

# SUNKIT 5050 EXT

## USER GUIDE



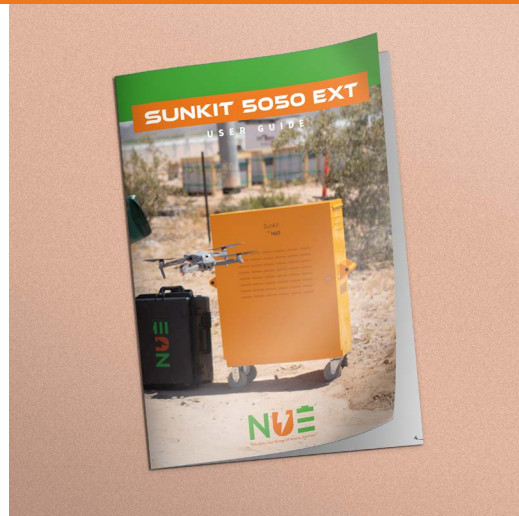
Affordable Clean Energy for Anyone, Anywhere™

# WHAT YOU NEED

## SUNKIT 5050 EXT



## USER MANUAL



# GLOSSARY

The following terms are used in this document to indicate various levels of potential harm that may be caused by improper operation.

## **NOTICE**

The instructions, if not properly followed, may result in property damage and minor physical damage.

## **WARNING**

Read the ENTIRE user manual to familiarize yourself with the features of this product before using it. Failure to operate the product correctly may result in damage to the product or your personal property. It can cause serious injury as well. New Use Energy will not assume any legal responsibility for any damages. DO NOT use the SunKit with incompatible components or alter the SunKit in any way. Otherwise, you cannot get after-sales service nor repair guidelines from New Use Energy under our warranty. Please note that this system comes with pre-set operating parameters and components to enable the safest and best performance. These Safety Guidelines include instructions for operation and maintenance. It is important to read and follow all the instructions and warnings in the user manual before setting up or using the product.

# PRODUCT SAFETY GUIDELINES

If instructions are not properly followed property damage and serious injury may result. Be sure to use this product in accordance with the following safety rules and guidelines. NUE shall not be liable for damages caused by use other than as intended or as mentioned in this manual or if the recommendations of the component manufacturers are neglected. NUE shall not be liable if there has been service or repair carried out by any unauthorized person, unusual use by any user, or improper installation by any individual.

## Product use:

1. While the SunKit 5050EXT is NEMA 3 rated its internal components are not. Do not open the SunKit 5050 EXT when there is a chance that rain or any liquid can come into contact with the components. Do not drop the SunKit into the water. If the battery in the SunCase comes into contact with water, it may cause chemical decomposition of the battery. This may cause the battery to catch fire or explode.
2. Never use or charge swollen, leaky, or damaged batteries. If the battery in your SunKit is abnormal, contact New Use Energy for further assistance.
3. Never install or remove a battery from the SunKit when it is turned on.
4. DO NOT disassemble the SunKit or battery.
5. DO NOT puncture or open battery cells.
6. Never disassemble or pierce the product in any way.
7. DO NOT use the SunKit if it was involved in a crash or a heavy bump.
8. If the SunKit falls into water during use, take the SunKit out immediately and put it in a safe and open area. Keep a safe distance from it until it is completely dry. Never use it again and dispose of it properly as described in the disposal section below.
9. Do Not insert pins, wires or other metal pieces inside the device enclosure, components, outlets or controls. Metal pieces may short circuit the wiring in the SunKit.
10. Avoid collisions. DO NOT place heavy objects on the SunKit.
11. Do not lift the product alone. The SunKit needs to be lifted by two individuals.

## **WARNING Product Charging using AC Input:**

1. DO NOT tamper with the SunKit AC charger settings. Only use a safe and consistent 120V AC input so as not to damage the unit.
2. DO NOT charge a SunKit immediately after handling a very high energy load, because the product's temperature may be elevated due to the stress of said load. Wait until it cools down to room temperature. DO NOT charge a SunKit if it is hot to the touch. The product is unsafe to charge when the internal temperature is outside the range of 32 to 131 °F (0 to 55 °C). Do not recharge if its below 0 degrees Celsius outside.
3. If you are charging from a diesel generator, please follow all instructions and safety policies for that generator and do so in a well-ventilated area outside.

