CRAFTSTROM
PLUGIN SOLAR

USER GUIDE

Meet Emily! Your plug & play smart home battery

WARNING

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

Contact us:

Info@craftstrom.com
www.craftstrom.com

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.

CAUTION

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

WARNING

The instructions, if not properly followed, may result in property damage, major accident and serious injury.

⚠WARNING

Read the ENTIRE user manual to be familiar with the features of this product before operating. Failure to operate the product correctly may result in damage to the product or personal property and cause serious injury. CraftStrom will not assume any legal responsibility. DO NOT use the product with incompatible components or alter the product in any way without following the instructions provided by CraftStrom. Otherwise, you cannot get after-sales service from CraftStrom under warranty condition. These Safety Guidelines include instructions for safety, operation and maintenance. It is important to read and follow all the instructions and warnings in the user manual before assembly, setup or use the product.

PRODUCT SAFETY GUIDELINES

⚠WARNING

Improper use may result in fire, property damage or personal injury. Make sure to use the product according to the following safety rules and guidelines.

Product use:

1. Do not expose EMILY to any liquid. Do not drop EMILY into water. If damaged battery cells in EMILY come into contact with water, it may cause chemical decomposition of the battery. This may cause the battery to catch fire or explode. Even though Emily contains LiFePO4 cells, which are much safer and only catch fire when heavily damaged (thermally and chemically stable), they still contain Lithium, which reacts violently with water.
2. CRAFTSTROM takes no responsibility for any damage caused by non-CRAFTSTROM batteries.
3. Never use or charge swollen, leaky, or damaged batteries. If your battery is abnormal, contact CRAFTSTROM support or a CRAFTSTROM authorized dealer for further assistance.
4. Follow instructions in this manual for remoiving a battery from EMILY's Smart Base.
5. DO NOT use the batteries in strong electrostatic or electromagnetic environments. Otherwise, the battery control board may malfunction and cause a serious accident during use.

6. Never disassemble or pierce the product in any way. Otherwise, it may leak, catch on fire, or explode.
7. DO NOT use the product if it was involved in a crash or a heavy bump.
8. If the product falls into the water during use,take the product 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 it properly as described in the Battery Disposal section below. If the product catches fire, it is recommend to use fire extinguishing equipment in the following order: water or water mist, sand, fire blanket, dry powder, carbon dioxide fire extinguisher.
9. DO NOT put the machine in a microwave oven or in a pressurized container.
10. Do Not allow pins, wires or other metal pieces to insert to the device case, outlets or controls. Metal pieces may short circuit the product.
11. Avoid collision. DO NOT place heavy objects on the machine.
12. If there is dirt on any plug or outlet surface, use a dry cloth to clean it. Otherwise, it will cause abrasion and result in energy loss or inability to charge.

⚠ WARNING

⚠ Product Charging:

1. Always use CraftStrom approved charging cables. CraftStrom takes no responsibility for any damage caused by using non-CraftStrom charging cables.
2. When charging, please place the product on the ground with no flammable or combustible materials around. To prevent accidents, never leave the machine unattended during charging.
3. DO NOT charge a product immediately after a long heavy load, because the product's temperature may be too high. DO NOT charge a product until it cools down to room temperature. The product may be unable to charge out of the temperature range -4°F to 140°F (-20 to 60°C). The ideal charging tempera ture range is 71°F to 82°F(22°C to 28°C).

⚠ Product Storage and Transportation:

1. Keep the product out of the reach of children. If any children accidentally swallow parts, please go to a doctor immediately.
2. If a low-battery warning appears, charge the battery before storing it. Otherwise, long-term storage may cause damage to the battery cells in the product. Battery will enter hibernation mode when depleted and stored for a long time. Recharging the product will activate the battery.
3. DO NOT place the product near a heat source, such as a car in direct sunlight, a fire source, or a heating stove.
4. Store the product in dry environments. DO NOT place the product where it may contact with water.
5. Make sure no small metal objects can fall on or around the product while in storage.
6. Never transport a product with a battery power level higher than 30%.

⚠ Battery Disposal:

1. Dispose the product in specific recycling boxes only after a complete discharge. Batteries are hazardous chemicals. Please strictly follow your local regulations regarding the battery disposal and recycle.
2. Dispose of the product immediately if it cannot be powered on after over-discharging.

⚠ Product Maintenance:

1. Never store the product in environments below -20°C or above 60°C.

2. Battery life may be reduced if not used for a long time.

3. Fully charge and discharge the battery at least once every 3 months to maintain battery health.

⚠ Travel Notice:

It is forbidden to carry lithium batteries and equipment with a capacity greater than 160Wh on airplane due to international regulations; Do Not bring this product on flights.

FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

⚠ WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Orient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

FCC RADIATION EXPOSURE STATEMENT

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

OVERVIEW

EMILY - CARE AND SAFETY GUIDE

CONGRATULATIONS!

