Installation Guide

Scalable Energy Storage Solutions

Lithium Ferro Phosphate (LFP) Battery Module

48V 2kWh and 3kWh 2RU Scalable Energy Solutions

Model Numbers GC48V-040LFP-2RU and GC48V-060LFP-2RU Series III

with or without rack tray kit

Contents

1 Introduction

Thank you for purchasing this LFP Battery Module. It has been designed and manufactured to provide many years of trouble free service.

Please read this guide prior to installing any of the LFP Battery Module models. This installation guide covers the following battery module models:

- GC48V-040LFP-2RU (48Volt, 2kWh, 40Ah, 2 Rack Unit high) Series III
- GC48V-060LFP-2RU (48Volt, 3kWh, 60Ah, 2 Rack Unit high) Series III

This guide provides important information that must be followed during installation of the Battery Modules.

This guide should be used in conjunction with the Battery Module Product Manual.

Failure to follow this guide may lead to you damaging the system it is being installed into and/or voiding your warranty for the battery module as well as the system it is installed into. There are important safety and handling procedures that must be followed for your own safety and the safety of those around you.

This guide also contains information for customer support and factory service if it is required.

2 General Information

2.1 Life Support Policy

We do not recommend the use of any of our products in 'life support' applications where failure or malfunction of the product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness.

2.2 genZ Energy Pty Ltd

3 Safety Guidelines

3.1 Weight

These Battery Modules are heavy. Any time the Battery Module has to be handled be sure to use, enough personnel, strong supports and suitable lifting equipment.

3.2 Risk of Electric Shock

Hazardous voltages maybe present on parts inside this module. Do not attempt to open or disassemble the module. These Battery Modules contain no user serviceable parts.

3.3 Stored Energy

These Battery Modules can, especially if they are connected in parallel, produce high currents.

3.4 Qualified Service Personnel Only

Repairs and Battery replacement must be performed by qualified service personnel only**.**

3.5 Safety Data Sheet (SDS)

Refer to the SDS that was supplied with this module in case of an accident.

4 Abbreviation Definition

A = Amperes
AC = Alternating Current
Ah = Ampere hours
BMS = Battery Management System
C = Celsius
CB = Circuit Breaker
CC = Constant Current (phase of charging)
cm = Centimetres
CV = Constant Voltage (phase of charging)
DC = Direct Current
DoD = Depth of Discharge
FAT = Factory Acceptance Test
IP = Ingress Protection rating
Kg = Kilograms
kW = Kilo Watts
kWh = kilo Watt hours
LED = Light Emitting Diode
LFP = Lithium Ferro Phosphate
mm = Millimetres
ms = milli seconds
SDS = Safety Data Sheet
NC = Normally Closed
RU = Rack Units
SAT = Site Acceptance Test
V = Volts

5 Specifications

NOTE: All Specifications shown are for an ambient temperature of 25°C (77F) and charge / discharge rates of 0.5C unless otherwise stated.

Model	GC48V-040LFP-2RU Series III	GC48V-060LFP-2RU Series III
Nominal Voltage	Direct Current (DC) 51.2V (48V)	
Nominal Capacity	38.4Ah/2kWh	57.6Ah/3kWh
Nominal Current	19.2 Amps	28.8 Amps
Maximum Current	60 Amps (limited by circuit breaker)	
Maximum DC Power	1966 Watts	2949 Watts
Minimum Charge Current	0.38 Amps	0.58 Amps
Maximum Charge Current	19.2 Amps	28.8 Amps
Charge/Discharge cycles to specified Depth of Discharge (DoD) Capacity retention >80%	10,000 @ 80% DoD 5000 @ 90% DoD (2500@100% DoD and 1C)	
Operating Temperature Limits	Charge 0° to 55°C and Discharge -20° to 60°C	
Operating Humidity (non-condensing)	85%	
IP Rating	IP50	
Battery Case Dimensions (mm)	450D x 420W x 88H	570D x 420W x 88H
Battery Tray Dimensions (mm)	450D x 483W	570D x 483W
Tray Slide Range (mm)	480 to 760	590 to 880
Terminal Connection	Genuine Anderson SB50 BLUE	
Weight Module	23.7kg	35kg
Weight of full Tray	Approximately 4.2kg	
[1] BMS Over Volt cut off	Approximately 58.4V	
BMS Under Volt cut off	40V	
BMS Short Circuit cut off	200 ± 30A (20mS Trip)	
BMS Over Temp cut off	65°C	
Charge time Approx.	2 hours at 19.2 A	2 hours at 28.8 A
Self-Discharge	14% per annum	
Round Trip charge/discharge efficiency	>= 96%	
Circuit Breaker Compliance	Double Pole, non-polarised, 60A IEC 60947-2	
UN Type Number (Module chemistry)	UN 3480	
Lithium Composition	As Lithium Ferro Phosphate, $LiFePO_4$ or LFP	
Decisive Voltage Classification (DVC)	Class A	
Casing /Coating	Surfmist white industrial coating	
Certifications	See genz.com.au for details	

[1] The over voltage cut-out may vary from that stated. This is due to the fact that the BMS protects the internal cell string voltages ahead of overall pack voltage.

6 Module Overview

6.1 Battery Management System (BMS)

This battery module is fitted (contained inside the battery module case) with a sophisticated BMS. The BMS is designed to provide user safety and protect the battery cells from:

- Over voltage charging.
- Under voltage discharging.
- Operation above a maximum temperature.
- Short circuit protection. This is in addition to the protection provided by the circuit breaker.

Should the BMS activate to protect the module, the BMS will automatically reset once a normal operational condition is detected by the BMS.

6.2 Power In/Out J1

The “POWER IN/OUT J1” connector is a standard Anderson SB50 (Blue) connector. The upper pin is positive and the lower pin is negative.

6.3 Earth Point

Connects the chassis of the battery module to ground. Another earth stud is located at the rear of the battery module.

NOTE: Neither the positive or negative terminal of this module is connected to the earth point. DC from the battery module is floating.

6.4 Dual Pole 60 Amp Circuit Breaker

This is the ON/OFF control for the battery module. Turning the “BATTERY CIRCUIT BREAKER” ON (up is ON) will energise the “POWER IN/OUT J1” connector. It will also activate the power “ON” indicating Light Emitting Diode (LED).

The “BATTERY CIRCUIT BREAKER” will trip in the event of a DC overcurrent condition.

NOTE: Before installing, ensure that the circuit breaker is in the down “OFF” position.

6.5 Front Panel Knurled Knobs

Knurled knobs are provided to assist in withdrawing the battery module from the battery shelf.

7 System Design

Failure to follow these guidelines may void the limited warranty and cause potential damage to property or serious injury.

7.1 Overview

Preparing a proper design and professional installation by suitably qualified people is key to the success of any energy storage system. This installation guide is exactly that, a guide and should be used in conjunction with various codes, regulations and standards applicable to where the battery modules are to be installed.

