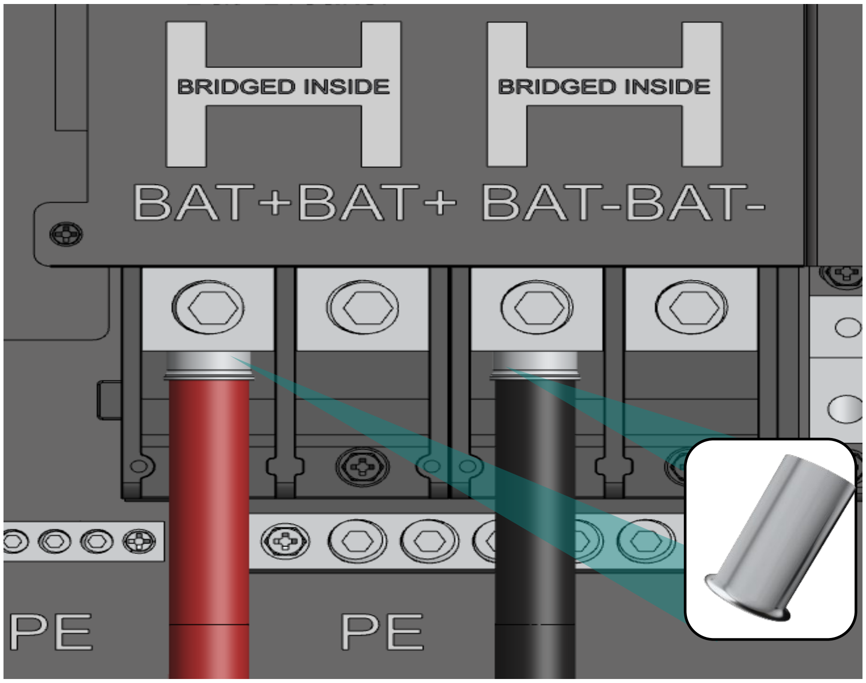




Use the included **SOL-ARK/CAN comm cable** When Using **eFlex MAX**



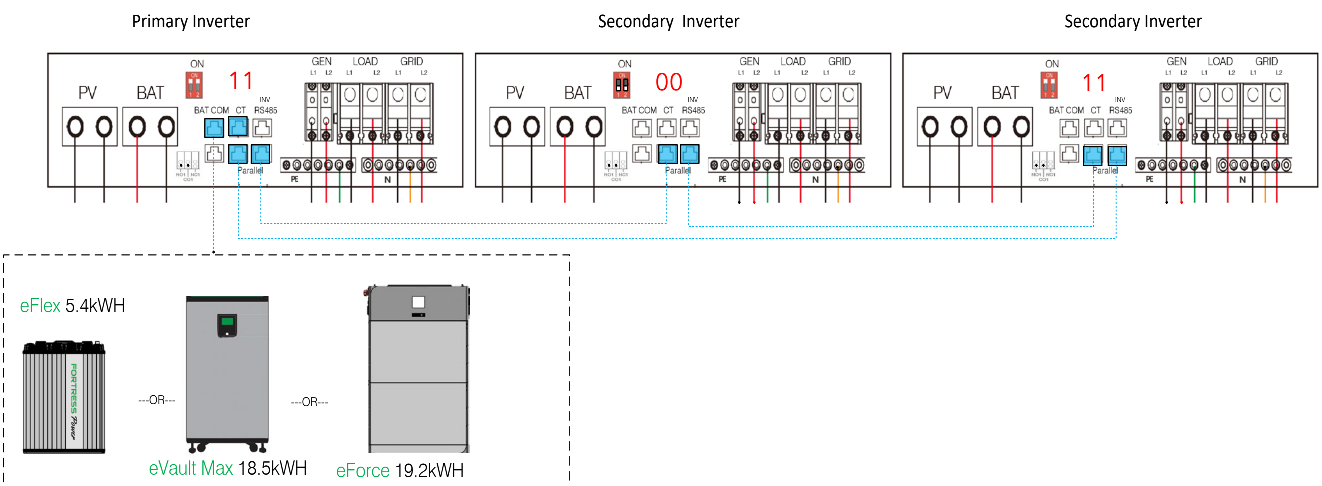
Reverse Polarity may damage the inverter. Do not make connections with battery breaker on or battery energized



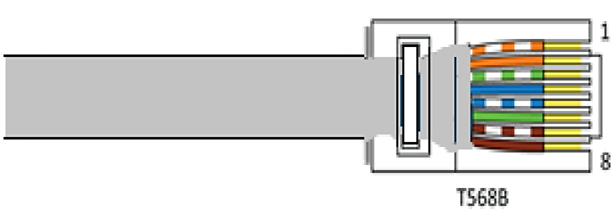
The battery communication port on inverter is an Rj45 socket, Pin for the RJ45 plug of the communication cable is as below. If there is a need to make a longer cable use the inverter pinout according to the table below. The inverter supports both CAN and RS485 communication. Use the communication cable included in the Envy Inverter packaging when using **eFlex 5.4kWh or eForce 9.6kWh** batteries. Use the communication cable included in the **eVault Max 18.5kWh** packaging to establish batteries-inverter communication.

11.2.2 Paralleling Multiple Inverters

Use the **Communication Cables** included in the Envy Inverter along with those of the eFlex5.4kWh, eVault Max 18.5kWh or eForce 9.6kW battery - Envy paralleling communication cables. 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 or CAN. Connect the communication cable to the BAT COM port. Proceed to the Advanced Section under the LCD programming segment to finish paralleling process.



11.2.3 Envy Battery communication port Pinout

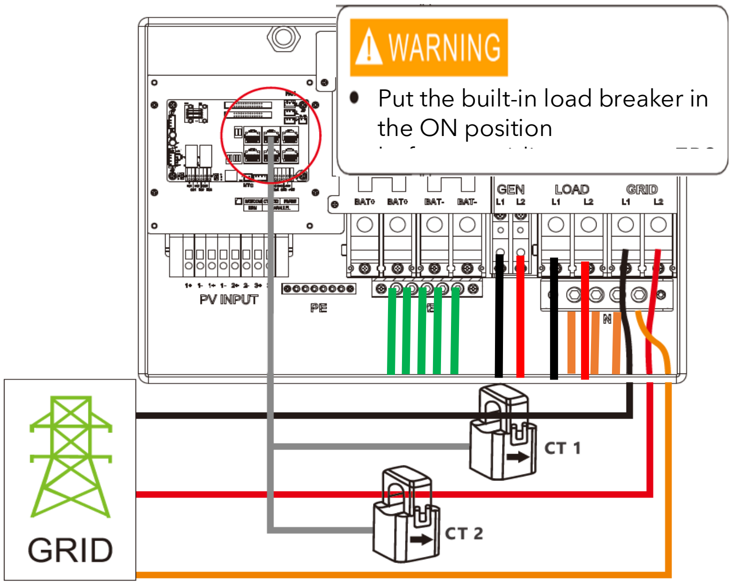


PIN	DESCRIPTION
1	BAT RS485 B
2	BAT RS485 A
3	NC
4	BAT CAN H
5	BAT CAN L
6	NC
7	NC
8	NC

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.

11.3 AC Connection

11.3.1 Grid connection

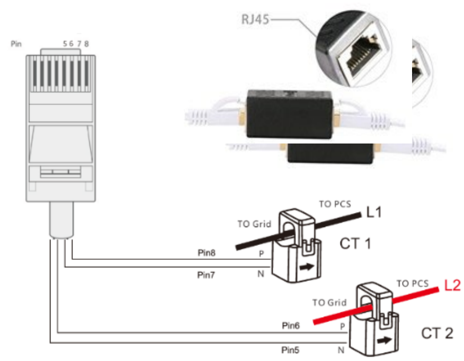


a. Strip off 5/16-3/8inch(8~10mm) insulation sleeve on the cables.
b. Use wire ferrules if the cables are made of fine stranded wires.
c. Secure the conduit fitting to the enclosure using the counter nut of the fitting.
d. Fasten the grid and EPS load cables to the terminal block in accordance with the 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.

11.3.2 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 on 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.

CT Clamp Cable Extender (Not Included)
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

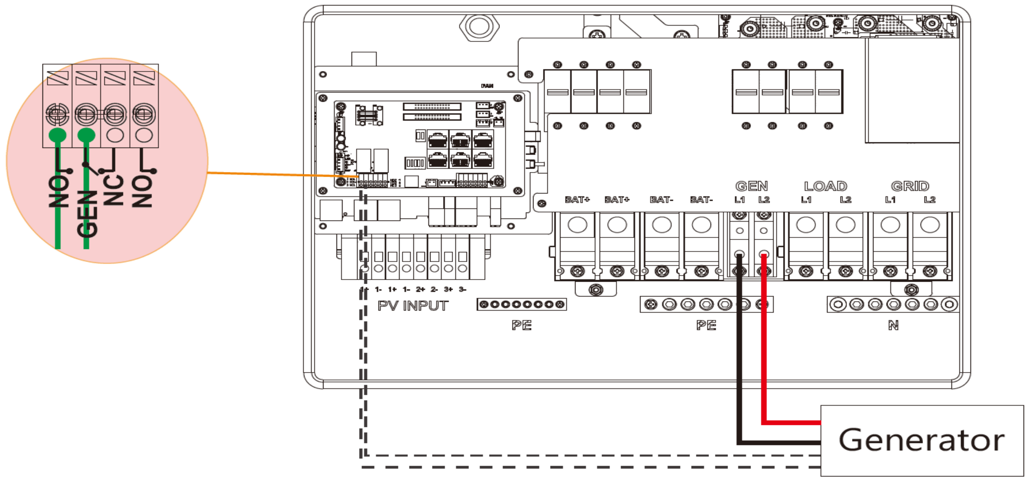
Optional Meter Connection
If you need to use a meter for import/export detection instead of CTs, you need to connect it to the Meter 485A and 485B terminals on the inverter (around 100m)

11.3.3 Generator Connection

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**, **120/208V** or **120/208V 3 phase** output.
When the generator starts, all the loads connected to EPS Load will be supplied by the generator while simultaneously charge the batteries.

When Using the Generator Connection, do not connect to an AC Coupled system unless you are AC coupling on the Grid Side. Damage will occur to Inverter and Generator

The pass-through relay on the generator port is 90A. When the generator is on, please ensure the total load and charge current will not exceed 90A.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.



DRY CONTACT CONDUCTIVITY RATINGS

Port	Max Voltage	Max Current
Generator Dry Contacts NO1-Com-NC1/ NO2-Com-NC2	250/VAC/30VDC	5A

11.3.4 AC Coupling 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.** To ensure optimal performance and energy distribution, it is imperative that the solar installation connected to each i**nverter does not exceed 12kW.** This precautionary measure is to facilitate the efficient allocation of surplus solar energy production to the battery storage systems when frequency shifting during instances of grid power interruptions. It is essential to adhere to this specification to maintain system integrity and to promote effective energy management.

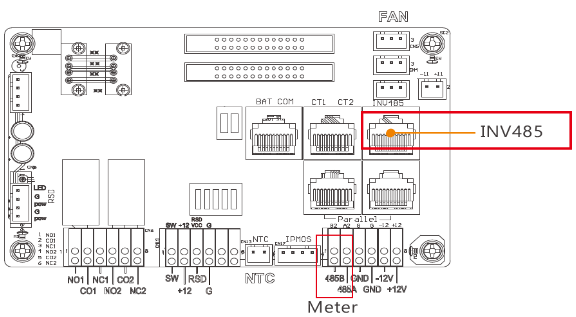
What is frequency shifting power reduction?

All UL1741SA compliant grid-interactive inverters have 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.

11.3.5 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	/

12. 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.**

12.1 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. Perform Firmware Inverter Update using the Envy Fortress Power APP.
3. Place the Inverter in Standby mode.
   a. LCD screen - Basic section
4. Confirm the Inverter is set up 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. Prior to turning it on, make sure there is no reverse polarity. Confirm PV voltage per MPPT.
5. Switch ON the Load Breaker inside the inverter.
6. Exit Inverter standby mode.
   a. LCD screen - Basic section
   b. Confirm Loads are being powered.
8. Turn on the Grid Breaker
9. If AC Coupling or Generator is integrated, Turn on the breaker. Ac Coupling will connect after 5 minutes.

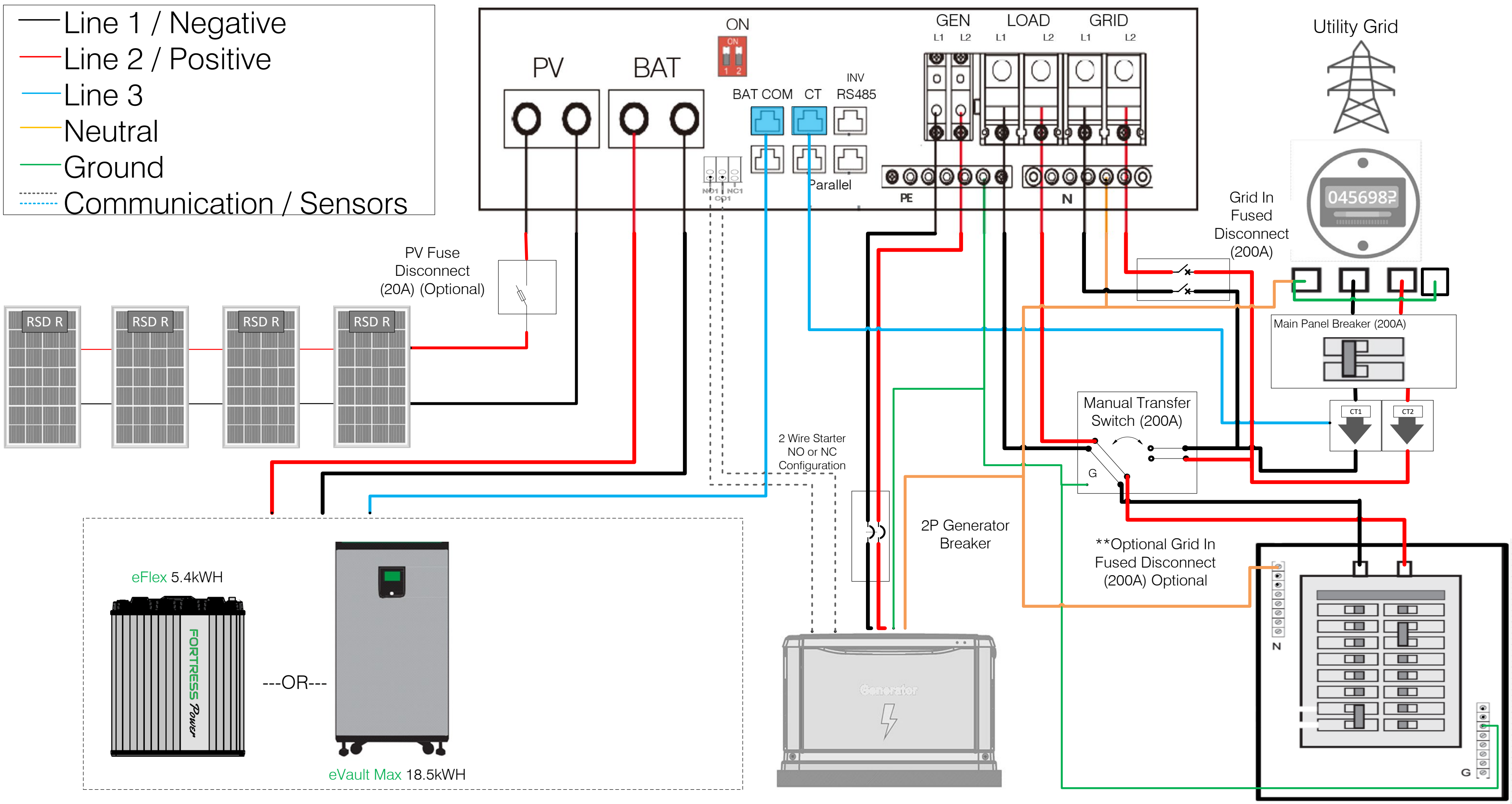
12.2 SHUT DOWN THE INVERTER.

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 below.