Emily is the coolest innovation, since those two guys started a really cool EV company based on a Lotus Elise (but then sold it to a meat-head). Anyway, get this: Emily is so much more than a regular portable battery you can find in the millions. It is smart, sure, but what does that mean? Emily is an on-grid battery generator that uses proprietary communication technology to talk to our other products - our Smart Solar Systems and PowerMeters. That way it can react to whatever your solar production and electricity usage is and even stop you from exporting your own solar production to thankless corporations. Essentially, Emily allows you to keep your solar energy within your home. In Auto Mode, it can even throttle solar production to keep those pesky utlities and their feed-in-fees at bay. Remember, what happens in your home is none of their business.

Also, if you ever do need offgrid power - when the grid is down, or when you go camping - then you can pull Emily out of the Smart Base and use it on-the-go. Emily can then be charged through its front DC charging port, as each battery has its own charge controller. This means you can use our solar panels to charge Emily directly in the sun wherever you go.

This pamphlet is short and is meant to help you. Please take some time to read it before using the product.

NOTICE

Please note:
To turn on the AC power outlets, you need to switch on the Off-Grid Inverter. This is designed purposefully: iIt will save battery life, so that Emilys power is available when you need it.

Battery Maintenance:

Get to know EMILY. Follow this step-by-step introduction to each of Emilys ports, buttons, display screen and more.

Technical Specifications:

Understanding the specs that make EMILY such a cutting-edge product.

How to Charge EMILY:

Everything you need to know about recharging your EMILY via SMART BASE, or solar charge cable.

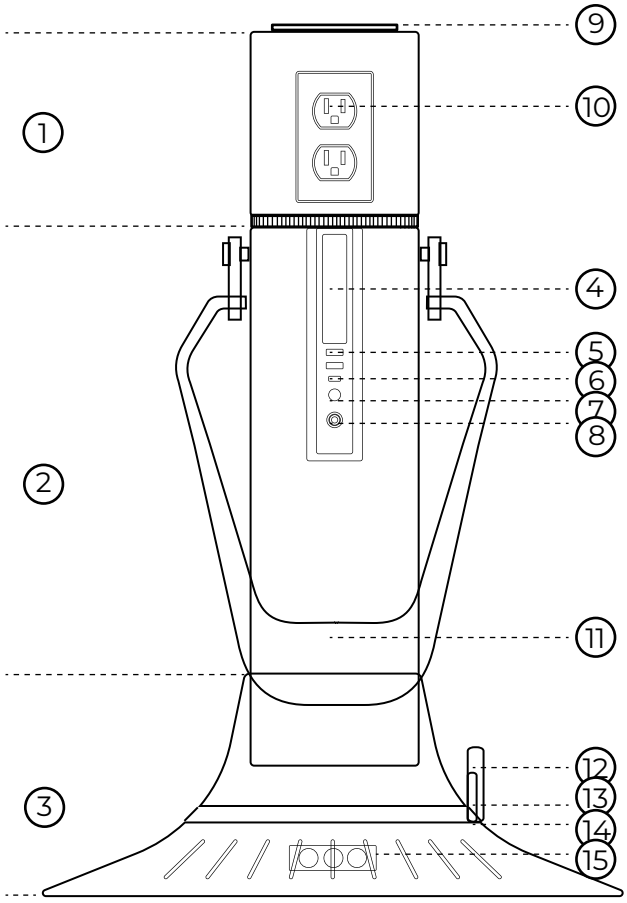
FAQs:

Answers to you some of the most important questions about how to take care of your EMILY, store power with EMILY and safely use EMILY

What’s in the Box:

Whats included in your EMILY purchase. If your purchase does not include these items, please contact us at info@craftstrom.com.

FEATURES OF EMILY



1. Detachable Off-Grid Inverter & Quick Release Ring
2. Main Battery - 1kWh Energy Storage
3. Smart Base - 400W Charge/Discharge
4. LCD Display
5. USB-A Output Ports
6. USB-C Output Port
7. ON/OFF display button
8. DC Charging Port (Solar or DC power brick)
9. Fast Charge Wireless Charger
10. AC Outlets 120V or 240V available*
    (600W output | 1200W peak output)
    ON/OFF switch on the back of Off Grid Inverter
11. Shoulder straps to take Battery out of base for Off -Grid use
12. Antennas - Wifi & MHz
13. Reset Button - Communication
14. Interactive Lightrail
15. Outlets for Extension Batteries

120-240V
Dedicated AC Output

*Craftstrom has designed different AC Output sockets following the local regulations of different countries.

1. Off Grid Inverter

The Off-Grid Inverter is detachable and can be used on any of your Batteries - Main or Extension. It holds 2 AC outlets and a wireless charger. The switch to turn it ON or OFF is on the back of the unit

2. Main Battery - 1kWh

The Main Battery can be used for both the Smart battery or an Extension Battery. A Display shows the state of the battery and charge level. Below are multiple USB ports and a DC charging port. The Button wakes up the display.