7.2 New Energy Storage Designs

7.2.1 Installation Placement

The battery module(s) must be installed such that they are not exposed to:

- Sources of radiant heat or where the ambient temperature is expected to regularly exceed 55°C.
- Extreme cold where the ambient temperature is expected to regularly fall below -10°C.
- Direct sunlight.
- Rain, water, salt laden air or where the humidity is likely to condense.
- Corrosive atmosphere.

Select a location, which will:

- Meet applicable standards and building codes for such an installation.
- Provide security from unauthorised access.
- Allows for cables to be routed so they cannot be walked on or damaged.
- Provides for the shortest cable runs possible to/from the batteries.
- If battery modules are to be mounted in a rack:
    - Always consult the rack manufacturers' specifications to determine suitability for use with your design.
    - The rack is suitable for the location and will provide the correct level of protection for the battery modules.

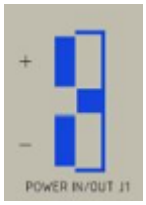
- That the rack is capable of carrying the combined weight of the battery modules, their trays and any other equipment installed in the rack.
- That the rack is placed on a floor that is capable of supporting the combined weight of both the battery modules and the rack itself.
- The rack is deep enough to accommodate the battery module trays. In particular this must be considered for the 3kWh battery modules.
- The rack can physically be moved within a building or structure, taking into account doorways and ceiling dimensions.

- Ease of access for installation and maintenance.
- Not create any health and safety concerns, such as manual handling of the battery modules due to their weight.
- These battery modules can be used in any orientation provided consideration is given to protecting the circuit breaker, connector and indicator lamp from damage.
- If battery modules are to be mounted in an enclosure, then apply the same consideration as to if mounting in a rack.

As the battery modules do NOT produce any toxic or flammable gases during normal charge/discharge cycles, there is no requirement for forced ventilation. However, consideration (as with any device) should be given to providing some air circulation to maintain operational temperatures as close to those as indicated in the specifications section of this guide.

7.3 Connectors and Cables

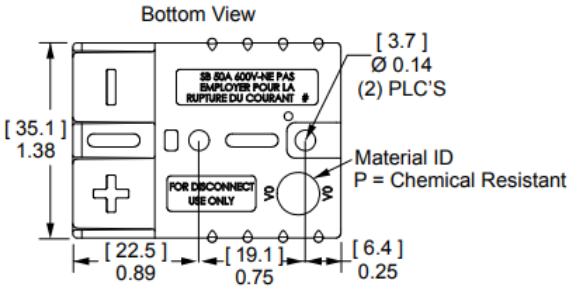
7.3.1 Connectors

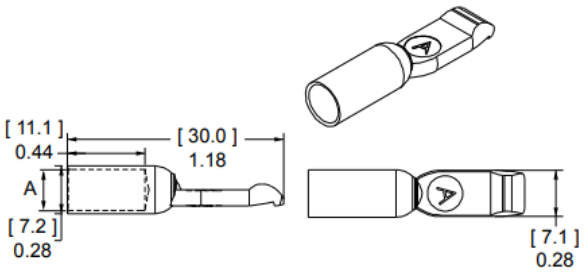


1. All genZ rack mount products are fitted as standard with genuine Anderson SB50® connectors.
2. These connectors are genderless and colour keyed.
3. All genZ 48V rack mount battery modules are fitted with **BLUE** connectors.
4. Only genuine Anderson SB50® **BLUE** connectors can connect/mate with **BLUE** connectors.

5. Additional connectors can be purchased from genZ
6. For detailed specifications regarding these connectors, please see: https://www.andersonpower.com/_global-assets/downloads/pdf/ds-sb50.pdf
7. Terminate wires in the connector wire contacts using a crimp tool and die appropriate to the contact and size of wire used. Refer to '6' above to locate Anderson specifications.
8. Always allow for sufficient cable length to permit the insertion and removal of the connector to/from the battery module.

9. Always allow for sufficient cable length so as to NOT exceed the minimum bending radius of the wire/cable being used
10. Take care to note the '+' and '-' symbols on both the connectors and the battery module front panel. Connect accordingly.
11. Always ensure that the connector contacts have been firmly inserted and will not easily pull out from the connector housing.





A – Suitable for a 16mm^2 wire

7.3.2 Wires and Cables

- Undersized cabling is the most common design/installation error.
- Cable used should be of a quality that meets or exceeds the requirements for the environment that it is being used in.
- Typical standards for cable used in Australia are:

  AS/NZS1125, AS/NZS3808, AS/NZS5000.1, AS/NZS1660.5.6, IEC 60228, IEC 60332-1
- As there is no obvious colour standard to use for 48V DC systems, the use of which colour to identify either the positive and/or negative is often driven by that which makes the most sense to those interacting with the system. It may also be driven by local standards.
- Electrically, the system may be positive earth, negative earth or floating. Identifying the earthing requirements may also dictate the colours of the cables to be used.
- Earth points for the modules can be located on the front panel of the module. Refer to the "Product Manual".
- Cables should be kept as short as possible to reduce the affects increased resistance and hence, loss of both charge and discharge power.
- System designers should be aware of the relationship between cable length, current flow, and cable size. Always refer to the cable manufacturers' tables to calculate volt drop and maximum current.
- If the battery modules are to be connected in parallel then all cables from the battery modules should be of equal length. Those cables should then run to a common point, such as a busbar.
- If Anderson connectors are supplied by genZ, they are suitable for 16mm^2 wire.
- All connectors and lugs should be well crimped using the correct type of crimp tool, not soldered to wires.

- Tinned wire should be used in areas where corrosion maybe a concern.
- Be aware of the cable manufacturers specification for the minimum bending radius permitted. This is of particular importance if the batteries are rack mounted and the cables are to be fed from the Anderson connector to the rear of the rack via the side of the rack.
- Do not allow the weight of a cable to be supported by the Anderson connector alone. For example, if using a typical 16mm^2 cable, given two cables per Anderson connector, these cables must be supported at least every 450mm.
- Cable should be supported at appropriate distances if not being run inside conduit.
- Cable runs should be protected from heat, sunlight, mechanical damage and any location that in general that could result in failure of that cable.

7.3.3 Circuit Protection

Any energy storage systems should be designed with protection in mind, particularly given the very high currents that can be involved. All genZ battery modules are fitted with a DD Frame sized, 60Amp dual pole, non-polarised hydraulic-magnetic circuit breaker. Hydraulic-magnetic technology ensures that breaker performance is unaffected by ambient temperatures.

The battery modules circuit breaker protects the battery module from over charge or over discharge currents. The trip characteristics of these breakers can be seen in Appendix B of this guide.