1. Set the System in Standby:
   a. LCD screen - Basic section
2. 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.

13. Wiring Diagrams and LCD programming

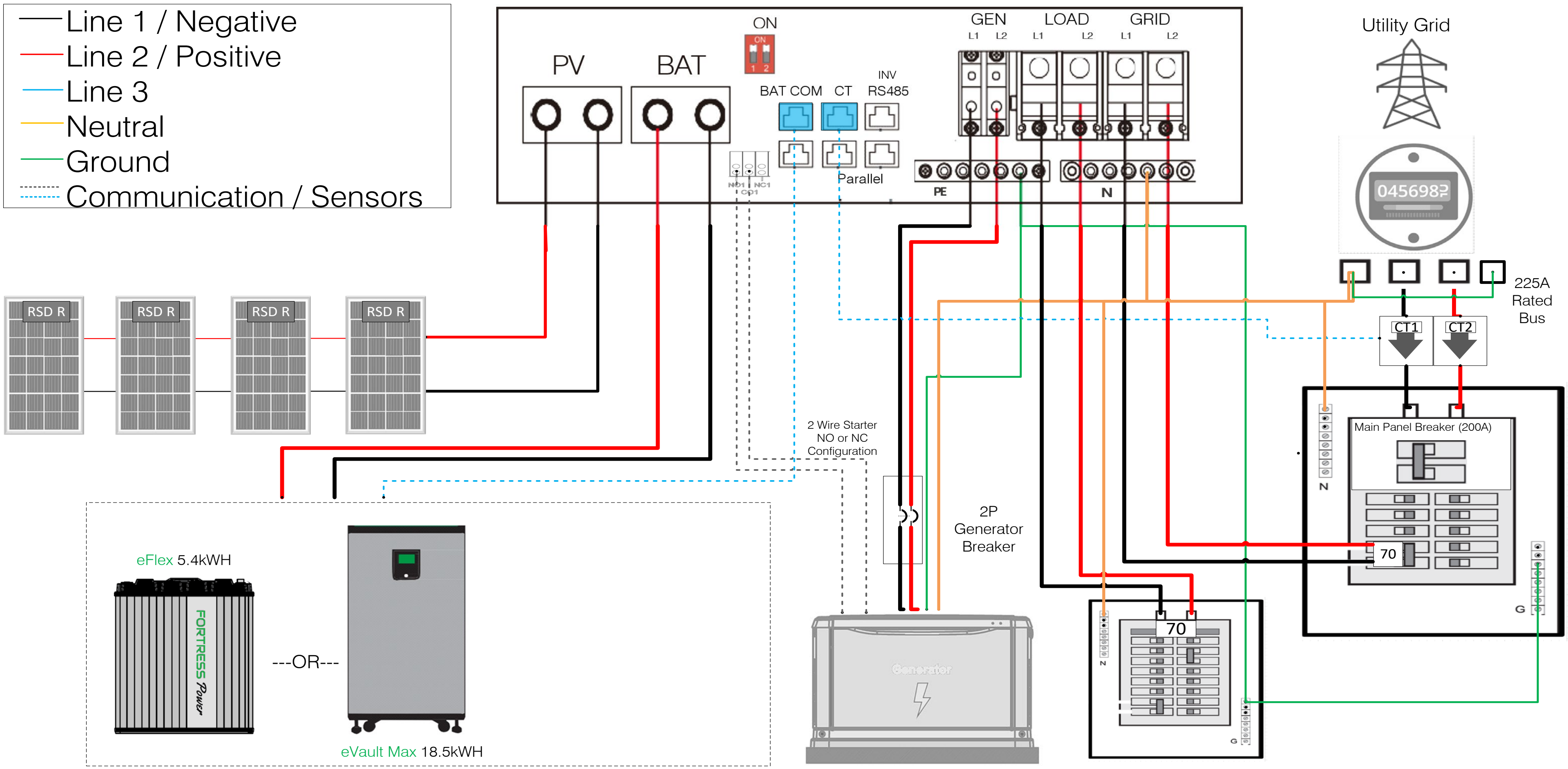
13.1.1 Whole Home AC Passthrough with Feeder Tap Connection (Split-Phase Service 120/240V)



There should be only one Neutral to Ground Bond established on the supply side of the electrical system.
For requirements of connection safety, please refer 2020/2023 NEC 705.11 or 2017 NEC 705.12A
Always adhere to your local jurisdiction guidelines and make sure that an Electrician makes all electrical connections.

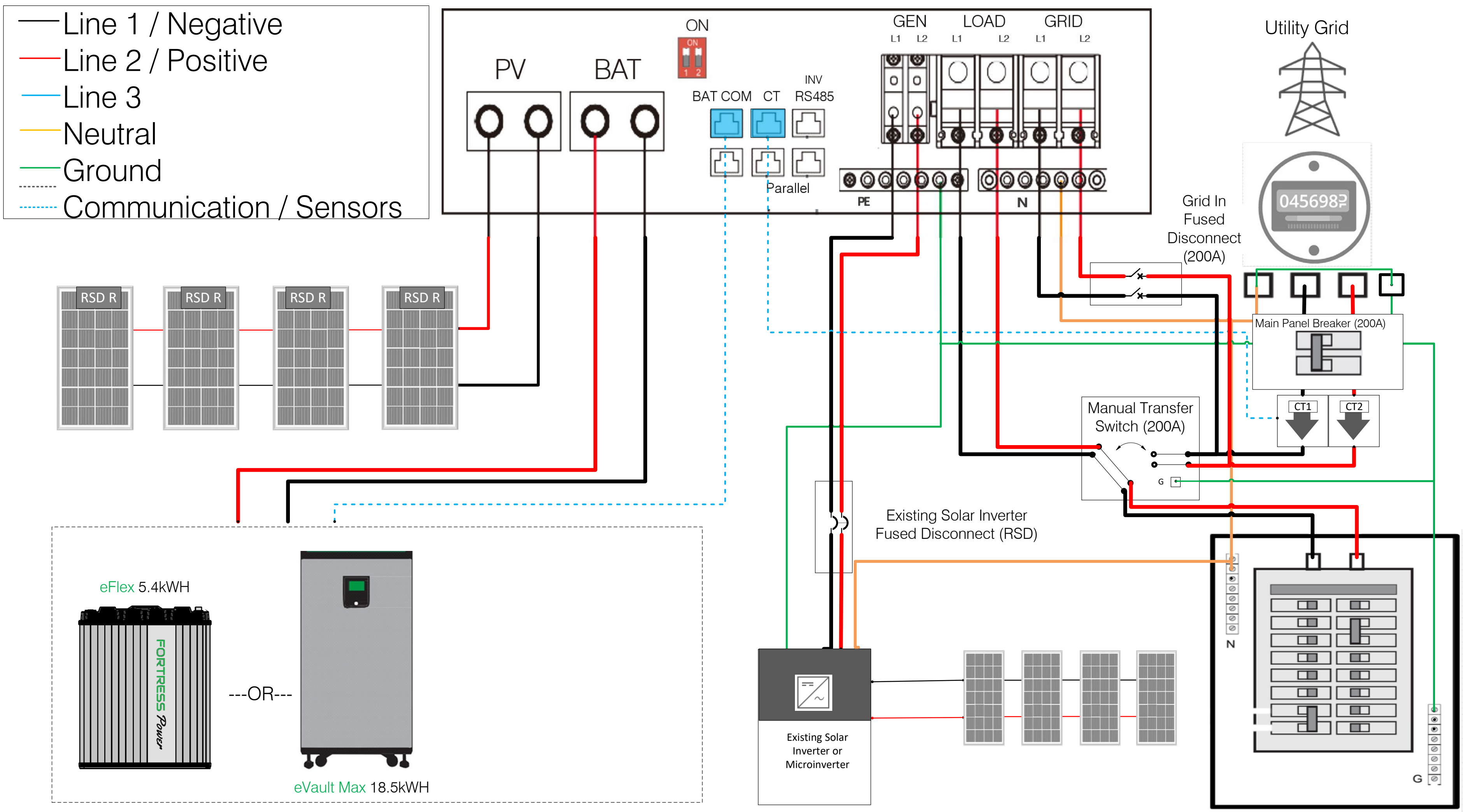
13.1.2 Backup Applications with Backfeeder Connection (split-phase service 120/240V & 120/208V)

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.



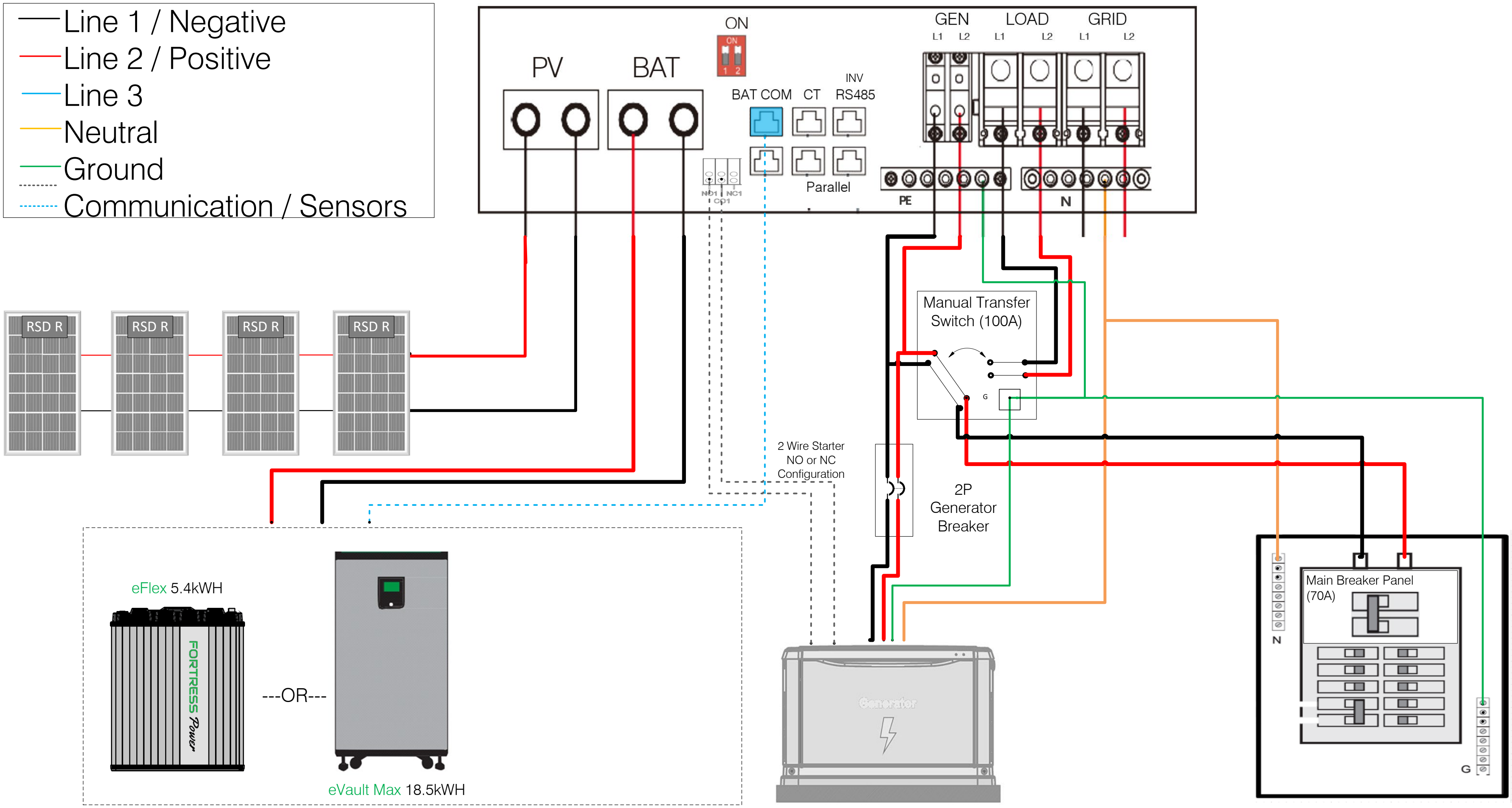
There should be only one Neutral to Ground Bond established on the supply side of the electrical system.
For requirements of connection safety, please refer 2020/2023 NEC 705.11 or 2017 NEC 705.12A
Always adhere to your local jurisdiction guidelines and make sure that an Electrician makes all electrical connections.

13.1.3 Combined or Individual AC Coupling/DC Coupling Applications with a Feeder tap Connection (split-phase service 120/240V)



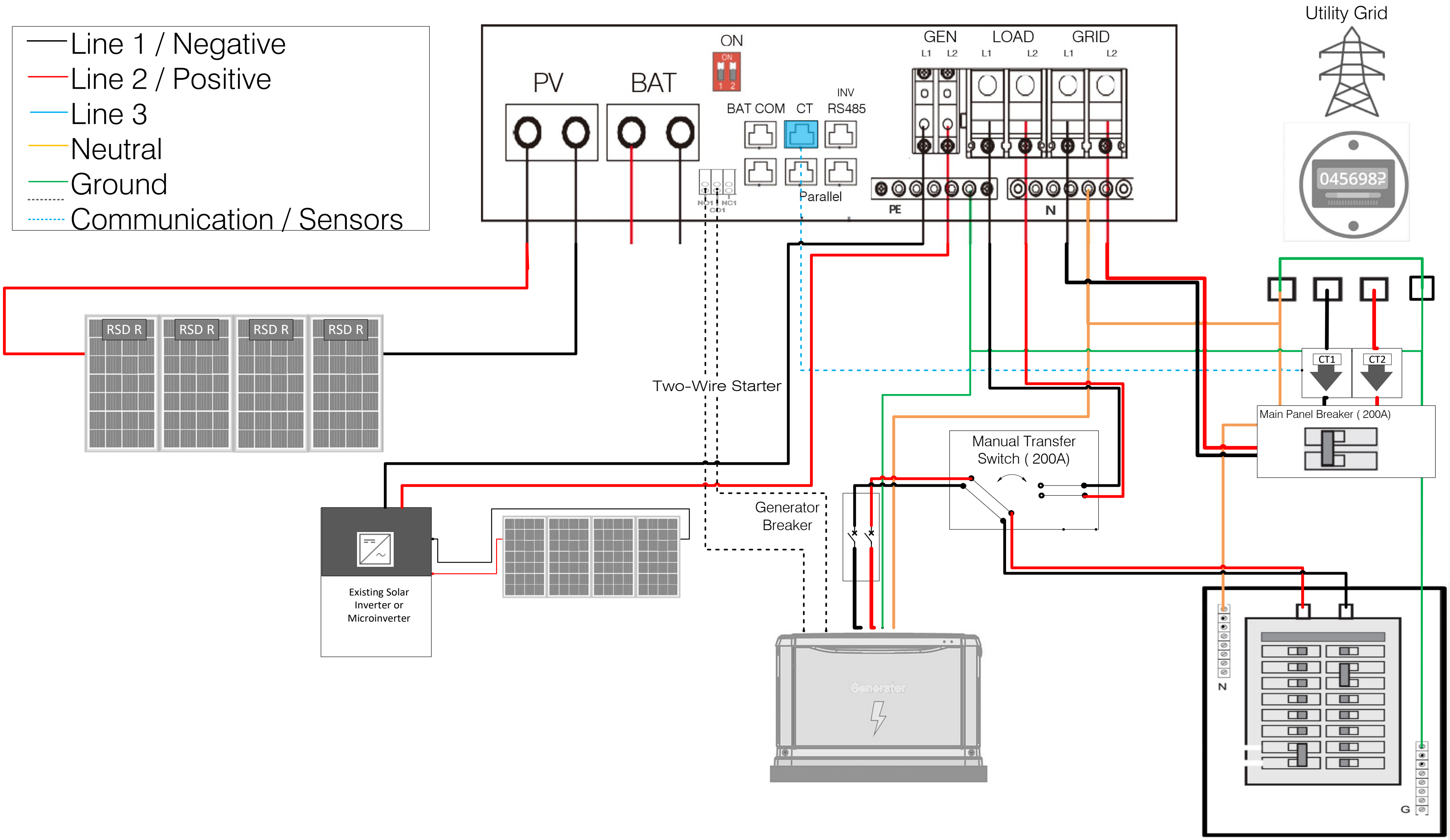
There should be only one Neutral to Ground Bond established on the supply side of the electrical system.
Always adhere to your local jurisdiction guidelines and make sure that an Electrician make all electrical connections.
Depending on your Local Jurisdiction a feeder tap breaker might be required between the Manual Bypass Switch and the feeder tap.
For requirements of connection safety, please refer 2020/2023 NEC 705.11 or 2017 NEC 705.12A

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



There should be only one Neutral to Ground Bond established at the Load panel of the electrical system.
Always adhere to your local jurisdiction guidelines and make sure that an Electrician make all electrical connections.
For requirements of connection safety, please refer 2020/2023 NEC 705.11 or 2017 NEC 705.12A

13.1.5 Battery less Connection (split-phase service 120/240V, 120/208V)

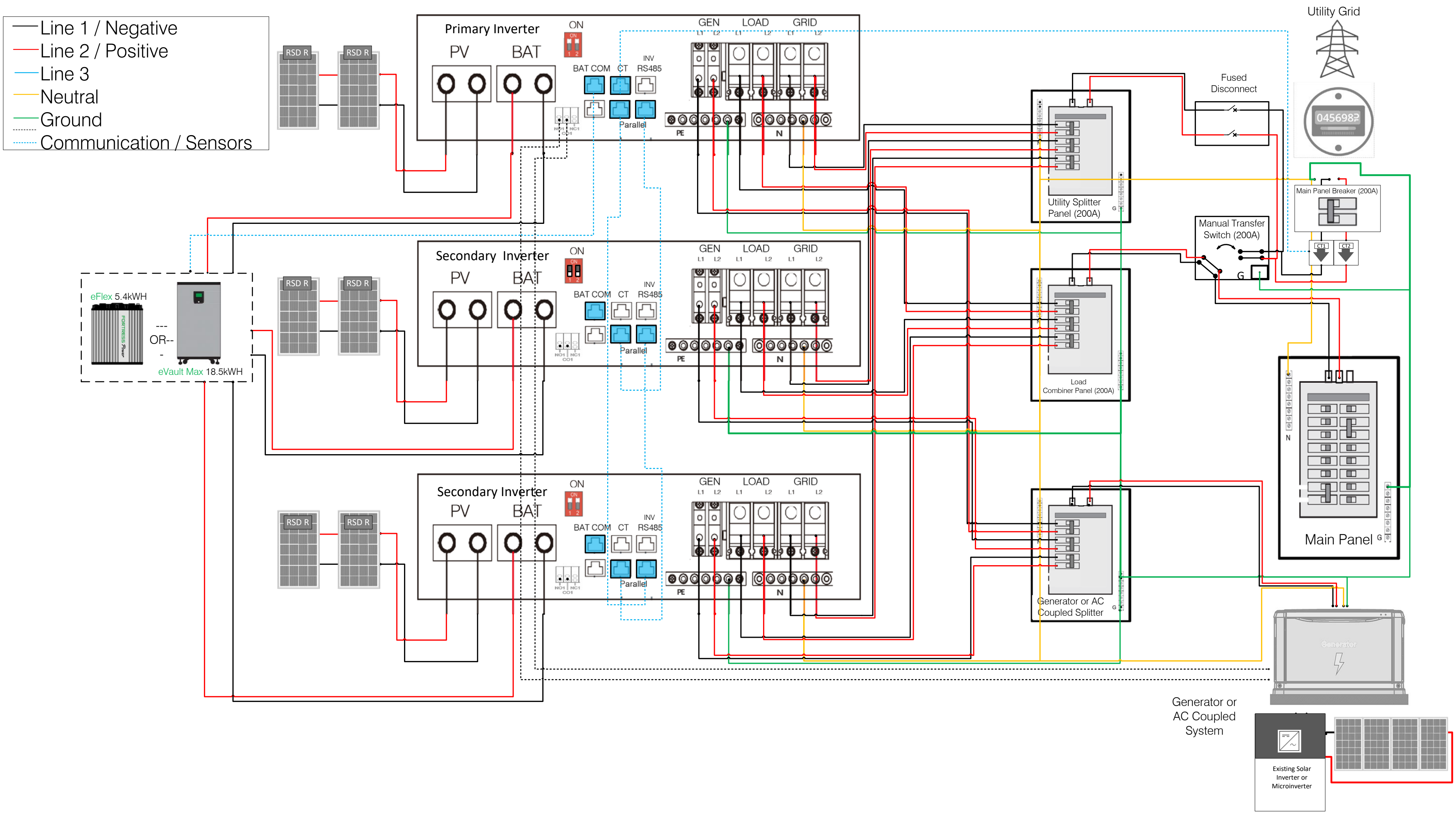


This schematic includes an optional generator addition in the case of grid outage. Note: the internal RSD transmitter is powered by a 12V source that is converted and supplied by grid connection or battery connection. Grid outage will deactivate the RSD transmitter. There should be only one Neutral to Ground Bond established on the supply side of the electrical system.

