

**TYKOOL<sup>®</sup>**

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**User's Guide**

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**LITHIUM  
LAWN MOWER  
BATTERIES**

Warnings: 



BEFORE USING THIS PRODUCT, PLEASE CAREFULLY READ AND UNDERSTAND THE SAFETY INFORMATION. Failure to follow these safety instructions may result in ELECTRICAL SHOCK, EXPLOSION, FIRE, potentially leading to SERIOUS INJURY, DEATH, or PROPERTY DAMAGE.



Fire. This product is an electrical storage device that can generate heat. Do not cover the product or place objects on top of it. Keep the product away from flammable materials



Explosion. Never short-circuit the battery terminals. Do not use an incompatible charging device. Do not attempt to jump start, charge, or discharge the battery if it is damaged or frozen. Never charge or discharge the product outside its operating temperature range. Never overcharge or overdischarge the battery. Never exceed the maximum charging currents of the battery. Never incinerate the product.



Electrical Shock. This product is an electrical device that can deliver a shock and cause serious harm. Do not submerge it in water or get it wet.

## Installation

Before installing the product, make sure it's fully charged. Visually inspect the product for any signs of damage (e.g., cracks, dents). Please make sure the battery is fully charged before installing the product. Visually inspect the product for any signs of damage (such as cracks, dents). Make sure the battery terminals are free of dirt, oxidation or corrosion. The product can be installed in any horizontal or vertical orientation except with the terminals facing downwards. Please follow the steps below to install:

1. Secure the battery securely to the battery tray/case, making sure the battery wires can reach both battery terminals.
2. Using the included fasteners, connect the positive (+) battery wire to the positive (+) battery terminal and the negative (-) battery wire to the negative (-) battery terminal. Make sure the battery wires are connected to the correct polarity.
3. Use 70-90 in-lbs of torque to hold the battery securely. Do not overtighten.

## Notes for Charging

To recharge the devices, attach a compatible lithium battery charger (DC, Rated Charging Voltage: 14.60 volts), to the positive (+) and negative (-) terminals of the battery. Usually a lead acid battery charger or charge mode is not available to charge a lithium battery. This product utilizes advanced lithium-ion technology, enabling quick charging of the internal lithium-ion cells. Below is a table displaying the charging times based on a 100% depth of discharge (DOD) with the recommended smart battery chargers:

Battery Models	12V1A Charger	12V2A Charger	12V5A Charger
U1-S-400	Not Recommended	Recommended	Not Recommended
U1-M-480	Not Recommended	Not Recommended	Recommended

## Full function Battery Management System

The product is equipped with a Battery Management System (BMS) that monitors the internal lithium-ion batteries and disconnects them in case of a fault. The BMS prevents overcharging, over-discharging, overcurrent, short circuits, overheating, and thermal faults. It also includes battery balancing to maintain voltage equilibrium among individual batteries, ensuring optimal battery performance. The BMS automatically recovers from fault conditions without user intervention. To protect the lithium battery, the BMS does not allow charging below -10°C (14.0°F). Charging will be permitted once the battery temperature reaches -10°C (14.0°F) or higher. To protect the lithium battery, the BMS will not allow charging or discharging when the battery temperature reaches 60°C (140°F). This situation may occur in high ambient temperatures and during repeated start attempts, which can cause the battery to self-heat. Once the battery cools down, the BMS will allow charging and discharging.

<b>When Protection Happens</b>	<b>Right Process for Battery Recovery</b>
Over-Charge	Please apply an external load for recovery.
Over-Discharge	Please apply a charger for recovery.
Over-Current	Please remove an external load for recovery.
Short-Circuit	Please remove an external load for recovery.
Over or Under -Temperature	Please operate the battery in a normal operating temperature range for a recovery.

## Technical Specifications

	U1-S-400	U1-M-480
Type	Lithium Lawn Mower Battery	
Chemistry	Lithium Iron Phosphate (LiFePO4)	
Nominal Voltage (V)	12.8	
Amp-Hours	8	12
Watt-Hours (Wh)	102.40	153.60
Starting Current	480	600
Continuous Current	16A (Max)	24A (Max)
Charging Voltage (V)	14.6V	
Charging Current (A)	8A (Max)	12A (Max)
Operating Temperature	-20°C to 60°C	
Charging Temperature	-10°C to 50°C	
Storage Temperature	-20°C to 60°C	
Housing Protection	IP66	
Dimensions: Inches	5.9*3.4*5.7	6.9*3.4*6.1
Weight: lb	3.96	5.1



# TYKOOL Battery Warranty Information

If you have any questions, please contact us by email:

[aftersale@tykoolbattery.com](mailto:aftersale@tykoolbattery.com),

and we will respond within 48 hours.

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TYKOOL guarantees that this product (the "Product") will be free from defects in materials and workmanship for one (1) year from the date of purchase (the "Warranty Period"). During this Warranty Period, TYKOOL will determine at its discretion whether to repair or replace any defective Product. Replacement parts and products will be new or in good condition and will be covered for the remainder of the original Warranty Period.

TYKOOL's liability is limited to repair or replacement. To the fullest extent permitted by law, TYKOOL is not responsible for any special, indirect, consequential, or punitive damages, including lost profits, property damage, or personal injury. This warranty supersedes all other warranties, whether express or implied. If applicable law imposes warranties that cannot be excluded or modified, this paragraph will apply to the maximum extent allowed by law.

This warranty is provided only to the original purchaser of the Product from TYKOOL or an authorized reseller and is non-transferable. To make a warranty claim, the purchaser must: (1) request and obtain a return merchandise authorization (RMA) number via email; (2) send the Product and receipt to the specified location. Do not return the Product without authorization.

