# EG4® CHARGEVERTER PLUS

## USER MANUAL

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VERSION 1.0.3 | INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.
MODEL #: CU-48-5000-OD-01

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# 1. CHANGELOG

| Revision | Date | Description of change |
|---|---|---|
| Version 1.0.3 | 6-23-26 | Modified default Charging Voltage to 57 VDC |
| Version 1.0.2 | 4-6-26 | Updated section 8.2 (Charging Time and Discharging Time) with revised wording and images<br>Added image of Charging Time set to 0M in section 8.2<br>Updated quick part formatting for readability throughout document<br>Revised Safety section formatting for readability<br>Updated front cover image to include specification label<br>Corrected included cable size from 2 AWG to 4 AWG in section 7.4 |
| Version 1.0.1 | | Added steps for cleaning the filters to section 10<br>Added Chargeverter Power Cords-120V compatibility<br>Added power connection images from WallMount 314Ah Indoor and All Weather batteries to Chargeverter Plus to section 7.4<br>Added Comm connection images for WallMount 314Ah Indoor/All Weather to section 8.3<br>Added verbiage of Chargeverter Power Cord-120V to section 6.3<br>Corrected minor formatting corrections and typos for easier readability<br>Added section 9 Troubleshooting and Maintenance |
| Version 1.0 | | Published v1.0 |

# 2. TECHNICAL SPECIFICATIONS

| | |
|---|---|
| **CHARGER OUTPUT SPECIFICATIONS** | |
| CHARGE CURRENT (ADJUSTABLE) | 0 – 100A @ 240 VAC I 0 – 50A @ 120 VAC I 0 – 80A @ 208 VAC |
| CHARGE VOLTAGE (ADJUSTABLE) | 40 – 60 VDC (default 57 VDC) |
| OUTPUT RIPPLE | <500mv |
| MAXIMUM OUTPUT | 5120W @ 240 VAC I 2560W @ 120 VAC |
| **AC INPUT SPECIFICATION** | |
| AC INPUT VOLTAGE RANGE | 90 – 264 VAC |
| AC FREQUENCY | 50 – 60Hz |
| MAXIMUM INPUT CURRENT | 26A @ 240 VAC I 28A @ 120 VAC |
| IDLE CONSUMPTION | ~4W |
| **ENVIRONMENTAL SPECIFICATIONS** | |
| OPERATING TEMPERATURE RANGE | -40° – 131°F (-40° – 55°C) |
| STORAGE TEMPERATURE RANGE | -40° – 158°F (-40° – 70°C) |
| HUMIDITY | 5% – 95% relative humidity (non-condensing) |
| INGRESS PROTECTION | IP54 |
| OPERATING ALTITUDE | 0 – 9843 ft. (0 – 3000 m) |
| **DRY CONTACT SPECIFICATIONS** | |
| INTERFACE CONNECTOR | NO, NC, and C |
| **GENERAL SPECIFICATIONS** | |
| BATTERY COMPATIBILITY | 15s or 16s Cell Lithium Batteries |
| COMMUNICATION PORT | CAN/RS485 (RJ45) |
| DIMENSION H × W × D | 4.3 × 16.1 × 7.1 in. (110 × 410 × 180 mm) |
| NET WEIGHT | 13.67 lbs. (6.2 kg) |
| CERTIFICATIONS | UL1012, FCC CLASS B |
| NOISE | <65db |
| WARRANTY | 3 years* (only when used indoors) |

***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.**

# 3. 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

# 4. SAFETY

## 4.1 SYMBOLS USED IN MANUAL

**DANGER**

This type of notation indicates a severe hazard that presents an immediate risk of serious injury or death.

**WARNING**

This type of notation indicates that a hazard may pose a risk to human health and safety

**TEAM LIFT**

Use team lift whenever load weight, size, or center of gravity exceeds safe single-person handling limits. Coordinated lifting improves stability, control, and significantly reduces injury risk.

**CAUTION**

This type of notation indicates that the hazard could potentially damage the equipment.

**NOTICE**

This type of notation indicates that the information provided is important for the installation, operation, and/or maintenance of the equipment. Failure to follow the recommendations in such a notation could result in the equipment warranty being voided.

**NOTE**

This type of notation indicates useful information.

## 4.2 SYMBOLS USED ON EQUIPMENT

| | |
|---|---|
| | **WARNING:**<br>Read the instructions before installation, operation, and maintenance of the system. |
| | **WARNING:**<br>Read the instructions before installation, operation, and maintenance of the system. |
| | **WARNING:**<br>Hazardous Voltage Circuits! |

## 4.3 SAFETY INSTRUCTIONS & NOTIFICATIONS

EG4® inverters, batteries, and system components are designed and tested in strict adherence to international safety standards. Before beginning any work, carefully review all safety instructions and follow them throughout the handling of all system components. Installation should be performed only by qualified service personnel who must adhere to the guidelines provided and follow appropriate practices in accordance with local electrical, building, fire, and utility regulations. It is also essential to consult the local Authority Having Jurisdiction (AHJ) to obtain any necessary permits and approvals prior to installation.

**Incorrect installation may cause:**

Injury or death to the installer, operator, or third party

Damage to the inverter or other attached equipment

**WARNING**

**All tasks related to this product**, including system design, installation, operation, setup, configuration, and maintenance, must be performed by trained personnel. To prevent electric shock, avoid performing any maintenance beyond what is outlined in the operating instructions unless qualified to do so.

**DANGER**

**Hazardous Voltage Circuits!** There are various safety concerns that must be carefully observed before, during, and after 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.

**Save these instructions. This manual contains instructions for the FlexBOSS Pro, and the 16kWh 100V battery which shall be followed during the installation and maintenance of the inverter and battery.**

1. **Beware of high PV voltage.** Install an external DC disconnect switch or breaker, making sure it is in the “off” or “open” position before installing or working on the inverter. Use a voltmeter to verify that no DC voltage is present to prevent electric shock.
2. **Beware of high grid voltage.** Confirm 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 that no voltage is present to prevent electric shock.
3. **Beware of high battery current.** Confirm 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 that no DC voltage is present to avoid electric shock.
4. **Do not open the inverter cable connection area 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 system is operating.** Damage to system components or risk of electric shock may occur if working with energized batteries.
6. **The system uses DC current.** DC current can lead to sustained muscle contractions, severe burns, or fire if mishandled during electric shock incidents.
7. **Do not disassemble the inverter or battery.** Contact the distributor for any issues requiring repair, for more information, and for proper handling instructions. Incorrect servicing or reassembly may pose a risk of electric shock or fire and void the warranty.
8. Ensure the PV, battery, and grid connections are secure and proper to prevent damage or injuries caused by improper installation.

9. Damage to the equipment or improper installation may cause arc flash, which can result in serious damage, injury, or death.
10. Make sure the inverter and battery are properly grounded.
11. Read all instructions before commencing installation. For electrical work, follow all local and national wiring standards, regulations, and these installation instructions. All wiring should comply with the National Electrical Code (NEC), ANSI/NFPA 70.
12. The inverter can connect to the utility grid only if the utility provider permits. Consult the local AHJ (Authority Having Jurisdiction) before installing this product to confirm any additional regulations or requirements for the immediate area.
13. All warning labels and nameplates on system components (inverters, batteries, etc.) must be clearly visible and must not be removed or covered.
14. The installer should consider the safety of future users when choosing the correct position and location of the inverter and battery, as specified in this manual.
15. Keep children from touching or misusing the inverter, battery, and relevant system components.
16. **Beware!** The inverter and other components of the system can get hot during use. Do not touch the inverter's surface or other components while the system is operating. During operation, only the LCD (if equipped) and buttons should be touched.
17. Rupture of the battery and shorting of battery cells can cause the release of toxic gases and harmful electrolyte solutions.
18. The installer must be adequately protected by wearing suitable, professional insulation gear, such as Personal Protective Equipment (PPE).
19. Some system components can be very heavy. Be sure to use team-lift and other safe lifting techniques throughout the installation.
20. Before installing, operating, or maintaining any components in the system, it is important to inspect all existing wiring to ensure it meets the appropriate specifications and operating conditions.

**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.

# 5. SÉCURITÉ

## 5.1 SYMBOLES UTILISÉS DANS LE MANUEL

**DANGER**

Ce type de signalisation indique un danger grave présentant un risque immédiat de blessures graves, voire mortelles.

**AVERTISSEMENT**

Ce type de signalisation indique qu'un danger peut présenter un risque pour la santé et la sécurité humaines.

**LEVAGE EN ÉQUIPE**

Utilisez le levage à deux personnes lorsque le poids, les dimensions ou le centre de gravité de la charge dépassent les limites de manutention sécuritaire pour une seule personne. Un levage coordonné améliore la stabilité et le contrôle, et réduit considérablement les risques de blessure.

**IMPORTANT**

Ce type de notation indique que les informations fournies sont importantes pour l'installation, le fonctionnement et/ou l'entretien de l'équipement. Le non-respect des recommandations figurant dans cette notation pourrait entraîner l'annulation de la garantie de l'équipement.

**RAPPEL**

Ce type de notation indique des informations précédemment mentionnées qui doivent être prises en compte pour garantir un fonctionnement et une sécurité optimaux.

**NOTE**

Ce type de notation indique des informations utiles.

## 5.2 SYMBOLES UTILISÉS SUR L'ÉQUIPEMENT

| | |
|---|---|
| | **AVERTISSEMENT :**<br>Lisez les instructions avant l'installation, l'utilisation et l'entretien du système. |
| | **AVERTISSEMENT :**<br>Lisez les instructions avant l'installation, l'utilisation et l'entretien du système. |
| | **AVERTISSEMENT :**<br>Circuits à tension dangereuse. |

## 5.3 CONSIGNES DE SÉCURITÉ ET AVIS

Les onduleurs, batteries et composants système EG4® sont conçus et testés en stricte conformité avec les normes de sécurité internationales. Avant toute intervention, veuillez lire attentivement toutes les consignes de sécurité et les respecter scrupuleusement lors de la manipulation du système. L'installation doit être effectuée uniquement par du personnel qualifié, qui doit respecter les directives fournies et appliquer les bonnes pratiques conformément aux réglementations locales en matière d'électricité, de construction, de sécurité incendie et de services publics. Il est également essentiel de consulter l'autorité compétente locale afin d'obtenir les permis et autorisations nécessaires avant l'installation.

**Une installation incorrecte peut entraîner les effets suivants :**

Blessure ou décès de l'installateur, de l'exploitant ou d'un tiers

Dommages à la batterie ou à tout autre équipement attaché

**AVERTISSEMENT**

**Pour réduire le risque de blessure, lisez toutes les instructions!** Toutes les tâches relatives à ce produit, y compris la conception du système, l'installation, le fonctionnement, la configuration et la maintenance, doivent être effectuées par du personnel qualifié. Afin de prévenir tout risque d'électrocution, il est impératif de ne procéder à aucune opération de maintenance autre que celles décrites dans le manuel d'utilisation, sauf si vous possédez les qualifications requises.

**DANGER**

**Circuits à haute tension!** Il existe diverses précautions de sécurité qui doivent être scrupuleusement respectées avant, pendant et après l'installation, ainsi que lors de l'utilisation et de la maintenance futures. Vous trouverez ci-dessous des consignes de sécurité importantes destinées à l'installateur et à tout utilisateur final de ce produit dans des conditions normales d'utilisation.

**Conservez ces Instructions. Ce manuel contient des instructions importantes concernant les modèles FlexBOSS Pro et la batterie 16kWh 100V, qui doiventêtre suivies lors de l'installation et de l'entretien de l'onduleur et de la batterie.**

1. **Méfiez-vous des tensions photovoltaïques élevées.** Installez un sectionneur ou un disjoncteur CC externe et assurez-vous qu'il est en position « off » ou « open » avant d'installer ou de travailler sur l'onduleur. Utilisez un voltmètre pour vérifier l'absence de tension CC afin d'éviter tout risque d'électrocution.
2. **Méfiez-vous des tensions élevées du réseau**. Assurez-vous que l'interrupteur CA et/ou le disjoncteur CA sont en position « off » ou « open » avant d'installer ou de travailler sur l'onduleur. Utilisez un voltmètre pour vérifier qu'il n'y a pas de tension afin d'éviter tout risque d'électrocution.
3. **Méfiez-vous du courant élevé de la batterie**. Assurez-vous que les disjoncteurs du module de batterie et/ou les interrupteurs marche/arrêt sont en position « ouverte » ou « arrêt » avant d'installer ou de travailler sur l'onduleur. Utilisez un voltmètre pour vérifier qu'il n'y a pas de tension continue afin d'éviter tout risque d'électrocution.
4. **N'ouvrez pas la zone de connexion des câbles de l'onduleur pendant son fonctionnement afin d'éviter tout risque d'électrocution et tout dommage causé par la tension et le courant présents dans le système.**
5. **N'effectuez aucune connexion ou déconnexion (PV, batterie, réseau, communication, etc.) pendant que le système est en fonctionnement.** Des dommages aux composants du système ou un risque de choc électrique peuvent survenir si vous travaillez avec des batteries sous tension.

6. Le système utilise du courant continu. Le courant continu peut entraîner des contractions musculaires prolongées, des brûlures graves ou un incendie s'il est mal manipulé lors d'incidents de choc électrique.
7. Ne démontez pas l'onduleur ou la batterie. Contactez le distributeur pour tout problème nécessitant une réparation, pour plus d'informations et pour obtenir des instructions de manipulation appropriées. Un entretien ou un remontage incorrect peut présenter un risque d'électrocution ou d'incendie et annuler la garantie.
8. Assurez-vous que les connexions PV, batterie et réseau sont sécurisées et correctes afin d'éviter tout dommage ou blessure causé par une installation incorrecte.
9. Tout dommage causé à l'ESS ou toute installation incorrecte peut provoquer un arc électrique, pouvant entraîner des dommages graves, des blessures ou la mort.
10. Assurez-vous que l'onduleur et la batterie sont correctement mis à la terre.
11. Lisez toutes les instructions avant de commencer l'installation. Pour les travaux électriques, respectez toutes les normes et réglementations locales et nationales en matière de câblage, ainsi que les présentes instructions d'installation. Tout le câblage doit être conforme au Code national de l'électricité (NEC), ANSI/NFPA 70.
12. L'onduleur et le système ne peuvent être interconnectés avec le réseau électrique public que si le fournisseur d'électricité l'autorise. Consultez l'autorité compétente locale avant d'installer ce produit afin de confirmer toute réglementation ou exigence supplémentaire applicable à la zone immédiate.
13. Toutes les étiquettes d'avertissement et plaques signalétiques apposées sur les composants du système (onduleurs, batteries, etc.) doivent être clairement visibles et ne doivent pas être retirées ou recouvertes.
14. L'installateur doit tenir compte de la sécurité des futurs utilisateurs lorsqu'il choisit la position et l'emplacement corrects de l'onduleur et de la batterie, comme indiqué dans ce manuel.
15. Empêchez les enfants de toucher ou d'utiliser de manière abusive l'onduleur, la batterie et les composants du système concernés.
16. **Attention !** L'onduleur et certaines parties du système peuvent devenir chauds pendant leur utilisation. Ne touchez pas la surface de l'onduleur ni la plupart de ses composants lorsque le système est en marche. Pendant le fonctionnement, seuls l'écran LCD (si présent) et les boutons doivent être touchés.
17. La rupture de la batterie et le court-circuit des cellules de la batterie peuvent entraîner le dégagement de gaz toxiques et de solutions électrolytiques nocives.
18. L'installateur doit s'assurer qu'il est correctement protégé en portant un équipement d'isolation professionnel adapté, tel qu'un équipement de protection individuelle (EPI).
19. Certains composants du système peuvent être très lourds. Veillez à utiliser des techniques de levage en équipe et d'autres techniques de levage sécuritaires tout au long de l'installation.
20. Avant d'installer, d'utiliser ou d'entretenir tout composant du système, il est important d'inspecter tout le câblage existant afin de s'assurer qu'il répond aux spécifications et aux conditions de fonctionnement appropriées.

