EG4® FLEXBOSS21
HYBRID INVERTER

USER MANUAL

VERSION 1.0| INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.
MODEL#: IV-16000-HYB-AW-FX-00

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1. TECHNICAL SPECIFICATIONS

AC INPUT DATA				
NOMINAL AC VOLTAGE				120/240VAC; 120/208VAC (L1/L2/N required)
FREQUENCY				60 Hz Default | 50 Hz Capable
MAX. AC CURRENT				50A @ 240V | 57.7A @ 208V
MAX. AC INPUT POWER				12kW
MAX. AC BYPASS				90A
AC GRID OUTPUT DATA				
MAX. OUTPUT CURRENT				66.7A
OUTPUT VOLTAGE				120/240VAC; 120/208VAC (L1/L2/N required)
OPERATING VOLTAGE RANGE				180 – 270VAC
NOMINAL POWER OUTPUT				16kW @ 240V | 13.8kW @ 208V
OUTPUT FREQUENCY				60 Hz Default| 50 Hz Capable
POWER FACTOR				0.99 @ Full Load
REACTIVE POWER ADJUST RANGE				(-0.8) – (+0.8) Leading Adjustable
PEAK POWER (SURGE CAPACITY)	24kW (0.5 sec)	18kW (1 sec)	15kW (6 min)	13.3kW (12min)
THD @FULL LOAD				<5%
TRANSFER TIME				20 ms (Default), 10 ms (Configurable) | Parallel – 20 ms
BACKUP/UPS AC OUTPUT DATA				
RATED OUTPUT CURRENT (240 | 208VAC)				50A | 57.7A
NOMINAL OUTPUT VOLTAGE				120/240 | 120/208VAC
RATED OUTPUT POWER				12kW @240VAC | 12kW @208VAC
PEAK POWER	18kW (1 sec)	15kW (6 min)	13.3kW (12 min)	Without PV: 13.3kW (12 min)
OPERATING FREQUENCY				50/60 Hz
THDV (TOTAL HARMONIC DISTORTION VOLTAGE)				<5%
TRANSFER TIME				20 ms (Default), 10 ms (Configurable) | Parallel: 20 ms
PV INPUT DATA				
NUMBER OF MPPTS				3
INPUTS PER MPPT				2 (MPPT 1) | 2 (MPPT 2) | 1 (MPPT 3)
MAX. USABLE INPUT CURRENT				26A (MPPT 1) | 26A (MPPT 2) | 15A (MPPT 3)
MAX. SHORT CIRCUIT INPUT CURRENT				31A (MPPT 1) | 31A (MPPT 2) | 19A (MPPT 3)
DC INPUT VOLTAGE RANGE				100 – 600VDC
UNIT STARTUP VOLTAGE				140VDC
MPPT OPERATING VOLTAGE RANGE				120 – 440VDC
NOMINAL MPPT VOLTAGE				360VDC
MAX. UTILIZED SOLAR POWER				21kW
MAX. RECOMMENDED SOLAR INPUT				24kW
EFFICIENCY				
CEC				96.9%
MAX. EFFICIENCY (PV TO GRID)				97%
MAX. EFFICIENCY (BATTERY TO GRID)				94%
MAX. EFFICIENCY (PV TO BATTERY)				94.5%
IDLE CONSUMPTION (STANDBY MODE)				<60W

BATTERY DATA	
COMPATIBLE BATTERY TYPES	Lead-acid/Lithium
MAX. CHARGE/DISCHARGE CURRENT	250A @ 48VDC | 234A @ 51.2VDC
NOMINAL VOLTAGE	48VDC
VOLTAGE RANGE	40 – 60VDC
RECOMMENDED BATTERY CAPACITY PER INVERTER	>300Ah
GENERAL DATA	
MAX. UNITS IN PARALLEL	10
PRODUCT DIMENSIONS (H×W×D)	29.52×20.47×11.22 in. (750×520×285 mm)
UNIT WEIGHT	88 lbs. (52 kg)
DESIGN TOPOLOGY	High Frequency – Transformerless
RELATIVE HUMIDITY	0 – 100%
OPERATING ALTITUDE	<6561 ft (<2000m)
OPERATING AMBIENT TEMPERATURE RANGE	-13°F – 140°F (-25°C – 60°C)
STORAGE AMBIENT TEMPERATURE RANGE	-13°F – 140°F (-25°C – 60°C)
NOISE EMISSION (TYPICAL)	<50dB @ 3 ft
COMMUNICATION INTERFACE	RS485/Wi-Fi/CAN
STANDARD WARRANTY	10-year standard warranty*
OUTDOOR RATING	NEMA 4X
SAFETY FEATURES	Integrated DC disconnect, Reverse polarity protection, Output over-voltage protection varistor, Output over current protection, Ground fault monitoring, grid monitoring, Pole sensitive leakage current monitoring unit, AFCI, RSD
STANDARDS AND CERTIFICATIONS	
UL1741B, SA, SB	
California Rule 21 Phase I, II, III	
Arc-Fault Circuit Interrupter (AFCI) NEC 2020:690.11/UL1699B	
Ground Fault Monitoring (GFDI) NEC 2020:690.41(b)	
CSA 22.2.107.1:2016 Ed. 4	
CSA 22.2.330:2017 Ed. 1	
IEEE 1547.1:2020; IEEE 1547:2018	
Hawaii Rule 14H [HECO SRD IEEE1547.1-2020 Ed. 2]	
Rapid Shut Down (RSD) NEC 2020:690.12 (PENDING)	
FCC Part 15, Class B (PENDING)	

See EG4® Warranty Registration for terms and conditions.

2. ABBREVIATIONS

- AWG – American Wire Gauge
- A – Amps
- Ah – Amp hour(s)
- AC – Alternating Current
- AFCI – Arc-Fault Circuit Interrupter
- AHJ – Authority Having Jurisdiction
- kAIC – kilo-Amp Interrupting Capability
- ANSI – American National Standards Institute
- BAT – Battery
- BMS – Battery Management System
- COM – Communication
- CT – Current Transformer
- DC – Direct Current
- DIP – Dual In-line Package
- DOD – Depth of Discharge
- EG – Equipment Ground
- EGS – Equipment Grounding System
- EMC – Electromagnetic Compatibility
- EPS – Emergency Power System
- ESS – Energy Storage System
- E-Stop – Emergency Stop
- FCC – Federal Communication Commission
- GE – Grounding Electrode
- GEC – Grounding Electrode Conductor
- GFCI – Ground Fault Circuit Interrupter
- GFDI – Ground Fault Detector/Interrupter
- Imp – Maximum Power Point Current
- IEEE – Institute of Electrical and Electronic Engineers
- IP – Ingress Protection
- Isc – Short-Circuit Current
- In-lbs. – Inch Pounds
- kW – Kilowatt
- kWh – Kilowatt-hour
- LCD – Liquid Crystal Display
- LFP – Lithium Iron Phosphate
- L1 – Line 1
- L2 – Line 2
- mm – Millimeters
- MPPT – Maximum Power Point Tracking
- mV – Millivolt
- N – Neutral
- NEC – National Electric Code
- NEMA – National Electrical Manufacturers Association
- NFPA – National Fire Prevention Association
- Nm – Newton Meters
- NOCT – Normal Operating Cell Temperature
- PC – Personal Computer
- PCB – Printed Circuit Board
- PE – Protective Earth
- PPE – Personal Protective Equipment
- PV – Photovoltaic
- RSD – Rapid Shut Down
- SCC – Standards Council of Canada
- SOC – State of Charge
- STC – Standard Testing Conditions
- UL – Underwriters Laboratories
- UPS – Uninterrupted Power Supply
- V – Volts
- VOC – Open-Circuit Voltage
- VMP – Voltage Maximum Power

3. INVERTER SAFETY

3.1 SAFETY INSTRUCTIONS

International safety regulations have been strictly observed in the design and testing of the inverter. Before beginning any work, carefully read all safety instructions, and always observe them when working on or with the inverter. The installation must follow all applicable national or local standards and regulations.

Incorrect installation may cause:

- Injury or death to the installer, operator or third party
- Damage to the inverter or other attached equipment

3.2 IMPORTANT SAFETY NOTIFICATIONS

DANGER: ***Hazardous Voltage Circuits!***
AVERTISSEMENT! ***Circuits à tension élevée!***

There are various safety concerns that must be carefully observed before, during, and after the installation, as well as during future operation and maintenance. The following are important safety notifications for the installer and any end users of this product under normal operating conditions.

1. **Beware of high PV voltage.** Install an external DC disconnect switch or breaker and ensure it is in the “off” or “open” position before installing or working on the inverter. Use a voltmeter to confirm there is no DC voltage present to avoid electric shock.
2. **Beware of high grid voltage.** Ensure the AC switch and/or AC breaker are in the “off” or “open” position before installing or working on the inverter. Use a voltmeter to confirm there is no voltage present to avoid electric shock.
3. **Beware of high battery current.** Ensure that the battery module breakers and/or on/off switches are in the “open” or “off” position before installing or working on the inverter. Use a voltmeter to confirm there is no DC voltage present to avoid electric shock.
4. **Do not open the inverter while it is operating to avoid electric shock and damage from live voltage and current within the system.**
5. Do not make any connections or disconnections (PV, battery, grid, communication, etc.) while the inverter is operating.
6. An installer should make sure to be well protected by reasonable and professional insulative equipment [e.g., personal protective equipment (PPE)].
7. Before installing, operating, or maintaining the system, it is important to inspect all existing wiring to ensure that it meets the appropriate specifications and conditions for use.
8. Ensure that the PV, battery, and grid connections to the inverter are secure and proper to prevent damage or injuries caused by improper installation.
9. Some components of the system can be very heavy. Be sure to utilize team-lift among other safe lifting techniques throughout the installation.

WARNING: *TO REDUCE THE RISK OF INJURY, READ ALL INSTRUCTIONS!*

All work on this product (system design, installation, operation, setting, configuration, and maintenance) must be carried out by qualified personnel. To reduce the risk of electric shock, do not perform any servicing other than those specified in the operating instructions unless qualified to do so.

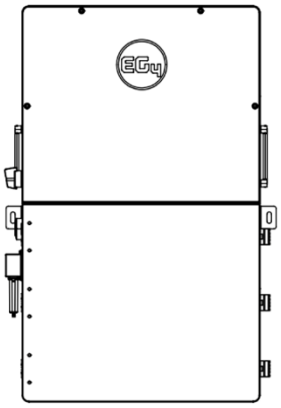
1. Read all instructions before installing. For electrical work, follow all local and national wiring standards, regulations, and these installation instructions.
2. Make sure the inverter is properly grounded. All wiring should be in accordance with the National Electrical Code (NEC), ANSI/NFPA 70.
3. The inverter and system can inter-connect with the utility grid only if the utility provider permits. Consult with the local AHJ (Authority Having Jurisdiction) before installing this product for any additional regulations and requirements for the immediate area.
4. All warning labels and nameplates on the inverter should be clearly visible and must not be removed or covered.
5. The installer should consider the safety of future users when choosing the inverter's correct position and location as specified in this manual.
6. Keep children from touching or misusing the inverter and relevant systems.
7. **Beware!** The inverter and some parts of the system can be hot when in use. Do not touch the inverter's surface or most of the parts when they are operating. During operation, only the LCD and buttons should be touched.

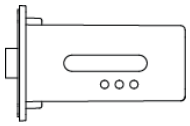
DISCLAIMER

EG4® reserves the right to make changes to the material herein at any time without notice.
Please refer to www.eg4electronics.com for the most updated version of our manuals/spec sheets.

4. PACKING LIST

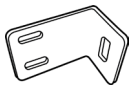
When the product is unpacked, the contents should match the list below.

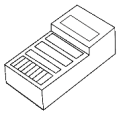

Hybrid Inverter

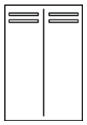

Wi-Fi Dongle


Keys

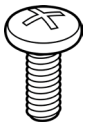

1” CT (×2)

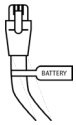

L Bracket (×2)


RJ45 Terminals (×4)

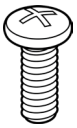

Wall Mount Template

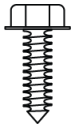

Mounting Bracket


Phillips Head Screw M3×10 (×4)

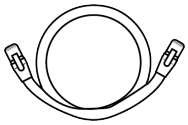


Battery Communication Cable L=2m × 1 (Orange)


Phillips Head Screw M5×10 (×4)

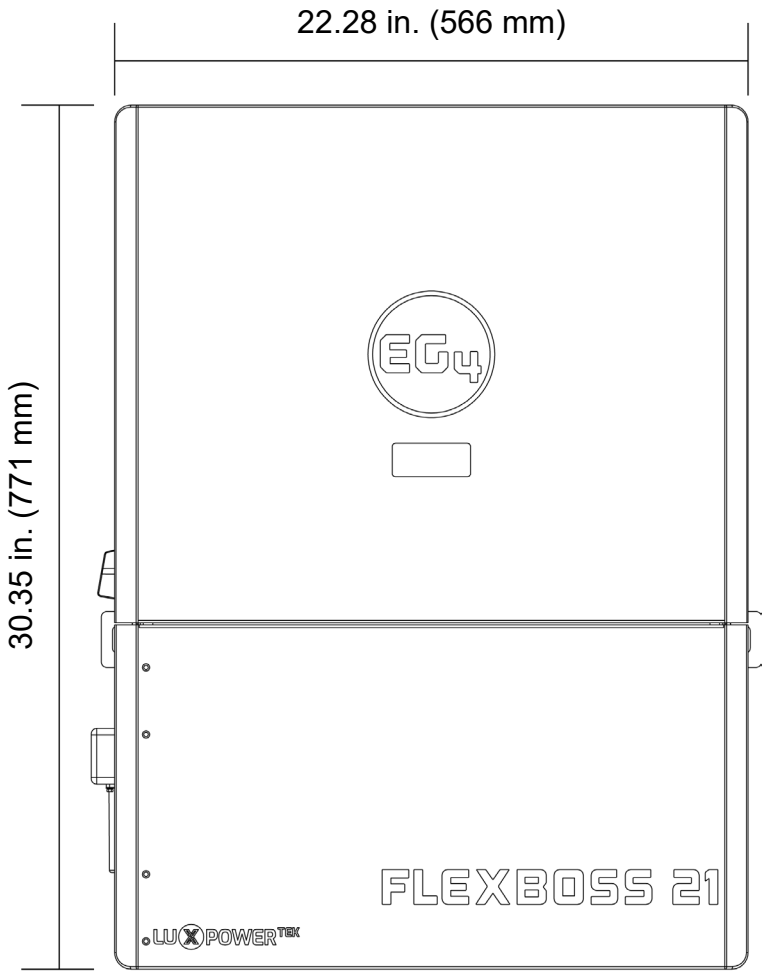

Self-Tapping Screws (×6)

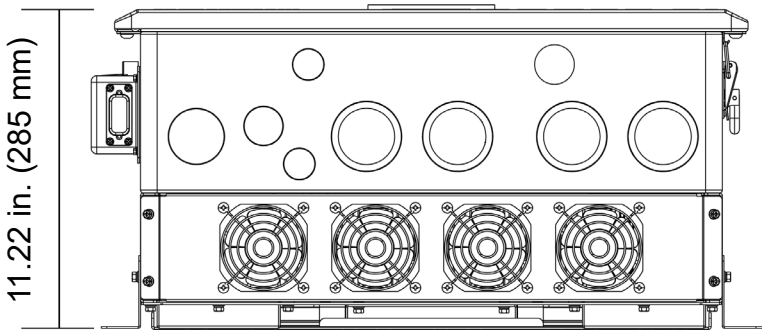

Expansion Bolts (×6)


Parallel Communication Cable L=2m × 1 (Grey)

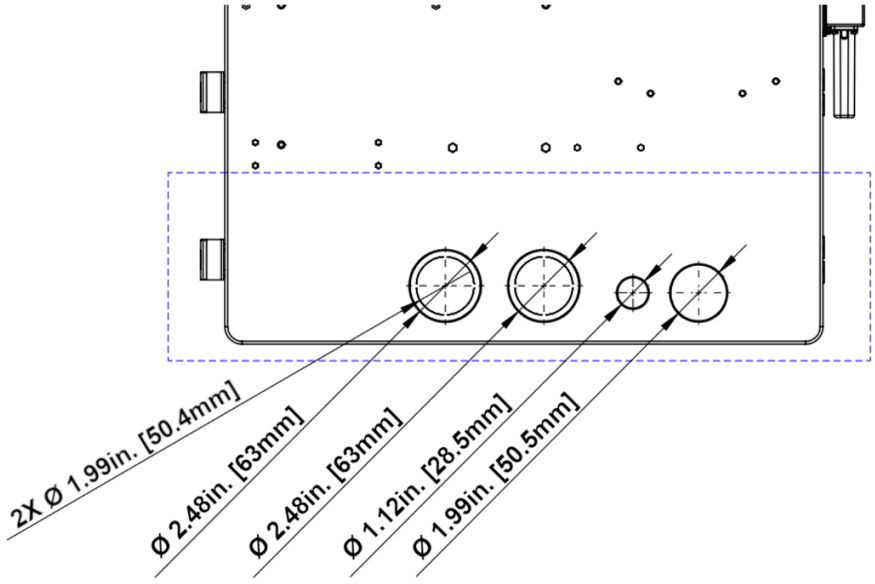
Pictures for reference only, subject to product availability.

5. PRODUCT DIMENSIONS

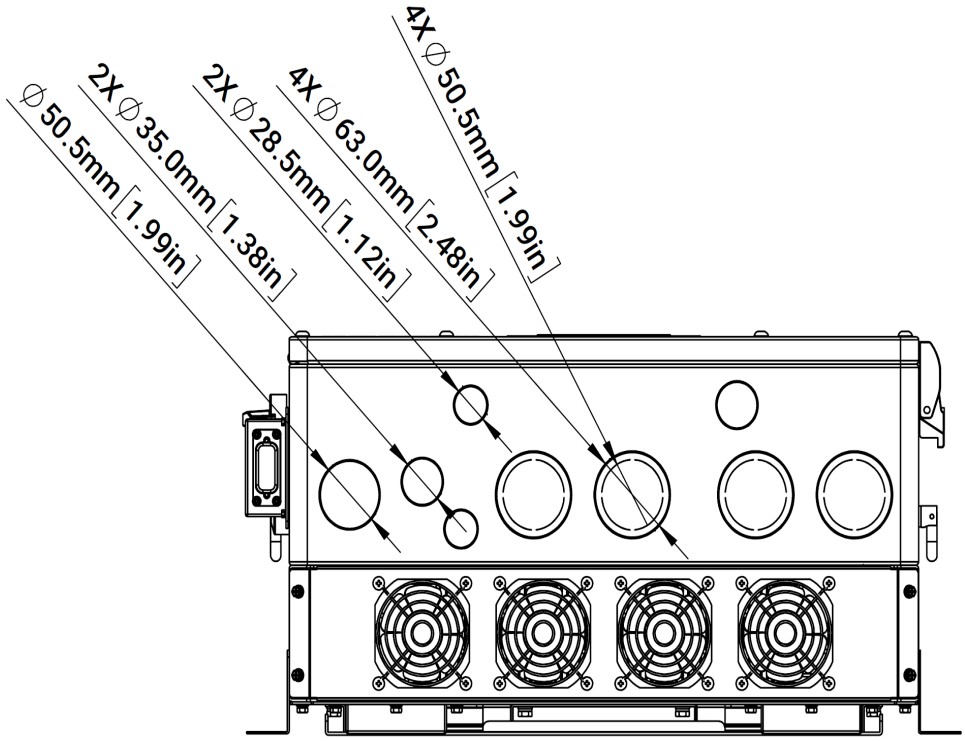




Back View of the Cable Box Knockouts



Bottom View of Cable Box Knockouts



U.S. NOM. TRADE SIZE	ACTUAL KO SIZE	ACTUAL KO SIZE
1/2 in.	0.88 in.	22.2 mm
3/4 in.	1.11 in.	28.2 mm
1 in.	1.38 in.	34.9 mm
1-1/4 in.	1.73 in.	44.0 mm
1-1/2 in.	1.98 in.	50.4 mm
2 in.	2.47 in.	62.7 mm

6. PRODUCT OVERVIEW

The EG4® FlexBOSS21 is a 12/16kW, 120/240VAC split-phase, all-in-one, hybrid, sine wave inverter designed for the residential and small commercial markets. The FlexBOSS21 can utilize 21kWs of DC (STC) solar PV on three MPPTs (26/26/15A) and can generate 12kWs of power during non-sunlight conditions and 16kWs with solar PV gain. It can feed through 90A of utility power from its grid port to load port. The FlexBOSS21 is an enhanced power-level cousin to EG4's flagship 18kPV inverter that has been designed to optimally work with EG4's GridBOSS power gateway though it can function as a stand-alone inverter as well as those not needing the full feature set of the 18kPV or GridBOSS.

6.1 FEATURES

- Applicable for off and on grid situations.
- Has three MPPT solar charge controllers, supporting PV input of 600V with an optimal range of 120VDC – 440VDC.
- Three MPPTs allow flexibility in paralleling strings. MPPT 1 and 2 allow up to 26A each, while MPPT 3 allows 15A, for a total of 21kW of utilized solar power.
- Added safety features such as PV Arc Fault Protection, PV Ground Fault Protection, PV Reverse Polarity Protection, Pose Sensitive Leakage Current Monitoring Unit, Surge Protection device, and Integrated PV Disconnect.
- Rated for 16kW output, with a power factor of 1.
- Supports up to 10 inverters in a parallel configuration.
- Supports Closed-Loop communications with all EG4® batteries and a wide selection of 3rd party batteries using CAN/RS485 protocols.
- Features remote monitoring and firmware updates via EG4® mobile app and Monitor Center website.

