Technology with Spirit

BATTERY USER MANUAL
e2Power 72V 30Ah

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Introduction

Whether you're navigating city streets or embarking on an extended adventure, TWS equips electric motorcycle batteries with cutting-edge high-energy-density LFP battery technologies, delivering a power-packed reliable solution for the dynamic world of electric mobility.

UltraSeal Tech

Rated IP67 water and dust proof, UltraSeal Tech is constructed for harsh.

UltraSafety with Intelligent BMS

Multiple advanced technologies ensure up to 10+ protections for consistent and stable battery performance, anytime and anywhere.

Better Performance at Extreme Temperatures

LiFePO4 ensures excellent discharge performance from - 20°C (- 4°F) ~ 60°C (140°F).

A Highly Reliable, Robust, Longer-Life Solution

Going electric with motorcycle that can quickly begin to save you money in fuel and maintenance costs.

Low Maintenance Battery

Quick to install - infrequent maintenance or replacement required.

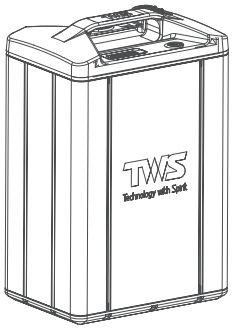
Reliable Power for Superior Riding Experience

The battery's aluminum shell is ruggedly constructed to meet rigorous industry standards. It is designed to be highly resistant to sea spay and endure vibrations from long rides to minimize wear and tear and maximize battery life.

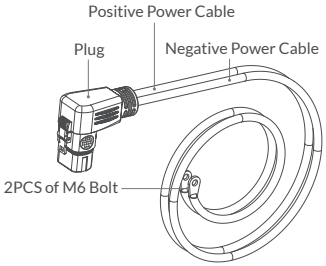
Eco Friendly

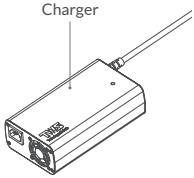
The battery has a reduced carbon footprint and is not made with harmful chemicals or toxic materials.

What's In the Box



Battery





Accessories Set

*Ensure all components are present and free of any signs of damage.

Read Before Installation

HANDLE WITH CARE

DO NOT PRESSURE WASH OR SUBMERGE

CHARGE BATTERY BEFORE USE

WARNINGS

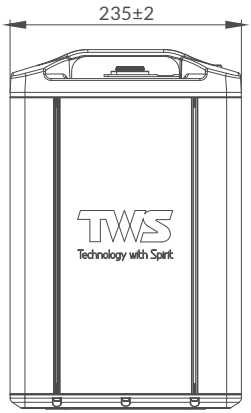
- DO NOT install or service this battery unless you are properly trained
- Use only with components that have the same voltage and current rating as the battery
- DO NOT touch or connect to the terminals unless the battery is manually turned off
- DO NOT open or attempt to service the battery, there are no user-service-able parts inside

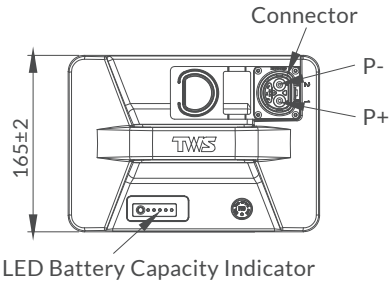
USE & CARE

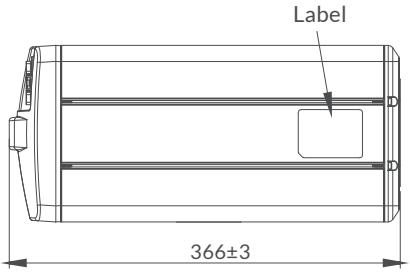
- Do not overcharge or over-discharge the battery
- Only charge the battery with a battery charger or charge controller that is compatible with lithium iron phosphate batteries
- DO NOT pressure wash, submerge, or use chemical agents to clean your battery
- Clean the battery using a damp cloth that does not include chemical agents

Battery Appearance

*Prior to installing and configuring the battery, prepare the recommended tools, components, and accessories.







