



**FOGSTAR DRIFT**

LiFePO<sub>4</sub> LEISURE BATTERY

**DRIFT V1 USER MANUAL**  
V.4 2023

**[WWW.FOGSTAR-DRIFT.CO.UK](http://WWW.FOGSTAR-DRIFT.CO.UK)**



## FOGSTAR DRIFT

Here at Fogstar, we've made it our mission to make Lithium Iron Phosphate batteries affordable and accessible to everyone. We've also made the manufacturing process a transparent one.

You can rest assured that your leisure battery contains quality products, including EVE Grade A LiFePO<sub>4</sub> Prismatic Cells and a JBD Battery Management System. We've also included heating, Bluetooth and an App as standard.

As a relatively small business based in Worcestershire, we've set our sights on providing customers with the very best product and customer service experience.

In this manual you'll find lots of useful information about your Fogstar Drift Leisure Battery. Of course, if you don't find the answers to your questions, you can always get in contact with our friendly team and we will always be happy to help.

*The Fogstar Team*

## CONTENTS

- 2 Welcome
- 3 Get to know your battery
- 4 Battery specifications
- 6 Looking after your battery
- 7 The Fogstar Drift app
- 10 Frequently asked questions
- 12 Our community





## Battery Management System

BMS Information	12v 105ah	12v 230ah	12v 280ah	12v 300ah	12v 460ah	12v 560ah	24v 280ah	230 Seat Base
Maximum Discharge	100A	200A	200A	200A	200A	200A	200A	200A
Peak Discharge	200A	400A	400A	400A	400A	400A	400A	400A
Max Charging Current	100A	200A	200A	200A	200A	200A	200A	200A
Temperate Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OverCurrent Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OverDischarge Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

### TOP TIPS



It can usually take between 2-4 cycles for the BMS to fully 'learn' the battery parameters. Make sure you charge your battery to the full 14.4v during the first few cycles.





Cell Information	Fogstar Drift 105	Fogstar Drift 230	Fogstar Drift 280	Fogstar Drift 300
Battery	Fogstar Drift 105	Fogstar Drift 230	Fogstar Drift 280	Fogstar Drift 300
Cell Type	Grade A EVE LF105	Grade A EVE LF230	Grade A EVE LF280	Grade A EVE LF304K
Cell Configuration	4S1P	4S1P	4S1P	4S1P
Nominal Capacity	105Ah	230Ah	280Ah	300Ah
Energy	1280Wh	2944Wh	3584Wh	3840Wh
Cell Chemistry	Lithium Iron Phosphate	Lithium Iron Phosphate	Lithium Iron Phosphate	Lithium Iron Phosphate
Cell Nominal Voltage	3.2V *4 (12.8V)	3.2V *4 (12.8V)	3.2V *4 (12.8V)	3.2V *4 (12.8V)
Cycle Life	3500 Cycles @ 80% DOD	3500 Cycles @ 80% DOD	6000 Cycles @ 80% DOD	3500 Cycles @ 80% DOD
Maximum Discharge	100A	200A	200A	200A
Maximum Charge	100A	200A	200A	200A
Nominal Voltage	12.8V	12.8V	12.8V	12.8V
Discharge Cut Off Voltage	10V	10V	10V	10V
Discharge Temperature Range	-20C to 60C	-20C to 60C	-20C to 60C	-20C to 60C
Charge Temperature Range	-20C to 60C (Heater Enabled)	-20 to 60C (Heater Enabled)	-20 to 60C (Heater Enabled)	-20 to 60C (Heater Enabled)
Storage	10C to 35C @ 50% SOC	10C to 35C @ 50% SOC	10C to 35C @ 50% SOC	10C to 35C @ 50% SOC
Measurements (LxWxH in mm)	260mm x 168mm x 209mm	345mm x 190mm x 245mm	345mm x 190mm x 245mm	345mm x 190mm x 245mm
Weight	10KG	25kg	26kg	26kg
Housing Material	ABS Plastic	ABS Plastic	ABS Plastic	ABS Plastic





