



LITHIUM IRON PHOSPHATE (LFP)

BATTERY INSTALLATION MANUAL

GIV-BAT-3.4-HV, GIV-BAT-10.2-HV, GIV-BAT-13.6-HV, GIV-BAT-17.0-HV, GIV-BAT-20.4-HV

Stackable Batteries Overview

SPECIFICATIONS



Model: GIV-BAT-17.0-HV

STACKABLE BATTERY

Customised power, to your property

Our stackable battery is designed to work alongside the GivEnergy 3-Phase Hybrid Inverter.

High voltage BMS allows for greater charge and discharge power running at a lower current, providing higher efficiency than our lesser voltage range.

Specifications

Max. Dimensions (20.4kWh)
1085H x 380D x 480W (mm)

Max. Weight
226.3 Kg

Rate of Charge/Discharge
0.5C

Max. Capacity
20.4 kWh / 51 Ah

Warranty
12 years

Environmental category
Indoor and outdoor, indoor installation must follow AS/NZS 5139:2019, please read it before doing any installation.

Max. Current
25A

Voltage
187 - 520 VDC

Operating temperature
Charge: 0°C - 55°
Discharge: -20°C - 55°

Max. Voltage
520VDC

Country of manufacture
China

Depth of Discharge
85%

BOX CONTENTS

GIV-BAT HV Kit

Item	Qty
Base Plate	1
HV Box	1
Cable Inverter to HV Box	1
Template / Positioning Part	1
Wall Bolts	2
M6 Screws (securing battery stack)	2
Plug to Plug Cable with Grommet	1

GIV-BAT-3.4-HV (3.4kWh)

Item	Qty
Battery	1
Giv-Bat HV Kit	2

GIV-BAT-10.2-HV (10.2kWh)

Item	Qty
Battery	3
Giv-Bat HV Kit	1
Screws	2

GIV-BAT-17.0-HV (17.0kWh)

Item	Qty
Battery	5
Giv-Bat HV Kit	1
Screws	2

GIV-BAT-13.6-HV (13.6kWh)

Item	Qty
Battery	4
Giv-Bat HV Kit	1
Screws	2

GIV-BAT-20.0-HV (20.0kWh)

Item	Qty
Battery	6
Giv-Bat HV Kit	1
Screws	2

Please note: a minimum of 3 x 3.4 battery packs are needed per inverter.

GENERAL INFORMATION

Introduction

All information contained in this booklet refers to the assembly, installation, commissioning, and maintenance of the stackable batteries. Please retain this manual for future reference.

Legal Disclaimer: This document is the property of GivEnergy, reproduction is prohibited.

Installation Requirements

Installation of all GivEnergy equipment must be carried out by a **SAA and GivEnergy approved installer**.

HV Unit Information

The stackable batteries are designed to work with a GivEnergy 3-Phase Inverter.

Storing the Battery

The units must be stored in their original packaging at temperatures between -30°C - 60°C.

Packaging Contents

When unpacking, please check the following:

- There are no missing accessories from the packaging list
- The model and specification of the battery's nameplate match the order specifications

If any damaged or missing parts are found, please contact GivEnergy on **1300 GIVENERGY (1300 448 363)** or email

info.aus@givenergy.com immediately. Returns must be provided in original or equivalent packaging. The

Disposing of Packaging

Recycle as much as possible and dispose of waste in the correct place.

Disposing of Hardware at the end of its lifetime

The units must be safely removed by a qualified professional. Local regulations must be adhered to and disposed of at the correct recycling place.

SYSTEM APPEARANCE

Item	Item Name
A	Indicator
B	ON/OFF Switch
C	HV Box
D	Battery connection point
E	Battery packs
F	Base plate
G	Adjustable feet
H	Securing screws
I	Earthing point
J	Battery connection point
K	DC breaker



SAFETY AND INSTALLATION

Safety Instructions

Extra care and attention must be taken when installing and maintaining any GivEnergy equipment. The system is capable of lethal voltages, even when disconnected

Inspect before install: Do not use the battery if there are any deformities, such as bulging or leakages.

- Avoid Hazardous Environments: keep it away from flammable materials.
- Moisture Precautions: If moisture has entered the system, do not install or operate it.
- Dry Hands Only: Avoid touching the system with wet hands.
- Vertically only: Do not install the product horizontally.
- Care physical damage on the product: Do not puncture or throw, prevent from any physical impact as possible.
- No repairs: Do not attempt to repair the product yourself, please seek help from approved installers and manufacturer.
- Weight Restrictions: Do not place heavy items on top of the product.

➤ If you suspect something is wrong with the battery, contact GivEnergy on **1300 GIVENERGY (1300 448 363)** or email **info.aus@givenergy.com**.