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

For requirements of connection safety, please refer 2020/2023 NEC 705.11 or 2017 NEC 705.12A

13.1.6 Paralleled Systems Applications with a Feeder tap Connection (split-phase service 120/240V, 120/208V)



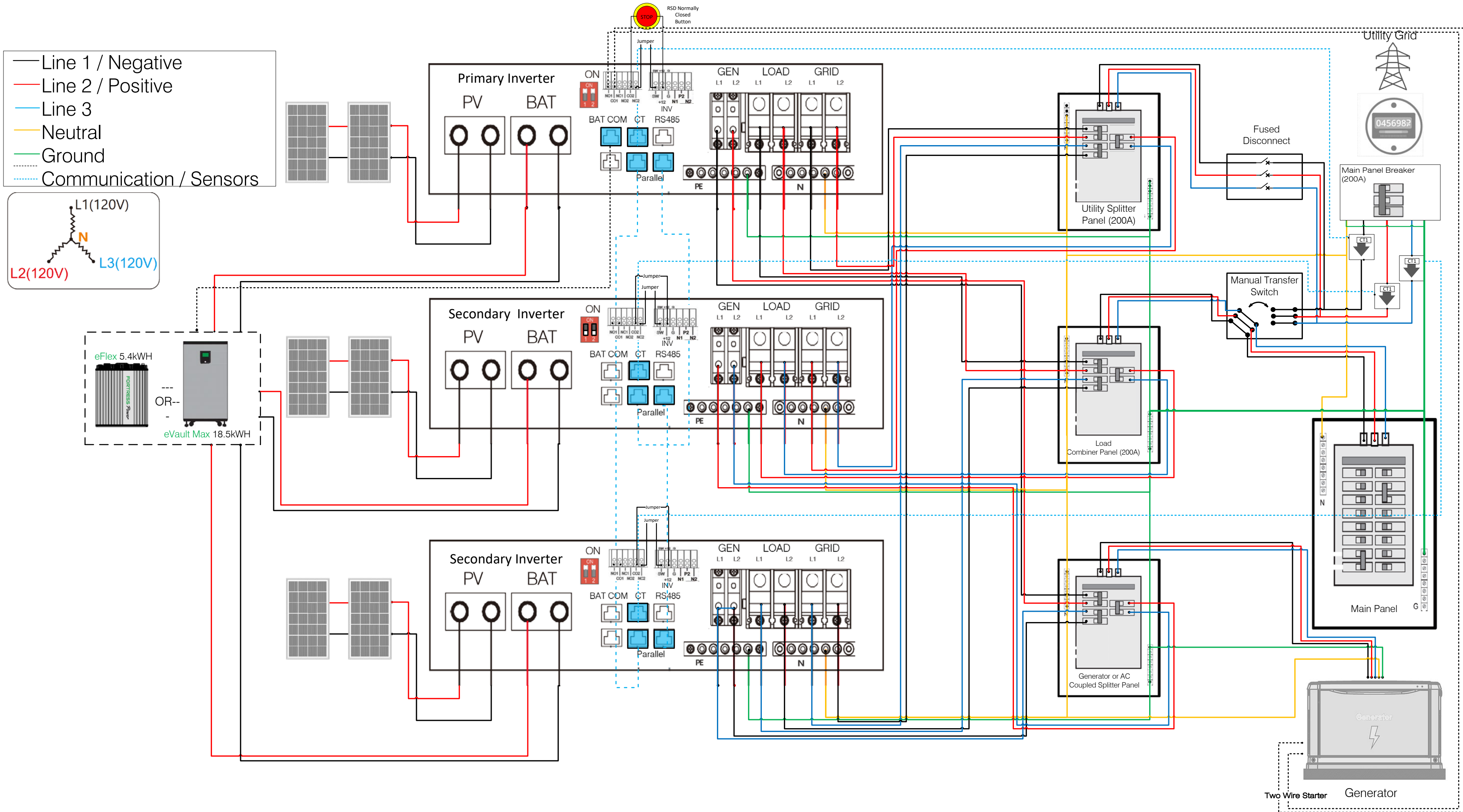
There should be only one Neutral to Ground Bond established on the supply side of the electrical system.

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.

For requirements of connection safety, please refer 2020/2023 NEC 705.11 or 2017 NEC 705.12A

13.1.7 3 Paralleled Systems Applications with a Feeder tap Connection (3 Phase-phase service 120/208V)



There should be only one Neutral to Ground Bond established on the supply side of the electrical system.

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

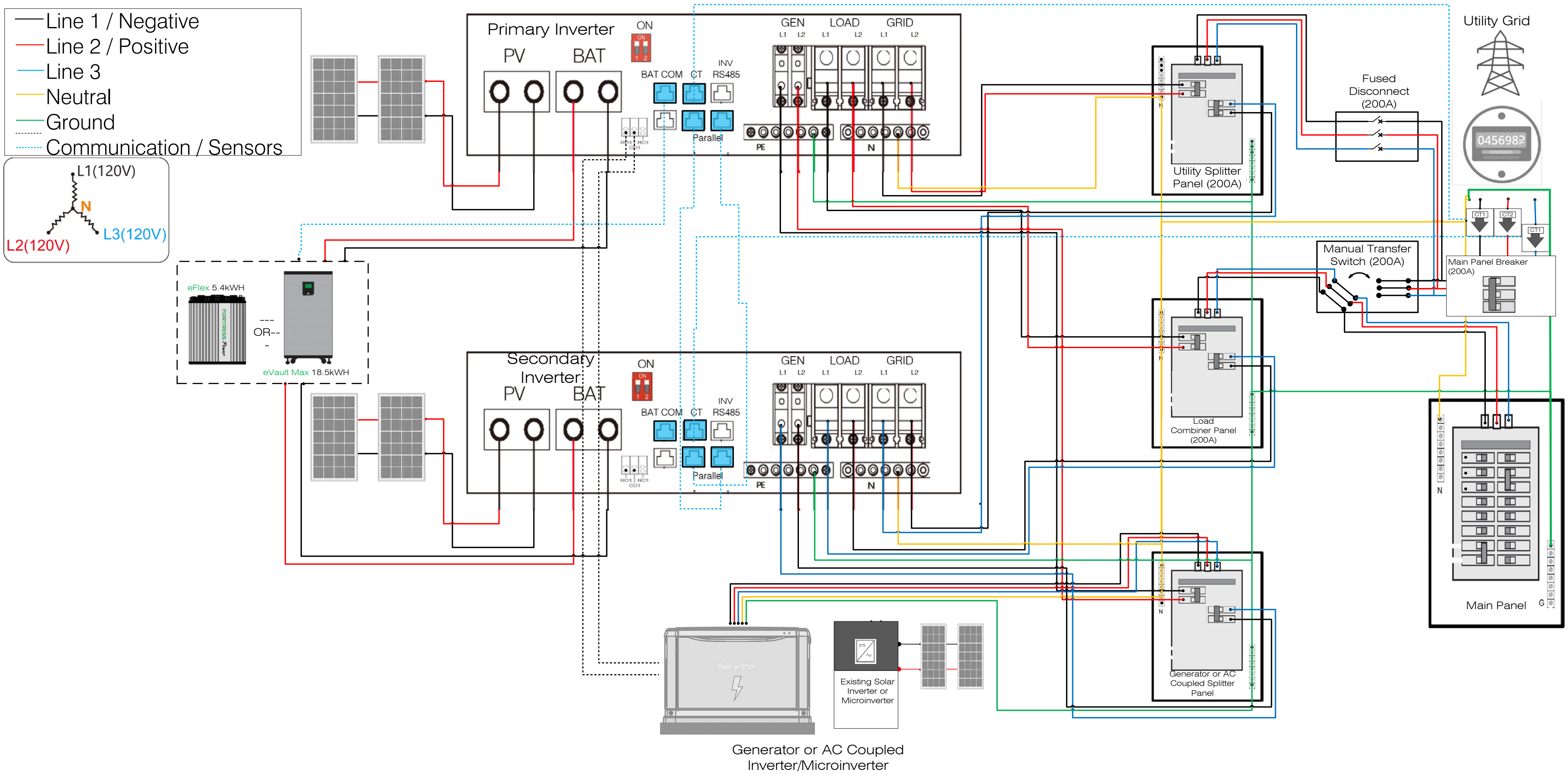
Depending on your Local Jurisdiction a feeder tap breaker might be required between the Manual Bypass Switch and the feeder tap.

For requirements of connection safety, please refer 2020/2023 NEC 705.11 or 2017 NEC 705.12A

Follow the Commissioning Sequence on page 19 and the Paralleling Setup at page 31

Make sure that all the inverters are programmed identically when it comes to functionality, charge & discharge times, power, voltage, current etc. Otherwise, the systems may malfunction. Use only CT1 as described in the image.

13.1.8 2 Paralleled Systems Applications with a Feeder tap Connection (3 Phase 120/208V)



There should be only one Neutral to Ground Bond established on the supply side of the electrical system.

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.

For requirements of connection safety, please refer 2020/2023 NEC 705.11 or 2017 NEC 705.12A

Follow the Commissioning Sequence on page 19 and the Paralleling Setup at page 31.

Make sure that all the inverters are programmed identically when it comes to functionality, charge & discharge times, power, voltage, current etc. Otherwise, the systems may malfunction. Use CT1&CT2 for the Primary inverter and only CT1 for the Secondary inverter as described in the image.

14. Firmware Updates

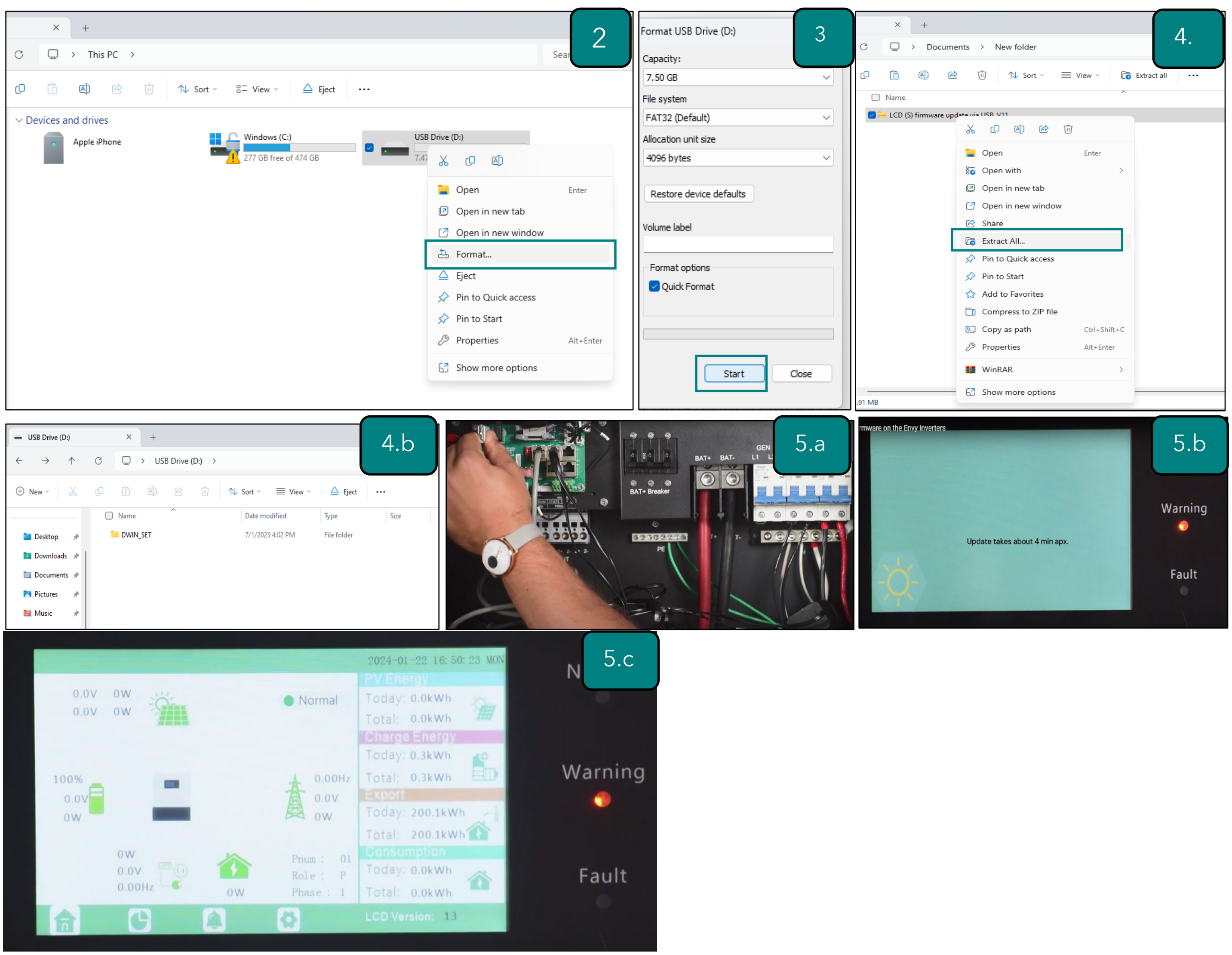
14.1 Envy LCD Firmware update via USB

We strongly recommend updating the LCD Firmware to take advantage of the new functions of the Inverter.
You will only need a **USB Flash disk** and a **laptop computer** to add the files to it. Once you add the files you can re-use the same USB Flash Drive for all future installations. Follow these simple steps:

1. **USB flash disk Size Selection**
   The Size of USB flash disk must be not more than 16GB. The Following are accepted: 16GB ,8GB, 4GB or 2GB.
2. **Formatting USB flash disk**
   Plug the USB flash disk to your PC and select **"Format**."
3. File system configuration should be **"FAT32"** Allocation unit should be "**4096 Bytes.**"

And press **"Start"** to format the USB flash disk.

4. **File Path**
   Extract the zip file,
   Copy the extracted folder into the USB Flash Disk. File name must be "DWIN_SET",
5. **LCD Firmware Update**
   a. Power off the inverter by turning off the PV disconnect and all breakers. Connect the USB Flash disk to the USB2 port of the interface board.
   b. After the USB flash disk has been well connected and you can power on the inverter, then you will see the screen display below, it will keep staying in the page for 4 minutes and then the screen will restart itself, and if the firmware update has been done successfully, you can see the normal home page.
   c. Unplug the USB flash disk (hot-plug feature is supported by USB2 port). You can check the LCD version code in the right bottom side of the LCD display. You can also see the LCD version or Firmware version of the inverter under the "Device info" page.



