DRIFTPRO GEN2

TECHNICAL MANUAL

VERSION 1

CONTENTS

INTRODUCTION

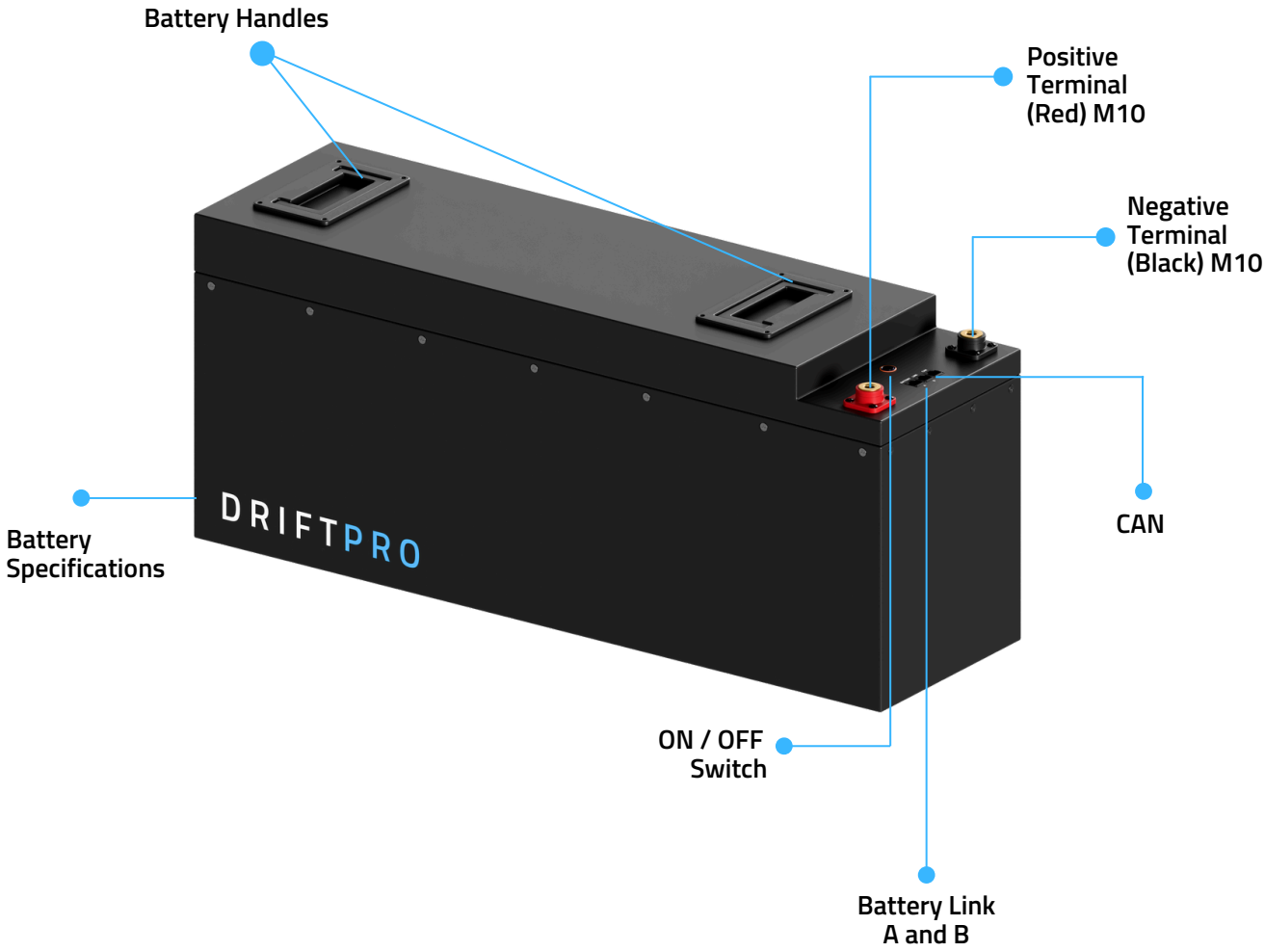
Fogstar is the number one choice for leisure battery installers across the UK. Our reputation is built on trust, technical excellence, and a product range that delivers uncompromising performance in every environment - from campervans and marine systems to commercial and off-grid applications.