➤ If any damaged or missing parts are found, please contact GivEnergy on **1300 GIVENERGY (1300 448 363)** or email **info.aus@givenergy.com** immediately. Returns must be provided in original or equivalent

Installation Instructions and Precautions

- All electrical installations must be carried out by a qualified and registered electrician and in accordance with the local wiring regulations
- Ensure batteries are always fixed to the wall by the top box, even when the weight of the product is on the floor
- All GivEnergy equipment must be installed by a **GivEnergy approved installer**
- Externally mounted batteries must always be wall mounted above the frost-line or a minimum of 50mm
- An earth bond must be installed between all batteries and inverters
- Do not remove the top covers unless instructed by the GivEnergy support team
- Only GivEnergy supplied battery cables must be used



Do not use the battery if there are any deformities, such as bulging or leakages



Do not puncture the battery



Do not throw the battery or use forceful impact



Do not attempt to repair the battery yourself (please call your Approved Installer)

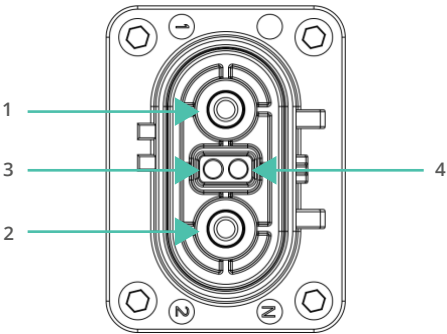


The battery must be installed vertically, never install horizontally, avoid tilting the unit



Do not install in direct sunlight

Battery Terminal Introductions



NO	Terminal Description
1	The positive pole, connected to an inverter or a parallel battery. Using
2	The negative pole, connected to an inverter or a parallel battery.
3	Built-in communication terminals, CANBUS, CAN-L
4	Built-in communication terminals, CANBUS, CAN-H

Stackable Batteries

PRODUCT HANDLING

HANDLING GUIDE

This guide provides step-by-step instructions for the proper handling, transportation, and unpacking of the GivEnergy stackable batteries. It also includes guidelines for dealing with packaging damage should it occur during transit. Please follow these instructions carefully to ensure the safety of the product and the installer.

Packing size



Packing weight

 **203.0± 0.5 KG**

Pallet presentation

- ✔ The GivEnergy stackable batteries is presented on pallets
- ✔ Each pallet contains 16 units
- ✔ The batteries are arranged in 4 PCS per layer, and the pallets can be stacked 4 layers high

Stacking pallets

- ✔ When stacking pallets, ensure that the bottom pallet is on a flat, stable surface
- ✔ Do not stack more pallets than recommended to prevent damage to the lower batteries and to maintain stability during transport

Safe unloading of the pallets

- ✔ Use appropriate lifting equipment, such as a forklift or pallet jack, to safely unload pallets from the delivery vehicle
- ✔ Ensure that the unloading area is clear of obstacles and is on a level surface
- ✔ Exercise caution when removing pallets from the vehicle to avoid injury or damage to the batteries

Safe unloading of the pallets

- ✔ Avoid dropping or mishandling the boxes, as this can lead to damage to the batteries
- ✔ Examine the box for any symbols or labels, follow these instructions carefully to ensure the proper orientation and handling of the product delivery vehicle:



Class 9
product



This way up



Handle
with care



Keep dry



Recycle

Safe transport in installer vehicles

- ✔ When transporting the batteries in an installer's vehicle, use proper securing methods, such as straps or cargo nets, to prevent movement and damage during transit
- ✔ Ensure that the batteries are positioned securely to avoid shifting while driving

Safe unloading from the van

- ✔ When unloading the product from the van, use appropriate lifting techniques to prevent strain or injury
- ✔ If possible, use a ramp or a liftgate to facilitate the unloading process

Stackable Batteries Installation

Unpacking the product

- When unpacking the product, do so in a clean and dry area
- Use appropriate tools, such as box cutters, to carefully open the packaging, be cautious not to damage the batteries inside
- Inspect the product for any visible signs of damage or irregularities. If damage is observed, document it and contact the manufacturer or supplier immediately

Disposal of packaging

- Dispose of the packaging materials responsibly. Recycle cardboard and other recyclable materials as applicable
- Follow local regulations for the disposal of non-recyclable materials
- Do not leave packaging materials in public areas or unauthorised dumping locations

Handling packaging damage

1. Document damage

Before opening the packaging, take photos of any visible damage to the exterior of the boxes

2. Inspect the batteries

Carefully unpack the product and inspect for any internal damage or defects

3. Contact the supplier

If damage is found, contact the supplier or manufacturer immediately to report the issue and provide them with the documentation of the damage

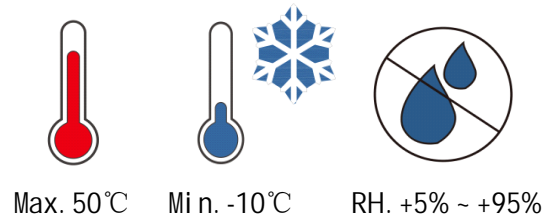
4. Follow supplier's instructions

Follow the supplier's instructions regarding the return, replacement, or repair of the damaged batteries

