

Ultra-Starter 28V



Energy that makes you fly



UST-2030



UST-4030



IMPORTANT NOTE

All users must read this entire guide prior to initiate operations of the UST-2030 or the UST-4030

Thank you and congratulations for the purchase of your new Ultra-Starter.

This User Guide contains the operating instructions and procedures for the UST-2030 & UST-4030, needed to safely and efficiently operate these units.

These Ultra-Starter units provide 30 ± 0.5 Volt DC electrical ground power for aircraft engine starts. Following the right procedures, and being aware of the limitations and best practices will ensure peak operating efficiency and will maximize operational capabilities and the final life cycle of the unit.

1. INTRODUCTION

The UST-2030 & UST-4030 are limited maintenance-free and sealed units. No repairs by the User are authorized. Warranty will be voided if the units are tampered in any way, or if unauthorized repairs are made. For technical support please contact:

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Europe



CAUTION SHOCK HAZARD POTENTIAL

Improper use or failure to follow instructions contained in this User Guide can result in unit damage and/or injury or death by electrical shock.

Any attempts to open or examine the inside of the UST-2030 or the UST-4030 via any tool or any device (borescope, probe, etc...) can result in the unit failure and/or injury by electrical shock. This Ultra-Starters are maintenance free and should not be opened or disassembled for any reason.

Always protect the units from short circuit.

Shipping Hazards: The UST-2030 & UST-4030 contain LiFePO4 cell batteries. These batteries must be shipped according to directive UN38.3.

2. BASIC PRODUCT DESCRIPTION

Ultra-Starters 28V UST-2030 & UST-4030 are devices developed by **ENERCRAFT** to improve the engine start of airplanes or helicopters, providing clean energy and extending the life of the engines, being capable of operating in any weather and environmental condition.

The equipment must be connected through the external power connector to the aircraft. The **ENERCRAFT** Ultra-Starter units were developed to offer the latest technology in energy storage, with a unique configuration, by combining the best of Lithium batteries and the best of Ultracapacitors.

3. MAIN FEATURES

1 Incorporates the latest technology

- ✓ **ENERCRAFT** patented design
- ✓ First to incorporate Lithium & Ultracapacitor technology
- ✓ Full operation in any weather and environmental condition
- ✓ Peak current is ensured, even in non-ideal charge conditions
- ✓ Extend & preserve the aircraft main battery useful life
- ✓ Supports more engine starts without recharge
- ✓ Provides clean energy and a more efficient engine start

2 Full data display

- ✓ Voltage and Battery load %
- ✓ + USB connector

3 Protective Case

- ✓ Reliable waterproofing
- ✓ NANUK®'s patented latching system
- ✓ Robust and Impact resistant
- ✓ Lightweight and modern design

4 Portable equipment

- ✓ Light weight
- ✓ All in one unit (Starter + GPU)
- ✓ One-handed operation
- ✓ Two stage retractable handle (UST-4030 only)
- ✓ Polyurethane wheels and stainless steel bearings (UST-4030 only)



4. SPECIFICATIONS AND PERFORMANCE

4.1 Ultra-Starter UST-2030

	UST-2030 (20 Ah unit)
AC INPUT	Charges from Single Phase 90-240 Vac, Freq. 50/60 Hz 2 amps
DC OUTPUT	28.5 VDC. (30@full charge) Peak start: 1500 amp (Standard PHCA 5sec) GPU: 10 Amps (connected to a power source)
RECHARGING RATE	45 minutes from full discharge @ 25° C
TEMPERATURE RANGE	- 40° C ↔ 70° C (in operation) - 50° C ↔ 85° C (in storage)
DIMENSIONS	426 mm x 327 mm x 236 mm
WEIGHT	13 kg (including cable and AN2551)
CABLE	1.5 mts Standard 3 PINS NATO AN2551 (50mm ²)
PROTECTION	Electronic sensors & Internal fuses
COOLING	Integrated design system



UST-2030

4.2 Ultra-Starter UST-4030

	UST-4030 (40 Ah unit)
AC INPUT	Charges from Single Phase 90-240 Vac, Freq. 50/60 Hz 2 amps
DC OUTPUT	28.5 VDC. (30@full charge) Peak start: 2600 amp (Standard PHCA 5sec) GPU: 10 Amps (connected to a power source)
RECHARGING RATE	90 minutes from full discharge @ 25° C
TEMPERATURE RANGE	- 40° C ↔ 70° C (in operation) - 50° C ↔ 85° C (in storage)
DIMENSIONS	558 mm x 355 mm x 228 mm
WEIGHT	25 kg (including cable and AN2551)
CABLE	1.5 mts Standard 3 PINS NATO AN2551 (50mm ²)
PROTECTION	Electronic sensors & Internal fuses
COOLING	Integrated design system



