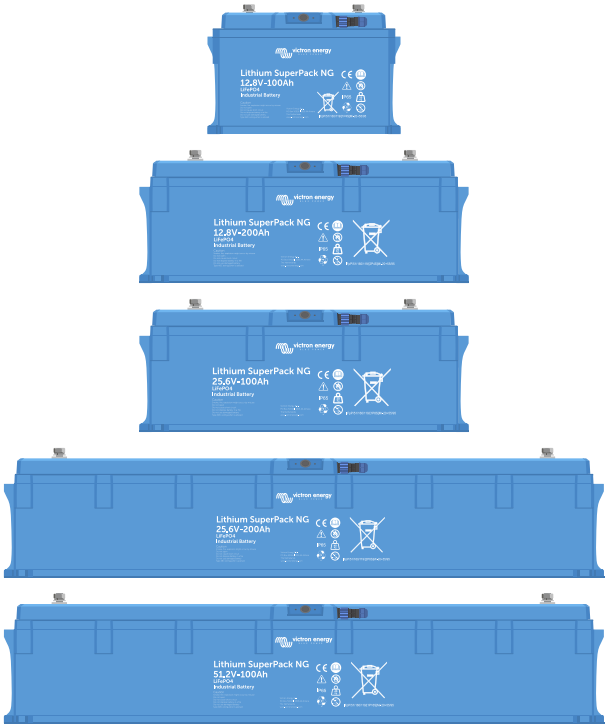
ENGLISH



Lithium SuperPack NG manual

12,8V/100Ah | 12,8V/200Ah | 25,6V/100Ah | 25,6V/200Ah | 51,2V/100Ah

Rev 04 - 10/2026

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1. Guideline to this manual

This section explains how information in this manual is organised and what the colours and symbols mean. It allows quick navigation to relevant information and helps gauge the importance of a message before reading it in full.

How this manual is organised

This manual has eight chapters. Guideline to this manual explains how the manual is organised and what the colours and symbols mean. Safety Precautions lists the general safety rules that apply to the whole product. Introduction describes the function and the main features of the Lithium SuperPack NG. Installation covers unpacking, mounting, wiring and the firmware update. Configuration and Settings explains how chargers and loads are set up and which settings the battery itself has. Operation covers monitoring and control in VictronConnect, charging, discharging, the factory reset and the Bluetooth reactivation. Troubleshooting lists the LED indicators together with the warnings, alarms and error codes shown in VictronConnect, the self-restoring protection mechanisms and the ATC and ATD off-reasons. Technical Data gives the battery specification and the enclosure dimensions.

Sections and subsections are numbered, for example 3.2.1, and a cross-reference such as see 4.3 points to that numbered section elsewhere in the manual. Figures and tables are numbered per chapter and referenced the same way in the running text.

Safety messages and other admonitions

Safety messages appear throughout this manual in framed panels headed by a signal word, so that their importance can be recognised at a glance. Each safety message identifies the hazard, the consequence of not avoiding it, and how to avoid it.

The safety alert symbol, a triangle enclosing an exclamation mark, indicates a potential personal injury hazard. The same symbol is used for DANGER, WARNING and CAUTION; its colour follows the signal word, and it is the signal word that indicates the degree of risk.

In the online version of this manual the signal word is shown on a coloured bar: red for DANGER, orange for WARNING, yellow for CAUTION and blue for NOTICE. In the PDF version the same messages are shown without the coloured bar. The signal word and the symbol carry the meaning, colour is an additional aid only.

Four signal words are used, in descending order of severity, together with two types of message that carry no signal word.

DANGER: preceded by the safety alert symbol. Indicates a hazardous situation which, if not avoided, will result in death or serious injury. This signal word is reserved for the most extreme situations.	
WARNING: preceded by the safety alert symbol. Indicates a hazardous situation which, if not avoided, could result in death or serious injury.	
CAUTION: preceded by the safety alert symbol. Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. CAUTION is never used for messages that concern damage to property only.	
NOTICE: not preceded by the safety alert symbol, because it addresses practices that can damage the equipment, the battery or stored data, and not personal injury.	

IMPORTANT: a panel marked with the refer to manual symbol. IMPORTANT is a heading, not a signal word, and it does not indicate a degree of risk. The panel states instructions that must be followed but that do not belong to one specific hazard, for example reading the manuals of connected equipment, complying with national regulations, or having the work carried out by qualified personnel.	
Note: a plain panel carrying no signal word and a pencil symbol. It holds supplementary information that is neither a hazard nor a risk of damage, for example a detail worth noting or a pointer to another part of the manual.	

2. Safety Precautions



IMPORTANT

- Read this manual and the manuals of all connected equipment before installing and operating this battery.
- Keep these instructions near the battery for future reference.
- Installation, maintenance and any other work on the battery must be carried out exclusively by qualified personnel familiar with lithium battery systems.
- Locate and read all product safety labels affixed to the battery before installation. Do not remove, alter or cover these labels.
- The Material Safety Datasheet can be downloaded from the “Material Safety Datasheet menu” located on the Lithium Smart product page.

2.1. General Warnings



WARNING

Hazard: Live terminals and stored energy. The terminals are live whenever the battery is switched on and can also become live in the event of an internal fault.

Consequence: A short circuit can cause arcing, severe burns, fire and electric shock.

Avoidance:

- Switch the battery off before starting any maintenance or work on or near it.
- Use insulated tools.
- Do not place metallic objects or tools on top of the battery.
- Do not wear watches, bracelets, rings or other metallic items during installation and service.
- Wear protective eyewear and protective clothing.



WARNING

Hazard: Leaking electrolyte or powder from a damaged battery.

Consequence: Contact with skin or eyes causes severe chemical burns.

Avoidance:

- Wear protective eyewear and protective clothing.
- If the battery casing is damaged, do not touch any exposed material, electrolyte or powder.
- On contact with skin or eyes, flush immediately with plenty of clean water and then seek medical assistance.
- Rinse affected clothing with water.



WARNING

Hazard: Damaged, modified or submerged battery.

Consequence: An internal fault can develop without warning and lead to thermal runaway, fire and the release of toxic gases.

Avoidance:

- Do not use, charge or transport a damaged battery.
- The battery is splash resistant (IP65) but is not suitable for immersion. If the battery has been submerged in water, discontinue use immediately.
- Isolate a damaged or submerged battery from all other equipment and contact your Victron Energy dealer for further advice.

WARNING

Hazard: Mechanical damage or exposure to extreme temperatures.

Consequence: Extreme mechanical stress or heat can start an uncontrolled internal reaction, leading to self-ignition, thermal runaway and fire.

Avoidance:

- Do not strike, drop, puncture, crush or otherwise apply force to the battery.
- Do not expose any part of the battery to temperatures above 70 °C, for example from heating surfaces, heat sources or radiation sources.
- Do not expose the battery to temperatures below -30 °C.
- Do not open, disassemble or modify the battery, and do not dispose of it in fire.

WARNING

Hazard: Thermal runaway and fire.

Consequence: Release of toxic gases, severe burns, and violent reignition after the flames appear to be out.

Avoidance:

- Evacuate the area and ventilate it thoroughly before approaching the battery.
- Disconnect the battery if it is safe to do so.
- Use CO_2, ABC or foam extinguishers to suppress flames initially. These do not prevent reignition during thermal runaway.
- Apply intensive cooling with large amounts of water. As a rule of thumb, fully submerge the battery in water at about 20 °C, using at least twice the battery volume.
- Always follow local fire authority guidance.

WARNING

Hazard: Unsecured battery in a vehicle or vessel.

Consequence: During a collision or heavy sea state an unsecured battery can become a projectile and cause serious injury or death.

Avoidance:

- Ensure adequate and secure mounting of the battery.
- Always use suitable handling and securing equipment for transportation.

CAUTION

Hazard: Heavy object.

Consequence: Lifting the battery can cause muscle strain or back injury.

Avoidance:

- Use lifting aids and proper lifting techniques when installing or removing batteries.

NOTICE

Improper use

- The battery is sensitive to mechanical shock. Handle it with care.

2.2. Charge and Discharge Warnings



The battery may be used at ambient temperatures from -30 °C to +60 °C. Charging is only permitted when the cell temperature is within the safe charging range. If the cell temperature is below 0 °C, the BMS suspends charging and the internal self-heating function warms the cells. Charging resumes automatically once a safe charging temperature is reached.



WARNING

Hazard: Charging with an unsuitable charger.

Consequence: Overcharging damages the cells and can lead to thermal runaway and fire.

Avoidance:

- Only use chargers that are certified or qualified for lithium iron phosphate (LFP) batteries and rated for the correct voltage range.
- Never use a charger with an equalisation or desulphation mode, or a charger set to a lead-acid charge profile.
- Set the charge voltages according to the specifications in this manual.



WARNING

Hazard: Overcharging or deep discharging.

Consequence: Overcharging or deep discharging seriously damages the cells and can render the battery unsafe for continued use.

Avoidance:

- Install an external safety relay, controlled by the EFS signal, as redundant protection in addition to the internal BMS.
- Observe the charge and discharge limits given in the specifications.



WARNING

Hazard: Charging without effective current limiting.

Consequence: The battery is capable of absorbing high levels of energy. A charging source without effective current limiting overloads the charger and the connected wiring, which can overheat and cause a fire.

Avoidance:

- Use a charging source with effective current limiting, or install an external current-limiting device.
- Size all cables and protective devices for the maximum possible charge current.



WARNING

Hazard: Obstructed safety valve.

Consequence: Under fault conditions, such as a severe internal failure or the failure of several protection mechanisms, the battery releases gases through its internal safety valve. If the valve or the vent connection is obstructed, pressure builds up inside the battery and the gases escape in an uncontrolled way.

Avoidance:

- Keep the safety valve and the 3/4 inch threaded vent connection clear at all times.
- The 3/4 inch threaded connection is provided solely for the controlled venting of gases. It is not designed for cooling and must not be connected to water, liquids or any other media.
- Where the battery is installed in an enclosed space, route the vented gases to the outside.

WARNING

Hazard: Automatic disconnection of the battery.

Consequence: The battery can disconnect from the system without prior warning in order to prevent internal damage, causing a total loss of power to all connected equipment.

Avoidance:

- Do not use the battery as the sole power source for safety-critical equipment such as navigation, steering, bilge pumps, or medical and life-support systems.
- Provide an independent back-up supply for any equipment whose failure could result in injury or in loss of the vessel or vehicle.
- Design the installation so that an unexpected loss of power does not create a hazardous situation.

CAUTION

Hazard: Hot surface.

Consequence: During peak power demand the top surface of the battery can reach temperatures of up to 50 °C. Prolonged contact can cause burns.

Avoidance:

- Do not touch the battery during or immediately after periods of high load.
- Allow the battery to cool down before carrying out any work on it.

NOTICE

Operation outside the specified limits

- The discharge temperature range is -30 °C to +60 °C. Discharging the battery outside this range can cause severe damage and reduce its service life.
- Short circuits, very deep discharges and excessive charge or discharge currents damage the battery and shorten its service life.
- Service life depends on the application and is reduced when the battery is operated outside the reference conditions given in the specifications.

2.3. Transportation Warnings

WARNING

Hazard: Suspended load.

Consequence: A falling battery can cause crush injuries or death.

Avoidance:

- Never stand below a battery while it is being hoisted.
- Only lift the battery by its handles. Never lift the battery by its terminals.
- Use lifting equipment rated for the weight of the battery.
- If the battery is still in its cardboard packaging, use soft slings to avoid damaging the packaging and the battery.

WARNING

Hazard: Short circuit or mechanical damage during transport.

Consequence: A short circuit across the terminals, or damage to the battery, can lead to thermal runaway and fire.

Avoidance:

- Transport the battery in its original packaging, or in equivalent packaging, and in an upright position.
- Ensure that all packaging materials are non-conductive.
- Secure the battery against movement for the whole journey.
- Do not transport a damaged battery.

Lithium batteries are classified as dangerous goods. The following requirements apply to anyone shipping them.

- Cartons or crates used to transport lithium batteries must have an approved warning label affixed.
- Air transport is subject to strict regulations. Refer to the applicable IATA Dangerous Goods Regulations and to the requirements of the airline before shipping.
- The batteries are tested in accordance with the UN Manual of Tests and Criteria, Part III, sub-section 38.3.
- For transport, the batteries are classified as UN 3480, Class 9. For land and sea transport (ADR, RID and IMDG) they must be packed according to packing instruction P903, and for air transport (IATA) according to packing instruction P965. The original packaging complies with these instructions.

