

LITHIUM CUBE™ EX18



User's Manual

1. INTRODUCTION

Congratulations on your purchase of Wagan Tech®'s Lithium Cube™. The Lithium Cube is an advanced electrical system that can power AC appliances and charge a variety of communication and entertainment devices. In an emergency it can power home appliances. On the job site it can power tools where no power lines or generators exist. At night it can power a variety of light sources from DC spotlights to AC floodlights. At the campground it can power a microwave oven, water pump, CPAP machines, and entertainment equipment.

Read and understand all warnings, cautions and notes included in this manual before using the Lithium Cube. Follow instructions provided by your vehicle and other device manufacturers intended to be used with the Lithium Cube.

Keep these instructions for future reference.

Fully charge the Lithium Cube before first use.

2. SAFETY INSTRUCTION

▲ WARNINGS

When using the product, please strictly follow the operating environment temperature specified in this user manual. Do not use the product near a heat source, such as a fire source or a heating furnace. If the temperature is too high, it may result in a fire or explosion; if the temperature is too low, the product performance may be severely reduced, or the product may cease to work.

WARNINGS identify important safety concerns when operating this equipment. Failure to follow these warnings could result in personal injury or loss of life.

1. Shock or fire hazard—The Lithium Cube generates the same potentially lethal AC power as a normal household wall outlet. Treat it with the same respect that you would any AC outlet.
2. Explosion Hazard—Do not use this product around flammable fumes or gasses, such as in the bilge of a gasoline powered boat, or near a propane tank. Do not use the Lithium Cube in an enclosure containing automotive-type lead-acid batteries. These batteries, unlike the sealed battery pack in the Lithium Cube, vent explosive hydrogen gas, which can be ignited by sparks from electrical connections or disconnections.
3. When working on electrical equipment, always make sure that someone is nearby to help you in an emergency.
4. Limitations on Use—The Lithium Cube has not been tested for use with life support systems or other medical equipment or devices. The user assumes all risk if medical devices are used with this product.
5. Unit is Not Waterproof—Do not expose this unit to rain or heavy moisture.
6. Do not disassemble the product in any way or pierce the product with sharp objects.
7. During thunderstorms or stormy weather, please disconnect the AC charging or solar charging. If the product is struck by lightning, it may cause electric shock, fire, and other accidents.

⚠ CAUTIONS

CAUTIONS identify conditions that can cause damage to equipment.