14.2 Envy Inverter Firmware Update

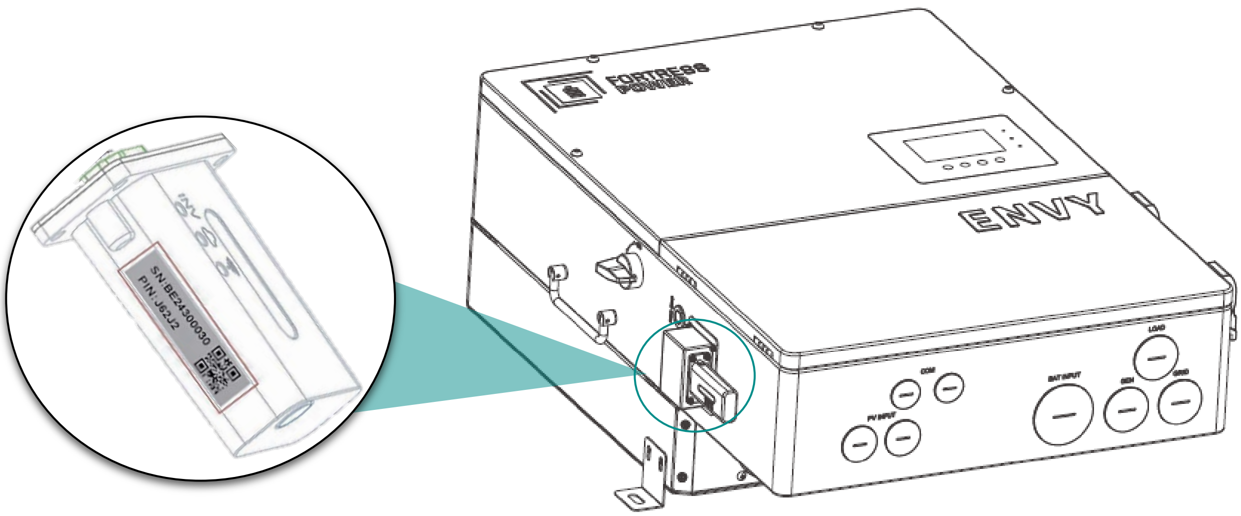
1. Download the **Envy Fortress Power App** and access it.
2. Select **Download Firmware** on the Home Screen of the App
3. Select **Download**, and three files should download (less than 30s)
4. **Disable Cellular Data** (to prevent your cellphone from connecting or searching for data as this might interrupt the firmware update process)
5. Select **Wi-Fi** and Connect to the **dongles serial number** (usually starts with AA or BA)
6. Return to the **APP** and select **Connect Device and Update**
7. When updating, you should see **2 progress bars** in the app and a flashing green light in the inverter. While the firmware is being pushed, do not make calls, touch the LCD, or use the phone for anything else as this will cause firmware interruption. Do not allow your cellphone screen to dim or go to sleep mode. In the case of receiving a call or interruptions occur, you may reselect update firmware and the inverter will resume from where it left off.
8. You will receive a **Update Firmware Successful** message when both files have been pushed through.

15. Monitor System Setup

15.1 Wi-Fi Dongle Connection

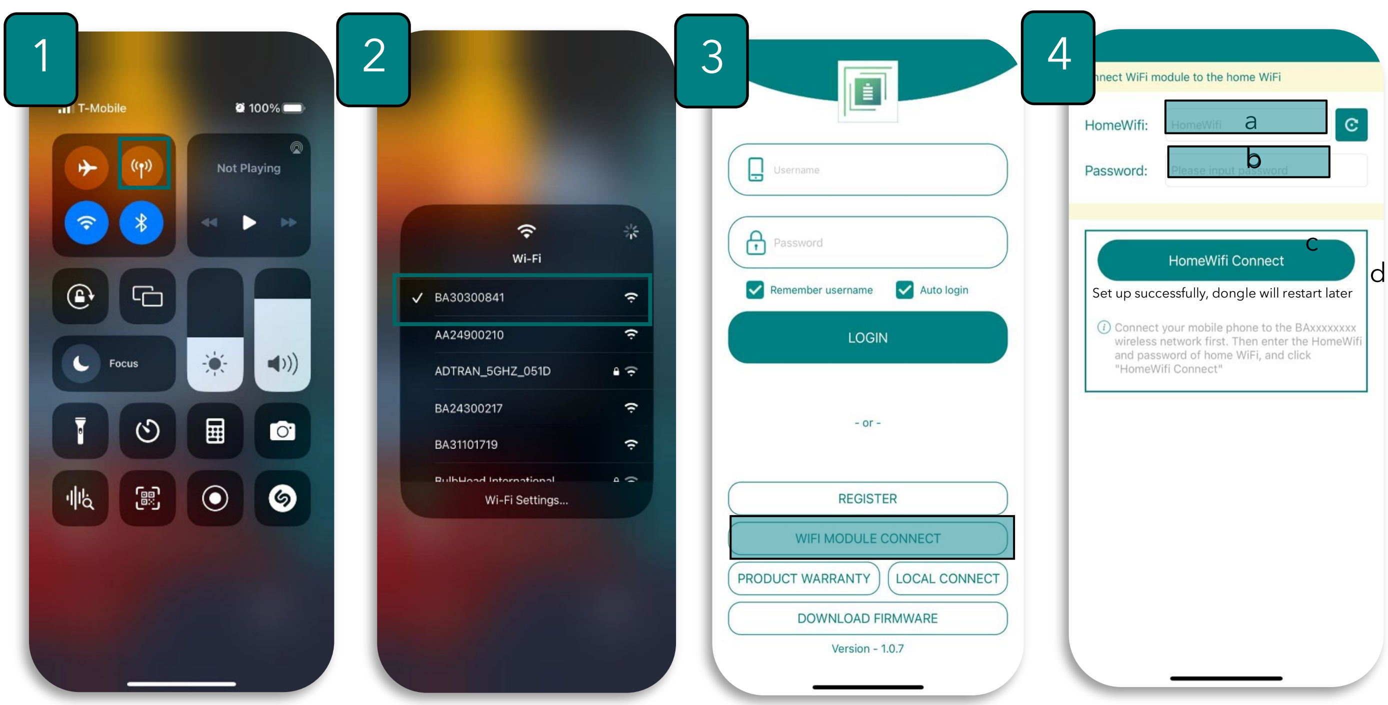
15.1.1 Envy Fortress Power Mobile APP Method

Users can use the Wi-Fi/ dongle to monitor their inverter and view the monitoring data on a computer or smart phone remotely. Plug 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.

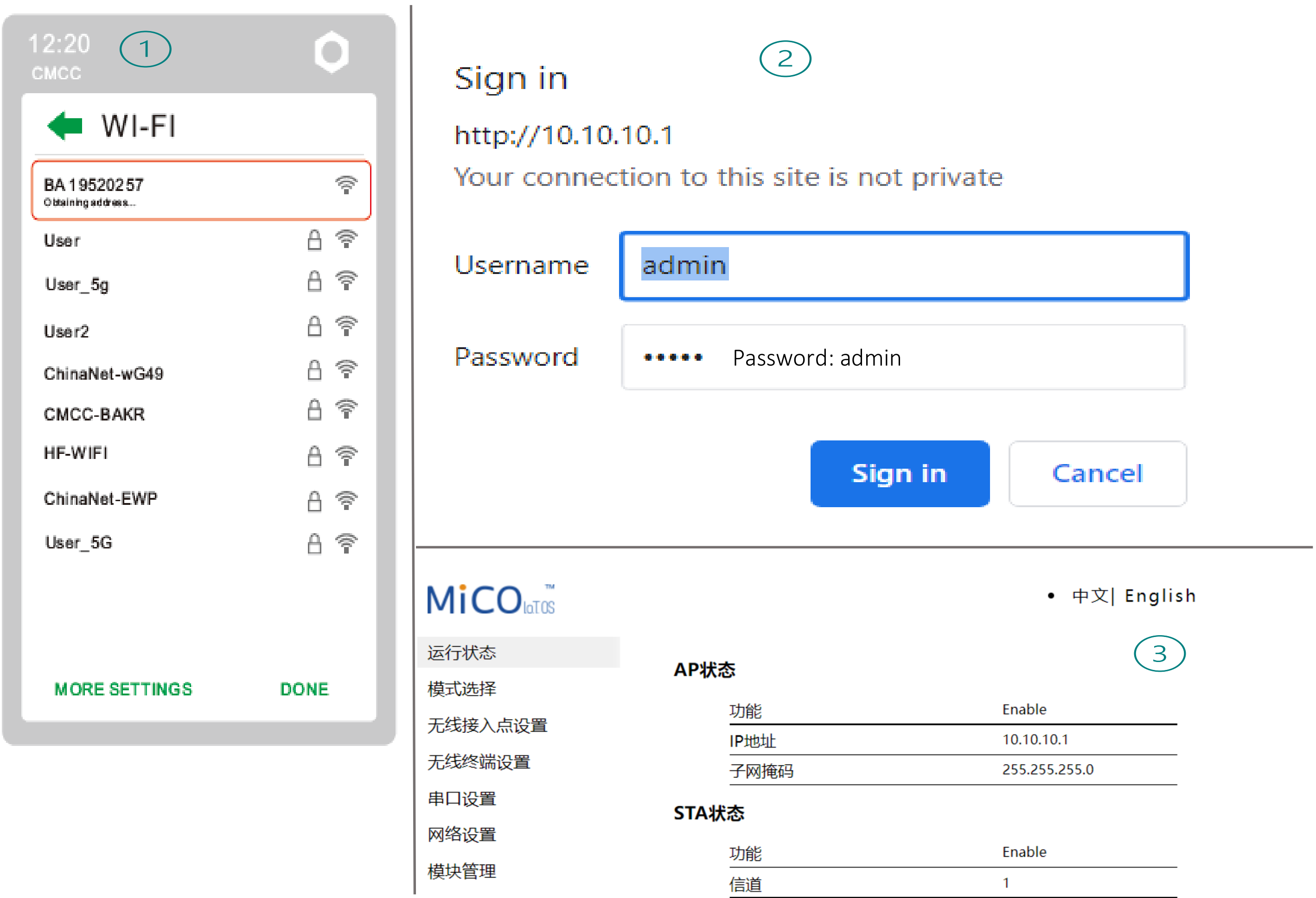
1. Disable **cellular data** on the phone. **2**. Enable WI-FI and connect to the **Dongle's Serial number**. **3**. Access the **Envy Fortress Power App**. **4**. Type in the Routers **SSID** in the Home WIFI Section following its **password** then select **Home WIFI Connect.** A message will appear validating the integration's success. The dongle will reboot and take about 1 minute to connect. **5.** Confirm that the dongle has connected to the internet by visually checking that there are **three LEDS in a green solid state.**

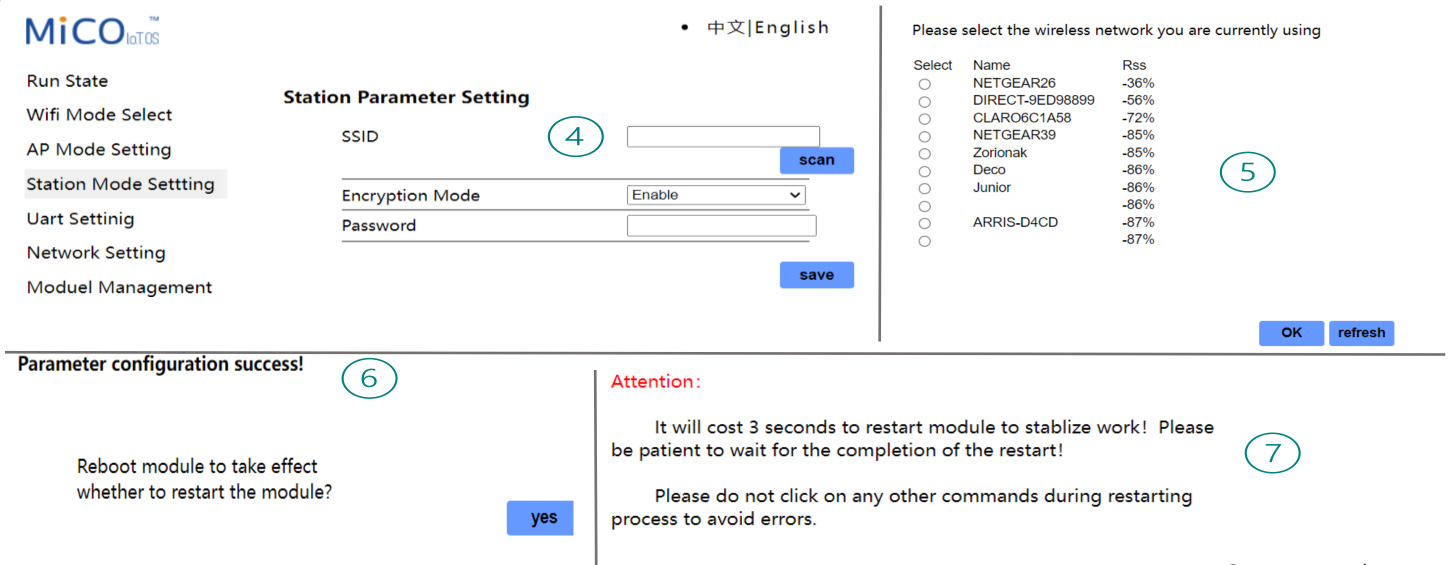


LED Definitions	
INV LED	Communication between datalogger and inverter
Cloud Icon LED	Communication between datalogger and network
Wi-Fi Icon LED	Communication between datalogger and HomeWiFi

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 Home Wi-Fi name and password are correct

15.1.2 IP Address method (Alternative method)

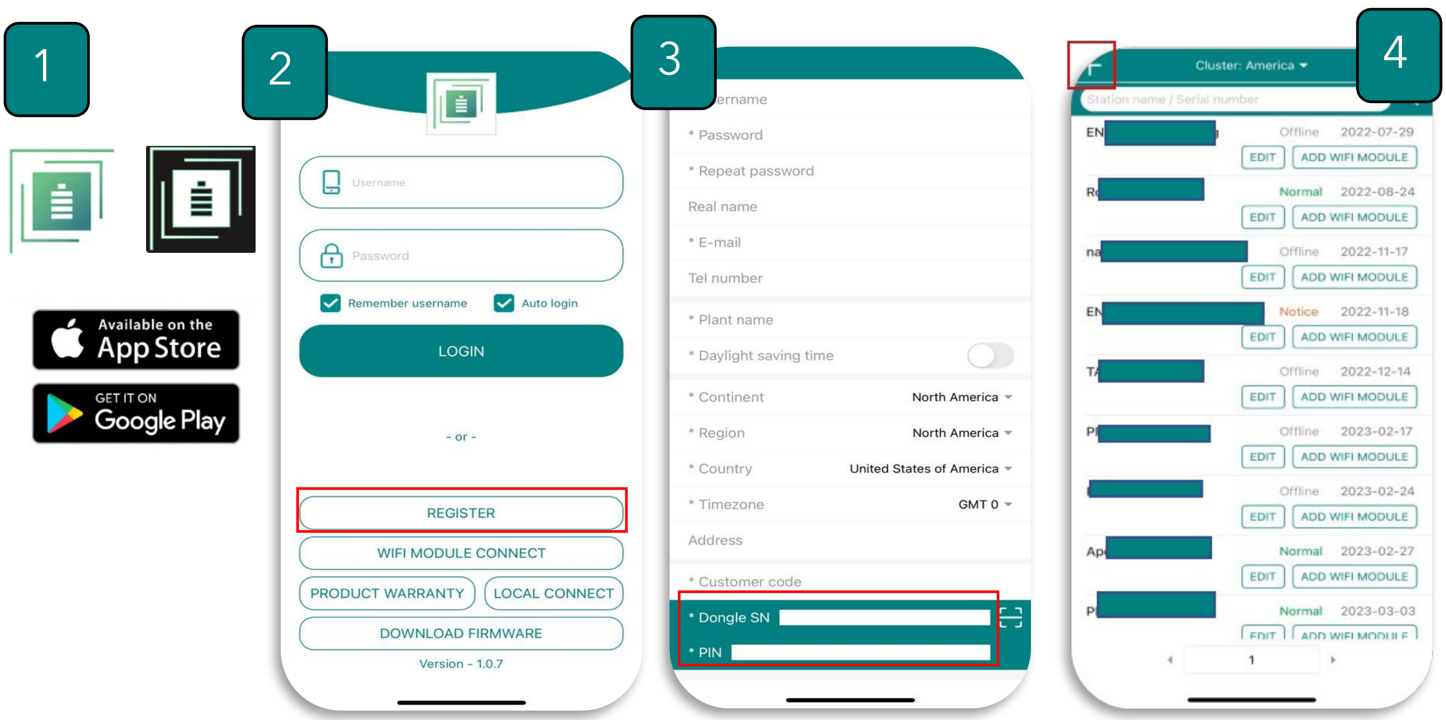




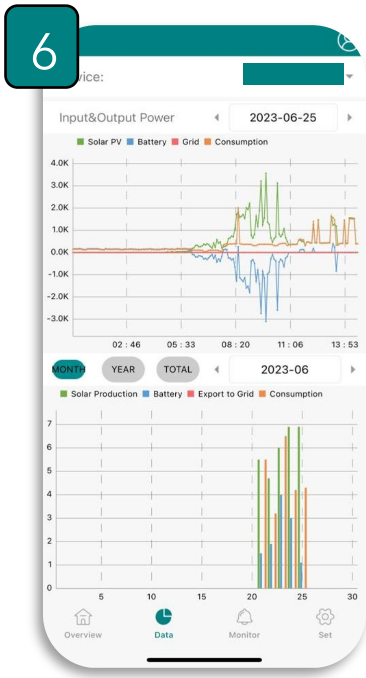
Connect to the Wireless Network of the Dongle **BA******** using your phone or Laptop**>**type in a web browser **10.10.10.1>**Username: **admin** Password: **admin>** Select **English>** Select **Station Mode Setting>** Select **Scan** on **SSID>** Select your **Internet Wireless Network>**Enter your 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.