2.4. Disposal of Lithium Batteries

WARNING

Hazard: Signs of an internal fault, such as an unusual odour, leakage, discolouration, swelling or deformation.

Consequence: An internal fault can develop into thermal runaway, fire and the release of toxic gases, even some time after the battery was last used.

Avoidance:

- Stop using the battery immediately and disconnect it, if it is safe to do so.
- Move the battery away from flammable materials, or remove flammable materials from its surroundings. Where possible, place the battery outdoors on a non-combustible surface.
- Do not charge, repair, open or disassemble the battery.
- Contact your Victron Energy dealer or an approved end-of-life service provider, and follow the instructions given.
- Do not hand the battery in at a normal collection point and do not ship it until the dealer or the service provider has given instructions. Damaged or defective lithium batteries are subject to separate transport requirements.

WARNING

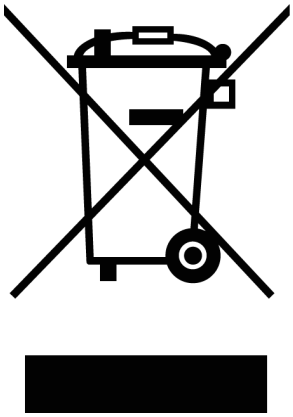
Hazard: Disposal in fire.

Consequence: A battery exposed to fire can rupture or explode and releases toxic gases.

Avoidance:

- Never dispose of a battery in fire and never incinerate it.

- Batteries must not be mixed with domestic or industrial waste.
- Batteries marked with the crossed-out wheelie bin symbol must be processed via a recognised recycling agency. National regulations on the collection and recycling of batteries apply.





3. Introduction

The Lithium SuperPack NG batteries are Lithium Iron Phosphate ($LiFePO_4$ or LFP) batteries available in various capacities with nominal voltages of 12,8V, 25,6V, and 51,2V. They are designed as drop-in replacements for lead-acid batteries in mobile, marine, and industrial applications. Designed for extended off-grid use, it provides ample capacity to power the complete electrical system, including high-demand appliances. Its form factor and terminal layout ensure easy installation across a wide range of mobile and industrial applications, including commercial and recreational vehicles.

3.1. Features

- **Embedded protection**

  The integrated Battery Management System (BMS) provides a layer of protection that ensures energy flow remains within the safe operating limits of the battery and the overall system.

- **Energy flow management**

  Capable of interrupting charging and discharging independently through its self-resetting circuit breaker.

- **Continuous current capability**

  Supports continuous discharge currents up to 2C and continuous charge currents up to 1C, reducing the need to oversize the battery pack.

- **Internal cell balancing**

  Maintains optimal cell voltage balance during charging and under transient load conditions.

- **Bluetooth monitoring and control**

  Integrated Bluetooth interface for real-time monitoring and control of the battery via VictronConnect.

- **On/Off push button**

  Push button for switching the battery on or off, disabling both charging and discharging. The on/off procedure can also be used to reset certain protection or lock-in conditions. When switched off, the battery enters a storage mode with a self-discharge rate of less than 3% per month.

- **LED status indication**

  Two integrated LEDs indicate Bluetooth connectivity, warning and alarm conditions, and firmware update status.

- **External Feedback Signal (EFS)**

  Provides a battery voltage signal limited to 250 mA. The EFS signal serves as an External Disconnection Signal (EDS) to trigger an event for redundant system protection. Additionally, the EFS can be configured as an External Charging Signal (ECS), based on the low SoC pre-alarm threshold, to activate a charger start signal.

- **Self-heating function**

  Maintains the battery temperature above the minimum safe charging limit to ensure reliable operation in cold environments. Two heating modes are available:

  - Charger mode – the heater is powered by the connected charger and activates automatically when the cell temperature drops below 0 °C during charging (default setting).
  - Auto mode – the battery powers the heater to keep the cells above 0 °C for immediate charging. This is limited by the battery's internal energy; if SoC falls below the Low SoC threshold, the heater is disconnected and charging remains unavailable.

  The internal heat balancer supports optimised thermal management and a wide operating range.

- **High efficiency**
  - Operating efficiency 93 %
  - High round-trip efficiency
  - High energy density (up to 170 Wh/dm³ and 128 Wh/kg) - more capacity with less weight and volume

- **Parallel connection**

  Supports parallel connection of an unlimited number of batteries to increase total energy capacity. The total system current should not exceed the maximum current that a single battery can safely interrupt (refer to Battery Specification [37] for details).

- **BCI Group 49 compatibility**

  Height dimension is compatible with the BCI Group 49 standard, allowing easy replacement in standard battery compartments.

- **Mounting brackets**

  Mounting brackets are included to ensure safe and stable fixing in all three axes.

- **Ingress protection (IP65)**

  The battery enclosure is rated IP65, providing protection against dust ingress and low-pressure water jets from any direction.

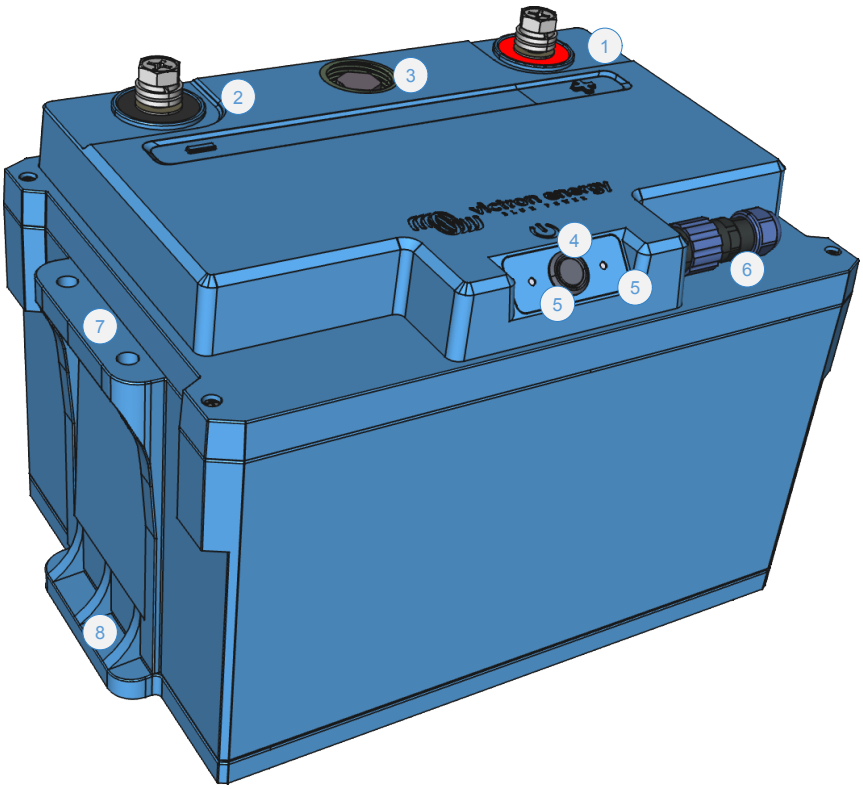
- **Self-restoring protection**

  Certain protection events are automatically cleared without user intervention. The battery allows multiple automatic recovery attempts for short-circuit and over-current conditions, reducing the need for manual reset in the case of occasional or transient faults. For details, please see the Self-restoring protection mechanisms [32] section.

- **Safety vent (3/4” threaded connection)**

  The battery is equipped with a safety vent with a 3/4 inch internal thread for connection to a gas discharge fitting. A suitable gasket must be used to ensure a proper seal. The vent allows gas to be released in a controlled way and routed out of the installation space. It must not be used for cooling, and no liquids or other media may be connected to it.

3.2. Product Overview



1. Positive terminal (M8)
2. Negative terminal (M8)
3. Safety vent (G3/4” BSPP threaded connection)
4. Push button for On/Off/Reset
5. Status LEDs (Bluetooth, Warning, Alarm, Firmware update status)
6. External Feedback Signal connector for SuperPack NG (included) - Victron part number: SPR00310
7. Handle brackets (carry handles not shown)
8. Mounting bosses for brackets

4. Installation

4.1. Unpacking and Handling the Battery

Handle the battery with care during unpacking. Batteries are heavy; do not lift the battery by its terminals. Use the carry handles located on both sides. The weight is specified in the Battery Specification [37].

Before installation, familiarise yourself with the battery layout. The main terminals on the top are marked with “+” (positive) and “–” (negative) to ensure correct polarity.

4.2. Download and Install VictronConnect

Download the VictronConnect app for Android, iOS or macOS from their respective app stores. For more information about the app, see the VictronConnect product page.

4.3. Updating Battery Firmware

Updating the firmware via VictronConnect

The battery firmware can be updated via the VictronConnect app.

- Ensure that the latest version of VictronConnect is installed, as this provides access to the most recent firmware.
- A new battery is charged to a maximum of 30 % SoC. Fully charge the battery before performing a firmware update.
- On first connection, the app may prompt to update the battery firmware. If prompted, allow the update to complete.
- Before updating, refer to the firmware update chapter in the VictronConnect manual for detailed instructions.

Updating a battery bank

There is no combined update for a battery bank. Each battery must be updated individually in VictronConnect, one after the other. Update every battery of the bank in the same session, before returning the system to service.

General notes on firmware updates

- **Newer isn’t always better** – only update if necessary.
- **If it works, don’t break it** – avoid unnecessary updates.
- **Read the changelog first** – available on Victron Professional.

Use this feature with care. Our main advice is not to update a running system unless problems occur or before the first startup.



A firmware update can change the charge and discharge limits or other performance parameters of the battery. Such changes are made to keep the product within its intended safety and performance boundaries. Every firmware release is published together with a changelog that describes the changes and any modified behaviour.

Notes on updating the Lithium SuperPack NG battery firmware

- The firmware update does not cause a full system shutdown.
- During the update, the Charge disconnect output opens, preventing battery charging.
- If the update fails, the Load disconnect output will open after 120 seconds as a safety measure, allowing time to retry the update.
- During a firmware update, the Bluetooth and Error LEDs blink simultaneously, indicating that the update is in progress.

4.4. Mounting the Battery



WARNING

Hazard: Unsecured battery in a vehicle or vessel.

Consequence: During a collision, a sudden stop or a heavy sea state, an unsecured battery can become a projectile and cause serious injury or death.

Avoidance:

- Mount the battery securely so that it cannot move.
- In vehicles, use the supplied mounting brackets.
- Use suitable handling and securing equipment when moving or transporting the battery.

Observe the following requirements when mounting the battery:

1. The battery may be installed upright or on its long side.

   Do not install the battery upside down.
2. The battery has an IP65 rating, providing protection against dust ingress and water jets. It can be installed in outdoor or semi-protected environments, but should not be exposed to direct sunlight, heavy rain, or other weather conditions.
3. Use suitable handling equipment when moving the battery.
4. Mount the battery securely to prevent movement. In vehicles, use the supplied mounting brackets.
5. Allow at least 10 mm clearance on all sides to ensure adequate ventilation during charging and discharging.

4.5. Electrical Installation

Maximum terminal voltage

The SuperPack NG is designed to withstand a maximum absolute voltage difference of 60 V between its own terminals. The system must be designed so that no fault condition can cause this limit to be exceeded.



WARNING

Hazard: Voltage between the battery terminals above 60 V.

Consequence: The internal insulation degrades or fails. This can cause an internal fault, a cascade failure of the system and a fire.

Avoidance:

- Do not connect the battery to any source that can apply more than 60 V across its terminals.
- Design the system so that no single fault can raise the terminal voltage above this limit.
- Where such a fault cannot be excluded by design, fit an overvoltage protection (OVP) device.

DC wiring

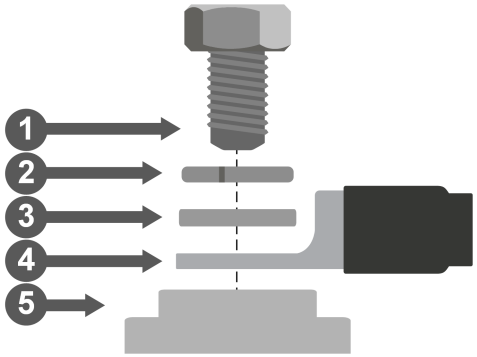
- Use battery cables with a cross-sectional area suitable for the maximum expected current in the system.
- Appropriately sized cables minimise voltage drop and heat generation. Keep cable lengths equal when connecting multiple batteries in parallel.
- For most installations, the voltage drop should not exceed 2 % of the nominal system voltage.
- The wire cross-sectional area for the EFS signal wire should be at least 0,75 mm^2.
- All DC wiring must comply with applicable system design guidelines and local electrical installation regulations.

