

EG4® 12kPV HYBRID INVERTER

QUICK-START GUIDE

This guide has been created to give the end-user a simple and efficient way to install and commission the 12kPV hybrid inverter.



TABLE OF CONTENTS

1.	TECHNICAL SPECIFICATIONS.....	1
2.	ABBREVIATIONS.....	4
3.	INVERTER SAFETY	5
3.1	SAFETY INSTRUCTIONS	5
3.2	IMPORTANT SAFETY NOTIFICATIONS	5
4.	SÉCURITÉ DE L'ONDULEUR.....	7
4.1	INSTRUCTIONS DE SÉCURITÉ	7
4.2	NOTIFICATIONS DE SÉCURITÉ IMPORTANTES	7
5.	PACKING LISTS	9
6.	LOCATION SELECTION AND INSTALLATION TOOLS	10
6.1	REQUIREMENTS FOR INSTALLATION LOCATION	10
6.2	RECOMMENDED TOOLS FOR INSTALLATION.....	10
6.3	INSTALLING THE INVERTER.....	11
6.4	MOUNTING STEPS.....	11
7.	PRE-WIRE STEPS AND WIRING (BATT, PV, AC).....	12
7.1	WIRE SIZING	13
7.2	BATTERY/INVERTER CONNECTION FOR NON-SERVER RACK	13
7.3	BATTERY/INVERTER CONNECTION FOR SERVER RACK	13
7.4	BMS COMMUNICATIONS	14
7.5	PV CONNECTION	16
7.6	AC CONNECTION	16
8.	SYSTEM START-UP SEQUENCE FOR COMMISSIONING	16
9.	ACCOUNT REGISTRATION	17
10.	FIRMWARE UPDATES.....	17
10.1	INVERTER UPDATE VIA EG4 APP	17
10.2	INVERTER UPDATE VIA MONITOR CENTER	18
10.3	BATTERY UPDATE	18
11.	OPERATION GUIDE.....	19
11.1	OPERATION MODE AND FUNCTION	19
11.2	RAPID SHUTDOWN (RSD).....	22
11.3	LCD DISPLAY AND SETTINGS	23
11.4	SETTING PARAMETERS.....	24
12.	OPERATING MODES.....	28
12.1	SELF-CONSUMPTION MODE	29
12.2	BATTERY BACKUP MODE.....	30
12.3	GRID SELL BACK WITH AC COUPLE	32
13.	DOUBLE CHECK ALL WIRING/VOLTAGES/AMPS	33
14.	FULL SYSTEM START-UP	33
15.	FULL SYSTEM SHUTDOWN	33
16.	POWER CONTROL SYSTEM.....	34
16.1	EXPORT LIMITING FROM ALL SOURCES (PEL).....	34
17.	INVERTER TROUBLESHOOTING	36
17.1	VIEWING INFORMATION AND ALARM FAULT/RECORD	36
17.2	REGULAR MAINTENANCE	37
17.3	ESS MODE	37
17.4	TROUBLESHOOTING BASED ON LCD SCREEN	39
18.	DONGLE OVERVIEW.....	43
18.1	DONGLE FCC ID'S	43
18.2	LED INDICATORS AND BUTTON FUNCTIONALITY	43
18.3	DONGLE BOOTUP STEPS.....	43
18.4	CONNECTIVITY REQUIREMENTS.....	44
18.5	VIEWING DONGLE PARAMETERS.....	44
18.6	TROUBLESHOOTING DONGLE NETWORK CONFIGURATION	46
18.7	ENABLING DONGLE NETWORK SECURITY	48
18.8	DISABLING DONGLE NETWORK SECURITY	50
19.	UPDATING DONGLE FIRMWARE USING APP.....	51
20.	WARRANTY INFORMATION	53

1. TECHNICAL SPECIFICATIONS

AC INPUT DATA					
NOMINAL AC VOLTAGE	120/240 VAC; 120/208 VAC (L1/L2/N required)				
FREQUENCY	50/60Hz				
MAX. AC INPUT POWER	8000W				
MIN. GENERATOR SIZE	>5000W				
MAX. GEN GRID PASSTHROUGH CURRENT	80A 80A				
AC GRID OUTPUT DATA					
MAX. OUTPUT CURRENT	33.3A@240 VAC 38.5A @208 VAC				
OUTPUT VOLTAGE	120/240 VAC; 120/208 VAC				
NOMINAL POWER OUTPUT	8000W				
OUTPUT FREQUENCY	50/60Hz				
POWER FACTOR	0.99 @ Full Load				
REACTIVE POWER ADJUST RANGE	±0.8				
MAX CONT. LINE WATTAGE	4000W				
PEAK POWER	0.5 s	1 s	1 min	12 min	
	16kW	12kW	10kW	8.8kW	
OPERATING FREQUENCY	50/60Hz				
THD (V) @FULL LOAD	<3%				
TRANSFER TIME	Single				Parallel
	20 ms – Default, 10 ms – Selectable				20 ms
PV INPUT DATA					
NUMBER OF MPPTS	2				
INPUTS PER MPPT	2				
MAX. USABLE INPUT CURRENT	25/25A				
	25A per MPPT 41.6A in total				
MAX. SHORT CIRCUIT INPUT CURRENT	31/31A				
DC INPUT VOLTAGE RANGE	100-600 VDC*				
UNIT STARTUP VOLTAGE	100 VDC				
MPPT OPERATING VOLTAGE RANGE	120-500 VDC**				
NOMINAL MPPT VOLTAGE	360 VDC				
MPPT VOLTAGE HIGH PROTECTION	550 VDC***				
MAXIMUM UTILIZED SOLAR POWER	12000W				
RECOMMENDED MAXIMUM SOLAR INPUT	15000W				

*Do not exceed the max. DC input voltage specification of 600 VDC. Any damage caused by reaching >600 VDC will not be covered under warranty.

**When sizing the system, it is best practice to follow the MPPT Operating Voltage Range specifications, and not the maximum voltage of the MPPT.

***The value at which the inverter will fault to protect the MPPT from the overvoltage spec of 600 VDC. Ensure **geographical considerations, weather patterns, and panel specifications** are factored into string sizing.

See <https://eg4electronics.com/wp-content/themes/hello-elementor/eg4-solar-panel-string-sizer/> for the EG4® string sizing tool.

EFFICIENCY	
MAXIMUM EFFICIENCY (PV TO GRID)	97.5%
MAXIMUM EFFICIENCY (BATTERY TO GRID)	94%
CEC WEIGHTED EFFICIENCY	96.4%
MAXIMUM EFFICIENCY (PV TO BATTERY)	99.9%
IDLE CONSUMPTION (STANDBY MODE)	<55W
BATTERY DATA	
COMPATIBLE BATTERY TYPES	Lead-Acid/Lithium
MAX. CHARGE/DISCHARGE CURRENT	167A @ 48 VDC
NOMINAL VOLTAGE	48 VDC
VOLTAGE RANGE	40-60 VDC (Lithium); 40-60 VDC (Lead-Acid)
RECOMMENDED BATTERY CAPACITY PER INVERTER	>200Ah
GENERAL DATA	
MAX. UNITS IN PARALLEL	10
PRODUCT DIMENSIONS (H×W×D)	29.5×20.5×11.2 in (750×520×285 mm)
UNIT WEIGHT	110 lbs. (50 kg)
DESIGN TOPOLOGY	High Frequency - Transformerless
RELATIVE HUMIDITY	0-100%
OPERATING ALTITUDE	<2000m (<6561 ft)*
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)	<50 dB @ 3 ft
LOCKED ROTOR AMPS (LRA)	195A
COMMUNICATION INTERFACE	RS485/Wi-Fi/CAN
STANDARD WARRANTY	10-year standard warranty**
ENCLOSURE RATING	NEMA 4X
SAFETY FEATURES	PV Arc Fault Protection, PV Ground Fault Protection, PV Reverse Polarity Protection, Pole Sensitive Leakage Current Monitoring Unit, Surge Protection Device, integrated PV disconnect

*For installations above 2000 m, the inverter needs to be derated to specific values depending on the elevation. Refer to the "Inverter Altitude and Derating Usage Restrictions" guide by navigating to <https://eg4electronics.com/wp-content/uploads/2026/04/EG4-Inverter-Altitude-Derating-Usage-Restrictions.pdf> or by scanning the QR code below.

**For information regarding warranty registration on EG4® Electronics products, please navigate to <https://eg4electronics.com/warranty/> and select the corresponding product to begin the registration process.



STANDARDS AND CERTIFICATIONS

UL1741, SA, SB, PCS CRD

RAPID SHUT DOWN (RSD) NEC 2020:690.12

ARC-FAULT CIRCUIT INTERRUPTER (AFCI) NEC 2020:690.11 / UL1699B

GROUND FAULT MONITORING (GFDI) NEC 2020:690.41(B)

CSA 22.2.107.1

CSA 22.2.330

IEEE 1547.1:2020; IEEE 1547:2018

HAWAII RULE 14H

CALIFORNIA RULE 21 PHASE I, II, III

FCC PART 15, CLASS B

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!*

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.



WARNING!

Cancer and Reproductive Harm – See www.P65Warnings.ca.gov for more details.

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. SÉCURITÉ DE L'ONDULEUR

4.1 INSTRUCTIONS DE SÉCURITÉ

Les réglementations internationales de sécurité ont été strictement observées lors de la conception et des tests de l'onduleur. Avant de commencer tout travail, lisez attentivement toutes les instructions de sécurité et respectez-les toujours lorsque vous travaillez sur ou avec l'onduleur. L'installation doit suivre toutes les normes et réglementations nationales ou locales applicables. Consultez l'autorité locale compétente et/ou le fournisseur d'électricité pour obtenir les permis et autorisations nécessaires avant l'installation.

Une installation incorrecte peut causer:

- Des blessures ou la mort de l'installateur, de l'opérateur ou d'un tiers
- Des dommages à l'onduleur ou à d'autres équipements connectés

4.2 NOTIFICATIONS DE SÉCURITÉ IMPORTANTES



DANGER: *Circuits à haute tension!*

Il y a divers problèmes de sécurité qui doivent être soigneusement observés avant, pendant et après l'installation, ainsi que pendant l'exploitation et la maintenance futures. Les notifications de sécurité suivantes sont importantes pour l'installateur et tout utilisateur final de ce produit dans des conditions normales de fonctionnement.

1. **Attention à la haute tension PV.** Installez un interrupteur ou disjoncteur externe de déconnexion DC et assurez-vous qu'il est en position "off" ou "ouvert" avant d'installer ou de travailler sur l'onduleur. Utilisez un voltmètre pour confirmer qu'il n'y a pas de tension DC présente afin d'éviter les chocs électriques.
2. **Attention à la haute tension du réseau.** Assurez-vous que l'interrupteur AC et/ou le disjoncteur AC sont en position "off" ou "ouvert" avant d'installer ou de travailler sur l'onduleur. Utilisez un voltmètre pour confirmer qu'il n'y a pas de tension présente afin d'éviter les chocs électriques.
3. **Attention au courant élevé de la batterie.** Assurez-vous que les disjoncteurs des modules de batterie et/ou les interrupteurs on/off sont en position "ouvert" ou "off" avant d'installer ou de travailler sur l'onduleur. Utilisez un voltmètre pour confirmer qu'il n'y a pas de tension DC présente afin d'éviter les chocs électriques.
4. **Ne pas ouvrir l'onduleur pendant qu'il fonctionne pour éviter les chocs électriques et les dommages dus à la tension et au courant en direct dans le système.**
5. Ne pas effectuer de connexions ou de déconnexions (PV, batterie, réseau, communication, etc.) pendant que l'onduleur fonctionne.
6. Un installateur doit s'assurer d'être bien protégé par un équipement isolant raisonnable et professionnel (par exemple, équipement de protection individuelle (EPI)).
7. Avant d'installer, d'exploiter ou de maintenir le système, il est important d'inspecter tous les câblages existants pour s'assurer qu'ils répondent aux spécifications et conditions appropriées pour l'utilisation.
8. Assurez-vous que les connexions PV, batterie et réseau à l'onduleur sont sécurisées et appropriées pour éviter les dommages ou les blessures causés par une installation incorrecte.
9. Certains composants du système peuvent être très lourds. Assurez-vous d'utiliser des techniques de levage en équipe parmi d'autres techniques de levage sûres tout au long de l'installation.



AVERTISSEMENT : POUR RÉDUIRE LE RISQUE DE BLESSURE, LISEZ TOUTES LES INSTRUCTIONS !

Tous les travaux sur ce produit (conception du système, installation, exploitation, réglage, configuration et maintenance) doivent être effectués par du personnel qualifié. Pour réduire le risque de choc électrique, ne réalisez aucun entretien autre que ceux spécifiés dans les instructions de fonctionnement, sauf si vous êtes qualifié pour le faire.

10. Lisez toutes les instructions avant d'installer. Pour les travaux électriques, suivez toutes les normes et réglementations locales et nationales de câblage, ainsi que ces instructions d'installation.
11. Assurez-vous que l'onduleur est correctement mis à la terre. Tous les câblages doivent être conformes au Code National de l'Électricité (NEC), ANSI/NFPA 70.
12. L'onduleur et le système peuvent se connecter au réseau électrique uniquement si le fournisseur d'électricité le permet. Consultez l'autorité locale compétente avant d'installer ce produit pour toute réglementation et exigence supplémentaire pour la zone immédiate.
13. Toutes les étiquettes d'avertissement et les plaques signalétiques sur l'onduleur doivent être clairement visibles et ne doivent pas être retirées ou couvertes.
14. L'installateur doit tenir compte de la sécurité des futurs utilisateurs lors du choix de la position et de l'emplacement corrects de l'onduleur, comme spécifié dans ce manuel.
15. Empêchez les enfants de toucher ou de mal utiliser l'onduleur et les systèmes pertinents.
16. **Attention !** L'onduleur et certaines parties du système peuvent être chauds lorsqu'ils sont utilisés. Ne touchez pas la surface de l'onduleur ou la plupart des pièces lorsqu'elles fonctionnent. Pendant le fonctionnement, seuls l'écran LCD et les boutons doivent être touchés.



AVERTISSEMENT !

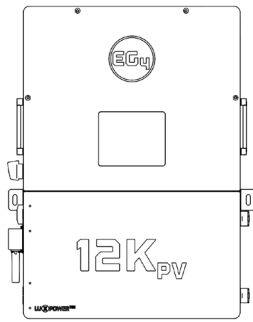
Cancer et dommages reproductifs – Voir www.P65Warnings.ca.gov pour plus de détails.

DISCLAIMER

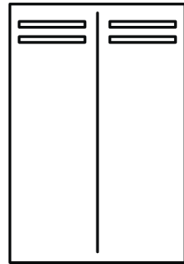
EG4® se réserve le droit de modifier le contenu de ce document à tout moment sans préavis. Veuillez consulter www.eg4electronics.com pour la version la plus récente de nos manuels/fiches techniques.

5. PACKING LISTS

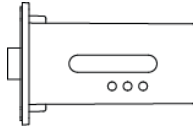
The items listed below will arrive with each product shipment:
Pictures for reference only.