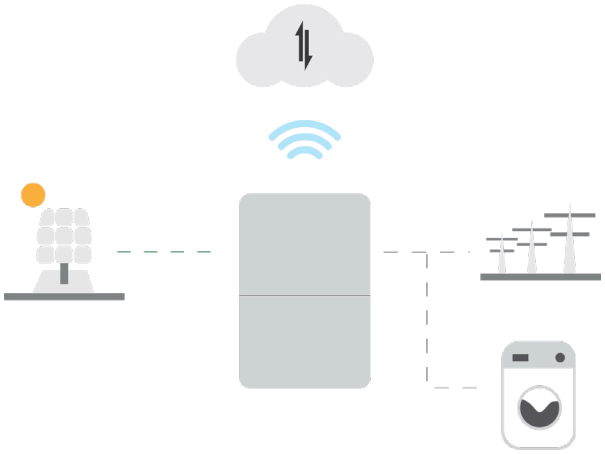
6.2 OPERATION OVERVIEW

The information below provides a high-level overview of the general operation of the inverter.

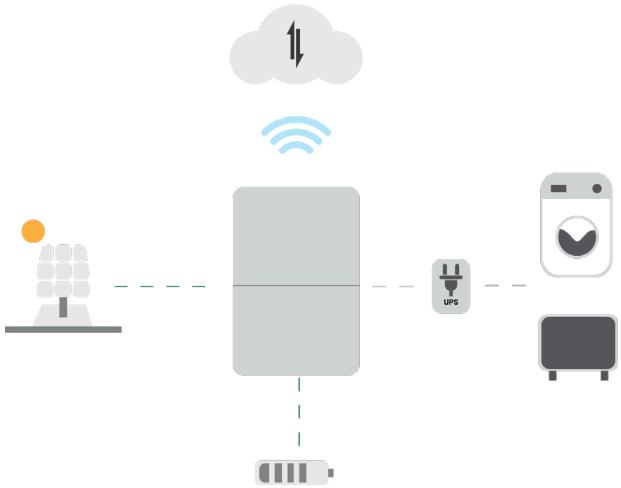
- FlexBOSS21 is a split-phase hybrid inverter that has the ability to operate off and on the grid.
- Designed for rural and suburban homeowners, and small commercial companies seeking energy savings and independence.
- Has the ability to power loads while simultaneously charging batteries.
- Harness multiple power sources, including photovoltaic (PV), battery storage, as well as the grid.
- Incorporates MPPTs, a bi-directional DC-AC inverter, grid interaction, and battery connectivity.
- Users can monitor system performance and perform updates remotely via the EG4® Monitoring website and mobile app, ensuring control and flexibility.
- Supports 24kW of DC (STC) solar PV input while producing 16kW of continuous AC output, even during battery charging, positioning it as an effective option for those looking to implement a robust Energy Storage System.
- Full AC coupling, generator, and smart loads capabilities when used with GridBOSS.
- Features a comprehensive list of certifications that ensure code compliance while offering additional safety and reliability.
- Modular design allows for expansion, adapting to growing energy needs and securing future efficiency in solar investment.

6.3 SYSTEM DIAGRAMS

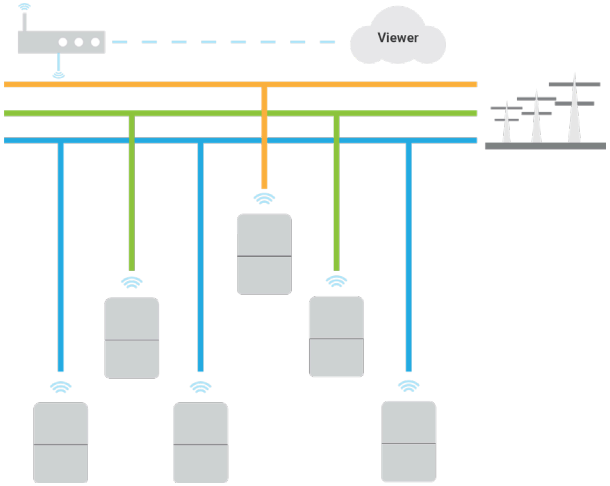
This unit and its associated system are suitable for the following applications:



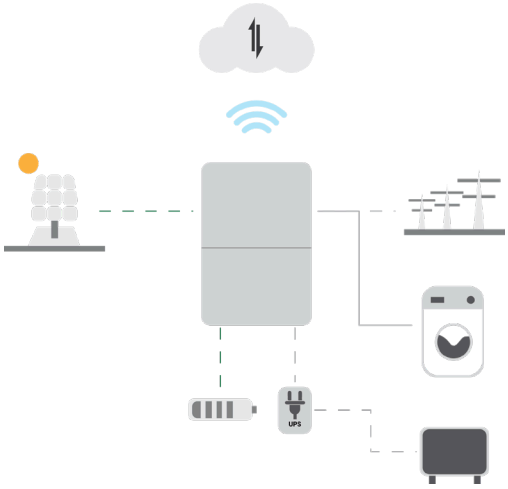
On-grid solar system without battery



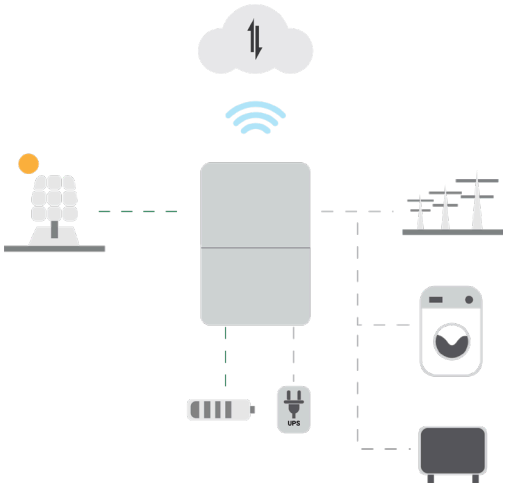
Off-grid and back up applications



Single and three phase paralleling system



Energy storage system
with peak shaving function



Solar and battery storage system

7. SYSTEM INSTALLATION

7.1 TOOLS NEEDED FOR INSTALLATION

- Hand truck with all-terrain tires
- Tape measure
- Drill and drill bits (5/15)
- Wire strippers
- Small flathead screwdriver
- Torque wrench
- M8 Hex
- M5 Hex
- Multimeter
- Precision screwdriver
- Medium flat head screwdriver for PV connection
- 14 mm or 9/16 socket for anchors
- 13 mm or 1/2 socket for lag screws
- Level
- Channel Locks
- Self-tapping screws (2)
- Lineman's Pliers, rabbit ears or side cutters
- Heavy duty wood screws (4)—if anchoring in wood OR Hammer Drill and masonry bit (9/16)— if anchoring in concrete

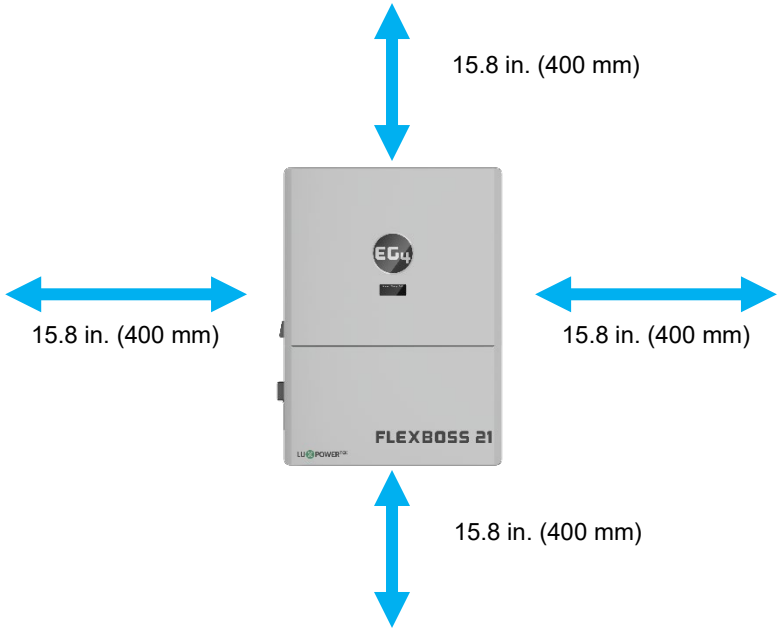
7.2 LOCATION SELECTION AND INSTALLATION

Requirements for installation location

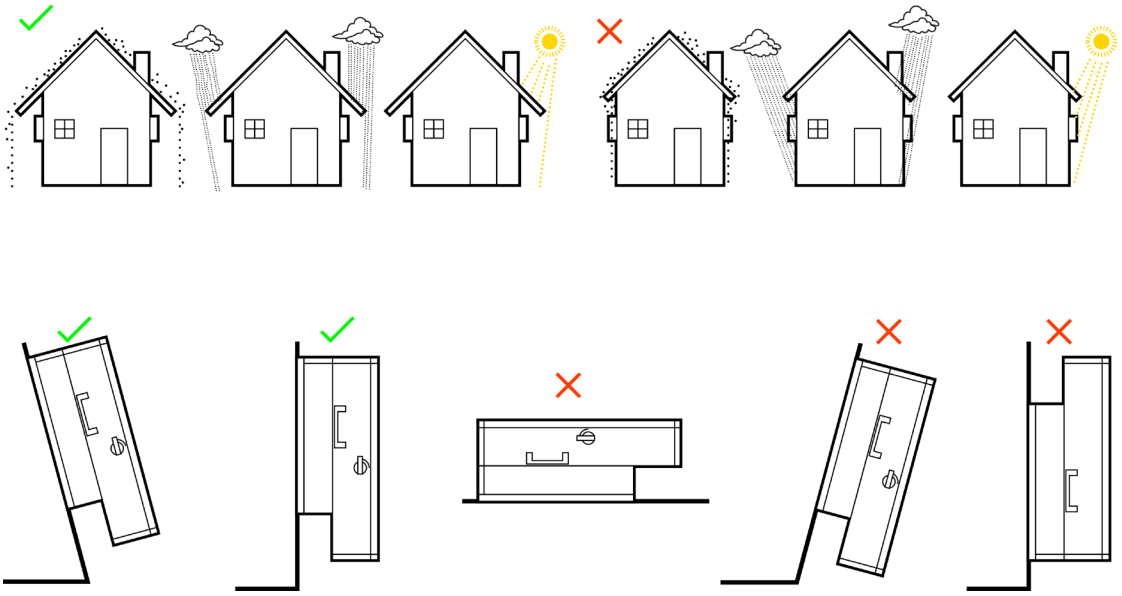
DANGER:

Ensure there is at least 15.8 inches of space around the inverter for heat to dissipate or else there is a risk of fire. Ensure the inverter is mounted away from all combustible materials.

1. The mounting wall should be strong enough to bear the weight of the inverter.
2. Maintain the minimum clearances presented below for adequate heat dissipation.

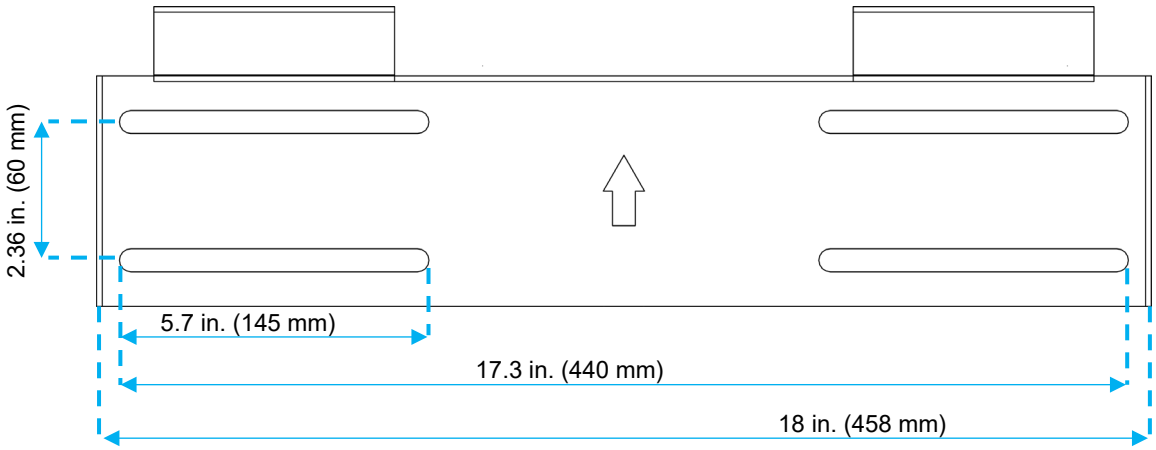


3. Never position the inverter in direct sunlight, rain, or snow. Refer to the figure below and choose a well-shaded site or a shed to protect the inverter from the elements. The inverter should be installed upright on a vertical surface.



Installing the Inverter

The inverter is designed to be wall-mounted on a vertical, solid **non-combustible** surface such as brick or concrete. 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 12 in. (305 mm) to 16 in. (406 mm).



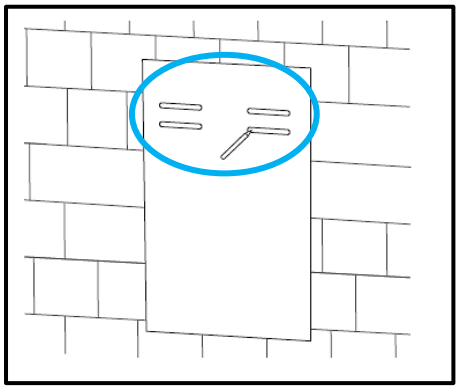
NOTE:

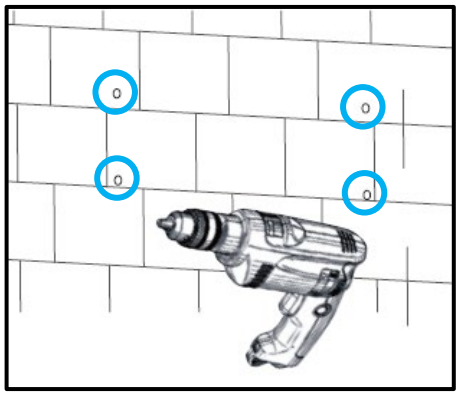
- Ensure the surface the inverter is being mounted to can support the weight of the unit and has proper spacing as per the diagram above.
- The screws needed for attaching the bracket to studs are **NOT** included in the packing contents and must be provided by the installer.

Mounting Steps:

1. Select a location for the inverter's final placement.
2. Use the wall mounting template to mark where the mounting bracket screws will be installed. Use a level to ensure the bracket will be installed straight.

   When installing the bracket to studs, verify the marks for the screws (not included) are centered over a stud. Ensure proper 12 in. (305 mm) or 16 in. (406 mm) spacing



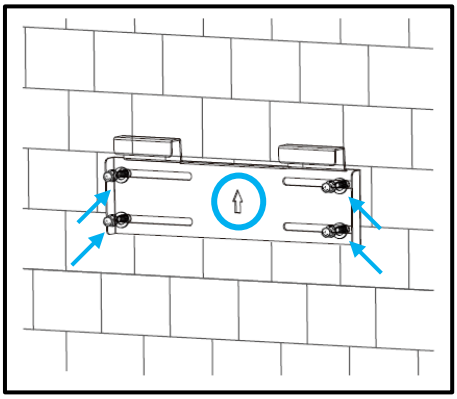


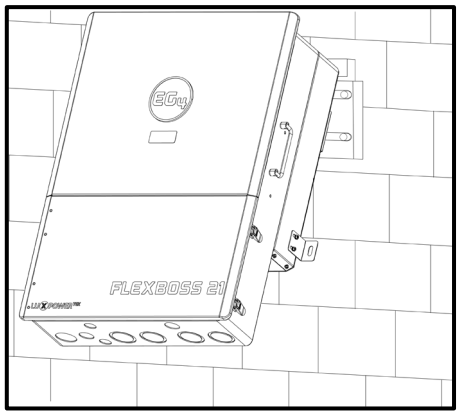
3. When installing the bracket to concrete or brick, drill 5/16 in. (8 mm) diameter holes on the marks, making sure the holes are deeper than 2 in. (50 mm) when using the included expansion bolts.

   When installing the bracket to studs, drill a pilot hole recommended for the screw diameter used. Ensure studs are spaced 12 to 16 in. apart.

4. For concrete or brick wall installation, insert the expansion bolts into the drilled holes. Install the bracket to the wall, ensuring the arrow is pointing up. Use the corresponding nuts and washers (packaged together with the expansion bolts) to affix the bracket to the wall.

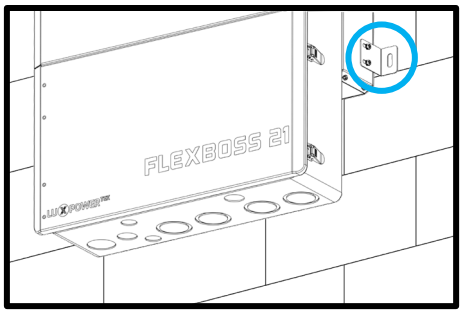
   For stud wall installation, use the proper screws and affix the bracket to the wall.

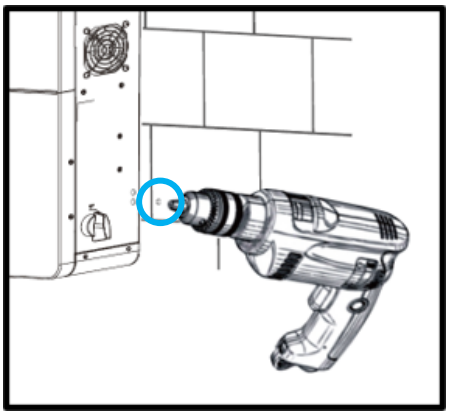




5. Using the team lift technique, place the inverter onto the wall bracket, securing it to the wall.

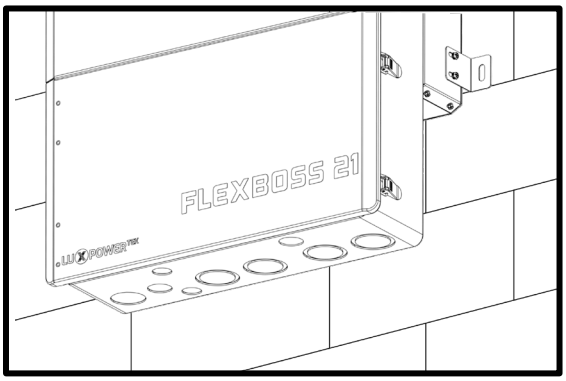
6. Temporarily mount the L bracket to the side of the inverter (located at the bottom, one on each side). Mark holes on the wall based on the hole location on the right-angled bracket (repeat this step for both sides).





7. Remove the angle bracket and drill a hole at the marking. Use the drill bit size based on the anchor type or screw size as directed in step 3 (repeat this step for both sides).

8. Attach the angle brackets (one on each side) to the inverter and to the wall using the correct hardware. Once the bracket is secure, the wall installation is complete.