Fusing

- Batteries are capable of delivering very high currents; therefore, all electrical connections to the battery must be fused.
- For the main battery terminal connection, use an MRBF-type or T-type fuse with an interrupt rating (IR) of at least 10 kA.
- For the EFS signal wire, use a 315 mA fast-acting fuse, DC-rated ≥ 32 V (5×20 mm type).
- Install all fuses as close as possible to the positive battery terminal. Ensure that the selected fuse ratings comply with the system design guidelines and local electrical regulations.

Terminal connections

- Tighten the M8 terminal bolts to a torque of 14 Nm.
- Use the following sequence:
  1. Bolt
  2. Spring washer
  3. Washer
  4. Cable lug
  5. Battery terminal
- Ensure all contact surfaces are clean, flat and securely tightened.



WARNING

Hazard: Loose or high-resistance terminal connections.

Consequence: A loose connection creates a local hot spot. The resulting high temperature can damage the battery and ignite a fire.

Avoidance:

- Tighten all terminal connections to the specified torque.
- Inspect all connections during installation and again as part of regular maintenance.

Connection sequence

1. Connect the positive (+) cable first.
2. Connect the negative (-) cable last.
3. When disconnecting, reverse the order.
4. Connect the External Feedback Signal (EFS) - see External Feedback Signal (EFS) – Function and Wiring.

NOTICE

This battery incorporates an internal negative switch. In OFF status or during a protection event, the negative terminal may be electronically disconnected.

4.5.1. Connecting multiple batteries in parallel

Batteries can be connected in parallel to increase capacity and autonomy. Power expansion is restricted by the maximum system current (refer to the Battery Specification [37]). Power is increased by using multiple independent and redundantly protected battery packs, not by adding more batteries to a single pack.

WARNING

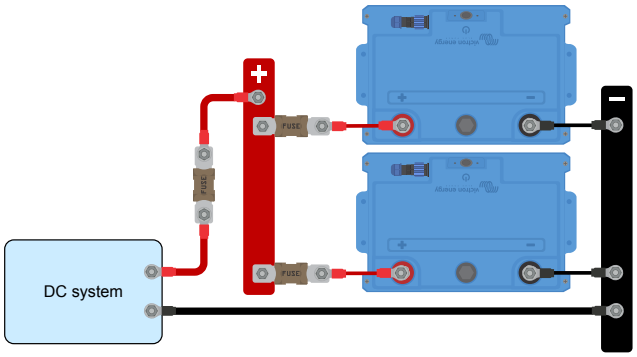
Hazard: System current above the interrupting capability of a single battery.

Consequence: In the event of a system overcurrent, the cascading protection sequence can leave the E-switch of the final battery to interrupt a fault current beyond its specified capability. The switch fails to open, which can lead to overheating, thermal runaway and fire.

Avoidance:

- Ensure that the total system current drawn from a parallel battery pack never exceeds 800 A, the maximum current that a single SuperPack NG can safely interrupt.
- Do not fit a main fuse for the battery pack rated above 800 A.
- Increase power by using multiple independent and redundantly protected battery packs, not by adding further batteries to a single pack.

- Connect the DC system cables diagonally to ensure equal current paths through each battery.
- Ensure that the cross-sectional area of the main system cable is equal to the cross-sectional area of a single string cable multiplied by the number of parallel strings.
- Fuse each battery on the positive side.
- Fuse the positive main cable leading to the battery bank.
- Connect the battery bank to the DC system.
- For detailed wiring principles, calculations, and examples, refer to the Wiring Unlimited book.



Fuse example

Two batteries are connected in parallel, each with a maximum continuous current of 100 A.

Each battery must be protected by an individual fuse rated slightly above 100 A, for example a 125 A Class T fuse (or MRBF type) with an interrupt rating of 20 kA. These fuses protect the cables and the battery in case of a fault in a single string.

The total system current is the sum of the individual battery currents. In this example, the maximum system current is 200 A. The main positive system cable and the main system fuse must therefore be rated for at least 200 A, for example a 250 A Class T fuse (or MRBF type) with an interrupt rating of 20 kA.

This ensures that each battery string is correctly protected while the main fuse protects the DC system against excessive total current.

4.6. External Feedback Signal (EFS) – Function and Wiring

The SuperPack NG battery features an M12 single-pole connector on the top panel that provides the External Feedback Signal (EFS).

The EFS connector can be associated with two functions:

- External Disconnection Signal (EDS)
- External Charging Signal (ECS)

Although both functions share the same physical EFS output, their signal behaviour and intended use are different.

General EFS characteristics

During normal operation, the EFS output is free-floating (0 V). When active, it outputs a battery-positive voltage (+Vbatt) referenced to battery negative and can supply up to 250 mA.



WARNING

Hazard: Inductive, capacitive or high-current loads connected directly to the EFS output.

Consequence: Voltage peaks and inrush currents can destroy the EFS output. Any protection function that relies on the signal, such as an external safety relay, is then lost without this being apparent.

Avoidance:

- Do not connect the EFS output directly to inductive, capacitive, or high-current loads. When using inductive devices such as relays or buzzers without an internal driver circuit, always fit a flyback diode across the coil (cathode to Vbatt+).
- Capacitive loads with large inrush currents should be avoided or suitably limited.

Always use the battery negative as the common reference for external devices connected to the EFS output. If multiple devices are connected, ensure that the total current remains within the output capability.

External Charging Signal (ECS)

ECS can be enabled in the VictronConnect app. When active, the EFS output is continuously high at battery-positive voltage (+Vbatt).

ECS is triggered when the configured Low SoC warning threshold is reached. The signal remains active as long as the SoC is below the threshold or a charging current is detected. Whenever SoC is above the Low SoC threshold and no charging current is detected for more than 30 seconds, the ECS is deactivated.

Because ECS provides a steady ON/OFF signal for more than 30 seconds, it can be used directly to:

- energise a relay coil,
- drive a visual or audible alarm,
- control devices with a remote on/off input such as a BatteryProtect, Solar Charger, or Orion XS.

External Disconnection Signal (EDS)

EDS is always enabled and provides an additional layer of system protection. When current flow is detected while ATC (Allow To Charge) or ATD (Allow To Discharge) is inactive, the EFS output generates an alternating square-wave signal.

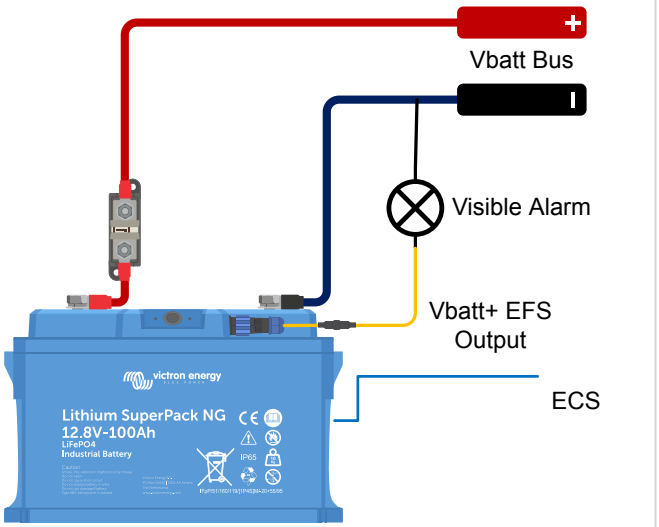
This condition can only occur in rare fault scenarios, such as a fail-short of electronic switching devices. The internal flags allow detection of such malfunctions and enables timely intervention.

EDS is a diagnostic signal and is not intended to directly drive relays, lamps, or buzzers. When using EDS, external logic or signal conditioning is required to detect the square-wave signal and convert it into a stable control or alarm output.

EFS functional wiring examples (ECS)

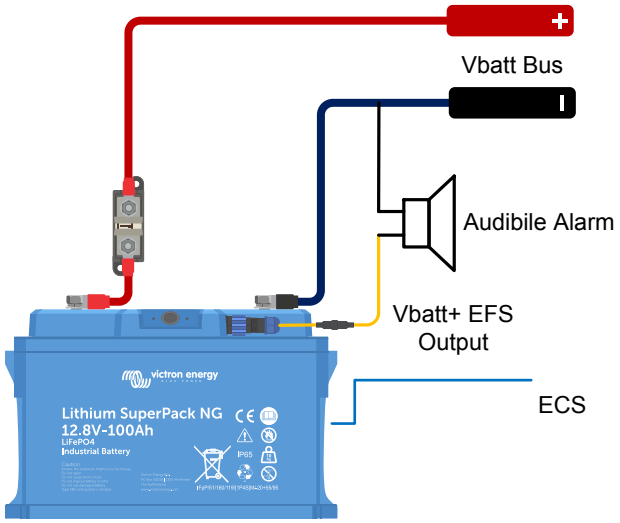
Indicator light (visible alarm)

An indicator light can be connected to provide a visible alarm during ECS operation. Connect the positive lead of the light to the EFS signal pin and the negative lead to the battery negative terminal. The light illuminates continuously while the ECS signal is active.



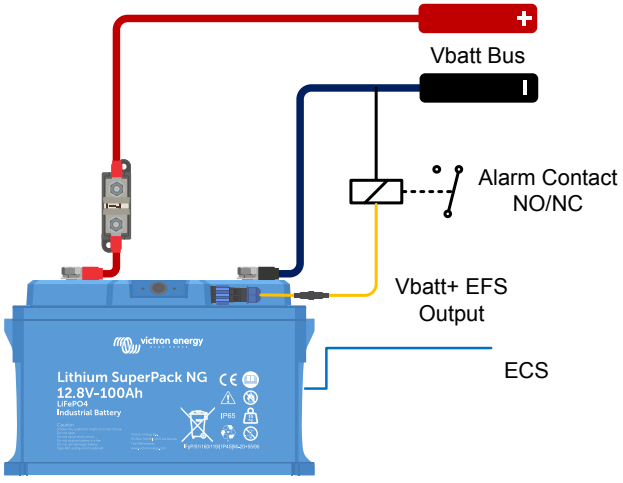
Audible alarm

An audible alarm, such as a buzzer or speaker, can be connected in the same way. The alarm sounds continuously while the ECS signal is active.



Relay-based control – alarm contact

A relay with NO/NC contacts can be driven directly by the ECS signal, as ECS provides a continuous battery-positive output. Connect the relay coil positive terminal to the EFS signal pin and the negative terminal to battery negative. When ECS is active, the relay energises and the contact can be used to switch an external alarm or signalling circuit.



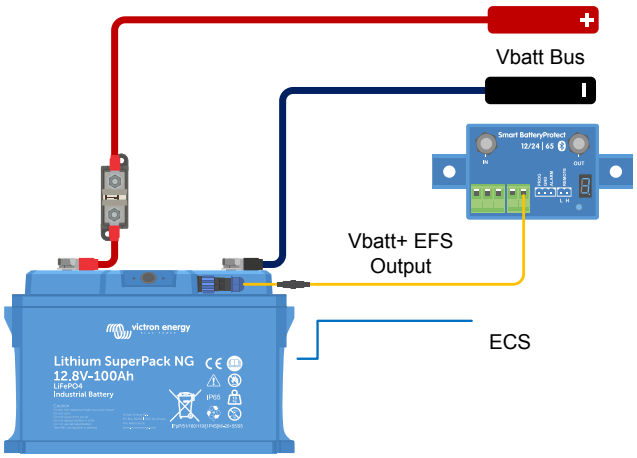
Direct control of a Victron product's remote on/off input

The ECS function can be used to control Victron products that provide a remote on/off input. It provides an automatic control signal that can be used to enable or disable external equipment based on the Low SoC threshold.

Connect the ECS output (EFS signal pin) to either the remote on/off L or H input of the device, depending on the required control behaviour for the application. Use the battery negative as the common reference (GND).