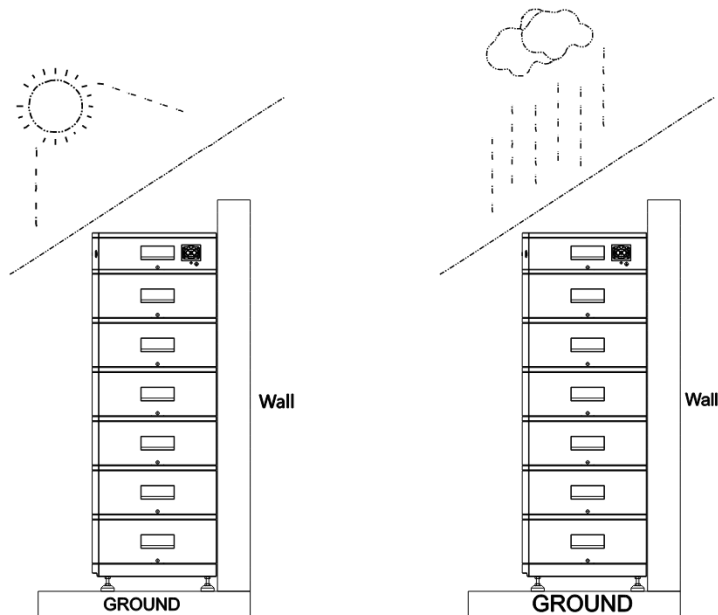
Remember, proper handling and care during the transportation and unpacking process are essential to ensure the safe and efficient installation of your GivEnergy stackable batteries. If you have any questions or concerns, don't hesitate to contact the supplier or manufacturer for assistance.

INSTALLATION ENVIRONMENT

The ambient temperature for the installation of the battery system should be above -10°C, below 50°C, and the humidity should be between 5% and 95%.



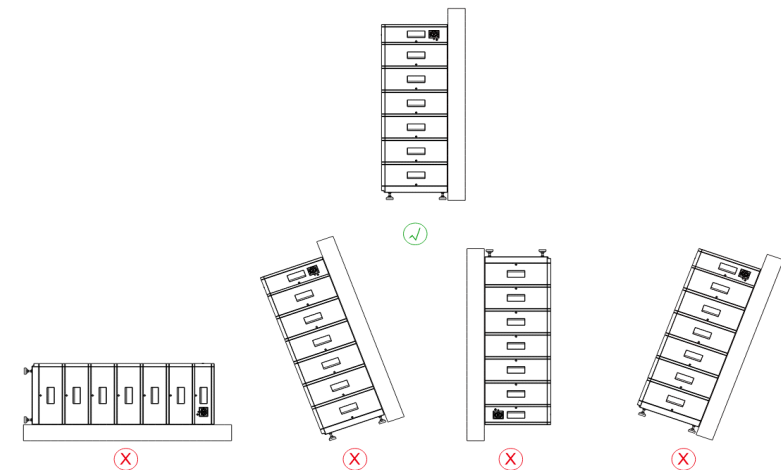
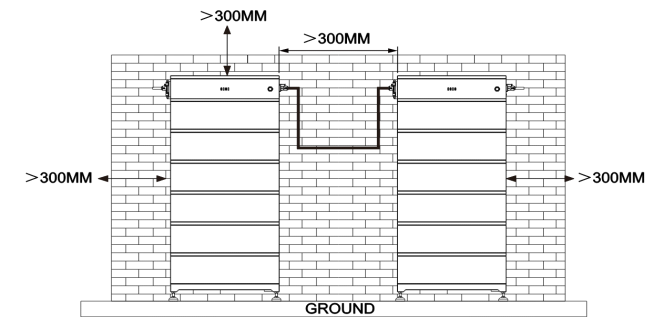
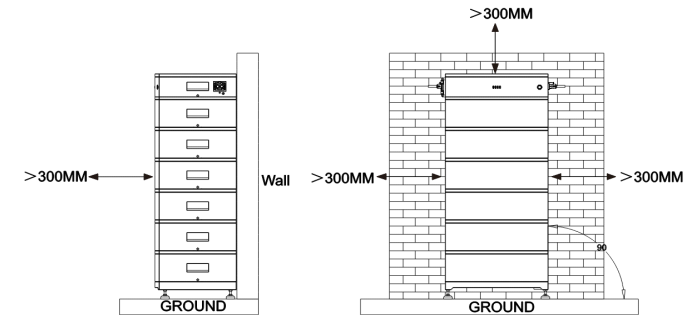
For outdoor installation, a rain cover should be installed above the battery. It should be installed in a place that avoids direct sunlight and maintains ventilation.



INSTALLATION ENVIRONMENT

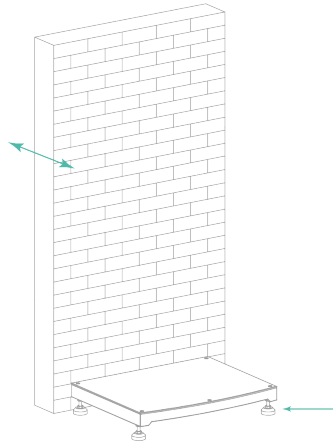
Basic installation requirements

There must be adequate clearance around the batteries to allow for heat dissipation. The diagram below illustrates the space required around the inverter.

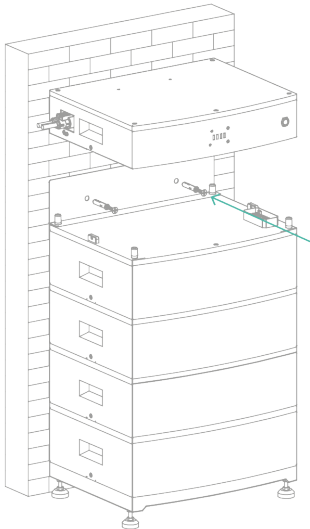


STEP-BY-STEP INSTALLATION

1. Place the base plate down as close to the wall as possible. The base plate needs to be flush to the wall. Cut out the skirting board if in the way.