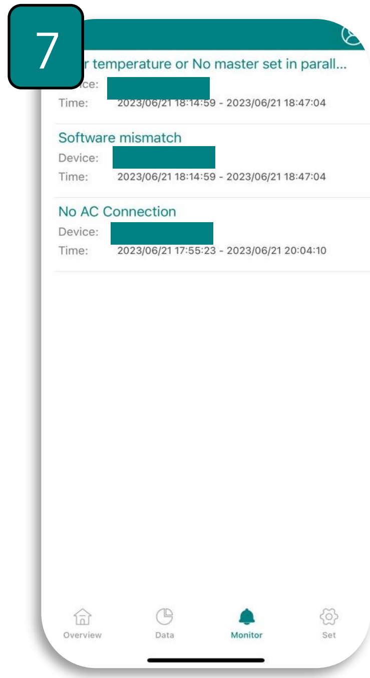
15.2 Register Account

1. Re-enable Mobile Data and Download **Envy Fortress Power APP** from the [Google Play Store] 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.



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.



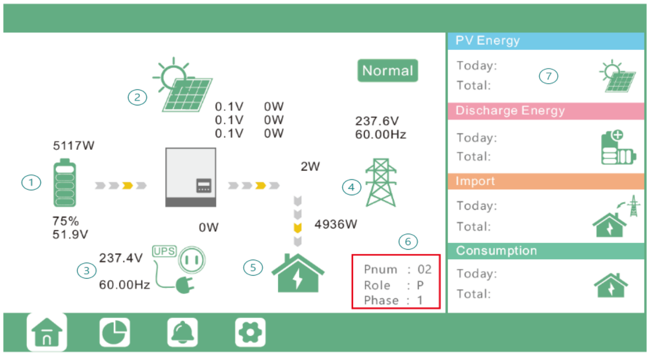


16. Envy Programming Through LCD Interface

16.1 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.

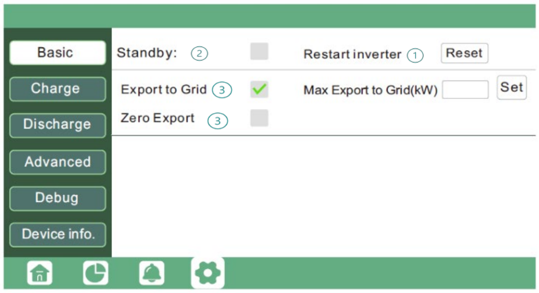


FIGURE#	NAME	DISPLAYS
1	Battery	Voltage, SOC
2	Solar	MPPT Voltage & Power Production
3	Backup	Voltage, Power, and Frequency
4	Grid	Voltage, Power, and Frequency
5	Loads	Power

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

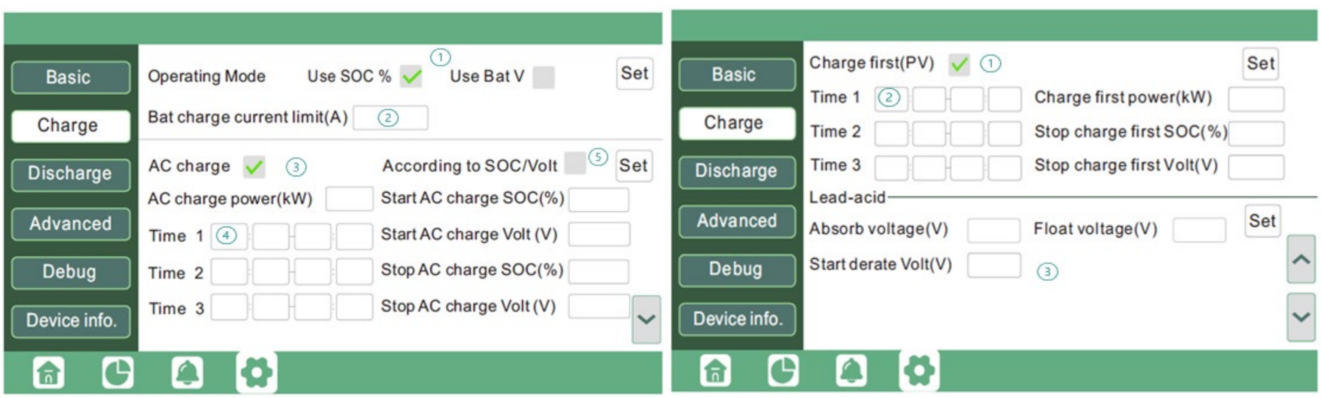
Clicking on the gear icon at the bottom of the screen, you'll get into the parameter setting page of the inverter.

16.2 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**

16.3 Charge Section



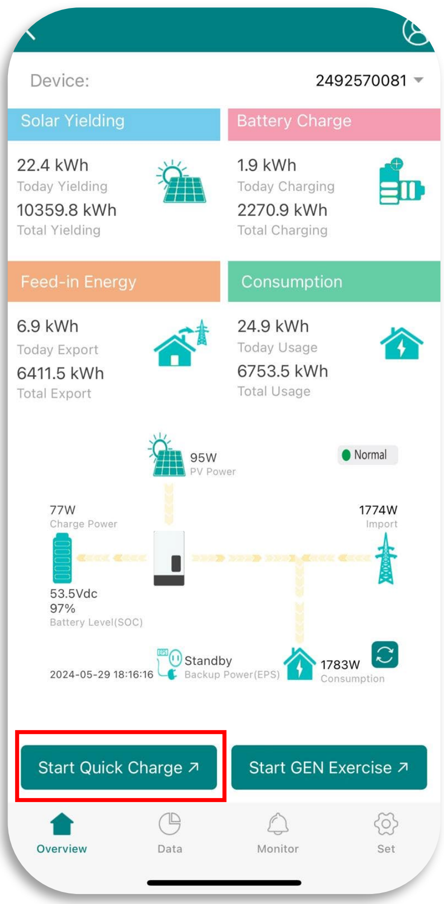
FIGURE#	NAME	FUNCTION
1	Operating Mode	Enabling SOC or Bat V to control charge and discharge logic depending on battery type. Always use percentage settings when in Closed Loop Using lithium batteries
2	Bat Charge Current Limit(a)	Use to set the maximum charging current recommended by the battery manufacturer.
3	**16.3.1 AC Charge**	By enabling, inverter will use available AC to charge the battery. AC Charge power(kW) to limit utility charging power,
4	**16.3.2 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.
5	According to SOC/Volt	AC Charge will adhere to charging based on SOC/Volt settings rather than TOU.
		SCROLL DOWN
1	**16.3.3 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	**16.3.4 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.

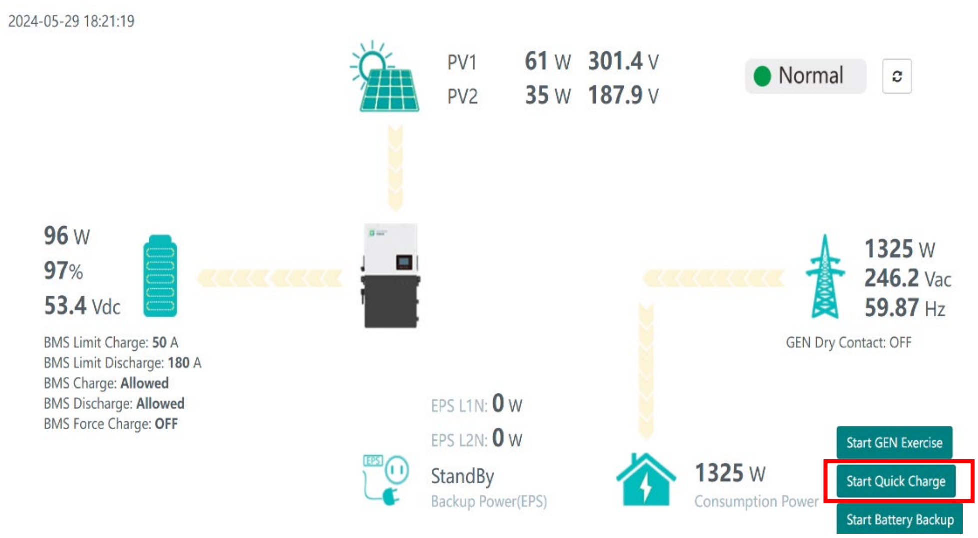
3	**16.3.5 Lead Acid /Open Loop Settings**	When using Open Loop Settings, you need to set parameters in these programs, Follow the battery manufacture recommendations. **Lead Acid batteries are no longer compatible with Envy Inverters**

Quick Charge Feature (Available in Envy APP and Web Portal):
With a single click, you can set up the battery to charge using Grid power. After an hour, it will automatically stop and revert to its default settings. Users also have the option to stop it manually at any time. You must have inverter firmware update 1919 and LCD firmware update #14.

Start Gen Exercise (Only available for Off-grid applications)
Allows to manually start the Generator. If Battery SOC/V is withing the Gen Start charge range, the inverter will switch the loads to the Generator and simultaneously charge the batteries.

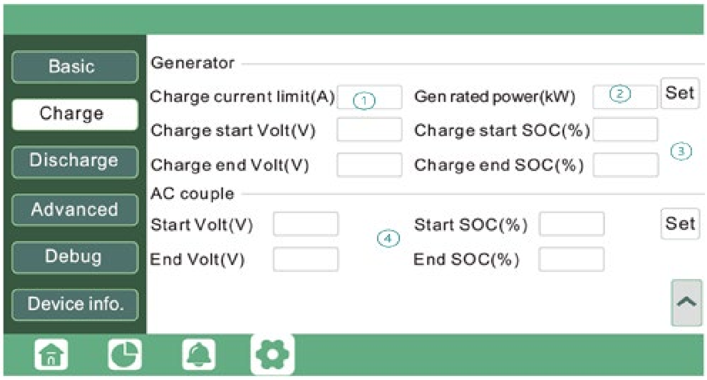
Generator Exercise button (Available in Envy APP and Web Portal)
Note:You must have an inverter firmware update 1919 or later and LCD firmware update #14 or later





SCROLL DOWN

16.3.6 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

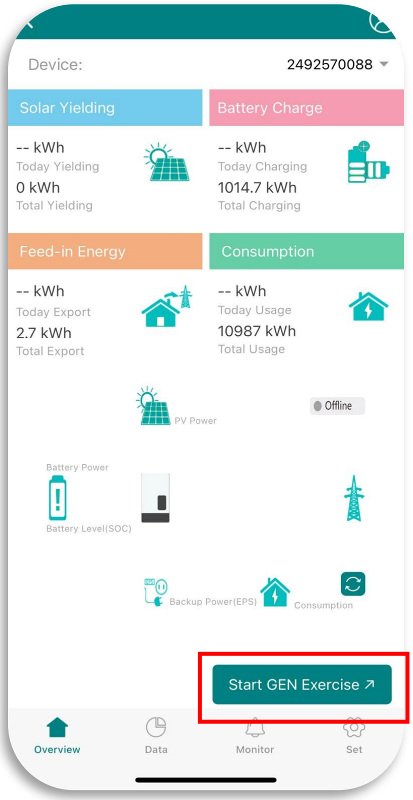
1. When battery voltage or SOC is higher than Charge end Volt/SOC settings value.

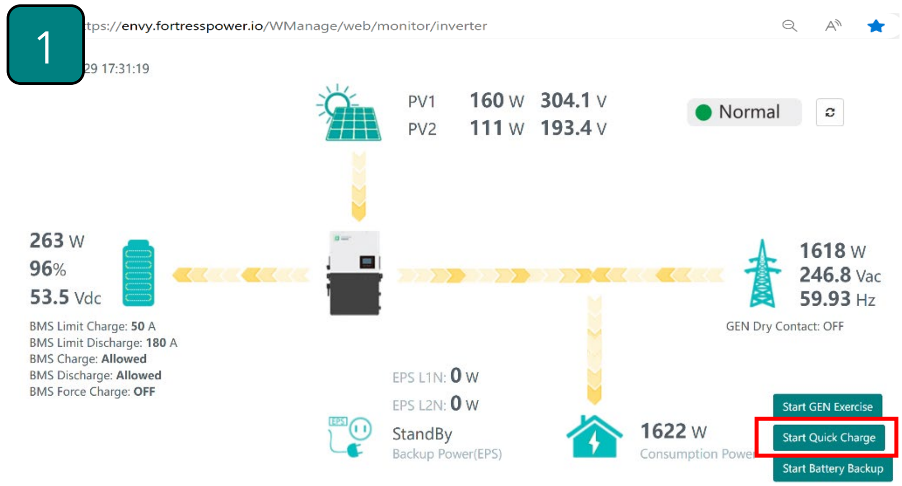
AC Coupling

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. AC Coupling power generation in an OFF-Grid scenario will be active when the batteries Start SOC%/V is reached and will power off when End SOC%/V is reached.

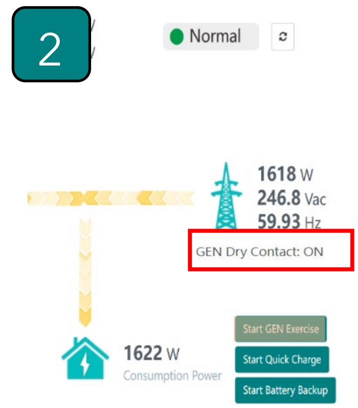
FIGURE#	NAME	FUNCTION
1	Charge Current Limit (A)	Set the Max. battery charge current from the Generator. The Generator will start charging according to the Charge start Volt/SOC and stop charging when the battery voltage or SOC reaches the Charge end Volt/SOC value.
2	Gen rated power	Stipulate Generator Power Rating
3	Charge Start & End SOC/Volt	Depending 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	**16.3.7 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 supplied by solar power first. 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

1. When selecting the" Start Gen Exercise" button on either the APP or Web portal



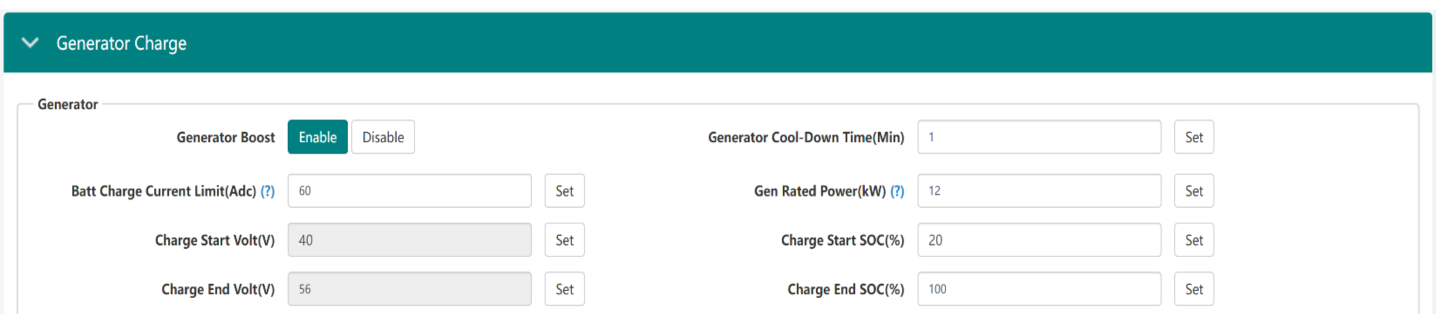


2. When enabled, the generator will start a 20-minute cycle. If the SOC/Volt is below the Generator Charge end SOC/Volt, the generator will warm up for 2 minutes before charging the battery. Once the Battery SOC/Volt reaches the Generator Charge end SOC/Volt, the relay on the generator side will open, stopping power generation. After a 2-minute cool-down period, the dry contact will stop.



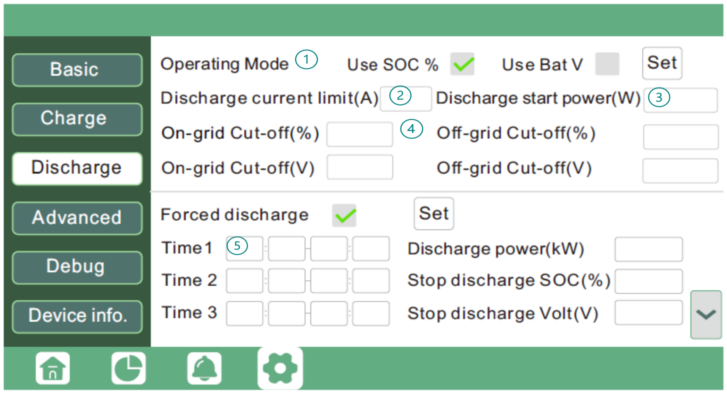
Gen Boost Feature (Available in Web Portal)

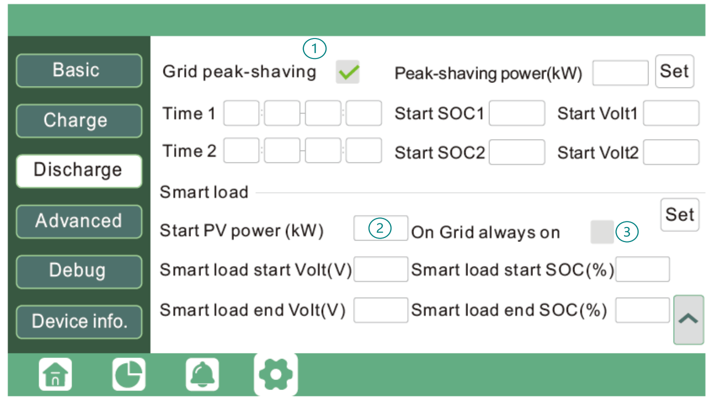
When stipulating the Gen Rated Power and enabling Gen Boost, the generator will prioritize the loads and supply the surplus energy to charge the batteries. Make sure to subtract anywhere from 5% to 15% of the generator's nominal rating to avoid any over throttling. If PV energy is present, the generator will share charge energy with PV power. If Loads exceed that of the capability of the generator rating, the inverter will discharge from the battery and PV to compensate power being drawn until battery SOC/V cut-off is reached.