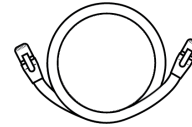
12kPV inverter



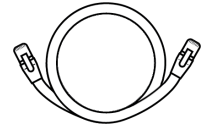
Mounting template x1



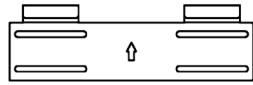
Dongle x1



6 ft. Battery
Communication
Cable (Orange) x1



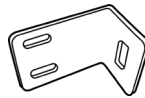
6 ft. Parallel
Communication
Cable (Gray) x1



Wall mounting
bracket x1



Expansion bolts x6



L-bracket x2



Phillips head (M5) x5



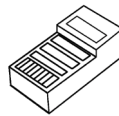
Phillips head (M3) x5



Current
Transformer x2



Keys x1



RJ45
Connectors x4

6. LOCATION SELECTION AND INSTALLATION TOOLS

6.1 REQUIREMENTS FOR INSTALLATION LOCATION

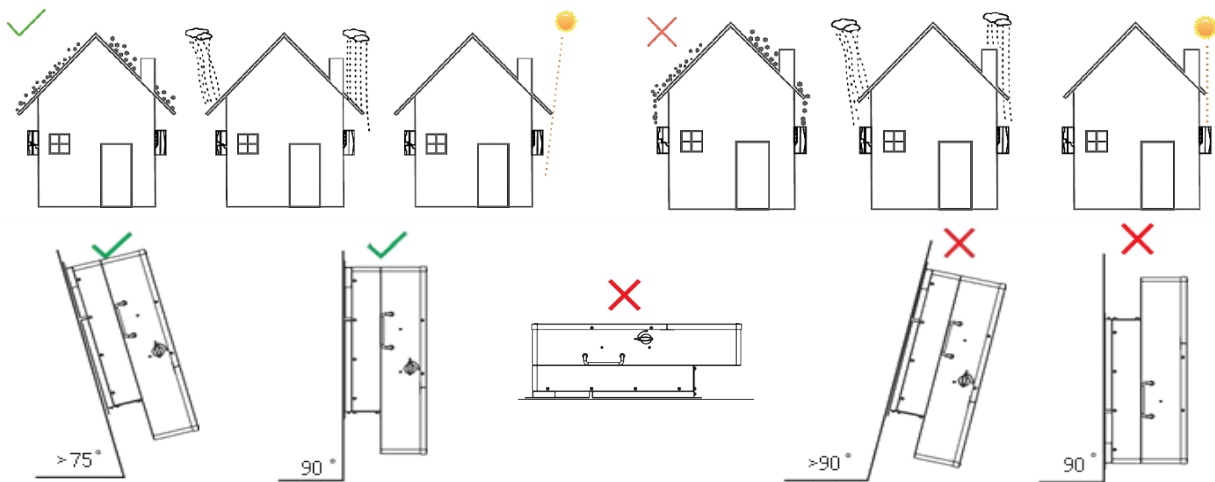
1. The mounting wall must be strong enough to bear the weight of the inverter.
2. Maintain the minimum clearance of 4.9 in. (125 mm) between the inverter and other components of the system to allow adequate heat dissipation.



NOTE:

When mounting the inverter, ensure there is enough space on either side of the unit to allow access to all components of the system such as the RSD switch, Wi-Fi dongle, and door latches.

3. Never position the inverter in direct sunlight. Ensure the site is well shaded or placed in a shed to protect the inverter and LCD from excessive UV exposure.
4. Ensure the inverter is mounted upright. Do not mount the inverter at a $>90^\circ$ angle, or upside down. See image below.



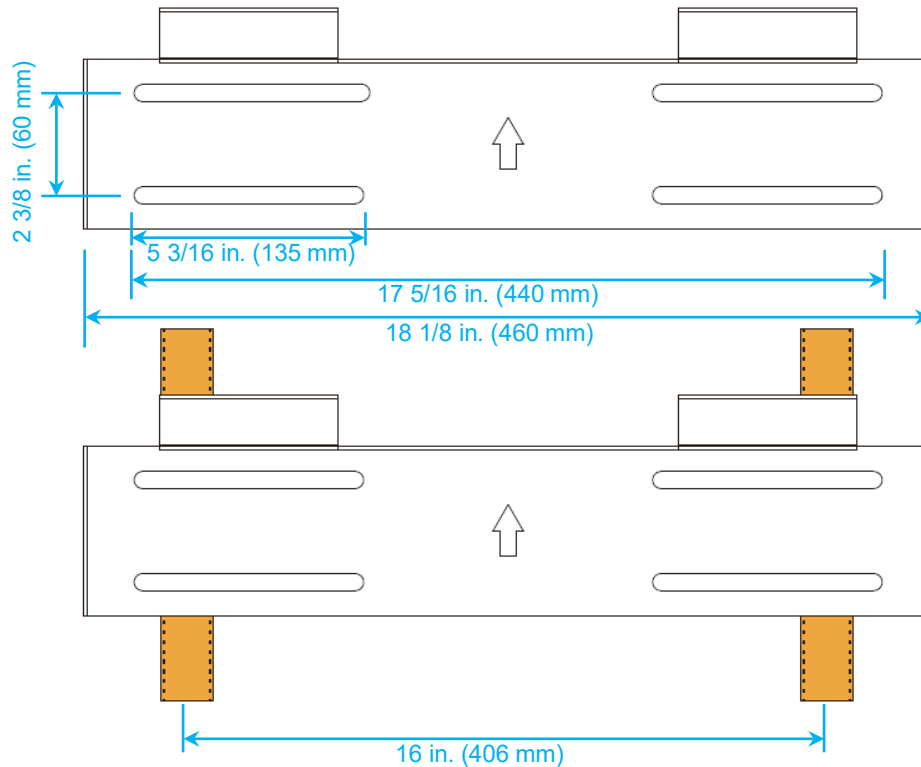
6.2 RECOMMENDED TOOLS FOR INSTALLATION

The following list of tools are not included with purchase, but may be required to complete the installation process:

- Hand truck with all terrain tires
- Tape measure
- Drill and drill bits (5/16")
- M8 Hex wrench/socket
- M5 Hex wrench/socket
- Torque wrench
- Multimeter
- Lineman pliers, rabbit ears or side cutters
- Wire strippers
- Channel locks
- Medium Phillips head screwdriver
- 13 mm or 1/2" socket for lag screws
- 14 mm or 9/16" socket for anchors

6.3 INSTALLING THE INVERTER

The 12kPV is designed to be wall mounted using a wall mounting bracket. The mounting location must be a vertical, solid mounting surface, such as concrete or brick, and be able to withstand the weight of the unit. The surface must be made of non-combustible material. The slots on the mounting bracket can accommodate various stud spacings from 12 in. (305 mm) to 16 in. (406 mm). See image below.



6.4 MOUNTING STEPS

Follow the steps below if mounting on brick or concrete:

1. Using the included template, mark the hole positions for the mounting bracket.
2. Drill four 5/16 in. diameter holes, ensuring the holes are deeper than 2 in.
3. Insert the expansion bolts into the drilled holes and tighten.
4. Use the included nuts and washers, packaged together with the expansion bolts, to secure the wall-mount bracket to the wall.
5. Using the team-lift technique, hang the inverter on the wall-mount bracket and lock it to the wall with two self-tapping screws (not included) and the included L-brackets.

For mounting on concrete board with wooden studs:

1. To ensure correct mounting, follow steps 1 and 2 above before proceeding.
2. Fasten the mounting bracket to the studs with four heavy duty wood screws.
3. Using the team-lift technique, hang the inverter on the wall-mount bracket and lock it to the wall with two self-tapping screws (not included) and the included L-brackets.

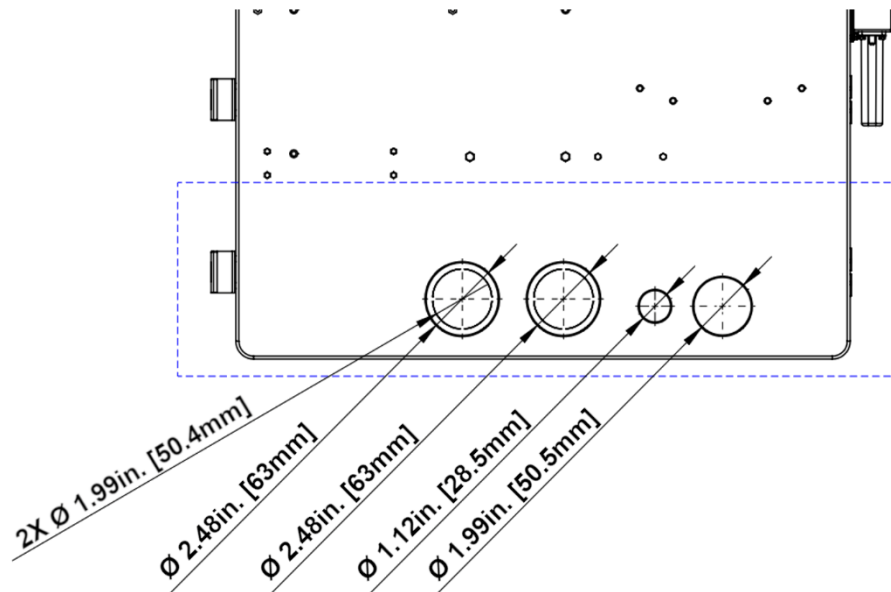


NOTE:

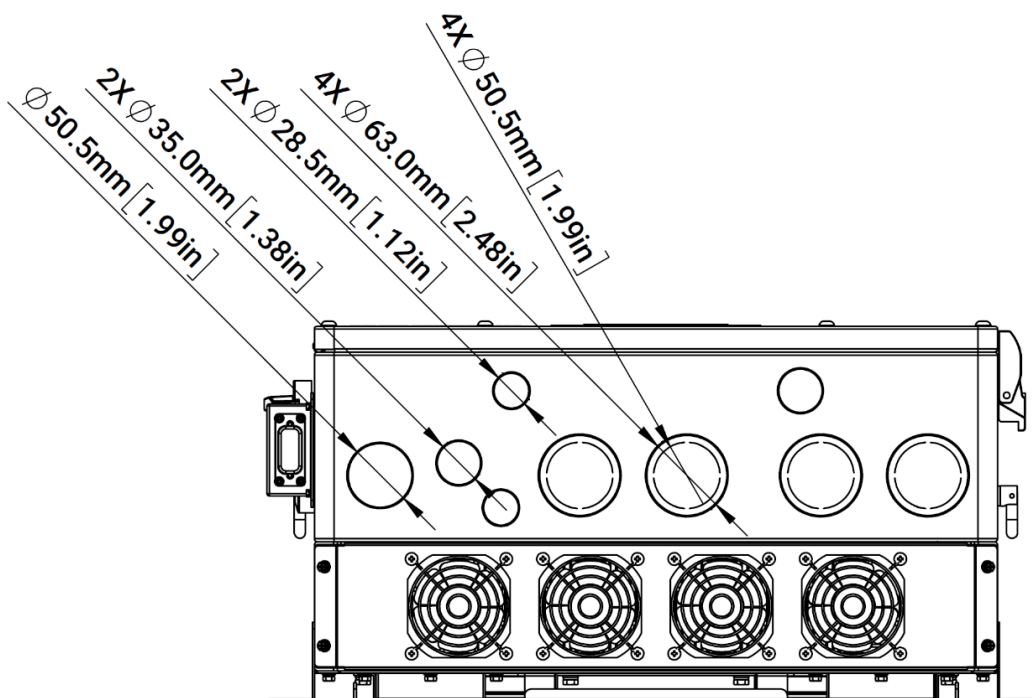
Wood screws and self-tapping screws are not included in the shipment. Installers will need to acquire all necessary screws before installation.

7. PRE-WIRE STEPS AND WIRING (BATT, PV, AC)

Back View of the Cable Box Knockouts



Bottom View of Cable Box Knockouts



U.S. NOM. TRADE SIZE	ACTUAL KNOCKOUT SIZE
1/2 in.	0.88 in. (22.2 mm)
3/4 in.	1.12 in. (28.5 mm)
1 in.	1.38 in. (35 mm)
1 1/4 in.	1.73 in. (44 mm)
1 1/2 in.	1.99 in. (50.5 mm)
2 in.	2.48 in. (63 mm)

7.1 WIRE SIZING

Reference the tables below for wire size and torque recommendations depending on the type of wire and connection.

Battery Wire Sizing

CABLE SIZE	MAX. DISTANCE	TORQUE VALUES
4/0 AWG (107 mm ²)	10 ft.	Max. 22.9 ft-lbs. (31.1Nm)
250 Kcmil (127 mm ²)	20 ft.	Max. 22.9 ft-lbs. (31.1Nm)

PV Wire Sizing

CABLE SIZE	MINIMUM INSULATOR VOLTAGE
10 AWG – 6 AWG (Max.) (6 mm ² – 16 mm ²)	600V

AC Wire Sizing

TERMINAL CONNECTION	CABLE SIZE	TORQUE VALUES
GRID	Max. 4 AWG (21.2 mm ²)	17.7 in-lbs. (2Nm)
GEN	Max. 4 AWG (21.2 mm ²)	17.7 in-lbs. (2Nm)
LOAD	Max. 4 AWG (21.2 mm ²)	17.7 in-lbs. (2Nm)

7.2 BATTERY/INVERTER CONNECTION FOR NON-SERVER RACK

1. Ensure all circuit breakers are open (off). Use a multimeter to test the wires and terminals for voltage. If no voltage is present, proceed to the next step.
2. Strip 3/15 – 4/5 in. (15 – 20 mm) insulation from the cable ends.
3. Route the battery power cables, ensuring cables are long enough to span the distance between battery and inverter terminals, without making any connections.
4. Secure a conduit fitting to the enclosure using a counter nut.
5. Connect the battery positive and negative cables to the inverter's mechanical lugs using an M8 hex wrench, torquing to a maximum value of 22.9 ft-lbs. (31.1 Nm).



NOTE:

Conduit fittings and counter nuts are not included with purchase. Installers will need to acquire all necessary conduit accessories before installation.

7.3 BATTERY/INVERTER CONNECTION FOR SERVER RACK

The recommended installation practice with server rack batteries requires the use of external busbars or battery cabinets with busbars. Follow the steps below to install the batteries to an external busbar:

1. Ensure all circuit breakers are open (off). Use a multimeter to test the wires and terminals for voltage. If no voltage is present, proceed to the next step.
2. Strip 3/15 – 4/5 in. (15 – 20 mm) insulation from the cable ends.
3. Remove the M8 terminal bolts. Install the power cables (positive and negative) to the battery terminals. Reseat the M8 bolts once the cables are in place, torquing to a maximum value of 70 in-lbs. (7.9Nm).
4. Install the power cables to the external busbar torquing to a maximum value of 15 ft-lbs. (20.3Nm).
5. Install the power cables from the external busbar to the inverter, torquing to a maximum value of 22.9 ft-lbs. (31.1Nm).



IMPORTANT!