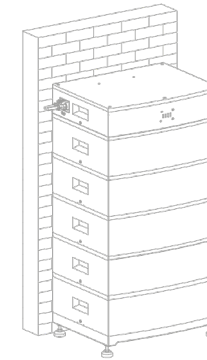


2. Stack the battery modules on the base making sure they are flush to the wall. Adjust the feet to make sure they are flush to the wall and level left and right. Once all of the battery packs are in place use the template to determine the location of the wall bolts. Ensure the template is level and completely flush to the wall.

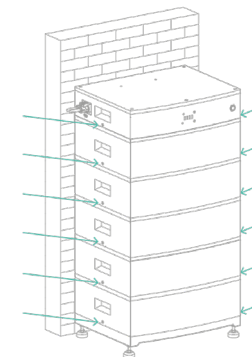


STEP-BY-STEP INSTALLATION

3. Use the template/positioning part to mark holes for the 2 bolts for the HV box.
4. Drill two holes at the marked points to suit the fixings. Install and tighten the two expanding bolts, leaving a 3mm gap between the bolt head and the wall to secure the HV Box.
5. Make sure the isolator is switched off before putting on the HV box.
6. Place the HV box on top of the batteries.

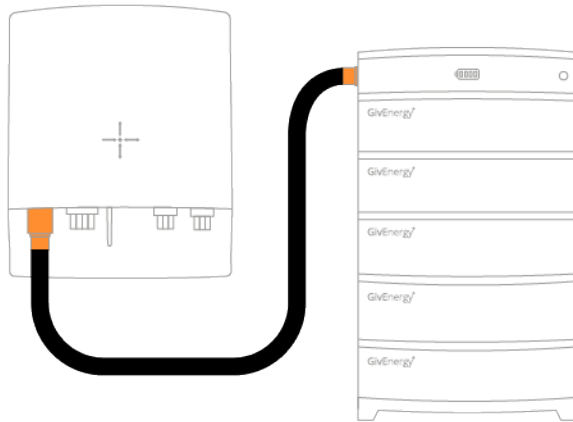


7. Connect all of the packs together (including base plate and HV Box) using the supplied screws on both sides.

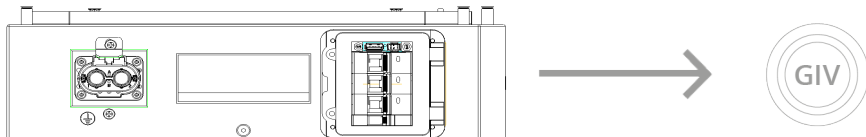


CONNECTING THE BATTERY TO THE INVERTER

1. Connect the cable to the battery and the other end to the inverter. Ensure that the grommated end of the cable is the inverter end. Push the plug until there is a click, lock in place using the red tab.



2. Make sure there is one cable (under local legislation, 6mm² earth cable suggested) running from one of the earthing points on the bottom of the inverter to the earthing point on the stackable battery.
3. When ready to power up the unit, close the DC breaker on the battery. Push and hold the button for 2 seconds to switch on the battery stack. The lights should then illuminate. The system is now ready for commissioning.



GROUND CONNECTION

Ground wiring

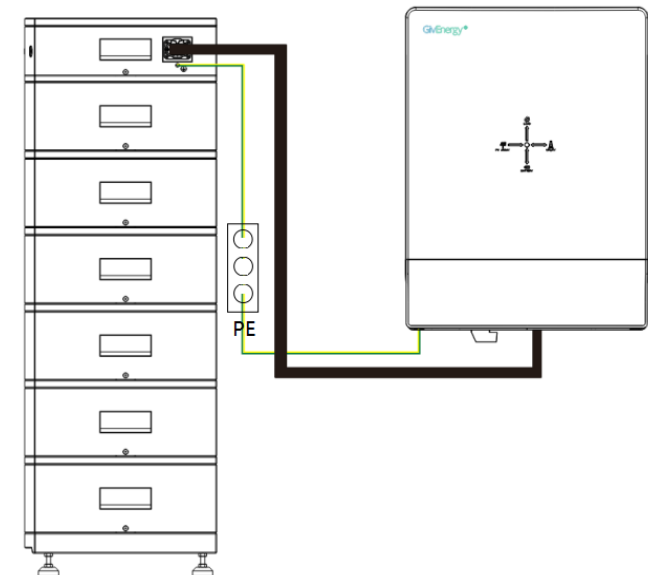
The battery is not equipped with a grounding wire, and a grounding wire needs to be made by oneself during installation.