If Gen boost is disabled, the inverter will prioritize loads and charge batteries simultaneously using the Gen Charge ADC parameter until the End Charge SOC/V is met. Generators should be sized correctly when used in this way.

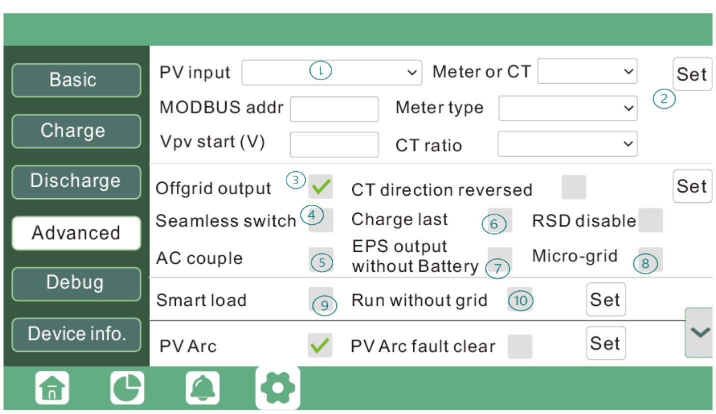
16.4 DISCHARGE SECTION

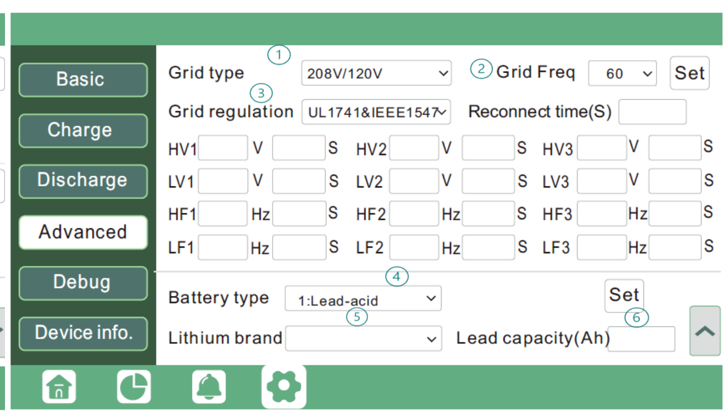




FIGURE#	NAME	FUNCTION
1	Operating Mode	You can choose "Use SOC %" or Use Bat V" to control the battery discharge state
2	Discharge current limit(A)	Discharge current limit(A): The Max. discharge current from battery
3	Discharge start power(W)	The Min. value can be set to 50. When the inverter detects 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 a certain 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!**

16.5 ADVANCED SECTION



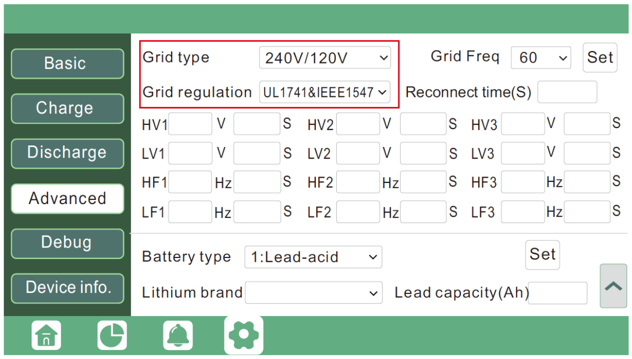


FIGURE#	NAME	FUNCTION
1	PV Input	Provides Selection of the quantity of MPPTS being used
2	CT Configuration	The supported CT ratio is 1000:1, 2000:1, 3000:1. The Default **CT ratio** that is provided with your inverter is 3000:1. If 3rd party CT is to be used, please. ensure its CT ratio is one of them 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	**16.5.1 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	**16.5.2 AC COUPLE**	Enable when user has AC coupling. AC coupled systems must always be connected in the Generator Port.
6	**16.5.3 CHARGE LAST**	When enabled, solar will supply energy first to Loads>Export to Grid and charge battery with the remaining power.
7	**16.5.4 EPS Output Without Battery**	When enabled, it will use solar power to supply load when the grid fails, or load-shedding happens.
8	**16.5.5 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	**16.5.6 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	**16.5.7 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	**16.5.8 BATTERY TYPE**	NO, BATTERY, LEAD-ACID (Open Loop), LITHIUM
5	Lithium Brand	**LITHIUM 18 (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. Leave default value if Closed Loop.

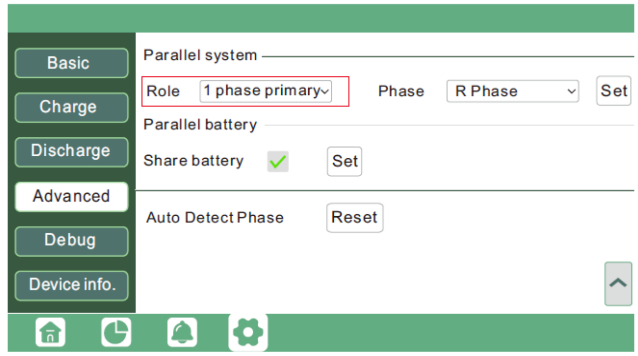
16.6 Paralleling Setup (LCD Interface)

Single Split Phase 120/240V Paralleling.

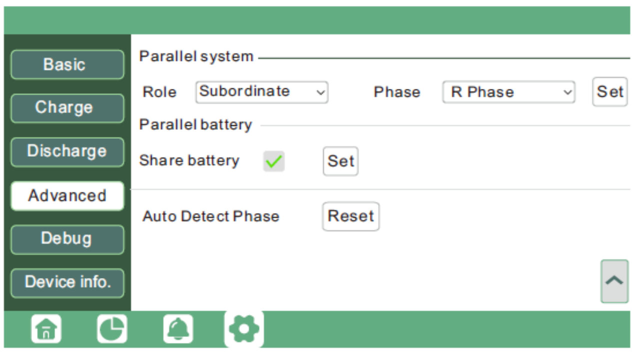
Utility Voltage Setup



Primary Inverter

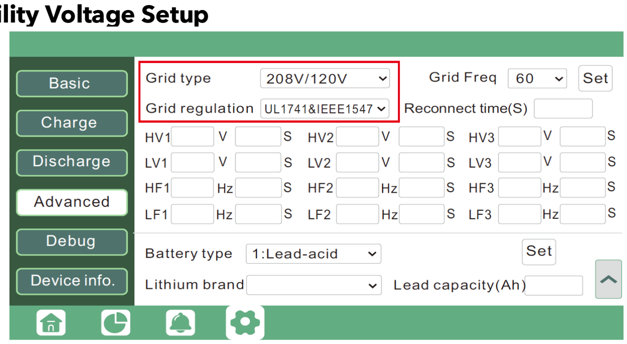


Secondary Inverter

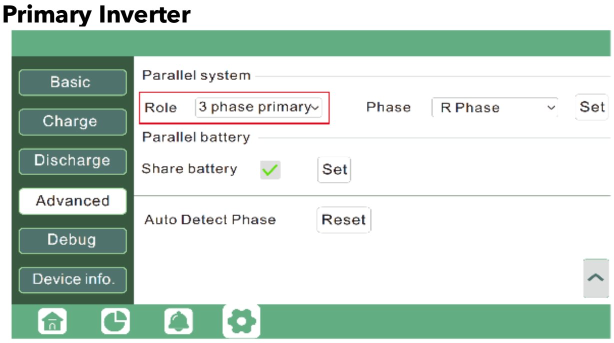


3Phase 120/208V Paralleling (3 inverters)

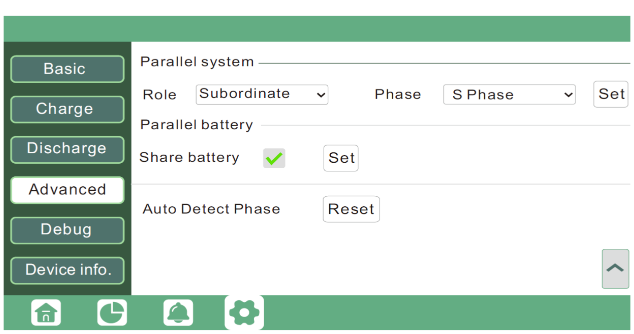
Utility Voltage Setup



Primary Inverter

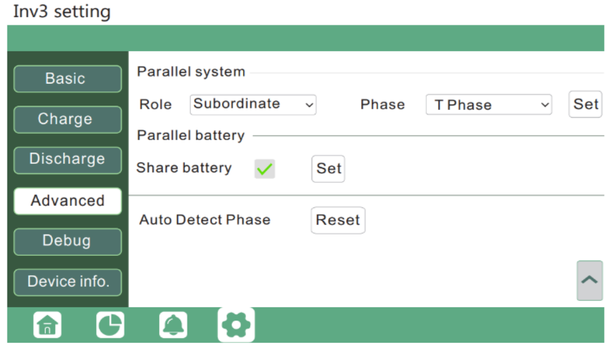


Secondary Inverter



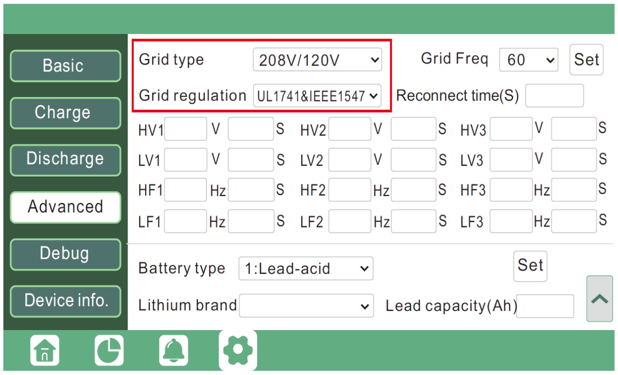
2nd Secondary Inverter

Inv3 setting

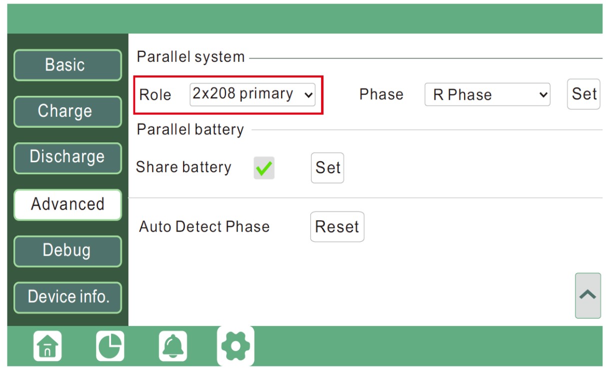


3Phase 120/208V Paralleling (2 inverters)

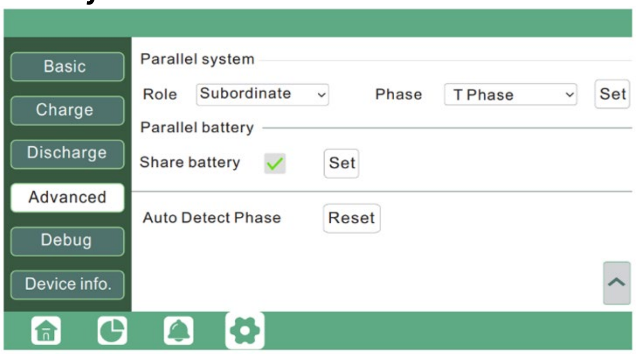
Utility Voltage Setup



Primary Inverter



Secondary Inverter

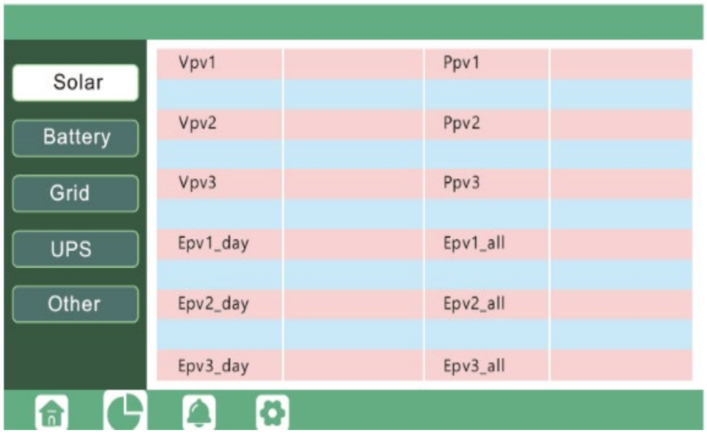


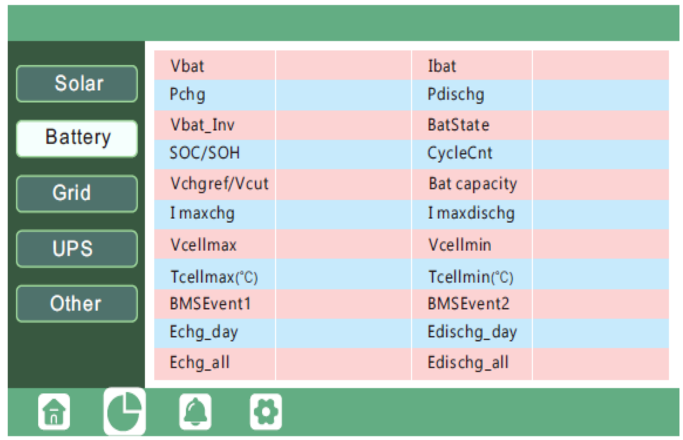
When paralleling multiple Inverters, make sure to complete paralleling process by identifying which is the Primary inverter and the secondary on Parallel System area under the Advance Section. You can confirm by Selecting the Home Icon and view how many inverters are in connection **(PNUM)** and which **Role** each has (**P=Primary, S=Subordinate)**

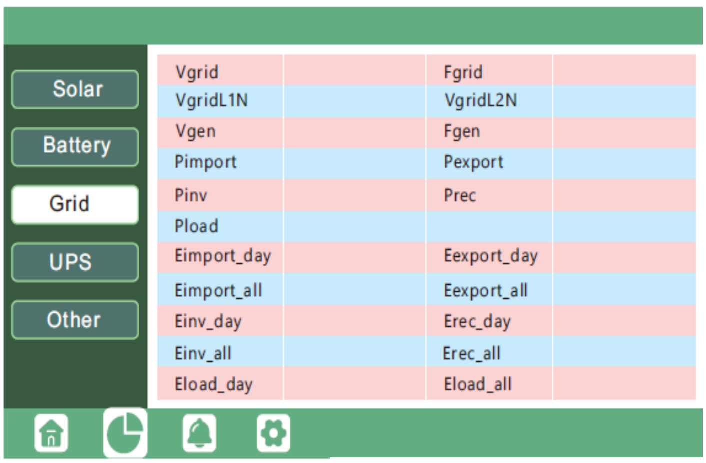
16.7 LCD Detailed System Information Section

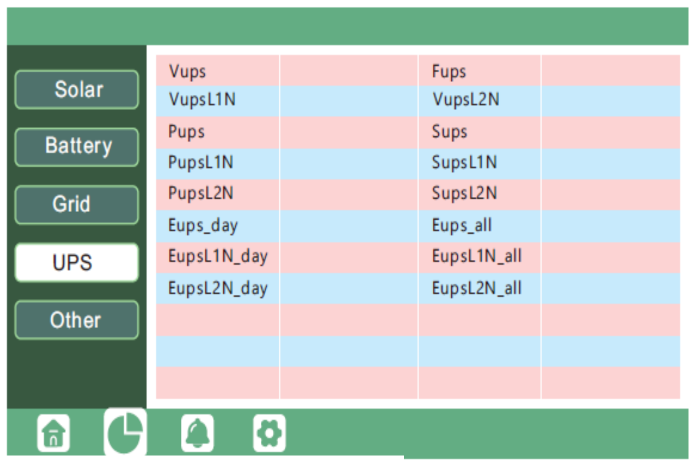
To access the Detailed System Information, click on the pie icon at the bottom of the screen and you'll be able to view the detailed real time solar information, battery information, grid information and EPS output information.