We offer one of the most comprehensive selections of LiFePO4 battery solutions on the market, designed to support all scales of installation, whether you're integrating with advanced Victron systems or building a reliable standalone setup.

Every Fogstar Drift battery is backed by a 10-year warranty and supported by our UK-based customer service team, ensuring expert assistance is always available when you need it.

The Drift PRO Gen2 range represents the next step in our battery evolution. Featuring enhanced system communication, advanced internal balancing, and modular scalability via Battery-Link, the Gen2 line ensures long-term serviceability, smarter diagnostics, and future-proof integration.

YOUR PRO GEN2 BATTERY



UN38.3

ARRIVAL CONDITION

In compliance with UN38.3 shipping regulations, your battery will arrive with a State of Charge (SoC) of approximately 30% or less. While this is below the typical 50% recommended for storage, it accounts for potential parasitic loads from connected appliances in real-world use cases.

Discharge is disabled by default.

To enable discharge:

- Press the button on the front of the battery until the blue LED illuminates
- You may hear an audible click as the internal relay (MOSFET) engages

⚠️ **Important:**

- If you're reading 0–2V at the terminals, discharge is likely still disabled - either via the button or within the Fogstar Drift App.
- Enabling discharge directly impacts terminal voltage. Always verify discharge status before system integration.

PRE-INSTALLATION

It is recommended to keep the discharge turned off on the battery until the installation has been completed. This is to enable a spark-free installation. Arcing can also damage the nickel coating.

For the terminal bolts, a torque of 6Nm is recommended, but should be kept within a range of 4Nm (minimum) to 8Nm (maximum).

DISCHARGE CONTROL LOGIC

The battery system allows for independent control of charge and discharge functions via the Fogstar Drift Bluetooth App. However, there are operational limitations that must be considered. When the physical Discharge button on the battery is engaged (pressed), control of the discharge function is locked out from the Bluetooth App.

In this state, discharge cannot be enabled or disabled via the app. Conversely, if the Discharge button remains unpressed, discharge can be fully controlled through the Fogstar Drift App.

⚠️ Note: If the battery's physical discharge button is engaged, remote control of the discharge function via the Bluetooth App is disabled.

Engaging the Discharge button also reduces the output voltage at the battery terminals to a level that is incompatible with most standard appliances. Nevertheless, certain low-power devices (e.g., LED lighting) may continue to operate under this reduced voltage.

When placing the battery into storage, it is important to consider that such devices may still draw power, even if discharge is disabled via the app. To ensure complete isolation and prevent any parasitic drain, it is recommended to use a mechanical disconnect switch or physically disconnect the battery from the system entirely during periods of non-use.

BATTERY HEATING

The Drift PRO Gen2 range uses $LiFePO_4$ chemistry, which supports safe discharge down to −20°C. However, charging lithium iron phosphate cells below 0°C can cause permanent cell degradation and capacity loss.

To mitigate this, each battery includes integrated 36W heating pads, managed by the onboard BMS to maintain safe charging conditions in low-temperature environments.

Heating Activation Logic:

- Charging is disabled when internal temperature drops to 0°C (LTC – Low Temperature Cut-off).
- The BMS redirects incoming charge current to power the heating pads.
- Once internal temperature reaches 5°C, charging is automatically re-enabled.
- The heating system operates exclusively during charging and does not consume battery power.

Technical Notes:

- Minimum charge current for effective heating: 0.5A
- Heating pad operation tested at: −20°C
- Rated for conditions down to: −40°C (external ambient)
- Heating will not activate unless a compatible charger is connected and supplying current.