# PRODUCT SAFETY GUIDELINES



## **WARNING: Risk of electric shock!**

Make sure all power is turned off before attempting any maintenance or repair.



## **Product Storage and Transportation:**

1. Enclosures should be shielded by panels and/or stored in shade.
2. Lock the front door of the SunKit so the internal components are out of reach of children.
3. If the low-battery indicator alarm goes off, charge the battery before storing it. Otherwise, long-term storage may cause damage to the battery in the product. Batteries in the product will enter hibernation mode if it is depleted and stored for a long time. Recharge the SunKit can bring the battery out of hibernation.
4. DO NOT place the SunKit near a heat source such as a fire source or a heating stove.
5. Store the product in dry environments. DO NOT place the SunCase where it may come into contact with water.
6. Never ship a SunKit with a battery power level higher than 60%.



## **Battery Disposal:**

1. Make sure the unit is powered down and neither outputting energy or charging.
2. Open the SunKit, and use a correctly sized wrench to remove the battery lugs. **WARNING:** be very careful not to short circuit the battery by having both battery terminals touch through any metal material. That is, **MAKE SURE THE END OF THE WRENCH NEVER TOUCHES ANY TERMINAL ENDS.** Wear gloves while handling the unit.
3. Please then be very careful when loosening the support nuts, threaded rod, and aluminum angle holding the battery in place to protect from cuts, scratches, or other damage to yourself or the battery. Make sure not to cause a short circuit with the battery terminals. Also, make sure not to scratch yourself by wearing gloves and utilizing the proper tools to loosen connections without damaging them.
4. Remove the battery from the SunKit by holding it from the handles.
5. Dispose the battery in specific recycling boxes only after the battery has been completely discharged. Batteries are hazardous and have to be disposed of in the proper facility. Please strictly follow your local regulations regarding battery disposal and recycling.
6. Dispose of the SunKit battery immediately if it cannot be powered on after over-discharging.



## **Product Maintenance:**

1. Never store the product in environments between 14 to 113 °F (-10 to 45°C).
2. If the battery is continually not charged and left in storage, its battery life may be reduced.
3. Fully charge and discharge the battery at least once every three months to maintain battery health.

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# INITIAL SETUP GUIDE

## SUNKIT 5050 (US SPEC) QUICK START GUIDE

Once the door to the unit is open, you should be looking at 3 sets of switches / breakers:

1. The single white breaker is the battery breaker
2. The double white breaker is the PV (solar panel) breaker
3. The series of narrow black breakers are for the AC output/charging

The inverter also has 2 switches:

1. The AC breaker on the left side of the inverter
2. An ON/OFF switch underneath in the bottom left corner of the inverter

