

SUNKIT 5050 INT

USER GUIDE



Affordable Clean Energy for Anyone, Anywhere™

WHAT YOU NEED

SUNKIT 5050 INT



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. Per its name, the SunKit INT is an Indoor Rated Enclosure. It is not weatherproof or waterproof. It is dust resistant but not designed for desert environments. USE OUTDOORS IS NOT COVERED BY PRODUCT WARRANTY.
2. DO NOT disassemble the battery. DO NOT use a battery with scar or deformation.
3. Never use or charge swollen, leaky, or damaged batteries. If the battery in your SunKit is abnormal, contact New Use Energy for further assistance.
4. Never install or remove a battery from the SunKit when it is turned on.
5. DO NOT disassemble the SunKit or battery.
6. DO NOT puncture or open battery cells.
7. Never disassemble or pierce the product in any way.
8. DO NOT use the SunKit if it was involved in a crash or a heavy bump.
9. 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.
10. 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.
11. Avoid collisions. DO NOT place heavy objects on the SunKit.
12. Do not lift the product alone. The SunKit needs to be lifted by two individuals.
13. Flames or high heat are dangerous with Li-ion; do not use around flames or at temperatures higher than 131°F (55C).
14. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.

PRODUCT SAFETY GUIDELINES

WARNING Product Charging using AC Input:

1. DO NOT tamper with the SunKit AC charger settings. Only use a safe and consistent 240V 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 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.

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 if deployed outside. Please note this unit is built and designed for internal use only.
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 SunKit where it may come into contact with water.
6. Never ship a SunKit with a battery power level higher than 60%.

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, it's 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 INT QUICK START GUIDE

STEP 1:

- Check for visible damage to any of the exterior components
- Open the enclosure's door and verify all breakers are in OFF position; verify the fuse holders to make sure there are fuses inside and are locked in.

STEP 2:

PV Module Selection.

When selecting proper PV modules, please be sure to consider below parameters:

1. Open circuit Voltage (Voc) of PV modules does not exceed max. PV array open circuit voltage of inverter. (Refer to chart below)
2. Open circuit Voltage (Voc) of PV modules should be higher than min. battery voltage.
3. Connect using Anderson SB50 blue connector.

Solar Charging Mode

Max. PV Array Peak Power	5 kWp
Max. PV Array Open Circuit Voltage	450 Vdc
PV Array MPPT Voltage Range	120~430 Vdc
Start-up Voltage	150 Vdc +/- 10 Vdc
Number of MPPTs	1

Recommended PV module Configuration

PV Module Spec. (reference)	Total Solar input power	Solar input	Q'ty of modules
250 Wp	1500 Wp	6 pieces in series	6 pcs
Vmp: 30.7 Vdc	2000 Wp	8 pieces in series	8 pcs
Imp: 8.15 Adc	2750 Wp	11 pieces in series	11 pcs
Voc: 37.4 Vdc	3000 Wp	6 pieces in series 2 strings in parallel	12 pcs
Isc: 8.63 Adc	4000 Wp	8 pieces in series 2 strings in parallel	16 pcs
Cells:60	5000 Wp	10 pieces in series 2 strings in parallel	20 pcs

INITIAL SETUP GUIDE

Grid/Generator:

Connect power cord to AC inlet coming from grid or generator.

STEP 3:

Once the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the display panel) to turn on the unit.

STEP 4:

Once the unit is fully operative, proceed to power the AC outlets in the side of the unit:

Each outlet is labeled and matches with one of the breakers (Labeled as “F”) inside of the unit. You can power all the outlets or just the ones that cover your needs.



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.

Troubleshooting

Helpful tips on resolving potential issues with the Sunkit

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 INTERIOR



1. Negative and Positive Battery Fuses

- Fuses which protect the battery from overloads of current.

2. Load Breakers

- Breakers which protect the inverter/battery from being overwhelmed with too much solar or AC input.

3. Inverter/Charger

- This device is both solar charge controller and inverter in one.

Please note:

The battery it is connected to is behind the inverter.