UST-4030

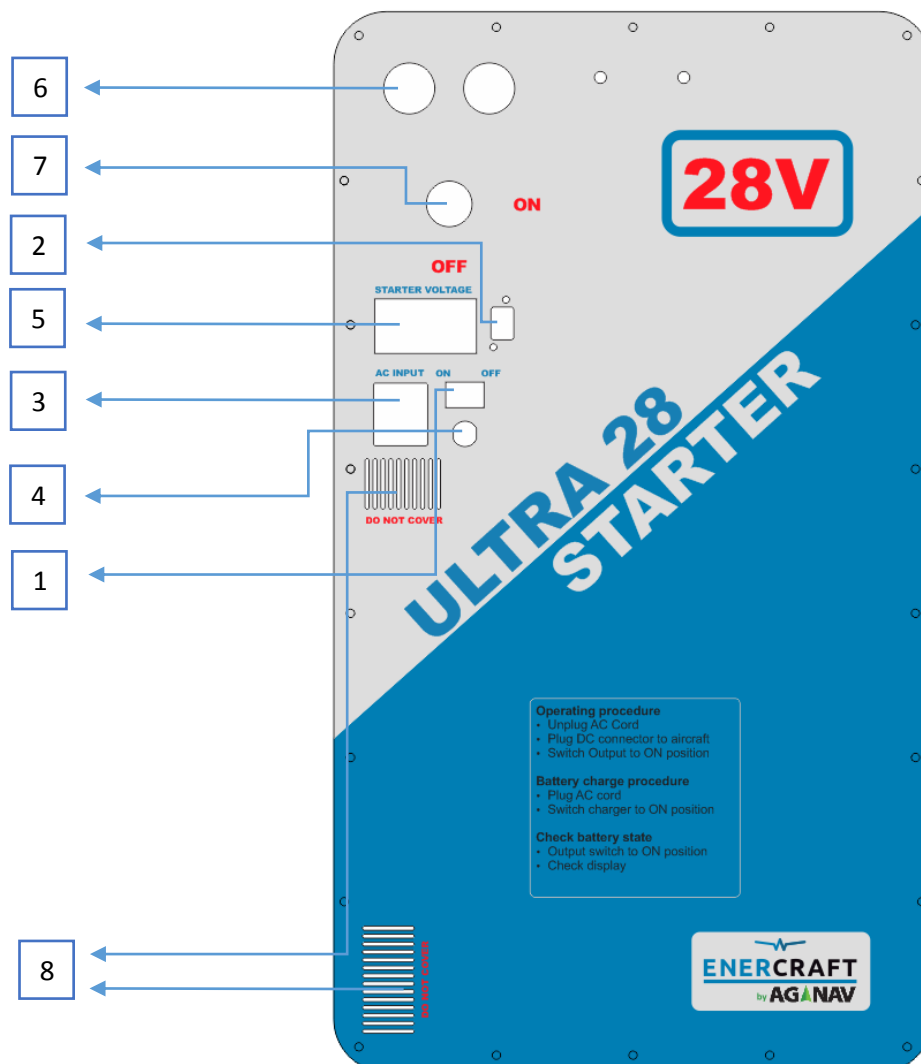
5.1 Ultra-Starter UST-2030

1. AC power switch
2. USB charger connector
3. AC input and fuse w/holder
4. Charger output DC fuse
5. DISPLAY: Battery load level and output voltage indicator
6. DC output
7. DC power switch
8. Air inlets



5.2 Ultra-Starter UST-4030

1. AC power switch
2. USB charger connector
3. AC input and fuse w/holder
4. Charger output DC fuse
5. DISPLAY: Battery load level and output voltage indicator
6. DC output
7. DC power switch
8. Air inlets



6. OPERATING PROCEDURE

6.1 Receiving your Ultra-Starter

Please check the overall status of the unit to make sure that it hasn't been tampered in any way during the Shipment and/or potential Customs inspections. If you detect anything, please contact us immediately.

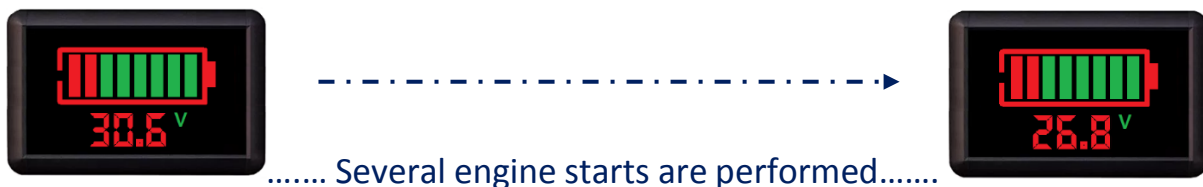
Due to the time needed to pack and deliver your Ultra-Starter from our factory in Canada to your hangar or operational base, and due to the existent regulations for shipping Lithium batteries (we must keep the cells under its 30% of charge), your unit won't be ready to be used once you receive it.