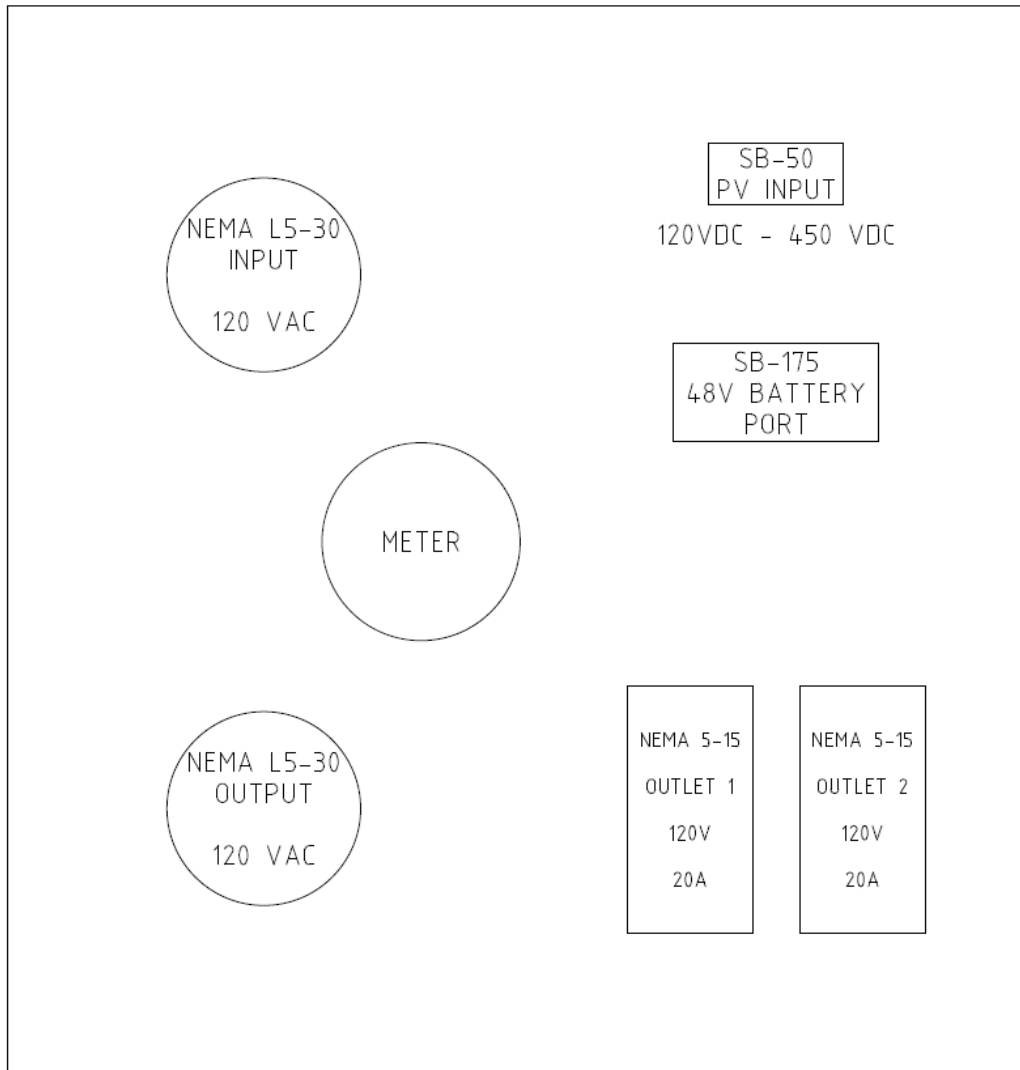
To start the SUNKIT switch all the breakers ON in the sequence listed (NOTE: the PV switch only needs to be switched ON if you have attached solar panels to the unit via the Anderson Connector on the Input/ Output (I/O) panel. Attach the solar panels before switching ON.

It may take a few seconds for the inverter to come ON. You will see the display in the top right corner light up. Once it's ON, you can plug your AC equipment into the outlets on the I/O panel.

The next page shows the layout of the I/O (Input/Output) panel which is located on the upper left side of the SunKit enclosure (note: the meter on the I/O panels is linked to a shunt that may require calibrating; however the battery voltage should provide a reliable indicator of state of charge (at 48V you are almost empty and at 57V you are almost full - battery starts to deplete quickly once you are around 50V).



# INITIAL SETUP GUIDE



User Interface: I/O Panel

## **NOTE:**

Under certain circumstances, if you are charging the SunKit from a GFCI protected source, you will need to disconnect the bonding wire between ground and neutral within the SunKit. Check the User Manual and/or Youtube video for more details



# UPCOMING SECTIONS

## **Features of the SunKit:**

Get to know the SunKit so that you can get the best performance from it. Follow this step-by-step introduction to each of battery ports, buttons, display screens and more.

## **Technical Specifications**

Get to know the specifications of the SunKit.