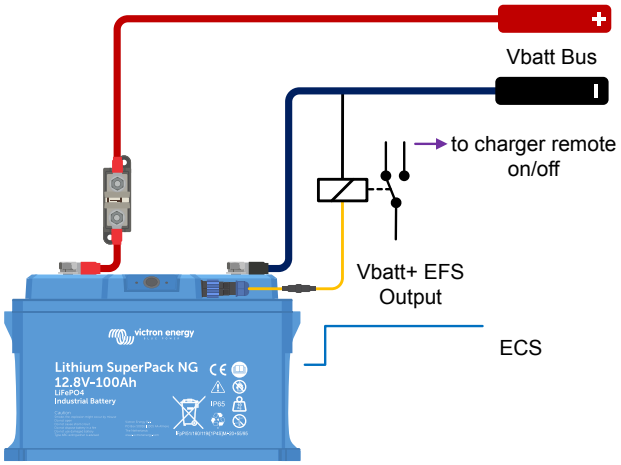
When ECS becomes active, the EFS signal goes high (+Vbatt). This activates or deactivates the device via the selected remote on/off L or H input, depending on the application. When ECS is cleared, the EFS signal returns to 0 V (free-floating) and the device reverts to its default state.

Refer to the product manual for the correct Remote on/off wiring and input requirements.



Relay-based control of a charger's remote on/off input

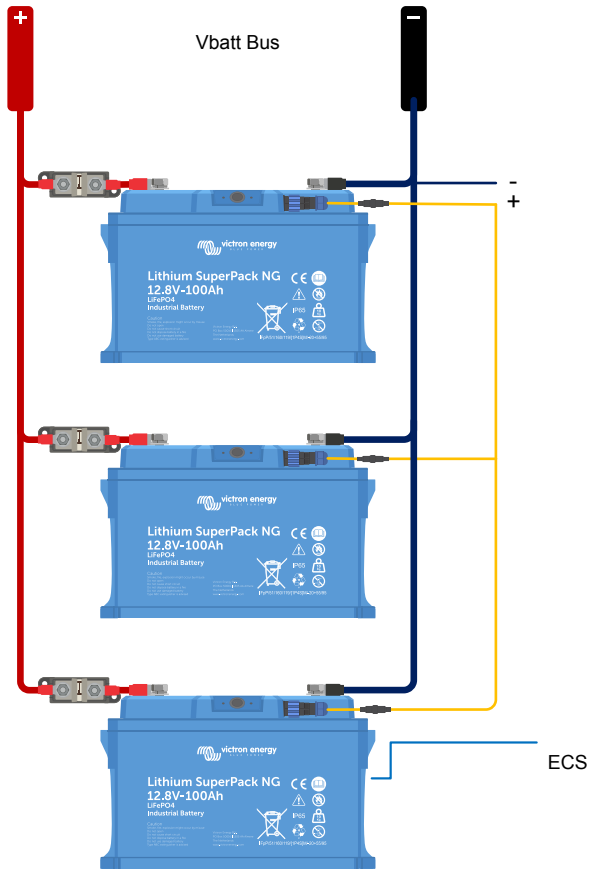
A relay with NO/NC contacts can be driven directly by the ECS signal. Connect the relay coil positive terminal to the EFS signal pin and the negative terminal to battery negative. When ECS is active, the relay energises and the contact can be used to control a charger or other device with a remote on/off input.



Battery bank solutions (ECS)

Parallel battery bank – ECS outputs connected in parallel

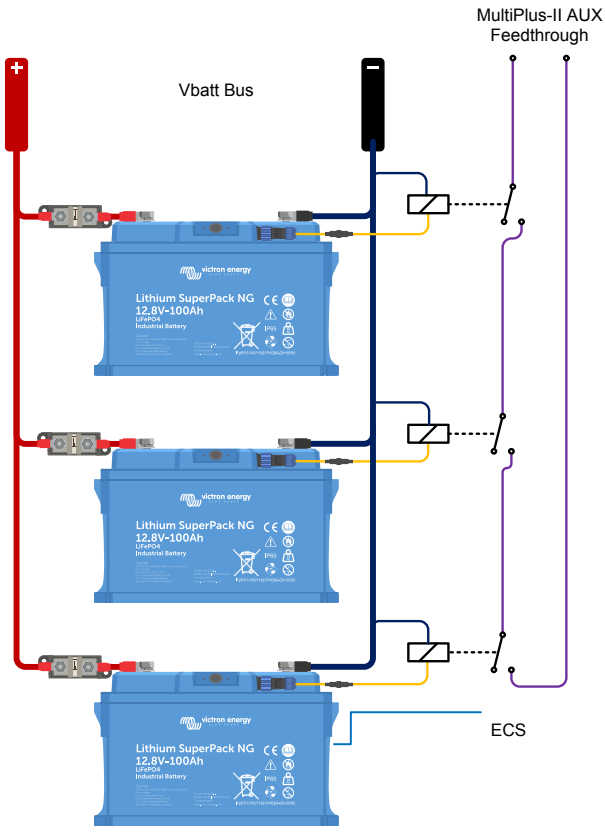
In systems with multiple Lithium SuperPack NG batteries connected in parallel, the EFS outputs of all batteries can also be connected in parallel. This ensures that when any battery triggers its EFS signal, the combined output activates, allowing connected devices or alarms to respond to a protection event from any unit in the system.



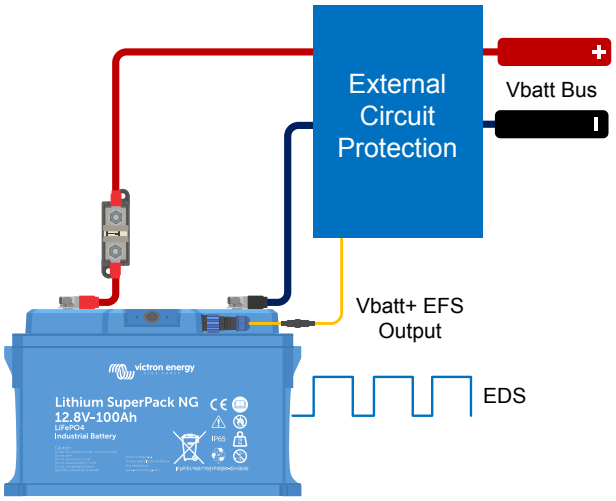
Parallel battery bank – ECS relay contacts in series

In systems with multiple Lithium SuperPack NG batteries connected in parallel, each battery can use its ECS output to drive its own relay. The relay contacts are connected in series, forming a single control path to the external device (for example, the AUX input of a MultiPlus-II).

If any battery activates its ECS signal, its relay opens and interrupts the control circuit, ensuring that the system responds immediately to a protection or warning condition from any battery.



EFS functional wiring example (EDS)

The EDS output provides a square-wave diagnostic signal when an internal fault condition is detected while charging or discharging is not allowed. This signal must be connected to external logic capable of detecting the square wave and converting it into a stable alarm or shutdown signal. The EDS output must not be used to directly drive relays.	

4.6.1. EFS inverter/charger integration

An inverter/charger such as the MultiPlus and Quattro that is powered from the AC input while the battery is disconnected can draw an overcurrent. This can trip the AC protection and prevent the battery from being charged again, leaving the system unable to recover on its own.

The battery protects itself against deep discharge and locks out. Before connecting the AC input to shore power, for example a shore power socket in a marina or a power socket on a campsite, verify that the battery is active and ready to be charged. For the lock-out condition and how to clear it, see Self-restoring protection mechanisms [32].

To prevent a deep discharge, the EFS output with the ECS function can be used to send a feedback signal to the inverter. On a MultiPlus-II, the AUX input can be configured for this purpose. Connect the EFS output through a separate relay so that the interface between the battery and the inverter is electrically isolated. **Observe the maximum output current of the EFS channel of 250 mA.**

The EDS function remains active on the same EFS output, because it is the native function of the channel. In the event of a BMS failure, the square-wave EDS signal is present on the same line as the ECS signal and can cause the inverter to disconnect intermittently. External logic is therefore required to distinguish the two signals.

Before using this arrangement, establish whether a sudden disconnection of the loads can create an undesired or critical condition in the application. See also the warning on automatic disconnection in Charge and Discharge Warnings [5].

ECS feedback to an inverter/charger The ECS output drives the coil of a separate relay. The relay contact is wired to the AUX input of the inverter/charger, so that the control circuit is electrically isolated from the battery. Use the battery negative as the common reference for the relay coil.	

5. Configuration & Settings

5.1. Configuration of chargers and loads

Before turning on the system, ensure that chargers and loads are correctly configured, particularly their maximum combined charge and combined discharge currents, to avoid exceeding battery limits.

In addition, configure the chargers for $LiFePO_4$ (LFP) chemistry and set the charge voltages and related parameters according to the values listed in the Battery Specification [37] chapter. Use the full charge algorithm (bulk, absorption and float, where applicable) and do not use profiles intended for lead-acid batteries.

Before first use, run one complete full charge sequence. This allows the battery to initialise correctly and ensures the state-of-charge indication is accurately displayed in VictronConnect.

Maximum charge current

The maximum continuous charge current is 1C.

NOTICE

For optimal battery performance and lifespan, a charge current of 0,3C is recommended.

Maximum discharge current

The SuperPack NG can sustain a continuous 2C discharge current for a limited period, depending on internal temperature and cell voltage. This should be considered for peak power demand.

NOTICE

For continuous cycling, maximum efficiency, and best service life, limit the discharge current to 0,5C.

5.2. Lithium SuperPack NG battery settings

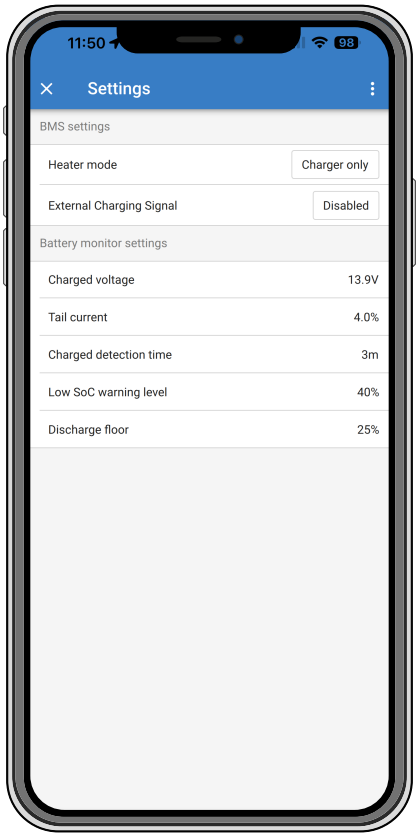
Once powered up, use the VictronConnect app to configure the battery settings.

BMS Settings

- **Heater mode:**
  - **Smart Heat** (default): The heater turns on only when a charger is connected, preserving battery energy.
  - **Anti-freeze:** The heater turns on when the temperature is too low to allow charging, even without a charger connected. This uses battery energy until the low SoC threshold is reached.
- **External Charging Signal:** Disabled by default. When enabled, the EFS is triggered when the Low SoC warning threshold, configurable in the VictronConnect app, is reached. For details, refer to the External Feedback Signal (EFS) – Function and Wiring [15] section.

Battery monitor settings:

Unlike other battery monitors, the Lithium SuperPack NG battery has mostly fixed settings that cannot be customised.



- **Charged voltage:** The voltage above which the battery monitor synchronises and resets SoC to 100%, provided tail current and charged detection time conditions are met.
- **Tail current:** The current below which the battery monitor synchronises and resets SoC to 100%, provided charged voltage and charge detection time conditions are met. Default: 4%, adjustable if needed.
- **Charged detection time:** The duration charged voltage and tail current must be met for SoC synchronisation. Default: 3 minutes, adjustable if needed.
- **Low SoC warning level:** The level at which a warning is issued before the discharge floor has been reached.

  A warning is displayed in VictronConnect and the red LED starts blinking when the warning is active.
- **Discharge floor:** This parameter has two functions:
  - It defines the minimum state of charge (SoC) to which the battery may be discharged, ensuring that sufficient energy remains for self-discharge after Allowed to Discharge (ATD) is disabled.

    It limits the depth of discharge to extend battery life and maintain reserve capacity, for example, to supply backup power in solar systems until recharging resumes.

    When the discharge floor is reached, a Low SoC alarm is triggered in VictronConnect, the red LED lights up continuously, and Allowed to Discharge (ATD) is disabled, preventing further discharge until the SoC rises above the defined threshold.

    Setting the discharge floor to zero (not recommended) disables this protection feature.

    NOTICE

    The discharge floor prevents full discharge and should be set to retain enough energy for self-discharge until recharging is possible.
  - It determines the 'Time remaining' value in the VictronConnect app, calculated based on the actual discharge current and the set discharge floor.

6. Operation

6.1. Monitoring & Control via VictronConnect

The battery is monitored and controlled using the VictronConnect app.

VictronConnect provides three pages for this purpose: Status, Battery, and History. Each page displays specific parameters, which are explained below.