The schematic diagram of the grounding wire is as follows:

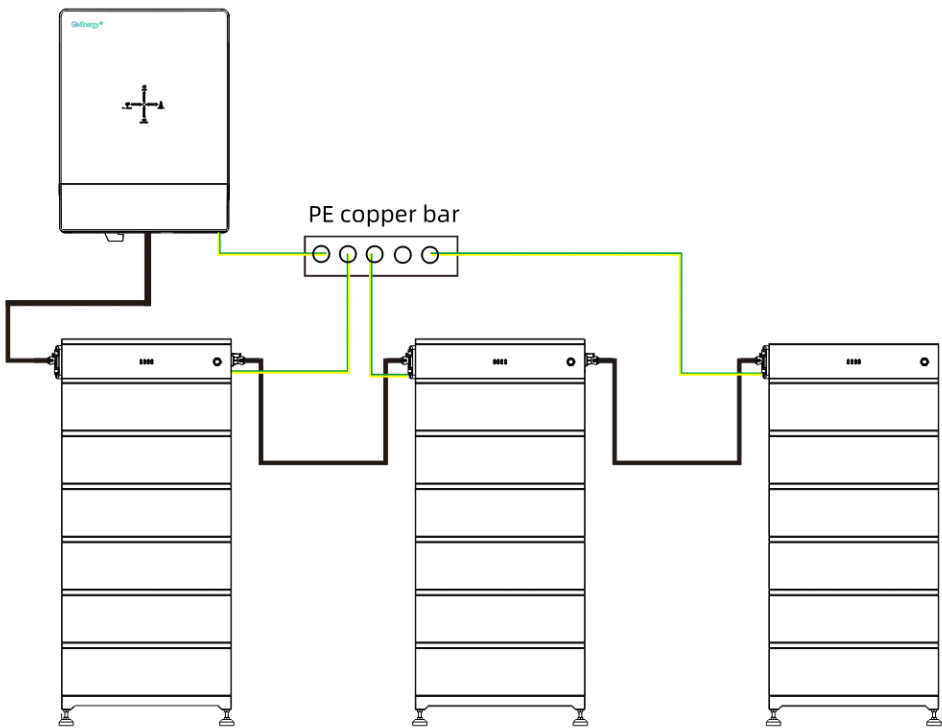


Notes: The diameter of the ground wire should not be less than 10AWG.

Single battery wiring diagram



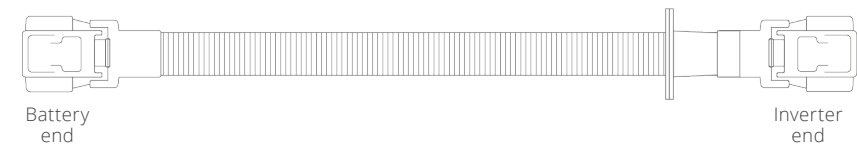
Multiple battery parallel wiring diagram



One type of cables exist for connection to the stackable battery:

Plug to plug battery cable (Built in comms cable)

Instructions on how to install the cable are also on the plug itself.

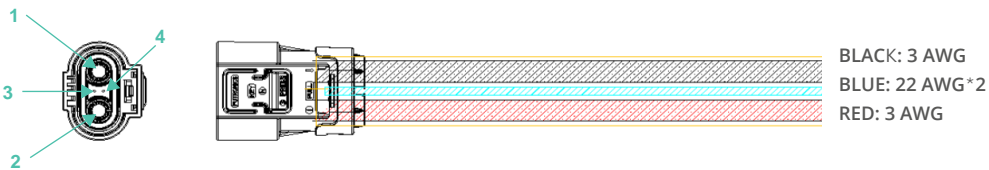


IMPORTANT

All stackable battery cables are included with the product.

Beware of inverter end and battery end.

Battery Cable Terminal Introductions



NO	Terminal Description
1	The negative pole, connected to an inverter or a parallel battery. Using
2	The positive pole, connected to an inverter or a parallel battery.
3	Built-in communication terminals, CANBUS, CAN-L
4	Built-in communication terminals, CANBUS, CAN-H

Start-Up Procedure

1. Connect the AC circuit breaker, ensure that the system is powered.
2. Check to see that the status light in the centre is flashing
3. Turn on the PV switch
4. The PV indicator should light up on the inverter (if the sun is shining)
5. Turn on the battery isolator
6. Push the button on the front of the battery until the LED lights up
7. Wait for the relays to start up
8. Make sure that the battery has a green status
9. The battery indicator on the inverter should light up
10. The system is ready to be commissioned as soon as it is powered up. Commission using the portal/app. Ensure that the grid power is reading identical to that of the mid approved meter (this can be found on the screen of the meter).

Shutdown Procedure

1. Turn off the battery by pressing the button on the front until lights have gone out
2. Switch off the battery isolator to prevent it from being reactivated
3. Turn off the PV switch
4. Disconnect the AC circuit breaker to prevent it from being reactivated
5. Wait until all LEDs have gone out. The inverter is now shut down

Notes: Battery only has DC connections, no AC connection exists.

All systems must be commissioned to ensure correct battery and meter communications, as well as connection to the online portal.

Please ensure the following conditions are met before commissioning:

The inverter is connected to the internet and the connection guide has been followed correctly.

Check that all the wires are securely connected before the battery isolator and the AC isolator is switched on. You MUST set the parameters of the battery according to your battery system.