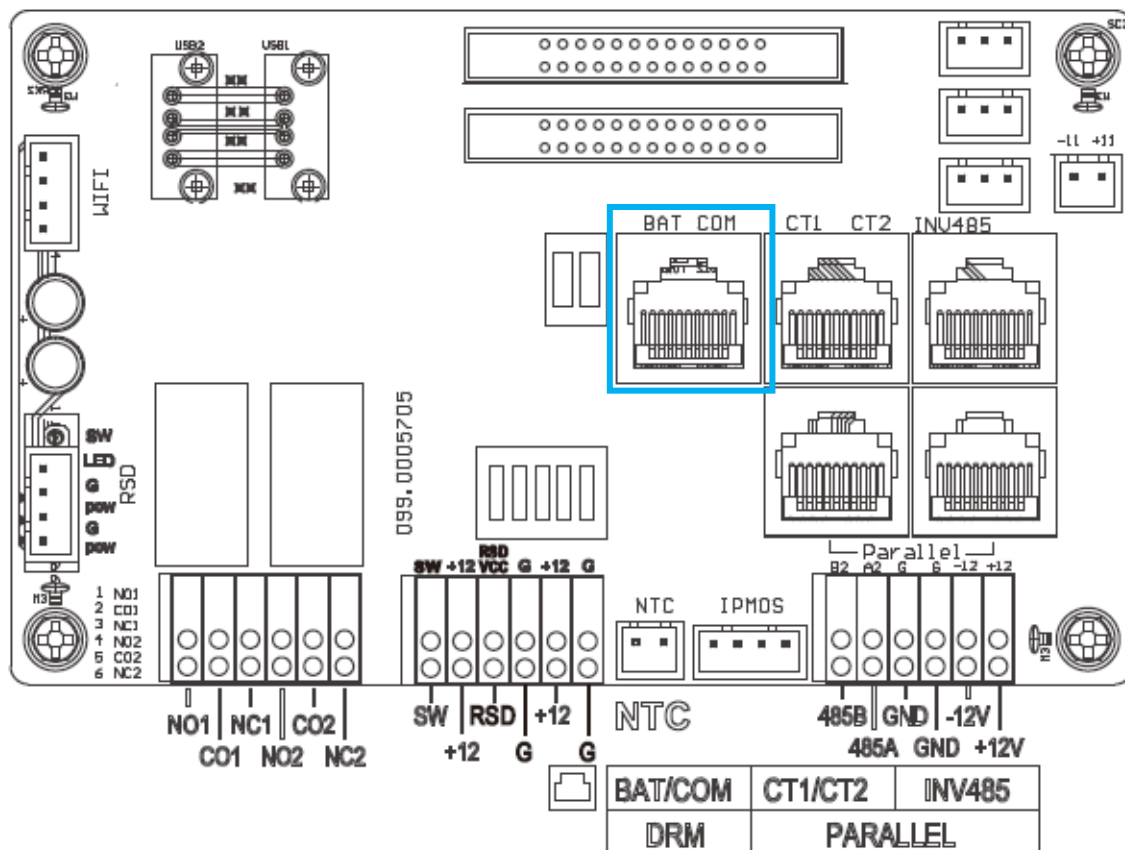
Size the battery cables going from external busbar to inverter accordingly! Refer to an NEC ampacity chart for further information.

7.4 BMS COMMUNICATIONS

EG4® batteries interface with an inverter by designating a “Master” battery (DIP switch ID No. 1). Depending on the model of battery, the available ID codes range from 1 – 64 (1 – 16 for LifePower4). The battery will connect directly to the inverter (*shown below*) via an RS485 battery communications cable or a standard CAT 5, CAT 5e, or CAT 6 cable for closed loop communications with supported non-EG4 inverters using CAN bus protocol.

The table below shows the communication protocol for the inverter. For battery specific pinouts, refer to the battery user manual.

PIN #		1	2	3	4	5	6	7	8
CAN	Pin	X	X	X	BMS_CAN H	BMS_CAN L	X	X	X
RS485	Description	BMS_485 B	BMS_485 A	X	X	X	X	X	X



Closed Loop Communications: WallMount, LL-S, LL-V2 & LifePower4 V2

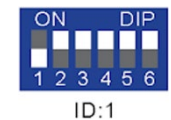
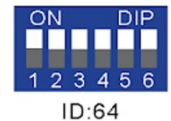


IMPORTANT:

Only the master battery (Address 1) must be set to the inverter protocol; all other batteries must have unique addresses starting at address 2 and ascending in chronological order. The CAN port of the master battery must be connected to the inverter's (or communication device's) BMS communication port.

CAN PROTOCOL LIST	
PROTOCOL #	MANUFACTURER
P01-EG4/LUX	EG4/LUX
P02-GRW	Growatt
P03-SLK	Sol-Ark
P04-DY	Deye
P05-MGR	Megarevo
P06-VCT	Victron
P07-LUX	Luxpower
P08-SMA	SMA

1. Power off all battery DC breakers and BMS power buttons.
2. The inverter protocol can only be changed with the master battery temporarily set to address 64 (all switches ON.) See image.
3. After the dipswitch is changed, reset the battery using the BMS power button for the settings to take effect.
4. On the master battery, press and hold the "Return"  key for 5 seconds and release to enter the "Protocol Setting" menu.
5. Select the CAN Protocol. Select EG4/LUX for closed loop communications.
6. Change the master DIP switch back to address 1 for inverter communications. Reset the BMS to register the change. See image.



NOTE:

To achieve closed loop communications between LifePower4 v1 batteries and the 12kPV inverter, a battery firmware update is required. Navigate to eg4electronics.com or contact the distributor to locate this file.

Closed Loop Communications: LifePower4 v1

1. Set the dipswitches on the master battery to address "0." See image.
2. Set the following battery dipswitches in ascending order to ensure there are no matching addresses.
3. Reset the battery BMS using the built-in circuit breaker.



7.5 PV CONNECTION

1. Ensure all circuit breakers are open (off). Use a multimeter to test the wires and terminals for voltage. If no voltage is present, proceed to the next step.
2. Strip 1/2 in. – 2/3 in. (13 – 17 mm) insulation from the PV wires.
3. Insert the conduit fitting into the opening for the PV connection and tighten it from the inside using a counter nut.
4. Route the PV wires through the conduit fitting and into the inverter.
5. Secure the PV wires into the terminals. Verify the connection by lightly tugging on the wires.



NOTE:

If using fine stranded wire, use ferrules to secure the connection.

7.6 AC CONNECTION

1. Ensure all circuit breakers are open (off). Use a multimeter to test the wires and terminals for voltage. If no voltage is present, proceed to the next step.
2. Strip 3/5 – 4/5 in. (15 – 20 mm) insulation from cables (If using stranded wire, use wire ferrules).
3. Secure a conduit fitting to the enclosure using the counter nut of the fitting.
4. Fasten the GRID and LOAD cables to the respective terminals (GRID= AC Input, LOAD = AC Output) using a Phillips head screwdriver, torquing to 17.7 in-lbs. (2Nm).
5. Secure conduit to the conduit fitting.

For more additional information regarding physical power connections and paralleling, scan the QR code to navigate to the Connections and Paralleling guide.

CONNECTIONS & PARALLELING GUIDE



8. SYSTEM START-UP SEQUENCE FOR COMMISSIONING

Follow the steps below to turn the system on to disable output while finishing commissioning:

1. Ensure the LOAD breaker is open (off). Use a multimeter to test all components for voltage. If no voltage is present, proceed to the next step.
2. If equipped, close (turn on) the external DC breaker between the battery and inverter. Turn on the “BAT” breaker located in the cable box of the inverter and then power on the battery system.
3. Ensure the PV string voltages are within the operating parameters using a multimeter. Upon confirmation, turn on (close) the PV isolator switch between the inverter and the panel array.
4. Turn on (close) the PV isolator switch on the side of the unit.
5. Make sure Steps 1 and 2 are accomplished before turning on the grid power or generator breaker.
6. Ensure the LOAD breaker is open (off) before proceeding to account registration.

Once the steps above are completed, the system will be in the proper state allowing for registry changes.



NOTE:

Steps listed in section 8 are for a single inverter. If using two or more inverters, refer to the EG4® 12kPV Connections & Paralleling Guide.

9. ACCOUNT REGISTRATION

Before using the EG4® Monitoring Center, an account must be registered. Follow the steps outlined below for account creating and linking:

1. Register the account:
 - a. Visit <https://monitor.eg4electronics.com/> or download the “EG4 Monitor” app to register for an end-user account.
2. When registering the account, provide the following information:
 - b. Customer code: This is the code for a distributor or installer. Contact the distributor or installer to obtain this code.
 - c. Dongle SN: The serial number is attached to the shell on the sticker.
 - d. Dongle PIN: The PIN is attached to the shell on the sticker.
3. Set the Wi-Fi Password:
 - e. Ensure the inverter is powered on and plug in the Wi-Fi dongle into the dongle port.
 - f. Wait until the “INV” LED on the module is solid. Once solid, connect the mobile device to the dongle’s Wi-Fi hotspot. The hotspot will be named the same as the SN of the module.
 - g. Open the app and click “DONGLE CONNECT.” Select the yellow “Refresh” button to display a full list of available networks. Select the home Wi-Fi network and enter the password.
 - h. After selecting “Home Wi-Fi Connect,” the dongle will reset. Once all three LED lights are solid the inverter has successfully connected to the network.

DEVICE MONITORING & SETTINGS GUIDE



10. FIRMWARE UPDATES

Before commissioning the system, ensure all components’ firmware is fully up to date. There are two different methods for updating the inverter’s firmware. The two methods are listed below:



NOTE:

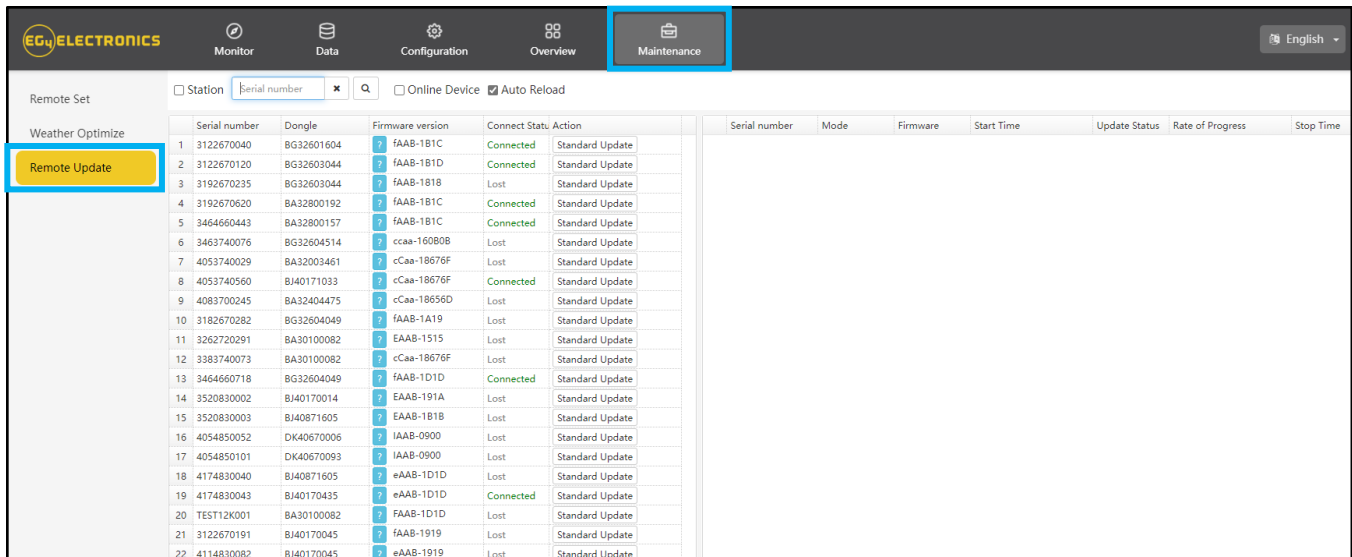
Contact the distributor to ensure the latest firmware files are applied.

10.1 INVERTER UPDATE VIA EG4 APP

1. Open the EG4 Electronics app on a mobile device and select the “DOWNLOAD FIRMWARE” button.
2. Select the correct inverter model, then select “DOWNLOAD” on the right-hand side to download the file to a mobile device.
3. With the app still running, go to the mobile device’s Wi-Fi settings. Connect the mobile device to the Wi-Fi 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 right-hand side of the app and proceed to the next step.
5. Swipe upward on the phone screen 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 click “UPDATE FIRMWARE” to begin the update process.

10.2 INVERTER UPDATE VIA MONITOR CENTER

1. Log in to the EG4® Monitor Center. Select “Maintenance” and then select “Remote Update”.
2. Choose the inverter needing the update by SN and select “Standard Update.” The Monitor Center will begin updating both firmware files for the inverter. The latest version of the firmware will be displayed in the bottom-right window.



Remote Set

☐ Station ☐ Online Device ☒ Auto Reload

Weather Optimize

Remote Update

Serial number	Dongle	Firmware version	Connect Status	Action
1	3122670040	BG32601604	Connected	Standard Update
2	3122670120	BG32603044	Connected	Standard Update
3	3192670235	BG32603044	Lost	Standard Update
4	3192670620	BA32800192	Connected	Standard Update
5	3464660443	BA32800157	Connected	Standard Update
6	3463740076	BG32604514	Lost	Standard Update
7	4053740029	BA32003461	Lost	Standard Update
8	4053740560	BJ40171033	Connected	Standard Update
9	4083700245	BA32404475	Lost	Standard Update
10	3182670282	BG32604049	Lost	Standard Update
11	3262720291	BA30100082	Lost	Standard Update
12	3383740073	BA30100082	Lost	Standard Update
13	3464660718	BG32604049	Connected	Standard Update
14	3520830002	BJ40170014	Lost	Standard Update
15	3520830003	BJ40871605	Lost	Standard Update
16	4054850052	DK40670006	Lost	Standard Update
17	4054850101	DK40670093	Lost	Standard Update
18	4174830040	BJ40871605	Lost	Standard Update
19	4174830043	BJ40170435	Connected	Standard Update
20	TEST12K001	BA30100082	Lost	Standard Update
21	3122670191	BJ40170045	Lost	Standard Update
22	4114830082	BJ40170045	Lost	Standard Update

Serial number	Mode	Firmware	Start Time	Update Status	Rate of Progress	Stop Time
---------------	------	----------	------------	---------------	------------------	-----------



NOTE:

While performing the update, make sure the inverter stays powered on throughout the entire process to ensure the update goes through successfully.