**AVERTISSEMENT**

**Cancer et dommages reproductifs – Voir www.P654warnings.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.

## TAKE THESE ADDITIONAL PRECAUTIONS DURING INSTALLATION/REPLACEMENT

***Ensure that all precautions listed above have been taken prior to beginning the installation and observe these additional precautions during installation. Failure to take these precautions may result in serious injury or death:***

- ***Thermal Runaway:*** ***Immediately stop the installation, place battery in a safe state if possible, and move away from the battery if the battery:***
    - ***begins to swell or bulge,***
    - ***if you smell any unusual odors,***
    - ***if you hear a hissing sound, or***
    - ***if the battery begins to emit heat and/or smoke.***

  ***Your battery may be experiencing thermal runaway, a dangerous condition that may cause fire or explosion. Contact local fire department, Chemtrec 800-262-8200, and EG4 support.***

- ***Electrical Shock: When installing/replacing the battery:***
    - ***Ensure that the battery does not get wet.***
    - ***Do not spray water or other liquids on the battery.***
    - ***Do not perform the installation in conditions where dust, moisture, or other debris could enter the battery.***
    - ***Avoid touching connections and components unless instructed to do so by this guide.***
    - ***Do not leave the battery unattended during the installation without it being in a safe state. Do not touch, lean on, or lay tools on the battery or connections.***

  ***If you are electrically shocked during installation, place battery in a safe state if possible, and seek immediate medical attention.***

- ***Ventilation Warning: When installing/replacing the battery:***
    - ***Do not open the battery.***
    - ***Do not attempt the installation/replacement if the battery is damaged.***

***Lithium batteries may emit toxic gases when ruptured. Do not attempt to repair the battery in the case of rupture. Move outdoors in the case of rupture and seek professional assistance.***

- ***<u>Electrolyte Exposure</u>: When installing/replacing the battery:***
    - ***Ensure that the battery is not damaged.***
    - ***Do not attempt the installation/replacement if the battery is damaged.***

***Lithium batteries contain a liquid electrolyte solution that is corrosive and damaging to skin and eyes. Exposure may occur in the case of damage to the battery. In the case of contact with skin or eyes, wash continuously with water for 15 minutes and seek immediate medical attention. Remove contaminated clothes immediately. In the case of ingestion, drink at least two glasses of water or milk, induce vomiting if unconscious, and seek immediate medical attention.***

## General Advice:

**In all cases of exposure, seek medical attention if symptoms persist or if large amounts of electrolyte are involved. Show this safety information to the treating physician.**

**Skin Contact:**

- **Immediately remove contaminated clothing and shoes.**
- **Rinse affected skin thoroughly with plenty of water for at least 15 minutes.**
- **Seek medical attention if irritation persists or burns appear.**
- **Wash contaminated clothing before reusing.**

**Eye Contact:**

- **Immediately flush eyes with plenty of water for at least 15 minutes, keeping eyelids open.**
- **Remove contact lenses if present and easy to do.**
- **Seek immediate medical attention.**

**Inhalation (if applicable):**

- **Move the person to fresh air immediately.**
- **If breathing is difficult, provide oxygen. If not breathing, give artificial respiration.**
- **Seek immediate medical attention.**

**Ingestion:**

- **Do not induce vomiting.**
- **Rinse mouth with water.**
- **Give small amounts of water or milk to dilute, if the person is conscious and alert.**
- **Never give anything by mouth to an unconscious person.**
- **Seek immediate medical attention or contact Poison Control immediately.**

## PRENEZ CES PRÉCAUTIONS SUPPLÉMENTAIRES LORS DE L'INSTALLATION OU DU REMPLACEMENT

***Assurez-vous que toutes les précautions énumérées ci-dessus ont été prises avant de commencer l'installation et respectez ces précautions supplémentaires pendant l'installation. Le non-respect de ces précautions peut entraîner des blessures graves ou la mort.***

- ***Emballement thermique:*** ***Arrêtez immédiatement l'installation, mettez la batterie dans un état sécuritaire si possible et éloignez-vous de la batterie si celle-ci :***
  - ***commence à gonfler ou à se déformer,***
  - ***dégage des odeurs inhabituelles,***
  - ***émet un sifflement, ou***
  - ***commence à dégager de la chaleur et/ou de la fumée.***

***La batterie peut être en situation d'emballement thermique, une condition dangereuse pouvant entraîner un incendie ou une explosion. Communiquez avec le service d'incendie local, Chemtrec au 800-262-8200, et le soutien EG4.***

- ***Choc électrique: Lors de l'installation ou du remplacement de la batterie :***
  - ***Assurez-vous que la batterie ne soit pas mouillée.***
  - ***Ne vaporisez pas d'eau ni d'autres liquides sur la batterie.***
  - ***N'effectuez pas l'installation dans des conditions où de la poussière, de l'humidité ou d'autres débris pourraient pénétrer dans la batterie.***
  - ***Évitez de toucher les connexions et les composants sauf indication contraire dans ce guide.***
  - ***Ne laissez pas la batterie sans surveillance pendant l'installation si elle n'est pas dans un état sécuritaire***
  - ***Ne touchez pas la batterie, ne vous appuyez pas dessus et ne déposez pas d'outils sur la batterie ou les connexions.***

***En cas de choc électrique pendant l'installation, mettez la batterie dans un état sécuritaire si possible et consultez immédiatement un professionnel de la santé.***

- ***Avertissement – Ventilation: Lors de l'installation ou du remplacement de la batterie :***
  - ***N'ouvrez pas la batterie.***
  - ***N'effectuez pas l'installation ou le remplacement si la batterie est endommagée.***

***Les batteries au lithium peuvent émettre des gaz toxiques en cas de rupture. N'essayez pas de réparer la batterie si elle est rompue. En cas de rupture, déplacez-vous à l'extérieur et demandez l'assistance d'un professionnel qualifié.***

- ***Exposition à l'électrolyte : Lors de l'installation ou du remplacement de la batterie :***
  - ***Assurez-vous que la batterie n'est pas endommagée.***
  - ***N'effectuez pas l'installation ou le remplacement si la batterie est endommagée.***

***Les batteries au lithium contiennent une solution d'électrolyte liquide corrosive et nocive pour la peau et les yeux. Une exposition peut survenir si la batterie est endommagée. En cas de contact avec la peau ou les yeux, rincez abondamment à l'eau pendant 15 minutes et consultez immédiatement un professionnel de la santé. Retirez immédiatement les vêtements contaminés. En cas d'ingestion, buvez au moins deux verres d'eau ou de lait, provoquez le vomissement si la personne est consciente, et consultez immédiatement un professionnel de la santé.***

## Conseils généraux :

**Dans tous les cas d'exposition, consultez un médecin si les symptômes persistent ou si de grandes quantités d'électrolytes sont impliquées. Montrez ces informations de sécurité au médecin traitant.**

**Contact avec la peau :**
- **Retirez immédiatement les vêtements et chaussures contaminés.**
- **Rincez abondamment la peau affectée à l'eau pendant au moins 15 minutes.**
- **Consultez un médecin si l'irritation persiste ou si des brûlures apparaissent.**
- **Laver les vêtements contaminés avant de les réutiliser.**

**Contact avec les yeux :**
- **Rincer immédiatement les yeux à grande eau pendant au moins 15 minutes, gardant les paupières ouvertes.**
- **Retirer les lentilles de contact si présentes et si cela est facile à faire.**
- **Consulter immédiatement un médecin.**

**Inhalation (le cas échéant) :**
- **Transporter immédiatement la personne à l'air frais.**
- **Si la respiration est difficile, administrer de l'oxygène. Si la personne ne respire pas, pratiquer la respiration artificielle.**
- **Consulter immédiatement un médecin**

**Ingestion :**
- **Ne pas faire vomir.**
- **Rincer la bouche à l'eau.**
- **Donner de petites quantités d'eau ou de lait pour diluer, si la personne est consciente et alerte.**
- **Ne jamais rien donner par voie orale à une personne inconsciente.**
- **Consultez immédiatement un médecin ou contactez immédiatement le centre antipoison.**

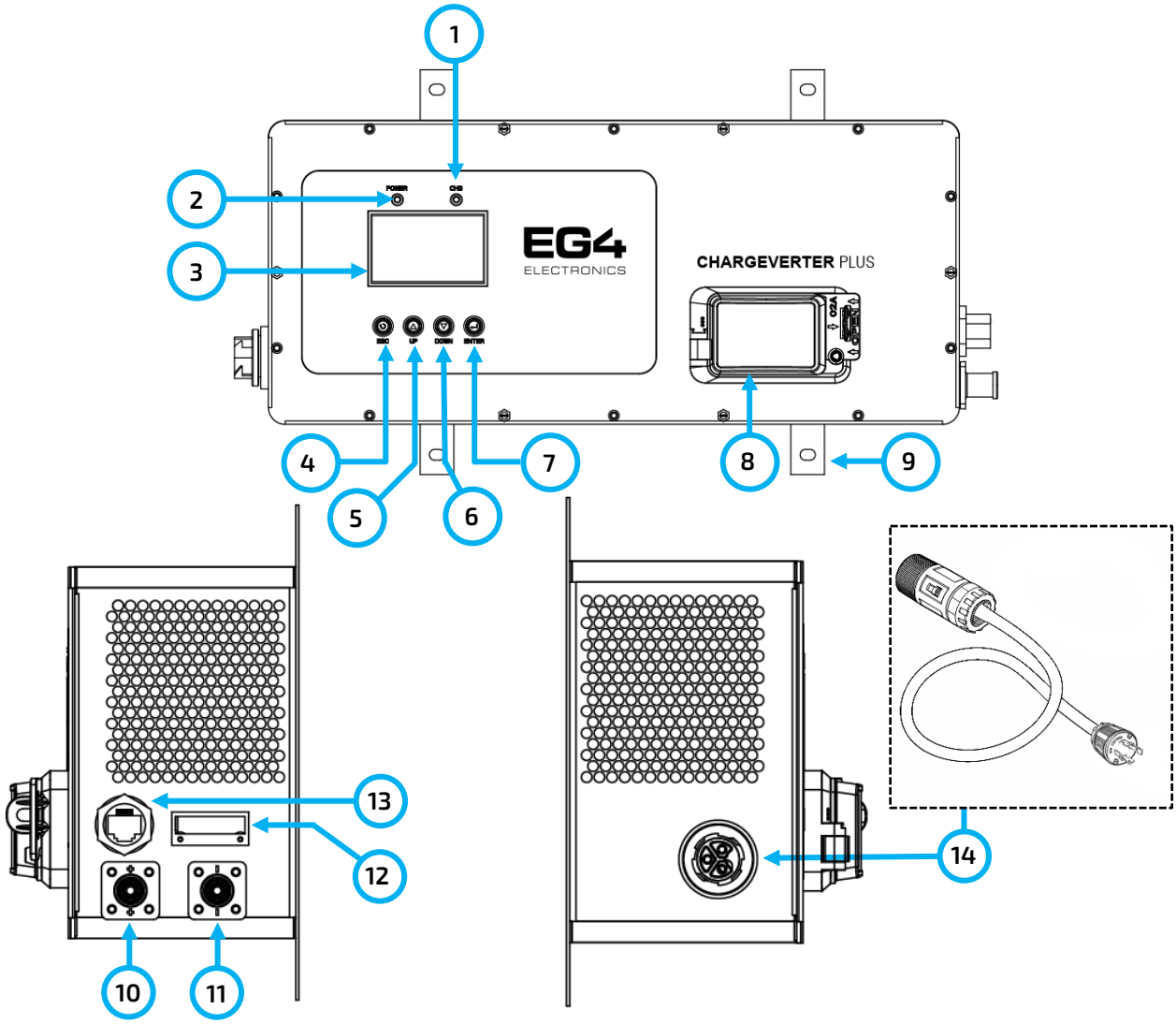
# 6. BRIEF INTRODUCTION

This guide describes the installation and operation of the EG4® Chargeverter Plus. Read the guide carefully and completely before proceeding.

## 6.1 PRODUCT OVERVIEW

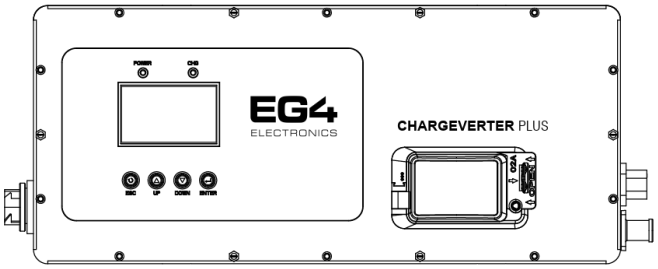
The EG4 Chargeverter Plus is a robust AC-to-DC converter and charger designed specifically for 48 VDC lithium battery charging **in on-grid and off-grid Energy Storage System (ESS)**. The charger can operate on 120, 208, or 240 VAC and is capable **of delivering up to** 100A of DC charging current. The unit is rated IP54, providing protection from dust and small amounts of splashing water. The inputs, outputs, and interface controls are identified in the table and image below.

| NO. | DESCRIPTION | NO. | DESCRIPTION |
|---|---|---|---|
| 1 | Charging indicator | 8 | Battery breaker |
| 2 | Power indicator | 9 | Mounting bracket (x2) |
| 3 | LCD interface | 10 | Positive battery quick connector |
| 4 | Function button – ESC (Escape) | 11 | Negative battery quick connector |
| 5 | Function button – UP | 12 | Dry contact port |
| 6 | Function button – DOWN | 13 | CAN/RS485 Communication Port (RJ45) |
| 7 | Function button – ESC | 14 | AC input connector |

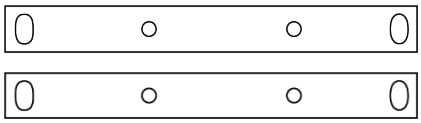


## 6.2 PACKING LIST

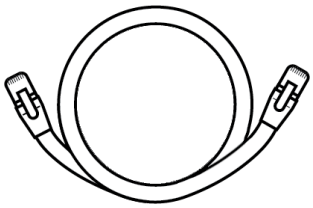
Before installation, inspect the unit. Be sure that nothing inside the package is damaged. The following items will arrive in the shipment.