NOTE: It is important to understand that excess AC ripple on the DC circuit may cause the circuit breaker to trip on the battery module. It is often difficult to identify AC ripple as typical current clamps and other current measuring devices will not display the AC component. This is important to be aware of if performing load and trip tests during commissioning. For example, a current clamp is measuring a 60Amp load on the battery module. The circuit breaker will hold at 60Amps if the load is pure DC. However, if there is AC ripple present, the current clamp may still read 60Amps, but, the ripple in fact is taking the actual load to 125% of the rated current and in approximately 12 seconds the circuit breaker would trip.

The battery module is also protected from any short circuit by the battery management system that is located within the battery module itself. Should a short circuit occur, the battery module on detecting a current of 200Amps (± 30Amps) will trip in approximately 20milli Seconds.

Battery modules that are wired in parallel:

- This will increase the current that can be delivered to the overall energy storage system.
- The use of high rupture current, fast acting fuses should be considered to protect attached equipment and cabling.
- Be aware that you may be protecting the charging circuit, not just the load circuit.
- Cabling should be sized to cater for fault currents.

7.4 Existing Systems

If the battery modules are to be used in an existing system, consideration should be given to the following:

- There is a very high probability that no two existing installations will be the same. Taking the time to visit the location where the batteries are to be installed and producing a design from a site survey is an important first step to take.
- As standards, rules and regulations vary from state to state along with company guidelines (for example if installing in a mine site) any design MUST take these requirements into consideration.
- Be aware that systems that operate at 48Volts may be positive earth. As such, always check what colour code is being used to designate the positive and negative DC feed.
- Existing cables and associated connections may well have suffered from corrosion, sun damage or physical damage. If reused, this may result in the system performance being seriously affected.
- Existing cables and associated connections could be underrated for the installation.
- Any existing chargers and/or inverters may need to be adjusted or replaced to suit the new characteristics of the LFP battery module.
- If the system is monitored, alarm points may need to be adjusted to accommodate the characteristics of the LFP battery module. For example, a low voltage alarm threshold may be set lower for the LFP module than a lead acid battery.
- Consideration to where the LFP battery modules are to be housed. Lead acid batteries will most likely have been housed in an outside area. This outside area may need to be upgraded if protection from the elements are not going to provide suitable protection to the LFP Battery modules.
- Cabling may well have to be re-routed to accommodate placing LFP Battery modules in parallel.
- Refer to the section above “New Energy Storage Designs” for further guidelines.

7.4.1 Chargers and Inverters

GenZ battery modules have been used with a variety of charger and inverter manufacturers. As the genZ battery modules do not have a communications port, more often than not, using a modified ‘lead acid’ charge profile will provide the required solution.

Refer to the user manual for charge and discharge characteristics.

7.4.2 Series Connection to Achieve Higher Voltages

These battery modules are NOT designed for connecting in series. Connecting in series will void your warranty.

8 Transportation, Dangerous Goods and Storage

All battery modules are designated as Dangerous Goods class 9 (DG9). All battery modules have an identifying dangerous goods label on the outside of the box.

While the battery modules are well packed, they MUST NOT be stacked any higher than five battery modules high. Doing so may cause damage to the battery module(S) at the lower part of the stack.

Once you receive the product it should be visually inspected for damage that may have occurred during shipping. Immediately notify the carrier and place of purchase if any damage is observed. The packing materials that the product was shipped has been designed to minimize any shipping damage. In the unlikely event that the product needs to be returned to the manufacturer, use the original packing material. Since the manufacturer is not responsible for shipping damage incurred when the product is returned, the original packing material is inexpensive insurance.

If the battery modules are not to be installed, they must be stored in an area such that they are not exposed to:

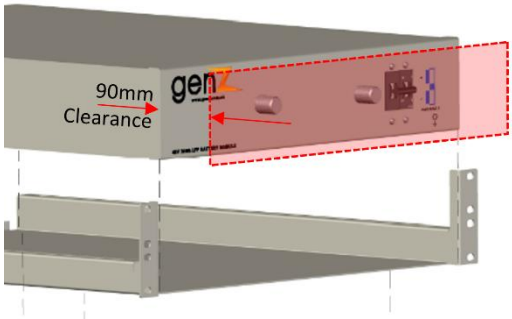
- Sources of radiant heat or where the ambient temperature is expected to regularly exceed 55°C.
- Extreme cold where the ambient temperature is expected to fall below -10°C.
- Direct sunlight.
- Rain, water, salt laden air or where the humidity is likely to condense.
- A corrosive atmosphere.

Depending on where the battery modules are stored, there may be a requirement to provide fire fighting equipment.

9 Installation of Battery Module(s)

Be sure to read the installation placement and associated cautions before installing the Battery Module. Place the Battery Module in the final desired location and complete the rest of the installation procedure.

9.1 Clearances, all models with or without a shelf kit



Ensure that the front of the battery module has at least 90mm of clearance as shown in the image. This clearance shall be from the front panel and is designed to allow for the minimum bending radius of a typical 16mm^2 cables. It also allows for clearance between the lever on the circuit breaker. There is no minimum clearance requirements for any of the other battery module sides.

NOTE: Additional clearance may need to be considered depending on the type of door (if used) that is utilised with a rack as some doors have locking mechanisms that protrude well within the door frame.

9.2 Installation of a single Battery Module

Ensure that the following is considered prior to installing:

- Use only genuine Anderson SB50 connectors.
- Use the matching colour of Anderson SB50 connector as these connectors are keyed and (for example) only a blue Anderson will connect with a blue Anderson.
- That the polarity of the connector is observed. + and – symbols are clearly marked on both the connectors and the front panel of the module.
- The correct size of cable to the battery connector is used.

9.3 Parallel Connection

In addition to the guidelines for a single module, when connecting in parallel, the following additional considerations apply:

- As the connection of these modules in parallel can result in high currents and stored energy, the design of such a system should be made by a suitably qualified person.
- All battery modules should be charged prior to installation as the modules may have different states/levels of charge. Refer to the “Operation” section of this guide for charging guidelines.
- Do NOT install a fully discharged battery module into a fully charged bank of batteries.
- Do NOT install a fully charged battery module into a fully discharged bank of batteries.
- Do NOT mix these battery modules with other battery chemistry types without prior engineered testing.
- Do NOT mix these battery modules with LFP batteries from other manufacturers.

9.4 Rackmount Configuration

NOTE: Any reference to racks and cabinets made in this document are outside the scope of the genZ rack mount battery module product certifications.

(a) Full tray variant.

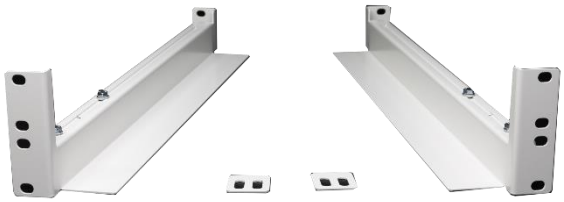
Use the included rackmount tray, brackets and screws to mount the Battery Module in a rack by

following the steps below.