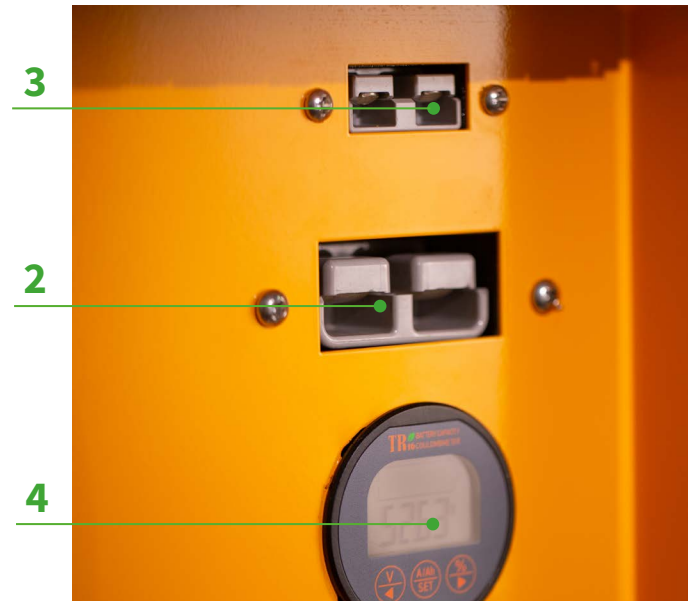
## **How to Charge**

Everything you need to know about recharging the SunKit system via AC sources or from solar power.

## **FAQs**

Answers to some of the most important questions you have about how to take care, store, and safely use the SunKit.

# FEATURES OF THE SUNKIT IO PANEL



## 1. AC Output Ports

- AC120V 60Hz outputs. These can charge devices that can charge devices using chargers, such as laptops, TVs, minifridges, vacuums. Each individual pair of outlets can output 20 Amps of power.

## 2. DC Anderson 175 Input Port

- An Anderson 175 industrial-grade connector designer for both solar input and external battery connection with a 48V BBG or other external battery kit.

## 3. DC Anderson 50 Input Port

- Designed to connect to Anderson 50 Amp connectors for PV input. PV input needs to be within 80A@ 51.2V DC, 5000 Watts PV Max (MPPT range 120V-450VDC) to meet solar charge controller specs. Please note that an Anderson50Amp to MC4 wire kit will be needed to hook up to solar panels and PV wire. If you are unsure whether you can use a panel to charge the SunKit please contact NUE.

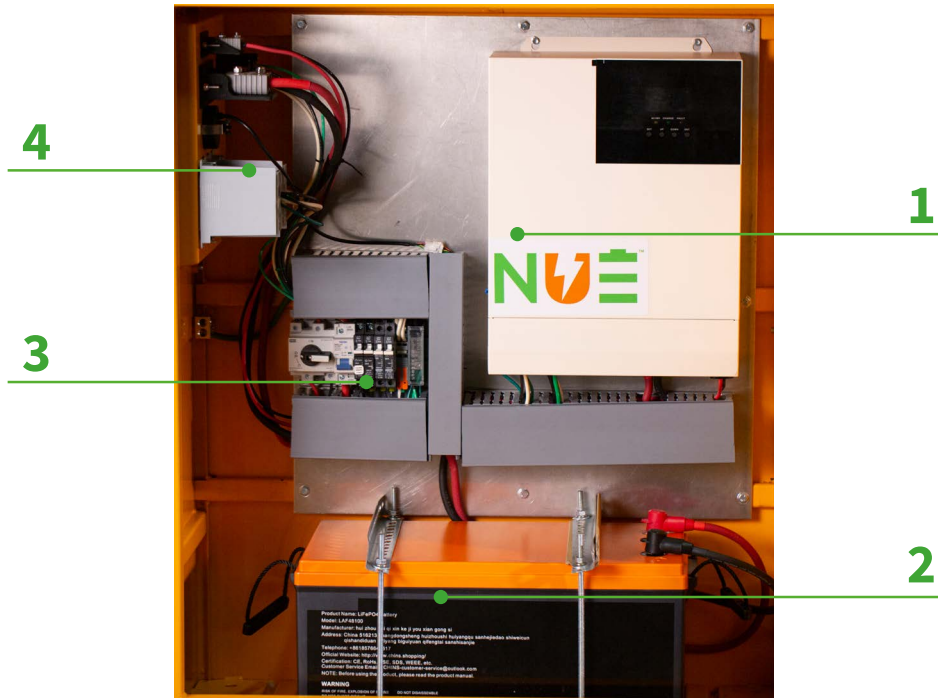
## 4. LCD Display

- This is a LCD display voltage tester connected to the battery that measures battery capacity, voltage, charge, and discharge. Use this to monitor your SunKit's performance.