Fogstar Drift 460	Fogstar Drift 560	Fogstar Drift 24V	Seat Base 230
Grade A EVE LF230K	Grade A EVE LF280K	Grade A EVE LF280K	Grade A EVE LF230K
4S2P	161SP	161SP	4S1P
460Ah	560Ah	280Ah	230Ah
5888Wh	7168Wh	7168Wh	2944Wh
Lithium Iron Phosphate	Lithium Iron Phosphate	Lithium Iron Phosphate	Lithium Iron Phosphate
3.2V *4 (12.8V)	3.2V *8 (12.8V)	3.2V *8 (25.6V)	3.2V *4 (12.8V)
3500 Cycles @ 80% DOD	6000 Cycles @ 80% DOD	6000 Cycles @ 80% DOD	3500 Cycles @ 80% DOD
200A	200A	200A	200A
200A	200A	200A	200A
12.8V	12.8V	25.6V	12.8V
10V	10V	20V	10V
-20C to 60C	-20C to 60C	-20C to 60C	-20C to 60C
-20C to 60C (Heater Enabled)	-20 to 60C (Heater Enabled)	-20 to 60C (Heater Enabled)	-20 to 60C (Heater Enabled)
10C to 35C @ 50% SOC	10C to 35C @ 50% SOC	10C to 35C @ 50% SOC	10C to 35C @ 50% SOC
522mm x 240mm x 218mm	640mm x 245mm x 220mm	640mm x 245mm x 220mm	275mm x 187.5mm x 315mm
38kg	50KG	50KG	25kg
ABS Plastic	ABS Plastic	ABS Plastic	ABS Plastic

## Storing your Battery

We strongly suggest your batteries are stored at room temperature, charged to between 30% to 50% of their capacity. We recommend that batteries be charged once every three months to prevent over discharge.

## Battery Performance

Because Lithium Iron Phosphate batteries utilise a chemical reaction, battery performance will deteriorate over time even if stored for long periods without regular use.

If the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges, the life expectancy of the battery may be shortened, or the device in which the battery is used may be damaged by electrolyte leakage.

If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate that it is time to change the battery.

## Battery Series and Parallel Mode

Batteries can be connected simultaneously with a maximum of four (4) in series OR (4) in parallel.

## Battery Safety

- Do not disassemble your battery
- Do not short the battery
- Do not store your batteries in direct sunlight.
- Store the battery in a cool and well ventilated area
- Keep batteries away from flammable objects and materials
- Keep batteries away from static electric charges
- Keep out of reach from animals and children
- Do not immerse your battery in water
- Do not crush, incinerate or modify your battery
- Only use batteries within the manufacturers specifications
- Recycle your batteries correctly



### Charging your Fogstar Drift Battery

The following parameters should be used to charge your Drift battery

12V = 14.4V Bulk/13.6V Float

24V = 28.8V Bulk/27.2V Float

48V = 57.6V Bulk/54.4V Float



The Fogstar Drift App contains real-time information enabling you to see all of your battery statistics. The App has been custom built to connect directly with the Fogstar Drift battery management system (BMS), allowing you to manage and maintain the health of your battery at all times.



## About the App

The Fogstar Drift app works on all models of Android and iPhone and is available to download from the App Store and Google Play for free. We've made our app as simple as possible to use. It only contains the information you really need.

The user-friendly interface is perfect for even the most hardened technophobes, and the simple navigation is deliberately designed to make for a simplistic user experience.

## ▶ Get started - Connect your Battery

### Step 1

Download the Fogstar Drift App from iOS or Android.

Scan the QR codes opposite to find the Fogstar Drift App, or visit our website to learn more.



### Step 2

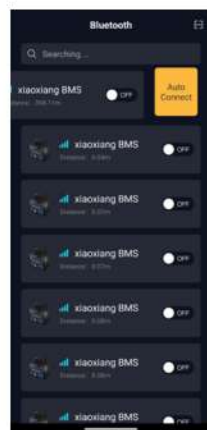
Ensure your phone's Bluetooth and Location services are switched on 

Open the Fogstar Drift App to search via Bluetooth

Locate your Fogstar Drift Battery on the Menu

Slide the dot to turn the Bluetooth on 

Wait a few moments for your phone and battery to establish a connection. You will then be directed to the Battery Dashboard.



TOP TIPS



Slide left on the battery to 'Auto-connect'. This will keep your battery connected to the App at all times.



## The Battery Dashboard

When you open the Drift App, you'll land on the main screen allowing you to view the Battery Dashboard.

At a glance you'll be able to see:

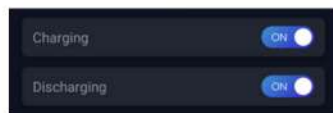
- Current battery status
- Charging and discharging status
- Battery voltage
- Battery current
- Temperature detection, and
- Cycle time.

Using the navigation at the bottom of the page, you'll be able to move between the various sections of the App including the page displaying individual cell voltages.



## Charge and Discharge Buttons

On the main dashboard of the App, you'll also find the 'Charging' and 'Discharging' buttons. Toggling these buttons to 'OFF' will turn the charge and discharge functions of the battery OFF. Setting the Discharge button to 'OFF' will effectively put the battery into storage mode.



## Battery Parameters

All battery parameters are locked by a password. We lock down the battery parameters to ensure your BMS settings remain protected and unable to be unchanged.

Changing the BMS parameters can permanently damage your unit. The set-up and configuration of these technical specifications are done so by the manufacturers, adapting them could result in a significant cell imbalance or errors in the BMS.