1. Install the tray into the rack using appropriate rack mounting screws. Note that these screws and caged nuts are not supplied.
2. Install the tray supporting rails and attach to the racks rear vertical mounting post using appropriate rack mounting screws.
3. Using the supplied screws, tighten the rail to the tray.
4. Slide the battery module into the tray.
5. Attach the battery module retaining plates using rack mount bolts (not supplied)to each side of the battery module. Use of split washers maybe required where the modules are retained in areas of movement or vibration.

NOTE: Failure to install the tray supporting rails may result in failure of the battery module tray.

(b) split shelf variant



Install the appropriate open shelf to each side of the rack, utilising the top and bottom bolt holes at front and back of the shelves.

These shelves are extendable, so are compatible with racks of varying depths up to 770mm.

Slide the battery module into the tray. The edges on the front plate of the battery module will prevent it from sliding past the back of the tray.

Attach the retaining plates/tabs (supplied with shelf kit) to each side of front of the frame using rack mount bolts (not supplied). Use of split washers maybe required where the modules are retained in areas of movement or vibration.

9.5 Connecting the Battery Module

(QUALIFIED SERVICE PERSONNEL ONLY!)

1. Ensure that the battery module circuit breaker is in the OFF (lever down) position.
2. This should also be confirmed by seeing that the green LED is OFF.
3. Attach an earth wire (if required in your design) to the earth point, located just below connector J1. An alternate earth point is also located on the rear of the module.
4. Inspect for any damage to cables or connectors.
5. Connect the Power In/Out J1 connector by firmly pushing the plug straight into the socket.

10 Operation

10.1 To Turn the Battery Module ON and OFF

To turn the battery module on, move the circuit breaker ‘up’. This will energise the POWER IN/OUT J1 connector. It will also activate the green LED on the front panel.

To turn the battery module off, move the circuit breaker ‘down’. This will de-energise the POWER IN/OUT J1 connector. It will also de-activate the green LED on the front panel.

If the green LED does not illuminate when the circuit breaker is in the ‘ON’ position, go to the trouble shooting section of this guide.

10.2 Power in/out J1

The DC power to the J1 connector is floating. Neither the positive nor the negative is connected to the modules chassis. DC from the battery module is floating.

When the circuit breaker is in the OFF position, as the circuit breaker is dual pole, both the positive and negative is isolated from the battery pack inside the module casing

10.3 Charging the Battery Module

These battery modules should only be charged by an approved charger that is designed to charge LFP chemistry, at the correct voltage, current and charge profile.

The charging profile described below is designed to achieve **maximum number of cycles/life** of the battery module.

10.3.1 Operating temperature

An ambient temperature of 23 to 27 Celsius is the ideal temperature for the operation of the battery. Operating outside of these temperatures will affect cycle life, capacity and possibly the warranty.

10.3.2 Charging current

Commence a charge cycle where the current is limited (Constant Current or CC) at 0.5C

- 19.2 Amps (for model GC48V-040LFP-2RU)
- 28.8 Amps (for model GC48V-060LFP-2RU)

10.3.3 Balance voltage

- Applicable to all models of 48V modules

Charge the battery module at a Constant Current until the module voltage reaches 57.6 Volts.

Continue charging at a constant voltage of 57.6 Volts for two (2) hours. This will then allow the cells to ‘balance’ their terminal voltage.

After two hours, the charging voltage can be removed as the module should now be fully charged.

At the completion of the above charge profile, the battery can either be stored or placed on a float charge.

10.3.4 Float voltage

If the battery module is to be placed on a float charge, maintain a voltage between 55.2 and 56 Volts.

For systems (such as uninterruptable power supplies) that will see the batteries floated for extended periods of time, the batteries should be cycled (at least to DoD 10%) and then charged as a minimum annually. For best performance a six monthly test is highly recommended.

10.4 Discharging the Battery Module

The discharge characteristics described below are to achieve maximum number of cycles/life of the battery module.

10.4.1 Battery module discharge current (0.5C)

- 19.2 Amps (for model GC48V-040LFP-2RU)
- 28.8 Amps (for model GC48V-060LFP-2RU)

It should be noted that the modules can both deliver up to 60Amps (1C) if required

10.4.2 When to charge a discharged module

While the battery module is protected by the BMS to prevent excessive battery module discharge, it is recommended to recharge the battery module as soon as practical following a discharge event.

10.5 Storage

Please refer to the Battery Module Product Manual

11 Disposal of Damaged, Failed or End of Life Battery Modules

- Always refer to the MSDS that was provided with the battery modules if they have been damaged.
- Be aware that even if the battery module has been damaged and no voltage can be measured at the connectors, there may still be considerable stored energy with the cells that are inside the module.
- Contact your local council or an authorised recycling centre for information on recycling these modules.
- Refer to the genZ website for further information on failed modules.

12 Trouble shooting

SYMPTOM / FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
NO OUTPUT VOLTAGE AT IN/OUT J1 POWER CONNECTOR	CIRCUIT BREAKER TURNED OFF/TRIPPED	TURN ON THE CIRCUIT BREAKER
	BMS UNDER VOLTAGE, IN PROTECTION MODE, OUTPUT OFF	RECHARGE THE BATTERY AND RECHECK FOR CORRECT OUTPUT VOLTAGE
	BMS OVERCURRENT, IN PROTECTION MODE, OUTPUT OFF	CHECK FOR SHORT CIRCUITS OR EXCESSIVE CURRENT DRAW
	BMS OVER VOLTAGE, IN PROTECTION MODE, OUTPUT OFF	CHECK FOR CHARGING CIRCUIT SUPPLYING EXCESSIVE CHARGE VOLTAGE
	BMS OVER TEMPERATURE, IN PROTECTION MODE, OUTPUT OFF	CHECK AND INVESTIGATE REASON FOR HIGH TEMPERATURE
	OTHER	RETURN TO GENZ FOR SERVICE
GREEN LED NOT ILLUMINATING WHEN CIRCUIT BREAKER ON	BMS UNDER VOLTAGE, IN PROTECTION MODE, OUTPUT OFF	RECHARGE THE BATTERY AND RECHECK FOR CORRECT OUTPUT VOLTAGE
	BMS OVERCURRENT, IN PROTECTION MODE, OUTPUT OFF	CHECK FOR SHORT CIRCUITS OR EXCESSIVE CURRENT DRAW
	BMS OVER VOLTAGE, IN PROTECTION MODE, OUTPUT OFF	CHECK FOR CHARGING CIRCUIT SUPPLYING EXCESSIVE CHARGE VOLTAGE
	BMS OVER TEMPERATURE, IN PROTECTION MODE, OUTPUT OFF	CHECK AND INVESTIGATE REASON FOR HIGH TEMPERATURE
	BATTERY VOLTAGE TOO LOW	RECHARGE THE BATTERY MODULE
	OTHER	RETURN TO GENZ FOR SERVICE