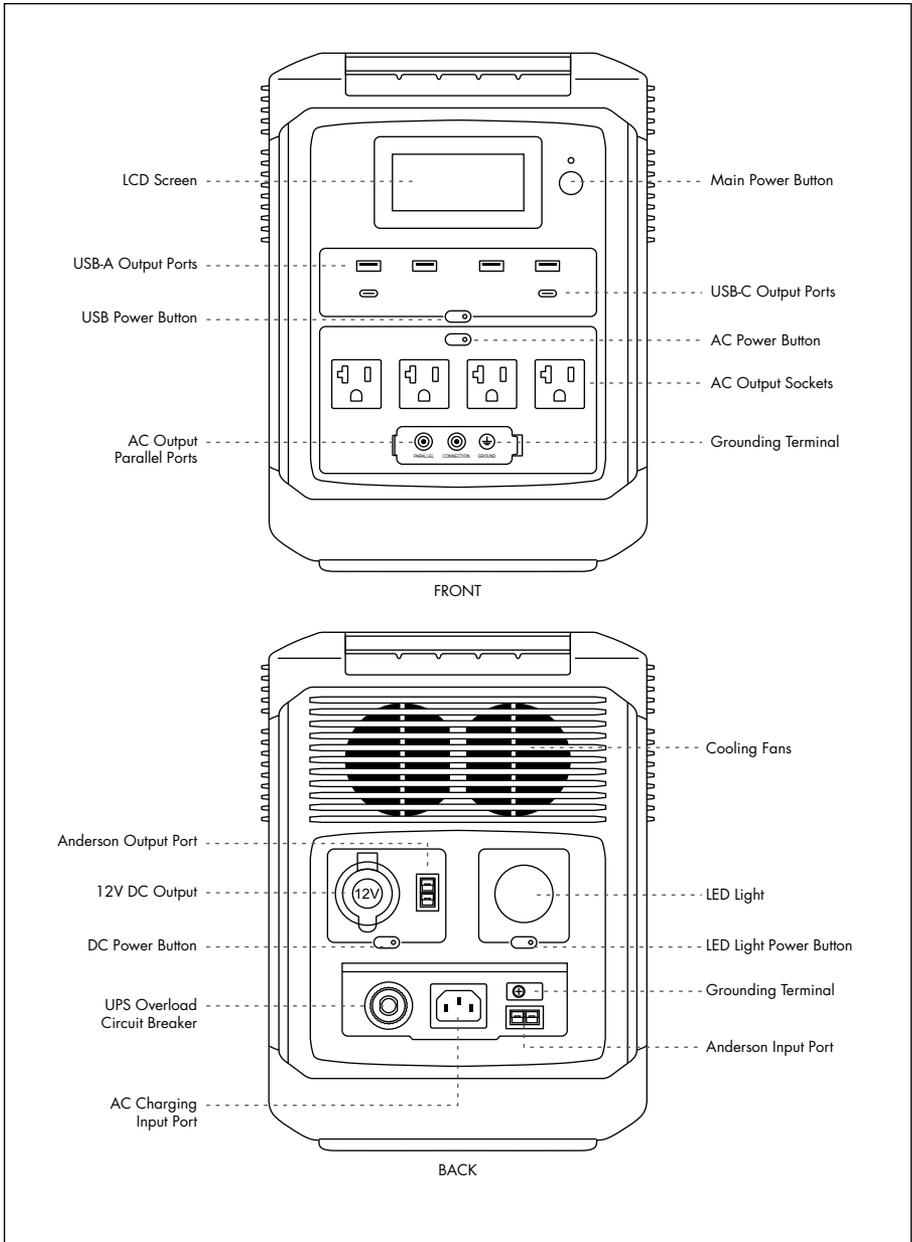
1. Liquids should be avoided. Avoid immersing the product in water or getting it wet. The product should not be used in humid or rainy environments. In the event that the product falls into the water during use, please place it in a safe open area and do not operate until it is completely dry.
2. If the product catches fire, it is recommended to use dry powder and carbon dioxide fire extinguishers.
3. Do not block, obstruct, or impede the fan's flow. Do not use or place this product in an unventilated or dusty area. Do not block vent holes on side of unit.
4. Rest the product on a flat surface to prevent damage from falling over. In the event that the product is severely damaged, turn it off immediately and stop using the product, place it in an open area, keep it away from combustible materials and people, and dispose of it in accordance with local laws and regulations.
Do not move the product during use. Movements may lead to poor contact with output ports of the product.
5. If the product input or output ports are dirty or if it needs to be cleaned, please wipe the product with a dry, soft, clean cloth or paper towel after it has been turned off.
6. Be sure to check the product's integrity and the integrity of the accessories before each use. If the product or the accessories are damaged or broken, do not use them.
7. Ensure that the product is kept out of reach of children and pets.

3. PRODUCT DETAILS

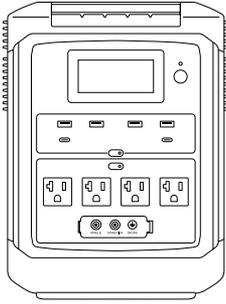
MAJOR FEATURES

- 1,800 watt pure sine wave inverter (3,600 watts peak)
- Four AC outlets
- One 12 volt automotive socket for powering DC appliances (up to 10 amps)
- Six USB power ports for charging/operating cell phones and tablets
- DC charging cable (fused)
- Comprehensive display shows charge status and power consumption
- DC port to connect solar panels to the internal solar charge controller
- Rugged handles integrated into the case structure for easy lifting
- LiFePO4 battery for long life

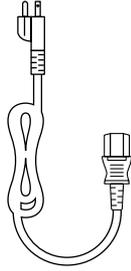
Lithium Cube™ EX18 by Wagan Tech®



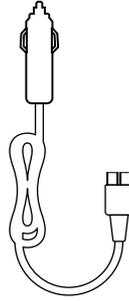
WHAT'S INCLUDED?