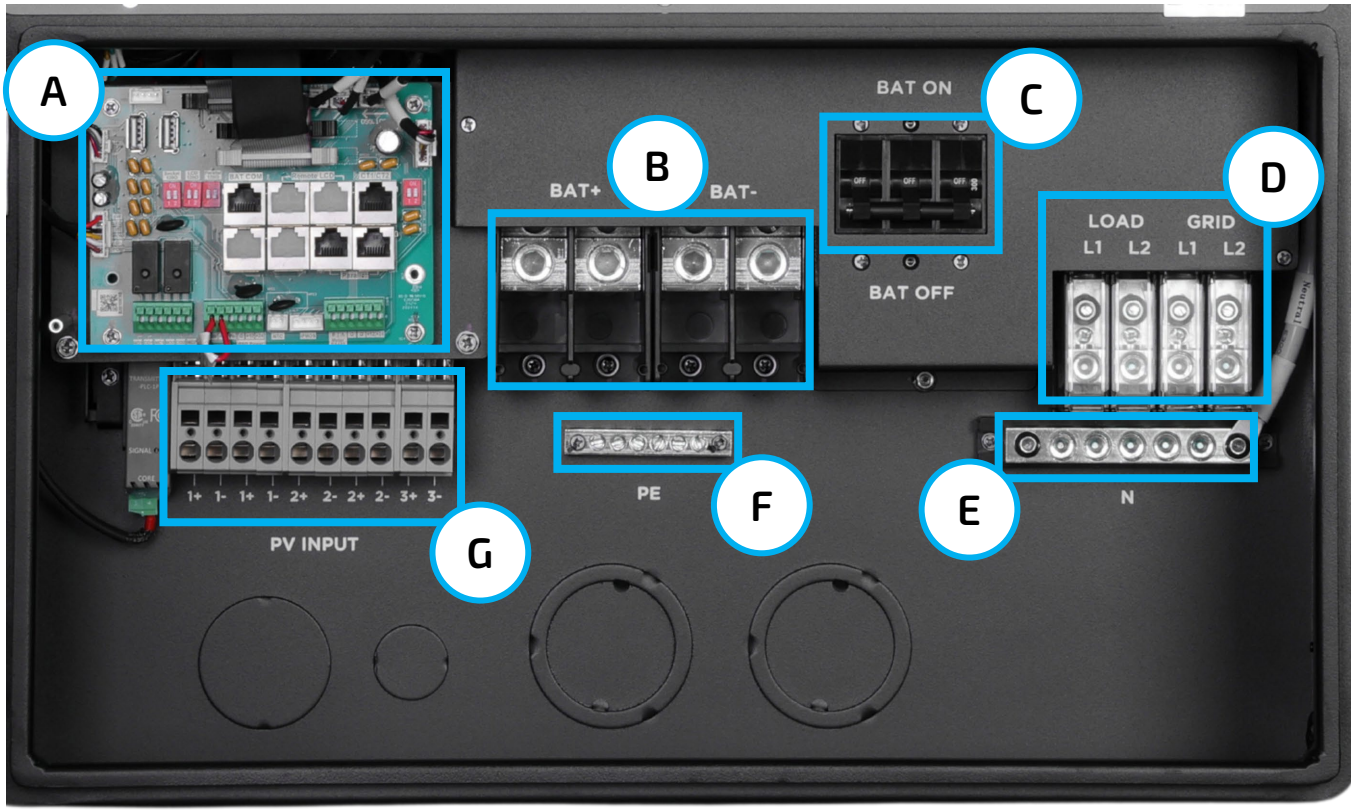


7.3 CONNECTION OVERVIEW

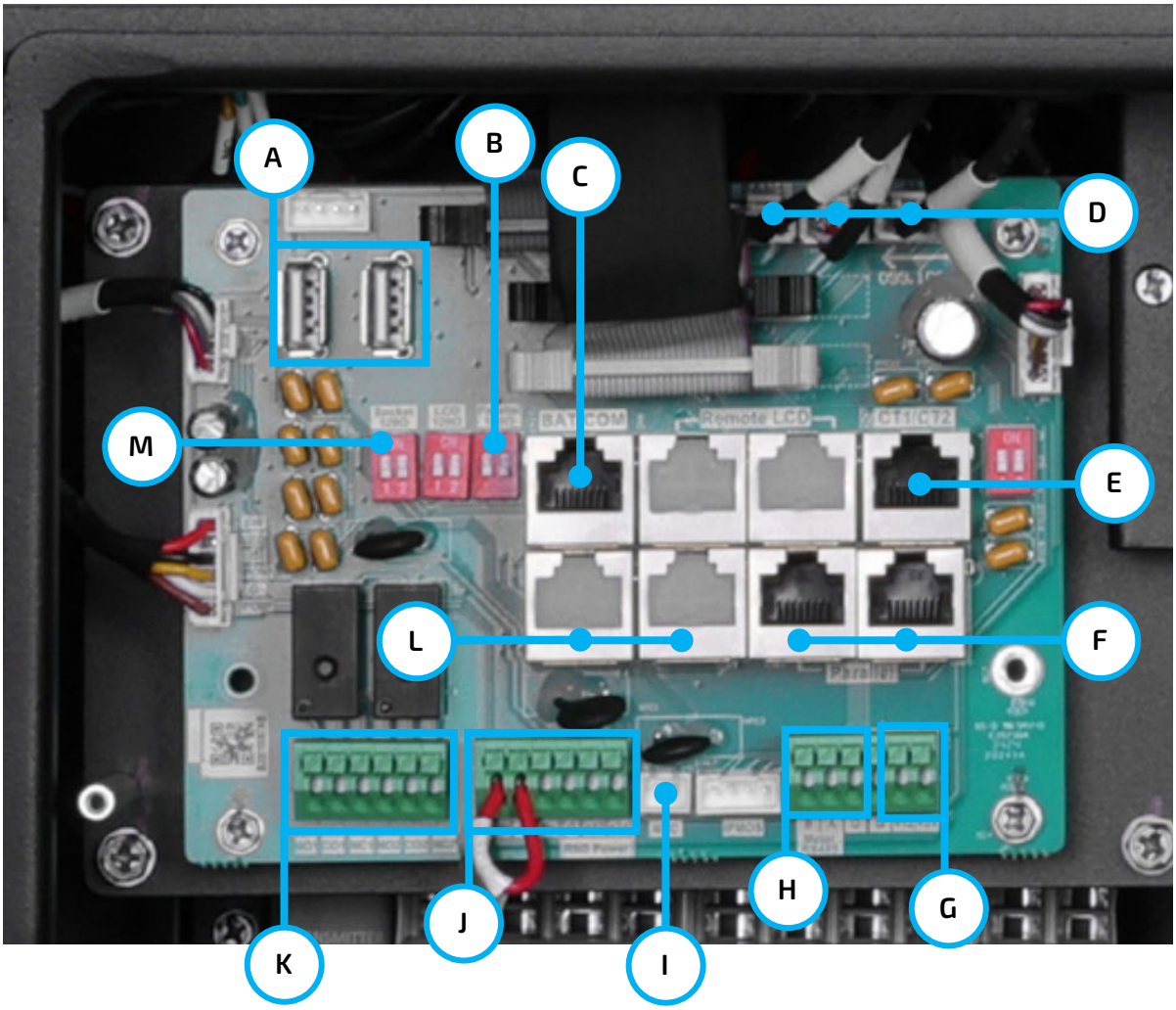
To expose the cable box area, open the bottom cover by opening the two clasps on the side of the inverter. Once the cover is open, follow the sections below for connecting the wiring for PV, battery, AC, parallelled inverters, and Rapid Shut Down. Before connecting any wiring to the inverter, verify each wire is not carrying voltage using a multimeter.
The following information contains details and descriptions of the various connections to the inverter.

Label	Component	Description
A	Communication Board	Used to connect communications cables, set DIP switches, add CTs, and connect external RSD
B	Battery Input	Used to connect battery cables
C	Integrated Bonded Battery Breaker	Over current protection for connected batteries.
D	AC Input/Output	Used to connect AC power from the grid and to loads
E	Neutral Bond	Used for neutral wiring
F	Protected Earth (Ground Bond)	Used for ground wiring
G	PV Input	Used for wiring DC power from solar units to the inverter

Cable Box Overview



Communications Board Overview:



A. Reserved
B. Parallel DIP Switches: Set DIP switches when using inverters in parallel
C. Battery Communication Port (CAN & RS485)
D. Fans
E. CT Interface
F. Paralleling Communication Ports
G. DC Power for customer use, max. 1A
H. Meter 485B & 485A: For meter communication
I. NTC: Connection for temperature sensor of lead-acid battery
J. RSD Terminals
K. DRY (NO, NC): Reserved
L. Reserved
M. Reserved

7.4 PV CONNECTION

Cable Requirements*:

Cable Size	Minimum Insulator Voltage
10 AWG – 6 AWG (Max.) (6 mm^2 – 16 mm^2)	600V

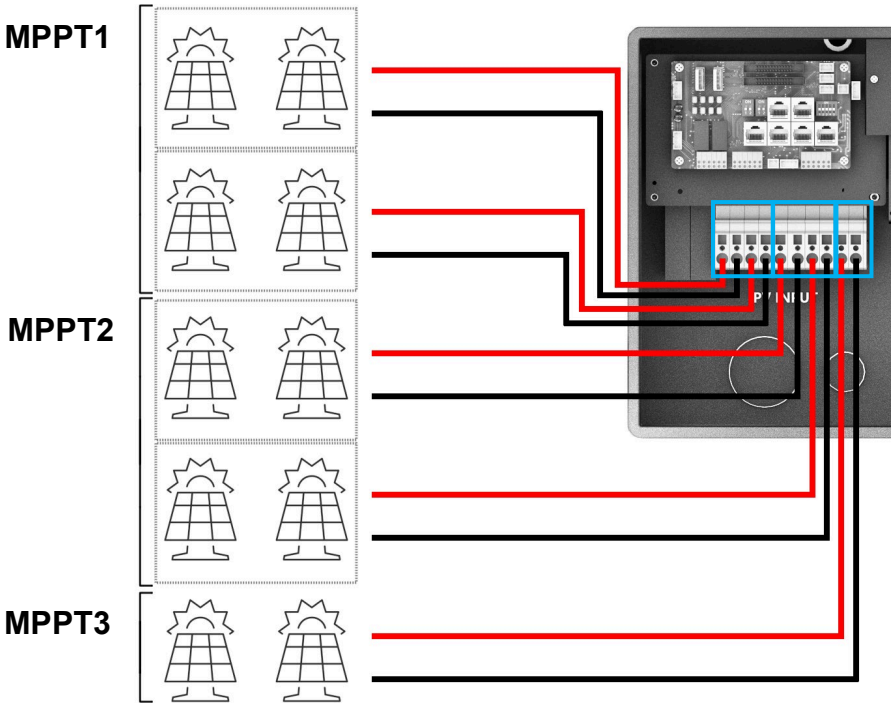
**Consult installer to ensure that appropriate cable sizing is used due to various factors such as distance and operating voltage and amperage.*

IMPORTANT!

- Verify the lowest ambient temperature of the installation location. The rated VOC on the solar module nameplate is obtained at STC (77°F/25°C). As the ambient temperature drops, the solar module VOC increases. Ensure the maximum solar string voltage, corrected at the lowest temperature, does not exceed the inverter's maximum input voltage of 600V.
- It is recommended to install a DC circuit breaker or disconnect switch between inverter and PV modules. The specifications of the DC breaker is 600VDC/32A. It's very important for system safety and efficient operation to use proper cable for PV module connection as shown in the table above.
- When connecting multiple inverters in parallel, a single string cannot be shared between inverters. Each inverter must be connected to its own string.

PV Input Data	Description	Parameter
DC Input Voltage Range	Range required for the unit to operate up to max. input	100 – 600VDC
Unit Startup Voltage	Voltage needed for the unit to turn on	140VDC
Load Output Minimum Voltage	Min. voltage needed to output power on the load side	>140VDC
MPPT Operating Voltage Range	Range where the MPPT can track	120 – 440VDC
Full Power MPPT Voltage Range	Range where the MPPT operates at max. capacity	230 – 500VDC
Nominal MPPT Voltage	Voltage at which MPPT will operate most optimally	360VDC
Max. Utilized Solar Power	Wattage the unit can utilize from the solar array	21kW
Rec. Max. Solar Input	Suggested PV power input to the device to utilize the full 21kw of PV	24kW

String Sizing



- Each string should ideally contain the same model, brand, and quantity of panels for ease of design, racking, and wiring. However, varying string sizes can be used for unique MPPTs. If two strings are used for MPPT1, they MUST be the same model, brand, and number per string. MPPT2 and MPPT3 could differ in model, brank, and number per string (same make/model per string) on the condition that each string complies with the lowest temperature (maximum string number) and maximum amperage calculations.
- When solar modules are put in a series string, the voltage multiplies by the number of modules and the amperage stays the same as each module.
- Calculate the maximum current of the string so as not to exceed the inverter's MPPT circuit ratings. Double check if the calculated VMP range is within the 120 – 440VDC optimal MPPT circuit operating range. Consult a solar designer if needed.
- When solar modules are put in parallel, the amperage multiplies by the number of modules and the voltage stays the same as each module.
- The inverter has three MPPT inputs: MPPT1 and MPPT2 will use up to 26 amps each which means strings can be paralleled together for any modules having less than a 13A (Imp) rating, ensuring the total amperage does not exceed 26A. MPPT #3 will use up to 15 amps which means strings can be paralleled together for any modules having less than 7.5A (Imp), ensuring the total amperage does not exceed 15A.
- All panels on a series/parallel string should face the same orientation and hopefully be exposed to roughly the same shading across the string. Consideration should be placed on string location and wiring order on the racking to minimize shading effects. One shaded module can disproportionately reduce output for the entire string, so avoiding linear strings in favor of rectangular strings can increase output. Optimizers can also achieve this.
- The total maximum solar input power of the inverter is 21kW

NOTE:

For all modules, the calculations need to be performed or verified by using a string calculator or consulting a professional.

DANGER:

DAMAGE WILL OCCUR if the string voltage on a cold, sunny morning exceeds the inverter's maximum input voltage of 600V!
The array can have a higher Imp than the 26A/15A specified, but the MPPTs will not make full use of the extra current. Having an array that can produce more current than the MPPTs can utilize is useful for increasing morning, winter, or cloudy day solar production. An Imp higher than 31A/19A will cause damage to the inverter.

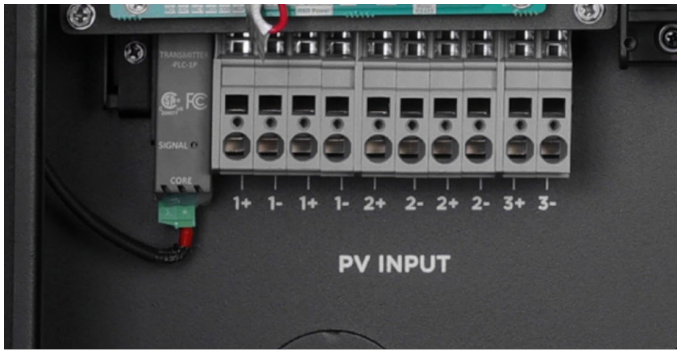
NOTE:

The array can have a higher Imp than the 26A/15A specified, but the MPPTs will not make full use of the extra current. Having an array that can produce more current than the MPPTs can utilize is useful for increasing morning, winter, or cloudy day solar production. An Imp higher than 31A/19A will cause damage to the inverter.

For more information on PV array sizing, scan the following QR code:

PV Array Sizing

Steps for PV Wiring:



1. Ensure all breakers and disconnect switches are in the OFF position before connecting or disconnecting wires. Use a voltmeter to confirm there is no voltage present.
2. Strip off 1/4 in. – 5/16 in. (6 mm – 8 mm) insulation on the PV string's positive and negative conductors.

   Note: Use wire ferrules for the PV string conductors if they are stranded wire.
3. Insert the conduit fitting into the opening for the PV connection and tighten it from the inside using the counter nut.
4. Route the PV conductors through the conduit fitting and into the inverter.
5. Secure the PV conductors in place into the inverter inputs by inserting a flathead screwdriver into the square and the conductor into the circular input. Verify that they are secured properly by *lightly* pulling on them.
6. Ensure the conduit and conduit fittings are fastened securely and the cable entry holes are sealed.

IMPORTANT!

According to the NEC (National Electric Code) in the USA, all PV systems above 50V must have one current-carrying conductor connected to the ground/earth.
All exposed metal parts of the system must be grounded, regardless of voltage.

7.5 CONNECTING BATTERIES TO THE INVERTER

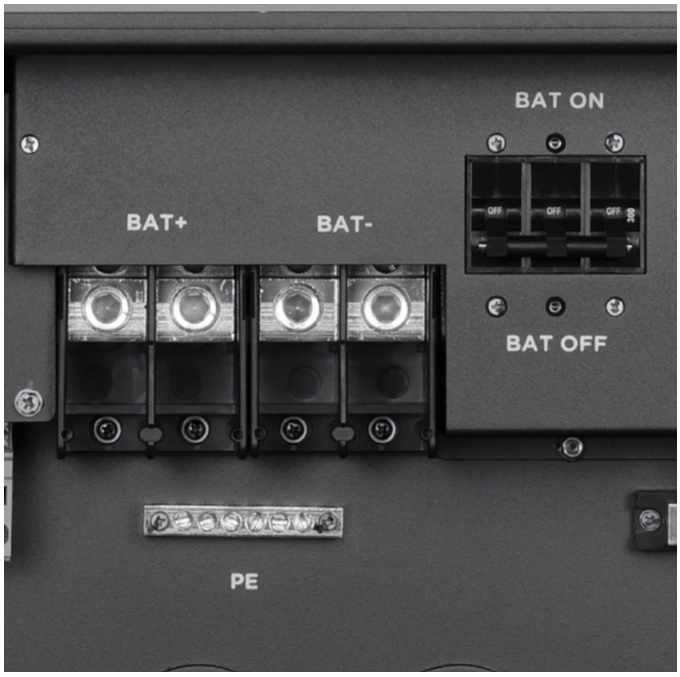
The FlexBOSS21 comes equipped with two battery positive terminals and two battery negative terminals. Each of the two positive battery terminals are protected by a 300 amp breaker. This is to accommodate using parallel conductors as supplied with the WallMount battery series. It is designed to utilize 4/0 battery cables up to 20 feet by using two sets of cables rather than resorting to larger cable sized.

Cable Requirements

# of Cables	Cable Size	Max. Distance	Torque Values
1 Set	4/0 AWG (107 mm^2)	10 ft.	Max. 22.9 ft-lbs. (31.1Nm)
1 Set	250 Kcmil (127 mm^2)	20 ft.	Max. 22.9 ft-lbs. (31.1Nm)
2 Sets	1/0 AWG (53.5 mm^2)	10 ft.	Max. 165 in-lbs. (18.6Nm)
2 Sets	2/0 AWG (67.4 mm^2)	20 ft.	Max. 165 in-lbs. (18.6Nm)

Cable Installation:

1. Place all breakers in the OFF position before connecting or disconnecting wires. Ensure that there is no voltage present with a voltmeter.
2. Strip 1/4 in. – 5/16 in. (6 mm – 8 mm) insulation from the cable end. If required, assemble a battery ring terminal to the battery cable based on recommended wire size and terminal size (see table above).
3. Route the battery power cable, connecting positive (red) to BAT +, and negative (black) to BAT -.
4. Secure the conduit fitting to the enclosure using the counter nut.
5. Fasten battery positive and negative cables to the mechanical terminals according to the markings with an M8 hex wrench, see torque values above.



6. Verify the positive and negative battery cables are properly connected to the battery bank, and the battery bank total amp hours meets or exceeds 300Ah.
7. Connect the included communications cable between inverter and battery communication ports.

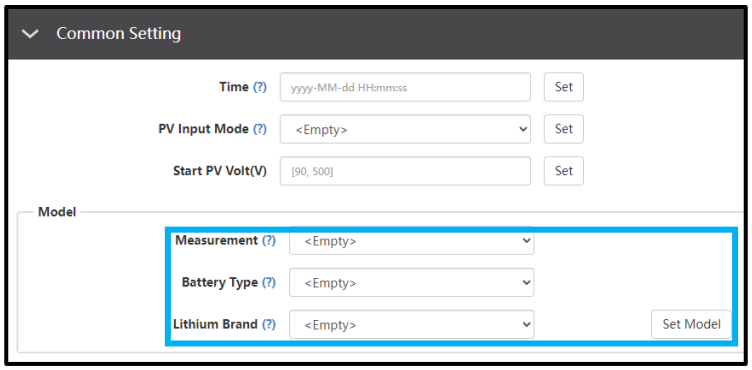
Battery Communication Cable Connection:

1. Use the included battery communication cable to connect the battery to the inverter and choose “Lithium” as the battery type. For inter-battery communication and battery setup with EG4® batteries, refer to the respective battery manual.
2. Select the “Lead-Acid” setting if the lithium battery cannot communicate with the inverter. Ensure battery settings are within the battery’s specifications to prevent damaging the battery bank. Put the inverter in standby mode to protect batteries until values are set.
3. The battery communication port on the inverter is an RJ45 socket with the pinout for the RJ45 plug shown in the following image.
4. The inverter supports both CAN and RS485 communication.

NOTE:

If using EG4® LifePower4 batteries in the system, a firmware update may be required for closed-loop communications. Contact the distributor for this file or navigate to https://www.eg4electronics.com/ for the most recent updates and documentation. For communication with EG4 batteries, select “Lithium” under “Battery Type” and then select “0:EG4” under “Lithium Batteries”

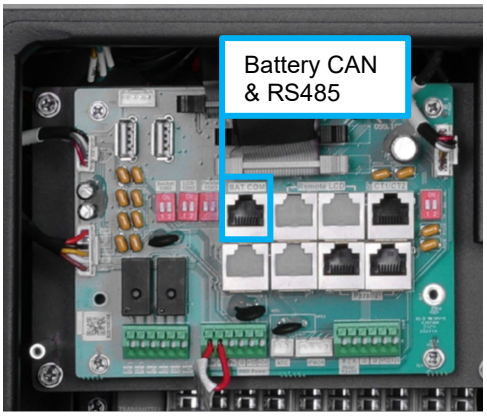
5. After connecting the battery power and communication cables, go to the Monitor Center app or website. Select “Maintenance”, “Remote Set”, and choose battery type under “Common Settings.”



For Lithium Battery:

- Be sure that the lithium battery being used is compatible with the inverter. EG4® strongly recommends using closed-loop communications between the battery bank and inverter. Contact the distributor or support@eg4electronics.com for an updated list of 3rd party batteries capable of closed-loop communication.
- If using multiple battery modules with the inverter, the inverter communication cable must be connected to the master battery. Check with the battery supplier for battery master and slave settings.

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



For Lead-Acid Battery:

Closed loop communication is not available with lead-acid batteries, however, an optional external temperature sensor will enable the inverter to control the charge/ discharge of the battery. Follow the battery manual to determine setting parameters and for more information.

7.6 AC WIRING INFORMATION

When sizing AC wires, adhere to the following information:

Terminal Connection	Cable Size	Torque Values	Max. Amperage Rating
Grid	6 – 4/0 AWG (26.7 mm^2 – 107mm^2)	95 – 165 in-lbs. (10.7Nm – 18.6Nm) depending on wire	50A
Load	6 – 4/0 AWG (26.7 mm^2 – 107mm^2)	95 – 165 in-lbs. (10.7Nm – 18.6Nm) depending on wire	66.7A

NOTE:

If using in conjunction with the GridBOSS, the Load port is not used; see section 9 for more information.

Ground-Neutral Bonding

The information below describes the nature of the ground and neutral in the inverter and their relationship to the system. Always consult with an installer or a licensed electrician to ensure that the right configuration is being used:

- The Neutral of the AC Input and the AC Output are common (known as a Common Neutral Architecture).
- The neutral line between the AC input and AC output is never disconnected.
- **The inverter never creates a ground-neutral bond in any mode of operation.**

IMPORTANT:

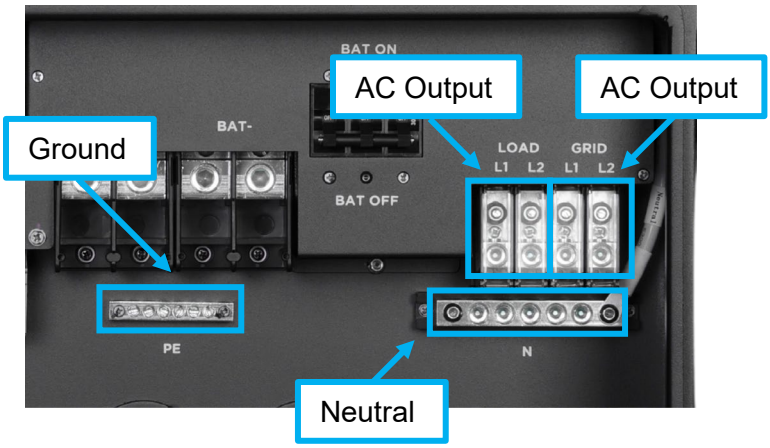
The system should have only one ground-neutral bond (this is typically the Main Bonding Jumper located at the service entrance main breaker).

Steps for AC Connection:

The FlexBOSS21 comes equipped with a L1 and L2 terminal for AC input (labeled GRID) and output (labeled LOAD). It is designed to utilize up to 50A of input and up to 66.7A of output. These terminals ARE NOT connected to a breaker; check with the local AHJ for requirements for means of disconnect.

1. Before connecting or disconnecting AC wires, ensure all breakers are in the OFF position. Check that there is no voltage present with a voltmeter.
2. Strip off 5/16 – 3/8 in. (8 – 10 mm) insulation from the AC cables.