SYMPTOM / FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
CIRCUIT BREAKER TRIPS	EXCESSIVE DISCHARGE CURRENT	USING A CLAMP METER, CHECK THAT THE CURRENT BEING DRAWN FROM THE BATTERY MODULE IS LESS THAN 60AMPS. REFER TO INFORMATION/WARNING REGARDING STATE OF CHARGE
	EXCESSIVE CHARGE CURRENT	USING A CLAMP METER, CHECK THAT THE CURRENT BEING SUPPLIED TO THE BATTERY MODULE IS LESS THAN 60AMPS. REFER TO INFORMATION/WARNING REGARDING STATE OF CHARGE
	OTHER	RETURN TO GENZ FOR SERVICE
BATTERY MODULE FAILING TO CHARGE OR HOLD CHARGE	INSUFFICENT CHARGE VOLTAGE/CURRENT	CHECK FOR FAULTY CHARGER, POOR CABLING OR LOOSE CONNECTORS
	SOLAR OR OTHER CHARGER NOT CONFIGURED CORRECTLY	REFER TO THE MANUFACTURER OR THE SOLAR OR MAINS CHARGER
	BATTERY CHARGER MAY WELL BE FAILING TO START A CHARGE CYCLE. THIS MAY OCCUR WITH SOME SMART CHARGERS THAT REQUIRE SEEING AT LEAST SOME VOLTAGE FROM A BATTERY	CHECK WITH CHARGER MANUFACTURER OR SUBSTITUTE THE CHARGER FOR A DIFFERENT TYPE OR USE A DC POWER SUPPLY SET TO THE CORRECT CHARGE VOLTAGE AND CURRENT
	OTHER	RETURN TO GENZ FOR SERVICE

13 Warranty & Service Information

Please refer to the Battery Module Product Manual for detailed information regarding warranty.

13.1 Registration

It is important that you maintain a record of your purchase details relating to the battery. Details such as, the model number, serial number of the battery module(s), place of purchase and/or who installed it.

13.2 Before Calling for Service

Verify that the charger and load are operating correctly. Refer to the "Trouble Shooting" section of this guide.

If you believe that the battery module is not delivering it's rated *capacity (refer Please refer to the Battery Module Product Manual) the battery module may be considered faulty if it fails to deliver less than 70% of it's rated capacity during the warranty period.

*Note: Some chargers/inverters display the capacity of a battery module or the battery system. These calculated values can be inaccurate for a number of technical reasons and as such should not be relied on.

Refer to the genZ website at www.genz.com.au for full details of the warranty on this product.

13.3 Warranty or Service

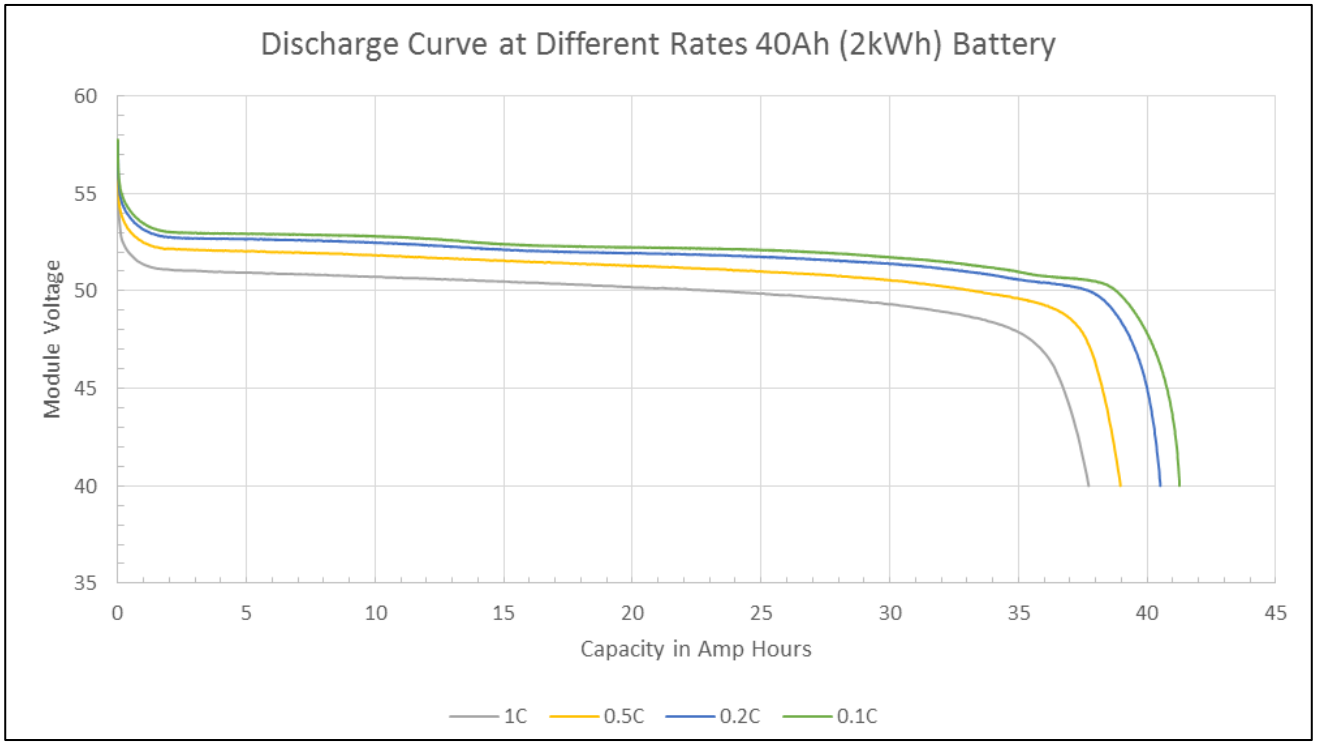
In the unlikely event that you believe the module is faulty, contact the place of purchase or dealer/distributor first. If you cannot reach your dealer, or if they cannot resolve the issue please visit the genZ web site at www.genz.com.au for contact details for technical support.