3. The Smart Base

The Smart Base plugs into the Outlet with the Safety Gate Adapter and can either receive a charge form the Home Grid (powered by your solar panels) or can discharge into the Home Grid - at 400W. The power level can be throttled based on your needs, either in manual or auto mode. It will also communicate with our system and App!

4. LCD Display

Displays the various states of the Battery. The screen will turn off after 5 mins. You can turn it on by pressing ON/OFF button below.

5. USB-A Output Ports

Charge a wide array of devices such as your iPhone, tablet, GoPro, speakers, or anything that needs to be charged through a USB-A Port.

6. USB-C Output Port

Fast charge-enabled devices can be charged at a maximum speed of 5V/2A. If your device does not support fast charging, the device will charge at regular speed.

7. Display ON/OFF Button

Hold the display button down for 1 second. Display will now show you the state it is in - Charging/Discharging - Off Grid Inverter Discharging - Charge Level - Charging from sun, if panels are directly plugged into the DC Charging Port.

8. DC Charging Port

Your Battery will come with a cable to connect Solar Panels directly to the DC charging port on the front of the battery. You will have to connect 3 x 200W panels in series and use the MC4 to 5.5 x2.5mm DC adapter cable. See illustration on page 5

9. Fast Charging Wireless Pad

The offgrid inverter has a wireless charging pad on top to charge your phones or tablets @ 7.5Watts.

10. 2 AC Output Sockets (100-240V available for each contry)

Charging devices that require 100-120V AC (230V for 220-240V) wall chargers to be charged , such as laptops, TVs, refrigerators, vacuums etc,.

11. Shoulder Straps

Padded shoulder straps help you to comfortably lift the battery out of its base to power appliances in an outage or on the go. It can be extended to fit any height needed.

12. Antennas

Our Smart base uses both WiFi and MHz communication, so we can assure uninterrupted communication of our products. Our products use an internal communication protocol within their own communication grid, to not compromise efficiency and operation at all times!

13. Reset Button

press the reset button for 1 second to initiate a restart of the comms module

14. Interactive lightrail

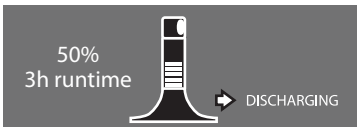
The lightrail can be changed in color and intensity. It can also be indicative of the state of the battery if desired

15. Outlets for Extension Bases

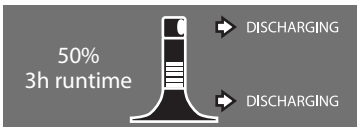
Each main Battery can be extended form 1kWh to 4 kWh! All you have to do is connect 3 more Batteries with the extension bases to the Main Battery. Each will essentially extend the runtime of your Manin Battery by about 2.5 hours at a constant discharge of 400W into the home grid.

BATTERY DISPLAY

Battery in ON - GRID mode & Discharging from Off GRID Outlets only! Acting like a UPS. 50% charged with a runtime of 3h.

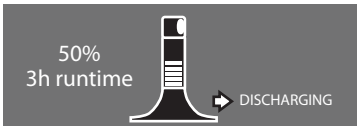


Battery in ON - GRID mode & Base is discharging into Outlets to lower your electricity bill! 50% charged with a runtime of 3h.



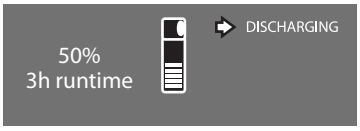
Battery in ON - GRID mode & Base is discharging into Outlets to lower your electricity bill! Also the OFF GRID Inverter is discharging acting like a UPS. 50% charged with a runtime of 3h.

Battery in ON - GRID mode & Base is Charging from solar. Also the OFF GRID Inverter is discharging acting like a UPS. 50% charged with a runtime of 3h.



Battery in ON - GRID mode & Base is discharging into Outlets to lower your electricity bill! 50% charged with a runtime of 3h.

Battery is idle in order to cool off! It will be operational shortly!



Battery in OFF - GRID mode & Outlets on Off Grid Inverter are discharging. 50% charged with a runtime of 3h.

Battery in OFF - GRID mode & Outlets on Off Grid Inverter are discharging. 50% charged with a runtime of 3h.

Battery in OFF - GRID mode & outlets on Off Grid Inverter are discharging & Battery is being charged by Solar Panels directly OR DC power supply is charging it. 50% charged with a runtime of 3h.

Battery in OFF - GRID mode & idle. 50% charged with a runtime of 3h.