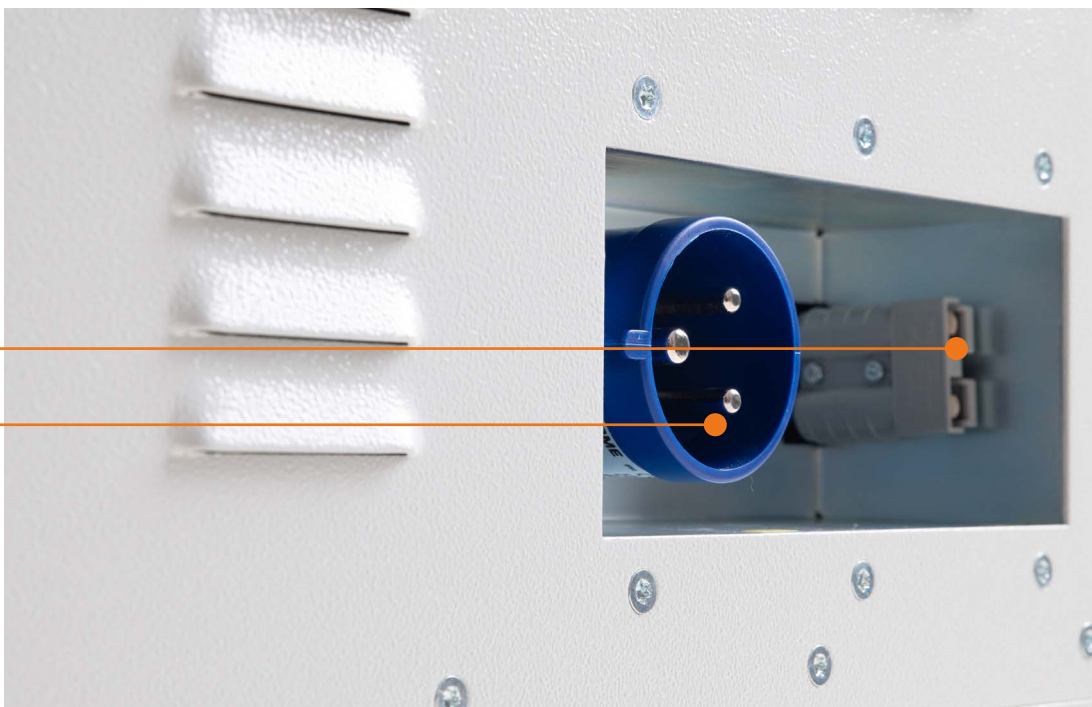
FEATURES OF THE SUNKIT INT EXTERNAL AC OUTPUT

AC OUTLETS



PV INPUT

AC INLET





FEATURES OF THE LCD DISPLAY



1. LCD display
2. Status indicator
3. Charging indicator
4. Fault indicator
5. Function buttons
6. Power on/off switch
7. LED indicators for USB function setting / Charger source priority setting

Indicators







LED Indicator	Color	Solid/Flashing	Messages	
Setting LED 1	Green	Solid On	Output powered by utility	
Setting LED 2	Green	Solid On	Output powered by PV	
Setting LED 3	Green	Solid On	Output powered by battery	
Status indicators	 AC INV	Green	Solid On	Output is available in bypass mode
		Green	Flashing	Output is powered by battery in inverter mode
	 CHG	Green	Solid On	Battery is fully charged
		Green	Flashing	Battery is charging
	FAULT	Red	Solid On	Fault mode
			Flashing	Warning mode

FEATURES OF THE LCD DISPLAY

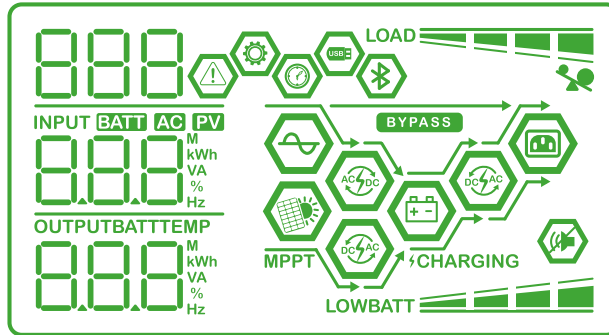
Power information



Function Keys

Function Key		Description
	ESC	Exit the setting
	USB function settings	Select USB OTG functions
	Timer settings for the Output source priority	Setup the timer for prioritizing the output source
	Timer setting for the Charger source priority	Setup the timer for prioritizing the charger source
	Up	To last selection
	Down	To next selection
	Enter	To confirm/enter the selection in setting mode

LCD DISPLAY ICONS



Icon	Function Description
Input Source Information	
	Indicates the AC input
	Indicates the PV input
	Indicate input voltage, input frequency, PV voltage, charger current, charger power, battery voltage
Configuration Program and Fault Information	
	Indicates the setting programs
	Indicates the warning and fault codes Warning: flashing with warning code Fault: lighting with fault code
Output information	
	Indicate output voltage, output frequency, load percent, load in VA, load in Watt and discharging current
Battery information	
	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode

In AC mode, it will present battery charging status.

Status	Battery voltage	LCD Display
Constant	< 2 V/cell	4 bars will flash in turns
Current mode /	2 ~ 2.083 V/cell	Bottom bar will be on and the other three bars will flash in turns
Constant	2.083 ~ 2.167 V/cell	Bottom two bars will be on and the other two bars will flash in turns
Voltage mode	> 2.167 V/cell	Bottom three bars will be on and the top bar will flash
Floating mode. Batteries are fully charged		4 bars will be on

LCD DISPLAY ICONS

In battery mode, it will present battery capacity.