   Note: Use wire ferrules if the cables are made of fine stranded wires.
3. Connect the AC ground wire to the ground bus (labeled PE).
4. Fasten the neutral wire into the neutral bus (Labeled N).



5. Secure the AC wires into their respective mechanical lugs (Line 1 to L1, Line 2 to L2). Torque to the specifications in the chart above.
6. Check that the cables are connected properly. Take appropriate measures to ensure that the conduit and conduit fitting are properly secured and seal the cable entry holes.

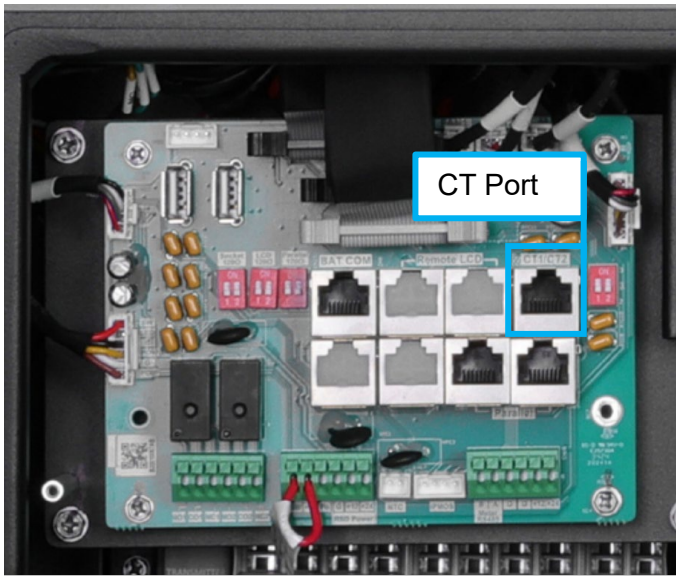
CT/Meter Connection

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. Two CTs are provided with each inverter. The inverter is capable of a third-party meter connection; see section 10.6 for more information.

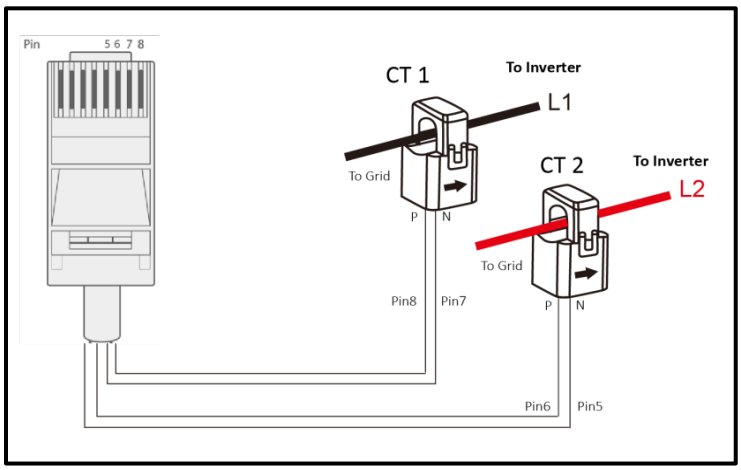
CT Port Pin Definition:

The CT interface for the two (2) CT connections is an RJ45 port. The two (2) CTs come with premade plugs that can be connected directly to the port.

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

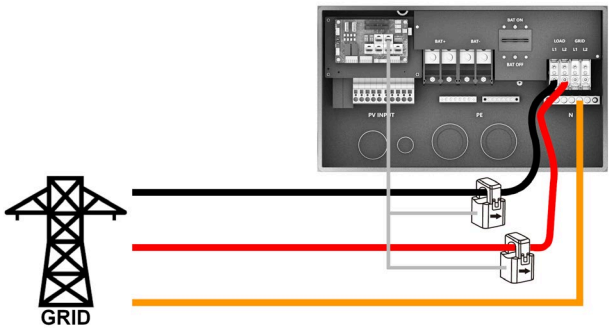


Refer to the connection diagram to the right for the correct position of the CTs. Clamp the 2 CTs onto the L1 and L2 wires at the service entry point in the main service panel as close to the meter base as possible.
The arrows on the CTs must point toward the inverter and be placed on the proper line based on their number. (CT 1 for L1, CT 2 for L2)



CT Clamp Ratio:

The inverter supports three ratios of CT clamps: 1000:1, 2000:1, and 3000:1. The included CTs are 3000:1.
If using a 3rd party CT, ensure that the CT ratio is of the supported types. Be sure to select the correct CT ratio setting on the inverter.
Black= L1
Red= L2
Orange= Neutral
Grey= Communication Cable



Extending the CT Clamp Cable:

The CT wires can be extended with a common ethernet cable if they are not long enough. An RJ45 adapter is needed for the extension. The CT wires can be extended up to 300 ft. (around 90 m).

7.7 PARALLEL SYSTEM CONNECTION

REMINDER:

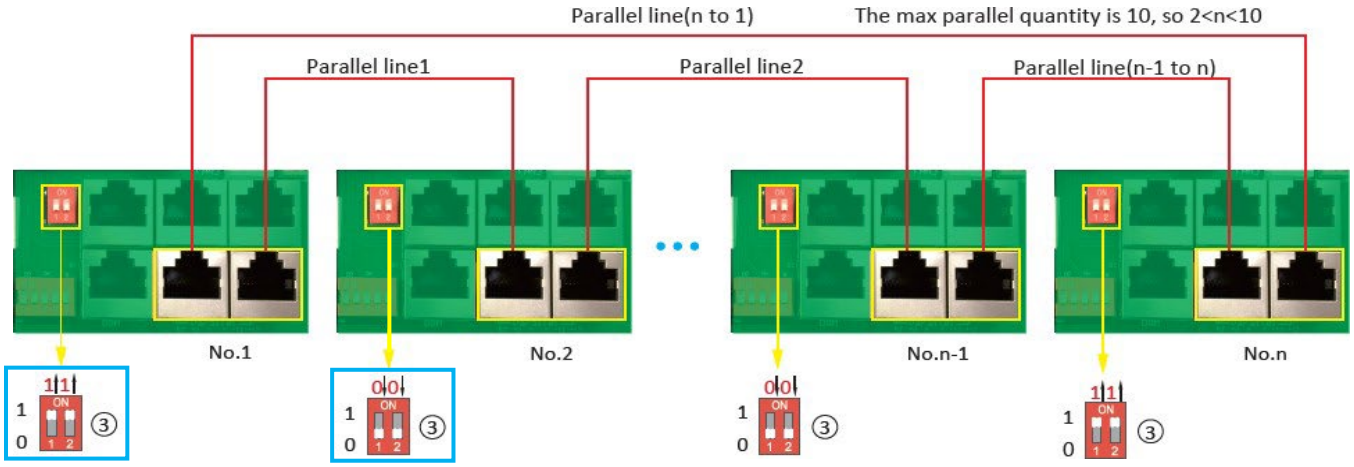
- All setting changes for parallel inverters must be done while in Standby Mode.
- If the system is connected to a lithium battery, the host battery must communicate with the inverter that is set as master in the parallel system.
- *Keep all settings the same for each inverter in the parallel system on the remote monitor!!*
- If the number of PV panels connected to each inverter cannot be evenly divided, it is recommended to have more PV panels on the master inverter.

Connections for Parallel System

The hybrid inverter supports parallel connection to expand power and energy capacity to suit different usage scenarios. Up to 16 units can be paralleled to reach a capacity of 256kW. The inverters can be used in single phase, or in a three phase system (for three or more inverters). The parallel wiring diagrams are as follows. If the inverters fail, users can switch loads to the grid. **Contact the inverter supplier for more detailed guidance on paralleling the system.**

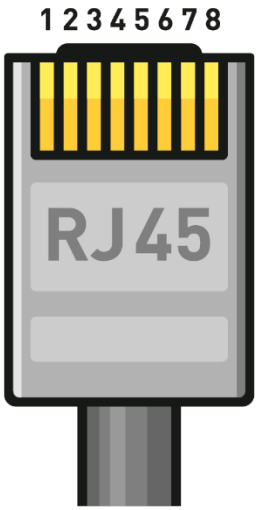
REMINDER:

Put the CAN communication pin to ON status for the first and the last inverter and OFF for inverters in between.
Both switches in the “ON” position translate to address 1. Both switches in the “OFF” position translates to address 0.

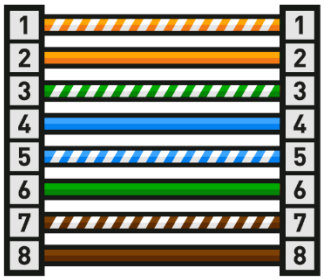


REMINDER:

If the inverter-to-inverter paralleling cable needs to be extended, ensure the cable is a straight-through CAT5 or higher CAT-rated cable. See image below for reference.



Stock Inverter Paralleling Communications Cable

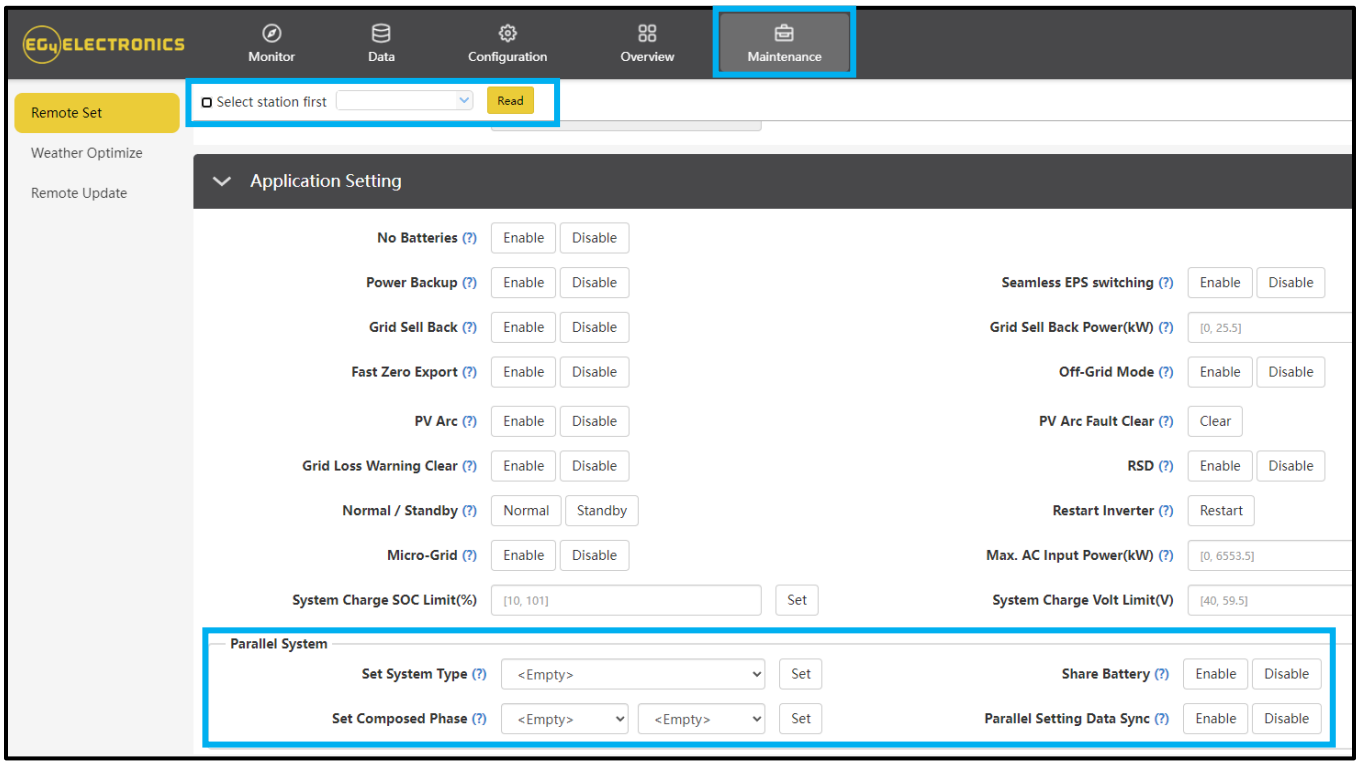


Parallel Configuration:

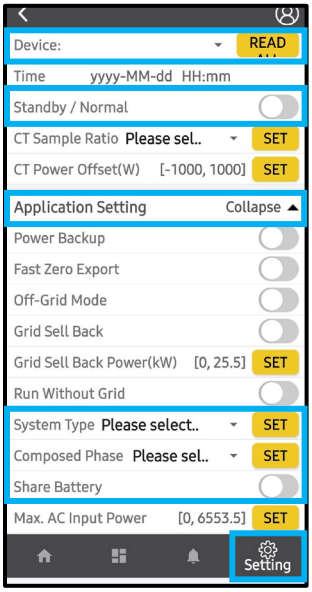
- Before commissioning the system, verify that all inverters are updated to the latest firmware. View www.eg4electronics.com for latest firmware version.
- Make sure the power cables and parallel communication cables have been wired correctly and verify the DIP switch configurations are correct.
- Power on the inverters.
- Login to the Monitor Center Website or the EG4® Electronics app. See section 10 for more information on how to access these and detailed information on how to use the app and website.
- Ensure all dongles are on one station, contact the installer or distributor for more information.

Commissioning Steps via the Monitor Center Website:

1. On the Monitor Center Website, select which unit to set as the Master in the drop-down menu at the top of the page.
2. Select “Maintenance” and scroll to “Application Setting”.
3. Select “1 Phase” or “3 Phase Master” under “Set System Type” (a three-phase system must have three or more inverters).
4. Select “U Phase” under “Set Composed Phase”.
5. Enable “Share Battery”.
6. Enable “Parallel Setting Data Sync”.
7. On all other inverters, select “Slave” under “Set System Type” and repeat steps 4 through 6 for single phase systems. Continue to the Finish Commissioning Steps below.
8. For three phase systems, the phasing will be set to “U Phase” for the master, “V Phase” for the first slave, and “W Phase” for the next. The pattern will repeat for each subsequent inverter, restarting at “U Phase”.
9. See Finish Commissioning Steps below:



Commissioning Steps via the EG4® App:



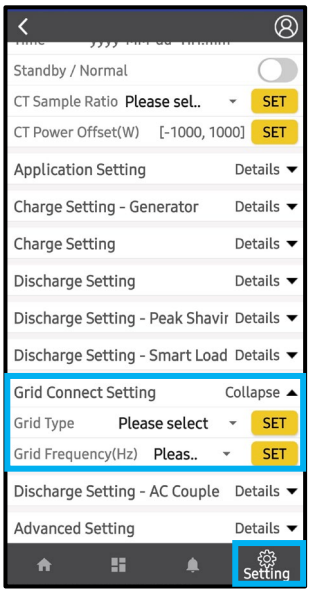
1. On the EG4® Electronics App, select the settings icon.
2. At the top, select the device to set as the Master in the drop-down menu.
3. Toggle the “Standby/Normal” setting off.
4. Select “Application Setting”.
5. Select “System Type” and set to either “1 Phase Master” or “3 Phase Master” (three phase must have three or more inverters).
6. Select “Composed Phase” and set to “U Phase”.
7. Toggle “Share Battery” on.
8. Select the inverters to set to “Slave” in the top drop-down menu and select “Slave” in “System Type” setting. Repeat steps 6 and 7 for single phase systems. Once finished with all inverters, continue to the Finish Commissioning Steps below.
9. For three phase systems, the phasing will be set to “U Phase” for the master, “V Phase” for the first slave, and “W Phase” for the next. The pattern will repeat for each subsequent inverter, restarting at “U Phase”.
10. See Finish Commissioning Steps below:

Finish Commissioning Steps:

1. Turn on the battery and make sure the communication works on all units.
2. Check the parallel info via the app or website.
3. Enable “Power Backup” under “Application Setting”.
4. Before connecting loads to the load output terminal, check the output of L1 and L2, and L1 and N with a multimeter.
5. Add small loads to the load output and verify power output.
6. Finish the commissioning by switching all inverters from “Standby” to “Normal”.

7.8 GRID, LOAD, AND AC INFORMATION

This inverter can be used in 120/240V or 120/208V phase systems. The default setting is 120/240. This inverter has passed the main grid connection regulations in the United States. Users can choose the different grid types and regulations in the “Grid Connect Setting,” on either the app or the website. On the website, this setting can be found under the Maintenance tab. On the app, this setting can be found under the settings icon at the bottom of the page. For more information on the app and website, see section 10.



7.9 ESS DISCONNECT/RAPID SHUTDOWN (RSD)

The inverter includes a rapid shutdown system that complies with 2017 and 2020 NEC 690.12 requirements. In case of emergency, press the rapid shutdown button to cut off the power supply, cutting the inverter's AC Output along with dropping the PV Conductors voltage to <30V in 30 seconds.

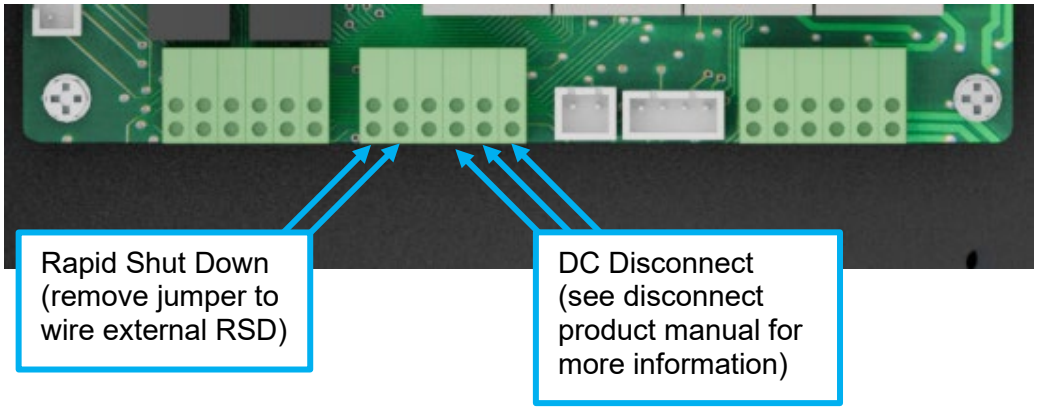
NOTE:
When using supported EG4® batteries in closed-loop communications with the inverter, the RSD also initiates ESS Disconnect as required by NEC code.

External RSD

The system can also utilize an External E-Stop Switch if the local AHJ deems it necessary.

- The external switch must have normally closed contact type for emergency shutdown.
- The external switch should be connected to the RSD terminals on the inverter and mounted on a readily accessible location outdoors (check with the local AHJ for requirements).
- Remove jumper from external RSD connection and wire the E-Stop Switch into the RSD terminals according to the switch's specifications.

External RSD Wiring:



8. INVERTER START-UP AND SHUTDOWN PROCEDURE

Starting up the inverter:

1. If equipped, turn on (close) the DC breaker between the battery bank and inverter first. Turn on the BAT breaker located in the cable box of the inverter and then power on the battery system.
2. Make sure the PV voltages of the strings are within operating parameters (over 140V). Turn on (close) the PV isolator switches between the inverter and array, and then turn on the switch on the side of the inverter.
3. Make sure Steps 1 and 2 are running properly before turning on the grid power breaker.
4. Power on the load breakers in the load panel.

DANGER:

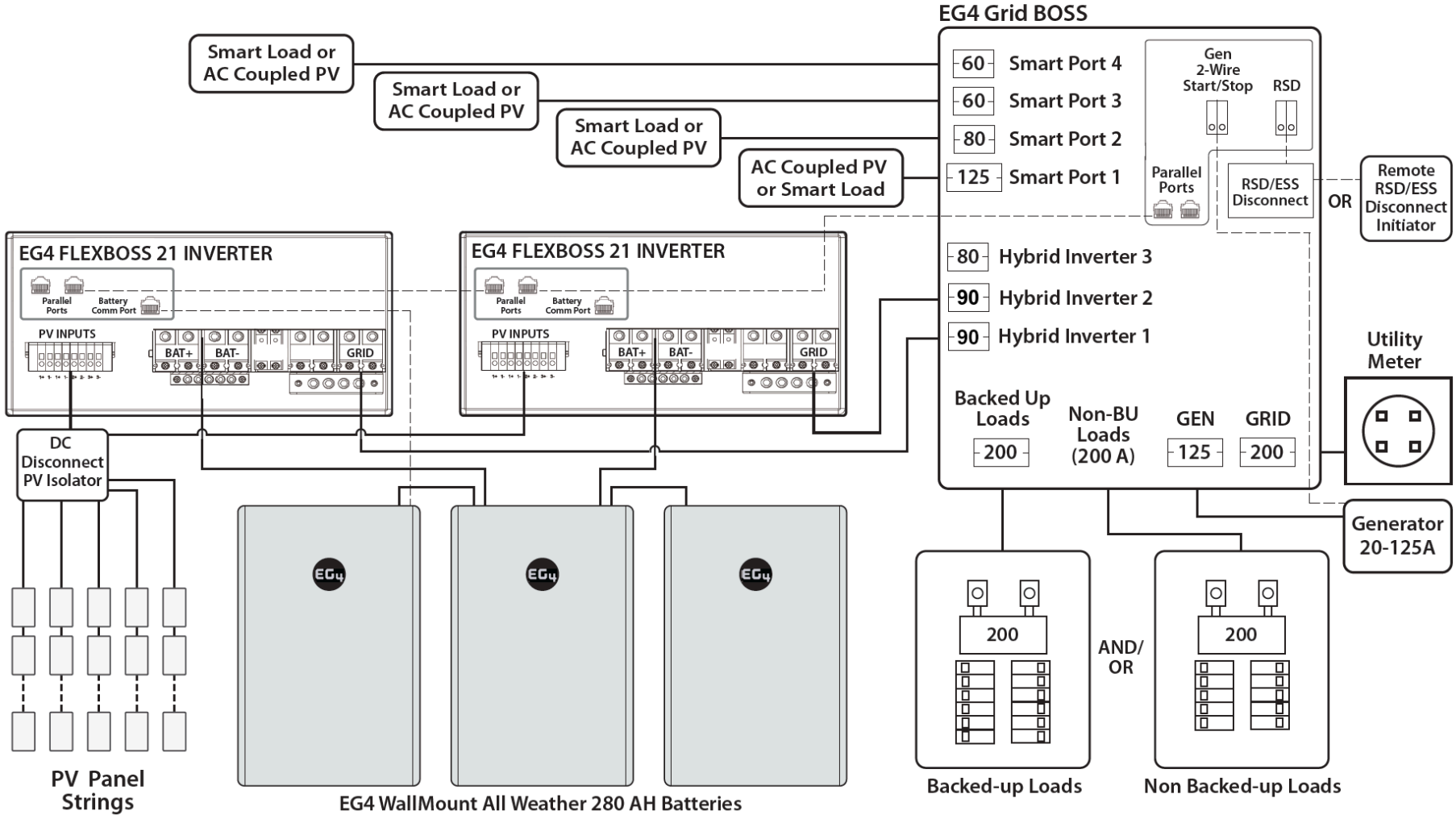
Never disconnect the battery, PV, or AC input power under load. If there is an emergency and users must shut down the inverter use Rapid Shut Down or follow the steps outlined below:

Shutting down the inverter:

1. Turn off the grid breaker feeding the inverter.
2. Switch off the load breaker.
3. Turn off the PV Isolator switch and then battery breaker. Wait for the LED lights to go off.