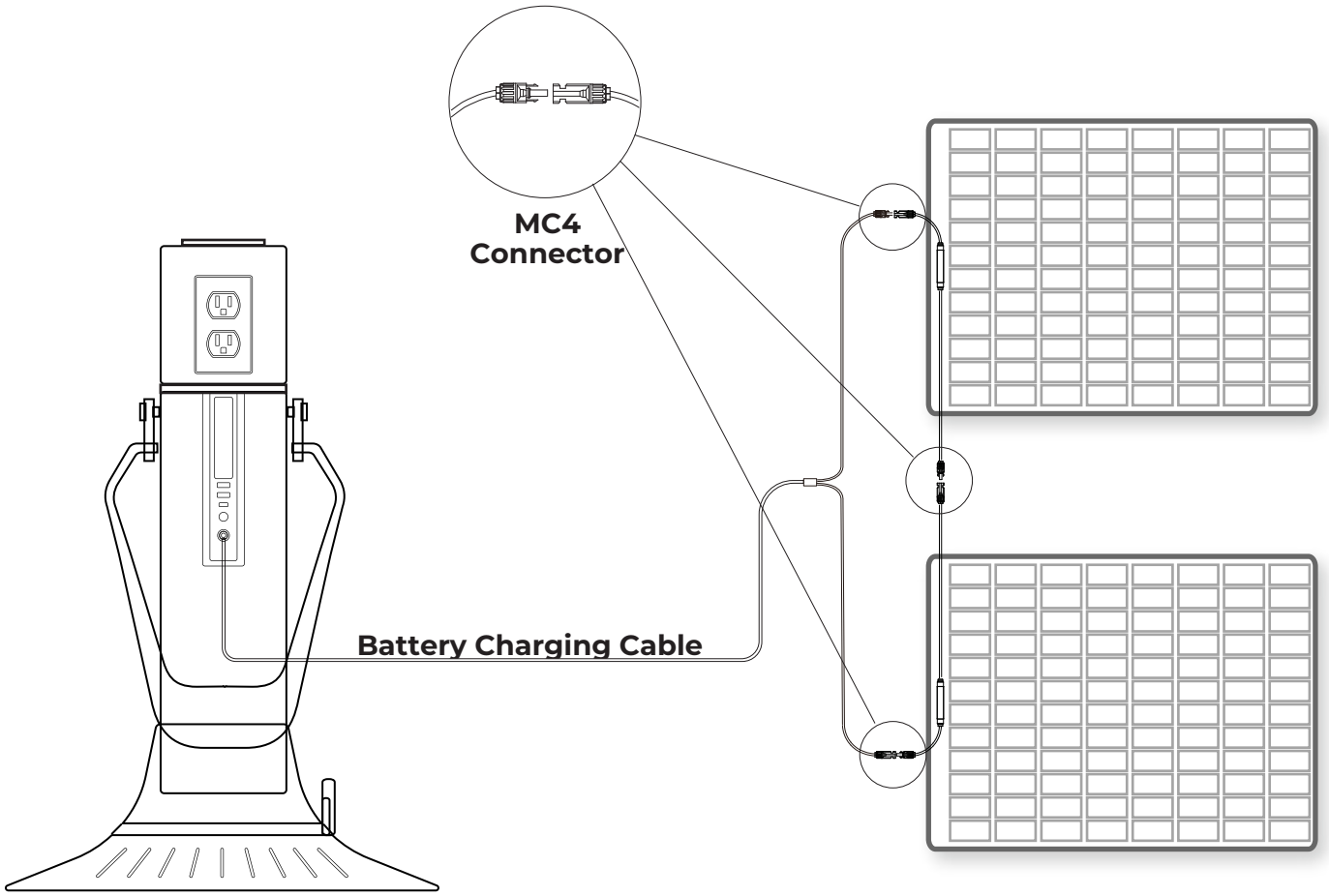
SOLAR PANEL CONNECTION

How to recharge the Battery with your solar panels?

Your Battery supports 30V-70V DC input. When the input exceeds 70V, the overload protection will be triggered. Extreme voltage overload may damage the product. Users should follow all the instructions in the manual. Craftstrom does not provide free repair services for any product damage caused by connecting many solar panels to the product or incorrect connection, even during the warranty period.

1. Recommended serial connection method

a. Users have to connect 2 x 200Watt Craftstrom solar panels (do not connect more than 2) in series, as shown in the figure below, to the MC4 port.
b. Then, connect to MC4s to the Battery charging cable.
c. Use the Battery charging cable to connect to the DC charging port on your Battery.