## 5. AC 120V Twist Lock Outlets

- 30Amp Outlets, of the type seen on industrial applications and RVs. These are used for larger, industrial applications.

# FEATURES OF THE SUNKIT INTERIOR



## NOTICE:

After initial setup you will not need to touch any internal part of the unit unless you are troubleshooting. Please feel free to contact NUE before repairing the unit yourself. NUE is not liable for the results of faulty repairs, revisions, etc.

### 1. Inverter Charger

- 5kW Hybrid Inverter to convert battery DC power to AC power and AC input power to charging DC power. This inverter includes a built in solar charge controller for solar charging.

### 2. Battery

- 48V 5KwH Lithium Iron Phosphate Battery.

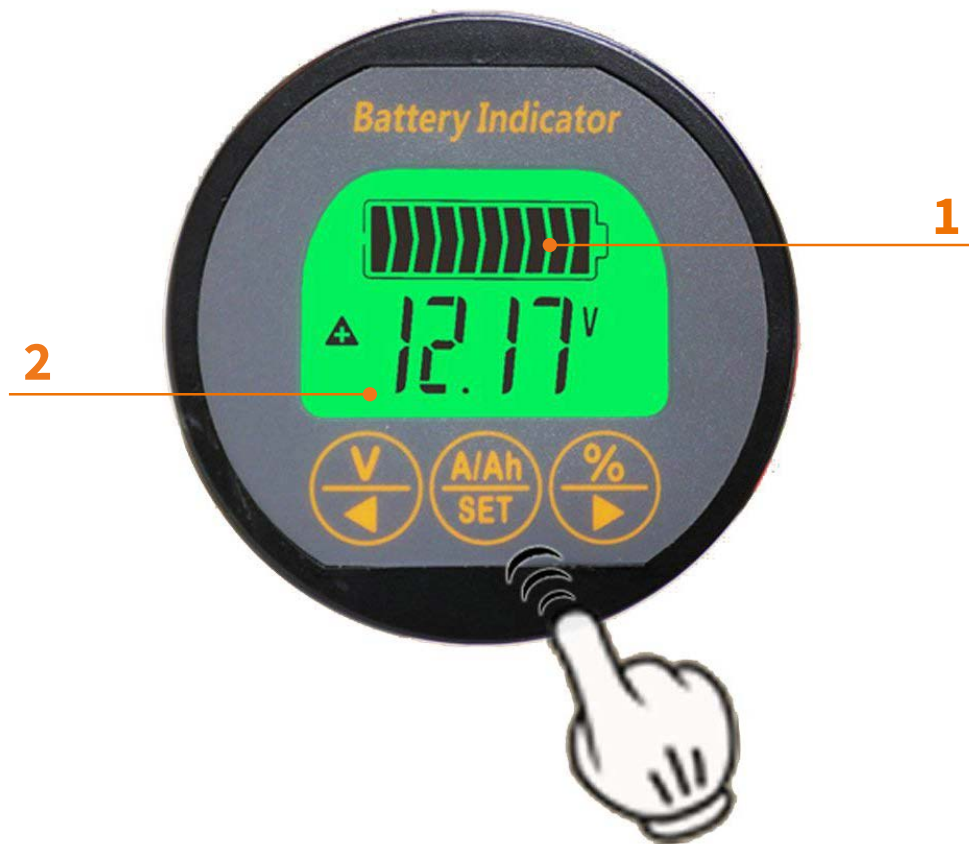
### 3. Breakers

- These breakers are important for ensuring the unit doesn't overload. They will shut the unit off. Please follow instructions on the breaker and flip them back into the on position after they flip because of an overload, but only after addressing the cause of the shutdown and ensuring the situation is safe from fire, open electricity, etc.

### 4. IO Panel Box

- These wires connect to the IO Panel described earlier. Please see the previous "Features of" section to understand what is included in the IO panel.

# FEATURES OF THE LCD DISPLAY



## 1. Battery Level Display

- The battery display has 10 bars, each representing 10% SOC. When the display has 1 bar remaining the remaining battery capacity is <10%. When this is the case, please charge the battery immediately. Note: the corresponding SOC of the display will vary according to the different load power size.