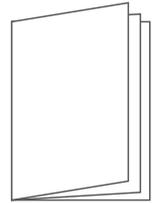
Lithium Cube



AC Charging Cable

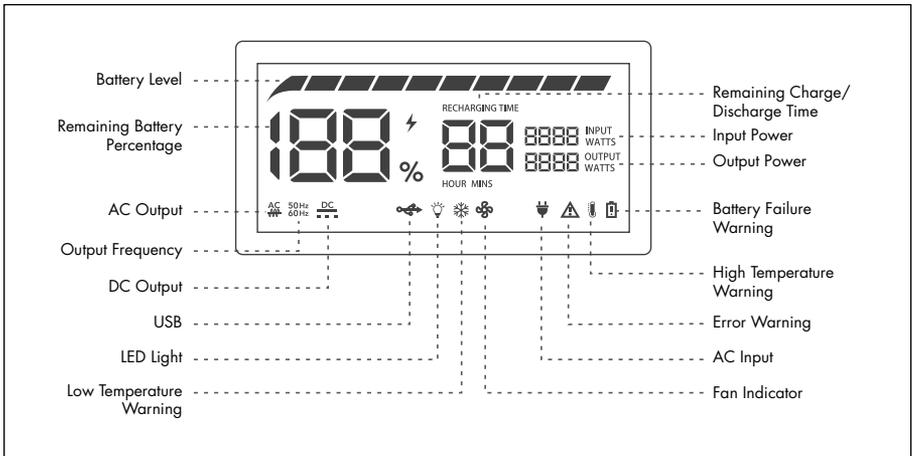


DC Charging Cable



User's Manual

LCD DISPLAY



4. PRODUCT OPERATION

CHARGING THE CUBE

AC Charging

The intelligent fast-charging technology of Wagan supports an AC input power of 1000W. The smart charging system will preferentially harness solar power whenever the Lithium Cube is being recharged simultaneously by AC power and solar power.

e.g.

During simultaneous solar and AC charging, if the solar power is 300W, it will automatically adjust the AC charging to 700W. If the solar power rises to 600W during the midday sun, the Lithium Cube will drop the AC charging to 400W to make maximum use of solar power.

Please use the official Wagan cable for AC charging. Using the supplied AC Charging Cable, plug one end of the cable into the AC Charging input port on the back of the Lithium Cube, then plug the other end of the cable into an AC Wall outlet that supports a current of 10A or greater. Wagan is not responsible for any damage caused by using an unofficial charging cable or operating the product outside of specifications.

DC Charging

The DC charging cable is fused at 10 amps to prevent damage if there is an inadvertent short. Users can charge the product through the cigarette lighter port. Be sure to start the vehicle before using the DC Charging Cable to reduce the risk of depleting your vehicle's battery.

To charge the Lithium Cube using the DC Charging Cable:

ONLY USE THE DC CHARGING CABLE SUPPLIED WITH THIS UNIT.

1. Note that the engine must be running while charging the Lithium Cube to avoid discharging the vehicle's battery.
2. Plug the DC charging cable into the Lithium Cube's DC Anderson input port.
3. Plug the other end of the DC charging cable into the vehicle's accessory socket (cigarette lighter socket).