⚠️ Important: Always ensure your charging setup meets minimum input current for heating pad activation.

BMS OPERATION

The Battery Management System (BMS) is designed to monitor and protect the battery pack against unsafe operating conditions. When any of the following conditions are detected, the BMS will automatically engage protective measures to prevent damage to the battery and connected systems.

Low Temperature Charging (UTC)
Condition: Charging initiated at or near 0°C
Action: Charging is temporarily paused. Incoming current is redirected to activate internal heating pads.
Recovery: Charging resumes automatically once internal cell temperature reaches ≥ 5°C.
Note: This is a normal behaviour to protect cell chemistry in cold environments.

High Temperature Discharging (OTD)
Condition: Discharge attempt detected while internal temperature > 75°C
Action: Discharging is disabled.
Recovery: Discharging resumes automatically once temperature returns to a safe range.

Low Temperature Discharging (UTD)
Condition: Discharge attempt detected while temperature < -20°C
Action: Discharging is disabled to prevent cell damage.
Recovery: Resume discharging once battery temperature is within safe operating limits.

Pack Over-Voltage (POV)
Condition: Total pack voltage exceeds the maximum allowable threshold
Action: Charging is disabled to prevent overcharge.
Recovery: Discharge the battery until pack voltage returns to a safe level.

Pack Under-Voltage (PUV)
Condition: Total pack voltage falls below the minimum allowable threshold
Action: Discharging is disabled to prevent deep discharge.
Recovery: Charge the battery until voltage returns to a safe range.

Short Circuit (SCD)
Condition: Sudden, high-current event indicative of a short circuit
Action: Both charge and discharge are disabled immediately.

Recovery:

1. Inspect the system for wiring faults, shorts, or damaged components.
2. If caused by an inverter with high inrush current (e.g., charging capacitors), disconnect the load and reintroduce it using a pre-charge resistor.

⚠ Warning: Do not reuse the battery until the fault source is identified and resolved.

BMS OPERATION

Over Current Charging (OCC)
Condition: Charging current exceeds 300A
Action: Charging is disabled to protect the system.
Recovery: Reduce the charging current to within the specified limit.

Over Current Discharging (OCD)
Condition: Discharging current exceeds 300A
Action: Discharging is disabled.
Recovery: Reduce the load to fall within the allowable current range.

Cell Under-Voltage (CUV)
Condition: One or more individual cells fall below the minimum voltage threshold
Action: Discharging is disabled to prevent cell damage.
Recovery: Charge the battery to rebalance and restore cell voltages.

High Temperature Charging (OTC)
Condition: Charging initiated while internal temperature > 55°C
Action: Charging is disabled.
Recovery: Charging resumes automatically once internal temperature falls to a safe level.

PARALLEL CONNECTIONS

Parallel Connection (Increased Capacity)

Purpose: To increase system capacity (Ah) while maintaining a 12.8V nominal voltage.

How to connect:

- Connect all positive terminals together → one common positive node
- Connect all negative terminals together → one common negative node

What increases:

- Capacity: Additive (e.g. 2 × 230Ah = 460Ah)
- Current Output: Additive (e.g. 2 × 300A = 600A peak)
- Voltage: Remains 12.8V nominal

Example:
Two Drift PRO Gen2 230Ah batteries in parallel =
460Ah, 600A peak, 12.8V system

Best Practice:

- For 2 batteries: take the positive feed from Battery A and the negative feed from Battery B to balance load.
- For 3 or more: use a dedicated busbar system, with identical cable lengths and sizes from each battery to the busbar.
- Maximum: 16 batteries in parallel

Important:

- All batteries must be at the same voltage (within 0.05V) before connecting.
- Use the Fogstar App to address and monitor each unit.
- Install data-link cables to enable CANbus communication across parallel units.

SERIES CONNECTIONS

Purpose: To increase system voltage while maintaining the same capacity.