Load percentage	Battery voltage	LCD Display
Load > 50%	< 1.85 V/cell	LOWBATT
	1.85 V/cell ~ 1.933 V/cell	BATT
	1.933 V/cell ~ 2.017 V/cell	BATT
	> 2.017 V/cell	BATT
Load < 50%	< 1.892 V/cell	LOWBATT
	1.892 V/cell ~ 1.975 V/cell	BATT
	1.975 V/cell ~ 2.058 V/cell	BATT
	> 2.058 V/cell	BATT
Load Information		
	Indicates overload	
 	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%	
	0% ~ 24%	25% ~ 49%
	50% ~ 74%	75% ~ 100%
Mode Operation Information		
	Indicates unit connects to the mains	
	Indicates unit connects to the PV panel	
BYPASS	Indicates load is supplied by utility power	
	Indicates the utility charger circuit is working	
	Indicates the solar charger circuit is working	
	Indicates the DC/AC inverter circuit is working	
	Indicates unit alarm is disabled	
	Indicates Bluetooth is connected	
	Indicates USB disk is connected	
	Indicates timer setting or time display	

TECHNICAL SPECIFICATIONS

SunKit Version	5050INT
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	240V AC 50/60Hz
Solar Charge Controller	80A@ 51.2V DC, 4000 Watts PV Max (MPPT range 120V-450VDC)
AC Input	230V AC in with programmable battery charging current (set to 10A default)
Circuit Breaker Protection	Yes
System Operating Voltage Range (Default)	44-66V DC
Operating Temperature Range	14-122°F (-10 to 50°C)
Weight	243 lb (110kg) [132 lb (60kg) without 110lb (50kg) battery]
Enclosure Dimensions	28"x24"x16" (70cmx60cmx40cm) [4" (10cm) wheel height]
Warranty and Certifications	2-YEAR LIMITED MANUFACTURER'S WARRANTY, UN 38.3 and CE Certified (Inverter and Battery)

TROUBLESHOOTING

Inverter Troubleshooting

Fault Code	Fault Event Description	Solution (If the problem remains, please contact NUE)
80	CAN data loss	Check if communication cables are connected well and restart the inverter
81	Host data loss	See above
82	Synchronization data loss	See above
84	AC input voltage and frequency are detected differently	<ol style="list-style-type: none">1. Check the utility wiring connections and restart the inverter.2. Make sure utility starts up at the same time. If there are breakers installed between utility and inverters, please be sure all breakers can be turned on AC input at the same time.
85	AC output current unbalance	<ol style="list-style-type: none">1. Restart the inverter.2. Remove some excessive loads and re-check load information from LCF of inverters. If the values are different, please check if AC input and output cables are in the same length and material type.
86	AC output mode setting is different	<ol style="list-style-type: none">1. Switch off the inverter and check LCD setting #282. Make sure no 3P1, 3P2, or 3P3 is set on #28.

Battery Troubleshooting

Problem	Solution (If the problem remains, please contact NUE)
Unable to start	<ol style="list-style-type: none">1. Press and hold RESET to observe whether the battery can be started;2. Charge the battery and observe it can be started;
Unable to charge	<ol style="list-style-type: none">1. Check whether the cable connection between the battery and the charging device is correct2. Check whether the setting of charging voltage for charging device is correct;3. Check whether the battery is in charge protection and try to release
Unable to discharge	<ol style="list-style-type: none">1. Check whether the cable connection between the battery and the load is correct;2. Check whether the battery occurs short circuit, reverse connection, pre-charge failure, etc.3. Check whether the battery is in dis-charge protection and try to release

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.

Can the SunKit power other devices when charging?

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

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 indoor settings. 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 indoors knowing power will be uninterrupted. Just make sure to watch the battery levels.

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 expose the SunKit to water.
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.

SUNKIT CONTINUOUS USE



Construction Site (*10 Large Powertools)

Operating hours:
5 Hours
Endless with Solar



Ventilator/
Patient Monitor

Operating hours:
70 Hours
Endless with Solar



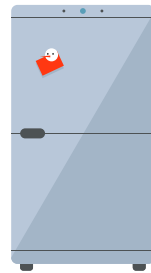
Starlink System/LED TV/Pellet
Cooker/Small Fridge

Operating hours:
36 Hours
Endless with Solar



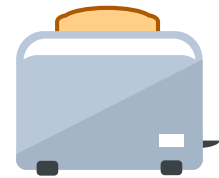
35L per Minute Water Pump/
5,000 BTU Window Air Conditioner

Operating hours:
10 Hours
Endless with Solar



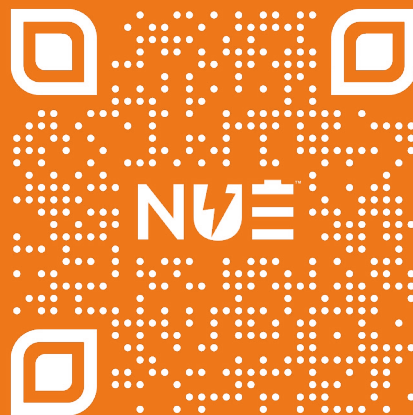
Desktop Computer/
Large Fridge

Operating hours:
10 Hours
Endless with Solar



Toaster Oven/Chain Saw/
Disc Saw

Operating hours:
18 Hours
Endless with Solar



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.