To be completely sure, please check first the battery status. The voltage may be below 28V, which means that you must proceed to its first full charge. For this first charge, we recommend you to charge the equipment for, at least, three (3) hours. The unit can reach a maximum voltage of 30.6V before that time, but please keep it charging for this first full charge only, in order to stabilize the batteries.

After three (3) hours, your new Ultra-Starter will be ready to be used! Please check the voltage again to confirm that it has reached more than 30V, and you can initiate normal operations to start the engines of all your aircraft.

6.2 Normal operations. DISPLAY reading and understanding

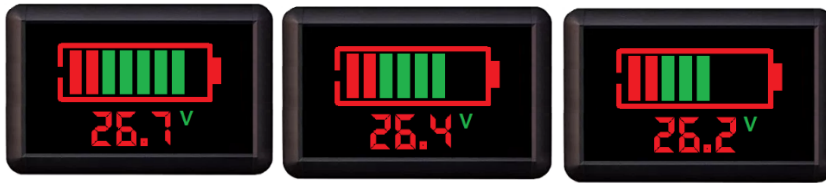
Once you start using the unit you will see that the discharge voltage will remain almost constant for quite a while. This is an advantage and a characteristic of the Lithium cells, which will improve the energy delivery efficiency of the Ultra-Starter. But, at some point after some engine starts (amount depending on type of engine/s or environmental factors), the display will show changes, according to the sequence below. Please follow the indications shown:



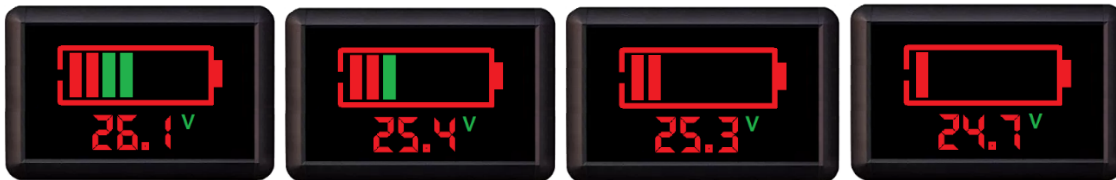
The output voltage will gradually drop from 30.6V initially down to 26.8V and all the battery load level LEDs (2 red and 6 green LEDs) will remain ON during this process.

At 26.7V, the first green LED will fade out. But the unit can still be used.

At 26.4V, the second green LED will fade out too. But the unit can still be used.



At 26.2V, the third green LED will fade out too. **We strongly recommend you to recharge the unit when reaching this voltage level.** If you keep on using the unit beyond this point, the discharge sequence would continue as shown below, moving to **critical voltage levels**.



6.3 Check battery status

- Switch DC Output to ON position.
- Check display. If voltage is less than 26.2, please re-charge the unit.

6.4 Check Cables status

- Always check the cables to visually detect any possible cuts or damages.

6.5 Engine Starting procedure

- Unplug AC Cord (if the unit is plugged in).
- Plug DC connector to the aircraft.
- Turn DC power switch to ON position.

6.6 Battery charge procedure

- Turn DC power switch to OFF position.
- Plug AC Cord to a properly grounded outlet.
- Switch charger (AC power switch) to ON position.
- The unit will charge in 45 minutes (UST-2030) or 90 minutes (UST-4030) from full discharge. When the voltage is higher than 30V, then the unit is fully charged again.

- During the charging process, it is normal to feel an electrolyte smell. The 3.2v LiFePo4 batteries of the equipment, are prismatic cells prepared for high currents, and have ventilation that can result in the User perceiving that smell.
- Always charge the Ultra-Starter units on a well ventilated area.
- **NOTE:** If the units are not in use, they do not have to be charging if the voltage is still above 26.2V. The configuration of these units and the Lithium batteries will avoid strong discharges if the units are stored or not in operation for short periods of time.

6.7 Use of the units as GPU

The Ultra-Starter units have an internal power supply and can work as well as GPUs providing up to 10 Amps of continuous power. For that use:

- Plug AC Cord to a properly grounded outlet.
- Plug DC connector to the aircraft.
- Switch charger (AC power switch) to ON position.
- Turn DC power switch to ON position.

7. STORAGE

IMPORTANT NOTE: The Ultra-Starter units cannot be stored for long periods of time, without any use. It is highly recommended to check the batteries often and charge the units every 15-30 days if the Ultra-Starters are not being used, to avoid full battery discharge. Be aware that battery life may be compromised, and the Lithium cells can lose their properties. A full repair service and replacement of the cells may be needed if the units are left unattended and discharged for more than 30 days.



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More information: <https://www.enercraft.ca/>