Should you wish to reconfigure the BMS for a hybrid set-up, please contact a member of our team at [customerservice@fogstar.co.uk](mailto:customerservice@fogstar.co.uk) to obtain the password, discuss your set-up and reconfiguration prior to altering any of the BMS vitals.



Please note: Changing BMS parameters without permission from Fogstar can invalidate your warranty. Please contact our team for more information on [customerservice@fogstar.co.uk](mailto:customerservice@fogstar.co.uk).





## ⚡ Changing the name of your battery

It's really simple to alter the name of your battery. Simply open your Battery Dashboard and click the name at the top of the screen. You can then change the name of your Drift to whatever you wish.



## ⚡ App Functionality

1. Displays real-time voltage, current, power, internal resistance and other parameter values in the form of dashboard and digital display
2. Displays the real-time voltage and alarm status of all single cells. If the reported parameter triggers the alarm value or protection value, an alarm will be prompted
3. Compares the data of each cell, including the voltage difference, maximum cell voltage, minimum cell voltage, and overall balancing of the cells
4. Creates a cell temperature warning for; over-temperature, short-circuit, over-voltage, under-voltage real-time alarms and keeps a record of all alarms that occur.



### Q&A **Can I series connect my batteries?**

Yes, you can connect up to 4 Fogstar Drift batteries in either series OR parallel - we've had our JBD BMS specially programmed to allow for this.

### Q&A **What size terminals/posts are the Fogstar Drift Leisure batteries?**

The Fogstar Drift terminals are all M8 in size, 1.25 pitch, 12mm. All of our Drift Leisure batteries come with bolts as standard.

### Q&A **I'm confused about the heaters - I've seen the cells as low as $-2.5^{\circ}\text{C}$ ?**

You can safely discharge a LiFePO<sub>4</sub> battery down to  $-20^{\circ}\text{C}$  degrees with no issues, the JBD BMS is set to allow this.

The issue is charging the battery, as this can cause damage under  $0^{\circ}\text{C}$ . The Drift heating pads are only activated when the battery is being charged, and are only powered by the incoming charge current, not the battery itself.

If you put the battery on charge, it will heat the battery first, and then allow current through to the battery when the temperature is safe enough to do so.

### Q&A **What are the charging parameters of your lithium leisure batteries in series?**

12V = 14.4V Bulk/13.6V Float

24V = 28.8V Bulk/27.2V Float

48V = 57.6V Bulk/54.4V Float

### Q&A **Is it possible to connect your leisure batteries in parallel if they are different capacities e.g. connecting a 105Ah in parallel with a 280Ah ?**

No, all batteries connected in series and/or parallel must be the same capacity rating.

This is particularly important for the 12v 105ah and 24v 280ah, in comparison with the other size batteries - if you look at the specification sheets for these products, you will see quite a difference in the Max. Discharge and Max. Charging Current - this is because they have different size BMS.



### Q&A Could you tell me if your Fogstar Drift 12v leisure batteries are suitable for series connection at 24 or 48 volts please?

Yes - we modified the JBD BMS at the manufacturing stage to add series and parallel support up to 4S and 4P.

### Q&A Where can I sign-up to register my Fogstar Drift Warranty?

You can register your 10 year Fogstar Drift Warranty at <https://www.fogstar-drift.co.uk/pages/warranty-registration>.

### Q&A Can I lay my drift on it's side?

Yes, your Drift battery can be lay on it's side, in fact, you can lie a Drift battery in any configuration you wish. All we recommend is that you keep the terminals clear and clean.

### Q&A How do I charge my Drift battery?

You can charge your Drift Leisure battery in a number of ways;

- Using a multi-stage LiFePO4 mains charger
- Using Solar panels and an MPPT controller
- Directly via the vehicles' alternator
- As part of a B2B or DC-DC charger set-up

The recommended voltage for charging a lithium leisure battery is between 13.6V to 14.6V. Going above this range for significant periods of time can damage the battery. The current level during charging is also important. Charging a lithium battery at a current level that is too high can shorten its lifespan or even cause it to overheat and catch fire.

The recommended charging current for a lithium leisure battery is typically around 20-30% of the battery's capacity. For example, if the battery has a capacity of 100Ah, the recommended charging current would be around 20-30 amps. It's important to check the specifications of your particular battery to ensure you are using the correct charging current.





## Had a great experience with Fogstar Drift?

We would love to hear your feedback on our Drift product. If you have any photos, videos or clips of our product in action - we'd love to see them. Use the hashtag #fogstardrift to engage with us.

Follow us on Instagram (@FogstarDrift), drop us a Google review, get in touch via our customer service team (customerservice@fogstar.co.uk), or leave a product review at our website.



**@FogstarDrift**