Accessing the Commissioning Portal

Sign into the online portal at <https://portal.givenergy.cloud> with your GivEnergy Engineer login. If you are a first time user, and you do not have an account or Engineer login, please consult your supplier to get this set up.

✔ To download a fully illustrated guide, please visit our Knowledge Base at www.givenergy.co.uk

Note: If commissioning is incomplete, leave the battery off to avoid it going flat. Without commissioning, the system may not operate correctly.

CLEARANCE AND MAINTENANCE

Maintenance

When maintaining and cleaning the stackable battery, **the whole system must be powered down**. Clean with a soft cloth with a light detergent if needed.

To ensure your stackable battery operates optimally at all times, annual maintenance checks need to be carried out. Check for visible damage or discolouration of the switch, and that the cables are intact. Please ensure that the top of the stackable battery is not obstructed in any way.

We recommend operating the rotary isolator from ON to OFF 5 times, this cleans the contacts of the rotary switch.

Routine Maintenance

Maintenance should be done by SAA approved technicians.

Maintenance Plan

- Check if wire connection loose.
- Check if cables aged/damaged.
- Check if cable insulating ribbon drop.
- Check if cable terminal has any overheat sign.
- Check if ground connection is well.

a. Operating Environment

(Every half year)

Carefully observe whether the battery system equipment is ineffective or damaged;

When the system is running, listen to any part of the system for abnormal noise;

Check whether the voltage, temperature and other parameters of the battery and other equipment parameters are normal during system operation;

b. Equipment Cleaning

(Every six months to one year, depending on the site environment and dust content, etc.)

Ensure that the ground is clean and tidy, keep the maintenance access route unblocked, and ensure that the warning and guiding signs are clear and intact. Monitor the temperature of the battery module and clean the battery module if necessary.

CLEARANCE AND MAINTENANCE

c. Cable, Terminal and Equipment Inspection

(Every six months to one year)

- Check if the cable connection is loose.
- Check whether the cable is aging or damaged.
- Check whether the conduit of the cable has fallen off.
- Check if the cable terminal position has any signs of overheating.
- Check whether the management system of the system equipment, monitoring system and other related equipment are invalid or damaged.
- Check that the grounding of the equipment is good and the grounding resistance is less than 10 ohms.

d. Daily maintenance instructions for customers

- Visual inspection to ensure that item is free from damage, clutter (not being used as a shelf for example), infestation
- Ensure that the cable and cables appear to be in good condition and properly connected.
- Ensure that the cover for the MCB is closed.
- If cleaning ensure you follow the shutdown procedure on both the battery and inverter and use only warm water (no chemicals) and non abrasive cloths / sponges to wipe down the product

Notes

After the equipment are out of operation, the following notes should be paid attention to while maintaining:

- Related safety standards and specifications should be followed in operation and maintenance.
- Disconnect all the electrical connections so that the equipment would not be powered on.
- Wait at least 5 minutes after disconnection in case that the residual voltage of capacitors down to safe voltage. Use a multimeter to ensure the equipment is completely uncharged.
- The equipment should be repaired by GivEnergy Staff and it is strictly forbidden for maintenance staff to open equipment on their own.
- Appropriate protective measures should be taken while maintaining, such as insulated gloves, shoes, and anti-noise ear plugs.
- Life is priceless. Make sure no one would get hurt first.
- The batteries need to be charged to 30%~50%SOC rate when the whole system is static (that is, the batteries has not been charged for two weeks or longer) for a long time, in case of over discharge.

DIP SWITCHES AND STATUS INDICATORS

Status indicators



What does the STATUS light mean?

OFF	Shut down
Green	Battery Energy. Flicker - Battery charge
Green light	System boot
Red	System failure
Sound	Firmware update or a fault (please consult the app or portal)

PARAMETER AND MODEL COMPARISON TABLE

Parameter type	GIV-BAT 3.4-HV	GIV-BAT 10.8-HV	GIV-BAT 13.6-HV	GIV-BAT 17.0-HV	GIV-BAT 20.4-HV
Height above ground (L)	220mm	575mm	725mm	875mm	1025mm
High Voltage (UH)	87.6Vd.c	262.8Vd.c	350.4Vd.c	438.0Vd.c	525.6Vd.c
Low Voltage (UL)	67.2Vd.c	201.6Vd.c	268.8Vd.c	336.0Vd.c	403.2Vd.c
Measuring Voltage (UM1)	79~81Vd.c	237~243Vd.c	316~324Vd.c	395~405Vd.c	474~486Vd.c
Measuring Voltage (UM2)	72Vd.c	216Vd.c	288Vd.c	360Vd.c	432Vd.c

COMMISSIONING AND DECOMMISSIONING A SYSTEM

Commissioning Overview

All systems must be commissioned to ensure correct battery and meter communications, as well as connection to the online portal.

Note: Without commissioning, the system may not operate correctly.

Check that all the wires are securely connected before the battery breaker and the AC isolator is switched on. You **MUST** set the parameters of the battery according to your battery system.

When commissioning the system, please use the **GivEnergy app** available from the **Google Play/App Store** and refer to our **GivEnergy Portal and App guide** found on our **Resource Hub** at **www.givenergy.co.uk**.