10.3 BATTERY UPDATE

To update the firmware on the battery, navigate to EG4electronics.com to find the latest files. Included in the downloaded file are two guides in PDF format to walk through the steps of each update. **Follow the guides to avoid soft-bricking the battery BMS!**

11. OPERATION GUIDE

11.1 OPERATION MODE AND FUNCTION

Self-Consumption Mode

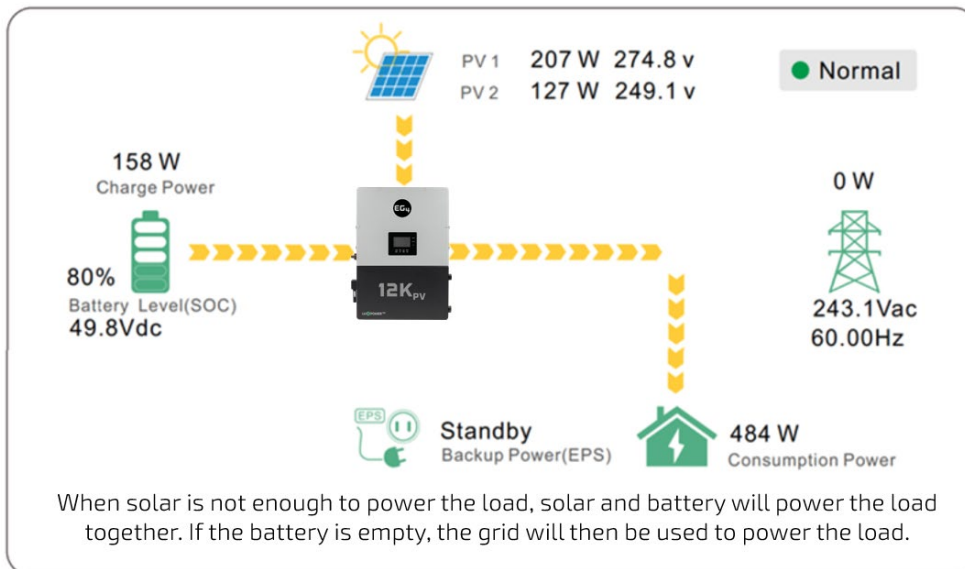
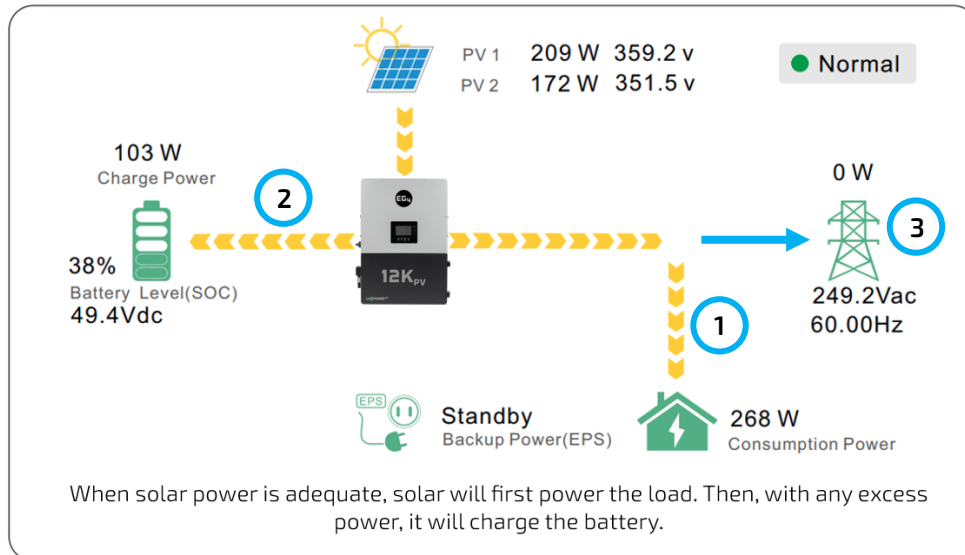
Self-Consumption mode will be the default mode upon start-up. In this mode, the order of priority for powering loads is Solar>Battery>Grid. The order of priority for solar power usage is Load>Battery.

Application Scenarios

Self-Consumption mode will increase the consumption rate of solar power and reduce energy bills.

Related Settings

Effective when Charge Priority, AC Charge, and Forced Discharge are disabled.



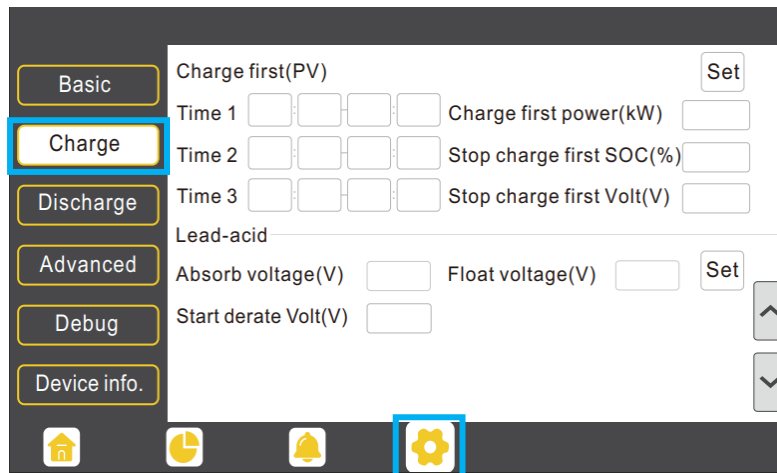
Charge First Mode

The order of priority for solar power usage will be Battery>Load>Grid. During the charge first 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.

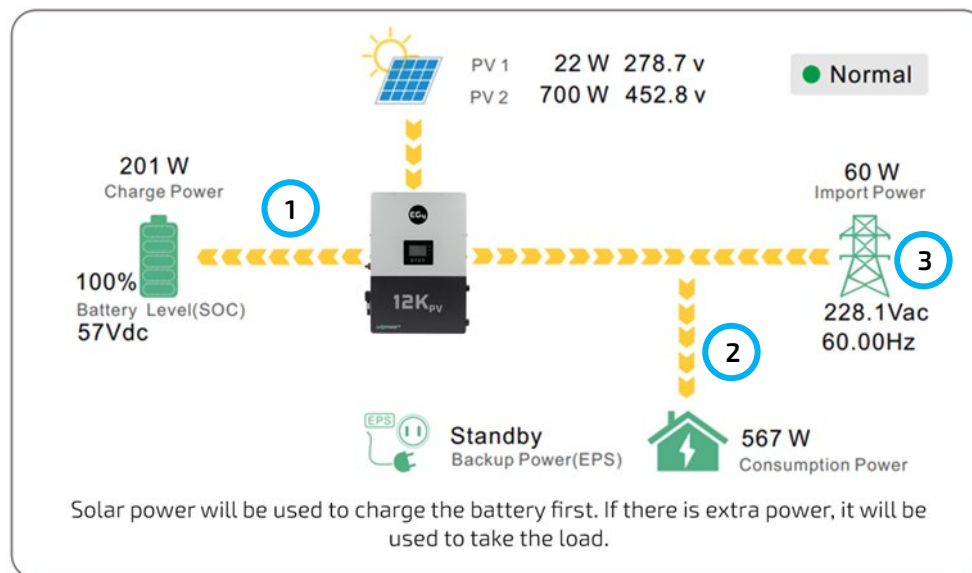
Application Scenarios

When users want solar power to charge batteries, the grid is used to power loads.

Related Settings



Example



AC Charge Mode

AC charge mode

Users can charge batteries with grid power when electricity prices are low, then use battery power run loads or export to the grid when electricity prices are high.

Application Scenarios

When users have a Time of Use (TOU) rate plan.

Related Settings (see image to left)

Grid Peak-Shaving

Grid peak-shaving and peak-shaving power (kW):

Used to set the maximum power that the inverter will draw from the grid. The minimum setting value is 0.2kW.

Smart Load Function

Smart Load: This function will make the GEN input connection point to a load connection point. If enabled, the inverter will supply power to this load when the battery SOC and PV power are above user set values.

For Example:

Start PV power=1kW
Smart load start SOC= 90%
Smart load end SOC= 85%
means:

When the PV power exceeds 1000W, and the battery system SOC gets to 90%, the Smart Load Port (GEN) will automatically switch on to power the connected load. When the battery reaches SOC<85% or PV power<1000W, the Smart Load Port automatically switches off.



Important Note:

IF THE SMART LOAD FUNCTION IS ENABLED, A GENERATOR CANNOT BE CONNECTED AT THE SAME TIME; OTHERWISE, THE DEVICE WILL BE DAMAGED!

11.2 RAPID SHUTDOWN (RSD)

The inverter includes a rapid shutdown system that complies with 2017 and 2020 NEC 690.12 requirements. A rapid shutdown switch should be connected to the RSD terminals on the master inverter and mounted in a readily accessible location outdoors (*check with the AHJ for specific requirements*). For paralleled systems, the RSD needs only to connect to the master inverter. When the switch is engaged, it will shut down all inverters in parallel.



NOTE:

When using supported EG4® batteries in closed-loop communications with the inverter, the RSD also initiates ESS Disconnect.

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

Type of External E-Stop Switch for RSD Requirements:

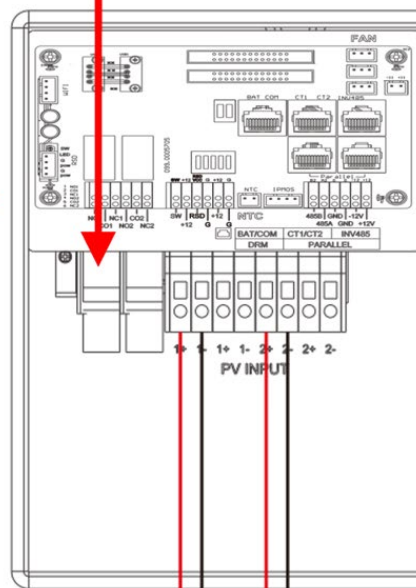
The external switch must be “Normally Open” by default, and “Closed” when the button is pressed for emergency shutdown.

If needing to install a different RSD transmitter or for additional information on the APsmart RSD transmitter, scan the QR code below.

APsmart RSD Transmitter Module Removal



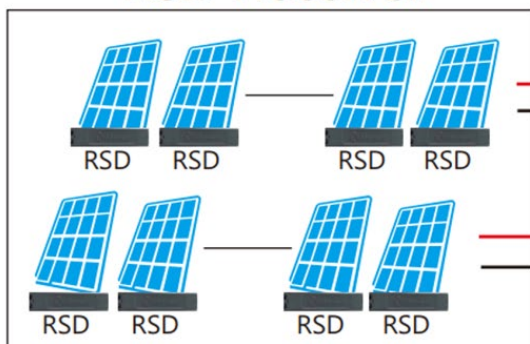
RSD Transmitter



Emergency button:
To initiate rapid shutdown



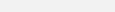
RSD Receiver

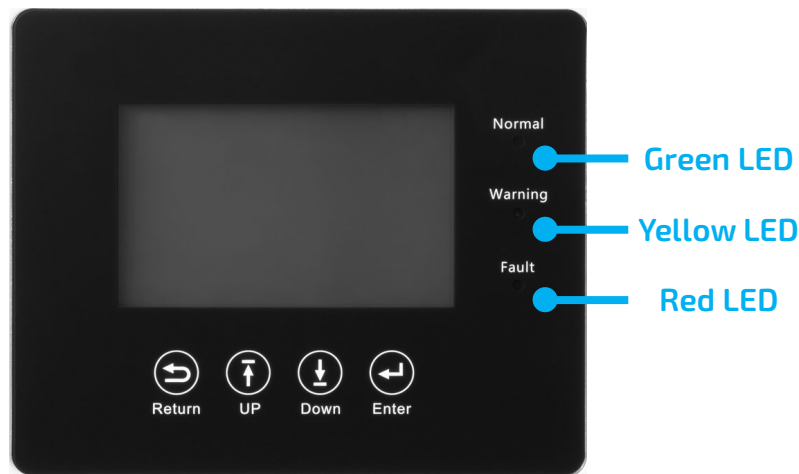


In case of emergency, press the rapid shutdown button, which will stop the inverter's AC output. The PV conductor's voltage will be reduced to less than 30V within 30 seconds.

11.3 LCD DISPLAY AND SETTINGS

Users can wake up the LCD screen by simply pressing the Enter button. System status, real-time power, and daily/accumulated energy information can all be conveniently viewed on the inverter's LCD screen. Additionally, users can also check the alarm and fault record on the display for troubleshooting.

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

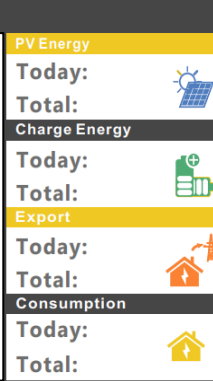


DISPLAY BUTTON	FUNCTION
Return	Exit
Up	Previous Level, Increase
Down	Next Level, Decrease
Enter	Confirm, Enter Menu

Viewing Information and Alarm Fault/Record

Home Screen

Touch the LCD screen to bring it out of sleep mode. The home page will appear on the display. Users will see a system overview diagram along with real-time information of each component such as battery SOC, battery charging/discharging power, grid import/export power, load power, etc. On the right side of the screen, users can check daily and accumulated solar energy, battery charge/discharge energy, grid import/export energy, as well as load consumption.








LCD Version :

Detailed System Information

Click on the pie icon at the bottom of the screen to view the detailed real-time solar information, battery information, grid information, and load output information.

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

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

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

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

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

11.4 SETTING PARAMETERS

Click on the gear icon at the bottom of the screen to get into the parameter setting page for the inverter. If prompted during setting changes, enter “00000” as the password.

Basic Settings

Standby: This setting is for users to set the inverter to normal or standby status. In standby status, the inverter will stop any charging, discharging, or solar feed-in operations.

Restart Inverter: This selection restarts the system. Note the power will be interrupted when the unit is restarted.

Basic	Standby:	Restart inverter	Reset
Charge			
Discharge			
Advanced			
Debug			
Device info.			

Charge Settings

Operating Mode: Users can decide to use state of charge (SOC) or battery voltage (Bat V) to control charge and discharge logic depending on battery type.

Bat. charge current limit (A): Users can set the maximum charge current.

AC Charge: If users want to use grid power to charge their battery, then they can enable “**AC Charge**” and set up to three different time periods when AC charging can happen. Set “**AC charge power (kW)**” to limit utility charging power.

Set “**Stop AC Charge SOC (%)**” as the target SOC for utility charging or “**Stop AC charge Volt (V)**” as the target battery voltage for utility charging.

Basic | Charge | Discharge | Advanced | Debug | Device info.

Operating Mode: Use SOC % | Use Bat V | Set

Bat charge current limit(A) []

AC charge: According to SOC/Volt | Set

AC charge power(kW) [] | Start AC charge SOC(%) []

Time 1 [] [] [] [] | Start AC charge Volt (V) []

Time 2 [] [] [] [] | Stop AC charge SOC(%) []

Time 3 [] [] [] [] | Stop AC charge Volt (V) []

Charge first (PV): PV charge configuration. When using “**Charge first**”, PV will charge the battery as the priority. Users can set up to three different time periods when PV charge can happen.

Charge first power (kW): Limits PV charge power.

Stop charge first SOC (%): The target SOC for PV charge first.

Stop charge first Volt(V): The target battery voltage for PV charge first.

Lead-Acid: When using a Lead-Acid battery, users need to set parameters in these programs. Follow the battery manufacturer’s recommendation for these settings.

Basic | Charge | Discharge | Advanced | Debug | Device info.

Charge first(PV) | Set

Time 1 [] [] [] [] | Charge first power(kW) []

Time 2 [] [] [] [] | Stop charge first SOC(%) []

Time 3 [] [] [] [] | Stop charge first Volt(V) []

Lead-acid

Absorb voltage(V) [] | Float voltage(V) [] | Set

Start derate Volt(V) []

Generator

Charge current limit(A): Maximum battery charge current from the generator. The generator will start charging according to the “**Charge start Volt/SOC**” and stop charging when the battery voltage or SOC reaches the “**Charge end Volt/SOC**” value.

Gen rated power(kW): The inverter has a peak-shaving function. Users can enable it and set up the Gen peak-shaving power with this setting.

Basic | Charge | Discharge | Advanced | Debug | Device info.

Generator

Charge current limit(A) [] | Gen rated power(kW) [] | Set

Charge start Volt(V) [] | Charge start SOC(%) []

Charge end Volt(V) [] | Charge end SOC(%) []

AC couple

Start Volt(V) [] | Start SOC(%) [] | Set

End Volt(V) [] | End SOC(%) []

Discharge Settings

Operating Mode: Users can choose “Use SOC %” or “Use Bat V” to control the battery discharge state.