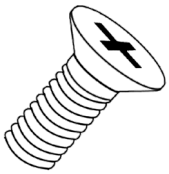

Chargeverter Plus



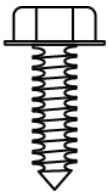
Mounting Brackets (x2)



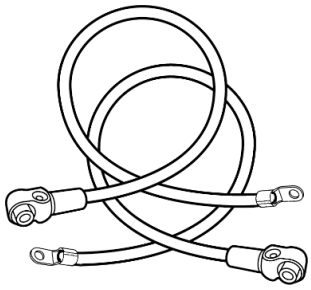
CAN/RS485
Communication Cable
(RJ45 to RJ45, Modified 1,2,4,5 Pinout)



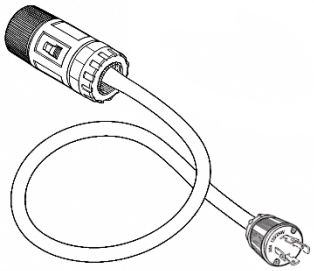
M4*8mm Mounting
Screws (x5)



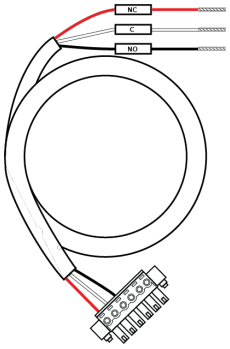
M4*40mm Bracket
Screws (x5)



Positive (Red) and
Negative (Black) 4 AWG
Battery Cables

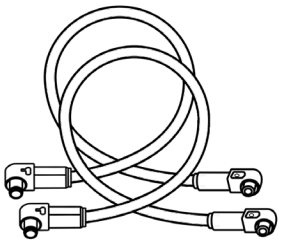


Power Supply Cord

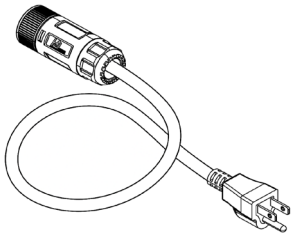



Dry Contact Cable

**Optional**
Chargeverter Adapter Cable

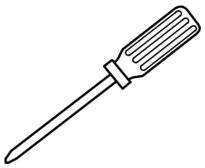


**Optional**
Chargeverter Power Cord-120V



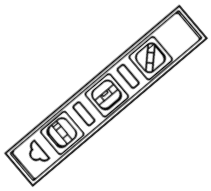
# 7. INSTALLATION

## 7.1 RECOMMENDED TOOLS



Phillips Head Screwdriver

Safety Goggles

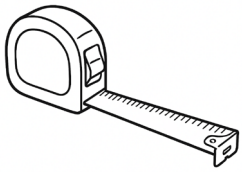


Level

Gloves

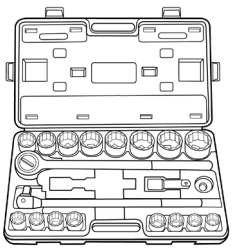
Electric Drill

Drill Bit

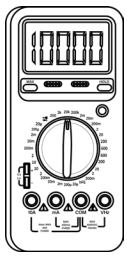


Tape Measure

Dielectric Shoes



Socket Set

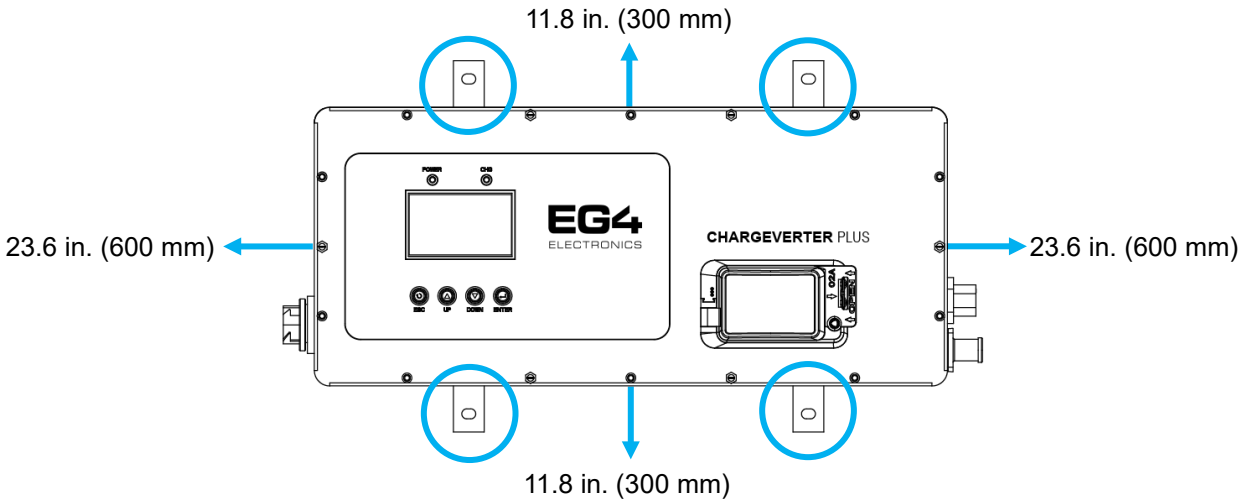


Multimeter

## 7.2 MOUNTING THE CHARGER

When selecting where to install the charger:

- Verify the mounting surface is suitable for mounting according to the design requirements shown below. Do not mount the EG4® Chargeverter Plus on combustible or flammable surfaces.
- Mount the Chargeverter Plus on a vertical, structurally sound wall.
- Install in a location that allows the LCD interface to be easily viewed.
- The ambient temperature should be between -40° – 131°F (-40° – 55°C) to ensure optimal operation.
- Verify there is at least 11.8 in. (300 mm) above and below and 23.6 in. (600 mm) on each side of the unit for heat dissipation and space for wires.




### INSTALLATION STEPS

1. Install the 2 mounting brackets to the back of the Chargeverter with the four M4*8mm screws provided with the unit.
2. Level and mount the charger to an appropriate wall by securing it with the four M4*40mm screws provided with the unit.

**NOTE**

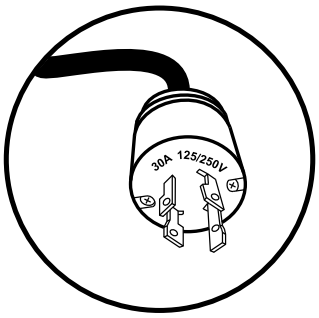
**Other fastening methods are acceptable** as long as the weight of the charger (13.67 lbs. [6.4kg], is adequately supported (e.g. concrete anchors, toggle bolt anchors, lag bolts, wood screws, etc.).

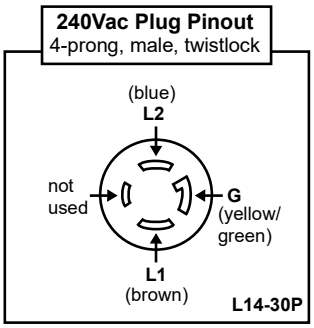
**NOTICE**

**The EG4® Chargeverter Plus can produce temperatures** of more than 131°F (55°C). It is recommended to mount this unit on appropriate backing, such as cement board, with 11.8 in. (300 mm) on top and bottom and 23.6 in. (600 mm) left to right clearance around the unit to allow proper airflow. **DO NOT BLOCK THE AIR VENTS!**

## 7.3 AC CONNECTIONS

The EG4® Chargeverter Plus comes pre-wired with a NEMA L14-30P 4-prong male twist lock plug designed to be used on a 240V/30A circuit, as shown in the images below:



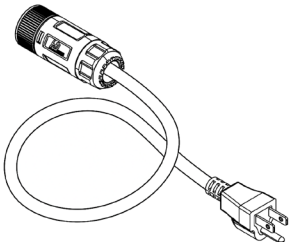




The EG4® Chargeverter Power Cord – 120V (optional accessory, not included) is designed to support a 120V/15A input source and deliver up to 25A / 1425W of battery charging power.

This cord enables operation from a standard 120V receptacle, providing a convenient charging solution in applications where 240V input power is not available.

**Optional**

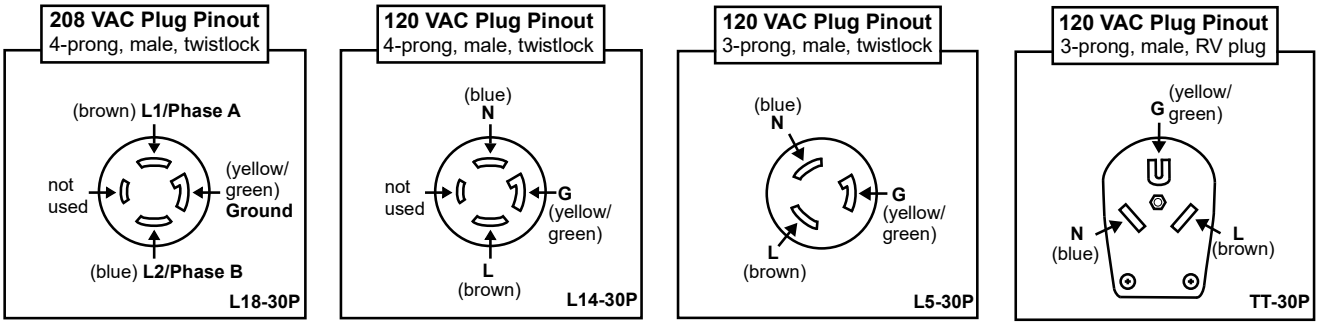
Chargeverter Power Cord-120V



Additional pinouts for other common NEMA 120V/30A and 208V/30A circuits are provided on page 19 for reference.

**WARNING**

**Plug pinouts are provided for reference only.** Consult a qualified professional before making any modifications.




| CHARGEVERTER AC WIRE COLOR | 120V | 208V | 240V |
|---|---|---|---|
| Brown | L1 (Hot) | L1 (Phase A) | L1 |
| Blue | Neutral | L2 (Phase B) | L2 |
| Yellow/Green | Ground | Ground | Ground |

The charger's maximum output current is dependent on the input AC voltage as shown in the following table:

| CHARGEVERTER AC INPUT | MAXIMUM DC OUTPUT CURRENT |
|---|---|
| 120 VAC/28A | 50A |
| 208 VAC/26A | 80A |
| 240 VAC/26A | 100A |

**NOTE**

**For single phase 230 VAC installations,** follow the guidelines below to properly wire the appropriate plug to the Chargeverter Plus.

| CHARGEVERTER AC WIRE COLOR | DESCRIPTION |
|---|---|
| Brown | 230 VAC |
| Blue | Neutral |
| Yellow/Green | Ground |

## 7.4 DC CONNECTIONS

**WARNING**

**Verify that the battery breakers and/or battery switches** are in the OFF position and the charger is not plugged in while installing battery charging cables.

- For a single battery, connect the cables to the battery positive and negative terminals or for a battery bank, connect the cables to the positive and negative busbars using appropriate size bolts for the battery.
- Verify EG4® Chargeverter Plus cable ring terminals are attached to the battery terminals or busbar with the proper polarity and tighten to the proper torque specifications. See the battery documentation for these specifications.
- For 240V usage, plug the Chargeverter into a 240V/30A twist lock receptacle with a dedicated 30A double-pole breaker.
- For 208V usage, plug the Chargeverter into a 208V/30A receptacle with a dedicated 30A double-pole breaker.
- For 120V usage, plug the Chargeverter into a 120V/30A receptacle with a dedicated 30A single-pole breaker.

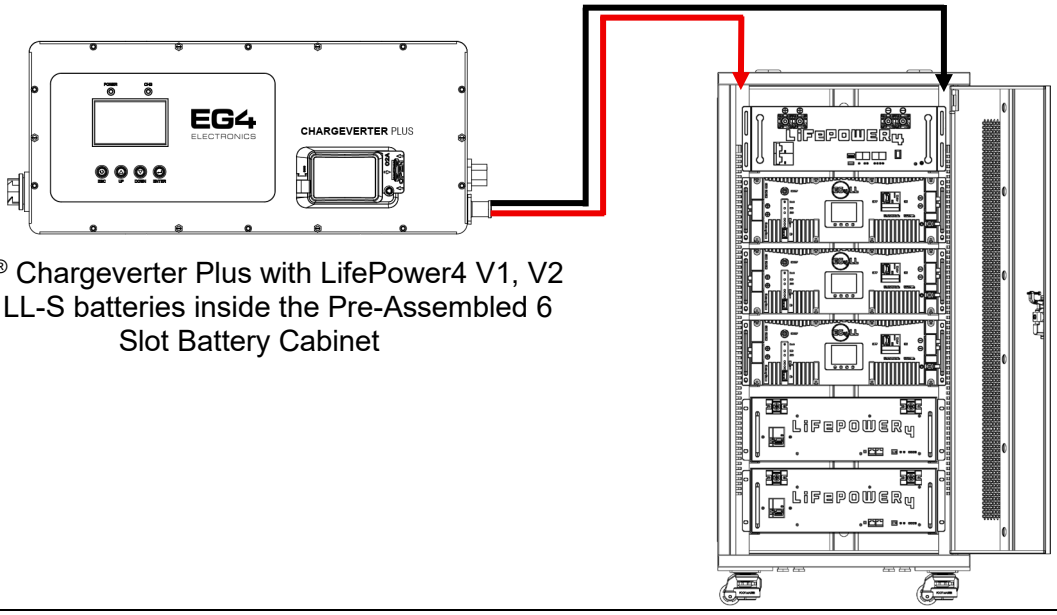
**NOTE**

**See plug pinouts** in section 7.3 for common plug types.

## EXAMPLE DIAGRAMS

The images below and on the next few pages showcase the EG4® Chargeverter Plus connected to different configurations of batteries.

The diagrams in this section are for illustrative purposes only. Final wiring diagrams should be generated by a licensed professional.