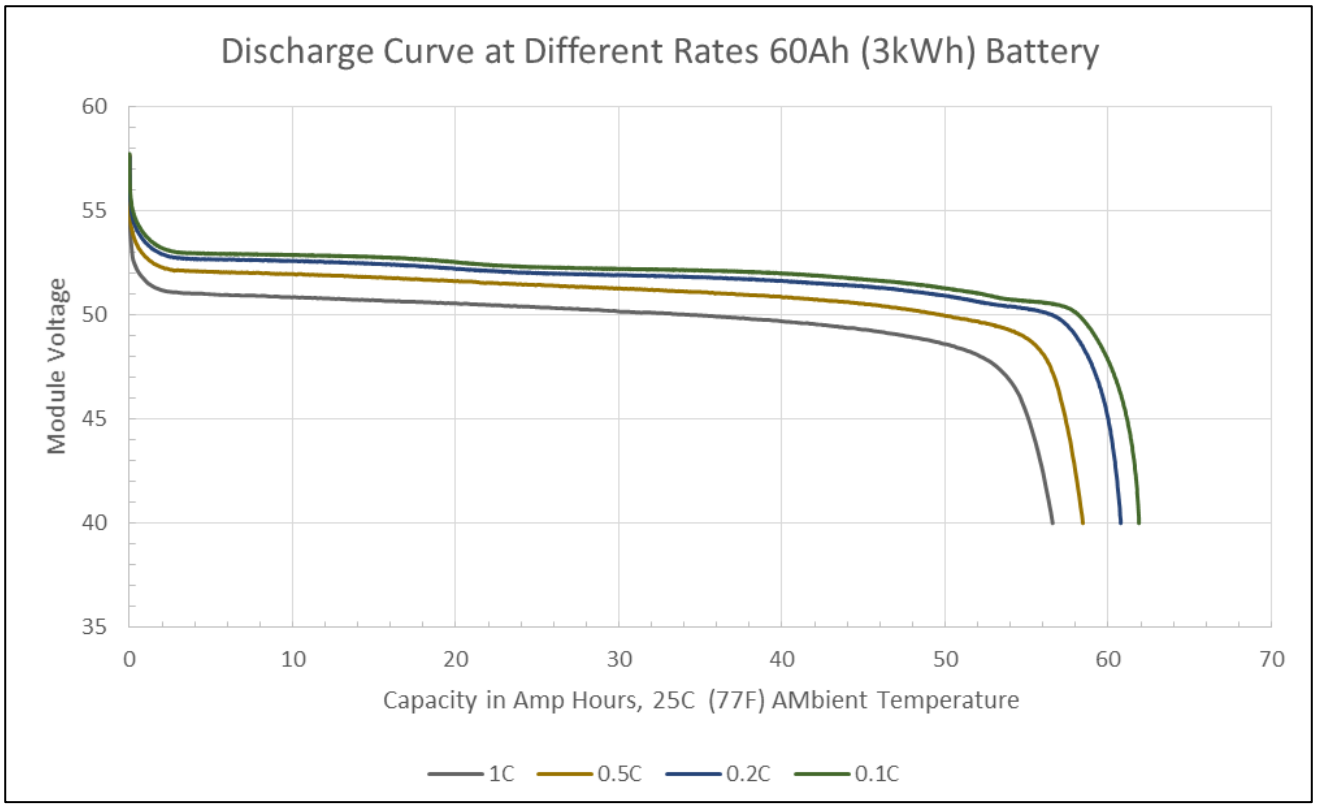
Please ensure that you have the following information available:

a) Where and when the unit was purchased.
b) The model number.
c) Serial number of your module.
d) Information on the nature of the failure.