On Android phones or tablets, VictronConnect also allows additional monitoring options. Home screen widgets can be added to display key information from Victron Bluetooth Smart devices such as the SuperPack NG battery at a glance.

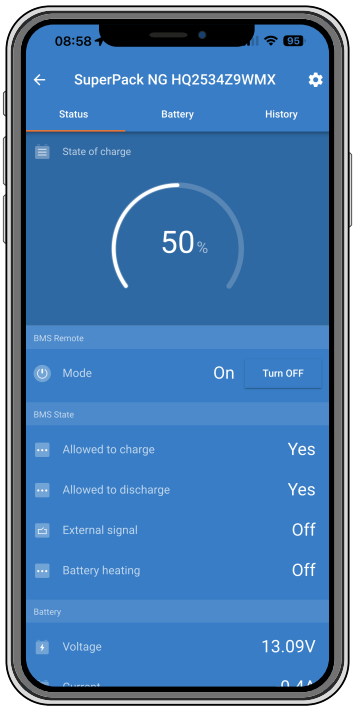
VictronConnect also supports Android Auto, allowing key information from Victron devices, such as the SuperPack NG battery, to be shown on the vehicle's infotainment display. Any Victron devices listed under "My devices" in the VictronConnect device list are available on the Android Auto screen. For details, refer to the VictronConnect manual.

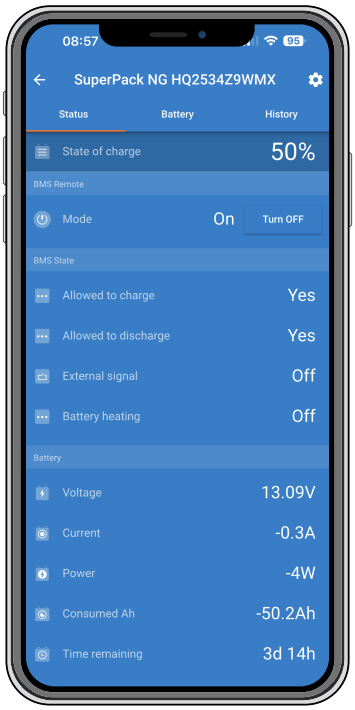
Status page:

The Status page displays real-time information about the battery.

- **State of Charge:** Indicates the battery's charge level in percent.
- **Mode:** Shows the battery status (On or Off) and allows switching the battery off with a tap, which disables both charging and discharging of the battery.

  When the battery is switched off using the mode button, Bluetooth remains active.
- **Allowed to charge:** Indicates whether charging is permitted. The status shows "No" if:
  - The battery temperature is below 5 °C.
  - The battery temperature too high.
  - One or more battery cell voltages have reached the high cell voltage threshold (hardcoded in the battery).
  - The battery is switched off using the mode button.
- **Allowed to discharge:** Indicates whether discharging is permitted. The status shows "No" if:
  - The configured Discharge floor has been reached.
  - One or more cells have reached the hard-coded low cell voltage threshold.
  - The battery is switched off using the mode button.
  - Note: "Pre-Alarm" is displayed in the event of a pre-alarm condition.
- **External signal:** Displays the status of the External Feedback Signal (EFS).
- **Battery heating:** Battery heating: Indicates whether the internal battery heater is currently active (On) or inactive (Off).
- **Voltage:** The battery voltage as reported by the battery.
- **Current:** The current flowing through the battery, as reported by the battery.
- **Power:** The battery power as reported by the battery.
- **Consumed Ah:** The ampere-hours consumed since the last full charge cycle.
- **Time remaining:** The estimated time remaining, based on current consumption, until the Discharge floor is reached.





Battery page:

The Battery page provides information about the battery and detailed data.

Battery information

- **Balancer status:** Shows the current cell balancing status. Possible states:
  - **Unknown:** The current status is not available. Possible reasons:
    - The battery has not been fully charged for more than 30 days.
    - The battery was recently added to the system.
    - The state of charge is unknown.

    In all cases, start a new charging cycle.
  - **Balanced:** All cells are balanced.
  - **Imbalanced:** A cell imbalance has been detected. Perform a full charge cycle to rebalance the cells.
  - **Balancing:** The battery is currently charging, and cell balancing is in progress.
- **Min cell voltage:** The lowest cell voltage detected.
- **Max cell voltage:** The highest cell voltage detected.
- **Min cell temperature:** The lowest cell temperature detected.
- **Max cell temperature:** The highest cell temperature detected.
- **Individual battery information**

  The lower section displays details for the selected battery.

  Displayed information includes:
  - battery serial number, nominal capacity, firmware version, battery temperature, voltage, current, and individual cell voltages.



History page:

The History page displays long-term battery statistics since installation or the last history reset.

The history data can be reset using the Reset history button at the bottom of the page. However, the history should not be reset, as this data is essential for diagnosing potential battery issues.

- **Deepest discharge:**
- **Cumulative AH drawn:**
- **Discharged energy:**
- **Charged energy:**
- **Synchcronisations:**
- **Cycles:**
- **Last full charge:**
- **Minimum battery voltage:**
- **Maximum battery voltage:**
- **Min cell voltage:**
- **Max cell voltage:**
- **Min cell temperature:**
- **Max cell temperature:**
- **Last error:**



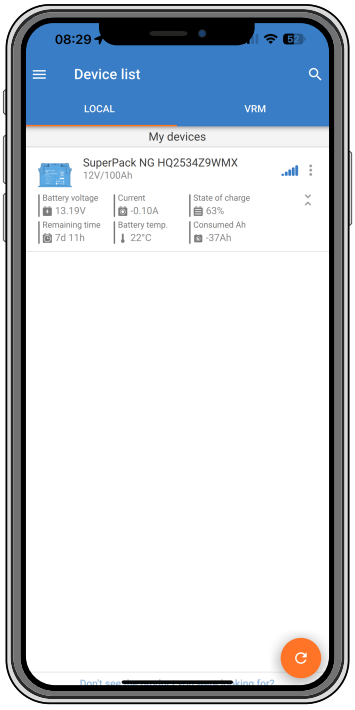
6.1.1. Instant Readout

VictronConnect can display key battery data directly on the Device List page—without needing to connect to the product. This includes visual notifications for warnings, alarms, and errors, allowing quick diagnostics at a glance.

Instant Readout is disabled by default and must be enabled if you wish to display this data. When VictronConnect is first installed, you will be prompted to enable the feature.

Available parameters:

- **Battery voltage**
- **Battery current**
- **State of charge**
- **Remaining time**
- **Battery temperature**
- **Consumed Ah**
- **Visual notifications for warnings, alarms and errors**



For details on enabling Instant Readout, refer to the VictronConnect manual, available on the VictronConnect download page.

6.2. Charging

The Lithium SuperPack NG battery can be charged with any battery charger, provided it has a Lithium Iron Phosphate (LFP) charging profile, or a user-defined preset.

Using the correct charging parameters ensures optimal performance, safety, and service life. Refer to the Battery Specification [37] for the detailed charging settings.

Charging characteristics

- The Bulk/Absorption voltage defines the level at which the battery is charged to full capacity. Once this voltage is reached, the current will gradually decrease until the battery is fully charged and the cells are balanced.
- The Float voltage maintains the battery at full charge without overcharging it. This stage can be held indefinitely when the system is on standby or under light load.
- Charging stops automatically when the internal Battery Management System (BMS) detects that all cells are balanced and fully charged.

Charging conditions

- Charging is only permitted when the battery temperature is between 0 °C and 60 °C. Below or above this range, the BMS will block charging to protect the cells.
- When the temperature is too low for charging, the internal heater activates when a charger is connected (default setting). Charging will resume as soon as the cell temperature is above 0 °C.
- The battery may be charged from any DC source, including alternators, DC-DC chargers, solar charge controllers, or mains-powered chargers, as long as the voltage and current limits are within specification.
- When the battery is switched off via the VictronConnect app or the on/off push button, charging and discharging are disabled. Switching the battery off via the app keeps the Bluetooth connection active and is therefore not suitable for long-term storage.
- Recondition or equalisation modes must not be used, as they apply voltages too high for LFP chemistry.

Solar charging

When charging from a solar system, use an MPPT solar charge controller with the appropriate LFP profile (for example, Victron SmartSolar or BlueSolar).

Ensure that the charge controller's voltage limits match the recommended values shown in the table above.

Alternator charging

When charging from an engine alternator, the alternator must be protected from overload.

Use a DC-DC charger between the alternator and the battery to limit current and voltage.

Victron DC-DC chargers (such as the Orion-Tr Smart and Orion XS series) provide a safe and efficient solution for LFP charging from alternators.

6.3. Discharging

The SuperPack NG battery can supply power to DC systems or inverters within the specified limits. The BMS continuously monitors voltage, current and temperature to ensure safe and reliable operation.

Discharge characteristics

- The battery can deliver high discharge currents up to 2C. The duration for which this current can be sustained depends on several factors, including State of Charge (SoC), State of Health (SoH), and ambient temperature.

  In a typical application (ambient temperature around 25 °C and 100 % SoC), 2C can be sustained for up to 10 minutes.

  For continuous operation and system sizing, a discharge rate of 0.5C is recommended to reduce heat build-up, prevent component overheating, avoid triggering temperature-related protections, and optimise battery lifespan.

  2C should be considered for peak power demand.

  Currents exceeding 2C will trigger overcurrent protection, with only short transient peaks (lasting a few seconds) permitted.

- The BMS automatically disconnects the loads and prevents discharging when the low-voltage cut-off is reached. A warning (W-B01) is issued. If the condition is not cleared within 30 seconds, ATD (discharge) is disabled and an alarm (A-B01) is raised.

  The status is cleared once the battery returns within the operational range.

- Discharge is automatically re-enabled once the battery voltage or temperature returns to a safe level.



WARNING

Hazard: Automatic disconnection of the battery.

Consequence: The battery can disconnect from the system without prior warning in order to prevent internal damage, causing a total loss of power to all connected equipment.

Avoidance:

- Do not use the battery as the sole power source for safety-critical equipment such as navigation, steering, bilge pumps, or medical and life-support systems.
- Provide an independent back-up supply for any equipment whose failure could result in injury or in loss of the vessel or vehicle.
- Design the installation so that an unexpected loss of power does not create a hazardous situation.

Discharge conditions

- Discharging is only permitted when the internal battery temperature is between −30 °C and 60 °C. Outside this range, the BMS disables discharging to protect the cells.
- When the battery is switched off via the VictronConnect app or the On/Off push button, discharging is disabled.

Recommended practices

- Avoid deep discharges below 10 % SoC whenever possible.
- Use the Low SoC warning level and Discharge floor settings to limit the depth of discharge. A reduced discharge depth improves battery longevity and maintains reserve capacity for backup power.
- Regularly review discharge data in the VictronConnect history page to identify abnormal usage patterns.
- During extended storage, disconnect all loads to prevent over-discharge caused by parasitic consumption. The best practice is to switch the battery off using the push button, as this also disables the internal Bluetooth interface.



WARNING

Hazard: Deep discharge during storage.

Consequence: Storing the battery at 0 % SoC, or leaving a load connected without a charging source, deeply discharges the cells. A deeply discharged battery can be permanently damaged and can become unsafe when it is charged again.

Avoidance:

- Never store the battery at 0 % SoC.
- Charge the battery before storage and switch it off with the push button, so that parasitic consumption cannot discharge it.
- Disconnect all loads for the whole storage period.
- Do not store the battery below 5 °C without a charging source connected. Charging is not permitted below this temperature, and in Anti-freeze mode the heater draws its energy from the battery.
- Allow for a self-discharge of up to 3 % SoC per month and recharge the battery in good time. For the permitted storage time and the minimum state of charge, see the battery specification.

6.4. Reset to factory defaults

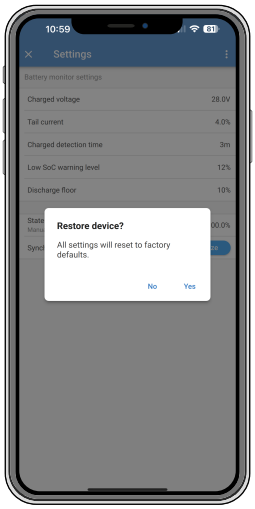
The Lithium SuperPack NG battery can be reset to factory settings via the VictronConnect app.

How to reset:

1. Open VictronConnect
2. Tap the cogwheel icon to access Settings.
3. Tap the three vertical dots in the Settings menu.
4. Select Reset to defaults, then confirm with Yes.