Battery Operation

Check the Battery

- After opening the battery package, first check the battery and accessories. If the battery is damaged or parts are missing, please contact the vendor.
- Make sure the electrical specifications of the battery are compatible with the relevant devices and systems.
- Ensure the battery is placed on clean surfaces only. Avoid getting dirt, e.g. sand or soil, in the charging socket and contacts.

- Test the battery before charging it for the first time or using it in motorcycle.
- If none of the LEDs on the battery charge indicator light up, the battery may be damaged.
- If at least one (but not all) of the LEDs on the battery charge indicator lights up, the battery will need to be fully charged before using it for the first time.

Charging the Battery

- Use only the charger included with your battery. Only this charger is compatible with your lithium-ion battery.
- To charge the battery, read and follow the instructions in the operating manual for the charger. The battery can be charged process does not damage the battery.
- The battery has a temperature monitoring function which only allows it to be charged within a temperature range of 0 °C to 45 °C.

Battery Installation

- Avoid short-circuiting the battery terminals to prevent irreversible damage to the system and battery caused by current bursts.
- Verify polarity before wiring to avoid irreversible battery damage due to polarity reversal. Do not touch the positive and negative terminals of the battery with your hands.

Select Appropriate Connection Cables

The user should select the appropriate connection cables according to the power of the third-party power system and the discharge current of the battery.

The following table shows the load capacity of different battery connection cables:

Cable Gauge Size	Ampacity
14 AWG (2.08 mm^2)	35A
12 AWG (3.31 mm^2)	40A
10 AWG (5.25 mm^2)	55A
8 AWG (8.36 mm^2)	80A

Battery SOC Table

The SOC values listed below are estimated based on the open circuit voltage when the battery is at rest for 60 minutes, not in charging or discharging state.

SOC	Open Circuit Voltage	SOC	Open Circuit Voltage
100%	78.13V	35%	75.57V
99%	77.72V	20%	74.59V
90%	76.52V	10%	73.61V
70%	76.50V	5%	71.62V
60%	76.28V	0%	59.02V

Battery Management System

The battery is equipped with a battery management system (BMS) and has the following battery protection features:

Over-discharge Protection	Prevents Over-discharging of Batteries
Over-charge Protection	Prevents Over-charging of Batteries
Overheat Charging / Discharging Protection	Prevents High Battery Temperature
Over-current Charging / Discharging Protection	Prevents Excessive Battery Current
Battery Balance Function	Keeps Each Individual Cell in the Same Condition to Ensure the Battery is in An Optimal Condition for Use

*If a protection alert is triggered, completely disconnect the battery and leave it disconnected for some time before reconnecting and restarting.

Troubleshooting

Description of Error	Error Type	Recovery Methods
The key button switch does not trigger the LED display	Over discharge due to self discharge or hanging load	Please charge the battery immediately
The battery turns off the output during usage and pressing the key button causes only one LED to flash	The battery voltage drops below the protection threshold	Remove the load and charge the battery
Cannot charge below 0 ℃	Triggered low-temperature charging protection	Place the battery at above 5℃ temperatures, environment, waiting the battery temperatures rise above 5℃
No output when using in high temperature environments	The battery temperature exceeds the threshold value for high temperature	Disconnect the battery from the load Let battery cool
Battery short circuit occurs	During usage, the positive and negative poles are at risk of short circuiting	Immediately remove the positive and negative short circuits and wait for 60 seconds for automatic recovery
The load current exceeds 60A, and the battery is not providing any output	Trigger discharge overcurrent protection	Remove the load for recovery The load current should be less than 60A
Charging the battery with a current greater than 30A damages the battery and prevents it from charging	Trigger charging over current protection	Remove the charger and use a charger with an output current below 30A to charge