Craftstrom Solar Panel 200W **X2**

UPS/GENERATOR BACKUP MODE

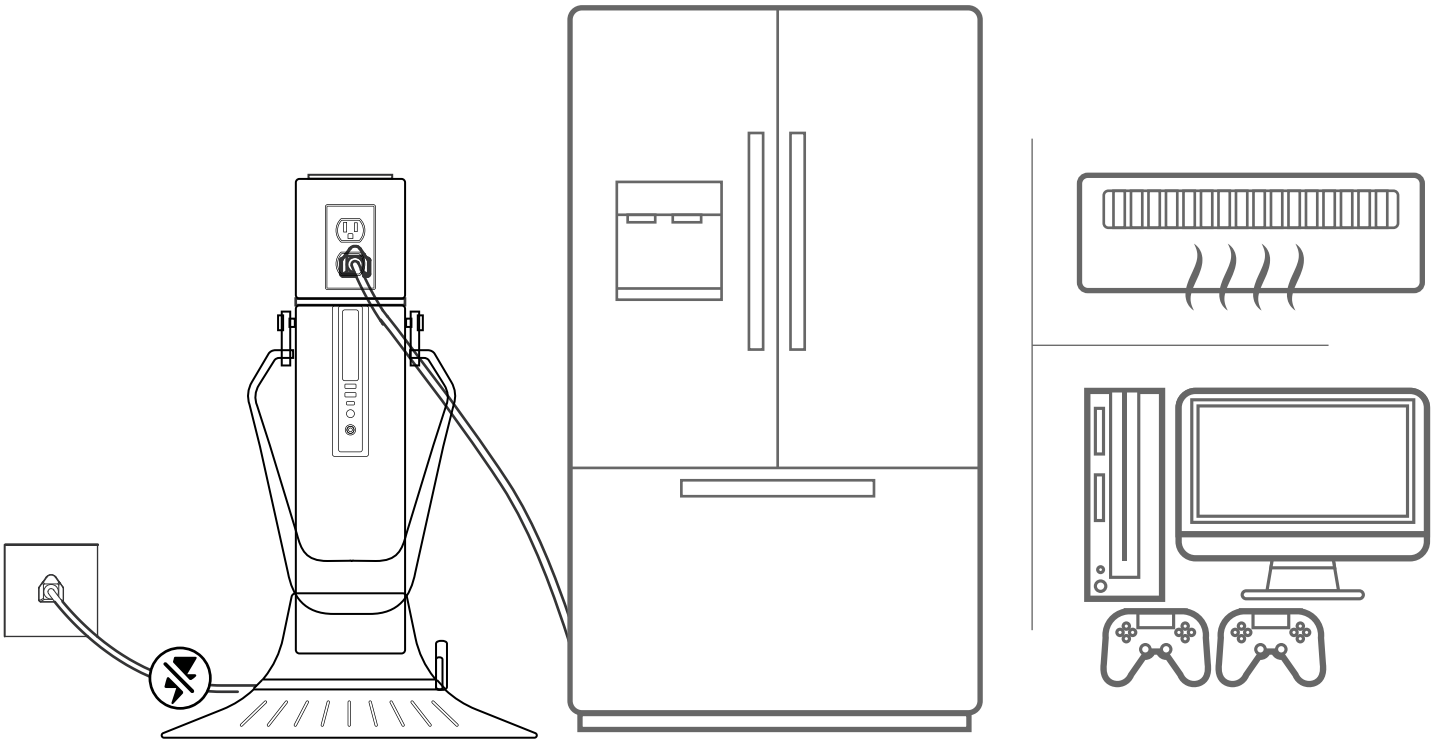
Precautions when using Emily as a UPS

The Craftstrom eco system supports a UPS function. You can use the AC sockets located on the OFF-GRID Inverter, while the device is connected to a wall socket with AC power supply (The AC power comes from the grid, or Solar). When the grid suddenly loses power, the device can automatically switch to battery power mode to ensure your appliance is not interrupted.

Do not connect devices requiring high continuing power supply (>600W). Otherwise, please run multiple tests to confirm its compatibility before connecting devices, such as data servers and work-stations, craftstrom does not take responsibility for any data loss or equipment damage caused by customers' failure in following these instructions.

UPS user guide

Users can connect the Smart Base to the power grid and connect selected appliances or other electronic devices to the Offgrid Inverter. The output can run continuously at 600W with peaks of up to 1200W. When the external power is cut off, the battery will immediately supply power to protect your devices.

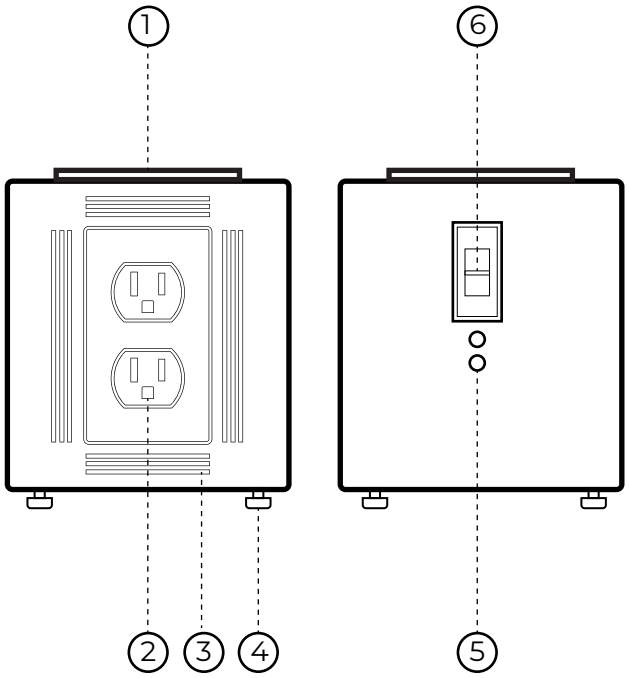


OFF-GRID INVERTER

100-240V Dedicated AC Output

The Off Grid Inverter is detachable and can be used on any of your Batteries - Main or Extension. It holds 2 AC outlets and a wireless charger. The switch to turn it ON or OFF is on the back of the unit

Craftstrom has designed different AC Output sockets following the local regulations of different countries.