The following settings will be restored to their default values:

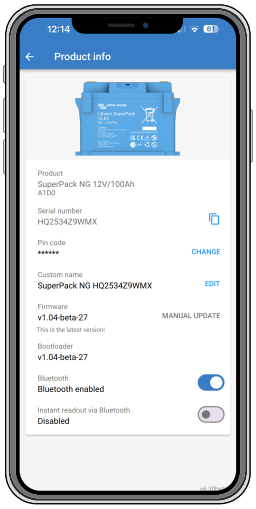
- Charged voltage
- Tail current
- Charged detection time
- Low SoC warning level
- Discharge floor



6.5. Bluetooth reactivation

If Bluetooth has been deactivated for the battery in VictronConnect, for example for security reasons, it can be reactivated as follows:

1. Switch the battery off and on again.
2. After power-up, Bluetooth will remain enabled for approximately 30 seconds.
3. Open VictronConnect within this time and connect to the battery.
4. Go to the product information page.
5. Re-enable Bluetooth to keep it active.



7. Troubleshooting

7.1. LEDs, Warnings, Alarms & Error Codes

LEDs

The battery is equipped with two indicator LEDs: the Bluetooth Status LED and the Error LED. These LEDs indicate the current operating state of the battery and signal any warnings or faults.	

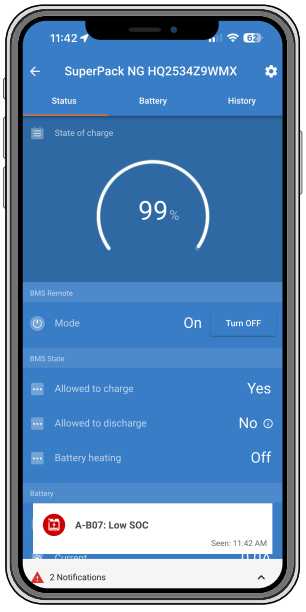
The following tables list all LED indications and their meanings.

Bluetooth Status LED	Description
Off	The battery is switched, or Bluetooth is disabled in the VictronConnect app.
Blue on	A Bluetooth device is connected.
Blue blinking	Bluetooth is active but no device is connected.

Error LED	Description
Off	No warning/alarm/error active.
Red blinking	A warning is active.
Red on	An alarm and/or error is active.

During a firmware update, the Bluetooth and Error LEDs blink simultaneously, indicating that the update is in progress.

Warnings, Alarms & Error Codes

• If the red LED lights up or blinks, open the VictronConnect app and connect to the battery to view the warning, alarm or error code and take appropriate action. • A warning indicates a condition that may lead to a system shutdown if not resolved. • An alarm indicates the reason for a shutdown that has already occurred. In the example shown, discharging is no longer allowed due to a Low SoC alarm, which was triggered by the Discharge floor setting in VictronConnect. • When ATC and/or ATD indicates “No”, VictronConnect also shows a circled “i” icon next to ATC and/or ATD. Tap the “i” icon to view the off-reason. See also the ATC / ATD off-reasons in VictronConnect [35] section.	

Warning codes

VictronConnect warning code	Message	Instructions / Remarks
W-B01	Low cell voltage	Charge the battery or reduce the load to prevent an imminent system shutdown.
W-B02	High current	Reduce the current to prevent an imminent system shutdown. Do this byreducing the load or by turning loads off.

VictronConnect warning code	Message	Instructions / Remarks
W-B05	Communication battery lost (cellpack	Internal communication failing. Contact your dealer
W-B06	Load will disconnect	The loads will be turned off if the fault is not resolved, for example due to low battery voltage. This warning is always shown together with the reason for the impending load disconnection.
W-B07	Low SoC	Charge battery or reduce load to prevent imminent system shutdown.
W-B09	High battery temperature	The battery temperature is too high. Try to reduce the ambient temperature.
W-B11	Cellguard Firmware cannot be updated	Follow recovery document (cellguard could not enter bootloader mode and needed a powercycle)

Alarm codes

VictronConnect alarm code	Message	Instructions / Remarks
A-B01	Low cell voltage	Charge battery or reduce load to prevent imminent system shutdown.
A-B02	High current	Reduce charging current or turn off some loads. The system will try to reenable chargers or loads in 5 minutes.
A-B03	High BMS temperature	Check the ambient temperature and verify that the cooling fans are operating.
A-B06	Load disconnected	The loads have been turned off via ATD. Resolve this alarm by charging the battery.
A-B07	Low SoC	Charge battery. The system will turn the loads back on when the battery is sufficiently charged.
A-B09	High battery temperature	The battery temperature is too high. Try to reduce the ambient temperature.
A-B13	Low battery temperature	The Battery temperature is too low. Try to increase the ambient temperature.

Error codes

VictronConnect error code	Message	Instructions / Remarks
E-B11	Hardware error	Contact your Victron dealer.
E-B25	Pre-charge error	The load resistance is too low to pre-charge the loads. Disconnect or reduce some DC loads.
E-B35	Pre-charge timeout	The load capacity is too high to pre-charge. Disconnect some DC loads.
E-B42	High cell voltage	
E-B43	External disconnection signal	EFS signal has been triggered. Internal Fatal Error. Disconnect the battery from load and chargers immediately. Contact your dealer.
E-B44	Battery safety lock	1) Check cell voltages. 2) Turn the product off and back on again, after issue has been solved.
E-B116	Calibration lost	Contact your dealer.
E-B119	Settings data lost	Go to the settings page and reset to factory defaults. Bluetooth bonding information will also reset and product must be removed from paired devices.

7.2. Self-restoring protection mechanisms

The SuperPack NG battery includes several protection mechanisms that automatically disable charging and/or discharging when unsafe conditions are detected. In most cases, the battery attempts to recover automatically once the condition is removed. This section explains the behaviour of these self-restoring protections and when manual intervention is required.



WARNING

Hazard: Automatic reconnection during a self-reset attempt.

Consequence: After a protection event, the battery can re-energise the circuit without warning. Wiring that appears to be dead becomes live again, and connected loads can start unexpectedly. This can cause electric shock, arcing or injury from equipment that starts while work is in progress.

Avoidance:

- Do not treat a protection event as a safe isolation of the circuit.
- Before inspecting or working on live parts of the circuit, switch the battery off with the push button or disconnect it physically.
- Make sure that the battery cannot be switched on again while the work is in progress.

Short circuit protection

A short circuit is detected and interrupted by the hardware protection. When this occurs, the firmware attempts to recover automatically by performing a pre-charge sequence.

The battery performs up to three pre-charge attempts, with a 30-second pause between each attempt.

If, after three attempts, the short-circuit condition is still present and the output voltage does not rise, a pre-charge error (E-B25) is raised. In this state, both charging and discharging are disabled.

If the short-circuit condition is later removed (the load voltage drops below the defined threshold), charging and discharging are automatically re-enabled.

If, during the recovery attempts, the output voltage does rise but normal operation cannot be fully restored, a pre-charge timeout is raised. In this case, discharging is disabled while charging remains allowed.

After a pre-charge timeout, the battery waits 10 minutes before repeating the pre-charge sequence (three attempts). This cycle is repeated automatically until the output can be enabled again.

Overcurrent protection

If an overcurrent condition is detected during charging or discharging, the affected action is disabled immediately. Overcurrent protection is activated within 5 seconds once the detected current exceeds the maximum continuous current threshold. The intervention time is reduced if the detected current exceeds 3C.

After a delay of up to 5 minutes, charging or discharging is automatically re-enabled. If an overcurrent condition is detected again, the same process is repeated.

There is no permanent lockout for overcurrent protection. The battery will continue to disable and re-enable charging or discharging in 5-minute cycles until the overcurrent condition is resolved.

Low-voltage protection

The BMS automatically disconnects the loads and prevents discharging when the low-voltage cut-off is reached. A warning (W-B01) is issued. If the condition is not cleared within 30 seconds, ATD (discharge) is disabled and an alarm (A-B01) is raised.

The status is cleared once the battery returns within the operational range.

Temperature protection behaviour

Over-temperature and under-temperature protections are self-restoring. Charging and/or discharging are automatically re-enabled once the battery temperature returns within the specified operating range. No manual intervention is required.

Low-voltage safety lock-down

The low-voltage safety lock-down is an additional layer of protection that can occur if the cells continue to discharge due to self-discharge.

If a cell voltage drops below the safety lock-down threshold, discharging is disabled. After 30 seconds, charging is also disabled and the Battery Safety Lock error (E-B44) is triggered.



This condition is not self-restoring. Recovery is only possible by performing a full power cycle of the battery after the underlying cause has been resolved.



WARNING

Hazard: Deep discharge of the battery.

Consequence: Deep discharge causes permanent cell damage and can render the battery unsafe for continued use.

Avoidance:

- Ensure that the battery remains sufficiently charged at all times, in particular during storage.
- If this condition does occur, follow the Very low battery voltage recovery procedure [34] in the next section.

7.2.1. Very low battery voltage recovery procedure

If a battery is discharged too deeply, its terminal voltage can fall well below the nominal 12 V (24 V or 48 V). If the battery voltage drops below 10 V (20 V or 40 V for 24 V and 48 V systems respectively), or if any cell voltage falls below 2,5 V, permanent battery damage may occur. The lower the battery or cell voltage, the more severe the damage is likely to be.

In such cases, it may be possible to attempt recovery using the low-voltage recharge procedure described below. However, recovery is not guaranteed. There is a realistic risk that the battery has suffered permanent cell damage, which may result in moderate to severe capacity loss even if recovery appears successful.

Low-voltage recovery charge procedure

This recovery procedure must only be performed on a single battery. If the system contains multiple batteries, disconnect them and repeat the procedure individually for each battery.



WARNING

Hazard: Recharging a deeply discharged battery.

Consequence: The cells may already be damaged. During the recovery charge the battery can overheat, bulge, release gas or go into thermal runaway.

Avoidance:

- This process is potentially hazardous. A supervisor must be present at all times.
- Monitor the battery voltage, the individual cell voltages, the charge current and the temperature throughout the procedure.
- Stop charging immediately if the battery becomes hot, starts to bulge, or if any value moves outside the limits given in this procedure.

1. Set the charger or power supply to:
   - 13,8 V for 12 V batteries
   - 27,6 V for 24 V batteries
   - 55,2 V for 48 V batteries
2. If any cell voltage is below 2,0 V, charge the battery with a current of 0,1 A until the lowest cell voltage rises to at least 2,5 V.

   Closely monitor the battery during this phase. If the battery becomes hot or starts to bulge, stop charging immediately. In this case, the battery is irreparably damaged and must not be used further.
3. Once the lowest cell voltage has risen above 2,5 V, increase the charge current to 0,1 C.

   For a 100 Ah battery, this corresponds to a charge current of 10 A.
4. Record the initial battery terminal voltage and individual cell voltages.
5. Start charging.

   During this phase, the BMS may repeatedly switch the charger on and off. This behaviour is normal when there is a significant cell imbalance.
6. Record the battery and cell voltages at regular intervals. The cell voltages should begin to rise during the first part of the charging process.

   If the voltage of any cell does not increase within the first 30 minutes, stop the procedure and consider the battery unrecoverable.
7. Monitor the battery temperature regularly.



WARNING

Hazard: Severe cell imbalance, which can indicate an internal fault leading to overheating and an internal short circuit.

Consequence: Internal failure of the battery, with possible gas release and thermal runaway.

Avoidance:

- Keep precise control of the charge current, the charge voltage and the temperature throughout the procedure.
- Shut the process down immediately if any of these values moves outside the limits given in this procedure.

If a sharp temperature increase is observed, stop charging immediately and consider the battery unrecoverable.

8. Once the battery reaches:
   - 13,8 V (27,6 V or 55,2 V),

     increase the charge voltage to:
   - 14,2 V (28,4 V or 56,8 V),

     and increase the charge current to 0,5 C.

     For a 100 Ah battery, this corresponds to a charge current of 50 A.
9. During this stage, the cell voltages will rise more slowly. This is normal.
10. Leave the charger connected for 6 hours.
11. Afterwards, check the cell voltages. They should be within 0,1 V of each other.

    If one or more cells show a significantly higher deviation, consider the battery damaged.
12. Disconnect the charger and allow the battery to rest for several hours. Then measure the battery voltage. It should stabilise well above:
    - 12,8 V (25,6 V or 51,2 V),

      typically around:
    - 13,2 V (26,4 V or 52,8 V) or higher.

      The cell voltages should still be within 0,1 V of each other.
13. Allow the battery to rest for 24 hours and measure the voltages again.