Specifications

Item		Spec.
Nominal Capacity		30Ah
Rated (Min.) Capacity (Cmin)		28Ah
Nominal Voltage		73.6V
Delivery Voltage or SOC		SOC 20% ~ 30%
Charge Method		CC/CV
Limited Charging Voltage (Ucl)		82V
Upper Limited Charging Voltage (Uup)		83.93V
End of Discharge Voltage (Ude)		57.5V
Discharge Cut-off Voltage (Udo)		52.9V
Recommended Charge Current (Icr)		10A
Max. Cont. Charge Current (Icm)		15A
Recommended Discharge Current (Idr)		15A
Max. Cont. Discharge Current (Idm)		60A
Operating Temperature	Charge	0°C ~ 45°C
	Discharge	- 20°C ~ 60°C
Operating Humidity		25% ~ 75%
Cycle Life		2000 Cycles (Retention ≥ 70% Cmin)
5 I_tA charge to Ucl with end current of 0.05 I_tA and discharge at CC of 0.5 I_tA to U_{do}. Rest interval is 30 min.		
Internal Impedance (AC 1kHz)		≤70 mΩ
Weight		Approx:17KG
Ingress Protection Grade		IP67
Storage Humidity		25% ~ 50%
Storage Temperature	Within 1 month	- 20°C ~ 55°C
	Within 3 months	- 20°C ~ 30°C
	Within 6 months	20°C ± 5°C

Battery Maintenance and Disposal

Maintenance Instructions

- Adopting preventive measures will prolong the life of your motorcycle battery and charger.
- Monitor your battery's voltage at least once a month to ensure it is within the recommended range.
- Keep your battery terminals free of corrosion and dirt to maintain proper electrical connections.
- Examine your charging cables for any signs of wear, damage, or fraying. Replace them if necessary.
- The battery must be stored in a dry and well-ventilated environment away from water sources, heat sources, and metal objects. It is recommended to store the battery at a temperature of 15 - 25℃ (59 - 77℉) . If the storage temperature is too high or too low, this will affect the self-discharge rate of the battery and accelerate its natural aging.
- If the battery is not going to be used for an extended period of time, it is recommended to store it intact in a semi-charged state (60% SOC). It is recommended to discharge the battery to 30% and then recharge to 60% every three months.
- When the temperature of the battery is equal to or below - 20℃ (-4℉), the battery cannot be used for charging or discharging.
- If the battery level is below 1% after use, it should be charged to 60% before storage. If the battery is left idle for a long period of time with critically low SOC, irreversible damage to the battery cell will occur, reducing the service life of the battery.

Disposal

- Batteries, accessories and packaging should be recycled in an environmentally friendly manner. If conditions permit, make sure that the battery is completely discharged before placing in the designated battery recycling bin.
- Apply tape over the contact surfaces of the battery terminals before disposing safe outdoor location.
- Do not touch severely damaged batteries with your bare hands – electrolyte may escape and cause skin irritation. Store the defective battery in a safe location outdoors.
- For relevant details, please comply with the user's local laws and regulations regarding lithium battery recycling and disposal.
- If the battery cannot be fully discharged due to the fault of the product itself, do not ispose of the battery directly. Contact a specialized battery recycling company for further disposal.
- An over-discharged battery cannot be switched on. Please dispose the battery according to local laws and regulations.

Disclaimer

Please read this User Manual and ensure you understand it fully before using the product. Please keep this User Manual properly for future reference. Any incorrect usage of this product may cause severe injury to the user or others, damage to the product, or loss of property.

By using this product, the user will be deemed as having understood, recognized, and accepted all the terms and contents of this User Manual, and will be responsible for any incorrect usage and all consequences arising therefrom.

TWS Technology hereby disclaims any liability for any losses due to the user's failure to use the product according to the User Manual.

In compliance with laws and regulations, TWS shall have the final right to interpret this document and all related documents for this product. Any update, revision, or termination of the contents thereof, if necessary, shall be made without prior notice, and users may visit TWS official website for the latest information of the product.

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