9. WORKING WITH A GRIDBOSS

EG4 FLEXWALL - GRIDBOSS with FLEXBOSS 21 INVERTER(S)



While the FlexBOSS21 is a hybrid inverter that is capable of functioning on its own, EG4® GridBOSS allows for more flexibility and functionality.

Function	Description
AC Coupling	Allows the user to pair the FlexBOSS21 and GridBOSS with an existing solar system.
Smart Loads	Smart loads control devices that are powered on or off according to time of use and battery state of charge.
Generator Functions	Allows the user the option of a backup generator for when the grid is down, and PV is insufficient to power loads.

When installing both GridBOSS and FlexBOSS21 together:

- Ensure the mounting wall is strong enough to bear the weight of all units.
- Maintain at least 400 mm of spacing between units.
- Observe all environmental specifications for all units.
- The Loads port will not be used on the FlexBOSS21
- The CT clamps provided with the inverter will not be used as all input/output data will be tracked by GridBOSS.
- Ensure that all parallel inverters are configured before configuring GridBOSS.

For more information on the GridBOSS and specific use cases, scan the following QR code:

GridBOSS
User Manual

10. MONITOR SYSTEM SETUP

There are multiple ways for the inverter to be programmed and monitored. The most common and convenient are the EG4® Monitor Center Website (monitor.eg4electronics.com) and the EG4 Monitor App. The following sections discuss the various ways to communicate with the inverter.

Monitor Center
Website

Monitor Center
Overview

Monitor App
for Android

Monitor App
for Apple

10.1 WI-FI/4G DONGLE CONNECTION

A Wi-Fi/4G dongle is used to monitor the inverter and remotely view the monitoring data on a computer or mobile device. Attach this module by plugging it in to the side of the inverter and securing it with the four (4) Phillips head screws.

View data on a mobile device:

A QR code with a link to the EG4® website with app installation steps can be found on the side of the inverter. Or visit the downloads page at www.eg4electronics.com for more information.

10.2 ONLINE MONITORING SYSTEM USER INTERFACE

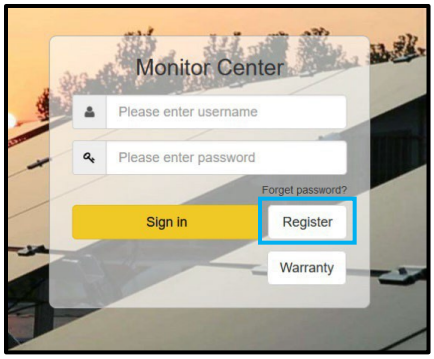
NOTE:

The monitoring system may change due to updates. Therefore, UI descriptions may vary from the current pages on the site. If you have any questions, or to create distributor or installer accounts, contact support@eg4electronics.com for assistance.

After connecting the Wi-Fi dongle, create an account by registering at monitor.eg4electronics.com. The “customer code” is a code assigned by the distributor or installer. Contact the supplier for this code.

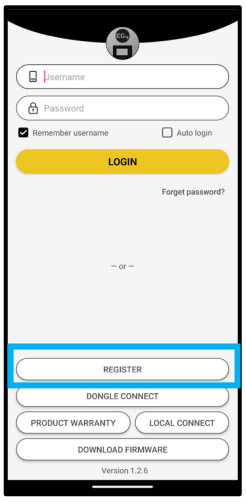
For more information on Monitor Center and the settings that can be adjusted there, scan the following QR code:

Monitor Center Overview



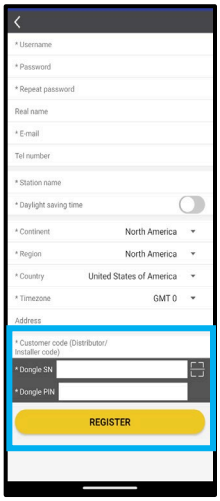
10.3 EG4® MONITOR APP SETUP

Register a monitoring account and set the Wi-Fi password for the Wi-Fi dongle *before* using EG4's monitoring system.



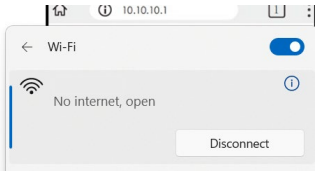
1. **Register an account:**

   Visit monitor.eg4electronics.com or download the "EG4® Monitor" app to register for an end-user account. Contact support@eg4electronics.com for distributor or installer accounts.

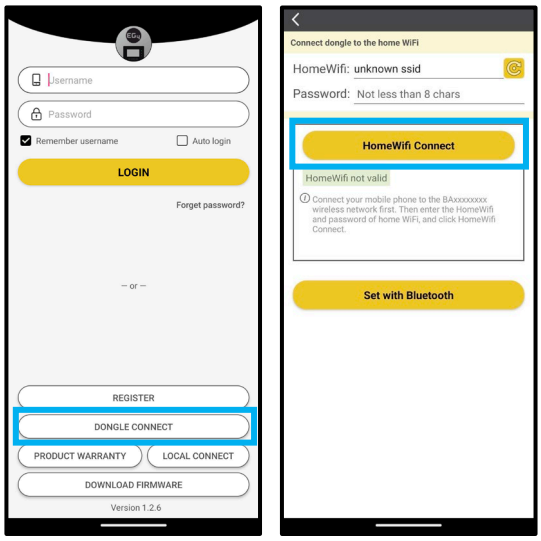


2. **When registering the account, provide the following information:**
   a. Customer code: Contact the distributor or installer to obtain this code.
   b. Dongle SN: The serial number is attached to the dongle shell.
   c. Dongle PIN: PIN is attached to the dongle shell below the SN.

3. **Set the Wi-Fi password:**
   a. Plug in the Wi-Fi dongle and power on the inverter.
   b. Wait until the INV LED on the Wi-Fi module is solid on, then connect the mobile device to the Wi-Fi hotspot. The hotspot name is the same as the Wi-Fi dongle serial number.



c. Open the app. Select on "*DONGLE CONNECT*".
d. Select the Yellow refresh button to display a list of available networks. Select the wireless network name and enter password.
e. After selecting Home Wi-Fi Connect, the Wi-Fi dongle will reset. After the correct password is set, three lights will be solid on, which means the inverter is connected to the server. Return to the login page and input account and password to begin monitoring the system.

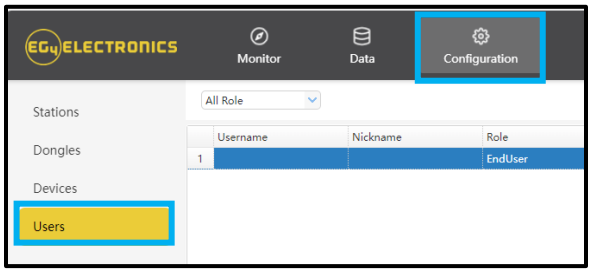


10.4 ENABLE APP NOTIFICATIONS

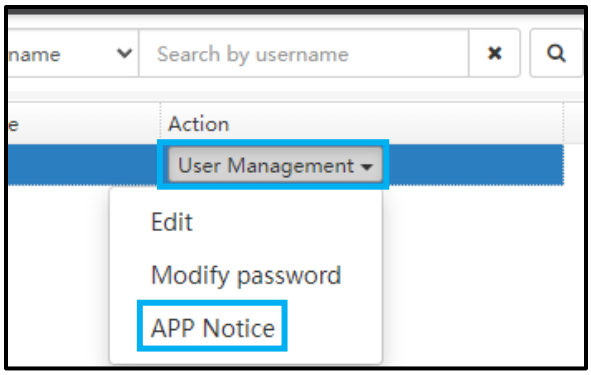
The EG4® Mobile App allows the end-user to easily check real-time system information regarding the inverters, batteries, and other informative values.

Enable Notifications in Monitor Center:

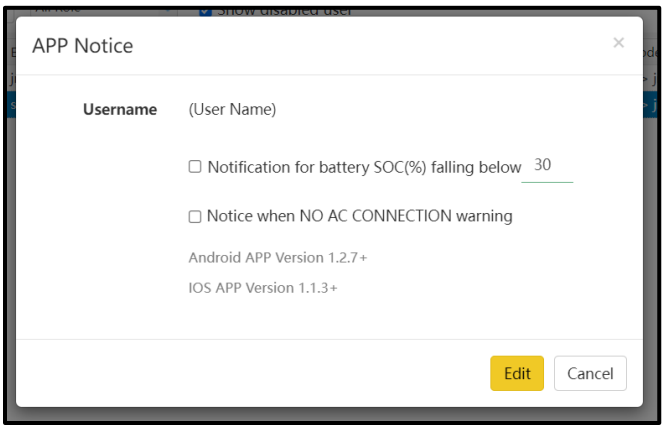
1. Go to monitor.eg4electronics.com and log in.
2. At the top of the screen, select “Configuration”, then “Users”



3. Select “User Management”, then “APP Notice”



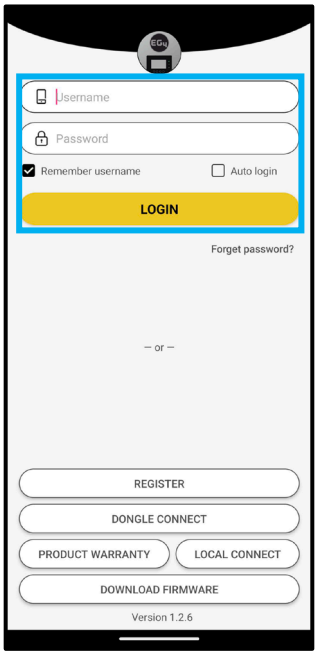
4. Choose which settings to enable, and at what values to be notified. Select “Edit”.

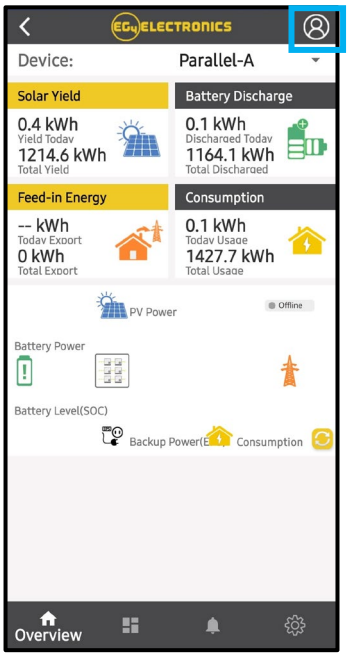


Enable Notifications on a Mobile Device:

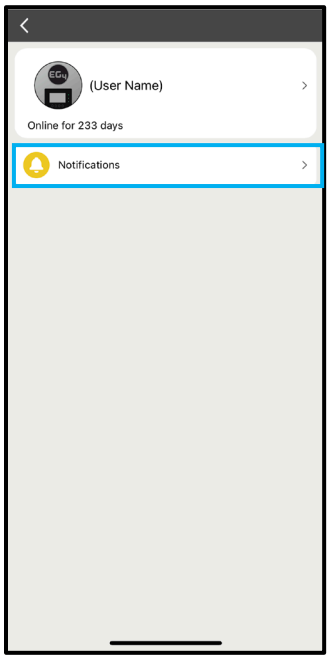
NOTE:
Make sure the app is up to date before beginning!

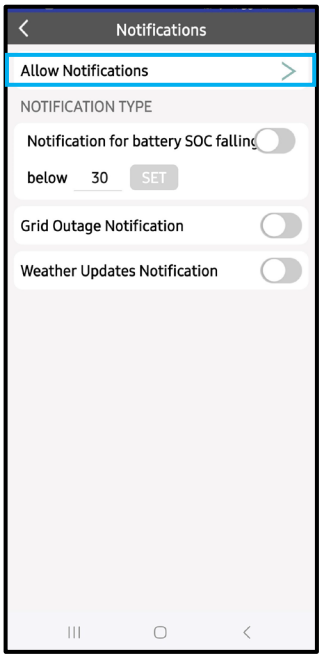
1. Login to the EG4® Monitor App. Select the user icon at the top right corner of the screen.

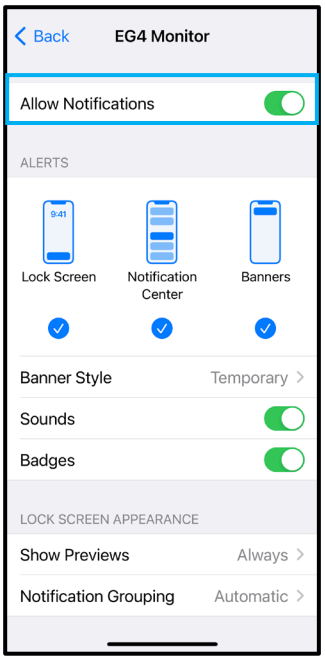




2. Select “Notifications,” “Allow Notifications,” and make selections for which notifications to receive. Toggle selection on to “Allow Notifications” on device and choose how to receive notifications.



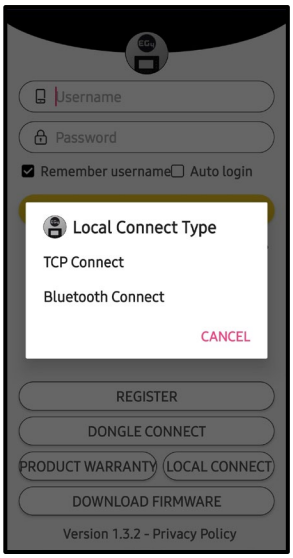


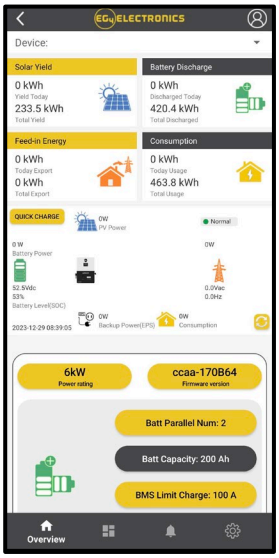


10.5 LOCAL MONITORING SETUP WITH THE EG4® MONITOR APP

If there is no Wi-Fi available at the location, use the local function to monitor or set up the system:

1. Download the EG4 Monitor app.
2. Connect the mobile device to the Wi-Fi hotspot after the INV LED on the Wi-Fi module is solid on. The name of the hotspot is the same as the serial number on the Wi-Fi module shell.
3. Select “Local Connect.” Now the system can be monitored and set up either through the hotspot connection or Bluetooth (on Android only).

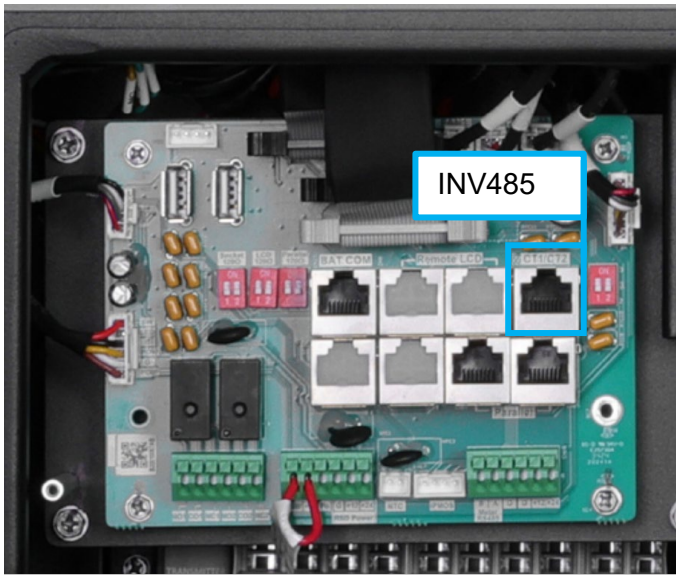


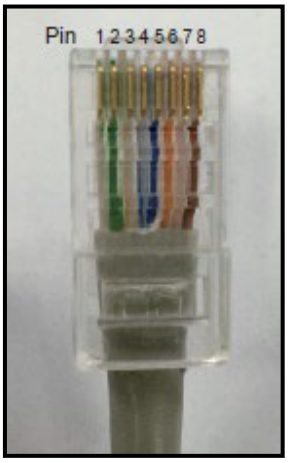


10.6 THIRD-PARTY RS485 COMMUNICATION

INV485 is shared with the Wi-Fi module. If the Wi-Fi module is not in use, this interface can be used to communicate with the inverter.
Relay 485B and 485A are used for third-party communication systems using the RS485 Modbus protocol.

Contact the distributor or the installer to get the Modbus protocol for third-party app development and more information.





Pin	Description
1	RS485B
2	RS485A
3 – 8	/

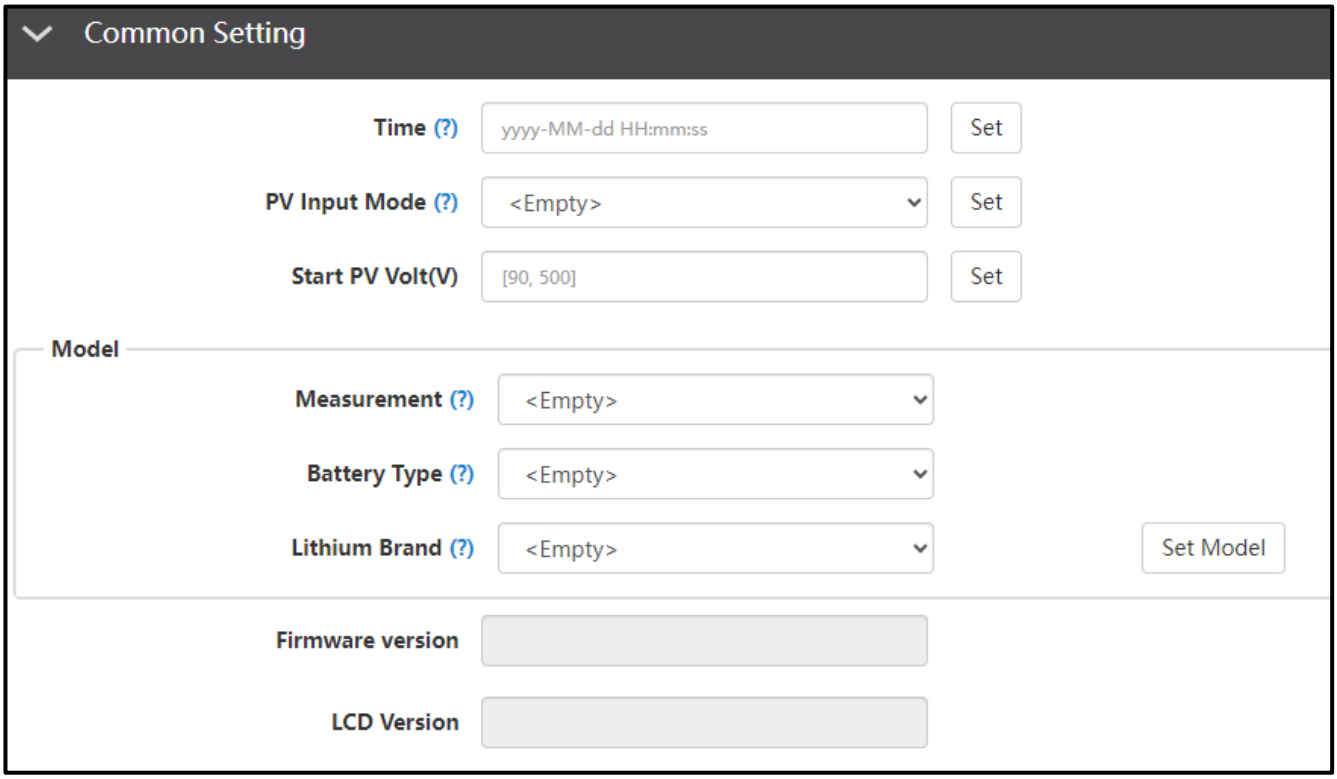
11. MONITOR CENTER SETTINGS

IMPORTANT:
These settings may need to be adjusted by the installer after installation. Consult with the installer/distributor before making any changes to avoid conflicting settings or damage to the system!