    If the battery voltage has fallen below 12,8 V (25,6 V or 51,2 V), or if a noticeable cell imbalance is present, the battery should be considered damaged beyond recovery.

7.3. ATC / ATD off-reasons in VictronConnect

When Allow To Charge (ATC) or Allow To Discharge (ATD) is inactive, VictronConnect displays a specific off-reason explaining why charging or discharging is currently disabled.

The off-reason can be viewed by tapping the circled “i” icon shown next to the ATC or ATD status when it indicates “No”.

Off-reasons can result from internal battery protection mechanisms, configuration settings, temperature limits, remote control inputs, or system error conditions. Each off-reason is accompanied by a short description and, where applicable, guidance on corrective actions.

Depending on the condition, an off-reason may apply to ATC, ATD, or both. Reviewing the off-reason helps determine whether the restriction is temporary, configuration-related, or caused by a protection or fault condition, and supports correct troubleshooting.

The following table provides an overview of all possible ATC and ATD off-reasons as shown in VictronConnect.

VictronConnect off-reason	Description	Advice	Trigger condition	ATC	ATD
#1: Disabled by battery	Battery prevents [charging | discharging]. This may occur if there is no communication with the battery (yet) or if the battery configuration is invalid.		No battery communication Invalid battery configuration Invalid battery voltage	Yes	Yes
#3: High temperature	The temperature is too high. This is a part of the battery protection mechanism and it is not necessarily indicating a problem.	Check the ambient temperature and/or whether the fans are running.	FET temperature too high Cell overtemperature	Yes	Yes
#5: Internal reason	The device is in alarm state and it is preventing normal operation.	Check the alarm notifications and take the appropriate actions to clear it.	System error (User Settings Failure, Calibration Data Lost, ATC/ATD Failure, External Disconnection Signal)	Yes	Yes
#6: Overloaded			Pre-charge timeout (ATD only) or pre-charge error	Yes	Yes

VictronConnect off-reason	Description	Advice	Trigger condition	ATC	ATD
#8: Disabled by the user	Remotely switched off by VictronConnect.	Check that the 'On/Off' settings are configured as desired.	Switched off via VictronConnect	Yes	Yes
#9: Low temperature	The temperature is too low. This is part of the battery protection mechanism and it is not necessarily indicating a problem.		Cell undertemperature	Yes	Yes
#10: High voltage	Voltage level of one or more cells is too high.		Cell overvoltage	Yes	No
#11: Low voltage	Voltage level of one or more cells is too low.		Battery bank undervoltage Cell undervoltage	No	Yes
#12: High current	[Charge | Discharge] current is too high.		Battery overcurrent	Yes	Yes
#13: Low SoC			SoC below discharge floor	No	Yes

8. Technical Data

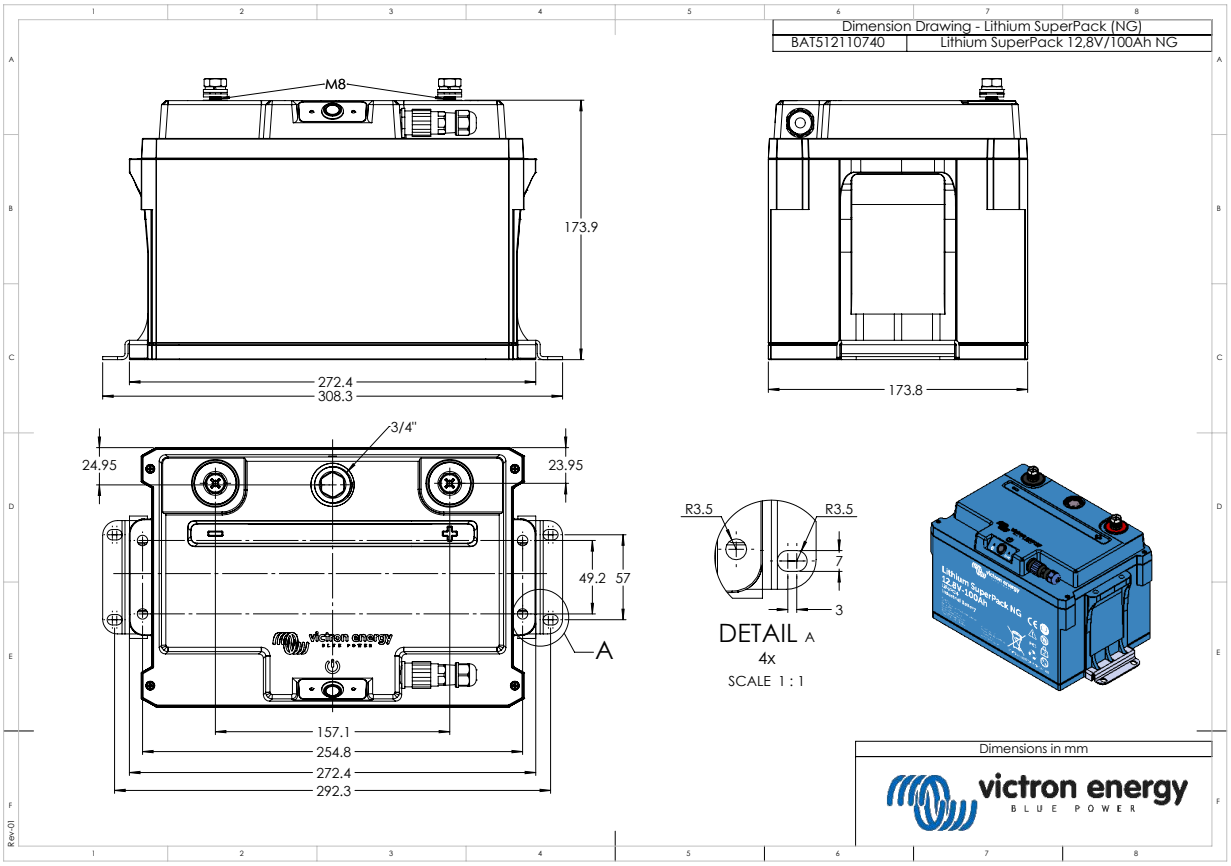
8.1. Battery Specification

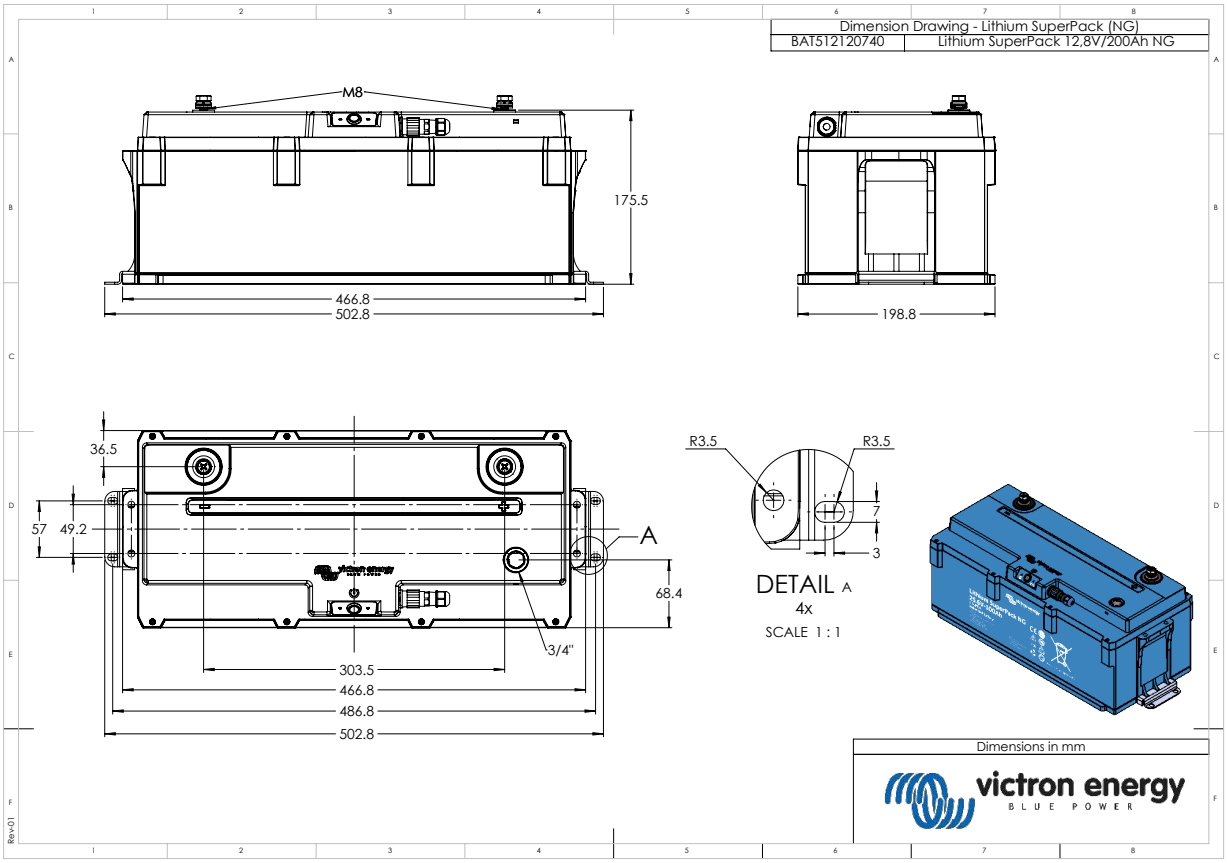
VOLTAGE & CAPACITY	SuperPack 12,8V/100 Ah NG	SuperPack 12,8 V /200 Ah NG	SuperPack 25,6 V /100 Ah NG	SuperPack 25,6 V /200 Ah NG	SuperPack 51,2 V /100 Ah NG
Part Number	BAT512110740	BAT512120740	BAT524110740	BAT524120740	BAT548110740
Nominal capacity @ 25 °C[2)]	12,8 V		25,6 V		51,2 V
Nominal energy @ 25°C[2)]	100 Ah	200 Ah	100 Ah	200 Ah	100 Ah
Nominal energy @ 25 °C	1280 Wh	2560 Wh		5120 Wh	
Capacity loss / Energy loss	(per 100 cycles, @ 25 °C, 100 % DoD): <1 %				
Round trip efficiency[3)]	93 %				
CYCLE LIFE 25 °C (capacity ≥ 80 % of nominal)[3)]					
Cycle life	2500 cycles @80 % DoD | 3000 cycles @70 % DoD | 5000 cycles @50 % DoD				
DISCHARGING					
Recommended discharge current (continuous use)	50 A	100 A	50 A	100 A	50 A
Max continuous discharge current[8)]	200 A	400 A	200 A	400 A	200 A
End of discharge voltage	11,2 V		22,4 V		44,8 V
Internal resistance Averáge values	3,1 mΩ	5,8 mΩ	1,8 mΩ	3,1 mΩ	11,0 mΩ
Max short-circuit[9] current	4,1 kA	4,5 kA	7,1 kA	8,3 kA	4,7 kA
CHARGING					
Recommended charging voltage	14 V		28 V		56 V
Float voltage	13,5 V		27 V		54 V
Charging voltage range	[13,5 - 14,2] V		[27 - 28,4] V		[54V - 56,8] V
Recommended charging current	30 A	60 A	30 A	60 A	30 A
Max continuous charging current[8)]	100 A	200 A	100 A	200 A	100 A
Max insulation voltage[10]	60 V				