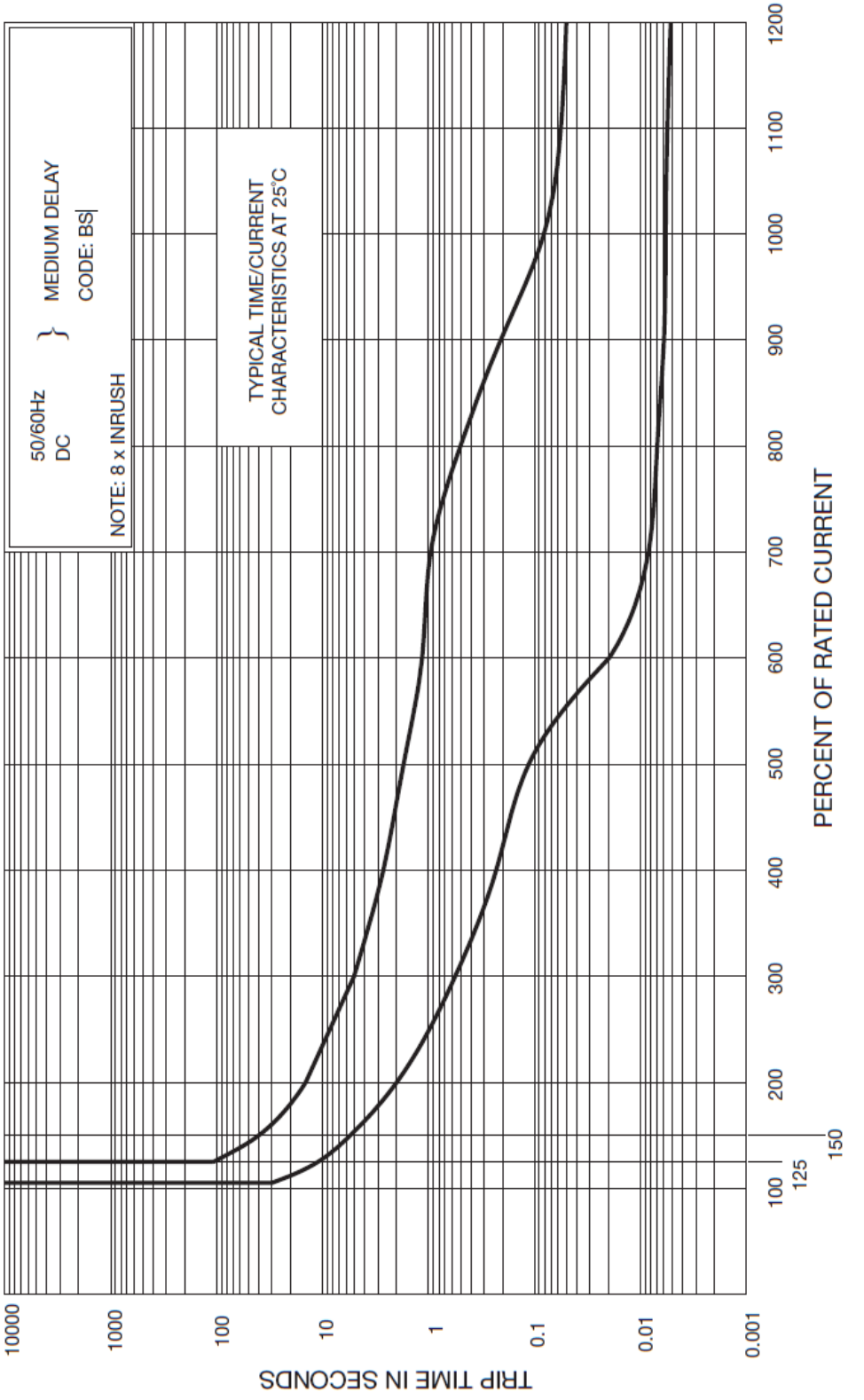
http://www.genz.com.au

14 Appendix A – Discharge and Capacity Curves (25°C)





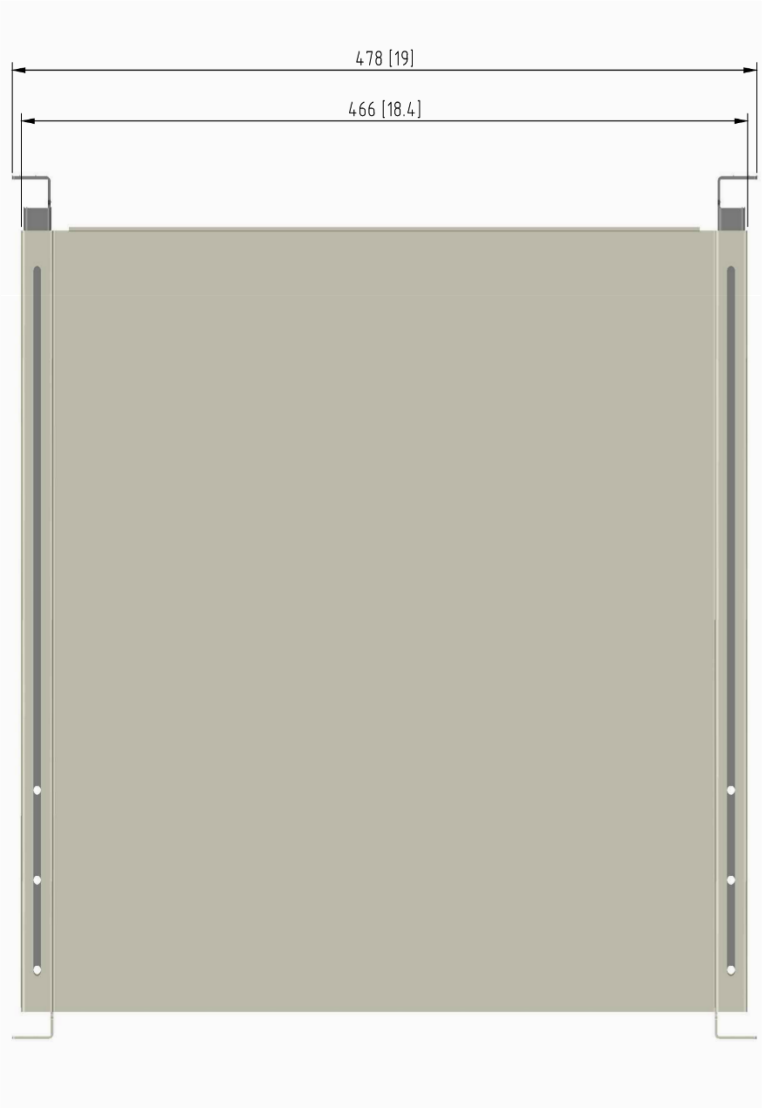
15 Appendix B – Circuit Breaker Trip Curve (BS)

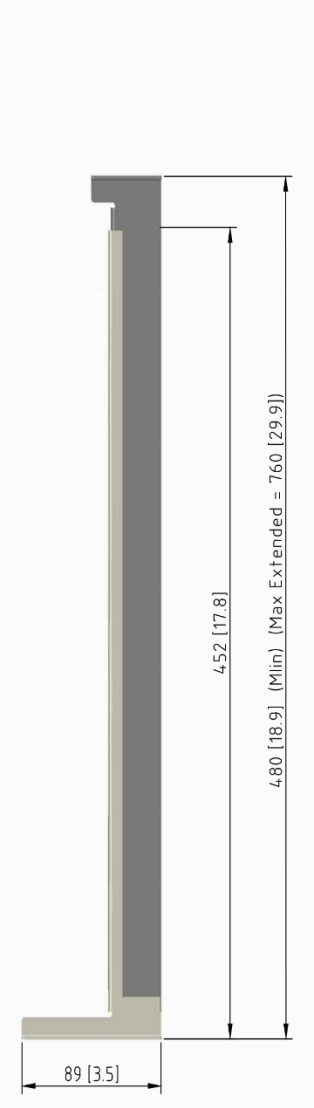


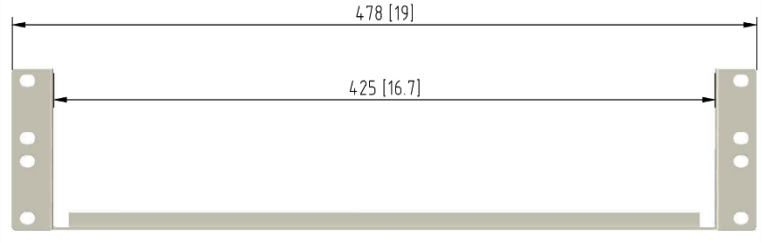
PERCENTAGE OF RATED CURRENT	100%	125%	150%	200%	300%	400%	500%	600%	700%	800%	900%	1000%	1100%	1200%
MINIMUM TRIP TIME IN SECONDS	NO TRIP	12	5.5	2	0.55	0.21	0.12	0.02	0.0085	0.007	0.006	0.006	0.0055	0.005
MAXIMUM TRIP TIME IN SECONDS	NO TRIP	100	40	14	5	2.8	1.8	1.2	0.98	0.5	0.2	0.08	0.058	0.05