The following settings are found on the Monitor Center Website at monitor.eg4electronics.com under the Maintenance tab. For more information, scan the following QR code:

EG4 Monitor Center Overview

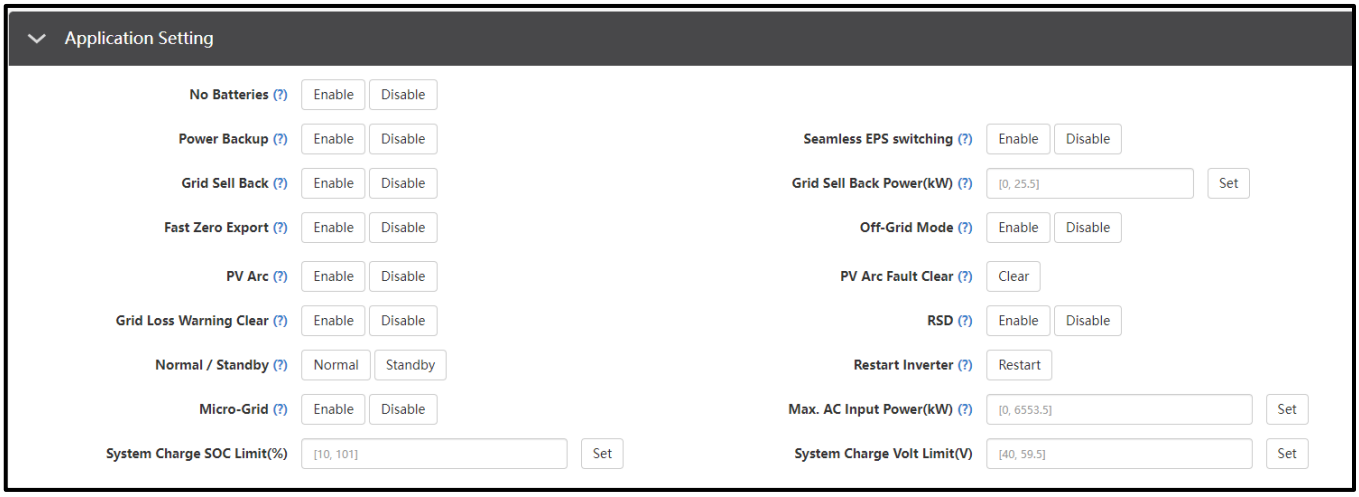
11.1 COMMON SETTING



- **Time:** Set the time/date of the inverter. The input format is 2019-02-14 14:44:00 (YYYY-MM-DD HH:MM:SS).
- **PV Input Mode:** The connection type of solar modules.
- **Start PV Volt (V):**
- **Measurement:** Determines whether or not CTs or a Smart Meter are used to measure AC input.
- **Battery Type:** Choose the “Battery Type” and then select Lithium Brand (for closed-loop communications), or battery capacity for lead-acid/lithium batteries with no communications. *Note: after setting the battery type, all other settings will reset to default*.
- **Lithium Brand:** This setting allows the user to select from a list of compatible batteries for closed-loop communications.

- **Firmware version:**
- **LCD Version:**

11.2 APPLICATION SETTINGS



- **No Batteries:** Allows access to Off-Grid mode when there is no battery and solar is the only input available.
- **Power Backup:** If Power Backup function is Enabled, the LOAD terminal will maintain output when AC is interrupted. Set "*Power Backup*" via web/app (When enabling this mode, LOAD output will be uninterrupted).
- **Seamless EPS switching:** When power is interrupted, the inverter will turn to EPS mode seamlessly unless there is a grid voltage fluctuation issue; in which case, we suggest you set to "*Disable*" to avoid misjudgment.
- **Grid Sell Back:** In some cases, the customer cannot feed energy into the grid. If the customer does not want to/cannot feed energy to the grid, disable the Grid Sell Back function.
- **Grid Sell Back Power(kW):** If Grid Sell Back function is enabled, adjust the power limitation to feed into the grid.
- **Fast Zero Export:** Normally the inverter will adjust output power every 5 seconds to avoid export. If Fast Zero Export is enabled, the inverter will adjust output power accordingly.
- **Off-Grid Mode:** Allows for absolute zero-export, when there is an AC connection. When enabled, the battery discharges power to load first and the grid will not assist in powering loads and the batteries will not charge from AC unless "*AC charge*" is enabled.
- **PV Arc:** The inverter will detect when there is a PV input Arc Fault and protect the inverter from an Arc Fault.
- **PV Arc Fault Clear:** Clears the records of PV Arc fault.
- **Grid Loss Warning Clear:** Enable for an absolute Off-Grid system. The "*No AC Connection*" and "*AC V/F out of range*" warnings will not occur when enabled.
- **RSD:** Enable or disable the rapid shut-down detection of the PV inputs.
- **Normal/Standby:** When set to Standby, there is no feed in, charge, nor discharge. Inverter will need to be in Standby mode when you are changing most settings such as paralleling the system. If this grid is available, the grid bypass relay will close, and the grid will take the load normally (this setting is found above *Application Setting* on the app).
- **Restart Inverter**
- **Micro-Grid:** Only set this when generator is connected to the inverter's Grid Terminal. With this setting enabled, the inverter will use AC power to charge the battery and will not export power.

- **Max. AC Input Power(kW):** The maximum amount of power to be imported from the grid; battery charging power will be adjusted based on Load consumption and grid import limitation.
- **System Charge SOC/Volt Limit:** Set charge limits based on SOC or Voltage.

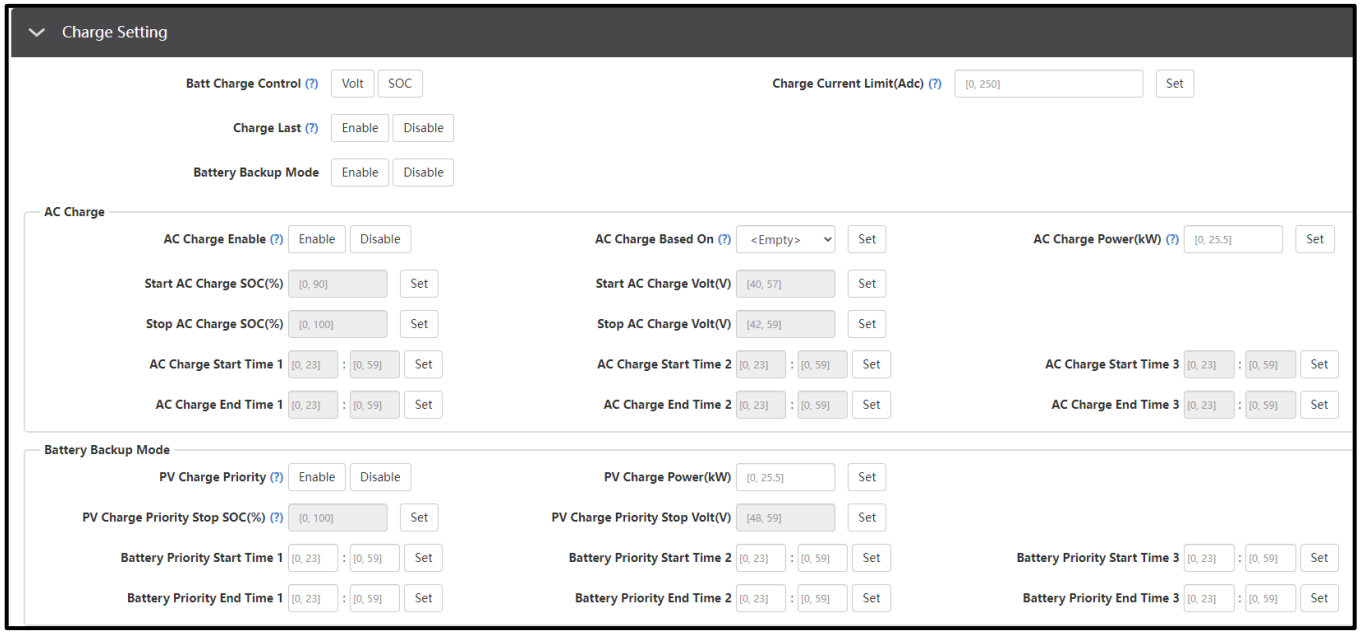
Parallel Settings

- **Set System Type:** The EG4 FlexBoss 21 supports paralleling of multiple inverters; connect the LOAD terminals together for paralleling. In this scenario, set one of the inverters to Master and the others to Slave. If all inverters are installed in one phase, set one of the inverters to "*1 Phase Master*". To compose a three-phase system, set one of the inverters to "*3 Phase Master*". All inverters are set to Slaves by default, upon set up, set one inverter to Master.
- **Set Composed Phase:** When using ≥3 inverters to compose a three-phase system, connect the AC terminals of the inverter to three-phase grids. If there is grid access in the system, the inverter will detect the phase it connects to automatically and record it. Next time, it will output the phase it detected. If the user setting is different from the phase inverter detected, it will output the phase detected. The output phase record must be cleared manually. If there is no grid input, the inverter will use the user output phase setting to compose three-phase output. If the customer sets the wrong phase (i.e., 2 U phase and no W phase) the system will report an error.
- **Share Battery:** For paralleled systems: if all inverters connect to same battery bank, Share Battery must be enabled. The Master inverter will broadcast the battery info to all other inverters.
- **Parallel Setting Data Sync:** Syncs master inverter with all paralleled inverters.

11.3 GRID CONNECT SETTING

- **Grid Frequency:** Selects the frequency of the grid.
- **Grid Type:** Select the correct Grid type to function.

11.4 CHARGE SETTINGS



- **Batt Charge Control (Volt/SOC):** Batt Charge Control will charge the battery bank according to Voltage/SOC% depending on selection.
- **Charge Last:** Charges battery as a last priority
- **Charge Current Limit (Amps DC):** Users can set the maximum battery charge current.
- **Battery Backup Mode:** Enable to access Battery Backup Mode settings below.

AC Charge:

- **AC Charge Enable:** Grid charge configuration. To use grid power to charge the battery bank, enable "*AC Charge*" and set up to three different time periods when AC charging can happen. Set "*AC charge power (kW)*" to limit grid charging power.
- **AC Charge Based On:** Set AC charging according to Time or Volt(V)/SOC (%).
- **AC Charge Power(kW):** The maximum charging power from grid.
- **Start AC Charge SOC(%)/Volt(V):** Percentage or voltage at which system will start charging batteries from Grid.
- **Stop AC Charge SOC(%)/Volt(V):** Percentage or voltage at which system will stop charging batteries from Grid.
- **AC Charge Start Time 1-3:** Start AC Charging according to timeframe.
- **AC Charge End Time 1-3:** Stop AC Charging according to timeframe.

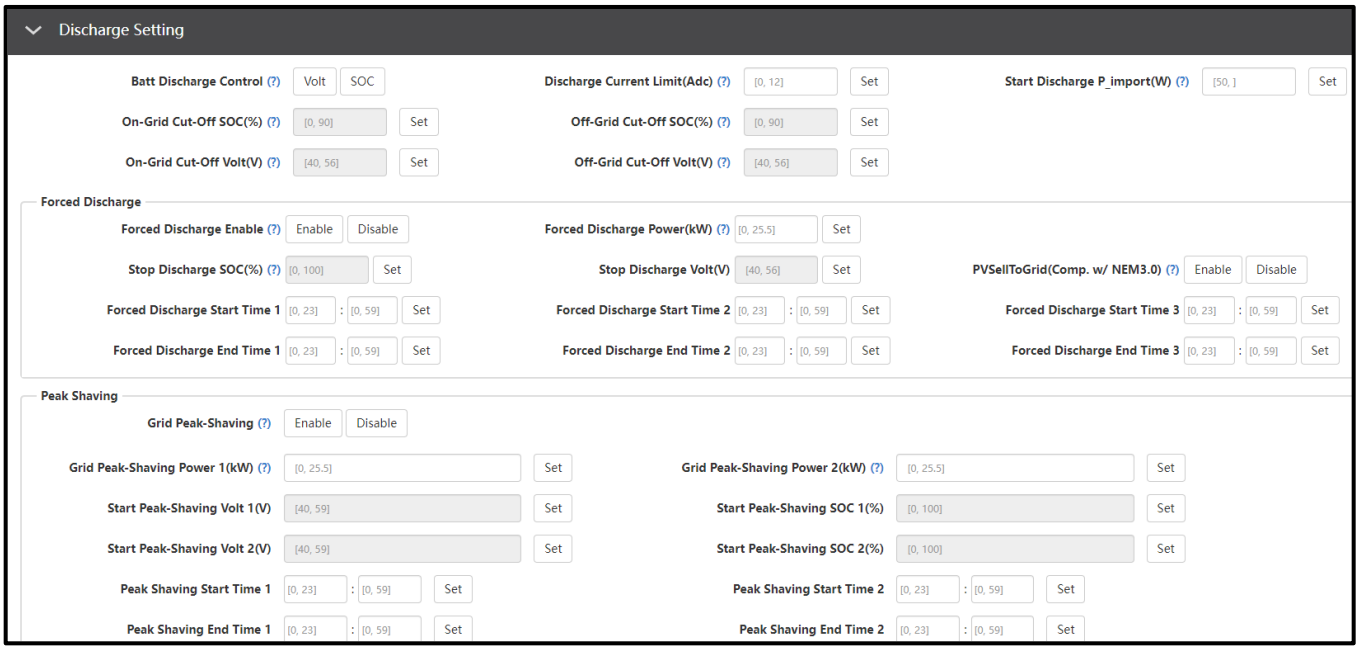
Battery Backup Mode

For the inverter in default mode: if PV power is sufficient to cover the demands of home loads, then PV power will prioritize home loads first. If there is excessive PV power, the remainder will be used to charge the battery bank. If there is still PV power after powering loads and battery charging, the remaining PV power will be sold back to the grid. In some situations, the customer would want solar power to charge the battery bank first, and if there is more energy than needed, it will then power loads. For this situation, enable "*PV Charge Priority (PV)*" function. "*PV Charge Priority power CMD*" is the maximum power percent when charging the battery bank in "*PV Charge Priority*" mode. If both time and battery SOC are within the parameters set by the user, PV will be used to charge the battery bank first.

- **PV Charge Priority:** Enable this setting to prioritize Solar for charging batteries.
- **PV Charge Power (kW):** The maximum charge power from PV.
- **PV Charge Priority Stop SOC (%)/Volt (V):** The inverter will stop charging the batteries if the battery SOC or Voltage exceeds these limits.

- **Battery Priority Start Time 1-3:** Start time for PV Charge Priority setting.
- **Battery Priority End Time 1-3:** End time for PV Charge Priority setting.

11.5 DISCHARGE SETTINGS



- **Batt Discharge Control:** If the inverter communicates with the Lithium battery and is capable of closed-loop communication, select charge control according to "*SOC*." * When using Lead-Acid batteries or Lithium batteries without communication, select charge control according to "*VOLT*."

NOTE:

**When using EG4 batteries with the FlexBoss 21 inverter, it is recommended to set the cut-off SOC to 20% to maintain the 80% Depth of Discharge (DOD).*

- **Discharge Current Limit(Adc):** Sets the discharge limit for lead-acid batteries.
- **Start Discharge P_import(W):** When set to 100, the battery will begin to discharge power to take the loads when the imported power from the grid is higher than 100W.
- **On-Grid Discharge Cut-Off SOC(%)/Volt(V):** Select battery SOC/voltage at which battery bank can take over the load from the grid.
- **Off-Grid Discharge Cut-Off SOC(%)/Volt(V):** Select how low to drain battery bank before going on-grid and allow battery bank to charge. *With EG4 batteries, do not allow this value to go below 20%.*

Forced Discharge

- **Forced Discharge Enable/Disable:** If the customer wants to discharge the battery, enable the forced discharge function; set both the discharge power and time period.
- **Forced Discharge Power(kW):** Forced discharge power limit.
- **Stop Discharge SOC(%)/Volt(V):** If Battery SOC/voltage is lower than this limit, the inverter will stop the forced discharging function. *Note: For EG4 batteries, this value should be ABOVE 20% of total battery capacity.*
- **PVSellToGrid(Comp. w/NEM3.0):** Enable for only PV sell back.
- **Forced Discharge Start Time 1-3:** Start time for Forced Discharge.
- **Forced Discharge End Time 1-3:** End time for Forced Discharge.

Peak Shaving

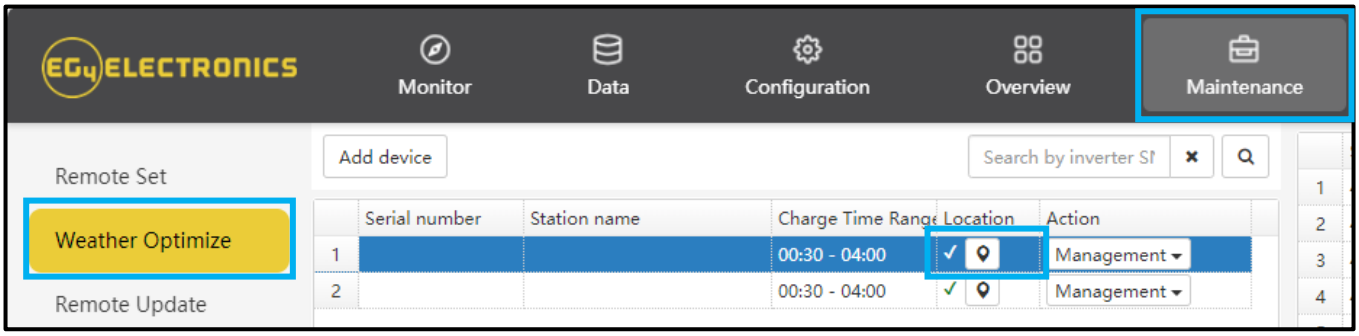
- **Grid Peak-Shaving:** Peak-Shaving is used to avoid peak demand charges from the grid. Peak shaving can be accomplished by halting Grid Charging at specific times. For example, during periods of peak demand (i.e., high grid rates), or when the batteries are fully charged based on SOC/Voltage. See Section 10.1 for more information regarding Peak-Shaving settings.
- **Grid Peak-Shaving Power(kW):** Used to set the maximum power that the inverter can draw from the grid.
- **Start Peak-Shaving Volt/SOC 1(V):** The point at which Peak-Shaving starts.
- **Start Peak-Shaving Volt/SOC 2(V):** The point at which Peak-Shaving stops
- **Peak-Shaving Start Time 1-2:** The time of day at which charging by the grid will be halted.
- **Peak-Shaving End Time 1-2:** The time of day at which charging by the grid will resume.
- **Reset:** Reset all settings to default.

12. WORKING MODES AND RELATED SETTINGS

Time of Use:

Used to maximize cost savings by flexibly adjusting the battery's usage pattern, establishing a real-time connection with the grid, and providing live updates on current electricity prices. This enables the system to meet energy demands across different time periods, provide real-time system status, and provide detailed reports. This feature is customizable to individual needs and fluctuations in electricity prices.

To enable this feature, select "*Maintenance*" at the top of the Monitor Center Webpage. Select "*Weather Optimization*" to the left of the screen. Select the desired inverter and click the location button. Input the inverter's information on the next screen. Afterwards, enable the times of use for battery charging/discharging under the *Maintenance* tab.

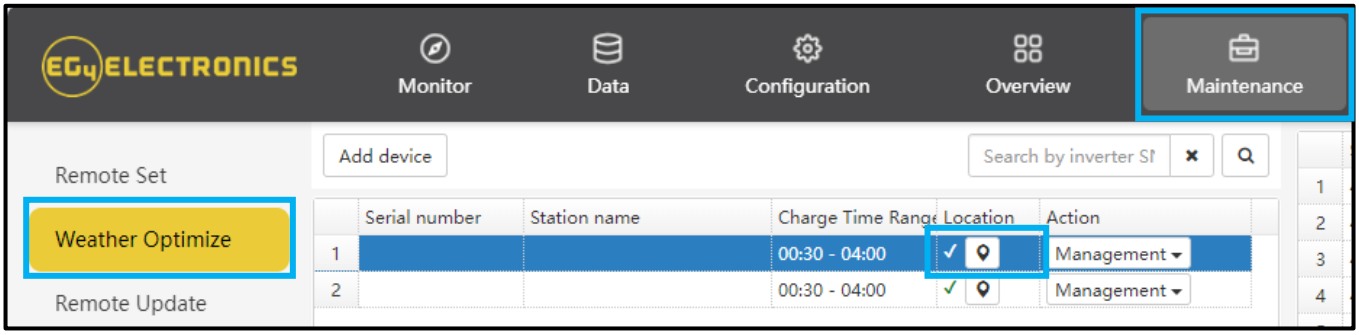


Weather Optimize Function:

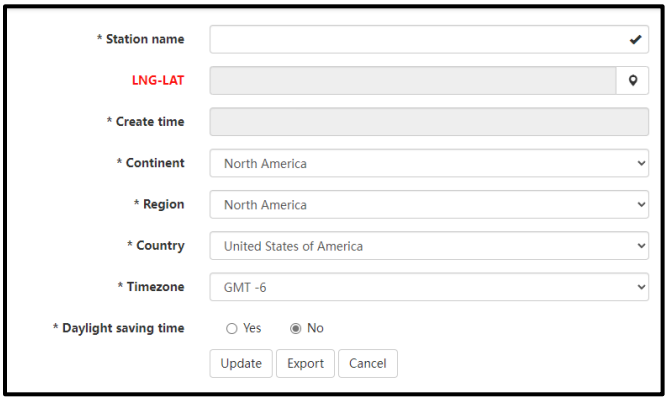
Used to collect real-time weather data. There are multiple operating modes to adapt to various scenarios:

- Charge Priority Mode prioritizes battery charging to ensure stable electricity usage, making it ideal for areas with unstable power supply.
- Self-Use Mode prioritizes self-generated solar power to meet household electricity demands, making it ideal for areas with high electricity prices.
- Forced Charge/Discharge Mode chooses to charge or discharge batteries based on electricity pricing, making it ideal for time-of-use pricing areas.
- Intelligent Charging Control automatically adjusts the state of charge to maximize the efficient use of solar energy based on real-time weather information.
- Stable Electricity Usage optimizes charging strategies based on weather conditions, ensuring the battery remains adequately charged for stable electricity consumption.

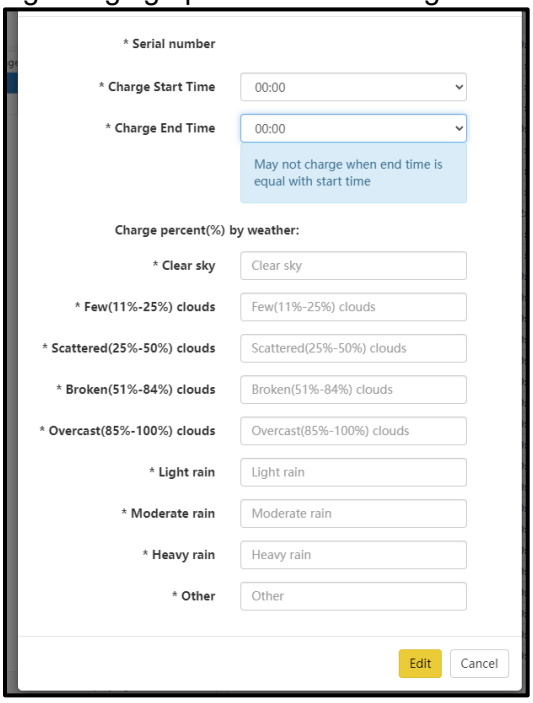
To enable this feature, select "*Maintenance*" at the top of the Monitor Center Webpage. Select "*Weather Optimization*" to the left of the screen. Select the desired inverter and click the location button.