How to connect:

- Connect the positive terminal of Battery 1 to the negative terminal of Battery 2
- The negative of Battery 1 becomes system negative
- The positive of Battery 2 becomes system positive

What increases:

- Voltage: Additive (e.g. 2 × 12.8V = 25.6V)
- Capacity & Current Output: Unchanged (e.g. still 230Ah, 300A peak)

Example:
Two Drift PRO Gen2 230Ah batteries in series =
230Ah, 300A peak, 25.6V system

Best Practice:

- Use only identical batteries (same brand, model, capacity, and age).
- Allow batteries to fully charge and settle within 0.05V of each other before connecting.
- Use for 24V or 48V system builds.

Limits:

- Maximum 4 batteries in series
- Do not configure systems above 48V nominal

⚠️ Critical Reminders for Parallel and Series Connections

- Do not mix batteries of different models, brands, voltages, or capacities in series.
- Always check voltage balance before making physical connections.
- Use identical cable lengths and cross-sections to ensure equal resistance paths, especially in parallel configurations.
- When building large banks, always use fused links and system-level protection (e.g. busbar fusing, DC isolators).

MULTI-BATTERY COMMUNICATIONS

Drift PRO batteries support multi-battery configurations using the Battery-Link ports located on the front face of each battery. These are standard RJ45 ports configured for internal CAN bus communication between units.

- Port A (Left): Transmits data to the next battery in the chain
- Port B (Right): Receives data from the previous battery

Automatic Master Detection
The battery system automatically determines the master unit - no DIP switches or manual configuration is required.

Configuration
To configure:

1. Connect the CAN port of any battery in the chain to the BMS-CAN port on the Victron Cerbo GX (or GX-enabled inverter) or Ekrano using the supplied cable.
2. Use standard RJ45 patch cables to daisy-chain additional batteries using the Battery-Link ports (Port A → Port B).
3. The system supports an unlimited number of Drift PRO units in this configuration.

Once connected, all battery data - including voltage, current, SOC, alarms, and cell-level details - will be visible through the Victron interface, consolidated via the auto-selected master battery.

VICTRON INTEGRATION

Victron Cerbo GX Connectivity
Drift PRO batteries are fully compatible with Victron GX systems and can communicate directly with a Victron Cerbo GX or any GX-enabled inverter.

Communication is established via the CANbus protocol, using the BMS-CAN port on the Victron device. Once connected, the BMS transmits real-time data including:

- Battery Voltage, State of Charge (SOC), and Current
- Internal and External Temperature Readings
- Individual Cell Voltages
- Up to 10 BMS Alarm States (e.g., cell imbalance, over-voltage, under-voltage)
- Dynamic Current Limit (DCL)
- Maximum Charging Voltage Limit (CVL)

Cable Requirements
A CAN communication cable is supplied with each battery. If additional length is required, a standard Cat7e Ethernet cable may be used. The cable must run from the CAN port on the battery to the BMS-CAN port on the Victron Cerbo GX or GX-enabled inverter.

Victron Ekrano GX Connectivity
After physically connecting the Drift PRO battery to the BMS-CAN port on the Victron Ekrano GX, some system settings must be adjusted to enable proper communication.

- Power on the Ekrano GX.
- **Navigate to Settings > Services:**
  - Ensure CAN-bus (VE.Can) is set to Enabled (250 kbit/s).
- **Go to Settings > DVCC (Distributed Voltage and Current Control):**
  - Enable DVCC (must be On)
  - Set Shared Voltage Sense = On
  - Set Shared Temperature Sense = On
- **Go to Settings > System Setup:**
  - Set Battery Monitor = Select the battery name that appears on the CAN bus (typically shows as “LFP” or the BMS identifier)
- **Return to the Device List:**
  - The battery should now be visible as a CAN device, displaying data such as voltage, current, SOC, and temperature.