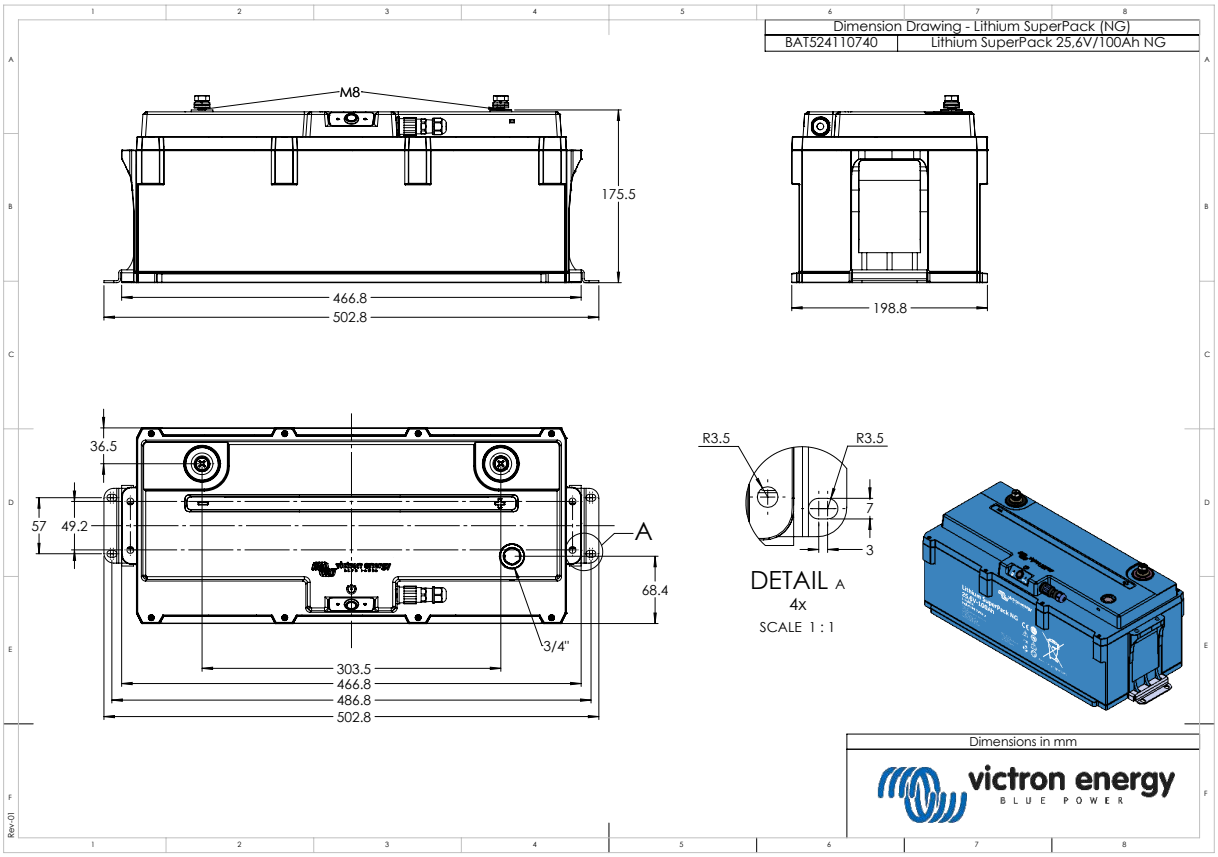
FEATURES			
Hardware connection / System max current	Short circuit above 800 A		
Software protections	Overvoltage, Undervoltage, Overtemperature, Undertemperature, Overcurrent		
Wired communication	External Feedback Signal (EFS)		
Bluetooth	Yes, VictronConnect App		
GUI / Status indication	Push button (On/Off), BLE LED, Error LED		
Self-heating max power	65 W	130 W	260 W
OPERATING CONDITIONS			
Parallel configuration	Yes, unlimited energy expansion, with power expansion limited to the system's maximum current		
Series configuration	No		
Operating temperature	Charge[7] and Discharge: -30 °C to +60 °C		
Humidity Operating Range (non-condensing)	<90 % RH		
Storage temperature	Recommended [10 to 35] °C Expanded [-40 to +65] °C[4]		
Max storage time @ 25°C	1 year with at least initial remaining SoC >50 %		
Ingres Protection	IP65		
MOUNTING			
Power connection (threaded insert)	M8 female 20 mm including nut screws		
Mounting options	Upright and on its long side, maintain flat horizontal support		
Dimensions [LxWxH] (mm)[5]	273 x 173 x 173[6]	466 x 198 x 173	871 x 198 x 173
Weight (kg)	10,7	20,5	41
External Feedback Signal (EFS) Connector	External Feedback Signal connector for SuperPack NG (included) - Victron part number: SPR00310		
STANDARDS			
Safety	Cells: IEC 62619 | UL 1973 | UL 9540A Battery: IEC 62619 (pending)		
EMC	EN 61000-6-3, EN 61000-6-2		
Performance	IEC 62620 (pending)		
Transportation	UN 38.3		
Automotive	ECE R10-7		

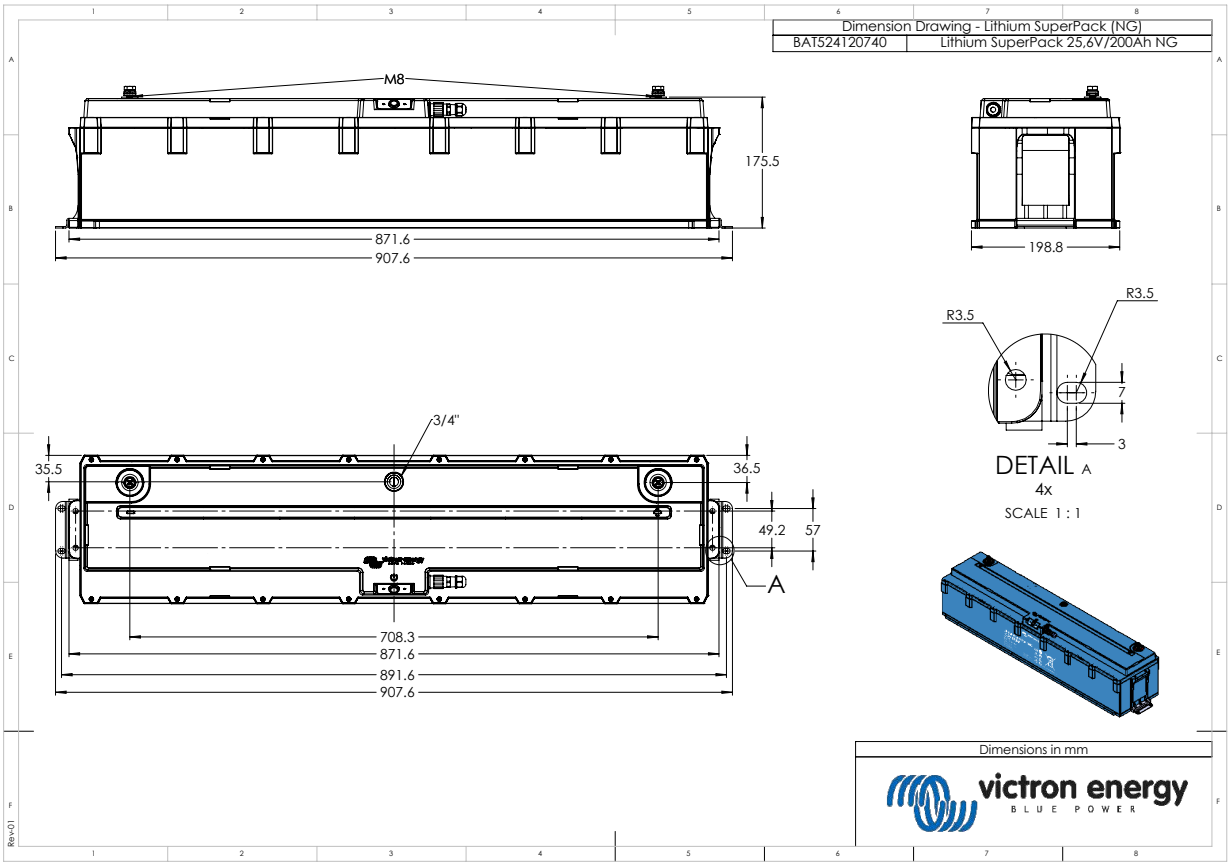
Notes	[2] Discharge current ≤1C [3] 25 °C and 0.5C cycling [4] Performances might be reduced [5] Additional height of 15 mm for terminal screws [6] Compatible with BCI Group 49 dimensions [7] Below 0 °C, charging is suspended while the internal self-heating function warms the cells and automatically resumes once a safe charging temperature is reached. [8] At 25 °C ambient and 100% SoC, 2C can be sustained for approximately 10 minutes. The actual duration depends on temperature and voltage protection limits. Above this, overcurrent protection is triggered within 5 seconds. [9] Average value across the entire SOC range. [10] Exceeding this voltage can damage the internal insulation. The installation must be designed so that this limit cannot be exceeded.

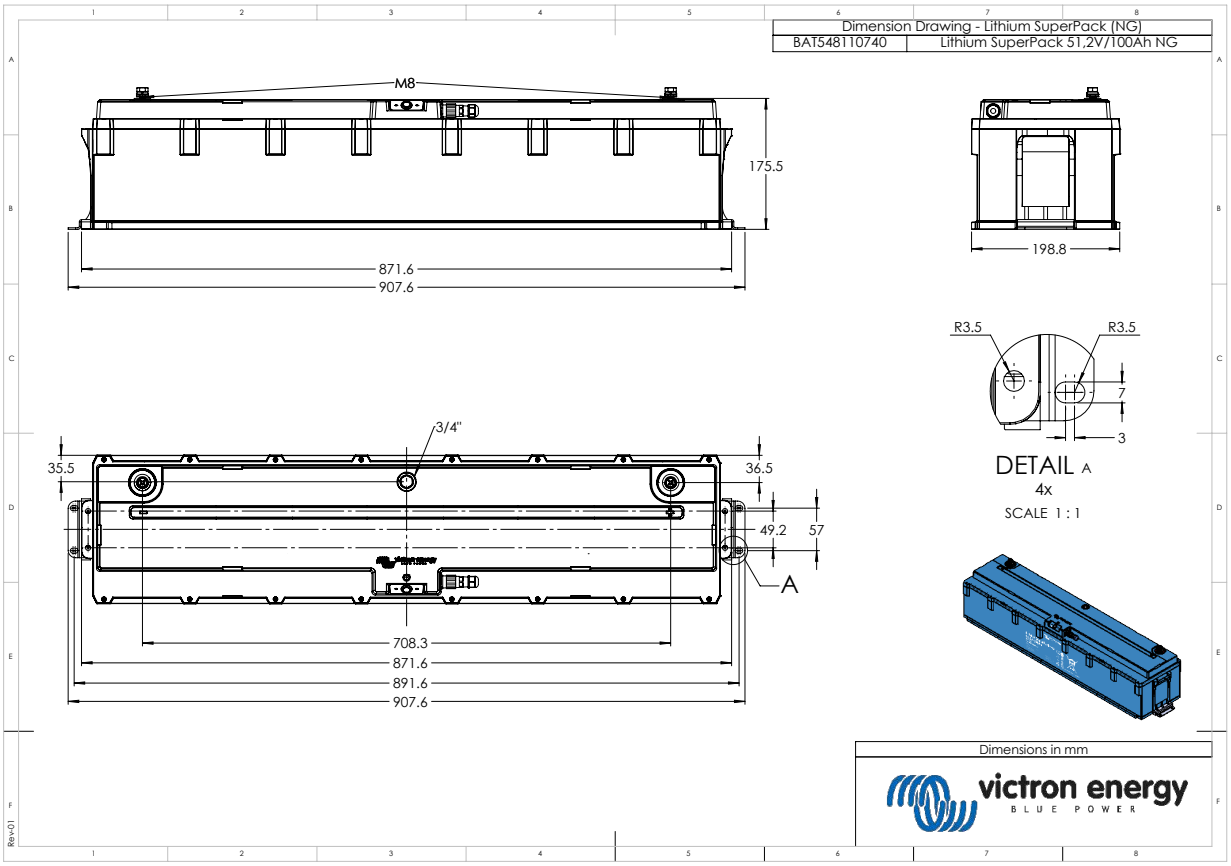
8.2. Enclosure Dimensions






Dimension Drawing - Lithium SuperPack (NG)
BAT524110740
Lithium SuperPack 25,6V/100Ah NG
M8
175.5
466.8
502.8
198.8
36.5
57
49.2
A
68.4
3/4"
303.5
466.8
486.8
502.8
R3.5
R3.5
7
3
DETAIL A
4x
SCALE 1 : 1
Dimensions in mm
victron energy
BLUE POWER


Dimension Drawing - Lithium SuperPack (NG)
BAT524120740
Lithium SuperPack 25,6V/200Ah NG
M8
175.5
871.6
907.6
198.8
R3.5
R3.5
7
3
DETAIL A
4x
SCALE 1 : 1
3/4"
35.5
36.5
49.2
57
A
708.3
871.6
891.6
907.6
Dimensions in mm
victron energy
BLUE POWER


Dimension Drawing - Lithium SuperPack (NG)
BAT548110740
Lithium SuperPack 51.2V/100Ah NG
M8
175.5
871.6
907.6
198.8
R3.5
R3.5
7
3
DETAIL A
4x
SCALE 1 : 1
3/4"
35.5
36.5
49.2
57
A
708.3
871.6
891.6
907.6
Dimensions in mm
victron energy
BLUE POWER