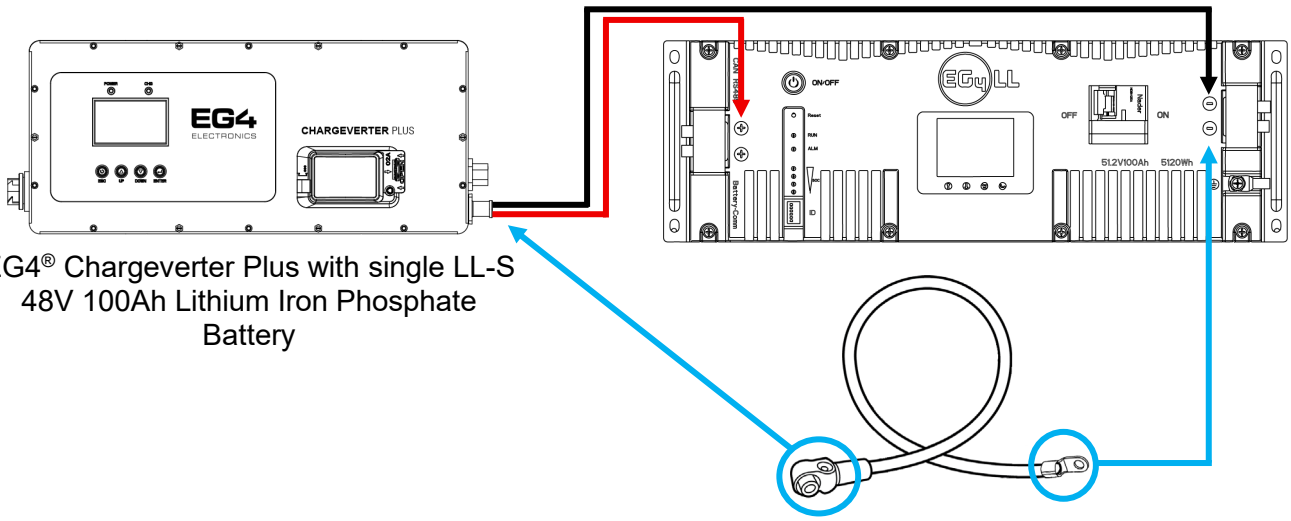



EG4® Chargeverter Plus with LifePower4 V1, V2 and LL-S batteries inside the Pre-Assembled 6 Slot Battery Cabinet

**NOTE**

**Battery cable connections** from Chargeverter Plus to the battery cabinet will connect to the busbar inside the battery cabinet. Check table below for torque values.

| CABLE SIZE | MIN. INSULATOR VOLTAGE | TORQUE VALUE | MAX RECOMMENDED DISTANCE |
|---|---|---|---|
| 4 AWG | 600V | 60 in-lbs. (~6.8 Nm) | 15 ft. (4.6 m) |




EG4® Chargeverter Plus with single LL-S 48V 100Ah Lithium Iron Phosphate Battery

The quick connect terminal will connect to the Chargeverter Plus and the ring terminal will connect to the battery terminal as shown in the picture above.
Do not cross-polarize!

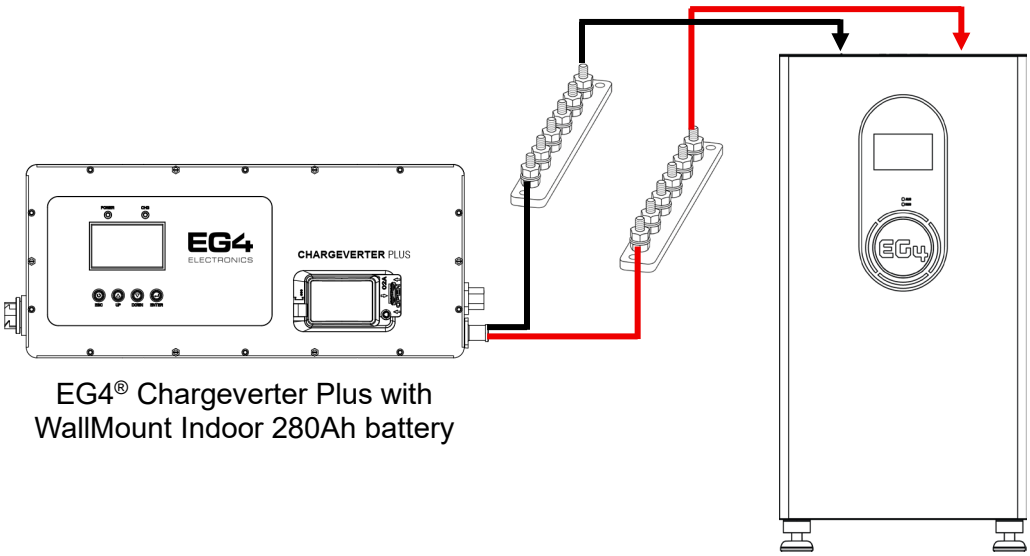
## USING BUSBAR TO CONNECT CHARGEVERTER PLUS AND BATTERY

The EG4® Chargeverter Plus comes with battery cables that have a ring terminal on the end. The images below represent the connections that will have to be made to safely charge the WallMount Indoor and AW 280Ah and WallMount Indoor and AW 314Ah battery(s).

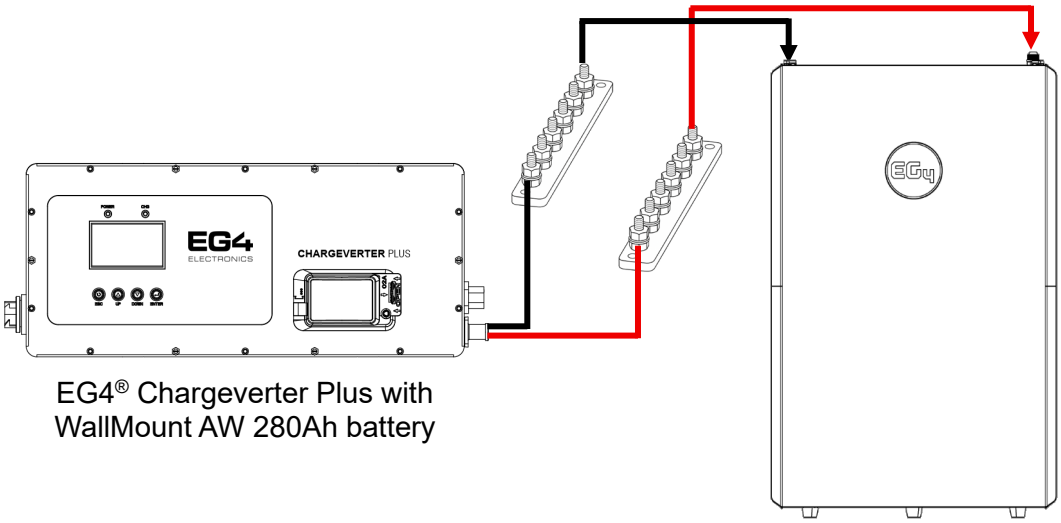
The diagrams in this section are for illustrative purposes only. Final wiring diagrams should be generated by a licensed professional.

**NOTE**

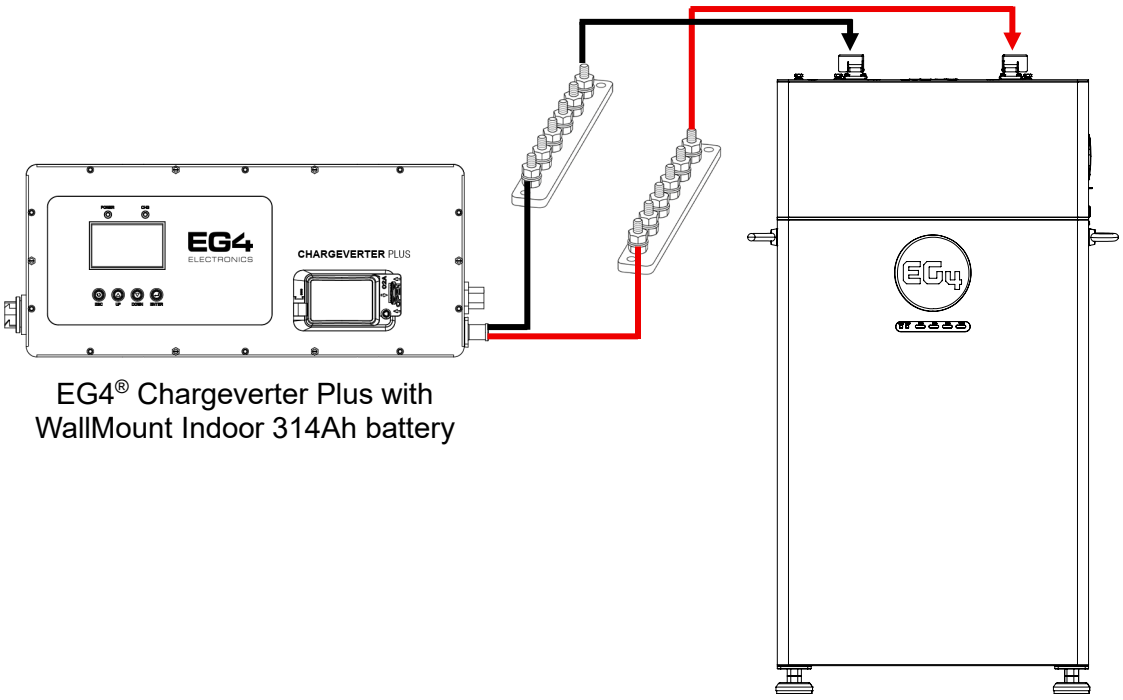
**If the customer has purchased** the optional 100Ah to 200Ah cable, see page 24 for image references.



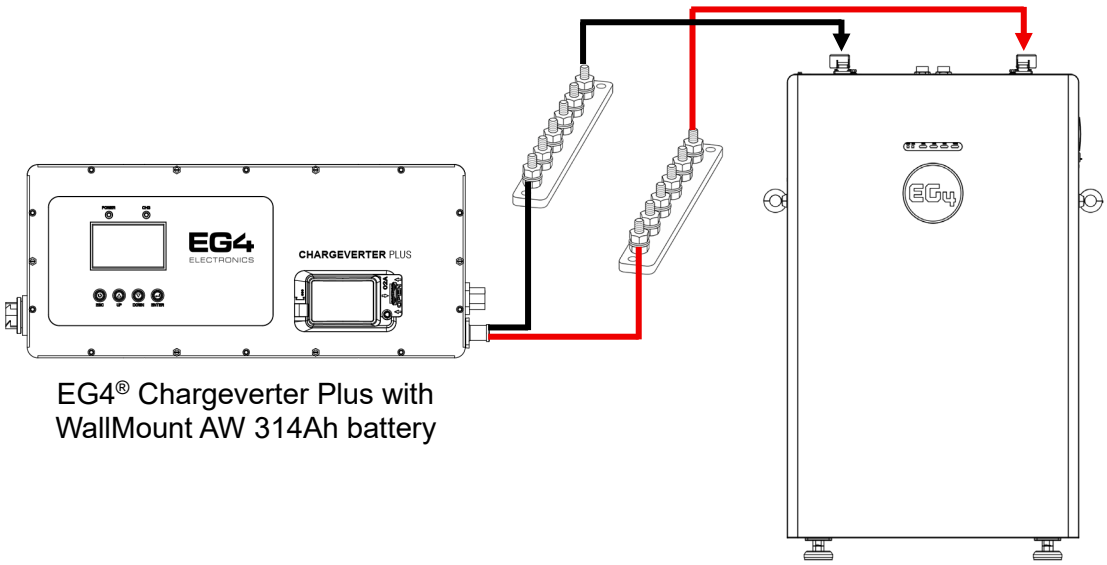

EG4® Chargeverter Plus with WallMount Indoor 280Ah battery




EG4® Chargeverter Plus with WallMount AW 280Ah battery

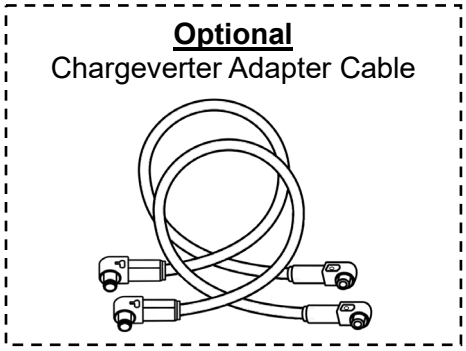



EG4® Chargeverter Plus with
WallMount Indoor 314Ah battery




EG4® Chargeverter Plus with
WallMount AW 314Ah battery

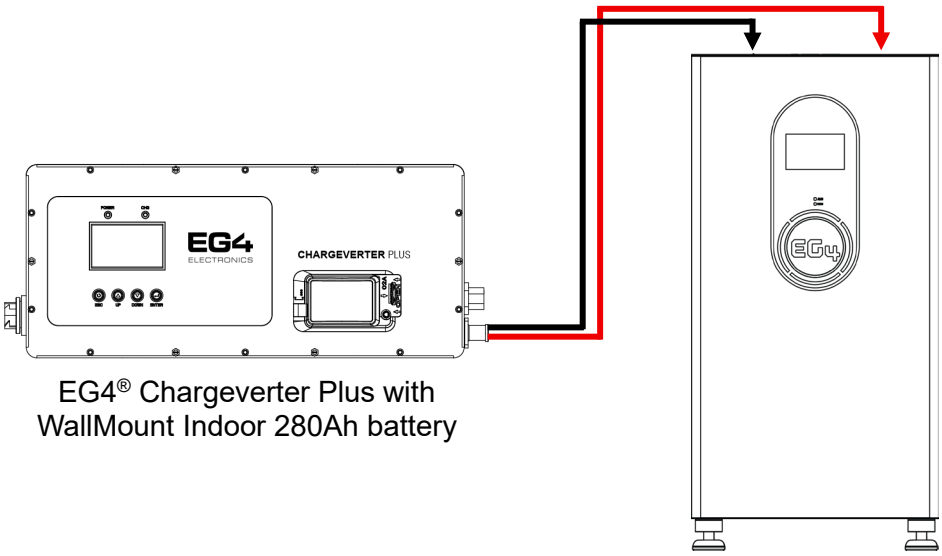
## USING CHARGEVERTER ADAPTER CABLE TO CONNECT CHARGEVERTER PLUS AND BATTERY



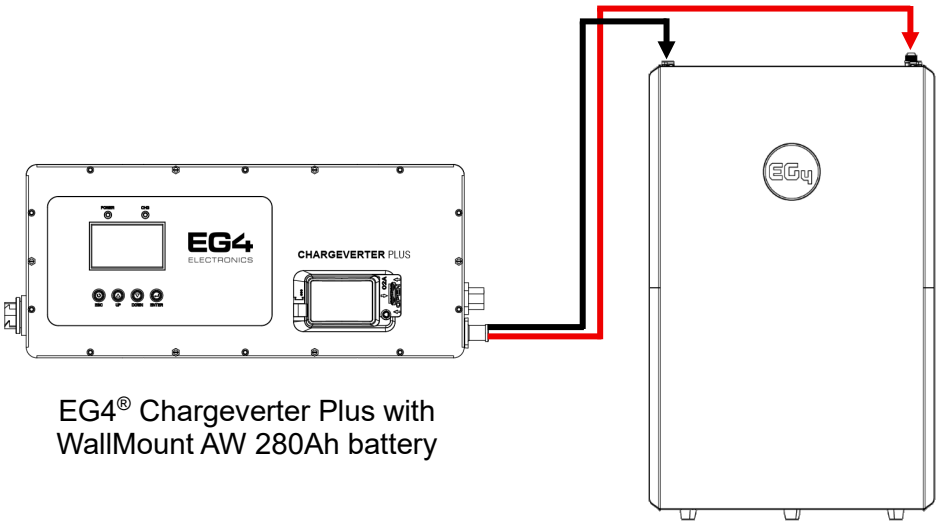

The EG4® Chargeverter Adapter Cable is EG4's solution to eliminate the use of busbars in connecting the Chargeverter Plus to the battery(s). This cable is designed to charge EG4® 280Ah and 314Ah Indoor and All Weather WallMount batteries.