When you start a commission, you will be prompted to input the grid code from a drop down list. For compliance with AS/NZS 4777.2:2020, please select from Australia A, B, C or New Zealand. Please confirm with your local grid operator on which Region to select.

Accessing the Commissioning Portal/GivEnergy app

Either sign into the online portal at **<https://portal.givenergy.cloud>**, or the GivEnergy app with your GivEnergy Engineer login. If you are a first time user, and you do not have an account or Engineer login, please consult your supplier to get this set up.

✔ To download a fully illustrated guide, please visit our Resource Hub at **www.givenergy.co.uk**

Setting up the internet connection

Sign into the **GivEnergy app** and follow the in-app instructions.

End user account creation

To set up GivEnergy account the end user will provide their email address to the installer/installation company. Upon successful commission of the equipment the end user will be emailed with a prompt to set up their account and gain access to the portal. Upon signing in to the portal for the first time they will go through a walk-through explaining how to navigate the portal and mobile app.

Decommissioning the system

To decommission the system please contact GivEnergy either by phone on **1300 GIVENERGY (1300 448 363)** or email at **info.aus@givenergy.com**.

For compliance with AS/NZS 4777.2:2020, please section from Australia A, B, C or New Zealand. Please confirm with your local grid operator on which Region to select.

UNINSTALLING A SYSTEM

Uninstalling the battery

1. Follow the shut-down procedure
2. Remove all cables
3. Remove the bolts securing the HV box
4. Lift the HV box
5. Lift off all of the battery packs
6. Remove the base plate

The stackable battery is covered by a 10-year warranty. Please refer to the warranty document for further specifications.

Products Covered



Stackable Battery | HV 3.4/ 10.2/ 13.6/ 17.0/ 20.4
10 years

Please contact us in time if there are any conditions that could not be explained in the manual.

GivEnergy Australia Pty Ltd

Phone: +61 1300 GIVENERGY (1300 448 363)

Email: info.aus@givenergy.com

Address: Level 1, 1 Queens Road, Melbourne, VIC 3004

Alternatively, visit our troubleshooting guide on the knowledge base at www.givenergy.co.uk.

No.	First-level content	Secondary content	BCU lamp policy				Remark
			Led1	led2	led3	led4	
1	Bootloader	/	0.25	0.5	0.75	1	
2	Software upgrade	/					
3	Precharge mode	/	Horse race lamp				
4	Charging	0%-25.0% SOC					Blinking green indicates charging.
		25.1%-50.0% SOC					
		50.1%-75.0% SOC					
		75.1%-100% SOC					
5	Discharging	100%-75.1%					
		75.0%-50.1%					
		50.0%-25.1%					
		25.0%-0%					
6	Fault	Host machine					Fault. The yellow light indicates the address.
		Slave 1					
		Slave 2					
		Slave 3					
7	Power-off mode	/					
8	Addressing mode	/					
9	System protection failure	Cell charge overvoltage protection					When multiple cluster batteries are combined, the LDE of the corresponding address changes from red light to yellow light.
		Battery chargeover voltage protection					
		Overcharge and over discharge protection					
		Cell discharge undervoltage protection					
		battery discharge undervoltage protection					
		Discharge short circuit					
		Voltage sampling fault					
		Charge/ Discharge overcurrent protection					

● ON ● OFF ○ Blinking

Safety Data Sheet

Issue Date: 12 November 2024	Revision Date: -	Version: V01
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SECTION 1 - IDENTIFICATION

Product Identifier

Product Name: Rechargeable Li-ion Battery
Models: GIV-BAT-3.4-HV

Other Means of Identification

SDS # SDS001
Synonyms: Lithium Iron Phosphate(LiFePO4, LFP)
Proper Shipping Name(ADG Code): Lithium-ion Battery
UN/ID No: UN3480

Recommended Use of the Chemical and Restrictions on Use

Recommended Use Energy Storage; Batter Packs

Details of Manufacturer or Importer

GivEnergy Australia Pty Ltd
Level 1, 1 Queens Road,
Melbourne VIC 3004
Australia

Emergency Phone Number

Emergency Telephone 1300 448 363(Australia)

SECTION 2 - HAZARDS IDENTIFICATION

Classification of the hazardous chemical

EXEMPT FROM HAZARD CLASSES AND CATEGORIES ACCORDING TO AUSTRALIAN GHS.



Other hazards

This product is a Lithium Iron Phosphate Battery with certified compliance under the UN Recommendations on Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3. For the battery cell, chemical materials are stored in a hermetically sealed metal case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage. However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by misuse, the gas release vent will be opened. The battery cell case might be breached at the extreme condition, and hazardous materials might be released in such case. Moreover, if heated strongly by the surrounding fire, acrid or harmful fume may be emitted.

SECTION 3 - COMPOSITION & INFORMATION ON INGREDIENTS

Classification of the substance or mixture: ☐ substance ☒ mixture

Chemical Composition	CAS No.	Weight (%)
LiFePO4	15365-14-7	24
C	7782-42-5	10-30
LiPF6	21324-40-3	23
Copper	7440-50-8	7-13
Aluminum	7429-90-5	5-10
Ni	7440-02-0	1-5

SECTION 4 – First Aid Measures

After eye contact: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
After skin contact: Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.
After inhalation: Remove from exposure and move to fresh air immediately. Use oxygen if available.
After ingestion: Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

SECTION 5 – Fire Fighting Measures

Extinguishing Media: Hydrocarbon surfactant, CO2.