NOTE:

When using EG4® batteries with the 12kPV inverter, it is recommended to set the cut-off SOC to 20% to maintain the 80% Depth of Discharge (DOD).

Discharge current limit(A): The maximum discharge current from the battery.

Discharge start power(W): The minimum value can be set to 50. When the inverter detects the import power is higher than this value, the battery starts discharging; otherwise, the battery will stay in standby.

On-grid Cut-off (%), Off-grid Cut off (%) / On-grid Cut-off(V), Off-grid Cut off(V): End of discharge SOC/Cutoff voltage when the system is in an on-grid or off-grid situation, respectively.

Forced discharge: This setting will force the battery to discharge within the programmed period. In the programmed period, the inverter will discharge the battery at the power set by “**Discharge power(kW)**” until battery SOC or voltage reaches “**Stop discharge**” value.

Basic	Operating Mode	Use SOC %	Use Bat V	Set
Charge	Discharge current limit(A)		Discharge start power(W)	
Discharge	On-grid Cut-off(%)		Off-grid Cut-off(%)	
Advanced	On-grid Cut-off(V)		Off-grid Cut-off(V)	
Debug	Forced discharge		Set	
Device info.	Time1		Discharge power(kW)	
	Time2		Stop discharge SOC(%)	
	Time3		Stop discharge Volt(V)	



IMPORTANT:

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

Advanced Settings

Grid type: The user can choose 240/120V or 220/208V.

Grid Regulation: Select the correct grid safety regulation.

Grid Frequency: If the grid frequency is nominal at 50Hz, then the inverter's frequency will be adjusted to 50Hz automatically. If there is no grid power and it is read as 50Hz but the devices are 60Hz, then the user can set to 60Hz manually. This is based on the rated frequency of the local grid regulation and devices.

Battery type: No battery, Lead-acid, or Lithium.

If **“Lead-acid”** battery is selected, input the correct battery capacity.

If **“Lithium”** battery is selected, choose the battery's brand in the Lithium brand drop-down list.

Meter type: Choose setting according to the meter installed.

CT ratio: The supported CT ratio is 1000:1, 2000:1, and 3000:1. The default CT ratio is 3000:1. If a third-party CT is used, ensure the CT ratio is one of the three supported types and set it accordingly.



NOTE:

For communication with EG4 batteries ensure the battery firmware is up to date, by contacting the distributor for this file or navigate to <https://www.eg4electronics.com> for the most recent updates and documentation. After ensuring the firmware is up to date, select “Lithium” under “Battery Type” and then select “1” under “Lithium brand”.

- If using LifePower4 V1 batteries or RS485 communications, use “0:EG4” under “Lithium brand”.

Off-grid output: Enabling this setting will cause the inverter to provide backup power if the grid is lost.

“Seamless switch” must be enabled if users want the load to be transferred seamlessly to the inverter backup power.

“No Battery” can be enabled to use solar power to supply load when the grid fails or load-shedding happens. If users do not have a battery installed yet but still wish to have inverter backup power with only solar panels connected, this setting can be enabled.

“Micro-grid” should be set **only** when the generator is connected to the inverter's Grid terminal. With this option enabled, the inverter will use AC power to charge the battery and will not export any power through the Grid terminal if AC power is present at the inverter's Grid terminal.

“Charge last” will use solar power in the following order: Loads>Grid export>Battery charging.

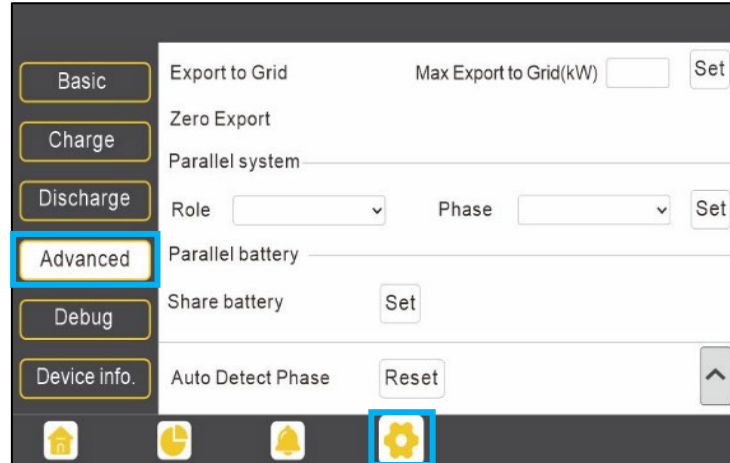
“CT direction reversed” occurs when both CTs are installed in the wrong direction; the installer can remedy this by checking this box.



CAUTION:

Zero Export cannot prevent export of energy supplied by inverters that are AC Coupled to the 12kPV.

Export to Grid: This selection is for users to set a zero-export function. If exporting solar power is not allowed, users need to disable the **“Export to Grid”** option. If a user’s utility meter is tripped with minimal solar export, **“Zero Export”** can be enabled, thus the export detection and adjustment will take place every 20 ms, which will effectively avoid any power being exported. If export is allowed, users can enable **“Export to Grid”** and set a maximum allowable export limit in **“Max Export to Grid(kW)”**.



Parallel System

“Role” setting of the parallel system. It is set to **“1 phase master”** by default. In a parallel system, only one inverter is allowed to be set as Master and the others are set as Slaves.

“Phase” is the phase code setting of the load output. The system will automatically detect the phase sequence of the inverter (consistent with the phase sequence of the connected grid mains) and display it on the inverter after it is connected to the grid.

Share battery: If all inverters are connected to the same battery bank when configured as a parallel system, then this setting must be **enabled**. If the inverters are configured as a parallel system and are connected to independent battery banks, then this setting must be **disabled**.



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 of the battery bank needs to communicate with the inverter that is set as Master in the parallel system. Keep all the settings the same for each inverter in the parallel system on the LCD or remote monitor!

12. OPERATING MODES

The EG4® 12kPV can work in several different modes of operation:

- **Self-Consumption Mode:** The inverter will operate in a pre-set priority system. In this mode, the user will experience the inverter drawing power from the solar arrays to power the loads, this is the default operating mode. When the solar power is insufficient, the inverter will then draw from the battery bank for loads. Only as a last resort will the inverter switch to bypass mode to power loads from AC input.
- **Battery Backup Mode:** The inverter will operate in a pre-set priority system. In this mode, the user will experience the inverter drawing power from the solar arrays to power the loads. When/if the solar power is insufficient, the inverter will then switch to bypass mode to power loads from AC input. The inverter will only power loads with battery when there are no other options.

- **Grid Sell Back with AC Couple:** The inverter will operate with full functionality while still allowing the inverter to sell back to the grid using the GEN port for an AC coupled system.

12.1 SELF-CONSUMPTION MODE

Ensure the inverter is in standby mode before making any changes to the system settings.

Listed below are the combination of settings to achieve Self-Consumption Mode via the mobile app or monitoring website for single inverter operations.



NOTE:

Ensure settings match the below selections. If any settings are missing from the list below, contact the distributor for more information regarding commissioning.

1. Step 1

PV Input Mode	7: PV1&2&3 in	Set
---------------	---------------	-----

2. Step 2

Grid Sell Back	Enable	Disable
----------------	--------	---------

3. Step 3

Fast Zero Export	Enable	Disable
------------------	--------	---------

4. Step 4

Run Without Grid	Enable	Disable
------------------	--------	---------

5. Step 5

Seamless EPS switching	Enable	Disable
------------------------	--------	---------

6. Step 6

On-Grid Cut-Off SOC(%) (?)	25	Set
----------------------------	----	-----

7. Step 7

Charge Current Limit(Adc)	100	Set
---------------------------	-----	-----

8. Step 8

Discharge Current Limit(Adc) (?)	100	Set
----------------------------------	-----	-----

12.2 BATTERY BACKUP MODE

Ensure the inverter is in standby mode before making any changes to the system settings.

Listed below are the combination of settings to achieve Battery Backup Mode via the mobile app or monitoring website.



NOTE:

Ensure settings match the below selections. If any settings are missing from the list below, contact the distributor for more information regarding commissioning.

1. Step 1

PV Input Mode	7: PV1&2&3 in	Set
----------------------	---------------	-----

2. Step 2

Grid Sell Back	Enable	Disable
-----------------------	--------	---------

3. Step 3

Fast Zero Export	Enable	Disable
-------------------------	--------	---------

4. Step 4

Run Without Grid	Enable	Disable
-------------------------	--------	---------

5. Step 5

Seamless EPS switching	Enable	Disable
-------------------------------	--------	---------

6. Step 6

AC Charge Enable	Enable	Disable
-------------------------	--------	---------

7. Step 7

Charge Current Limit(Adc)	100	Set
----------------------------------	-----	-----

8. Step 8

Start AC Charge SOC(%)	90	Set
Stop AC Charge SOC(%)	100	Set

9. Step 9

AC Charge Start Time 1	00	:	01	Set
AC Charge End Time 1	23	:	59	Set

10. Step 10

Battery Priority (?)	Enable	Disable
----------------------	---------------------------------------	--

11. Step 11

On-Grid Cut-Off SOC(%) (?)	90
----------------------------	---------------------------------

12. Step 12

Discharge Current Limit(Adc) (?)	100	Set
----------------------------------	----------------------------------	------------------------------------

12.3 GRID SELL BACK WITH AC COUPLE

Ensure the inverter is in standby mode before making any changes to the system settings. To achieve Grid Sell Back w/ AC Couple working mode, refer to the following settings.



NOTE:

Ensure settings match the below selections. If any settings are missing from the list below, contact the distributor for more information regarding commissioning.

1. Step 1

PV Input Mode	7: PV1&2&3 in	Set
----------------------	---------------	-----

2. Step 2

Run Without Grid	Enable	Disable
-------------------------	--------	---------

3. Step 3

Seamless EPS switching	Enable	Disable
-------------------------------	--------	---------

4. Step 4

Battery Priority (?)	Enable	Disable
-----------------------------	--------	---------

5. Step 5

Charge Current Limit(Adc)	100	Set
----------------------------------	-----	-----

6. Step 6

AC Couple	Enable	Disable
------------------	--------	---------

7. Step 7

AC Couple Start SOC(%)	25	Set
AC Couple End SOC(%)	100	Set

8. Step 8

Discharge Current Limit(Adc) (?)	100	Set
----------------------------------	-----	-----

9. Step 9

On-Grid Cut-Off SOC(%) (?)	25	Set
----------------------------	----	-----

13. DOUBLE CHECK ALL WIRING/VOLTAGES/AMPS

Once all settings are configured to achieve the desired mode, check all voltages at all available disconnects as an added safety step before outputting power from the inverter. Ensure all circuit breakers are open (off). Using a multimeter, check voltages at all available disconnects. Once 0V on all lines are confirmed, proceed to full system start-up.

14. FULL SYSTEM START-UP

Follow the steps listed below for proper start-up sequence of the inverter:

1. If equipped, first close (turn on) the external DC breaker between the battery and inverter. Turn on the "BAT" breaker located in the cable box of the inverter and then power on the battery system.
2. Ensure the PV string voltages are within the operating parameters using a multimeter. Upon confirmation, turn on (close) the PV isolator switch between the inverter and the panel array.
3. Turn on (close) the PV isolator switch on the side of the unit.
4. Make sure Steps 1 and 2 are accomplished before turning on the grid power or generator breaker.
5. Power on the load breakers on the inverter.

15. FULL SYSTEM SHUTDOWN

Follow the steps listed below for proper shutdown sequence of the inverter:

1. Set the inverter into Standby mode following section 11.4.
2. Turn off (open) the grid breaker feeding the inverter.
3. Turn off the LOAD breaker.
4. Turn off the PV isolator switch.
5. Turn off the BAT breaker.

Once the LCD powers down, the inverter has been shut down.

16. POWER CONTROL SYSTEM

16.1 EXPORT LIMITING FROM ALL SOURCES (PEL)

- A. **Export to Grid:** Enables power export to the grid.
- B. **Max export to Grid (kW):** Sets the maximum allowable power export to the grid setting.
 - a. **Note:** To allow power export from the inverter to the grid, “Export to Grid” must be enabled, and “Max Export to Grid” must be set to a value greater than 0. This value defines the upper limit of export power.
- C. **Zero Export:** Disables all power export to the grid.

The screenshot shows the 'Basic' settings tab of the EG4 Power Control System. The 'Export to Grid' and 'Max Export to Grid(kW)' fields are highlighted with a blue box. The 'Zero Export' option is also visible. Below these, there are settings for 'Parallel system', 'Role', 'Phase', 'Parallel battery', 'Share battery', 'Auto Detect Phase', and 'MID Box'. The interface includes a sidebar with tabs for 'Basic', 'Charge', 'Discharge', 'Advanced', 'Debug', and 'Device info.'.

- D. **Discharge current limit (A):** Defines the maximum discharge current allowed from the battery.

The screenshot shows the 'Discharge' settings tab of the EG4 Power Control System. The 'Discharge current limit(A)' field is highlighted with a blue box. The interface includes settings for 'Operating Mode', 'Use SOC %', 'Use Bat V', 'Discharge start power(W)', 'On-grid Cut-off(%)', 'Off-grid Cut-off(%)', 'On-grid Cut-off(V)', 'Off-grid Cut-off(V)', 'Forced discharge', 'Time1', 'Time2', 'Time3', 'Discharge power(kW)', 'Stop discharge SOC(%)', and 'Stop discharge Volt(V)'. The sidebar shows the 'Discharge' tab is selected.

- E. **Discharge power (kW):** Sets the maximum power the battery can deliver when the *Forced Discharge* function is enabled.

The screenshot shows the EG4 Electronics control interface. On the left, there is a sidebar with buttons for 'Basic', 'Charge', 'Discharge', 'Advanced', 'Debug', and 'Device info.'. The 'Discharge' button is highlighted. The main area displays various settings. Under the 'Discharge' tab, there are fields for 'Operating Mode', 'Use SOC %', 'Use Bat V', and a 'Set' button. Below these are 'Discharge current limit(A)', 'Discharge start power(W)', 'On-grid Cut-off(%)', 'Off-grid Cut-off(%)', 'On-grid Cut-off(V)', and 'Off-grid Cut-off(V)'. The 'Advanced' section is expanded, showing 'Forced discharge' with a 'Set' button. Below this, there are three time slots (Time 1, Time 2, Time 3) and their corresponding 'Discharge power(kW)', 'Stop discharge SOC(%)', and 'Stop discharge Volt(V)' settings. The 'Discharge power(kW)' field for Time 1 is highlighted with a blue box. At the bottom, there is a navigation bar with icons for home, battery, alarm, and settings.

Prerequisite: Export to Grid is Enabled.

For example: Max Export to Grid is 5kW.