1. Wireless Fast Charging
2. AC Output x 2 (100 - 240V)
3. Cooling Vents
4. Quick Release Studs
5. LED Indicator
6. ON/OFF Switch

TECHNICAL SPECIFICATIONS

Output Specs

Continuous Output Power: 600W

Surge Rating: 1200W (5 Seconds)

Output Voltage: 110/220 V

Line Mode Efficiency: 83%~87%

Output Frequency: 50Hz - 60Hz

Input Specs

Input Voltage: 30V - 60V 84V

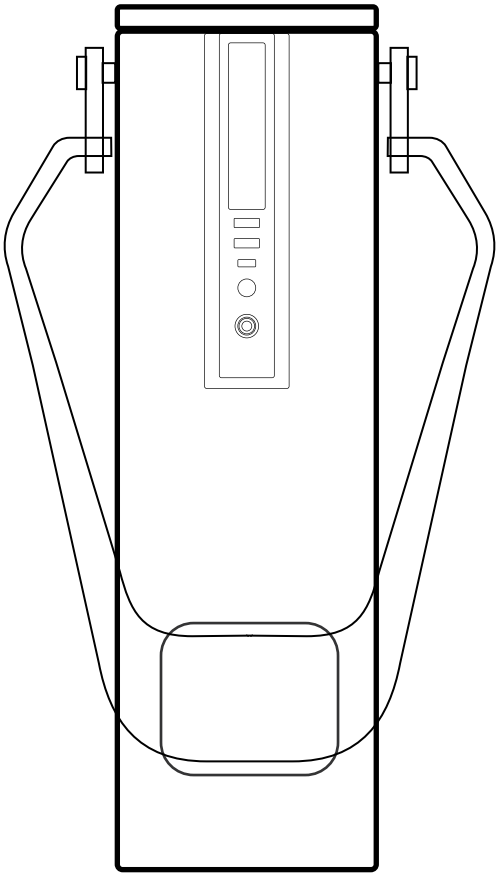
Max Current:20A

Low Battery Cutoff: 35V - 40V

BATTERY

1kWh Lithium Iron Phosphate Battery (LiFePO4)

Emily is a preoprietary design by CraftStrom and we are proud to say that we developed absolutely ever componant of this battery setup in-house. This means that we control every aspect of quality and functionality. We use LiFePO4 cells, because they are much safer to use, don't explode when looked at funny (thermal stability, if you will) and have a much longer lifespan than your typical cellphone battery. Up to 5,000 charge cycles, depending on use-case, vs. 2300 cycles for your phone. Also: They do not contain Cobalt, which is mined in Africa and has been associated with human rights violations.



The Battery Management System (BMS) we developed allows us to minimize internal losses, so it will take your Emily **1 year** to empty itself. Still, keep in mind that it will live longer when used and charged regularly.

This Battery is identical for the Main Battery as well as the Extension Batteries!
The Quick Release Ring to snap the Off Grid Inverter on and off is on top of the Battery and should not be removed at any time!

Any contacts visible are DC Voltage only.

The Belt is removable.