If the end-user has purchased the optional Chargeverter Adapter Cable, busbars are no longer needed and can connect straight to the batteries shown below.

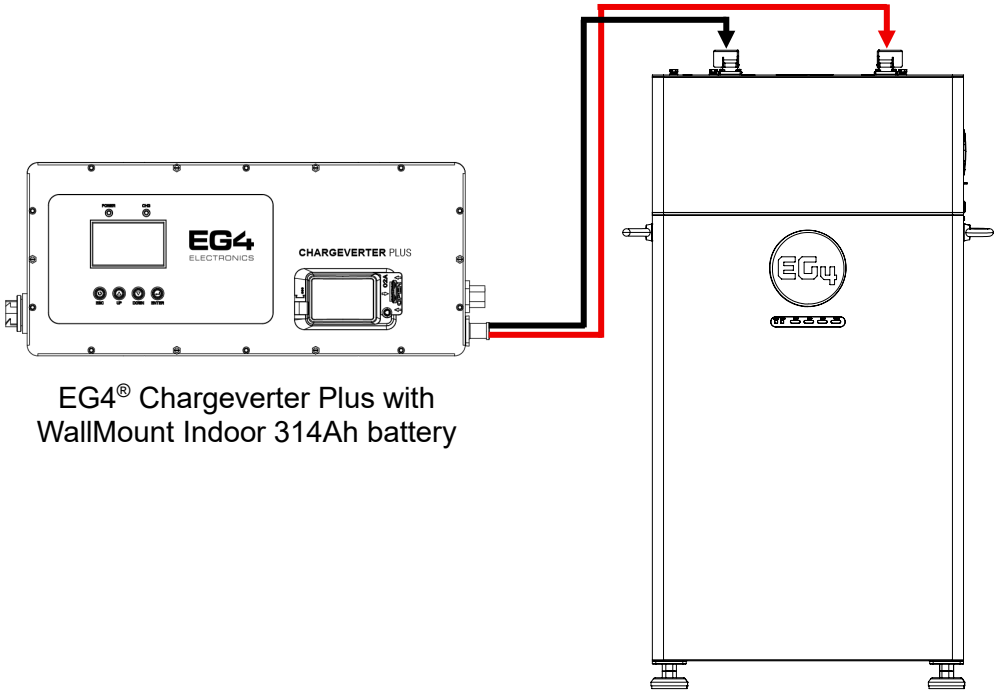
The diagrams in this section are for illustrative purposes only. Final wiring diagrams should be generated by a licensed professional.



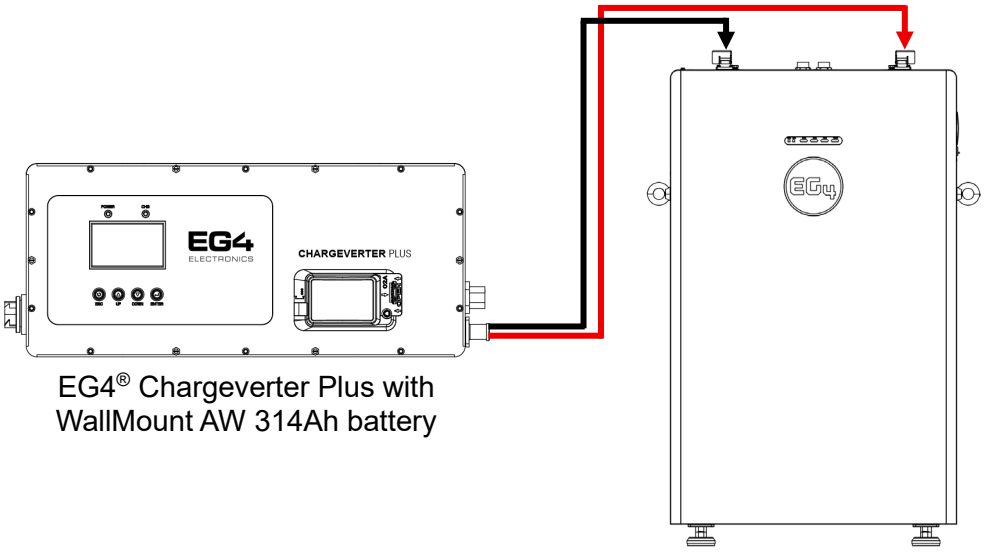

EG4® Chargeverter Plus with WallMount Indoor 280Ah battery




EG4® Chargeverter Plus with WallMount AW 280Ah battery




EG4® Chargeverter Plus with
WallMount Indoor 314Ah battery




EG4® Chargeverter Plus with
WallMount AW 314Ah battery

# 8. OPERATION

## 8.1 POWER ON/OFF

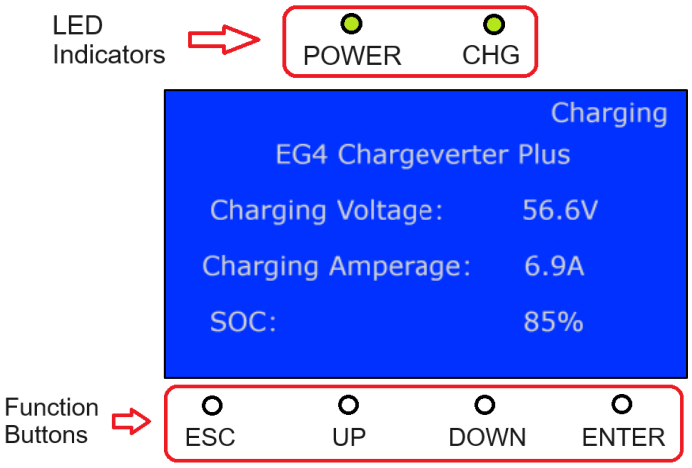
1. Check that the battery cables are securely connected.
2. Verify the EG4® Chargeverter Plus is connected to a power supply capable of supplying the required voltage and amperage.
3. First turn on the battery breaker(s), wait for 5 seconds, then power on BMS.
4. Turn the Chargeverter breaker on the front of the unit to ON.

After the initial power-up, the end-user may need to set parameters to activate charging output.

If the required parameters are already configured, the Chargeverter will automatically start charging within 15 seconds.

## 8.2 DISPLAY PANEL OPERATION

Operation and control of the EG4 Chargeverter Plus are facilitated through the front panel (shown to the right). It features two green LED indicators, four function buttons, and an LCD interface indicating the operational and charging status of the unit. The following tables display the LED indicator modes and descriptions of the function-buttons.



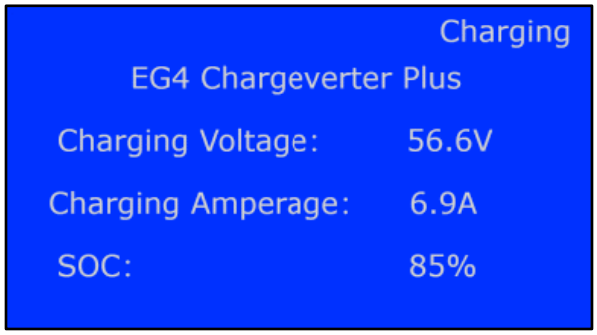

### LED INDICATOR

| LABEL | COLOR | STATUS | MODE |
|---|---|---|---|
| POWER | Green | Solid ON | The unit is powered ON. |
| CHG | Green | Solid ON | The battery is fully charged. |
| | | Flashing | The battery is charging. |

| FUNCTION | DESCRIPTION |
|---|---|
| ESC | Exit Setting Mode. |
| UP | Increase the currently selected parameter.<br>Go to the next selection to the left when navigating in Settings Mode.<br>**Note:** The button shows an up arrow, but the function is “left” for navigating. |
| DOWN | Decrease the currently selected parameter.<br>Go to the next selection to the right when navigating in Setting Mode.<br>**Note:** The button shows a down arrow, but the function is “right” for navigating. |
| ENTER | Press and hold enter for ~3 seconds to enter Setting Mode. |
| | Confirm the selection in Setting Mode. |

## LCD INTERFACE

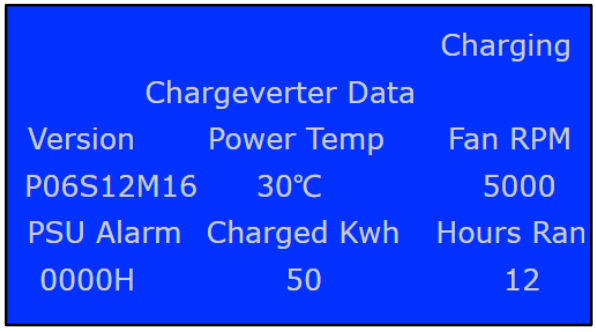
Press any button to wake up the LCD interface. The main screen (shown to the right) displays the Charging Voltage, Charging Amperage, and SOC values. The SOC is only displayed when the charger is connected to a battery via CAN/RS485 and receives SOC information. This screen is informational only and no changes can be made.



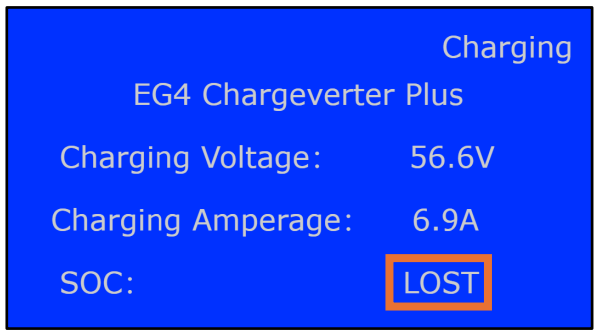

**NOTE**

**SOC can only** be used in closed-loop communication. Use Voltage settings if SOC cannot be used.

Pressing the up and down keys on the main screen allows the user to switch pages and view the Version, Power Temp, Fan RPM, PSU Alarm, Charged kWh, and Hours Ran.



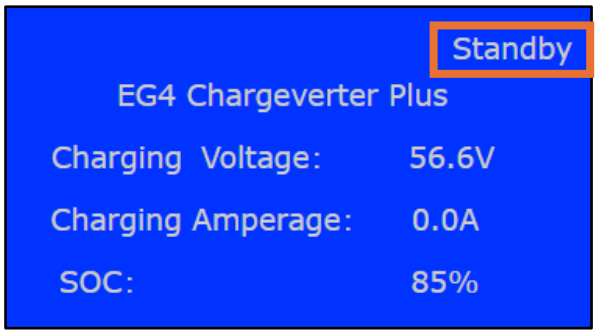

The main screen will display “LOST” for the SOC value when the charger is not connected to a battery via CAN/RS485 and is not receiving SOC data.



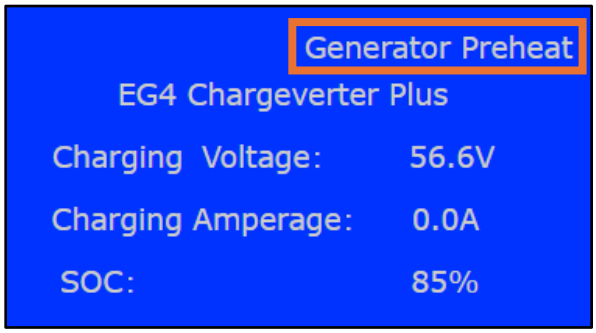
When using the EG4® Chargeverter Plus, it will perform function conversion according to the working state, and the working status will appear in the upper right corner of the LCD display.

**The working status is as follows:**

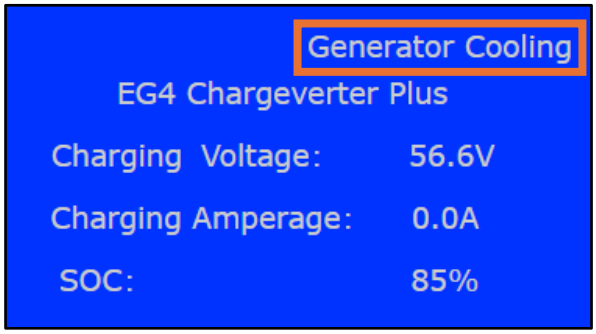
- **Standby** – When the Chargeverter first powers on.



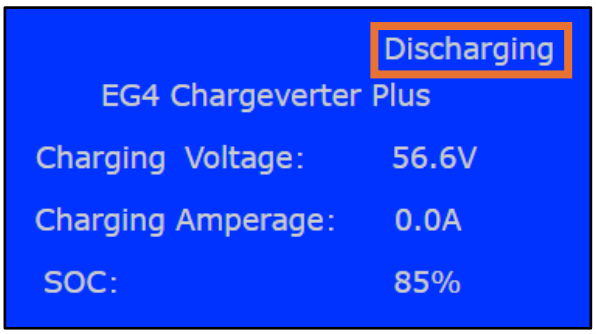

- **Generator Preheat** – Chargeverter will preheat the generator before auto starting.



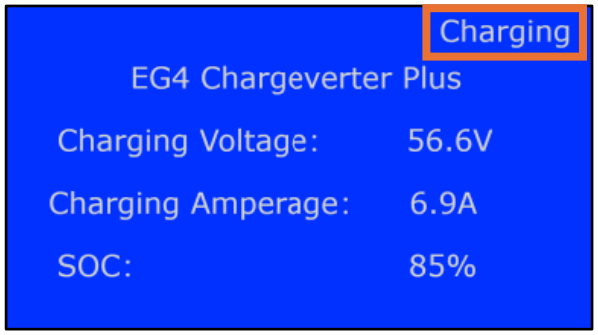

- **Generator Cooling** – Cool down after charging the battery(s). Beneficial for not overheating the generator.



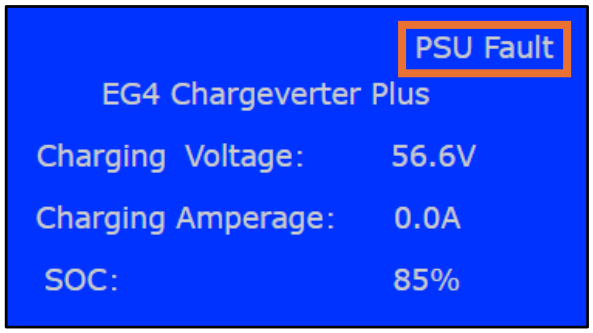
- **Discharging** – A state of idle.