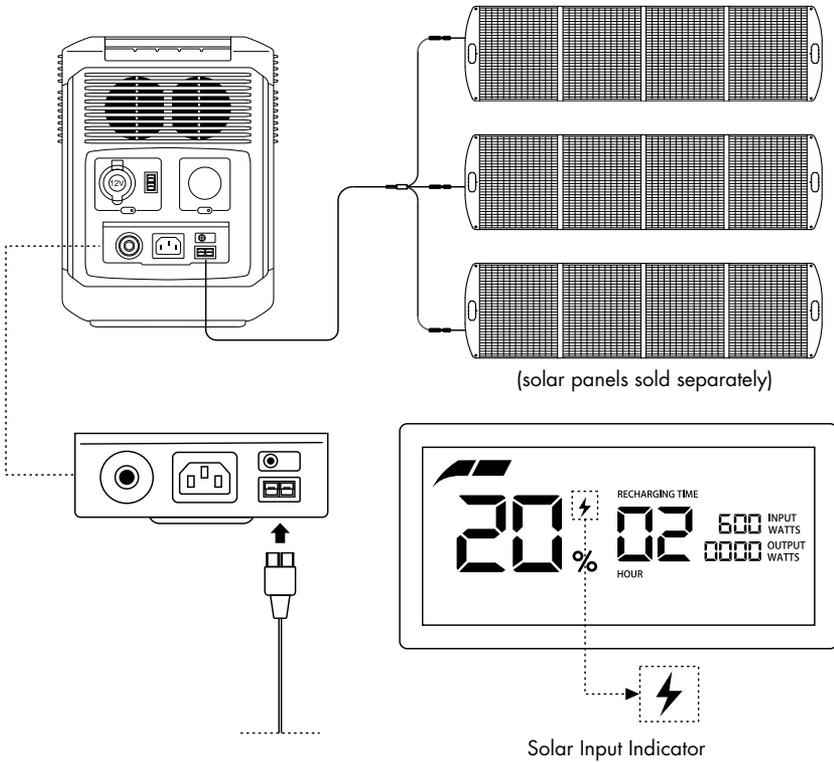
Solar Charging

The Lithium Cube's DC input circuit is designed to maximize the charging profile based on the available power supplied, whether charging by the AC charger or solar panels via the Anderson port.

The Lithium Cube comes with a built-in 25A MPPT solar controller capable of charging up to 600W. Do not use solar panels with their own built-in solar controller. Wagan is not responsible for any damage caused by using an unofficial charging cable.

1. To charge the Lithium Cube using a single solar panel, connect the solar panel using an Anderson connector compatible with the one built into the unit. The charge status will update on the display automatically.

User's Manual—Read before using this equipment



2. To charge using multiple panels, the best way to do this is by connecting the panels in series.
3. The Wagan Series Solar Cable is wired to connect multiple panels in series. If only two panels are connected, you must connect the jumper cable to the third cable set in order for the panels to charge. You can connect this cable to any cable set on the panel side of the cables.
4. When connecting three panels, the jumper cable is not needed. Keep this jumper for future use.

Note: Multiple solar panels with a total voltage of 70V can be connected in series. The maximum wattage of solar panels is 600W. (Cable and Solar Panels sold separately)

5. OUTPUT POWER

Before using the Lithium Cube, please make sure the main power has been turned on.

AC OUTPUT

The Lithium Cube's inverter can operate most AC Appliances or a combination of appliances up to 1,800 watts. Operating time (run time) is dependent on the AC load (watts) and the charge and condition of the Lithium Cube's internal battery. Be sure to turn off or disconnect any AC appliance not in use.

Converting DC battery power to AC generates heat. To minimize heat buildup and possible thermal shutdown, remove obstacles blocking or hindering airflow between the intake and exhaust sides of the Lithium Cube. Ambient temperatures above 77 °F will reduce the Inverter's ability to cool effectively, thus affecting operating times.

This inverter produces Pure Sine Wave (PSW) AC, which mimics the same power coming from your wall outlets at home.

To use the AC Power Inverter:

1. Connect the AC appliance or appliances to any AC Outlet.
2. Turn the power inverter ON by pressing the AC power button.
3. Turn on one AC appliance and observe the power indicator.
4. After appliance use, turn OFF the AC power button.
5. Remove AC appliance plug(s) from the AC outlets on the Lithium Cube.
6. Recharge the Lithium Cube as soon as convenient.

Note: The cooling fan turns off and on when needed to keep the internal components cool. The cooling fan helps maintain the Lithium Cube's internal temperature when products with high power requirements are in use.

PARALLEL POWER CONNECTION

With Wagan's parallel stacking technology, users can parallel connect two Lithium Cube Power Stations via the Parallel Cable for a maximum power capacity of 2880Wh of AC power and get a continuous power output of 3600W from the AC Outlet of the Parallel Cable or 2400W from the AC Output ports of the Lithium Cube.