## 2. Main Display Portion

- Alternating between voltage, amps, %, based on the buttons pressed, this is your main source of numerical information on the battery.

# TECHNICAL SPECIFICATIONS

SunKit Version	5050EXT
Pure Sine Wave Inverter	5000W Continuous (10kW 5 sec surge)
Battery Type	Lithium Iron Phosphate (LiFePO4)
Storage Capacity	5120Wh
Estimated Cycle Life based on an 80% Depth of Discharge (subject to other variables including temperature and load)	6000
DC Nominal Voltage	51.2V
AC Output Options	120V AC or 240V AC, 50/60Hz
Solar Charge Controller	80A@ 51.2V DC, 5000 Watts PV Max (MPPT range 120V-450VDC)
AC Input	120V AC in (corresponding to AC output voltage) with programmable charging current (set to 20A default)
Circuit Breaker Protection	Yes
System Operating Voltage Range (Default)	48-57.6V DC
Operating Temperature Range	32-131°F (0-55°C)
Weight	300 lb (136kg)
Enclosure Dimensions	45"x37"x15" (114x94x38)
Warranty and Certifications	2-YEAR LIMITED MANUFACTURER'S WARRANTY, UN 38.3 and CE Certified (Inverter and Battery)

# CHARGING AND PARALLEL CAPACITY

## How to recharge the SunCase with charger or solar panels?

If you need to know more about the connection of a single panel to the unit, please refer to the solar panel's user manual. The charge controller supports a 120V-450V VDC input and up to 5000W of panels. Please only use the SunKit with panels that are wired correctly to output within this voltage. The SunKit's over-voltage protection is triggered when the input is over 450V as voltage exceeding this amount may damage the product. The user shall follow all the instructions in the manual. New Use Energy do not provide free repair services for any product damage caused by connecting too many solar panels to the product or connecting them incorrectly even during the warranty period. As shown in the picture below, the user can connect 1 or more solar panels through the 50Amp Anderson connectors through PV connection wire.

## How to charge the SunKit

As shown in the picture below, users can connect AC input wires through the IO port to charge the SunKit. The Inverter Charger will allow up to 80Amps of AC power to charge the SunKit's batteries.

## How to extend the battery lifetime

Some applications will require the SunKit to have more battery runtime. Use the 48V 100Ah Backup Battery Generator (BBG) to double the battery capacity of the SunKit. As seen in the photo below, simply connect both batteries in parallel through the Anderson 175Amp DC-input port using an NUE-provided Daisy Chain battery kit. You can also connect to SunKit's in parallel or any other NUE provided 48V 100Ah battery extension system.

Do not connect the SunKit 5050EXT with any batteries besides NUE-approved solutions. Even if the battery is 48V, running different batteries with varying BMS settings will damage batteries and void the warranty. Connecting the SunKit to non-48V batteries is dangerous. If you are unsure whether you can parallel a battery to the SunKit 5050 EXT please contact NUE technical support.

## How to charge the unit?

The SunKit has a built-in charger. It has a DC 175Amp input connector port where it can accept DC charge from the grid or a fuel generator. It has a 50Amp smaller input connector port that can accept PV input from solar panels.

## Can the SunKit power other devices when charging?

When charging the SunKit, the AC output will be simultaneously charged.

# FAQS

## How can you maintain the SunKit?

If you need to clean the SunKit, please use a dry or slightly moist cloth to clean the surface. Clean the SunKit with detergent designed for your phone or computer screen. Don't rinse or hose down the unit with water.

## How do you ensure the SunKit is grounded?

### Grounding

Connect an 8AWG or larger copper wire between the grounding terminal in the enclosure and the earth grounding system (rods, plates, or metal plumbing, as appropriate) or the vehicle chassis.

### Neutral-to-Ground

The National Electric Code requires that AC neutral (white wires) be electronically connected, or "bonded" to the grounding system (green wires) at only one location in the system. This N-G bond should occur near the location of the main system disconnect. In the SunKit, the N-G bond is accomplished by a green jumper wire between the Neutral and Ground bus bars near the circuit breaker rail. (see Image)

If you need to connect the SunKit to a GFCI (ground-fault circuit interrupter) protected AC input source, that jumper wire should be disconnected to remove the internal N-G bond. Otherwise the GFCI source will see it as a ground fault and disconnect the circuit.