- **Charging** – When current is detected by the Chargeverter.




- **PSU Fault** – The “PSU Fault” indicator will activate when any of the following conditions occur; over-temperature protection, short-circuit protection, AC input over-voltage or under-voltage protection, fan failure, output over-voltage protection, PSU module communication failure.



The table below describes the various parameters for the EG4® Chargeverter Plus; see the information on page 32 for details on how to make adjustments to the parameter settings.

| PARAMETER | DESCRIPTION | APPLICATIONS | DETAILS |
|---|---|---|---|
| Voltage (V) | Charging Voltage | This parameter is used with and without a generator to set the charging voltage. | This is the voltage used to charge the batteries. The setting range is 40V – 60V in 1-digit increments per value. The default setting is 57V EG4 recommends having at least a 5V difference between the BATT Start and BATT Stop. |
| SOC Start (%) | SOC Threshold | This parameter is used when AC Grid or generator is supplying AC power to the charger. | When the battery SOC is less than the SOC Start, the dry contacts NO & C are closed, and NC & C are open. This turns the generator ON. The setting range is 1% – 100% in 1% increments. |
| Voltage Start (V) | Battery Under-Voltage Threshold | This parameter is used when AC Grid or generator is supplying AC power to the charger. | When the battery voltage is lower than Voltage Start, the dry contacts NO & C are closed and NC & C are open. This turns the generator ON. The setting range is 40V – 60V in 1-digit increments. |
| Current (A) | Charging Current | This parameter is used with or without a generator to set the charging current. | This is the current used to charge the batteries. The setting range is 2A – 100A in 1A increments. |
| SOC Stop (%) | SOC Stop | This parameter is used when AC Grid or generator is supplying AC power to the charger. | When the battery SOC is higher than SOC Stop, the dry contacts NO & C are open. This turns the generator OFF. The setting range is 1% – 100% in 1% increments. |
| Voltage Stop (V) | Battery Over-Voltage Threshold | This parameter is used when AC Grid or generator is supplying AC power to the charger. | When the battery voltage is higher than Voltage Stop, the dry contacts NO & C are open and NC & C are closed. This turns the generator OFF. The setting range is 40V – 60V in 1-digit increments. **Note:** Upon reaching the Voltage Stop value, the Chargeverter will continue charging for ~3 minutes before stopping the charge. |
| Preheat Time | The preheating time can be set (0-5 minutes) | This parameter is used only when a generator is supplying AC power to the charger. | The preheating time can be set to 0 – 5 minutes. After starting the generator, the charger will not charge the battery during the preheating time. |
| Cooling Time | The cooling time can be set (0-5 minutes) | This parameter is used only when a generator is supplying AC power to the charger. | The cooling time can be set (0-5 minutes). After charging is completed, the charger will not charge the battery during the cooling time. |

| | | | |
|---|---|---|---|
| RS485 Protocol | RS485 Protocol | Select the protocol according to the communication interface of the battery. | 1. P01-GRW: PF Lithium battery BMS Communication Protocol RS485 Protocol 1xSxxP ESS V2.01<br>2. P02-LUX: 06-02-02-PTC Luxpower battery communication RS485 Protocol V03 20220706<br>3. P03-EG4: EG4 LFP battery communication protocol |
| CAN Protocol | CAN Protocol | Select the protocol according to the communication interface of the battery. | 1. P01-LUX Luxpowertek battery CAN protocol V06 |
| Charging Time | The charging time can be set (0-180 minutes) | This parameter is used when AC Grid or generator is supplying AC power to the charger. | If charging time is set to 30 minutes, and the charging time is reached (if the SOC Stop or Voltage Stop does not reach the end value at this time), the charging will complete, and the generator will shut down. (Clarification: When the charger is charging, the charging time starts counting.)<br><br>**Note:** The charging time is set to “0”, it will disable this function, and the charging time is invalid |

**NOTE**

1. SOC Start should always be less than SOC Stop. Voltage Start should always be less than Voltage Stop.
2. Open loop (BMS without communication), Voltage Stop should always be less than Charging Voltage.
3. The Charging Time is set to “0”, it will disable this function, and the Charging Time is invalid.

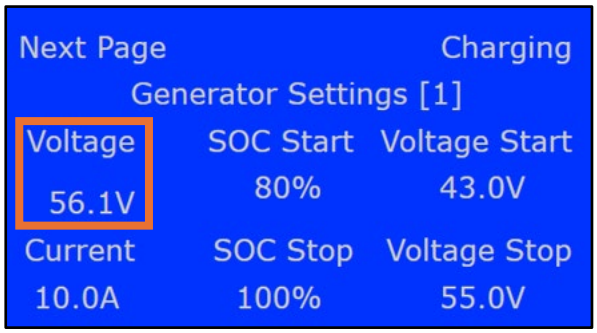
## LCD SETTINGS

The following section provides detailed instructions for configuring the EG4® Chargeverter Plus parameter settings using the LCD interface.

**NOTE**

**When configuring the EG4 Chargeverter Plus** to charge by voltage, verify there is at least a 5V difference between Voltage Start and Voltage Stop. The images below are for representation purposes only.

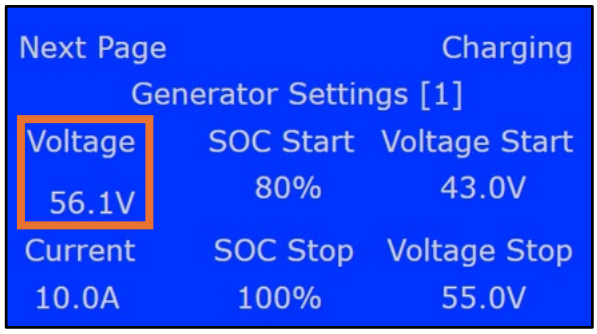
- Hold “ENTER” for 2 seconds to display the “Generator Settings” screen shown to the right. The “Voltage” setting will be highlighted. Press the “UP/DOWN” buttons to scroll left/right through the various parameters.



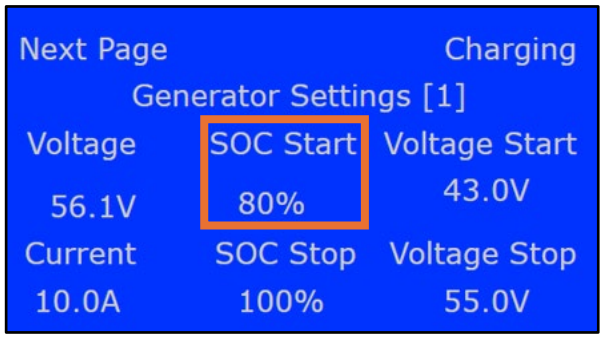

**NOTE**

**The Voltage Setting is for the applied** charging voltage that the charger will apply to the battery. For EG4 Electronic batteries, it is recommended to set this setting between 56-57 VDC.

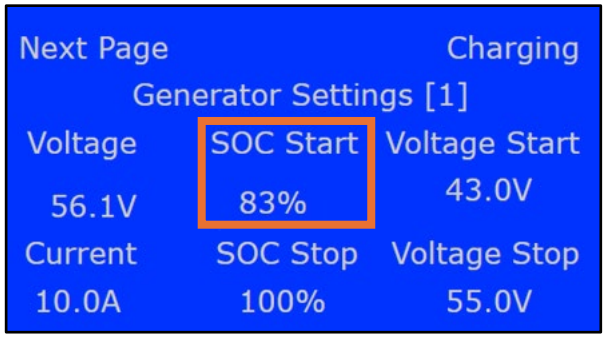
- To modify a parameter, scroll to the desired parameter (in this case, Voltage as shown to the right). Press the “ENTER” button to select the voltage in the highlighted area. Press the “UP” button or “DOWN” button to make changes to this value. Press “ENTER” to accept the changes or “ESC” to ignore them.



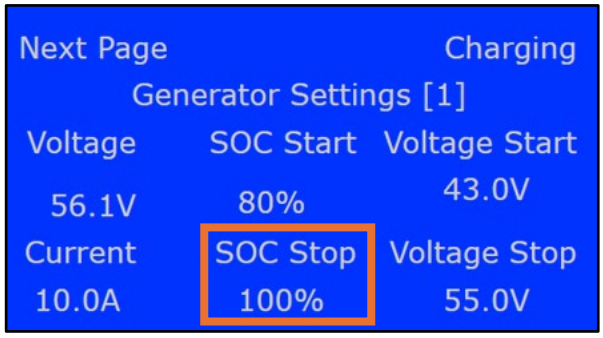

- Press the “DOWN” button to highlight the “SOC Start” setting.



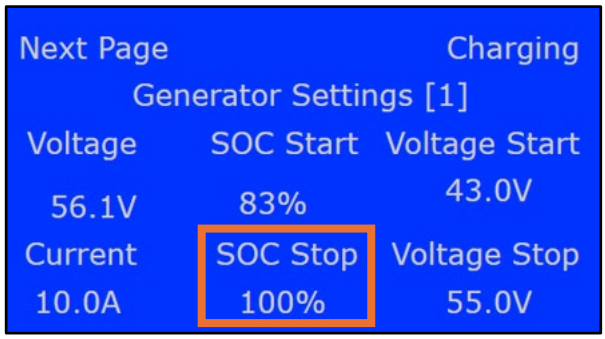
- Press the “ENTER” button to select the SOC Start parameter in the highlighted area. Press the “UP” button or “DOWN” button to make changes to this value. Press “ENTER” to accept the changes or “ESC” to ignore them.




- Press the “DOWN” button three times to highlight the “SOC Stop” setting.



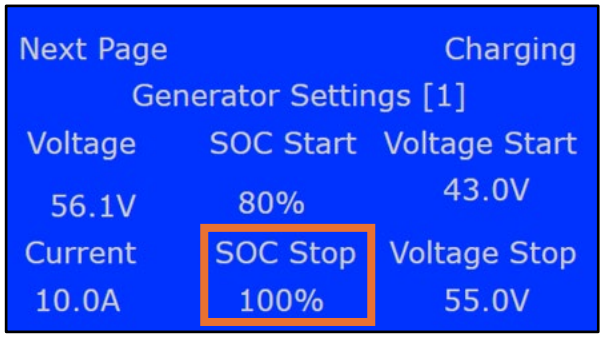

- Press the “ENTER” button to select the “SOC Stop” parameter in the highlighted area. Press the “UP” button or “DOWN” button to make changes to this value. Press “ENTER” to accept the changes or “ESC” to ignore them.



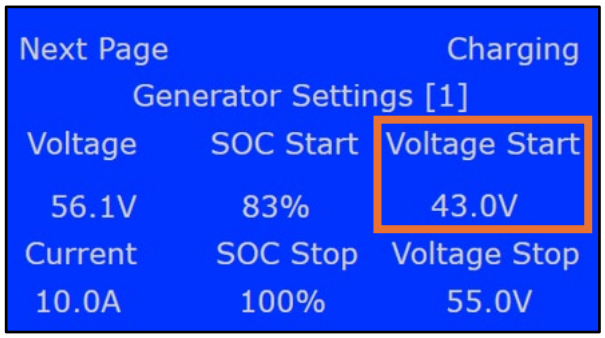

**NOTE**

**The SOC Start/Stop settings** is used with EG4 Electronics batteries in closed-loop communication. **Set the SOC Start% higher** than what the battery is reporting to begin charging with the AC Utility or Generator. When the SOC Stop% is reached, the charger will stop the charge and power off the battery.

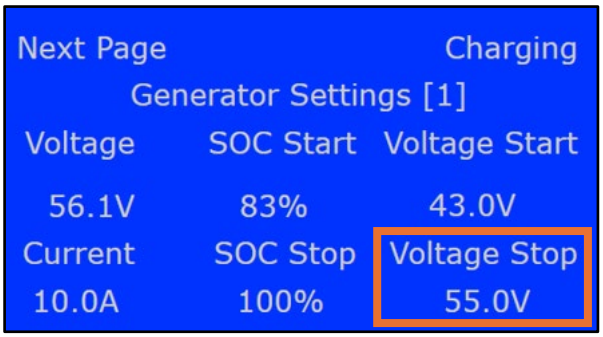
- Press the “DOWN” button four times to highlight the “Voltage Start” setting.
  If starting from “Voltage” setting, press the “DOWN” button two times.



- Press the “ENTER” button to select the Voltage Start parameter in the highlighted area. Press the “UP” button or “DOWN” button to make changes to this value. Press “ENTER” to accept the changes or “ESC” to ignore them.



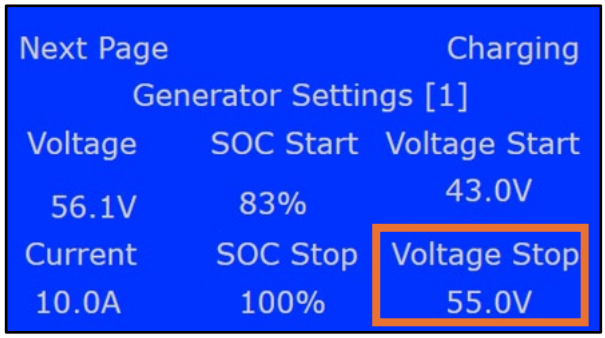

- Press the “DOWN” button three times to highlight the “Voltage Stop” setting.




**NOTE**

**Verify there is at least** a 5V difference between Voltage Start and Voltage Stop.

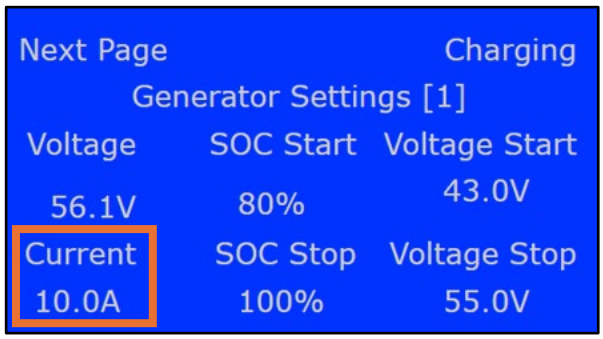
- Press the “ENTER” button to select the “Voltage Stop” parameter in the highlighted area. Press the “UP” button or “DOWN” button to make changes to this value. Press “ENTER” to accept the changes or “ESC” to ignore them.



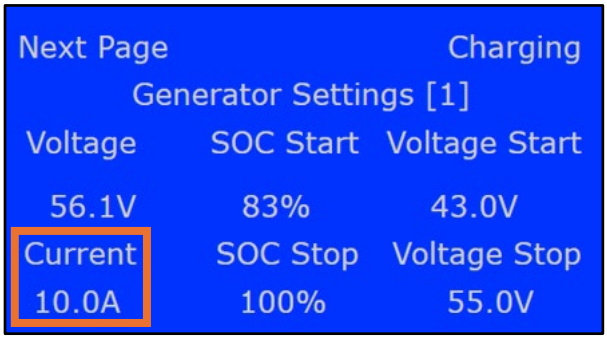

**NOTE**

**The Voltage Start/Stop** is for open-loop communications (no BMS communication) for charging any battery models. Set the Voltage Start higher than what the battery voltage currently is to begin charging with the AC Utility or Generator. When the Voltage Stop is reached, a 3-minute duration will occur. After 3 minutes the charger will stop the charge and power OFF the generator.