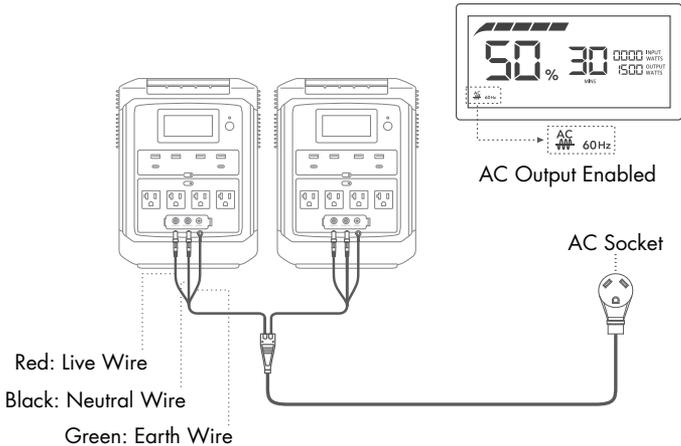
1. Before connecting the two Lithium Cubes in parallel, make sure that the AC Power Buttons of both products are kept off and are NOT AC charging.
2. As shown in the diagram below, ground terminals, positive terminals and negative terminals of the Parallel Cable and the Lithium Cube need to be connected to each other.

For firm contact, make sure the parallel connectors of the cable are fully plugged into the parallel ports of Lithium Cube. Please notice the positive and negative terminals are distinguished by their color.

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3. Once the two Lithium Cube Power Stations are connected, turn on the AC Power Button on each unit, and you can charge electrical devices through the AC output socket on the Parallel Cable.

*Real-time AC output wattage shows on both units, indicating a successful connection.



Notice:

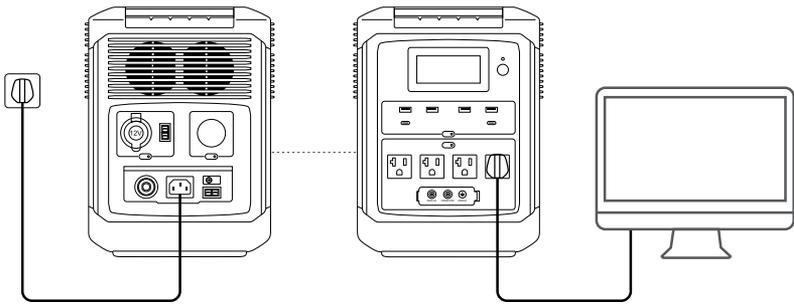
1. For parallel connections, please use Wagan's official parallel connectors. Wagan will not be responsible for any safety accident resulting from the use of cables not approved by Wagan.
 - ⚠ To prevent electric shock, please do not plug any conductive objects into the parallel ports.
2. Please make sure that the AC output is off before connecting the two units in parallel.
 - ⚠ If the AC output has been turned on before plugging the parallel connectors, it is possible to generate electric sparks and damage the parallel ports.
3. Please note that when the Lithium Cube is in UPS mode, the parallel connection is automatically disabled.
4. Upon connecting the two units in parallel, one unit with lower power will automatically shut itself down when its power is exhausted, which will disable the parallel connection and return the AC output to 1800W.

UNINTERRUPTED POWER SUPPLY (UPS)

The Lithium Cube support UPS. After plugging the Lithium Cube into the grid power through the AC Input Port, you can charge electrical devices through the AC Output Ports of Lithium Cube (In this situation, AC power will come from the grid rather than the Lithium Cube).

When a sudden blackout occurs, the Lithium Cube automatically switches to uninterrupted power supply mode within 10ms (Milliseconds). Electric devices can automatically be charged by grid power after the grid power is restored. Wagan's Lithium Cube supports an uninterrupted power switchover mode.

UPS Care Technology will protect against overload if Lithium Cube is used in UPS mode when charging devices that exceed 1800W.



Note: The UPS of the Lithium Cube does not support 0ms switching. Please do not connect it to any device that requires 0ms UPS, such as data servers and workstations. It is recommended that you test and confirm the compatibility of Lithium Cube with your devices before using the UPS function. To avoid overload protection, we recommend only charging one device at a time rather than using multiple ones simultaneously. Wagan takes no responsibility for any device failures or data losses caused by failures to follow instructions.

DC OUTPUT

The Lithium Cube is equipped with 12V DC output ports to power various DC appliances via a standard DC socket or an Anderson power port (10A max shared).

Overloading the DC port will trip a safety circuit. Remove the overload to restore power to the DC output ports.

CAUTION—Do not insert an automotive cigarette lighter into the socket. There is no pop-out feature and excessive heat may damage the socket.