- Input the inverter's information on the next screen and select update.



- Afterwards, select "*Management"* and click "E*dit*". There, users can set charging times and percentages based on their electricity use patterns and weather conditions. The platform sends user settings to the inverter, and the inverter provides feedback, confirming the receipt of setting and executing charging operations according to user-defined parameters.



Working Modes:

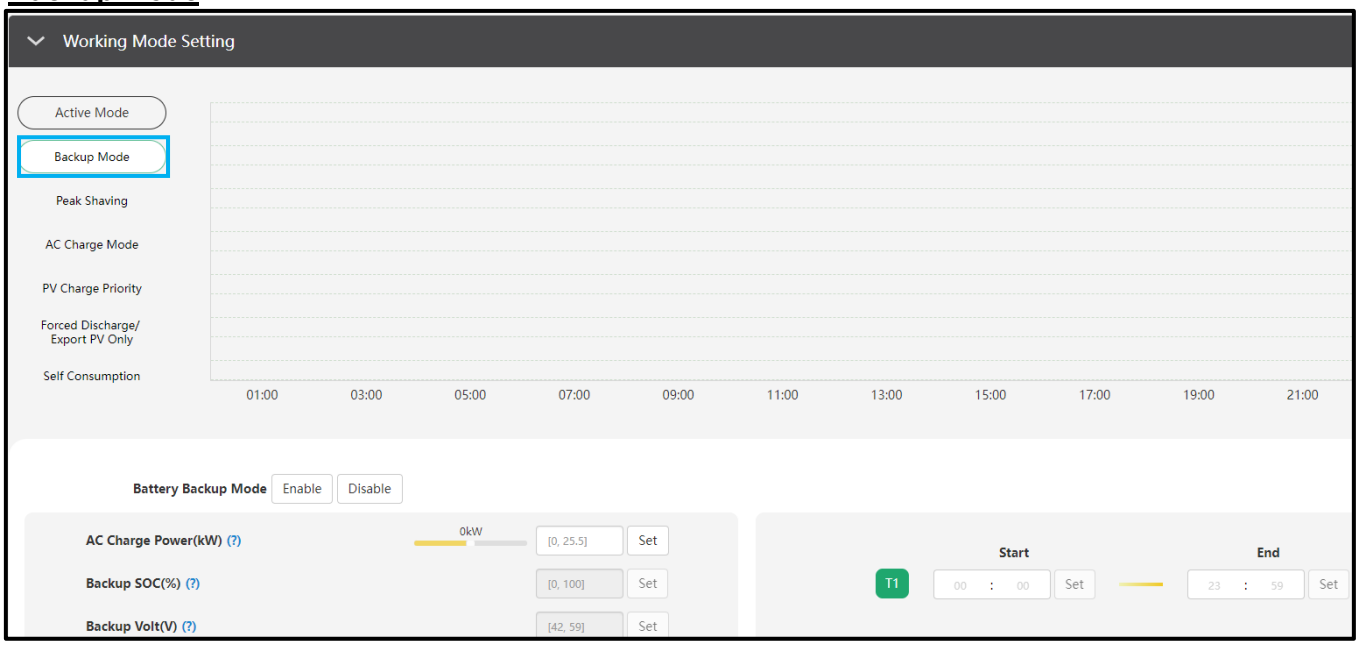
Working modes are pre-set priority systems that allow users to configure the system to meet their demands through extensive customizations. These modes can be found under the Maintenance tab by clicking “Working Mode.” Scroll past “*Application Setting”* to the “*Working Mode Setting*” section.

Working Mode Definitions:

- Peak Shaving: Used to avoid peak demand charges from the grid by using a combination of settings to limit the power drawn from the grid.
- Backup Mode/AC Charge Mode: Used to save battery power as a last resort. The solar arrays power the loads, and when PV is insufficient, loads will pull from the grid. The inverter will only power loads with battery when there are no other options.
- PV Charge Priority: Used to charge battery bank with PV; once battery bank is charged, then PV will be used to power loads.
- Forced Discharge/Export PV Only: Used to sell PV and/or battery power back to the grid.
- Self-Consumption: Used to significantly lower grid consumption. Solar arrays to power loads, when PV is insufficient, batteries power loads, and AC is only used as a last resort.

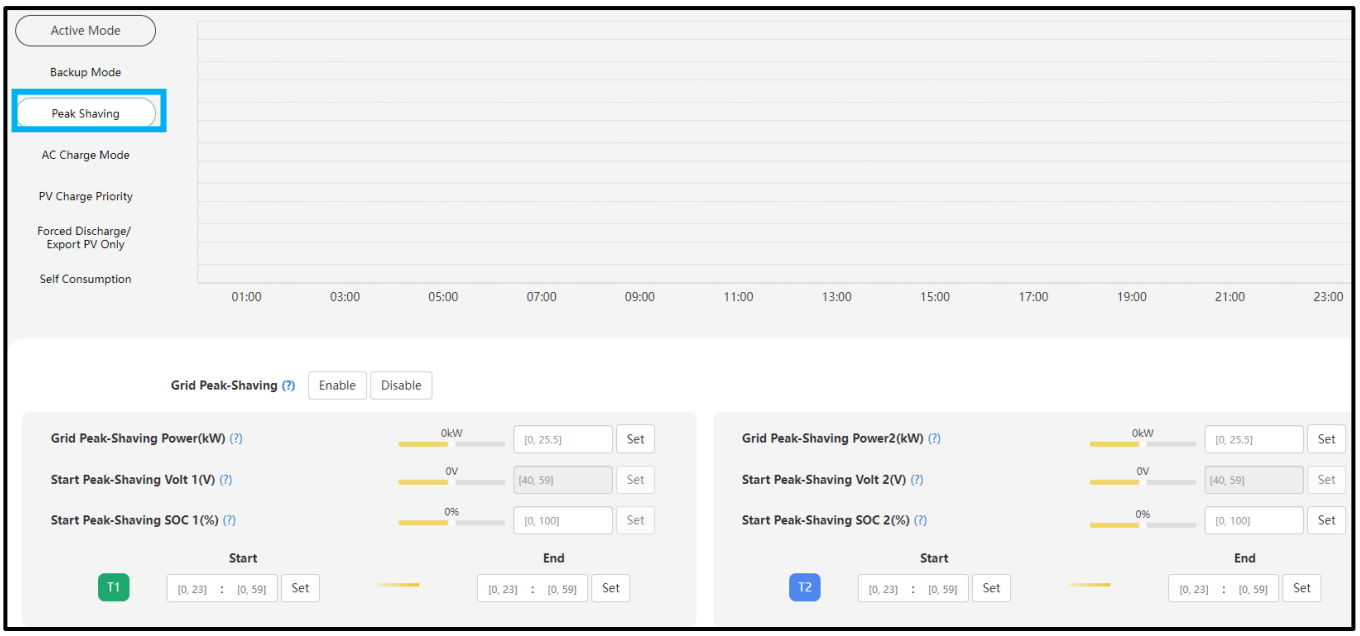
Working Mode Setting

Backup Mode



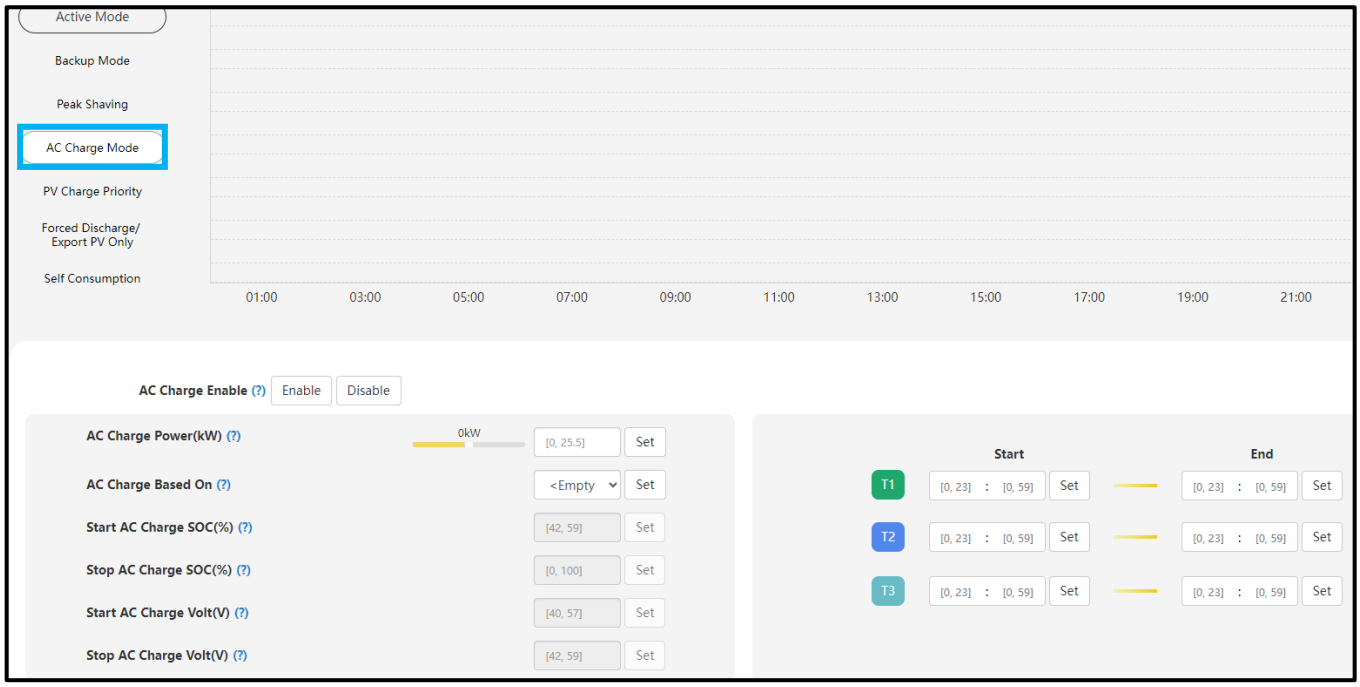
- **Battery Backup Mode:**
  When enabled, the system will use the batteries as a last resort during the set timeframes.
- **AC Charge Power (kW)**
  The maximum charging power from grid.
- **Backup SOC(%)**
  Set the maximum SOC for backup. This parameter is the same as Stop AC Charge SOC.
- **Backup Volt(V)**
  Set the maximum Voltage for backup. This parameter is the same as Stop AC Charge Volt.
- **Start/End Times**
  Set time to begin and end Backup Mode

Peak Shaving



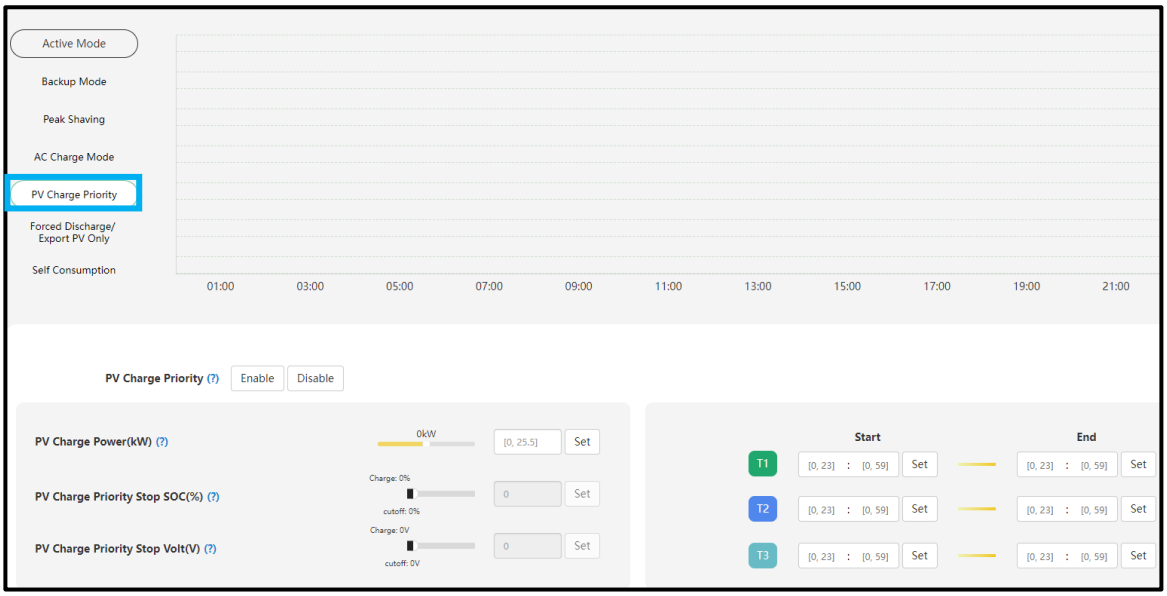
- **Grid Peak-Shaving**
  Enable or disable grid peak-shaving.
- **Grid Peak-Shaving Power(kW)/Grid Peak-Shaving Power2(kW)**
  Set the maximum amount of power that will be drawn from the grid.
- **Start Peak-Shaving Volt 1(V)/Start Peak-Shaving Volt 2(V)**
  Set the starting point of peak-shaving when using voltage setpoints for batteries.
- **Start Peak-Shaving SOC 1(%)/Start Peak-Shaving SOC 2(%)**
  Set the starting point of peak-shaving when using SOC setpoints for batteries.
- **T1/T2 Start**
  Set the start time of peak-shaving depending on SOC/voltage as configured above.
- **T1/T2 End**
  Set the end time of peak-shaving depending on SOC/voltage as configured above

AC Charge Mode:

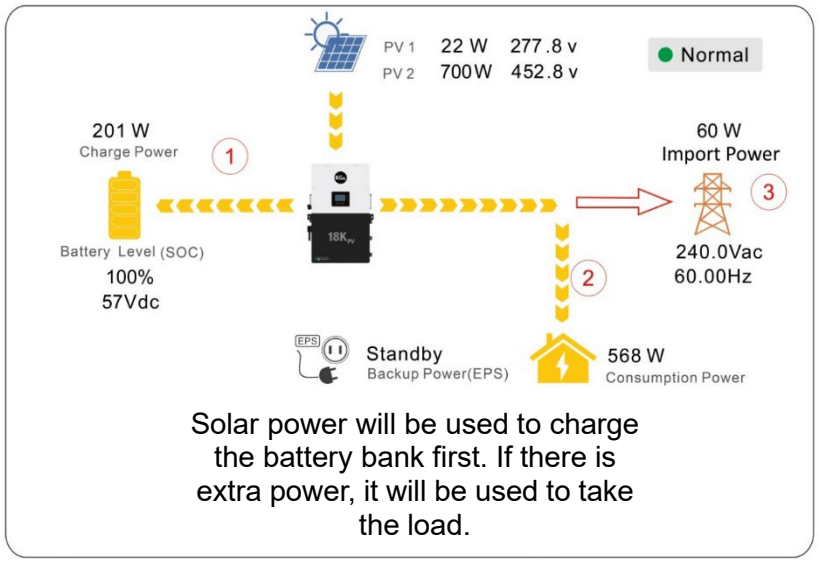


- **AC Charge Enable**
  Enable or disable the system's ability to charge batteries from the grid.
- **AC Charge Power(kw)**
  Set the maximum power drawn from the grid to charge batteries.
- **AC Charge Based On (SOC/Volt/Time)**
  Configure how the system will charge batteries from the grid by setting custom voltage points, SOC% of batteries, or by time.

PV Charge Priority:



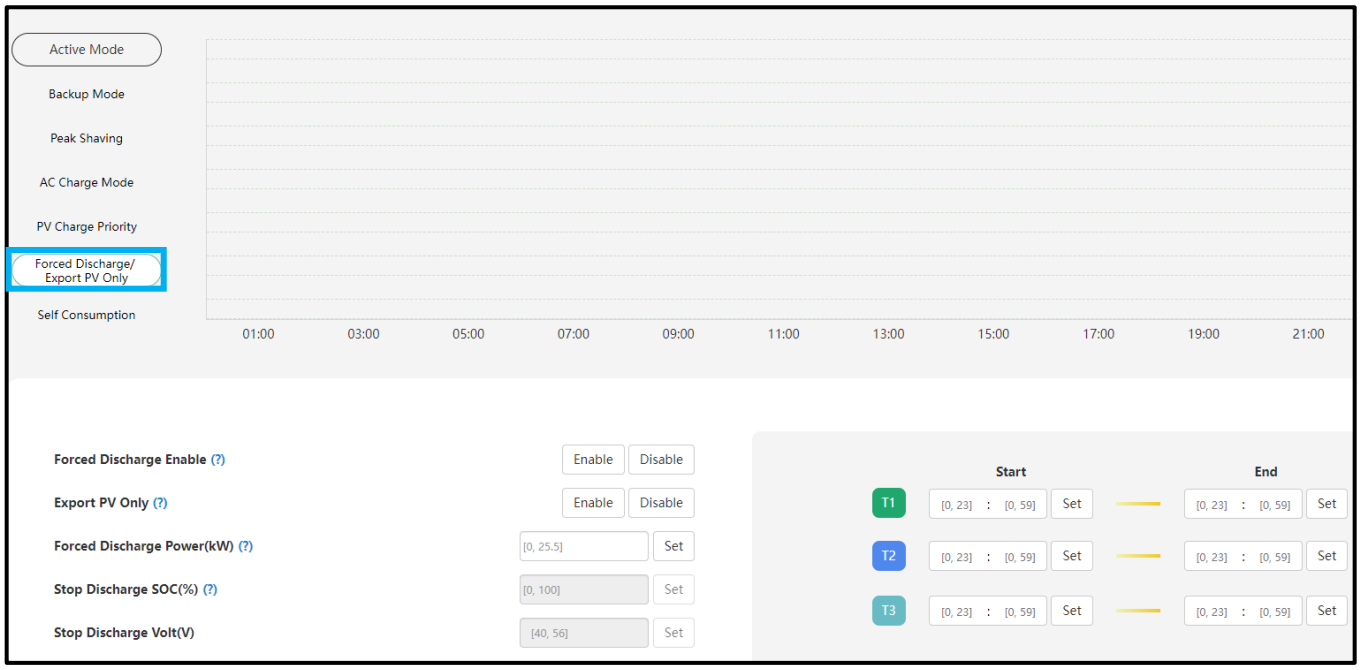
The order of priority for solar power usage will be Battery -->Load -->Grid. During the "*PV Charge Priority*" period, loads are first supplied power from the grid. If there is excess solar power after charging batteries, the excess solar will power the loads along with grid power.



Solar power will be used to charge the battery bank first. If there is extra power, it will be used to take the load.

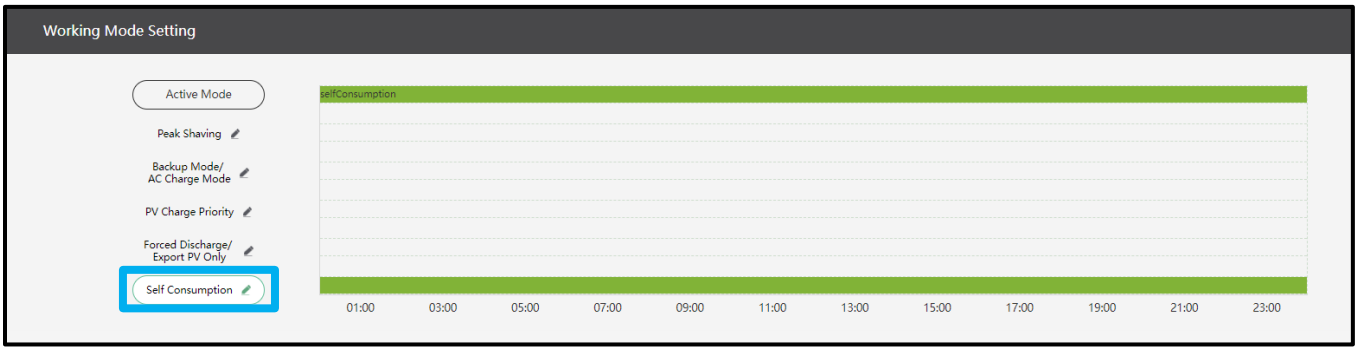
- **PV Charge Priority**
  Enable or disable the battery priority/PV Charge Priority working mode.
- **PV Charge Power(kW)**
  Set the maximum amount of power to charge the batteries from solar.
- **PV Charge Priority Stop SOC(%)**
  Set the stop point for Battery Priority according to SOC%.
- **Battery Priority Stop Volt(V)**
  Set the stop point for Battery Priority according to voltage.
- **T1/T2/T3**
  Set up to 3 different start and stop times for the PV Charge Priority working mode.
- **Off-Grid Mode**
  Set to disable

Forced Discharge/Export PV Only:

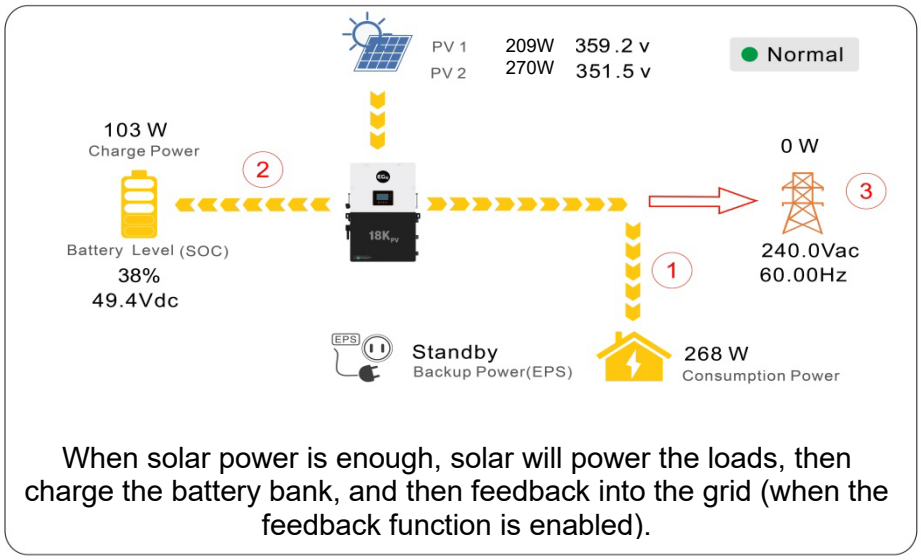


- **Forced Discharge Enable**
  Enable this setting to forcefully discharge the station's battery bank.
- **Export PV Only**
  Enable this setting to sell back generated PV power to the grid.
- **Forced Discharge Power(kW)**
  Set the maximum power limit of battery discharge.
- **Stop Discharge SOC(%)**
  Stop the forced discharge upon reaching the set SOC%.
- **Stop Discharge Volt(V)**
  Stop the forced discharge upon reaching the set voltage point.
- **T1/T2/T3**
  Set up to 3 different start and stop times for the Force Discharge/Sell To Grid working mode.