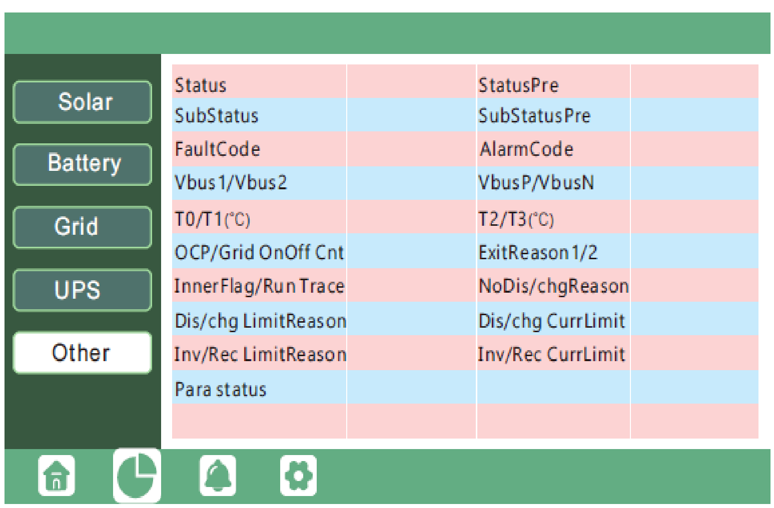
To confirm Batteries have been installed correctly and are communicating with the inverter, please refer to the Battery side of this section and note the **"Imaxdischg"**. For each **eFlex 5.4kWh** installed the value should be 60A. For each **eVault 18.5kWh** installed, the value should be 250A. For











17. Monitoring

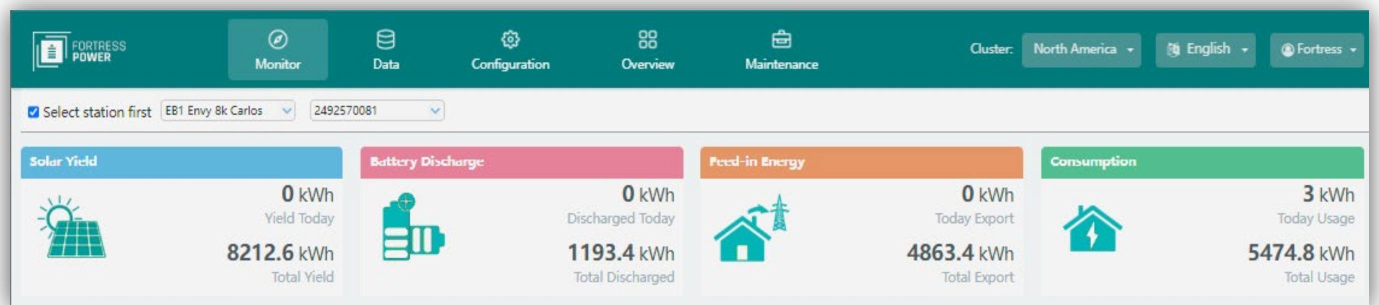
The Fortress Power Envy Application facilitates remote access of your Fortress power system, permitting visibility and control from any location at any given time. Users are provided the opportunity to tailor energy conservation tactics specific to their domestic requirements, while also availing themselves of distinctive features designed to augment daily living. It is imperative to acknowledge that configurations adjusted locally and physically hold high importance over those made through the web interface. Furthermore, the employment of remote functionalities via web application does not serve as an alternative to the essential on-site evaluation for the verification of circuit safety. The omission of such inspections could potentially lead to severe personal injury or fatal outcomes.

17.1 Monitor Homepage Overview

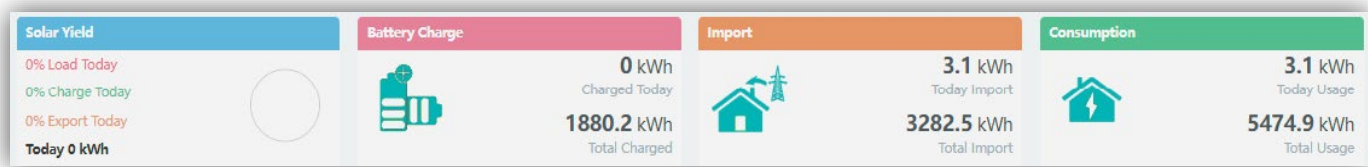
For access to the Fortress Power Envy web monitoring service, please proceed to the following URL: envy.fortresspower.io

The "Monitor" interface is crafted to help end-users with the convenience of accessing real-time system metrics effortlessly. This functionality encompasses a broad spectrum of system components, including Battery, Photovoltaic (PV), Emergency Power Supply (EPS), and Grid data. By presenting both daily and cumulative statistics for solar production, battery charging/discharging, energy feed-in, and consumption, it furnishes a holistic view of the system's operational efficacy.

17.2 Dashboard Introduction



Click the dashboard for more details.



Solar Production:
This metric delineates the electricity generated by the solar panels. Engaging with the solar production icon within the ENVY application permits users to transition fluidly to a detailed visual representation of solar.

energy utilization over the course of the day. Interaction with the solar dashboard unveils aggregated data since the inception of the system, elucidating the energy distribution among load supply, battery charging, and grid exportation.

17.3 Battery Discharging/Charging:

This parameter reflects the energy dynamics—both the absorption and release—pertaining to the battery or batteries in question. By interacting with the battery dashboard, users can toggle effortlessly between views of battery discharging and charging, with displays providing current day aggregates. This seamless interface facilitates a deeper understanding of the battery's daily operational cycle.

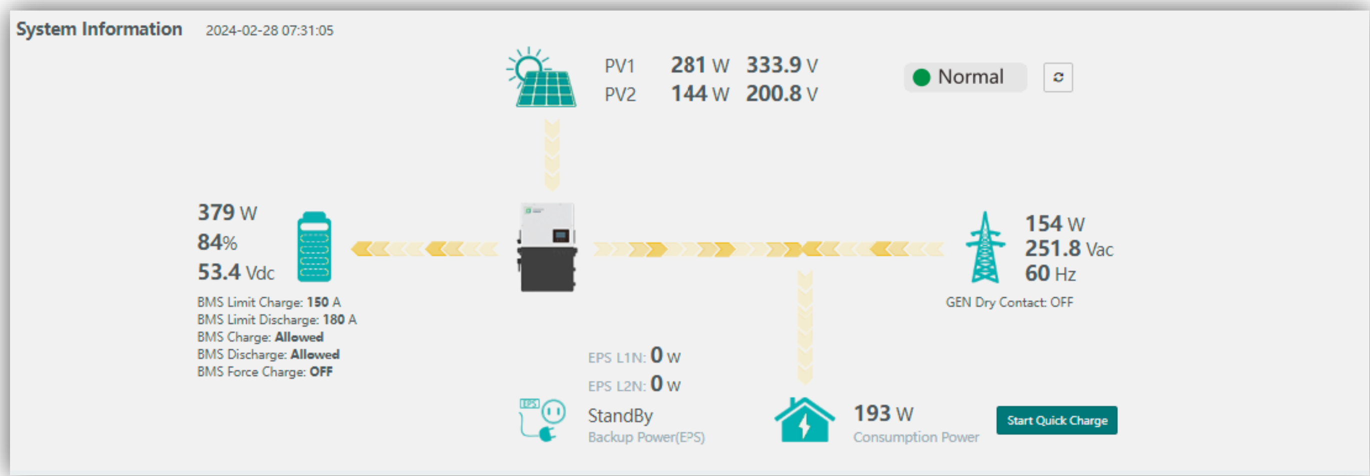
17.4 Energy Feed-in/Import Visualization

This feature articulates the energy that has been directed back to the grid, detailing metrics for both the present day and the period extending back to the system's initiation. A simple interaction with the relevant icon enables a shift in perspective to the energy that has been drawn from the grid over these same intervals.

17.5 Consumption Overview

This section offers insights into the total energy usage of the premises, cataloged daily and cumulatively from the start of system operations.

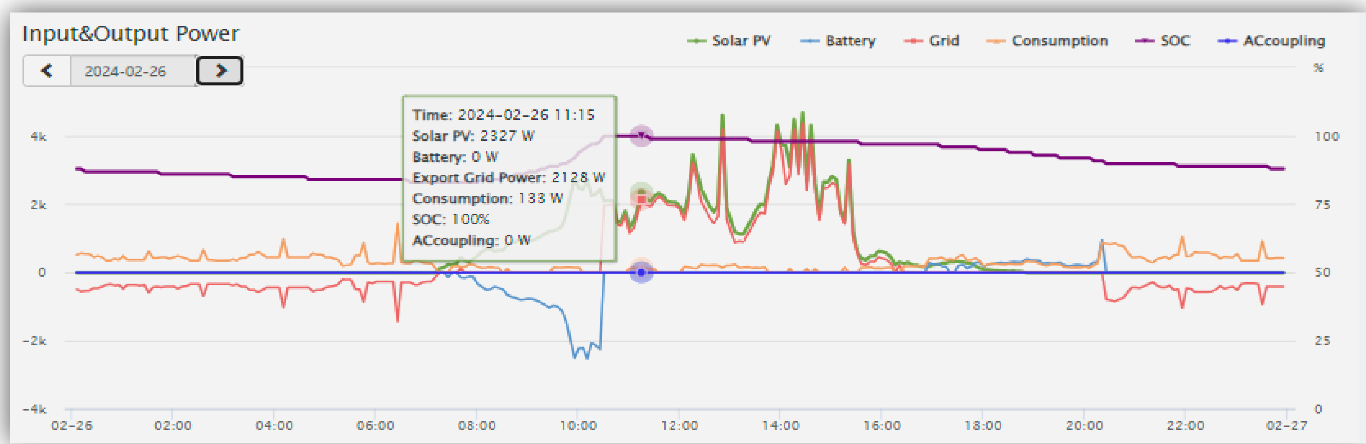
17.6 Real-time System Insights



The interface presents instantaneous energy data, illustrating the dynamic exchanges of power. Initially, the Battery Information is prominently displayed. Engaging with the battery icon allows users to toggle the view, collapsing or expanding the section as desired. Should the battery icon appear yellow or red, this serves as an indication of a potential issue or malfunction within the battery system.

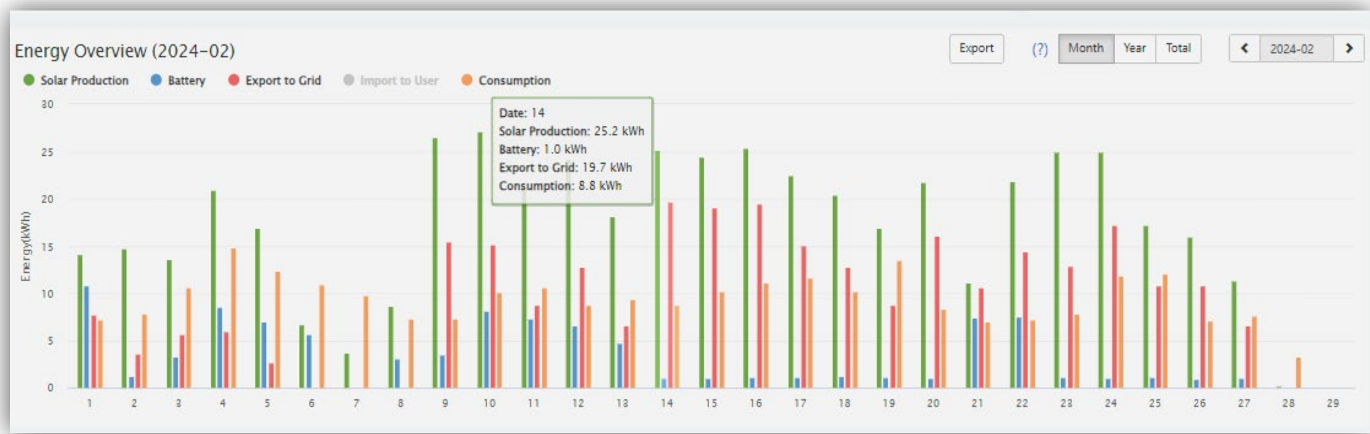
17.7 Daily Power Input & Output

This graph displays the daily power curve, showcasing solar energy production, battery charging/discharging activities, as well as power imported from or exported to the grid and overall consumption. Moving your cursor over the chart will highlight precise data points for specific moments throughout the day.



17.8 Energy Summary

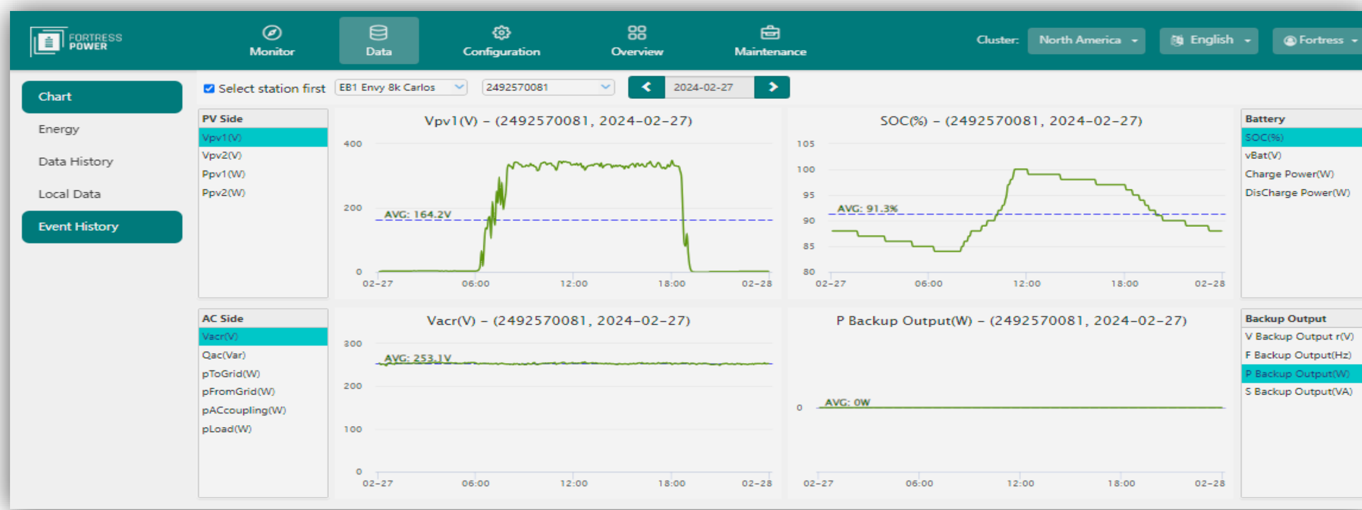
Selecting the 'Month' icon unfolds daily energy statistics, the 'Year' icon presents monthly energy details, and the



'Total' icon offers an annual energy overview.

17.9 Data View

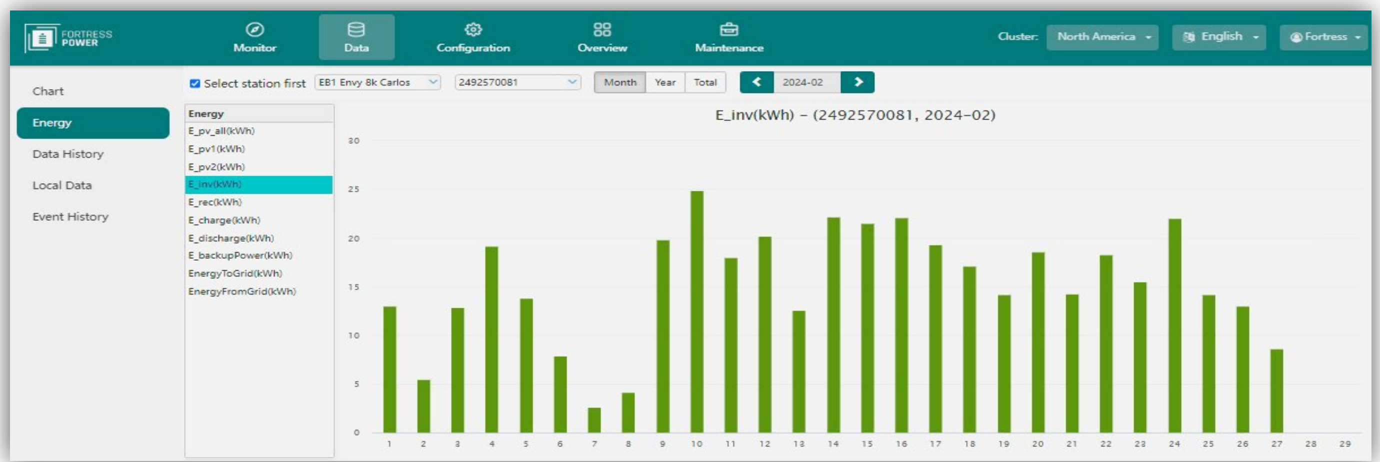
The 'Data' section offers in-depth operational data for analysis and maintenance purposes, including technical specifics related to Photovoltaic (PV) systems, batteries, grid connections, and Emergency Power Supply (EPS) outputs. It is segmented into five distinct areas: 'Chart', 'Energy', 'Data History', 'Local Data', and 'Event History'.