To use an accessory outlet:

1. Insert the 12V DC accessory plug into either the DC port or Anderson port.
2. Press the DC power button. DC symbol should show on display.
3. Operate the appliance as usual.
4. After use, disconnect the accessory plug and store the accessory.

5. Recharge the Lithium Cube as soon as convenient.

USB OUTPUT

With 2x 12W USB-A ports, 2x 60W USB-A fast charging ports, and 2x 100W USB-C PD charging ports, the product supports most fast-charging protocols.

Note:

- When the USB output exceeds 5W, the USB output wattage will be displayed on the screen.
- Output voltage is reduced to 5V when both a fast charge port and USB-C port are used.

How to use the USB ports:

1. Press the USB power button. The screen will indicate that the USB output is enabled.
2. Insert USB cable into port.
3. After use, turn off USB power button and remove plugs from port.
4. Recharge the Lithium Cube as soon as convenient.

6. OPERATING TIMES

Below are typical products that can be operated by the Lithium Cube with estimated operating times. The operating times will vary depending on the internal battery charge level, ambient temperature and the actual AC or DC powered product being operated. The Lithium Cube will not continuously operate AC appliances rated at more than 1,800 watts, such as air conditioners or motors over 12 amps. 12V DC output is limited to 120W through the cigarette lighter or Anderson connector. Operating times can be extended if charging cable is connected to the Lithium Cube.

AC OPERATING TIME

AC Powered Products*	Watts	Estimated Run time ¹
Clock Radio	10	115 hours
WiFi Router	15	77 hours
DVD Player	50	23 hours
Laptop	65	17.5 hours
Refrigerator (AC) 40% duty	80	14.4 hours
CPAP w/ Humidifier	90	12.5 hours
42" LCD TV	120	9.5 hours
Playstation® 5	160	7 hours
Slow Cooker	200	5.5 hours
1/2" Drill	500	2.3 hours
Deep Well Water Pump 1/3 HP	750	1.5 hours
1/2 HP Garage Door Opener	875	1.3 hours
Coffee Maker	1000	70 minutes

* Power usages listed are averages. Check your appliance rating for more accurate time estimates.

1. Operating times assume a fully charged battery and ambient temperature of 77 °F. Actual results may vary based on model/brand used.

Assumes continuous operation

DC OPERATING TIME

DC Powered Products*	Watts	Estimated Run time ¹
Starlink®	75	15 hours
Thermoelectric Cooler	48	24 hours
Dometic™ CFX3 (DC) 30% Duty	30	48 hours
Vacuum (handheld)	100	11.5 hours

* Power usages listed are averages. Check your appliance rating for more accurate time estimates.

1. Operating times assume a fully charged battery and ambient temperature of 77 °F. Actual results may vary based on model/brand used.

Assumes continuous operation

7. USER MAINTENANCE

- Please use or store the product in an environment with a temperature between 68°F to 86°F, away from water, intense heat, and other sharp objects.
- If the remaining battery is less than 1% after you finish using the product, please recharge it to at least 60% before storing it. If the product is left idle for a long time with a severely low battery, irreversible damages may be caused to the battery cell and the product's service life will be shortened.
- For long-term storage, please check the battery level of the product every six months. If the battery level is lower than 30%, please recharge it to at least 60% before storing.
- If the Lithium Cube has been idle for too long and the battery is severely low, it will enter hibernation mode. In such case, please recharge before use.
- Recharge unit every 6 months
- Make sure vents are clean
- Keep unit dry
- For battery replacement, contact www.wagan.com