Special Fire-Fighting Procedures: Self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: Cell may vent when subject to excessive heat-exposing battery contents.

Hazardous Combustion Products: Carbon monoxide, carbon dioxide, lithium oxide fumes.

SECTION 6 – Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

If the battery is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area and allow the vapors to dissipate. Avoid skin and eyes contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerated. If leakage of the battery happens, liquid could be absorbed by using sand, earth or other inert substance and contaminated area should be ventilated meantime.

Environment precautions:

Do not allow product to reach sewage system or any water source.

Inform respective authorities in case of seepage into water course of sewage system.

Do not allow to enter sewers/ surface or ground water.

Methods and material for containment and cleaning up:

If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules. Avoid leached substances to get into the earth, canalization or waters.

SECTION 7 – Handling and Storage

Handling: The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container.

Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire.

Do not crush or puncture the battery, or immerse in liquids.

Storage: Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided.

Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Other Precautions: The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

SECTION 8 – Exposure Controls, Personal Protection

Engineering control: Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor.

Personal Protective Equipment:

Respiratory Protection: Not necessary under conditions of normal.

Skin and body Protection: Not necessary under conditions of normal. Wear suitable protective clothing and gloves if handling an open or leaking battery.


Hand protection: Wear suitable protective clothing and gloves if handling an open or leaking battery.

Eye Protection: Not necessary under conditions of normal. Wear suitable protective clothing and gloves if handling an open or leaking battery.

Other Protective Equipment: Have a safety shower and eye wash fountain readily available in the immediate work area.

Hygiene Measures: Do not eat, drink, or smoke in the work area. Maintain good housekeeping

Personal Protection:

Hand protection	Eye protection
 Protective gloves	 Tightly sealed goggles

SECTION 9 – Physical and Chemical Properties

Information on basic physical and chemical properties	
Appearance	White
Odour	N/A
pH	N/A
Melting point/freezing point	N/A
Boiling Point and Boiling range	N/A
Flash Point	N/A
Upper/lower flammability or explosive limits	N/A
Vapor pressure	N/A
Vapor Density	N/A
Relative density	N/A
Solubility in water	N/A
Auto-ignition temperature	N/A
Decomposition temperature	N/A
Evaporation rate	N/A
Flammability (soil, gas)	N/A
Viscosity	N/A

SECTION 10 – Stability and Reactivity

Information on basic stability and reactivity	
Stability	The product is stable under conditions description Section 7
Conditions to Avoid	Heat above 70°C or incinerate. Deform, Mutilate, Crush, Disassemble, Overcharge, Short circuit, Expose over a long period to humid conditions.
Incompatible Materials	Oxidizing agents, acid, base.
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide, lithium oxide fumes.
Possibility of Hazardous Reaction	N/A

SECTION 11 – Toxicological Information

Irritation	Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin. Eyes and respiratory tract may occurs.
Sensitization	N/A
Neurological Effects	N/A
Teratogenicity	N/A
Reproductive Toxicity	N/A
Mutagenicity (Genetic Effects)	N/A
Toxicologically Synergistic Materials	N/A

SECTION 12 – Ecological Information

Ecological Toxicity	N/A
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Mobility in soil	N/A
Persistence and Degradability	N/A
Bioaccumulation potential	N/A
Other Adverse Effects	N/A

SECTION 13 – Disposal Considerations

Product disposal recommendation	Observe local, state and federal laws and regulation.
Packaging disposal recommendation	Disposal must be made according to official regulations.

SECTION 14 – Transport Information

Label for conveyance	Lithium Battery Label
UN Number	UN3480 or UN3481
Transport hazard class (es)	9
Packing group	965 or 966 II 967 --
Marine pollutant	No
UN proper shipping name	Lithium ion Batteries (Including lithium ion polymer batteries) Lithium ion Batteries packed with equipment (Including lithium ion polymer batteries) Lithium ion Batteries contained in equipment (Including lithium ion polymer batteries)
ICAO/IATA	Can be shipped by air in accordance with international Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA) DGR 65 th Packing Instructions Section IA of 965~967 appropriately.
IMDG CODE	International Maritime Dangerous Goods Code IMDG CODE (Amdt 41-22)
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
The dangerous goods regulations require that each battery design be subject to tests contained in Section 38.3 of the UN Manual of Tests and Criteria prior to being for transport.	

SECTION 15 – Regulatory Information

Law information

《Dangerous Goods Regulations》
 《Recommendation on the Transport of Dangerous Goods Model Regulations》
 《International Maritime Dangerous Goods》
 《Technical Instructions for the Safe Transport of Dangerous Goods》
 《Classification and code of dangerous Goods》
 《Consumer Product Safety Act》 (CPSA)
 《Federal Environmental Pollution Control Act》 (FEPCA)
 《Resource Conservation and Recovery Act》 (RCRA)
 《European Agreement concerning the International Carriage of Dangerous》
 《Regulations concerning the International Carriage of Dangerous》

In according with all Federal, State and local laws.

SECTION 16 – Other Information

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