Chart

The chart visualizes crucial metrics for 'PV Side,' 'Battery,' 'AC Side,' and 'Backup Output' (EPS), tracking them across a 24-hour span. Here are the abbreviations terminology:

1. **Vpv:** Voltage from solar panels (PV)
2. **Ppv**: Power generated by solar panels (PV)
3. **SOC(%):** State of Charge of the battery
4. **vBat**: Voltage of the battery
5. **Vacr**: Voltage of the AC output (phase R)
6. **Qac:** Reactive power at the AC output
7. **Vepsr**: Standard voltage for the EPS



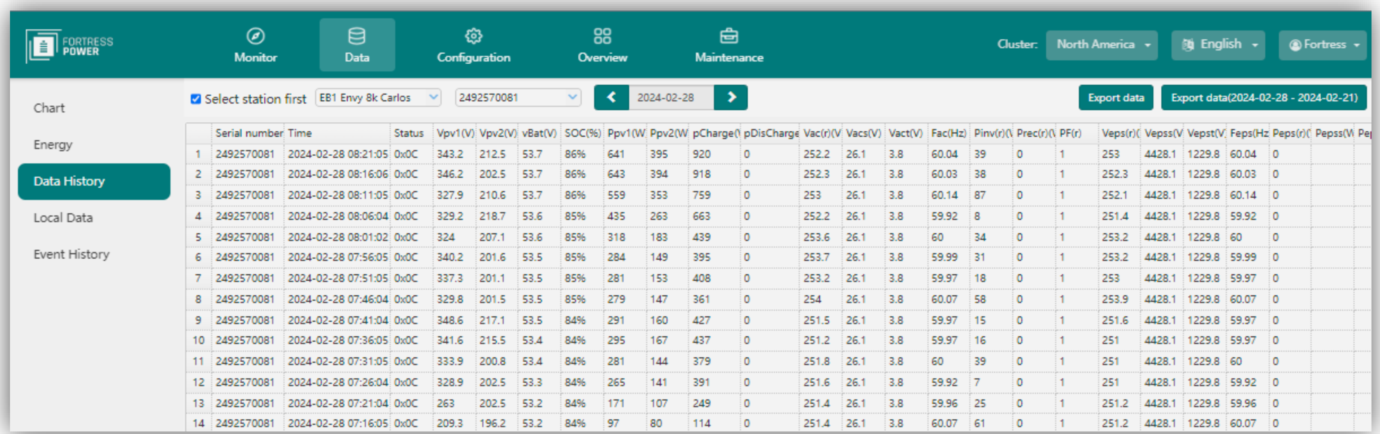
The 'Energy' section showcases a variety of bar graphs that track energy variations over different timescales, including daily and monthly breakdowns. The key metrics represented are:

1. **E_pv_all(kWh):** The cumulative energy produced by all solar panel strings
2. **E_pv1(kWh):** Energy produced by the first solar panel string
3. **E_pv2(kWh):** Energy produced by the second solar panel string
4. **E_inv(kWh):** Energy distributed through AC output
5. **E_rec(kWh):** Energy received from AC charging
6. **E_charge(kWh**): Energy consumed in charging the battery
7. **E_discharge(kWh):** Energy supplied during battery discharge
8. **E_backupPower(kWh**): Energy supplied through the Emergency Power Supply

9. **EnergyToGrid(kWh):** Energy sent back to the power grid
10. **EnergyFromGrid(kWh):** Energy drawn from the power grid

17.10 Data History Overview

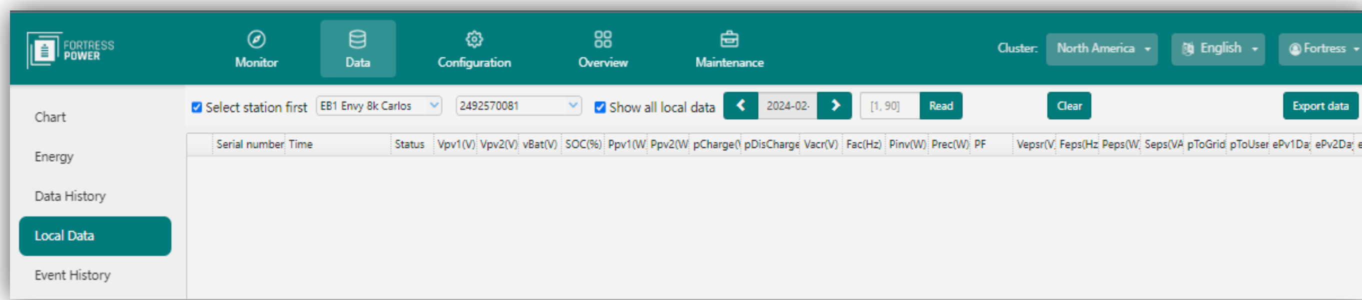
The 'Data History' section catalogs detailed technical readings from PV systems, batteries, Backup Outputs (EPS), and the Grid, specifically for analysis by Fortress Powerr or its authorized installers. A nuanced understanding of this data necessitates a solid grounding in technical knowledge. We recommend that end-users primarily engage with the 'Monitor', 'Chart', and 'Energy' sections, which offer a more intuitive grasp of system performance. Conversely Fortress Power and installers partners are advised to delve into these critical metrics for efficient diagnostic processes.



1. **PtoGrid/PtoUser**: This involves confirming the correct installation of Current Transformers (CT) to accurately monitor power flow to and from the grid.
2. **Vpv/Ppv**: This step entails evaluating the Maximum Power Point Tracking (MPPT) efficiency by checking the solar input voltage and generated power.
3. **Vo/Po/So**: This requires analyzing the load characteristics and identifying potential overloads in Emergency Power Supply (EPS) mode.
4. **Vb/SOC**: This includes monitoring the battery's state of charge to pinpoint issues like overcharging or excessive discharging.
5. **Vac/Fac**: This involves assessing grid performance through the examination of operational voltage and frequency, ensuring they meet grid standards.
6. **E-xxday and Exxall**: Utilize E-xxday for a daily breakdown of energy metrics and Exxall for an overarching view of energy contributions for specific parameters from the commencement of inverter operations.

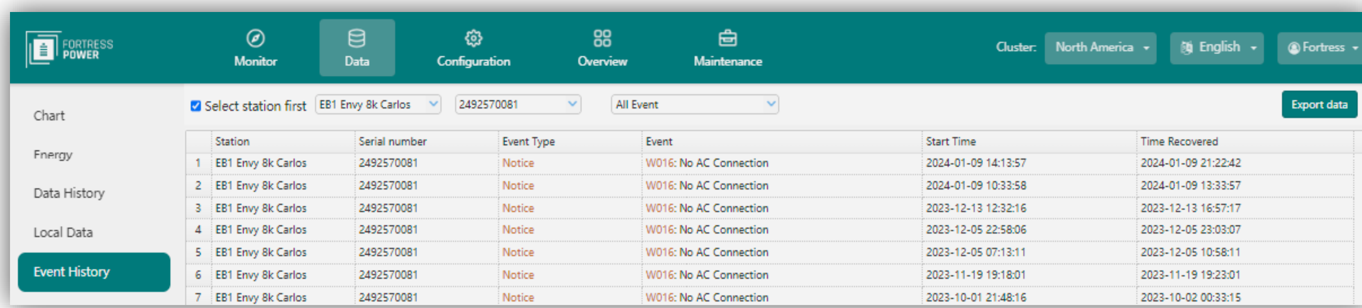
17.11 LOCAL DATA INSIGHTS

The 'Local Data' segment displays information logged during times when the system is not connected to the internet, recording entries every 5 minutes if the system remains offline for over 20 minutes. This data is preserved for up to 90 days.



17.12 EVENT HISTORY OVERVIEW

The 'Event History' area provides a chronological log of significant occurrences, including notices and faults. A lack of entries in the 'Event History' suggests that the hybrid inverter is functioning smoothly, without any reported problems.



18. Mobile App Monitoring

User Information

Inverter Serial Number

Solar Yield:
Displays daily and total solar power generation. Clicking on it allows you to view a pie chart depicting the usage of PV energy.

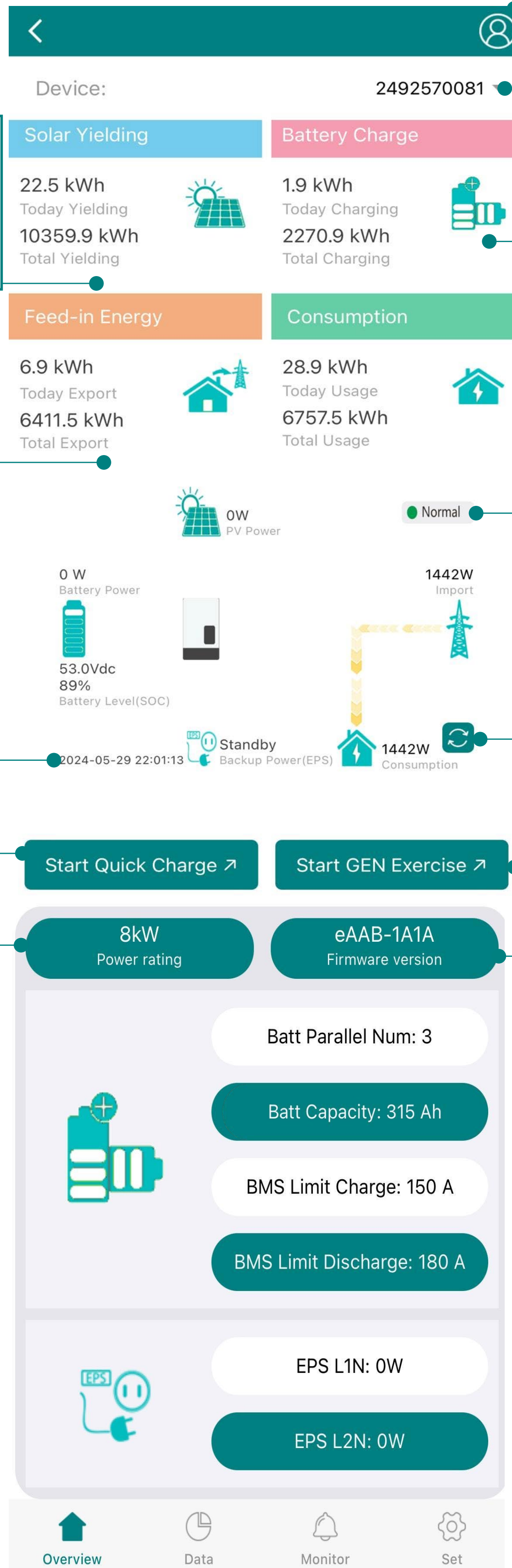
Battery Discharge:
Displays daily, total charging amount and discharged amount. Clicking on it reveals both daily and overall battery discharge.

Feed-in Energy: Daily and total feed-in energy, and clicking on it reveals daily and total grid power consumption.

Displays the operating status of the inverter. Click on "Notice" to access the Events page and view alarm information.

Refresh Button

Last Updated Time



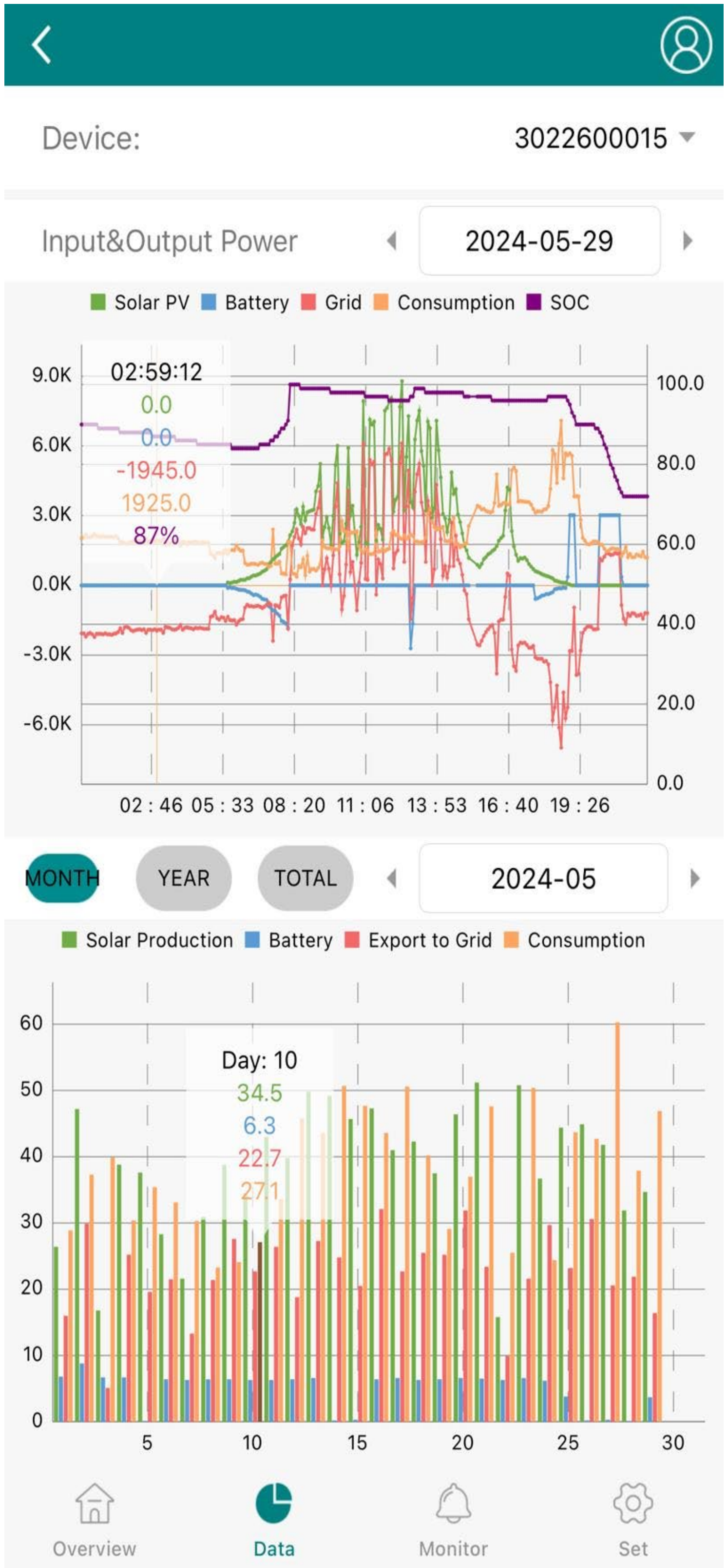
BATTERY QUICK CHARGE from Grid (1HR)

Star Gen Manually

Inverter Rated Power

Firmware Version

18.1 Real time and Historical Data



19. Troubleshooting & Maintenance

19.1 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.

19.2 LED Displays

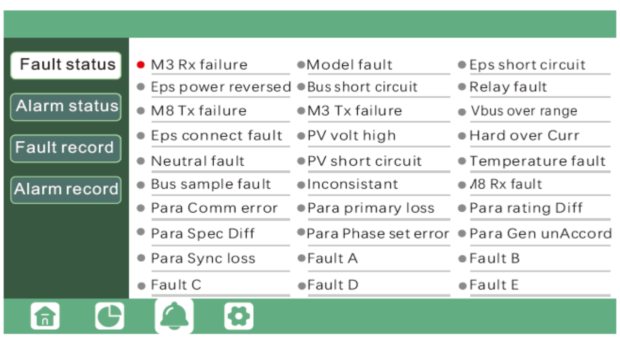
LED	DISPLAY	DESCRIPTION	SUGGESTION
GREEN LED	Solid lit	Working normally	
	Flashing	Firmware upgrading	Wait for the firmware upgrade to be completed
YELLOW LED	Solid lit	Alarm, inverter is working but needs checked.	Wait for it to be clear up, If Alarm, remains it might need troubleshooting
RED LED	Solid lit	Fault, inverter stopped working	Need troubleshooting

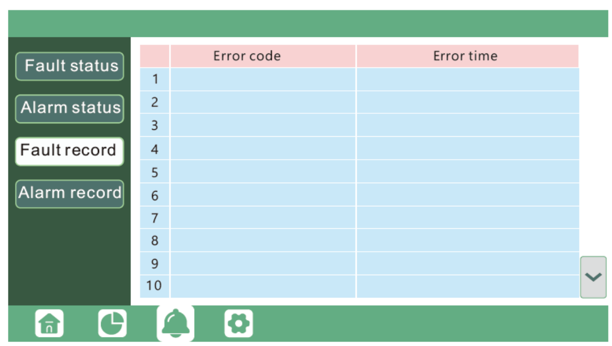
19.3 Troubleshooting Based On LCD Displays

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.**

19.3.1 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.





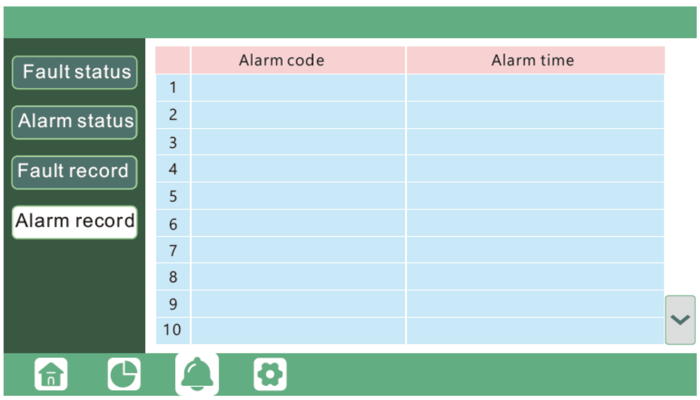
FAULT	MEANING	TROUBLESHOOTING
M3 RX FAILURE	M3 microprocessor fails to receive data from DSP	Restart inverter, if the error still exists, contact Fortress Power service or your inverter supplier.
MODEL FAULT	Incorrect model value	
EPS SHORT CIRCUIT	Inverter detected short-circuit on EPS Load output terminals	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.

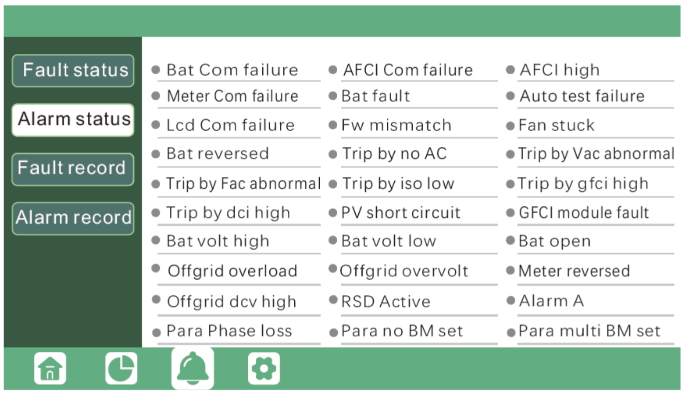
EPS POWER REVERSED	Inverter detected power flowing into EPS Load port	Restart inverter, if the error still exists, contact Fortress Power service or your inverter supplier.
BUS SHORT CIRCUIT	DC Bus is short circuited	
RELAY FAULT	Relay abnormal	
M8 TX FAILURE	DSP fails to receive data from M8 microprocessor	
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

19.3.2 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	3.Check if there is ground fault on grid and load side; 4.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	a. Check if each PV string is connected correctly; b. 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

20. Contact Information

FORTRESS POWER
Secure your energy

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/

System Design Tool
SCAN HERE

Updated Documentation
SCAN HERE

https://www.fortresspower.com/products/envy-12kw/