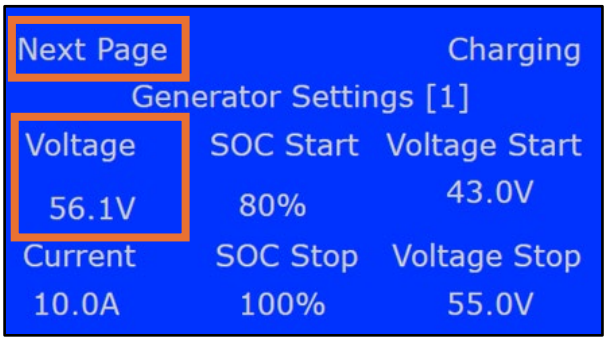
- Press the “DOWN” button five times to highlight the “Current” setting.
  If starting from “Voltage” setting, press the “DOWN” button three times.



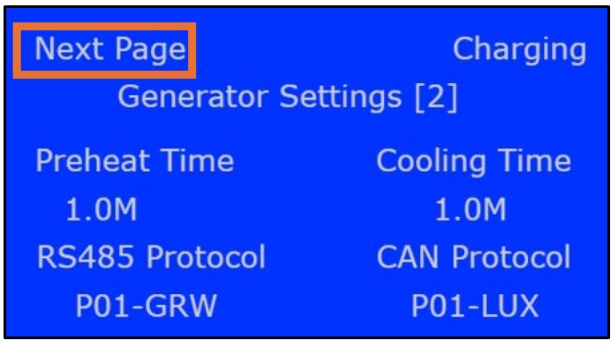

- The Current setting is the applied charging Current/Amperage that the charger will apply to the battery. The range is from 0-100A DC. It is recommended to charge EG4 Electronics batteries at 0.5C-Rate or less.




- Press the “DOWN” button three times to highlight the “Voltage” setting, then press the “UP” button to highlight “Next Page”.



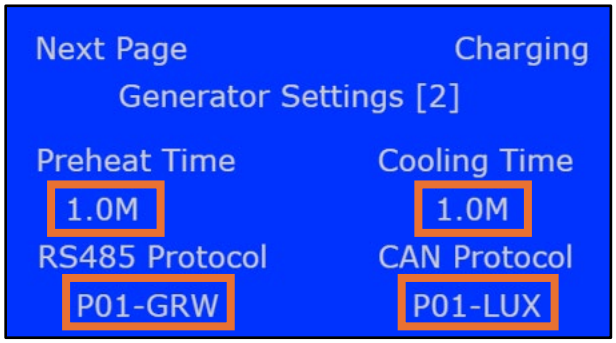

- Press the “ENTER” button to go to the next page of parameters (Preheat Time and Cooling Time).




**NOTE**

**Select “Next Page”** to proceed to Generator Settings 2 and 3.

- Repeat the steps above to navigate to, adjust, and save changes to the Preheat Time, Cooling Time, RS485 Protocol, and CAN Protocol parameters, as needed.

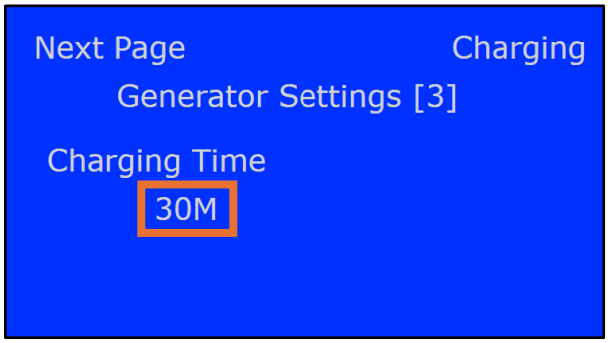



**NOTE**

**Preheat Time:** The preheating time can be set to 0 – 5 minutes. After starting the generator, the charger will not charge the battery during the preheating time.

**Cooling Time:** The cooling time can be set to 0 – 5 minutes. After the battery is charged, the generator will not be started during the cooling time.

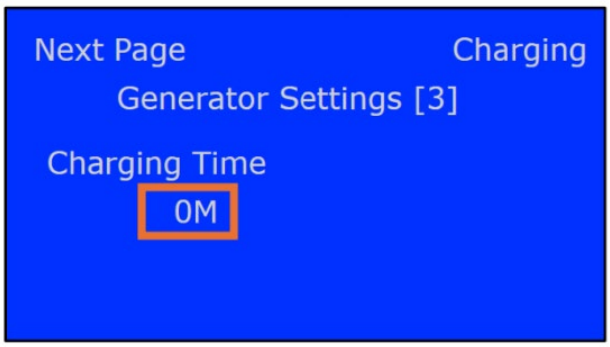
- Repeat the steps above to make and save changes to the Charging Time.




**NOTE**

**The "Charging Time" settings controls** the amount of time that the EG4® Chargeverter Plus charges the battery from both the AC Utility or a generator. Having this setting enabled from 1-180 minutes will always have the chargeverter stop the charging whenever the minutes duration is reached.

- To disable this setting, set the Charging Time setting to 0M. This will allow continuous uninterrupted charging.

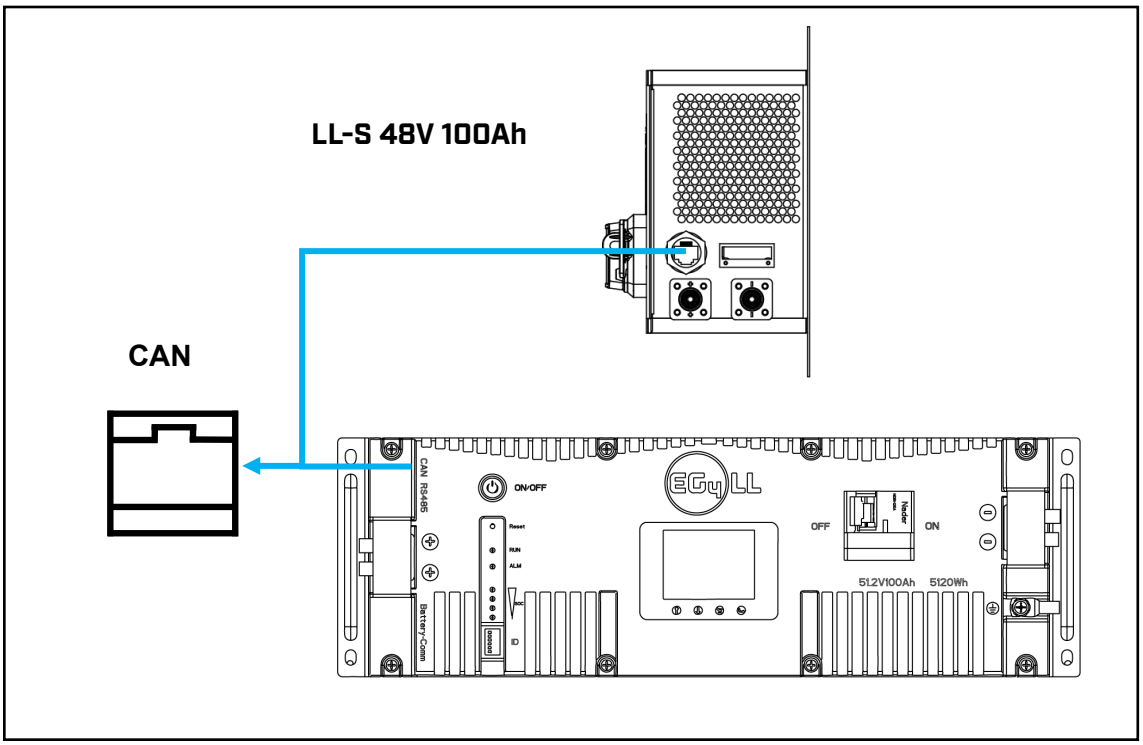


## 8.3 CHARGER COMMUNICATIONS

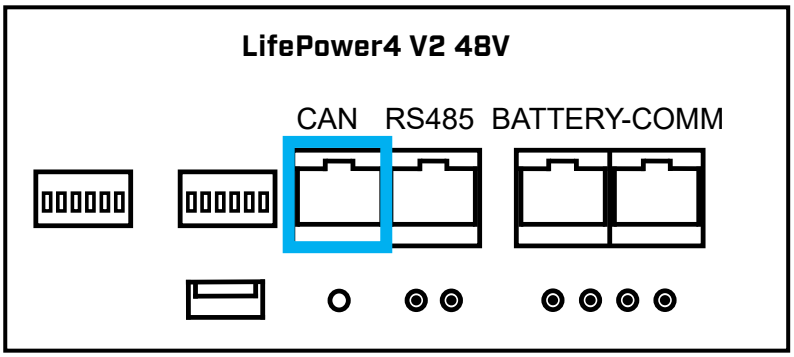
The EG4® Chargeverter Plus includes the option to connect the charger to a properly equipped battery for communications through the CAN/RS485 communication cable. The charger will communicate with the battery to get the SOC/Voltage status and use that information to start and stop generator charging at the preset thresholds. These thresholds are adjustable via the LCD. If there is no communication between the charger and battery, the battery voltage is used to start and stop generator charging at preset voltage thresholds (Voltage Start and Voltage Stop). These voltage thresholds are also adjustable via the LCD.

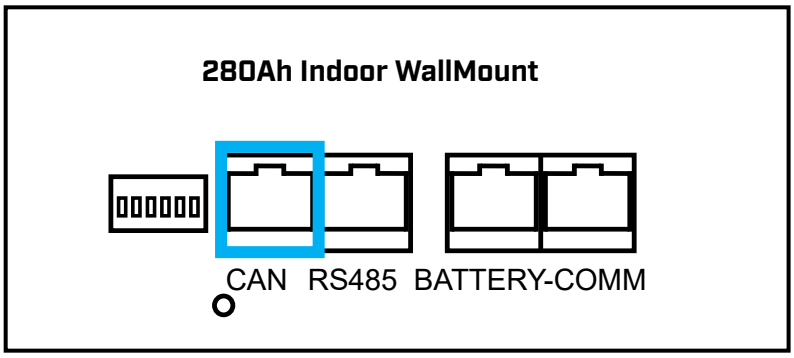
The following table and diagram show the connections necessary to facilitate charger-to-battery communications using the RS485 communication cable provided with the charger. The EG4 LL-S battery series is used in this example for convenience. Connect the CAN/RS485 cable between the RJ45 jack on the right side of the charger (labeled RS485) and the RJ45 jack on the battery (labeled CAN).

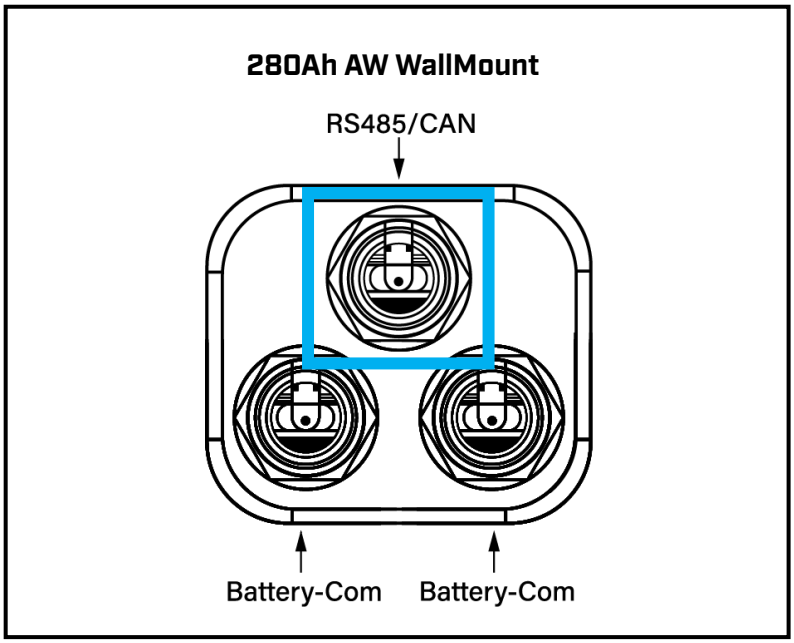
| CAN/RS485 JACK PIN OUT | |
|---|---|
| **RJ-45 PIN** | **DESCRIPTION** |
| 1 | BAT-RS485B |
| 2 | BAT-RS485A |
| 3 | PSU_CANH |
| 4 | BAT-CANH |
| 5 | BAT-CANL |
| 6 | PSU_CANL |
| 7,8 | NC=No Connection |

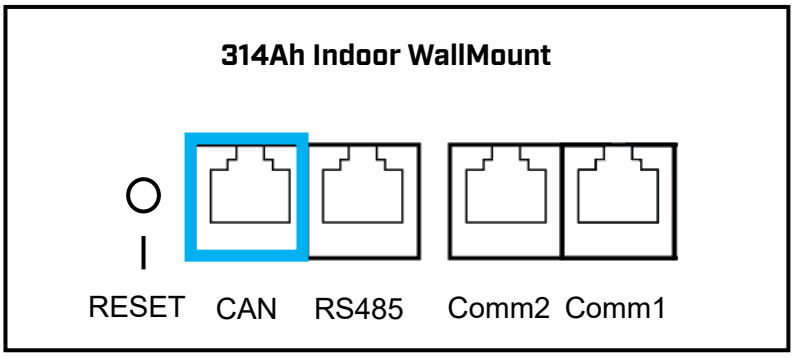


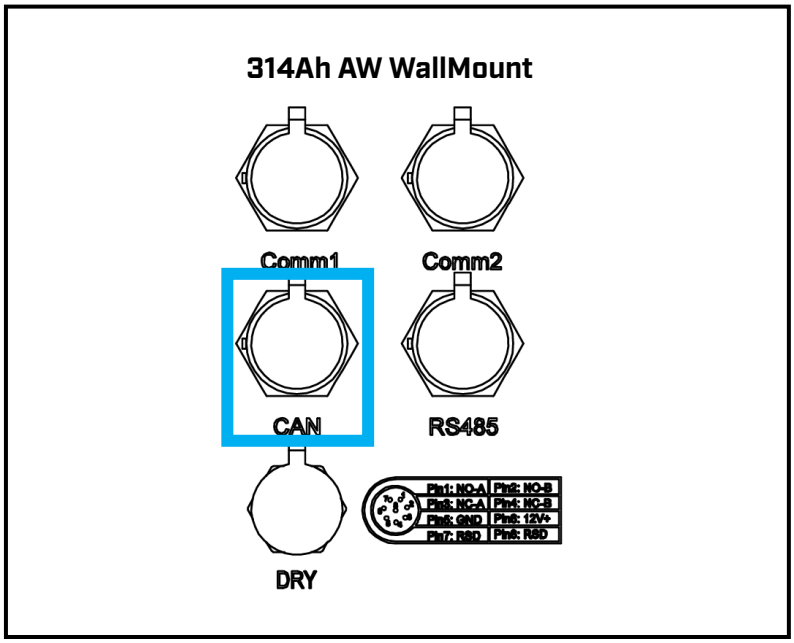
The images below show where the EG4® Chargeverter Plus connects to the LifePower4 V2 48V, WallMount All Weather 280Ah 48V, WallMount Indoor 280Ah 48V, WallMount All Weather 314Ah, and WallMount Indoor 314Ah CAN port.