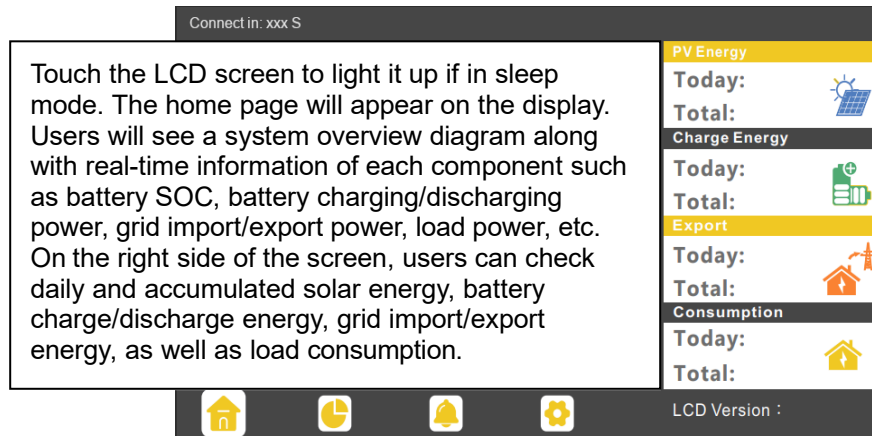
- If the system has battery power but there is no PV coming in (perhaps because the sun is down, or because it does not have PV established in the system). To export power to the grid, the *Forced Discharge* function must be enabled.
 - If Discharge Power is set to 4kW, and the Discharge Current Limit is set to 200A, with a nominal battery voltage of 50V ($200A \times 50V = 10,000W$, indicating the power that the battery can output), then the system will export 4kW to the grid.
 - If the Discharge Current Limit is reduced to 50A (With the other settings unchanged from the previous example), the system will export only 2.5kW ($50A \times 50V$).
- If the system has PV and battery, but *Forced Discharge* is disabled:
 - Only excess PV power is exported to the grid. The battery does not discharge to the grid.
- If the system has PV and battery, and *Force Discharge* is enabled:
 - Both PV and battery output their available power to the grid, up to the set limits.

17. INVERTER TROUBLESHOOTING

See the troubleshooting information in the tables below when encountering any faults and/or errors on the inverter.

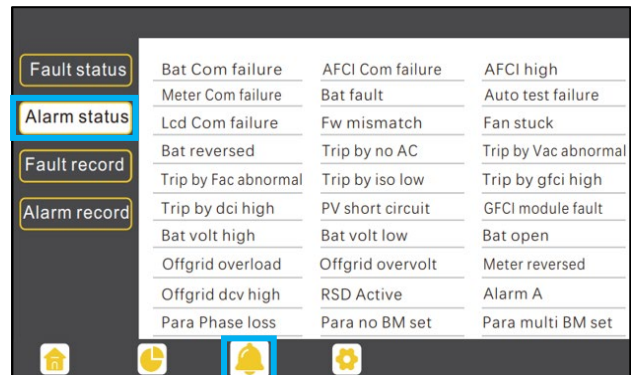
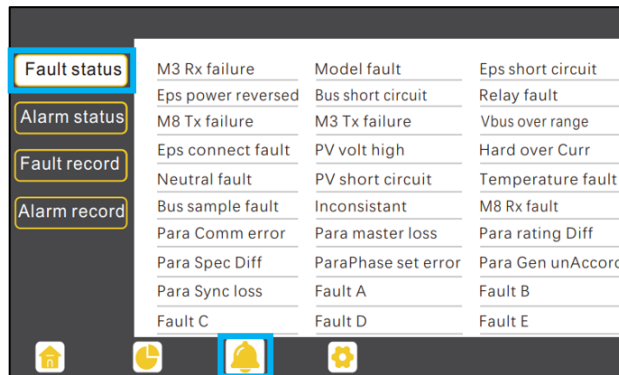
17.1 VIEWING INFORMATION AND ALARM FAULT/RECORD

Home Screen



Fault/Alarm Information

By touching the bell icon at the bottom of the screen, users will see all the current and historical faults and warning information on this page.



17.2 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 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. If there is, shut down the inverter and clear the heat sink to restore proper cooling.

17.3 ESS MODE

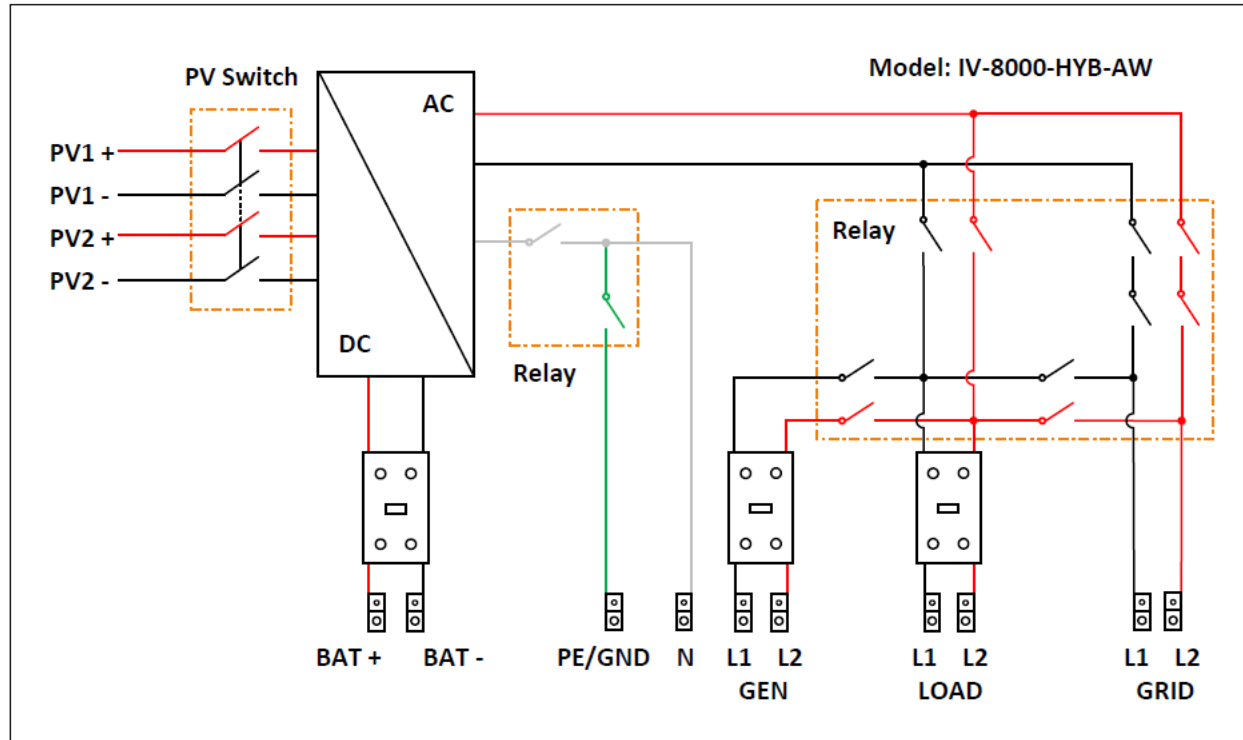
- **Unrestricted Mode:** The ESS may import active power from the Area EPS while charging and may export active power to the Area EPS while discharging.
- **Export Only Mode:** The ESS may export active power to the Area EPS during discharging but shall not import active power from the Area EPS for ESS charging purposes.
- **Import Only Mode:** The ESS may import active power from the Area EPS for charging purposes but shall not export active power from the ESS to the Area EPS.
- **No Exchange Mode:** The ESS shall not exchange active power with the Area EPS for charging or discharging purposes.



NOTE: *This mode is alternatively known as “No Export Mode”.*

Mode	Maximum Current (Charging)	Maximum Current (Discharging)	Overcurrent Protection (Charging)	Overcurrent Protection (Discharging)
Unrestricted Mode	38.5A/208V 33.33A/240V	33.3A	48.077A (125%)	41.667A (125%)
Export Only Mode	0A	33.3A	N/A	41.667A (125%)
Import Only Mode	38.5A /208V 33.33A /240V	0A	48.077A (125%)	N/A
No Exchange Mode	0A	0A	N/A	N/A

Schematic Diagram



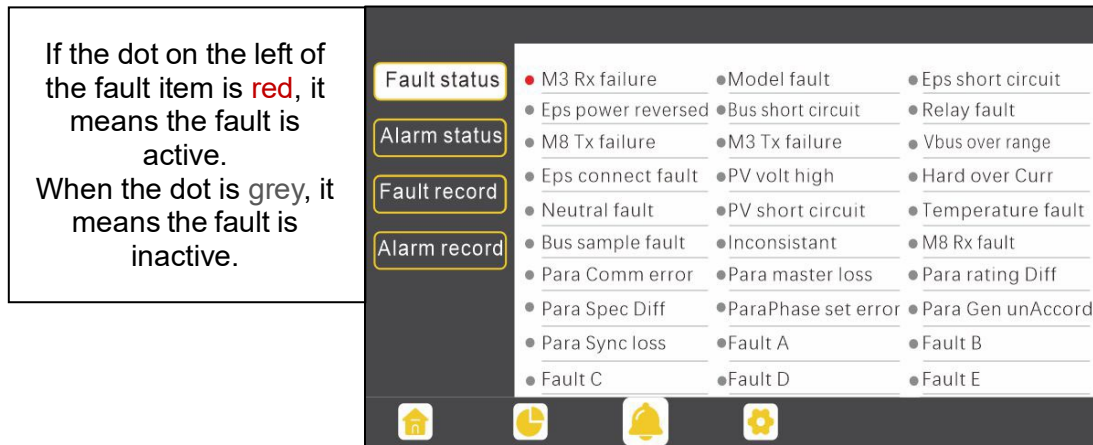
Mode Descriptions

Item	Mode	Time
1	Step Change in Load Test	The average open loop response time: 0.37s The maximum open loop response time:0.85s
2	Step Change in Generation Test	The average open loop response time:0.12s The maximum open loop response time:0.35s
3	Export limiting from all sources	The average open loop response time:1.92s The maximum open loop response time:2.00s
4	Import limiting from all sources	The average open loop response time:1.11s The maximum open loop response time:1.95s
5	ESS Operating Modes Unrestricted Mode	The average open loop response time:0.37s The maximum open loop response time:0.85s
6	ESS Operating Modes Export Only Mode	The average open loop response time:0.22s The maximum open loop response time:0.70s
7	ESS Operating Modes Import Only Mode	The average open loop response time:0.43s The maximum open loop response time:0.95s
8	ESS Operating Modes No Exchange Mode	The average open loop response time:0.12s The maximum open loop response time:0.35s
9	Export limiting from Energy Storage Systems	The average open loop response time:0.22s The maximum open loop response time:0.70s
10	Import limiting to Energy Storage Systems	The average open loop response time:0.43s The maximum open loop response time:0.95s

17.4 TROUBLESHOOTING BASED ON LCD SCREEN

Once there is any warning or fault occurring, users can troubleshoot according to the LED status description and the warning/fault information on the LCD screen.

Faults on the LCD and Fault List

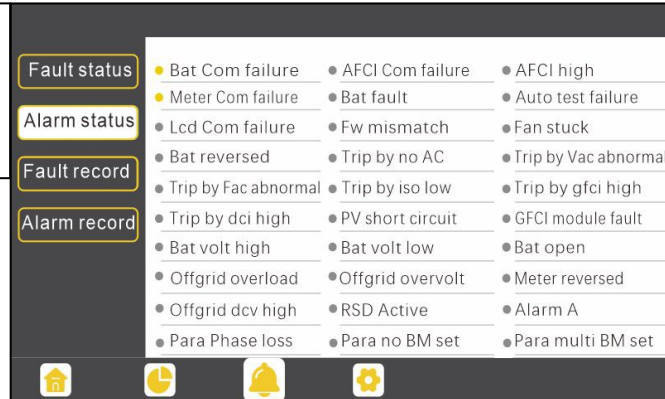


FAULT	MEANING	TROUBLESHOOTING
M3 Rx failure	M3 microprocessor fails to receive data from DSP	Restart the inverter. If the error persists, contact the distributor.
Model fault	Incorrect model value	Restart the inverter. If the error persists, contact the distributor.
EPS short circuit	Inverter detected 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. Disconnect the load breaker to see if fault remains. If the fault persists, contact the distributor.
EPS power reversed	Inverter detected power flowing into load terminal	Restart the inverter. If the fault persists, contact the distributor.
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	Ensure the PV string voltage is within the inverter specification. Also, check inverter and battery voltage. If voltage readings are within range and this fault persists, contact the distributor.
Vbus over range	DC Bus voltage too high	
EPS connect fault	Load terminal and grid terminal are wired incorrectly or reversed	
PV volt high	PV voltage is too high	
Hard over curr	Hardware level over current protection triggered	Restart the inverter. If the fault persists, contact the distributor.

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 distributor.
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 distributor.
Inconsistent	Sampled grid voltage values of DSP and M8 microprocessor are inconsistent	
M8 Rx fault	M8 microprocessor fails to receive data from DSP	
Para Comm error	Parallel communication abnormal	1. Verify the parallel cable is plugged into the proper ports and the connections are not loose. 2. Ensure the PIN status of the CAN communication cable from the first to the end inverter is configured 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 is inconsistent	Confirm that the rated power of all inverters is the same.
Para Phase set error	Incorrect setting of phase in parallel	First 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 distributor.
Para Gen in Accord	Inconsistent generator connection in parallel	Some inverters are connected to generators, and some are not. Confirm <i>all</i> inverters in parallel are connected to common generator output, or <i>none</i> are connected to generators.
Para sync loss	Parallel inverter fault	Restart the inverter. If the fault persists, contact the distributor.

Alarm on the LCD and Alarm List

If the dot to the left of the fault item is yellow, the fault is active. When it is grey, it means the fault is inactive.



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 is selected on the inverter's LCD. If all is correct but the alarm persists, contact the distributor.
AFCI com failure	Inverter fails to communicate with AFCI module	Restart inverter. If the error continues, contact the distributor.
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 distributor.
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 is selected. 3. Check if there is fault on battery's indicator. If there is a fault, contact the battery distributor.
LCD com failure	LCD fails to communicate with M3 microprocessor	Restart inverter. If the alarm persists, contact the distributor.
Fwm mismatch	Firmware version mismatch between the microprocessors	
Fan stuck	Cooling fan(s) are stuck	
Trip by GFCI high	Inverter detected leakage current on AC side	1. Check if there is ground fault on grid and load side. 2. Restart inverter. If the alarm persists, contact the distributor.
Trip by dci high	Inverter detected high DC injection current on Grid terminal	Restart inverter. If the alarm persists, contact the distributor.
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 distributor.

GFCI module fault	GFCI module is abnormal	Restart inverter. If the alarm persists, contact the distributor.
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 battery 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 distributor.
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 distributor.
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.

18. DONGLE OVERVIEW

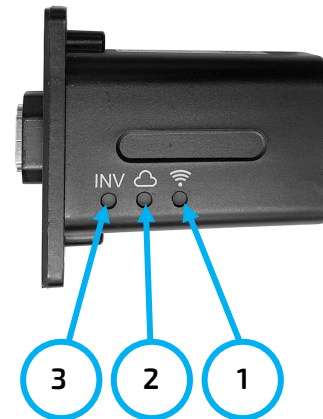
18.1 DONGLE FCC ID'S

Name/Model	Serial Number (SN)	Dongle Type	FCC ID
1 st gen WiFi Dongle	xAxxxxxxxx	WiFi 4 (2.4 Ghz)	P53-EMW3080V2
2 nd gen E-WiFi Dongle	xGxxxxxxxx xIxxxxxxxx xJxxxxxxxx	WiFi 5 (2.4 Ghz)	2AC7Z-ESPC3MINII
2 nd gen E-WiFi Dongle (Encrypted)	XSxxxxxxxx	WiFi 5 (2.4 Ghz)	2AC7Z-ESPC3MINII
3 rd gen E-WiFi Dongle (WiFi 6 single band)	xPxxxxxxxx	WiFi 6 (2.4 Ghz)	2AC7Z-ESPC6MINIU
2 nd LAN Dongle	xQxxxxxxxx	WiFi + Ethernet	2AC7Z-ESPWROOM32UE
4G Dongle	xBxxxxxxxx	4G LTE	XMR201606EC21A

18.2 LED INDICATORS AND BUTTON FUNCTIONALITY

LEDs: Each of the three LEDs on the dongle will illuminate green once that step in the boot/configuration process is complete.