FOGSTAR DRIFT APP

The Fogstar Drift App is your go-to tool for monitoring and managing your Drift PRO battery. Designed with clarity and simplicity in mind, the app gives you direct access to real-time data from your battery's internal Battery Management System (BMS).

About the App

- Available free for all Android and iOS devices
- Download from the App Store (iOS) or Google Play (Android)
- Designed for quick access to key battery data without unnecessary complexity
- Built specifically to interface with the Fogstar Drift BMS
- Bluetooth direct connection (no internet required)
- Option to connect via QR code for quicker pairing

The app features a user-friendly interface, suitable for all users—whether you're technically inclined or not. Navigation is clean and intuitive, putting the most important information front and center.

📥 Getting Started

1. Download the App
Install the Fogstar Drift App from the App Store (iOS) or Google Play (Android).

2. Enable Required Services
- Ensure Bluetooth is switched on
- Enable Location Services (required by Android for Bluetooth scanning)

🔄 Connecting to Your Battery

There are three ways to connect your Fogstar Drift App to your battery.

1. Connecting Your Battery via QR Code
You can quickly pair your Fogstar Drift battery to the app using the QR Code located on the battery itself.

- The QR code is positioned on the top of the battery, between the positive and negative terminals.
- Open the Fogstar Drift App, and on the Connect screen, tap the scan icon in the top-right corner.
- Your phone's camera will activate - simply scan the QR code to instantly connect.

2. Manual Connect

- Power on your Drift PRO battery
- Open the Fogstar Drift App
- Wait for the app to identify nearby batteries
- Find your battery on the list
- Slide the Bluetooth toggle (dot) to initiate the connection
- After a brief pairing process, you'll be redirected to the Battery Dashboard

3. Auto Connect

Auto Connect ensures your battery stays paired without having to manually select it each time.

- On the battery list, swipe left on your battery's name
- Tap "Auto Connect"
- Your phone will now remember this battery and automatically reconnect whenever the app is opened and the battery is in range

⚡Charge and Discharge Control

Within the main dashboard of the Fogstar Drift App, you'll find two key toggles: 'Charging' and 'Discharging'.

These controls allow you to manually enable or disable the battery's charge and discharge functions:

- Charging [OFF]: Prevents the battery from accepting charge.
- Discharging [OFF]: Prevents the battery from supplying power. This is useful for storage mode or system maintenance.

Setting Discharge to OFF places the battery in a low-power state, reducing the risk of unintended power drain during storage.

FOGSTAR DRIFT APP

📝 Renaming Your Battery

You can easily customise the name of your Drift PRO battery for clearer identification - especially useful in multi-battery systems.

To rename your battery:

1. Open the Fogstar Drift App
2. Navigate to the Battery Dashboard
3. Tap the current battery name displayed at the top of the screen
4. Enter your new name and confirm
5. Do not exceed 20 characters
6. The BMS will acknowledge the change with a 'Success' message.

⏱️ Wait 15 seconds for the new name to fully register with the BMS before exiting the screen.

🔒 Advanced Settings

Access to Advanced Settings is password-protected to ensure the integrity and safety of your battery system.

All BMS parameters are factory-configured and locked to prevent unauthorised changes. These settings are critical to the safe and stable operation of your battery. Modifying them without guidance can cause irreversible damage, including:

- Severe cell imbalance
- BMS communication errors
- System instability or failure

If you require a custom configuration - such as for a hybrid system or non-standard application - please contact our Customer Service team before making any changes:
✉️ customerservice@fogstar.co.uk

A member of our technical team will review your setup and, if appropriate, provide temporary access along with guidance to ensure the configuration is safe and supported.

⚠️ Do not attempt to alter BMS settings without authorisation. Doing so may void your warranty and compromise battery safety.

FOGSTAR DRIFT APP

🔐 Setting a Password (PIN Protection)

To enhance security, you can set a 6-digit PIN on your Drift PRO battery via the Fogstar Drift App. Once enabled, this PIN will prevent unauthorised devices from connecting to your battery.