314Ah Indoor WallMount
RESET
CAN
RS485
Comm2
Comm1


314Ah AW WallMount
Comm1
Comm2
CAN
RS485
DRY
Pin1: NO-A
Pin2: NO-B
Pin3: NC-A
Pin4: NC-B
Pin5: GND
Pin6: 12V+
Pin7: RSD
Pin8: RSD

## 8.4 WORKING WITH A GENERATOR

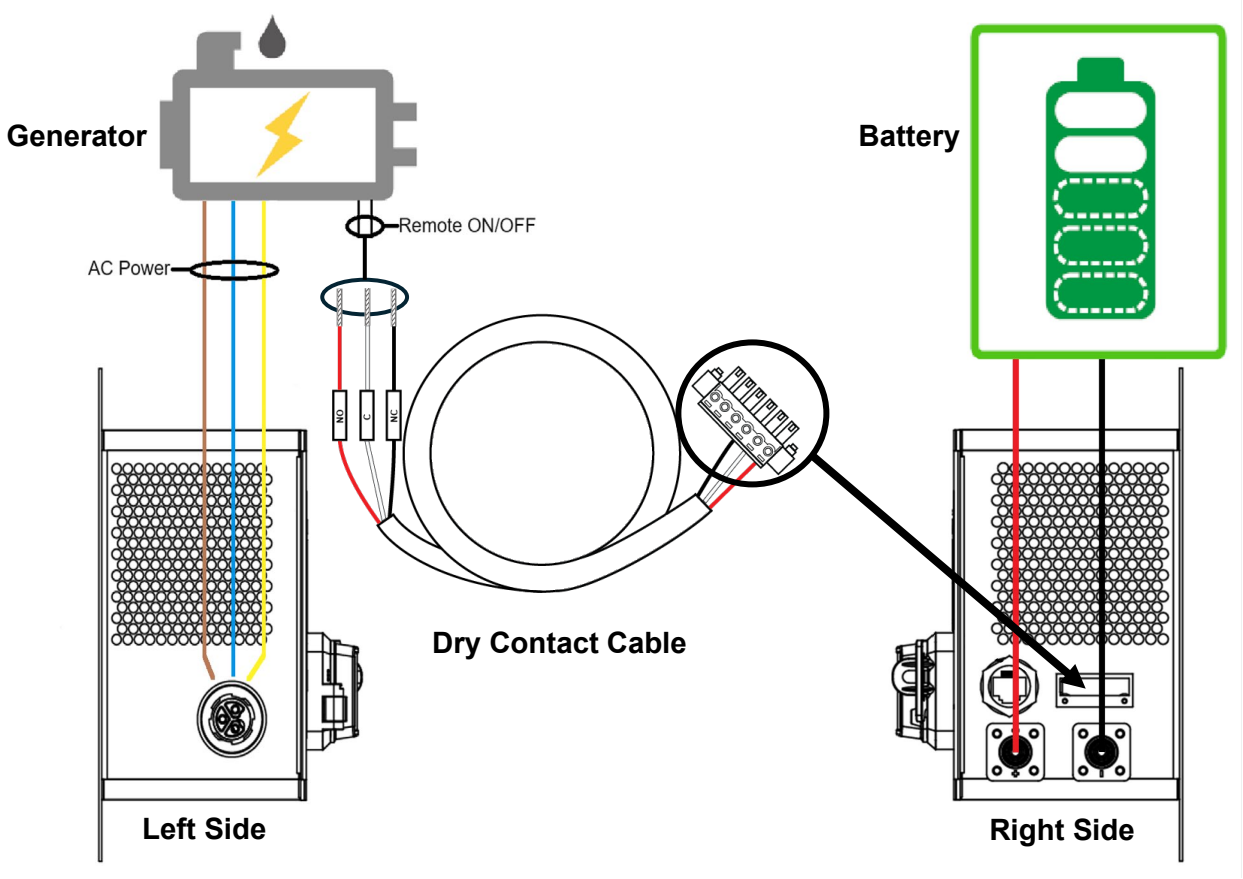
The EG4® Chargeverter Plus dry contacts are specifically designed to interface with a generator. The charger AC input is simply plugged into the 240 VAC output generator, and the dry contacts are used to start/stop the generator based on user defined thresholds of battery SOC or voltage. During this mode of operation, the charger is powered from the battery's DC voltage.

The following diagram shows the necessary connections to use the generator and the charger to charge the batteries. When the battery SOC or voltage (*) reaches the user defined 'ON' threshold (SOC Start and Voltage Start, respectively), the Normally Open (NO) dry contacts will close, signaling the generator to turn ON. Once the battery SOC or voltage reaches the user defined 'OFF' threshold (SOC Stop and Voltage Stop, respectively) the Normally Open (NO) dry contacts will open, signaling the generator to turn OFF.

**NOTE**

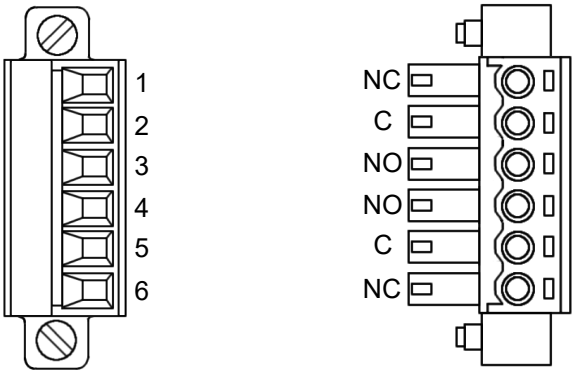
**If charger-to-battery communications are being used,** SOC will be used as the charging ON/OFF thresholds (SOC Start and SOC Stop, respectively). If charger-to-battery communications are not being used, voltage will be used as the charging ON/OFF thresholds (Voltage Start and Voltage Stop, respectively).

The diagrams in this section are for illustrative purposes only. Final wiring diagrams should be generated by a licensed professional.



## 8.5 DRY CONTACT DESCRIPTION

There are dry contacts available on the right side of the EG4® Chargeverter Plus to control a generator. The dry contacts contain 6 pins used in pairs to provide a Normally Open (NO) signal, a Common (C), and a Normally Closed (NC) signal. The jack and plug pin locations are identified in the images below and the wiring and pinout details for the dry contact cable included with the charger are identified in the table below.




| DRY CONTACT PORT PINOUT | | | | | | |
|---|---|---|---|---|---|---|
| Pair | Pair One | | | Pair Two | | |
| PIN # | 1 | 2 | 3 | 4 | 5 | 6 |
| Signal | NC | C | NO | NO | C | NC |

These signals can be used to control a generator based on user defined thresholds of battery SOC or voltage. If the charger has communication with the battery, SOC is the priority and is available for charging start/stop thresholds. If there is no communication between the charger and battery, SOC readings are not available, and voltage is used as the charging start/stop threshold. See Section 8.4 for more information on dry contact use for generator control.

| UNIT STATUS* | BATTERY CONDITION | DRY CONTACT PORT | |
|---|---|---|---|
| | | NO & C** | NC & C** |
| Power OFF | Unit is OFF | Open | Closed |
| Power ON<br>Charger to Battery Comms NOT used (No SOC) | Battery Voltage < Voltage Start | Closed (Generator ON) | Open |
| | Battery Voltage > Voltage Stop | Open (Generator OFF) | Closed |
| | Voltage Start < Battery Voltage < Voltage Stop | Closed while charging (Generator ON)<br>Open while discharging (Generator OFF) | Open while charging<br>Closed while discharging |

*Power provided to unit with AC power (120, 208, or 240 VAC) or DC power from batteries (~48 VDC)
**NC = Normally Closed, NO = Normally Open, C = Common

The following table shows the Generator ON/OFF status based on the user defined thresholds and the Normally Open (NO) dry contacts on the Chargeverter Plus. SOC is used if charger to battery communications are being used. Voltage is used if SOC is not available.

| BATTERY CONDITION | NO CONTACT (REFERENCE TO COMMON) | GENERATOR STATUS |
|---|---|---|
| Battery SOC < SOC Start | Closed | ON |
| Battery SOC > SOC Stop | Open | OFF |
| SOC Start < Battery SOC < SOC Stop | Closed while charging<br>Open while discharging | ON while charging<br>OFF while discharging |
| Battery Voltage < Voltage Start | Closed | ON |
| Battery Voltage > Voltage Stop | Open | OFF |
| Voltage Start < Battery Voltage < Voltage Stop | Closed while charging<br>Open while discharging | ON while charging<br>OFF while discharging |

| BATTERY WORKING STATUS | NO CONTACT (REFERENCE TO COMMON) | GENERATOR STATUS |
|---|---|---|
| 0: Standby Mode | Open | OFF |
| 1: Preheating State of Generator | Closed | ON |
| 2: Battery Charging State | Closed | ON |
| 3: Cooling State of Generator | Open | OFF |
| 4: Discharge State | Open | OFF |
| 5: PSU Fault State | Open | OFF |

# 9. TROUBLESHOOTING AND MAINTENANCE

## 9.1 TROUBLESHOOTING

When the EG4® Chargeverter Plus has troubleshooting or fault, there will be no alarms or sound. It will appear on the main display letting the end-user know what the issue is.

The table below shows the issues and how to troubleshoot them:

### ISSUES AND SOLUTIONS:

| ISSUE | ACTION |
|---|---|
| No power from AC | 1. Verify the breaker to the outlet the Chargeverter is connected to.<br>2. Verify that all connections are secure and tight.<br>3. Verify that the power cord is in good condition and properly secured. |
| No power from DC | Verify that the battery cables have not been crossed. |
| No communication to battery | 1. Verify that the cable is plugged into the CAN port.<br>2. Verify cable has the correct pinout (see section 8.5). |
| No Amperage | 1. Verify that the breaker on the Chargeverter Plus is in the “OPEN” position.<br>2. Check settings. Verify that the SOC Start and Stop are correct.<br>3. SOC Start is more than the current battery charge.<br>4. Refer to “No Communication to Battery” for more actions. If communication with the battery is lost, the system will not utilize the State of Charge (SoC) settings and may either fail to start or attempt to operate using open-loop voltage settings. |
| No Voltage | 1. Check settings. Verify that the SOC Start and Stop are correct.<br>2. SOC Start is more than the current battery charge.<br>3. Verify the power cable are secured properly and the battery breaker is in the OPEN position.<br>**Note:** If set up correctly, resting voltage will be seen even if the charger isn’t charging. |
| Dry Contact Communication | Verify that the pinouts to the cable are correct (see section 8.5). |

**NOTE**

**If any of the warnings or faults** from both tables persist, please contact the distributor for additional troubleshooting steps.

# 10. MAINTENANCE

EG4® Chargeverter Plus must be properly maintained to increase longevity and consistency. Follow the steps below to help prevent component damage/deterioration.

| ITEM | MAINTENANCE INTERVAL | MAINTENANCE SOLUTION |
|---|---|---|
| Generator | Every month | Inspect the generator every month and verify that it is tuned up, cables are not loose, and parameters are set correct.<br>**Note:** If using a generator, verify it is maintained per the manufacturer's manual and standards before inspection. |
| Chargeverter Plus | Every 1 – 3 months | Inspect the Chargeverter Plus every month to confirm that dust is not covering the filter on the fan vents. If there is, shut down the Chargeverter and clear the dust.<br>**Note:** See section 10.1 on how to clean the filter. |
| | Every 3 months | Inspect the Chargeverter Plus every 3 months to verify the operating parameters are normal, and there is no abnormal heating or noise from any components in the system. |
| | Every 6 months | Inspect the Chargeverter Plus every 6 months to check for any damaged cables, accessories, or terminals. |

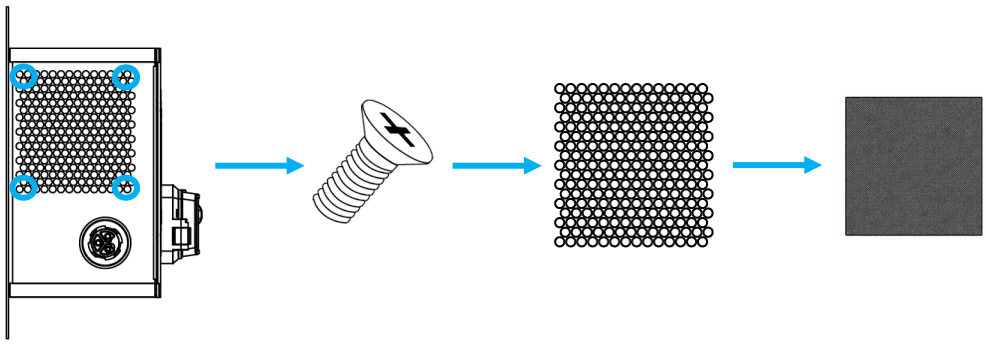
**NOTE**

**If unable to identify the source** of any potential abnormal operations, contact the distributor's technical support team for additional information.

## 10.1 CLEANING THE FILTERS

Follow the steps below to properly clean the filters in the Chargeverter Plus.

1. Remove the four screws from the left side vent to expose the filter and set these screws and vent to the side.
2. Remove the filter and clean it using warm water and mild soap. Verify the filter is completely dry before reinstalling.
3. Once dry, reinstall the filter and place the vent cover back on using the four screws from step 1.
4. Repeat all steps for the right side vent.



# 11. 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.

# 12. STORAGE

Please follow these instructions for the safe storage of the unit to maintain the longevity of the Chargeverter Plus, if choosing not to install the product immediately after purchasing or unpacking the box.

There are a few steps that can be taken to ensure that the Chargeverter Plus are stored safely and in a state that will ensure they are not damaged during storage. The steps are detailed below.

## 12.1 ENVIRONMENTAL FACTORS

The environment the Chargeverter Plus is stored in can greatly affect the health of the Chargeverter Plus. **For best results,** the temperature should range between -40°F and 158°F (-40°C and 70°C). Mount the Chargeverter Plus in a location where it is not exposed to direct rain, standing water and ***ensure the Chargeverter Plus is mounted on non-combustible material. –***
***Keep the Chargeverter Plus away from direct sunlight.***

## NOTES

EG4

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