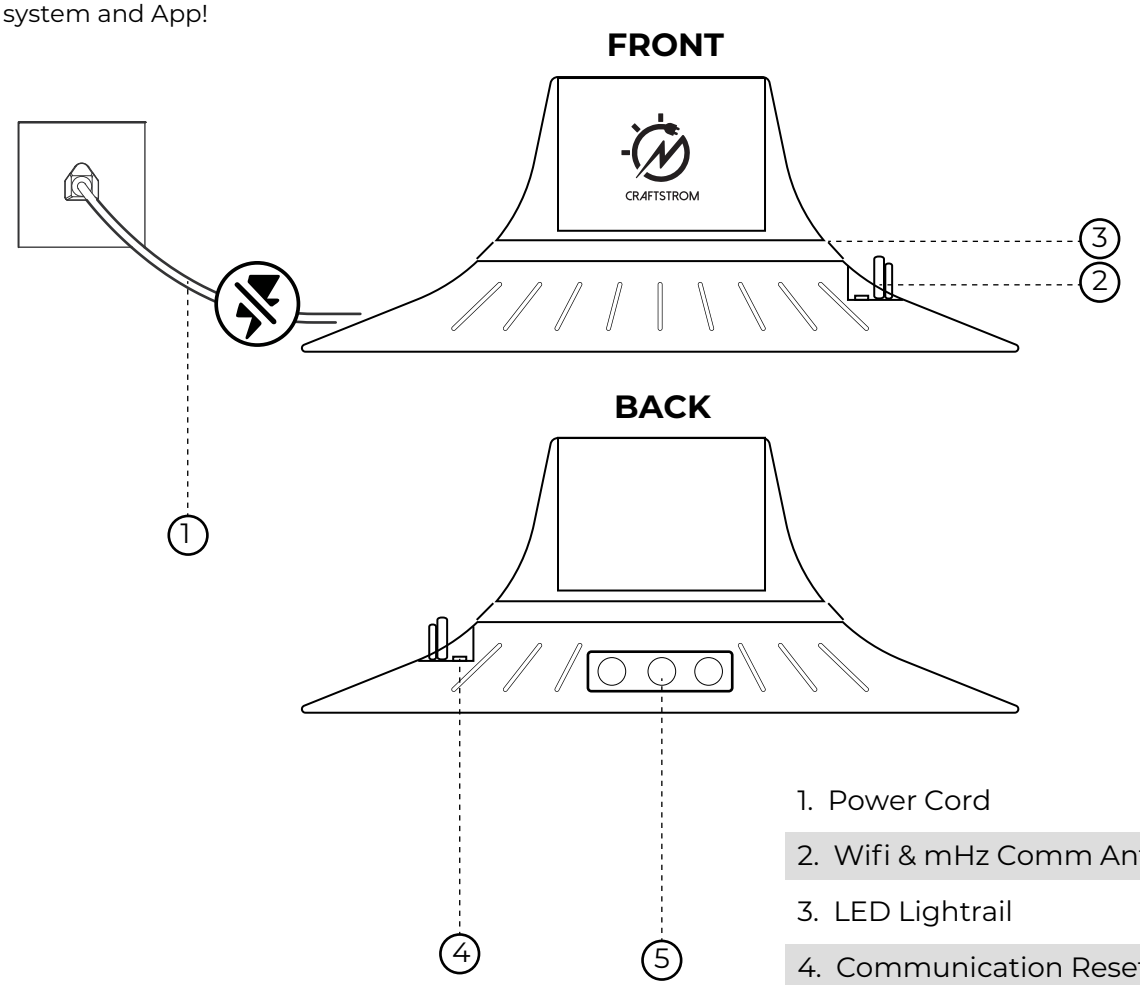
BMS SPECIFICATIONS

General Specs	
Core type	Lithium iron phosphate
Core size	32700 cylinder
Core capacity	6000-6500 mAh
Whole machine string number	15 S
Whole machine number	4 P
Rated voltage of the whole machine	48 V
Rated capacity of the whole machine	22Ah-24 Ah
Rated power of the whole machine	1056Wh - 1152Ah
Measuring Method of Whole Machine Capacity	TI
Balance mode of whole machine core	Balanced Management of Active Energy Transfer
Whole machine communication	CAN
Display mode of the whole machine	OLED screen
Output Parameter specifications	
Maximum output power of the whole machine	＞1100 W (3300W peak)
Maximum output current of the whole machine	＞50 A peak
Output Voltage Range of the Unit	38 V-54 V
USB Output Maximum Power	5V2A*2 Road
TYPEC Output Maximum Power	5V2A
USB Output Mode	Insert interface load to start output automatically
TYPEC Output Mode	Insert interface load to start output automatically
Output Parameter specifications	
Maximum Input Voltage for Charging (Battery Port)	＜56V
Maximum current input for charging (battery port)	＜24A
Maximum power input for charging (battery port)	＜300W
Fast Full Time (Battery Port)	＞5H
Maximum Input Voltage for Charging (Photovoltaic Port)	＜100V
Maximum current input for charging (photovoltaic port)	＜8.6A
Maximum power input for charging (photovoltaic port)	＜300W
Fast Filling Time (Photovoltaic Port)	＞5H

THE SMART BASE

Bi-Directional Inverter

The Smart Base plugs into the outlet with the Safety Gate Adapter (used to adhere to NEC regulations in the USA) and can either receive a charge form the home grid (powered by your solar panels) or can discharge into the home grid at 400W. The value can be throttled based on your needs. It will also communicate with our system and App!



1. Power Cord
2. Wifi & mHz Comm Antennas
3. LED Lightrail
4. Communication Reset Button
5. Connection for Extension Batteries