⚠️ Important: If you forget your PIN, recovery is not possible via the app. The only way to reset it is by using the JBD Windows Tool with a compatible USB-to-UART interface. This is a technical process and not easily performed in the field.

How to Set a PIN:

1. Open the Fogstar Drift App
2. Navigate to the final tab: the Dashboard
3. Tap the Fogstar Drift logo
4. Enter your desired 6-digit PIN when prompted

Once set:

- Your current device will remain connected and will not prompt for the PIN again
- Any new device attempting to connect will require the PIN to access the battery

Best Practices:

- Write the PIN down and store it securely
- Email a copy to yourself or send it to customerservice@fogstar.co.uk for safekeeping
- Do not set a PIN unless you're confident you can retain or retrieve it later

QUICK START GUIDE

✅ Installation Orientation & Location

- Mounting Orientation: The battery can be installed in any orientation except upside down.
- Vehicle Installations:
  - The battery must be securely mounted to prevent movement during transit.
  - Specialist Drift PRO Battery Brackets are available and recommended for safe, vibration-resistant mounting.
  - Ensure the battery is accessible for disconnection or removal in an emergency.
  - Keep appropriate tools on hand, including cable cutters, a ratchet, and the correct spanner/socket for M10 hardware.
- Thermal Environment:
  - Install the battery in a space with moderate, stable temperatures - avoid exposure to extremes.
  - If mounting on a metal vehicle floor, use insulation or an air gap to prevent thermal bridging.
  - The integrated heating system will manage low ambient temperatures automatically when charge is applied, protecting the cells during cold conditions.

⚙ Electrical Connections & Torque Specs

- Terminals:
  - The Drift PRO Gen2 uses M10 terminals.
  - A maximum of two ring terminals may be connected per battery post.
- Required Hardware (Included):
  - M10 bolts
  - Flat washers
  - Spring washers
- Connection Stack (Top to Bottom):
  a. Ring terminal (flat against the battery post)
  b. Flat washer
  c. Spring washer
  d. M10 bolt
- Torque Specification:
  - Tighten bolts to between 4 Nm and 8 Nm, depending on ring terminal type and system design.
  - Do not overtighten.
  - Important: Allow terminals to cool to ambient temperature before tightening if they have been under recent load.

QUICK START GUIDE

⚠️ Safety & Commissioning Guidelines

- Switches Off First:
  - Ensure the battery's on/off switch is in the OFF position before connecting any cables.
  - Your system's main isolator must also be OFF.
- Polarity Check:
  - Double-check all polarity before final connections.
  - Incorrect polarity may cause irreparable damage to the battery and connected devices.
- Short Circuit Prevention:
  - Take extreme care not to bridge the positive and negative terminals.
  - A short circuit can cause severe system damage.
- Cable Management:
  - Do not stack more than two ring terminals per post.
  - Use busbars or a DC distribution block to handle multiple connections (chargers, inverters, etc.).
  - Excessive connections per terminal increase contact resistance and risk of overheating under high current.

🧯 Emergency Preparedness

- Ensure installation allows for quick access and disconnection of the battery in case of emergency.
- Keep tools nearby that are capable of quickly isolating or cutting power if required.

FREQUENTLY ASKED QUESTIONS

Can I Series or Parallel my batteries?
Yes. You can connect up to four (4) 12V Drift PRO batteries in series or parallel. For 24V Drift PRO batteries, you can connect a maximum of two (2) in series or four (4) in parallel.

What size terminals do the Drift PRO batteries use?
All Drift PRO batteries use M10 terminals and come with bolts as standard.

What are the charging parameters for Drift PRO batteries?

- 12V: 14.4V Bulk / 13.6V Float
- 24V: 28.8V Bulk / 27.2V Float
- 48V: 57.6V Bulk / 54.4V Float

Can I parallel batteries of different capacities?
No. All batteries connected in series or parallel must be the same capacity, make and model.

Why does my Drift only show temperatures on three cells?
This is normal.