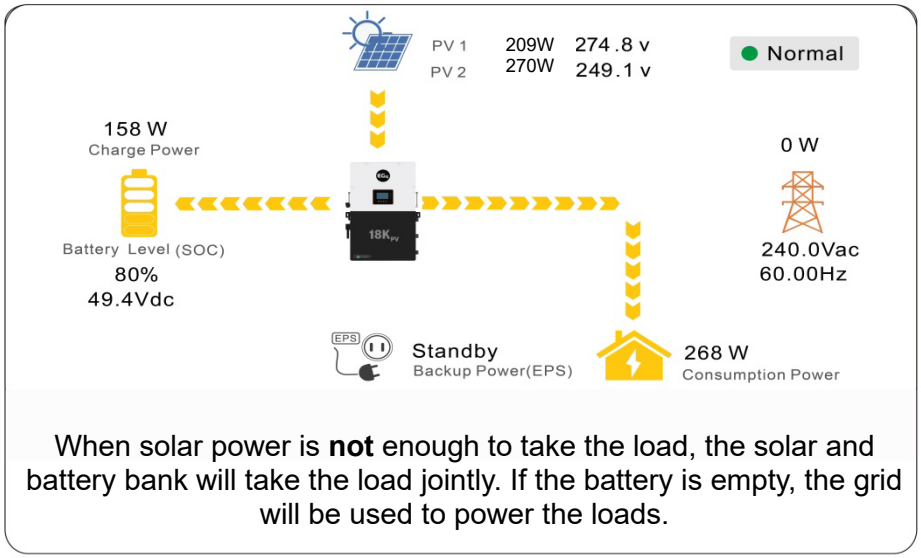
Self-Consumption:



The station will default to Self-Consumption mode. The order of priority for powering loads is Solar > Battery > Grid. The order priority for solar power is Load > Battery > Grid which creates an ideal scenario when needing to prioritize solar power generation over other types of power. Self-usage mode will increase the self-consumption rate of solar power and reduce energy bills significantly. Effective when Charge Priority, AC Charge, and Forced Discharge are disabled.



When solar power is enough, solar will power the loads, then charge the battery bank, and then feedback into the grid (when the feedback function is enabled).



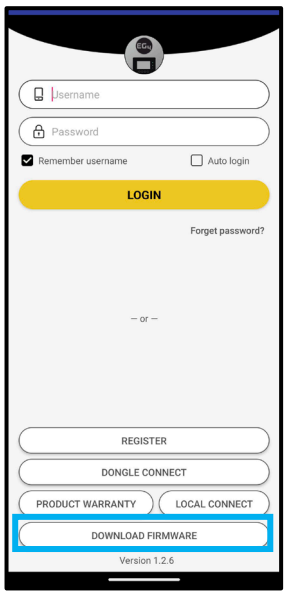
When solar power is **not** enough to take the load, the solar and battery bank will take the load jointly. If the battery is empty, the grid will be used to power the loads.

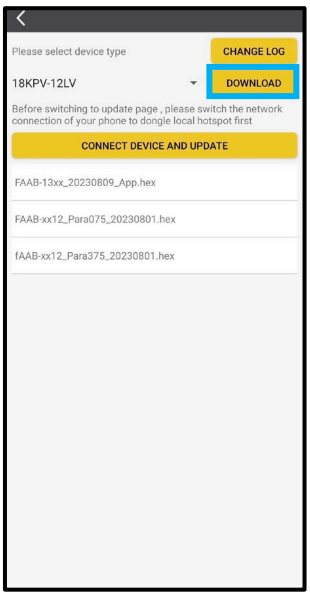
13. FIRMWARE UPDATES

13.1 FIRMWARE UPDATE VIA EG4® ELECTRONICS APP

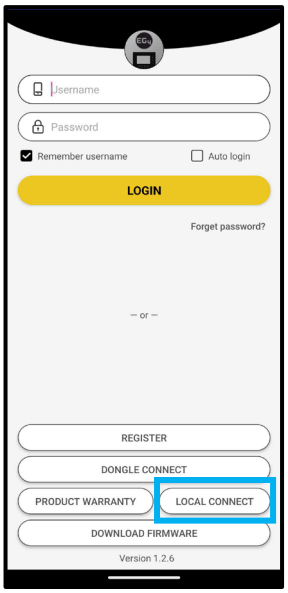
Before updating firmware through the EG4® Monitor app, ensure the mobile device being used has enough battery life to last through the update. While the update is ongoing, do not close the application. Ensure the Wi-Fi dongle is securely connected and correctly configured (see Section 10.1 for details) before performing the following steps:

1. Open the EG4 Electronics app on a mobile device and select the “DOWNLOAD FIRMWARE” button.
2. Choose the correct firmware file (contact distributor for the most up-to-date files) and select “DOWNLOAD” on the right side to download the file to the mobile device.
3. Keep the app running and go to the mobile device’s Wi-Fi settings. Connect the mobile device to the dongle’s network. The dongle’s network ID will be the same as the dongle’s serial number.





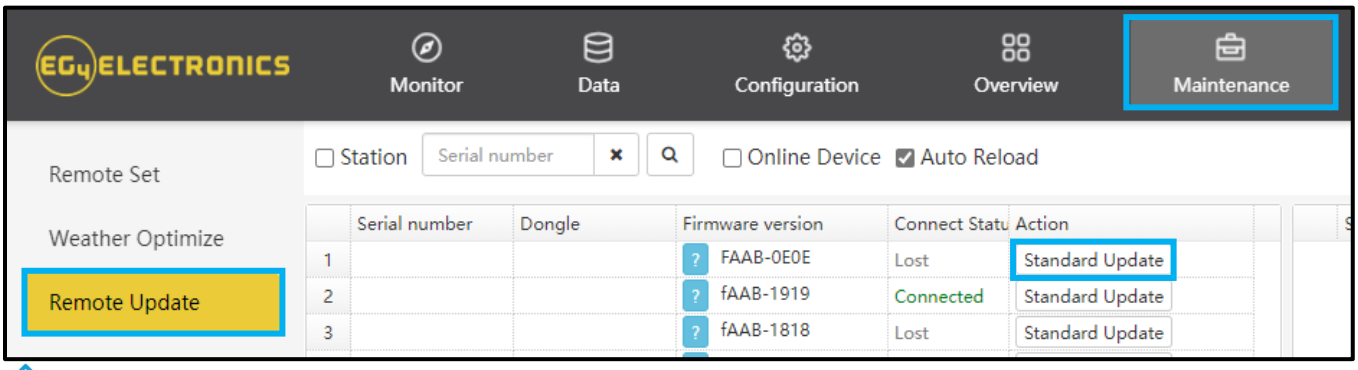
4. Return to the home screen of the app and select “LOCAL CONNECT”. Select the “Set” button on the bottom right side and proceed to the next step.
5. After completing step 4, the Local Set Interface will appear. Swipe upward on the screen of the mobile device until the “UPDATE FIRMWARE” button is visible at the bottom of the app’s display.
6. Choose the correct installation package in the dropdown box and select “UPDATE FIRMWARE” to begin the updating process.



After selecting the “UPDATE FIRMWARE” button, the update will begin. Update progress can be viewed via the app. Once the update is completed, a notification will appear confirming that the firmware has been successfully updated. After successfully updating firmware, the inverter will restart itself. Make sure to update all inverters installed in the same ESS to the latest firmware version.

13.2 FIRMWARE UPDATE VIA MONITOR CENTER (WEBSITE)

1. Distributors and installers can update firmware by using the EG4® Electronics website monitoring system. Contact EG4 to make sure the files are correct.
2. Log in to the EG4 Electronics Monitor System. Select “Maintenance,” and then select “Remote Update.”
3. Choose the inverter to update and then select “Standard Update”. The Monitor Center will begin updating both firmware files in the inverter. The latest version of the firmware will be displayed in the bottom right window.



IMPORTANT:

Throughout the update, the inverter will automatically cycle power as it moves from one update to the next; however, if at any time an “Update Failed” alert appears, restart the full update from the first task. The “Update Failed” alert will only appear in the monitoring center. The software may need more than one attempt to update. If unable to successfully update the firmware, contact the distributor.

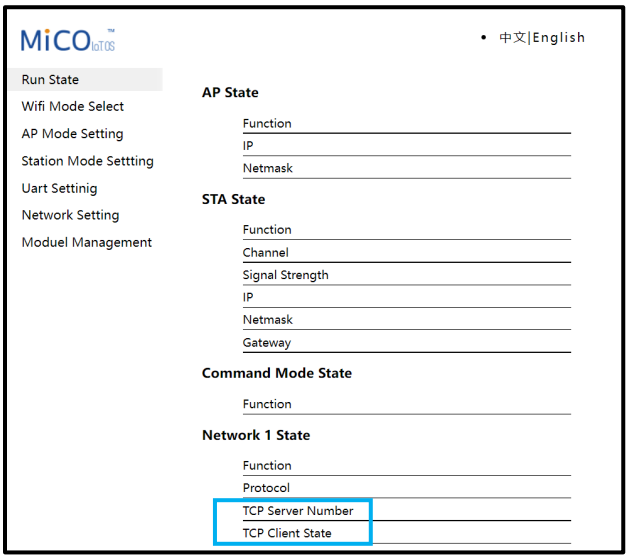
14. TROUBLESHOOTING AND MAINTENANCE

14.1 TROUBLESHOOTING WI-FI MODULE

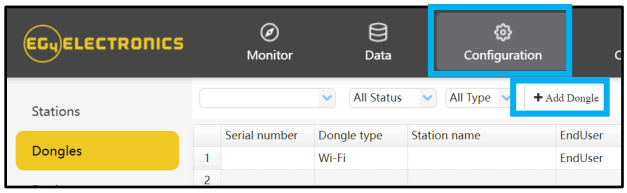
Why is the middle light for the Wi-Fi module flashing?

After setting the right Wi-Fi password, all three lights should be solidly on. If they are still flashing, try the following:

1. Check if the Wi-Fi is connected and that the correct password has been entered. Use a device to connect to the Wi-Fi hotspot and visit the website 10.10.10.1; the TCP client status should be “Connected”. The username and password are both “admin”. Check the Wi-Fi name and password.



2. Prior to setting the password, add the dongle to the system. After registering and entering the Wi-Fi SN and PIN, the dongle is automatically added to the system. While logged in, go to the “Configuration” tab. Select “Dongles”, and “Add dongle, on monitor.eg4electronics.com to add this dongle to the current configuration if there is more than one dongle. Restart the Wi-Fi module by unplugging it and plugging it back in.



For more information on Wi-Fi dongle troubleshooting, scan the following QR code:

Dongle Troubleshooting Guide

14.2 REGULAR MAINTENANCE

Inverter Maintenance:

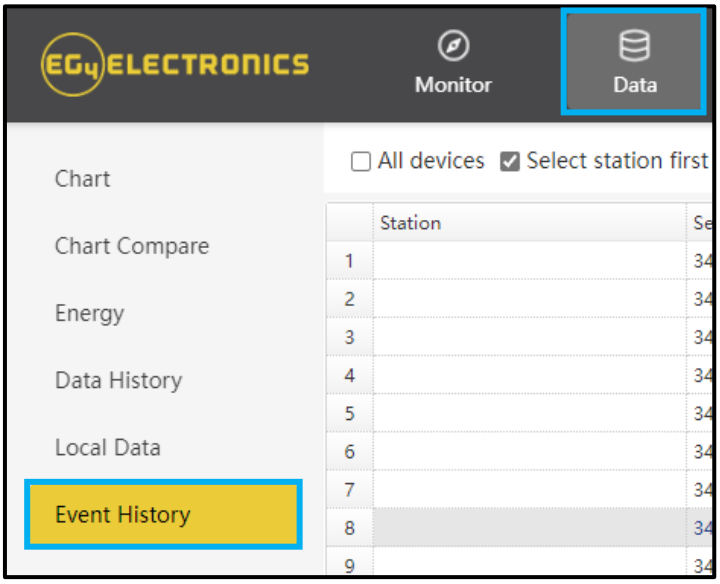
- Inspect the inverter every 6 months to check for any damaged cables, accessories, or terminals, and inspect the inverter itself.
- Inspect the inverter every 3 months to verify if the operating parameters are normal and there is no abnormal heating or noise from all components in the system.
- Inspect the inverter every month to confirm nothing covers the inverter heat sink on the back of the inverter. If there is, shut down the inverter and clear the heat sink to restore proper cooling.

14.3 LED DESCRIPTION

If a warning or fault occurs, users can troubleshoot according to the LED status description and the warning/fault information found in the “Event History” tab on the App or Monitor Center website.

LED	Display	Description	Action
Green LED	Solid lit	Working normally	No action needed
	Flashing	Firmware upgrading	Wait until update is complete
Yellow LED	Solid lit	Warning, inverter may stop working	Needs troubleshooting
Red LED	Solid lit	Fault, inverter will stop working	Needs troubleshooting

Website:



Mobile App

14.4 FAULT AND ALARM LISTS

Fault	Meaning	Troubleshooting
M3 Rx failure	M3 microprocessor fails to receive data from DSP	Restart the inverter. If the error persists, contact the supplier.
Model fault	Incorrect model value	
EPS short circuit	Inverter detected short-circuit on load output terminals	1. Check if the L1, L2, and N wires are connected correctly at the inverter load output terminal. 2. Restart inverter. If the fault persists, contact the supplier.
EPS power reversed	Inverter detected power flowing into load terminal	Restart the inverter. If the fault persists, contact the 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	Ensure the PV string voltage is within the inverter specification. If string voltage is within range and this fault persists, contact the supplier.
EPS connect fault	Load terminal and grid terminal are connected wired incorrectly or reversed	Check if the wires on load terminal and grid terminal are wired correctly. If the fault persists, contact the supplier.
PV volt high	PV voltage is too high	Check if the PV string voltage is within the inverter specification. If string voltage is within range and this fault persists, contact the supplier.
Hard over curr	Hardware level over current protection triggered	Restart the inverter. If the fault persists, contact the supplier.
Neutral fault	Voltage between N and G is greater than 30V	Ensure 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 the supplier.
Temperature fault	Heat sink temperature too high	Install the inverter in a place with good ventilation and no direct sunlight. If the installation site is okay, check if the NTC connector inside the inverter is loose.
Bus sample fault	Inverter detected DC bus voltage lower than PV input voltage	Restart the inverter, if the fault persists, contact the supplier.
Inconsistent	Sampled grid voltage values of DSP and M8 microprocessors are inconsistent	
M8 Rx fault	M8 microprocessor fails to receive data from DSP	
Para Comm error	Parallel communication abnormal	1. Check whether the connection of the parallel cable is loose. Connect the parallel cable correctly. 2. Ensure the PIN status of the CAN communication cable from the first to the end inverter is connected correctly.

Para master loss	No Master in the parallel system	1. If a Master has been configured in the system, the fault will automatically be removed after the Master works. 2. If a Master has not been configured and there are only Slaves in the system, set the Master first. **Note:** For a single-unit system, the role of the inverter should be set as “1 Phase Master.”
Para rating Diff	Rated power of parallel inverters are inconsistent	Confirm that the rated power of all inverters is the same.
Para Phase set error	Incorrect setting of phase in parallel	Confirm the wiring for the parallel system is correct. Once verified, connect each inverter to the grid. The system will automatically detect the phase sequence, and the fault automatically resolves after the phase sequence is detected. If the fault persists, contact the supplier.
Para sync loss	Parallel inverter fault	Restart the inverter. If the fault persists, contact the supplier.

Alarm	Meaning	Troubleshooting
Bat com failure	Inverter fails to communicate with battery	Check if the communication cable pinout is correct, and if the correct battery brand has been chosen on the inverter’s LCD. If all is correct but this alarm persists, contact the supplier.
AFCI com failure	Inverter fails to communicate with AFCI module	Restart inverter. If the error persists, contact the 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, clear the alarm on the inverter LCD.
Meter com failure	Inverter fails to communicate with the meter	Check if the communication cable is connected correctly and in good working condition. Restart inverter. If the alarm persists, contact the 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 an incorrect battery brand has been chosen. 3. Check if there is a fault on the battery's indicator. If there is a fault, contact the battery supplier.
Fwm mismatch	Firmware version mismatch between the microprocessors	Attempt firmware update again following the steps in Section 13; if the fault persists, contact supplier.
Fan stuck	Cooling fan(s) are stuck	Contact supplier.
Trip by GFCI high	Inverter detected leakage current on AC side	1. Check if there is ground fault on grid and load side. 2. Restart inverter. If the alarm persists, contact the supplier.

Trip by DCI high	Inverter detected high DC injection current on Grid terminal	Restart inverter. If the alarm persists, contact the supplier.
PV short circuit	Inverter detected a short circuit in PV input	1. Check whether each PV string is connected correctly. 2. Restart inverter. If the alarm persists, contact the supplier.
GFCI module fault	GFCI module is abnormal	Restart inverter. If the alarm persists, contact the supplier.
Bat volt high	Battery voltage too high	Check whether the battery voltage exceeds 59.9V; battery voltage should be within inverter specification.
Bat volt low	Battery voltage too low	Check whether the battery voltage is under 40V; battery voltage should be within inverter specification.
Bat open	Battery is disconnected from inverter	Check battery breaker or fuse. Reconnect as needed.
Off-grid overload	Overload on Load terminal	Check if load power on inverter LOAD terminal is within inverter specification.
Off-grid overvolt	Load voltage is too high	Restart inverter. If the alarm persists, contact the supplier.
Meter reversed	Meter connection is reversed	Check if the meter communication cable is connected correctly on the inverter and meter sides.
Off-grid dcv high	High DC voltage component on load output when running off-grid	Restart inverter. If the alarm persists, contact the supplier.
RSD Active	Rapid shutdown activated	Check if the RSD switch is pressed.
Para phase loss	Phase losing in parallel system	Confirm that the wiring of the inverter is correct. If the Master is set to 3-phase Master, the number of parallel inverters must be ≥3. (The grid input for each inverter should be connected correctly to Grid L1, L2, L3.) If the Master is set to 2x 208 Master, the number of parallel inverters needs to be ≥2. (And the grid input of each inverter should be connected correctly to Grid L1, L2, L3.)
Para no BM set	Master is not set in the parallel system	Set one of the inverters in the parallel system as the Master.
Para multi BM set	Multiple Primaries have been set in the parallel system	There are at least two inverters set as the Master in the parallel system. Keep one Master and set the other as Slave.

15. STANDARDS AND CERTIFICATIONS

The EG4® FlexBOSS21 is ETL & cETL listed and complies with national and international standards for safety and reliability when connected to the grid.

Safety

- UL1741, SA, SB
- RSD NEC 2020:690.12 (PENDING)
- AFCI NEC 2020:690.11/UL1699B
- GFDI NEC 2020:690.41(B)
- CSA 22.2.107.1:2016 Ed. 4
- CSA 22.2.330:2017 Ed. 1

Grid Connection

- IEEE 1547.1:2020; IEEE 1547:2018
- Hawaii Rule 14H [HECO SRD IEEE 1547.1-2020 Ed. 2]
- California Rule 21 Phase I, II, III

EMC

- FCC Part 15 Class B (PENDING)

Outdoor Rating

- NEMA 4X/IP65

16. EG4® 10-YEAR LIMITED WARRANTY

Congratulations on your purchase. EG4 Electronics offers a 10-year Full Parts Replacement or Full Product Replacement Warranty from the date of original inverter (EG4 FlexBOSS 21*) purchase. Your warranty must be registered within the first year of purchase or provide proof of purchase from an EG4 authorized distributor to remain valid. If you choose not to register or cannot provide proof of purchase, your warranty may be invalidated. This limited warranty is to the original purchaser of the product and is one time transferable only if the product remains installed in the original installation location. All parts exchanges are covered during the warranty period. Outside of the continental US, replacement shipping charges may apply.

Product that is not purchased through an EG4 approved vendor is not covered under this warranty. A list of approved vendors can be found on our website. Reselling or removing the product from the original installation site will void the warranty.

Warranty Exclusions - EG4 Electronics has no obligation under this limited warranty for products subjected to the following conditions (including but not limited to):

1. Damages incurred during installation/reinstallation or removal
2. Poor workmanship performed by an individual, installer, or a firm
3. Damages caused by mishandling the product or inappropriate environmental exposure
4. Damages caused by improper maintenance or operating outside the specified operating conditions
5. Tampering, altering, and/or disassembly of the product
6. Using product in applications other than what the manufacturer intended
7. Lightning, fire, flood, earthquake, terrorism, riots, or acts of God
8. Any product with a serial number that has been altered, defaced, or removed
9. Any unauthorized firmware updates/upgrades/patches
10. Damages incurred from a voltage or current spikes due to open-loop lithium battery communications

EG4 product warranty is a **limited warranty** – EG4 limits its liability in the event of a product defect to repair or replacement in accordance with the terms of this limited warranty. EG4 is not responsible for any additional or indirect damages that may arise from the malfunctioning of the product. These damages could be incidental or consequential, including without limitation, any liability for the loss of revenue, profits, or time. EG4 shall not be liable for any direct or indirect loss of life, including but not limited to bodily injury, illness, or death arising from the misuse or mishandling of the product, whether caused by negligence or otherwise.

Return Policy and Warranty Claims Procedure: Contact your original place of purchase.

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CONTACT US

support@eg4electronics.com
(903) 609-1988
www.eg4electronics.com