16 Appendix C – Dimensions

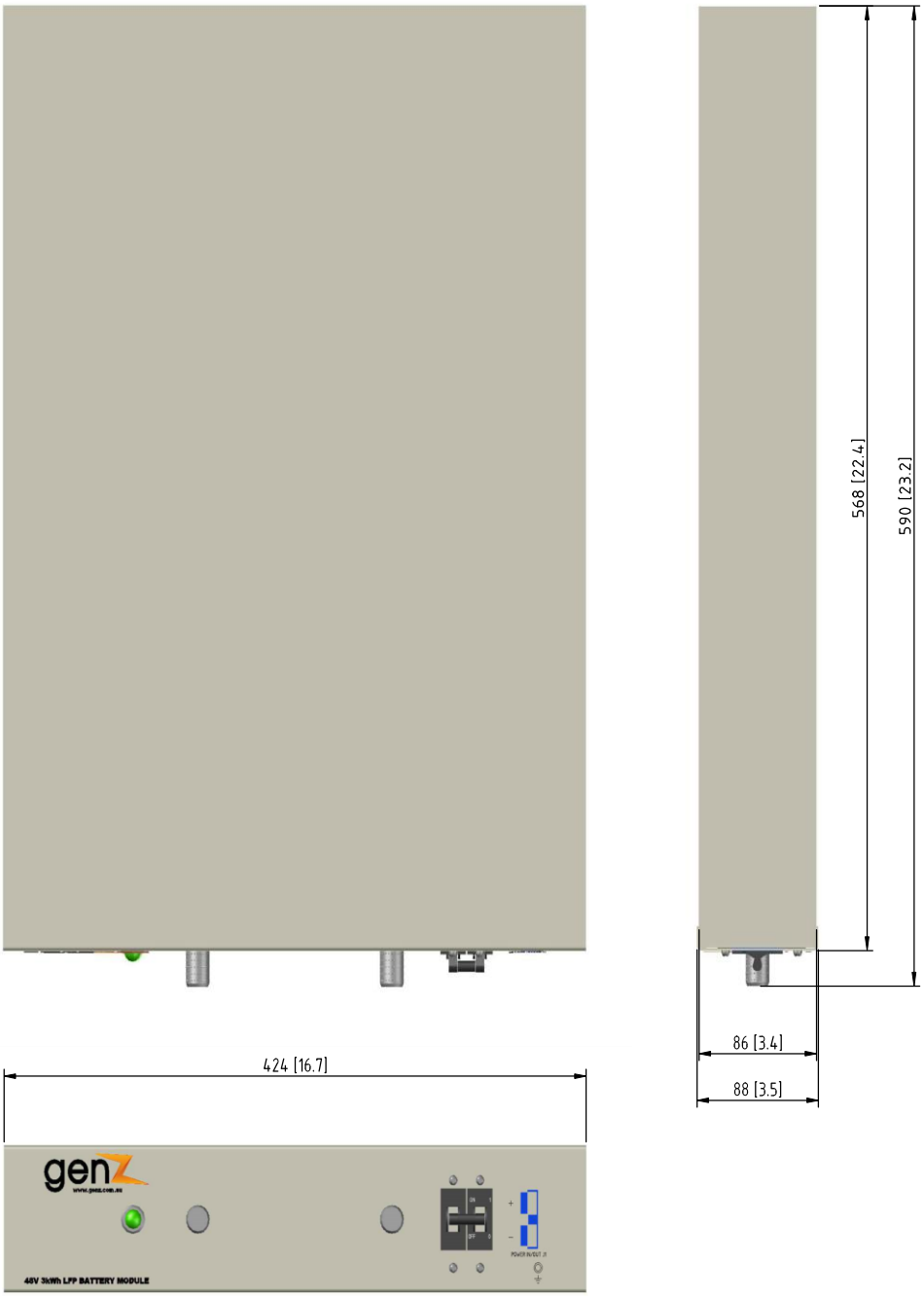
16.1 2kWh Module and Tray

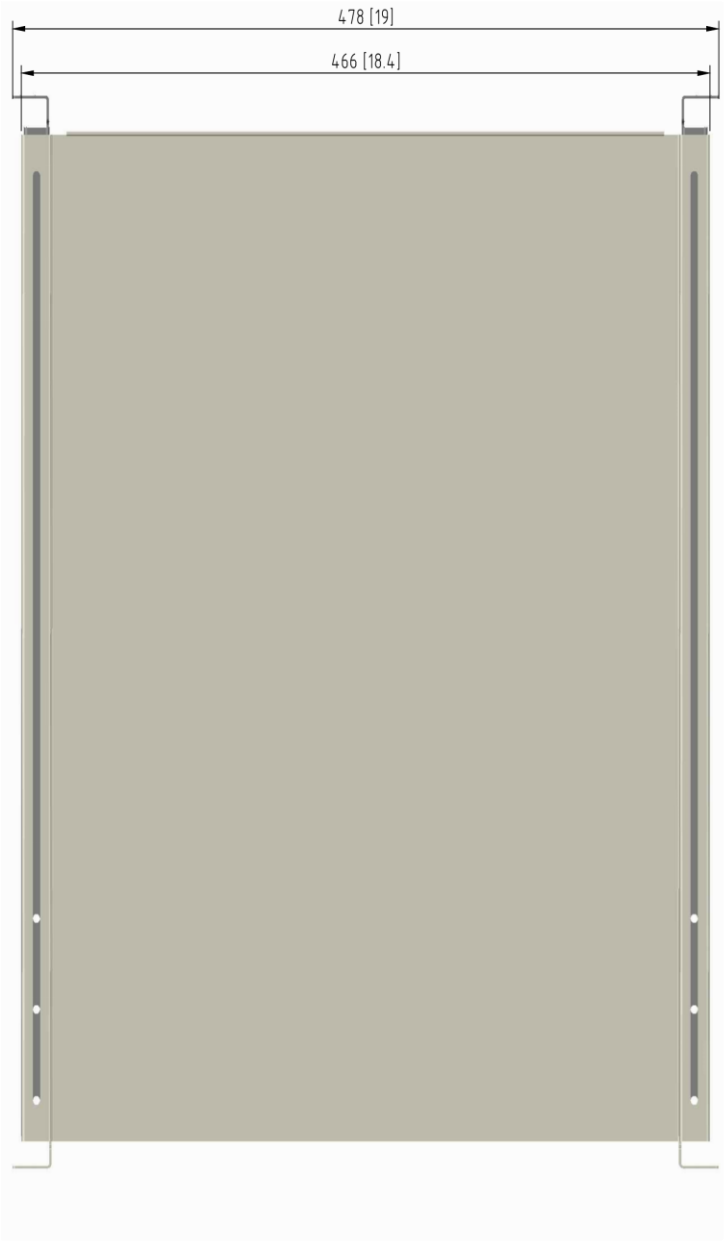


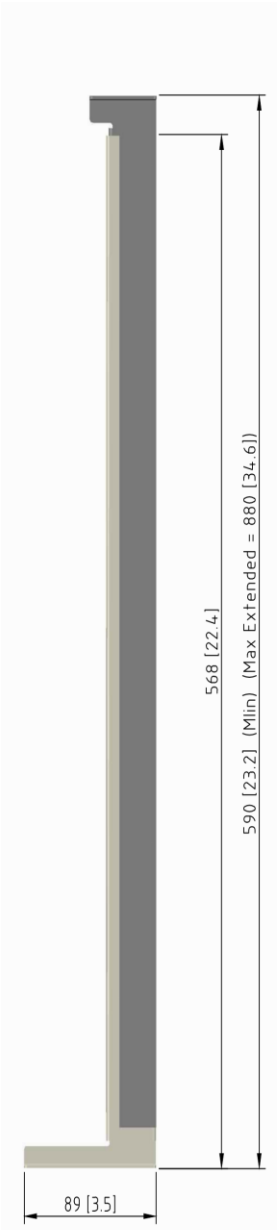


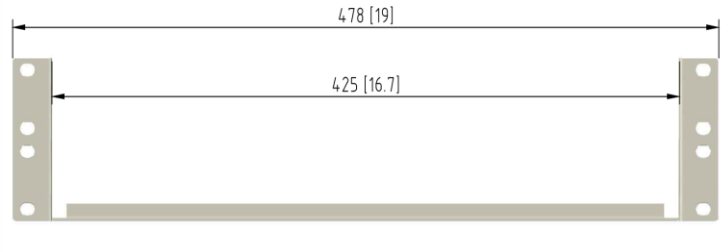


16.2 3kWh Module and Tray









Notes:

Serial Number:
Model Number:
Place of Purchase:
Date of Purchase:
Owner:

genZ Energy Pty Ltd

Western Australia

Email: info@genz.com.au
Web: www.genz.com.au