1. **Wi-Fi LED:** Dongle has power, and the Wi-Fi hotspot is on.
2. **Cloud LED:** Dongle is communicating with the monitoring server.
3. **INV LED:** Dongle to inverter communication is established and functioning.



Bottom Button: When using dongle firmware version 2.0 or later, press the button on the bottom of the dongle to perform the following:

- Reboot the dongle - Hold down the button for 5 seconds, then release.
- Disable encryption - Hold down the button for 10 seconds, then release.



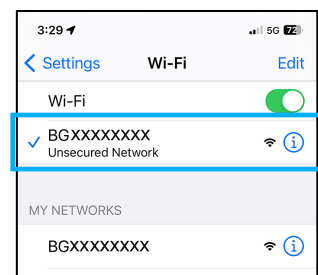
NOTE:

It is recommended to use a small Phillips screwdriver or similar object to press the button to ensure it is pressed in far enough to make the change. The dongle will not reboot until the button is depressed.

18.3 DONGLE BOOTUP STEPS

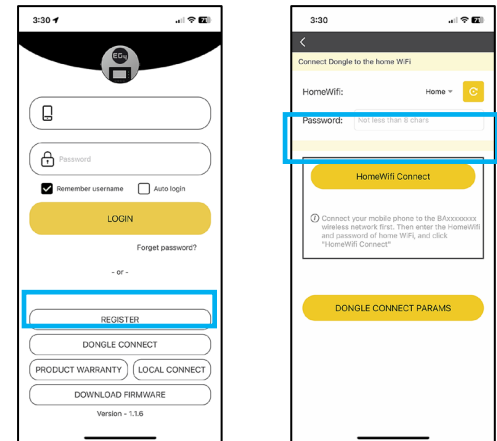
The following steps describe the Wi-Fi dongle bootup sequence:

1. After the Wi-Fi Dongle receives power from the inverter and completes the first step in the bootup process, the Wi-Fi LED should be on. The dongle then creates a hotspot (see image) for supported devices to connect to.



NOTE: The dongle should automatically power-on if the inverter is on and the dongle is plugged into the dongle connector. If the Wi-Fi LED is not on, check the physical connection to ensure the dongle is completely seated into the connector on the inverter. The dongle is hot-pluggable, meaning it can be removed and re-inserted with the inverter on.

2. Once the dongle is properly configured, it should successfully connect to the home Wi-Fi network and then to the internet. The Cloud LED will illuminate once the dongle connects to the monitoring server via the internet.
3. Once the dongle has a connection to the monitoring server, it will then set up an internal connection to the inverter. When internal communication is successful, **the INV LED is solid on.**
4. When all three dongle LEDs are on, the inverter can be configured and monitored using the EG4 monitor phone app or the EG4 monitor website.



18.4 CONNECTIVITY REQUIREMENTS

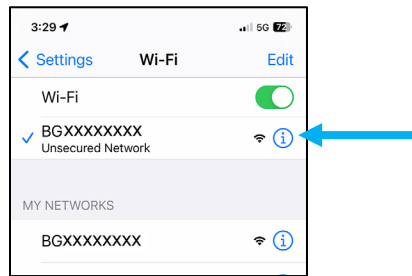
Due to certain limitations of the Wi-Fi Dongle, please ensure that the home Wi-Fi network signal and security settings meet the following requirements:

- The Wi-Fi Dongle only supports wireless networks in the 2.4GHz frequency band. If the router supports the 5GHz or 6GHz network frequencies, please confirm the router supports the 2.4GHz network frequency band and it is enabled.
- The Wi-Fi Dongle is compatible with WPA1, WPA2, and WPA3 security protocols on the 2.4GHz network only.
- Ensure the Wi-Fi Dongle can obtain an IP Address by verifying the home Wi-Fi router has DHCP (Dynamic Host Configuration Protocol) setup and it is enabled.
- It is recommended the home Wi-Fi network name length does not exceed 19 characters, and the password length does not exceed 24 characters. It is not recommended to use any of the following special symbols in the password: @, #, \$, %, &, *, ?, _, /, or using a space "keyboard space bar".

18.5 VIEWING DONGLE PARAMETERS

The dongle network parameters can be used for troubleshooting various configuration and connectivity issues. This section describes the steps to view the dongle parameters along with a brief description for each parameter.

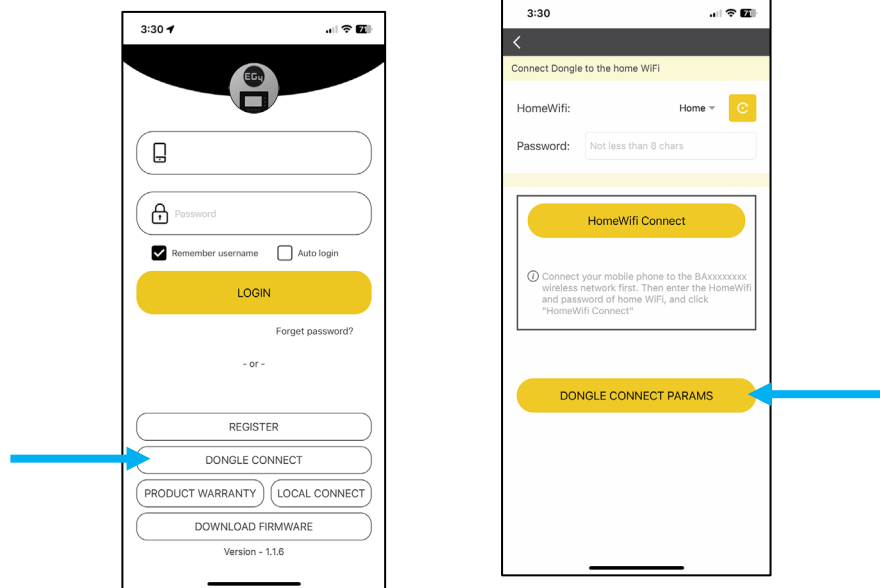
1. Verify the Wi-Fi LED is solid on. If the LED is not on, see section 18.2.
2. Using an iOS or Android device, connect to the Wi-Fi network created by the dongle, generally it's named as dongle serial number (i.e., BEXXXXXXXX, BJXXXXXXX, BGXXXXXXX).



3. Open the EG4 app and select Dongle Connect. Then select Dongle Connect Params.

NOTE: If the home screen is bypassed after opening the EG4 app, click the user icon in the upper right of the screen and then select logout.

NOTE: After clicking Dongle Connect, give the dongle time to respond to the EG4 monitor phone app. This could take up to 60 seconds based on connectivity strength.



4. The configuration parameters used by the dongle when connecting and communicating over the Wi-Fi network are described below:

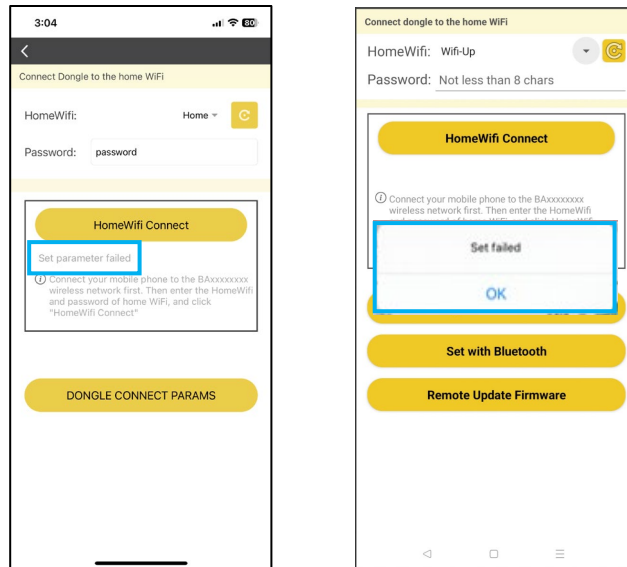
Section	Parameter	Value	Description
AP State	Function	Enable	This is the dongle's IP address of the when it is acting as the access point to other Wi-Fi devices (i.e. phones, tablets, etc). This is also the gateway address attached devices use when communicating to the dongle via Wi-Fi. The dongle IP address 10.10.10.24 is pre-set at the factory and will always be the same.
	Ip	10.10.10.1	
	Netmask	255.255.255.0	
STA State	Function	Enable	This is the DHCP IP address the dongle received from the home Wi-Fi network. The gateway listed here is the IP address of the home Wi-Fi router. If the user knows the home Wi-Fi router password, the gateway address can be used to connect to the router if network parameters need to be changed. If the STA State area does not populate with an IP address, the dongle is not properly connecting to the home Wi-Fi router (network).
	Ip	192.168.1.74	
	Netmask	255.255.255.0	
	Gateway	192.168.1.1	
AP Parameter	SSID	BGXXXXXXX	This area displays encryption information for the dongle's Wi-Fi network, including the SSID of the dongle, if encryption mode is enabled or disabled, the encryption password, and a button to restart the dongle. Enabling encryption mode provides a level of security when connecting a device directly to the dongle. By default, any device can connect to the dongle without requiring a password (no security).
	Encryption Mode	☐	
	AP Password		
	Restart Dongle	SET	
Station Parameter	SSID	Home	The SSID of the home Wi-Fi network, password, and connection state.
	Password		
	Connection State	Connected	
Network 1 State	Protocol	TCPClient	The protocol and address used to communicate with the EG4 monitoring server over the internet.
	Remote Port	3.101.7.137	
	Server Address(Ip or domain)	4346	
	TCP Client State	Connected	
Network 2 State	Protocol	TCPServer	Protocol and port used for internal communication between dongle and inverter.
	Local Port	8000	

18.6 TROUBLESHOOTING DONGLE NETWORK CONFIGURATION

Error: "Set failed" and/or "Set parameter failed"

Description: This error message may appear after selecting any button in the app that performs an action. For example, selecting the HomeWiFi Connect button as shown below.

Fix: Confirm the phone is connected to the dongle's Wi-Fi network and the dongle's wireless LED is illuminated. If those two conditions are met, wait a few minutes and retry the last step that failed. At times the dongle can become busy or slow to respond to the app.



Error: Lost Hotspot Connection

Description: This error will occur when there is an issue connecting to the dongle hotspot properly, or the phone has disconnected from the dongle hotspot and is trying to connect using the mobile Cellular Network.

Fix: Verify the phone is not set up to connect to a cellular network when Wi-Fi connectivity is poor or is not providing a connection to the internet. The WLAN/Wi-Fi assist can be disabled or the Cellular can be temporarily disabled during the dongle setup process.

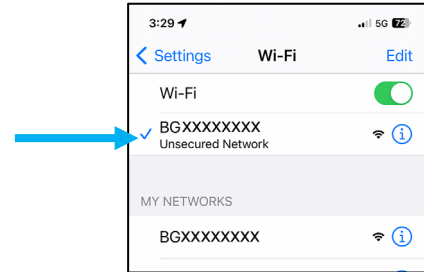
To disable WLAN and W-Fi assist perform the following:

- Android – Select Settings → click Cellular, then scroll down the page (screen). Locate 'WLAN assistant' and disable this setting.
- iOS – Select Settings → click Cellular, then scroll to the bottom of the page (screen). Locate "Wi-F- Assist" and disable this setting.

18.7 ENABLING DONGLE NETWORK SECURITY

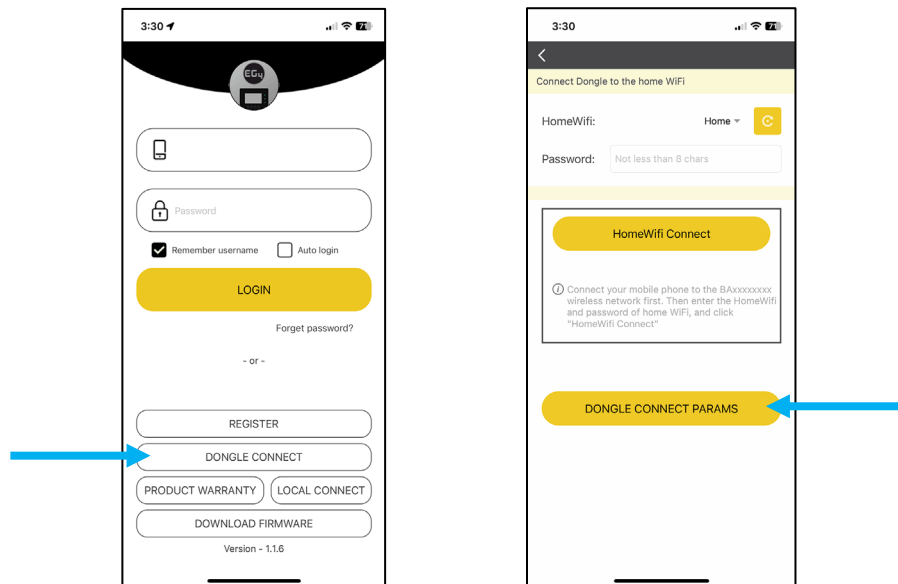
The following steps describe the process of configuring and enabling WPA2 security for the dongle's wireless network:

1. Verify the Wi-Fi LED is solid on. If the LED is not on, see section 18.2.
2. Using a supported device, connect the Wi-Fi network created by the dongle, generally it's named as dongle serial number (i.e., BEXXXXXXXX, BJXXXXXXX, BGXXXXXXX).
3. Open the EG4 app and select DONGLE CONNECT. Then select DONGLE CONNECT PARAMS.

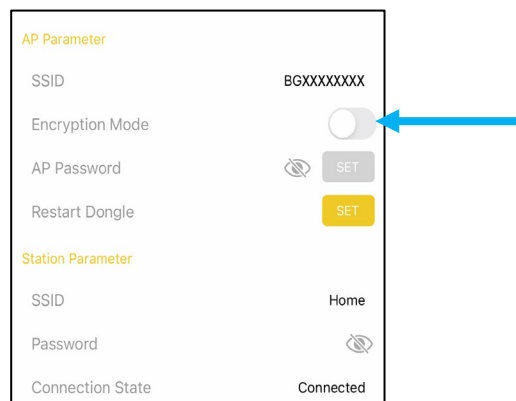


NOTE: If the home screen is bypassed when opening the EG4 app, click the user icon in the upper right of the screen and then select logout.

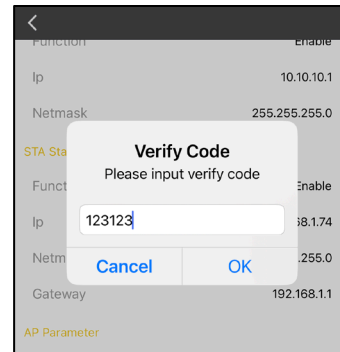
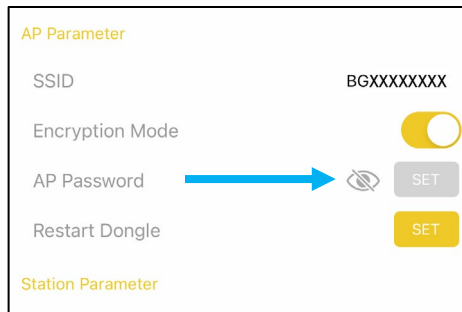
NOTE: After clicking DONGLE CONNECT, give the dongle time to respond to the Phone app. This could take up to 60 seconds based on connectivity strength.