- Temp 1 = BMS temperature
- Temp 2 = Battery bank 1
- Temp 3 = Battery bank 2
- Temp 4 is not used and will not show a reading.

How do I register my Drift warranty?
You can register your 10-year Fogstar Drift warranty here:
https://www.fogstar-drift.co.uk/pages/warranty-registration

What charger should I use with my Drift PRO?
As a general guideline, lithium batteries should be charged at 20–30% of their rated capacity. For example, a 200Ah battery is best paired with a charger that delivers around 40A.

Always refer to the specific charging parameters for your battery to ensure compatibility. We offer a range of Fogstar-approved chargers designed to maximise performance and lifespan. For tailored advice, feel free to contact our team.

FREQUENTLY ASKED QUESTIONS

Can I install my Drift battery on its side?
Yes. Drift batteries are orientation-independent, meaning they can be installed on their side, end, or upright - whichever suits your setup. The only requirement is that the terminals remain clean, accessible, and unobstructed.

What settings should I use on my charger?
Your charger should be set to match lithium charging parameters as closely as possible.

- Ideal settings: 14.4V bulk / 13.5–13.6V float
- Acceptable range: 14.2–14.6V bulk / 13.3–13.6V float
- For Victron systems: Use 14.2V bulk and 13.6V float

Avoid AGM or Lead Acid profiles with higher absorption voltages unless they can be customised.

WARRANTY

Coverage
All Fogstar Drift Lithium Leisure Batteries are covered by a 10-year warranty from the date of shipment. This warranty applies to products purchased from an authorised Fogstar dealer.

🔧 Important: Register your battery at our Fogstar Drift website upon receipt to activate your warranty.

✅ What's Covered
This warranty protects against defects in materials and workmanship that prevent the battery from performing as specified, including:

- BMS failure
- Cell failure
- Faulty temperature sensors
- Charging/discharging issues
- Internal corrosion

❌ What's Not Covered
The warranty does not cover:

- Improper installation or use
- Physical damage, neglect, or modification
- Alteration of BMS parameters without approval
- Use with incompatible chargers
- Damage due to over-discharge requiring recovery

📩 Making a Claim
To begin a warranty claim, contact:
📧 customerservice@fogstar.co.uk
📞 01527 757980

SPECIFICATIONS

Specification	12V 230Ah	12V 280Ah	12V 300Ah	12V 460Ah	12V 628Ah	24V 280Ah
Nominal Capacity (Ah)	230	280	300	460	628	280
Energy (Wh)	2944	3584	3840	5888	8038	7168
Cycle Life (@80% DOD)	4000	8000	4500	4500	8000	8000
Nominal Voltage (V)	12.8	12.8	12.8	12.8	12.8	25.6
Max Discharge Current (A)	300	300	300	300	300	300
Standard Charge Voltage (V)	14.4	14.4	14.4	14.4	14.4	28.4
Max Charge Voltage (V)	14.6	14.6	14.6	14.6	14.6	28.8
Cut-Off Voltage (V)	10	10	10	10	10	20
Charge Temp (°C)	0°C to 55°C	0°C to 55°C	0°C to 55°C	0°C to 55°C	0°C to 55°C	0°C to 55°C
Discharge Temp (°C)	-20°C to 55°C	-20°C to 55°C	-20°C to 55°C	-20°C to 55°C	-20°C to 55°C	-20°C to 55°C
Heating Function	Yes	Yes	Yes	Yes	Yes	Yes
Active Balancing	2A	2A	2A	2A	2A	2A
Dimensions (L×W×H mm)	320×205×280	390×205×280	390×205×280	531×205×280	698×205×280	698x205x280
Weight (kg)	27.7	33.28	33.5	47.3	60.23	60.6
Cell Type	LF230	LF280K	LF304	LF230	MB31	LF280K
Cell Configuration	4S1P	4S1P	4S1P	4S2P	4S2P	8S1P