8. TROUBLESHOOTING

Indicator/Content	Problem	Solution
 Overload Protection Switch pops up. +   Icons flash together.	UPS Overload	Remove the overload devices and turn off the AC output. One minute later, press the UPS Overload Circuit Breaker. Normal operation will resume after turning on the AC output again.
  Icons are not displayed. + AC input wattage can't be displayed, and AC charging fails.	AC Input Failure	Check the AC charging cable for a good connection at both the wall outlet and the charging input port of the unit.
 Icon is not displayed. +  Battery level indicator does not scroll. + The product cannot be charged by either the solar panel or the car input.	DC Input Failure	Check and make sure the DC input is connected with the correct polarity. Check whether the solar panel or car lighter port works properly.
	High Temperature Charge Protection	Let the unit cool down for 2hrs before recharge.
	Battery Failure	Contact Wagan Support Team
No response after pressing the main power button.	System Halted	After discharging the power station until the battery is drained, recharge the product and restart it.
	Battery Failure	Contact Wagan Support Team
 Icon flashes. +  INPUT WATTS Icon stays on.	Battery Failure	Please restart after removing the AC Input & Solar Input. If the error hasn't been fixed, please contact Wagan support team.
 Icon flashes. +  OUTPUT WATTS Icon stays on.	Inverter Failure	Please restart after removing the AC Input & Solar Input. If the error hasn't been fixed, please contact Wagan support team.
AC output power can't be displayed.	AC Output Failure	Contact Wagan Support Team
  Icon flash together. +  OUTPUT WATTS Icon stays on. + The AC output port cannot power the devices normally.	AC Output Overload Protection	Normal operation will be resumed automatically after you remove the overloaded devices and restart the unit. Electrical devices should be used within rated wattage.

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Indicator/Content	Problem	Solution
  Icon flash together. +   Icon stays on. + The AC/DC output port cannot power the devices normally.	Over Temperature Protection	Please confirm whether the fan inlet and outlet are blocked, if not, normal operation will be resumed automatically after the temperature of unit drops.
  Icon flash together. +   Icon stays on. + The AC output port cannot power the devices normally.	AC Output Over Current Protection	After removing the devices, restart the unit to check if normal operation has resumed. After that, if the unit is working normally, please check your devices, and if not, please contact Wagan support team.
USB-A Output Failure	USB-A Overload Protection	USB-A output will be resumed automatically after you remove the overloaded device and restart the unit. Do not use electrical devices that exceed the rated power of unit.
USB-C Output Failure	USB-C Overload Protection	USB-C output will be resumed automatically after you remove the overloaded device and restart the unit. Do not use electrical devices that exceed the rated power of unit.
Unable to power on during charging	Charging over-heat Protection	Remove the unit from a high-temperature environment. Give it 2hrs to cool down before recharge.
	Charging Low-Temperature Protection	Remove the unit from a low-temperature environment. Restart charging after the battery temperature increases.
Unable to power on during discharging	Discharging Overheat Protection	Remove the unit from a high-temperature environment. Give it 2hrs to cool down and then restart it without connecting to other devices.
	Discharging Low-Temperature Protection	Remove the unit from a low-temperature environment. After the battery temperature rises to 10.4°F and above, restart it without connecting to other devices.
 	Battery Over Voltage	Please discharge the unit via the DC Output Port or USB-C Port.

Indicator/Content	Problem	Solution
E2 OUTPUT WATTS	Battery Low Voltage	Please recharge the unit with grid power through the AC Input Port.
E4 OUTPUT WATTS	AC Input Grid Voltage Abnormal	The grid power should be replaced with the correct voltage if the input voltage requirements of the product are not met.
E5 OUTPUT WATTS	AC Input Grid Frequency Abnormal	Disconnect the unit from the grid and turn it off. Then reconnect to the grid and restart it. The indicator "E5" will display for 3 seconds before learning the current electrical frequency. If the indicator "E5" remains on after 5 seconds, please check the electrical frequency.
E6 OUTPUT WATTS	Inverter Output Voltage Abnormal	Contact Wagan Support Team.
E9 OUTPUT WATTS	Inverter Failure	Contact Wagan Support Team.
E10 OUTPUT WATTS	Solar Input Over Voltage	Please use solar panel(s) with a voltage of 11V-70V DC.
E11 OUTPUT WATTS	Solar Input Over Current	Please use solar panel(s) within the input wattage of 600W.

9. RECYCLING/DISPOSAL

If conditions permit, make sure that the battery is fully discharged before disposing of it in a designated battery recycling bin. The product contains batteries with potentially harmful chemicals, it is strictly prohibited to dispose of it in ordinary trash cans. For more details, please follow the local laws and regulations on battery recycling and disposal.

If the battery cannot be fully discharged due to a product failure, please do not dispose of the battery directly in the battery recycling bin. In such a case, you should contact a professional battery recycling organization for further processing.