The original purchaser is responsible for all packaging and shipping costs.

This hassle-free warranty is void in the following cases: (a) misuse, mishandling, or operation under extreme conditions; (b) improper installation or maintenance; (c) unauthorized modifications; (d) disassembly or repair by anyone other than TYKOOL; (e) defects reported after the Warranty Period. This hassle-free warranty does not cover: (1) normal wear and tear; (2) cosmetic damage that does not affect functionality; or (3) missing or damaged serial numbers.

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## Hassle-Free Warranty Conditions:

These conditions apply only to Products within the Warranty Period. If the time since the purchase date exceeds the Warranty Period or if any of the above conditions apply, the warranty will be void. Please return the Product with the appropriate documentation.

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### With Receipt:

1 Year: Free, warranty period starts from the purchase date.

### Without Receipt:

1 Year: Free, warranty period starts from the date corresponding to the serial number.

## Important Safety Warnings

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**Operation.** Operating temperature range is -4°F(-20°C) to 140°F(60°C). Charging temperature range is 14°F(-10°C) to 122°F(50°C). Do not operate outside the recommended temperature ranges.

**Storage.** Recommended storage temperature range is -4°F(-20°C) to 140°F(60°C). Do not exceed 140°F(60°C) under any circumstances. For optimal lifespan, store at 25°C and maintain a state of charge above 70%. Self-discharge rate is less than 1%/month. Storing the battery for more than 6 months without charging is not recommended.

**Charging.** This product is a 12V lithium-ion battery. Do not use chargers with pulse charging or desulfation features. For optimal performance, we recommend using only the 12V lithium battery mode of DC charging. If using a third-party charger, it must be compatible with 12V LiFePO4 batteries, have a charging voltage of 14.6V. Use caution with low-quality chargers, as they can pose severe electrical risks, leading to personal injury, property damage, shortened product life, and product failure. TYKOOL is not responsible for the safety of using accessories or chargers not approved by TYKOOL. If the battery overheats, deforms, swells, or emits smoke or odor during charging, stop using it immediately and contact support.

**Connections.** Ensure all connections to the product are secure. Use 70-90 inch-pounds of torque to properly secure connections. Loose connections can lead to performance degradation and overheating due to resistance, potentially causing the enclosure to melt or potentially leading to a fire.



**Retrofit.** Lithium-ion batteries are significantly lighter than lead-acid batteries of comparable capacity. Some equipment is designed to utilize the weight of lead-acid batteries for weight distribution. Using this product as a replacement battery may affect the weight distribution of the equipment. Understand the consequences of changing the weight distribution and ensure safe weight distribution. You assume full responsibility and liability for any damage, injury, or accident resulting from decreased stability.

**Handle this product with care.** Damage from impact may occur. Do not use a damaged product, including a cracked enclosure. Moisture and liquids can damage the product. Do not handle the product or any electronic components near liquids. Store the product in a dry location. If the product becomes wet, do not operate it. If the product is running and becomes wet, stop using it immediately. Modifications. Do not attempt to alter, modify, or repair any part of the product. Disassembling the product may result in injury, death, or property damage. If the product is damaged, malfunctions, or comes into contact with any liquids, stop using it and contact TYKOOL. Never disable the internal Battery Management System (BMS) for any reason. Any modifications will void your warranty.

**Cleaning.** Disconnect and remove this product before cleaning. If exposed to liquids or any contaminants, immediately dry the product. Use a soft, lint-free (microfiber) cloth. Do not use high-pressure water to clean the battery.





**Personal Protection.** Use this product only as intended. In case of an emergency, have someone present when using this product. When working near batteries, wear full protective gear, including eye protection and protective clothing. Wash hands after handling batteries and related materials. Do not wear any metal objects, including tools, watches, or jewelry, when handling batteries, as they can cause sparks or short circuits, leading to electric shock, fire, explosion, and resulting injury, death, or property damage.

**Proposition 65.** The battery terminals, and related accessories contain chemicals known to the State of California to cause cancer, birth defects, and other reproductive harm.

**Minors.** If the "Purchaser" intends for a minor to use the product, the adult Purchaser agrees to provide detailed instructions and warnings to any minor prior to use. The "Purchaser" agrees to indemnify TYKOOL for any accidental use or misuse by a minor.

**Choking Hazard.** Product accessories may pose a choking risk to children. Keep children away from unsupervised access to this product or any accessories. This product is not a toy.

**Ventilation.** This product does not release gases during normal use and does not require special ventilation. However, it is crucial to minimize exposure to extreme temperatures or restricted airflow around the product. Maintain at least 0.50 inches (12.7 mm) of clearance around the product to allow for adequate air circulation.

**Medical Devices.** This product may emit electromagnetic fields. It contains magnetic components that may interfere with pacemakers, defibrillators, or other medical devices. Consult your doctor before use. If you suspect this product is interfering with medical equipment, stop using it immediately and consult your doctor.

**Disposal.** This product must be recycled or disposed of separately and not with household waste. Discarding this product in household trash is illegal under state and federal environmental laws. Please take this product to a local battery recycling center.

**Explosive Environments.** Observe all signs and instructions. Do not operate this product in any area with potential explosive environments, including fueling areas or areas containing chemicals or particulates (such as grain, dust, or metal powders)

**Radio Frequency Interference.** This product complies with regulations governing radio frequency emissions. Radiation from this product may negatively affect the operation of other electronic equipment, potentially causing them to malfunction.

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**END**