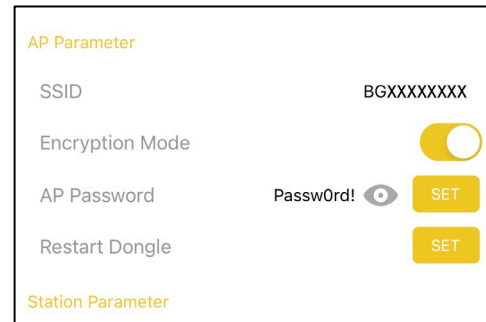
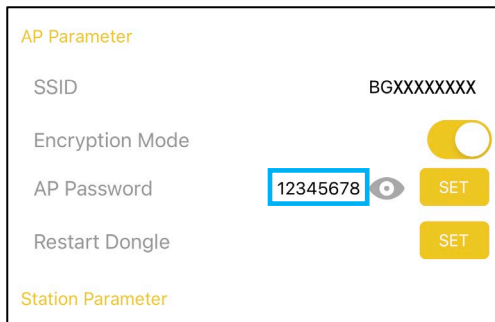
4. Click the Encryption Mode slider to start the configuration process. This step alone will not enable encryption. If the app is closed or the back arrow is selected to move to the previous screen, this step will need to be completed again.



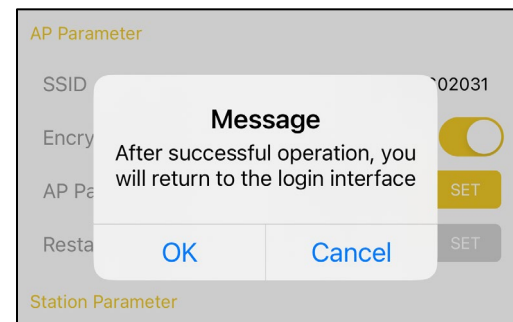
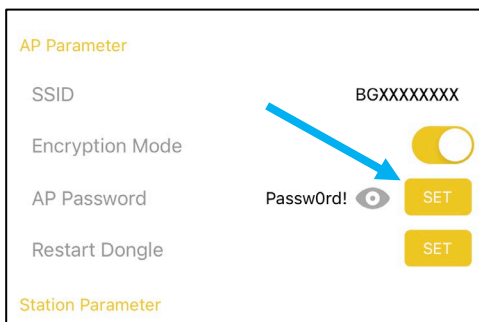
5. Select the “eye” icon and enter the verification code 123123. The ok button may need to be selected twice, depending on communication and/or software lag.



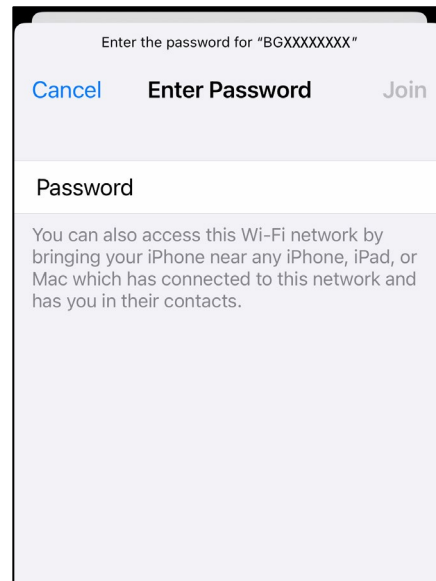
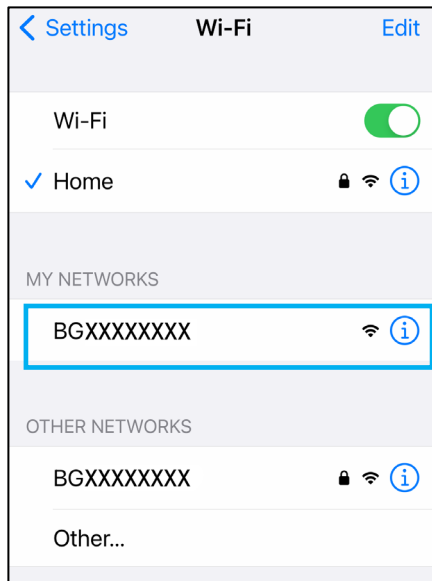
6. The default WPA2 password set at the factory is “12345678”. To change the default password, click inside the password area and overwrite the existing password using the desired password. In the example below, the password is set to “Passw0rd!”. It’s also recommended to follow the password guidelines described in section 18.3.



7. Click SET to save the password which will also enable WPA2 security. There may be a short pause after clicking the Set button. Click OK to verify the setup is complete. The dongle will reboot and should be back online within a couple minutes.



- Go to the phone's Wi-Fi settings and re-select the dongle's Wi-Fi network. The lock icon should appear next to the dongle's wireless network which means security is enabled. Enter the password created in the previous step.

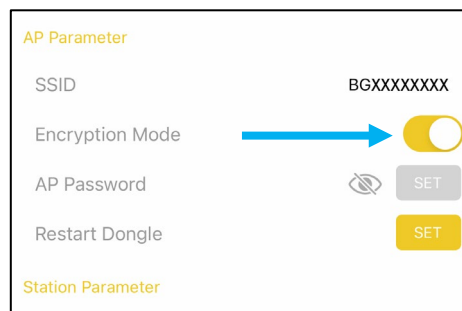


- The EG4 app can now be used as it was previously when security was not enabled. Also note, enabling and setting up WPA2 security on the dongle's Wi-Fi network will not change the dongle's ability to connect to the home Wi-Fi network.

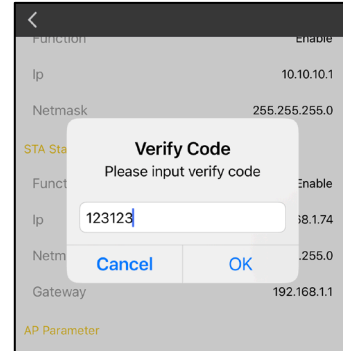
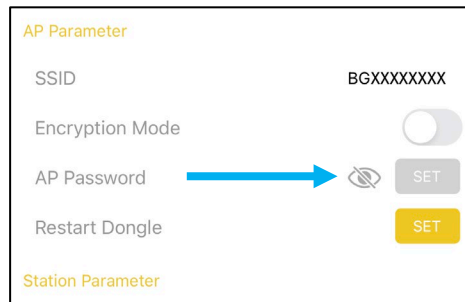
18.8 DISABLING DONGLE NETWORK SECURITY

There are two options to disable the security settings for the dongle's network.

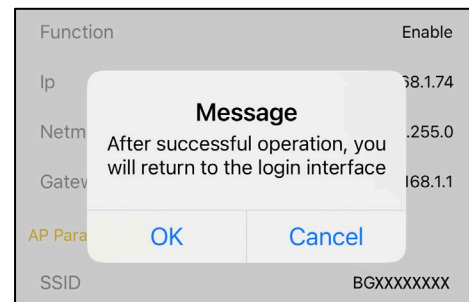
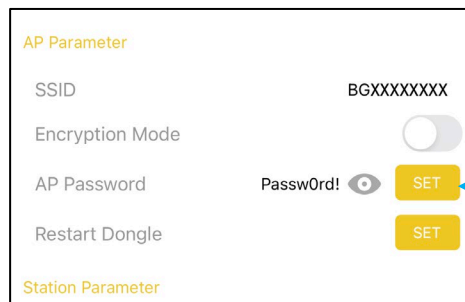
- Option 1:** Hold down the reset button on the bottom of the dongle for at least 10 seconds and release. This is the quickest and easiest option because it does not require using the currently set WPA2 password set on the dongle's Wi-Fi network.
- Option 2:** Use the EG4 App to disable the security settings on the dongle. This option can only be used if the WPA2 password is known. Follow the step list below:
 - Connect a phone to the dongle's Wi-Fi network. If the network was not previously saved on the current phone, enter the dongle's WPA2 password when prompted.
 - Open the EG4 app and select DONGLE CONNECT.
 - Under the AP Parameter area, select the slider button next to Encryption Mode to disable security.



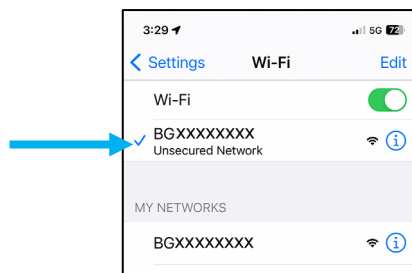
- Click the “eye” icon and enter the verification code 123123.



- Click the SET button. There may be a short pause after clicking SET. If this step is not completed, security will NOT be disabled. Select OK when prompted. The dongle will reboot, and security will be disabled after the reboot is complete.



- When selecting the dongle’s Wi-Fi network, the lock icon should no longer be displayed, and a password should not be required to connect to the dongle’s network.



19. UPDATING DONGLE FIRMWARE USING APP

Before starting a dongle firmware update, verify all three LEDs are on and the dongle is online and has access to the monitoring server (EG4 Monitor Website). Dongle updates require downloading firmware from the server over the internet. If there are any issues connecting to the monitoring server, please refer to section 18. Connect the mobile device to Dongle's wireless network.

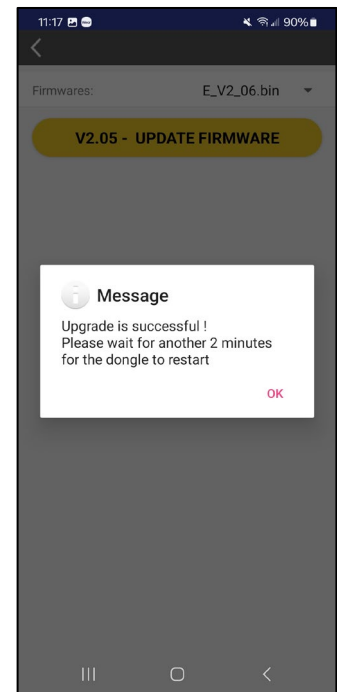
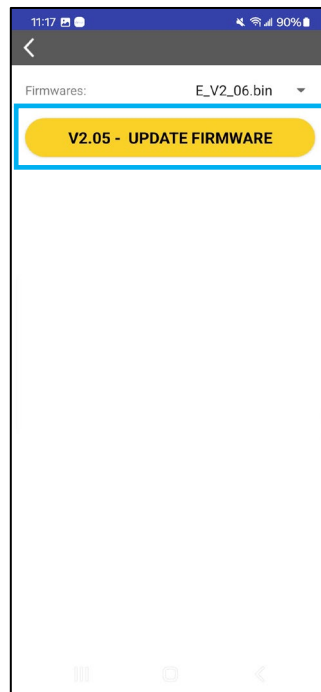
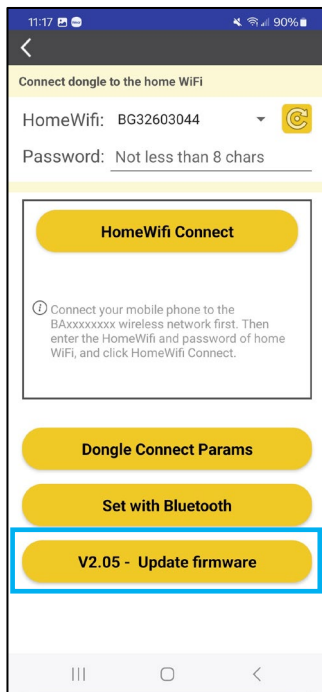


NOTE: Before starting a firmware update, verify the EG4 APP is Android version 1.3.1 or later. Apple iOS does not currently support upgrading the dongle FW.



REMINDER: Before starting a dongle firmware update, verify all 3 LEDs are ON, the dongle is online, and your phone is connected to the dongle's Wi-Fi.

1. Connect the phone to the dongle's wireless network.
2. Open the EG4 app and Select DONGLE CONNECT.
3. The current dongle firmware will be displayed on the Update Firmware button. Select the *Vx.xx Update Firmware* button to start the upgrade process. The EG4 APP will automatically locate the latest firmware version available. At the time of this writing, the latest version in the image below is 2.06.
4. Select Vx.x.x Update Firmware to load the new firmware to the dongle.
5. The dongle FW should immediately load to the dongle followed by the message shown below. Click OK and wait for the dongle to reboot, which should not take more than a couple minutes. Once rebooted, verify the dongle firmware was updated using the dongle connect option in the app, or by using Monitor Center.



20. WARRANTY INFORMATION

For information regarding warranty registration on EG4® Electronics products, please navigate to <https://eg4electronics.com/warranty/> and select the corresponding product to begin the registration process.

CHANGELOG

Version 1.3.2

- Add table of dongle FCC IDs to section 18.1

Version 1.3.1

- Removed knockout plugs from packing list
- Added information and QR code to Spec Sheet about derating power to install in higher altitudes.

Version 1.3.0

- Added MPPT Voltage High Protection value to spec sheet

Version 1.2.9

- Created/Added sections 16 – “Power Control System”, 16.1 – “Export Limiting From All Sources (PEL), and 16.2 – “ESS Mode” to cover PCS information
- Added additional step of setting inverter to standby before full shutdown

Version 1.2.8

- Replaced dongle overview section 17 with updated information
- Modified spec sheet Safety and Certifications and added more information

Version 1.2.7

- Added an asterisk to MPPT Operating Voltage Range line in spec sheet
- Added note after the spec sheet regarding MPPT Operating Voltage Range asterisk

Version 1.2.6

- Modified verbiage in section 11.2 for External E-Stop Switch
- Added Note quick-part in section 11.4 on Lithium brand selection

Version 1.2.5

- Modified max AC input power from 12000 to 8000W
- Modified minimum installation spacing requirements from 200 mm to 125 mm
- Added French warning/danger safety section
- Added Locked Rotor Amps (LRA) value to spec sheet

Version 1.2.4

- Modified cable string length for PV, AC and Battery
- Removed (Pending) from FCC certification

Version 1.2.3

- Added cable box knockout dimensions image

Version 1.2.2

- Modified warranty information

Version 1.2.1

- Updated warranty information
- Added California Prop 65 label to safety section

Version 1.2

- Modified safety information for consistency
- Changed verbiage throughout document for clarity
- Modified structure of document for readability
- Modified Sec. 4 Packing List.
- Added inverter location and angle images to Sec. 5.1.
- Added mounting bracket image to Sec. 5.3.
- Modified Sec. 5.4 for clarity and consistency.
- Modified Sec. 6.2 for consistency.
- Modified list in Sec. 6.3 for consistency.
- Added image for Battery Communications to Sec. 6.4.
- Modified list in Sec. 7 for consistency.
- Added Note quick-part in Sec. 7 for clarity.
- Modified Sec. 10.1 for clarity.
- Modified Sec. 10.1 images for clarity.
- Modified Smart Load in Sec. 10.1 for clarity.
- Modified Sec. 10.2 and added APsmart QR code for clarity.
- Added Display button table to Sec. 10.3.
- Modified Sec 10.4 for clarity.
- Modified Sec. 11 for consistency.
- Modified Sec. 15 for clarity.
- Modified table in Sec. 15.3 for consistency.

NOTES

[illegible]



CONTACT US

support@eg4electronics.com

(903) 609-1988

www.eg4electronics.com