The Lithium Cube contains materials that are prohibited from being placed in landfills and require recycling. These include batteries, and some components in the inverter. Contact local authorities for disposal/recycling instructions.

10. SPECIFICATIONS

Specifications are subject to change without notice.

General Information

Cell Chemistry	LiFePO ₄ Cell
Cycle Life	3000 Cycles to 80% + Capacity
Capacity	1440Wh (48V)
Dimensions	11.6 × 9 × 15.6 in.
Net Weight	40 lbs (18.2 kg)
UPS (Uninterrupted Power Supply)	Switchover time <10ms
Parallel Connection	Supports 2 Lithium Cube (#8837) to parallel
Protection	Over Voltage Protection, Overload Protection, Over Temperature Protection, Short Circuit Protection, Low Temperature Protection, Low Voltage Protection, Overcurrent Protection, Over Charge Protection, Over Discharge Protection

Output Ports

AC (x4)	Pure Sine Wave, 1800W total (surge 3600W), 120V~, 50/60Hz
USB-A (x2)	5V, 2.4A (12W), per port
USB-A Fast Charge (x2)	20V, 3A (60W), per port
USB-C PD (x2)	20V, 5A (100W), per port
DC Output	12V, 10A (120W)

Input Ports

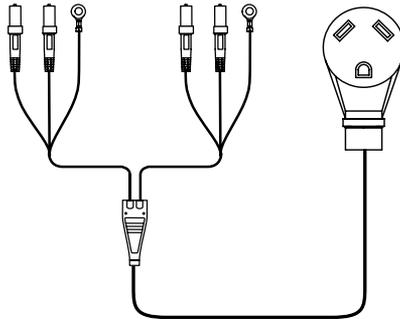
AC Charge	1000W max, 50/60Hz, 100V–132V
Solar Input	25A, 600W max, 11V–70V DC, MPPT
Solar/Car Input Port Type	Anderson
Car Charger	120W max, 11V–15V, 8.5A max

Environmental Operating Temperature

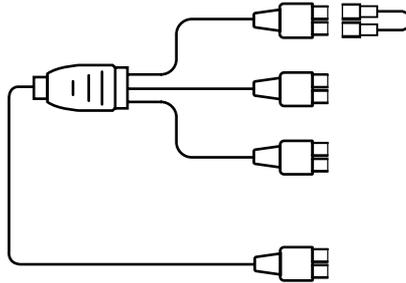
Optimal Operation Temperature	68°F – 86°F
Storage Temperature	-4°F – 113°F
Charging Temperature	32°F – 113°F
Discharging Temperature	-4°F – 113°F

11. OPTIONAL ACCESSORIES

AA5476
Parallel Connection Cable



AA5477
Solar Series Cable



WAGAN Corp. Limited Warranty

Warranty Duration:

Product is warranted to the original purchaser for a period of two (2) years from the original purchase date, to be free of defects in material and workmanship. WAGAN Corporation disclaims any liability for consequential damages. In no event will WAGAN Corporation be responsible for any amount of damages beyond the amount paid for the product at retail.

Warranty Performance:

During the warranty period, a product with a defect will be replaced with a comparable model when the product is returned to WAGAN Corporation with an original store receipt. WAGAN Corporation will, at its discretion, replace or repair the defective part. The replacement product will be warranted for the balance of the original warranty period. This warranty does not extend to any units which have been used in violation of written instructions furnished.

Warranty Disclaimers:

This warranty is in lieu of all warranties expressed or implied and no representative or person is authorized to assume any other liability in connection with the sale of our products. There shall be no claims for defects or failure of performance or product failure under any theory of tort, contract or commercial law including, but not limited to negligence, gross negligence, strict liability, breach of warranty, and breach of contract.

Returns:

WAGAN Corporation is not responsible for any item(s) returned without an official Return Authorization number (RA#). Please contact our customer service team by phone or email to obtain an RA#. You can also visit our website and chat with our team during our normal business hours. For more details and instructions on how to process a warranty claim, please read the "Returns" section under the "Contact" page on our website. WAGAN Corporation is not responsible for any shipping charges incurred in returning the item(s) back to the company for repair or replacement.

Register your product online at <http://tinyurl.com/wagan-registration> to be added to our email list. You will receive previews on our upcoming products, promotions, and events.

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