*Please contact NUE technical support if you are unsure.*

## How to store the SunKit?

1. Make sure that you charge the SunKit to around 85% capacity.
2. Store your SunKit in a dry environment without anything abrasive near it. For optimal battery health, store the SunKit at room temperature of 77°F (25°C).
3. Charge the unit to 85% capacity every 3 months. This helps extend battery life and ensures that your SunKit is always ready for use.

## How often can I use the SunKit?

The SunKit is designed for 365 days, 24 hour a day use in outdoor settings? While storing the unit properly will extend the units shelf life, it can withstand a beating. The unit can also operate as a solar UPS. Feel free to leave it connected to solar panels (first ensuring they are within the system parameters) and deploy it remotely.

## How to use the SunKit safely?

1. Please use it within the operating temperature range of the SunKit. Using the SunKit outside of the optimum operating temperature range will push the machine beyond its safe and effective limits. Do not immerse the SunKit in water. Water can penetrate if the unit is submerged.
2. For your safety, do not charge the SunKit immediately after it is fully discharged.
3. If you try to charge the SunKit immediately after it is fully discharged, the SunKit will overheat. Please wait 2 to 3 hours for the unit to cool down before charging.

# FAQS

## How do I access the Device's Bluetooth App?

1. Visit the App store on your Iphone or Samsung device.
2. Search for "BAT-BMS".
3. Download the app of that name in the "Utilities" category. Remember to give the app access to your Bluetooth and accessories.
4. Open the app. If your SunKit is nearby, it's battery will appear as a device on the list. If there are multiple SunKit or NUE brand PowerPacs nearby, multiple devices will show up. Please check for a 48V battery. This is because the bluetooth app links to the BMS for the most accurate reading.
5. Connect to the device you would like to monitor.
6. Open that device on the app. You will be given multiple pages. To get accurate up-to-date information check the RT page, which should have information direct from the BMS.



## Do you have any advice on how to best use the Bluetooth App for this device?

1. On the Control page you can toggle the charging and discharging switch remotely as well. Please do not touch the AutoBalance or Heating State portions for this device.
2. Please do not touch the Parameter settings, so as to ensure the safest use of this unit within the preset parameters.

## My unit turned off overnight?

While this is rare, it sometimes happens, especially if no load is being applied to the unit. The battery will activate it's protection mode. You can restart by disconnecting the positive terminal for a few minutes, which will cause the battery to reset. Use the BAT BMS app to monitor.



# SUNKIT CONTINUOUS USE



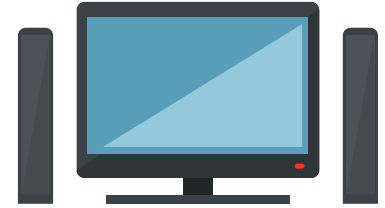
Worksites \*est. 10 tools

Operating hours:  
**5 Hours**  
Endless with Solar



Ventilator/  
Patient Monitor

Operating hours:  
**70 Hours**  
Endless with Solar



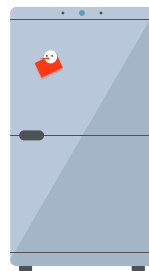
Starlink System/LED TV/Pellet  
Cooker/Small Fridge

Operating hours:  
**36 Hours**  
Endless with Solar



35L per Minute Water Pump/  
5,000 BTU Window Air Conditioner

Operating hours:  
**10 Hours**



Desktop Computer/  
Large Fridge

Operating hours:  
**10 Hours**  
Endless with Solar



Toaster Oven/Chain Saw/  
Disc Saw

Operating hours:  
**18 Hours**



1. Keep the SunKit and its accessories dry. Do not expose them to high temperatures.
2. Never disassemble, puncture, shock, crash, or incinerate the product or its accessories.
3. Recycle and dispose of the product in accordance with local regulations.
4. Pay attention to safety when handling the SunKit.
5. People with disabilities or children should use the machine under the protection of a supervisor.