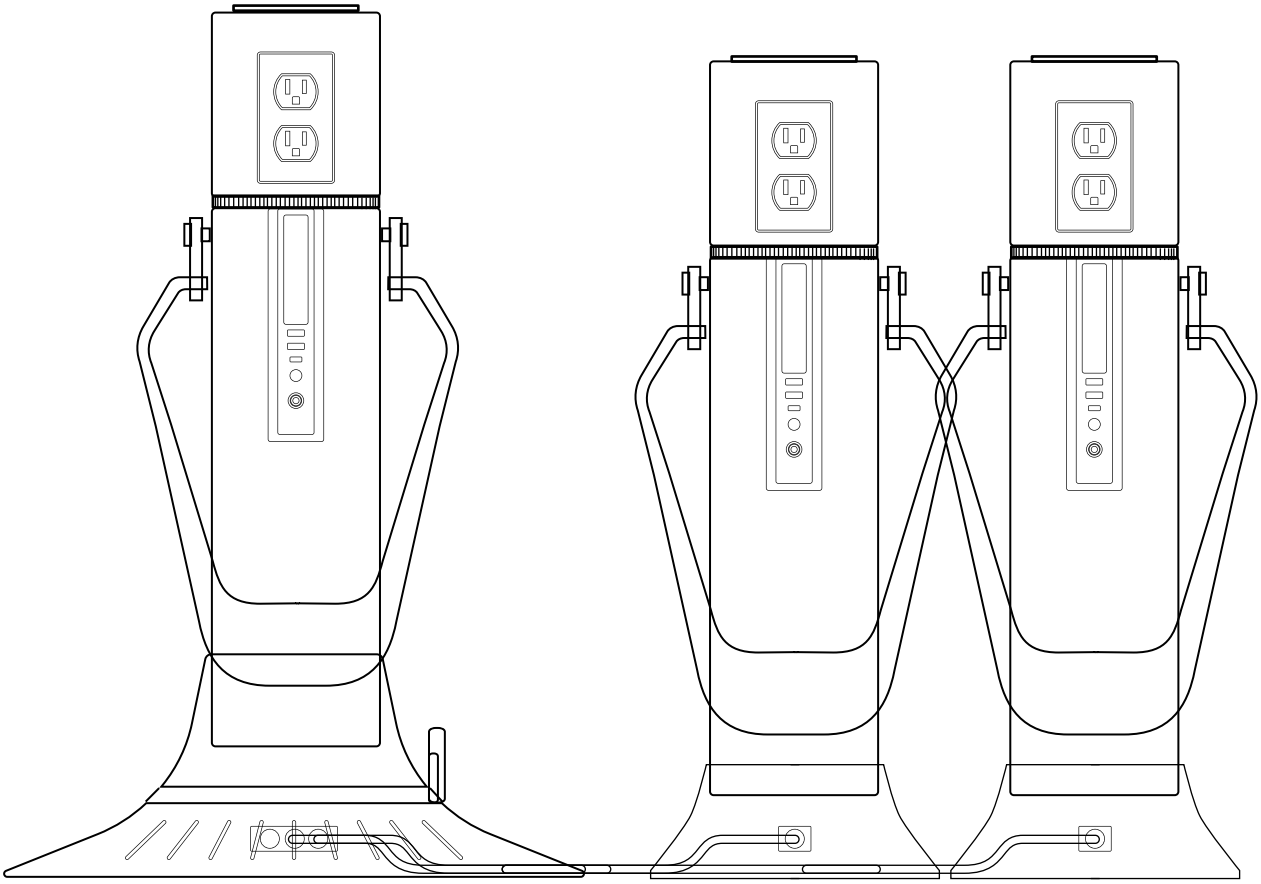
BI-DIRECTIONAL INVERTER BASE SPECS

General Specs	
Maximum input power	
Output peak power	280W -~320W
Rated output power	400W Max
Output current	110V / 3.6A, 220V / 1.8A
AC voltage range	90V-240V
AC frequency range	50Hz-60Hz
Power factor	90% - 93%
MPPT efficiency	85% - 93%
Temperature range	- 20°C to + 60°C
Dimensions(LxWxH)	165mm x 176mm x 38mm
Net weight	0.82kg
Weight	1.28kg 19.2kg
Size	Main 450 x 395 x 345 mm, Ext.: 245 x 202 x 60 mm
Enclosure rating	NEM A3R
Heat dissipation mode	Self-cooling
Communication mode	Wifi & mHz
Monitoring system	Mobile phone App, Browser
Electromagnetic compatibility	EN 5008.1 Part1 EN 5008.2 Part1 CSAS TD.C22.2.No.107.1
Power grid	EN 61000-3-2 EN 62109 UL STD 1741
Power grid detection	DIN VDE 4105, IEEE STD 1547 1547.1 and 1547.A
Certification	FCC,CE, ETL
Number of branch connections	30 pcs (single) 30 pcs (single) 30 pcs (single)
Output voltage mode	120/230V auto switch
PV open circuit voltage	22V - 60V
Operating voltage range	22V - 60V
MPPT ra nge	22V - 60V
short circuit current	400W/22V=18A
maximum working current	400W/22V=18A

EXTENSION BATTERIES

1-3 1KWH EXTENSION BATTERIES

Emily is completely modular, which means you can add more batteries to our Smart Base. You can add up to 3 x the 1kWh Battery. Ordered as Extension Batteries, these cost-effective modules are shipped with the Extension Base. This allows you to quickly add them to your Smart Base, where the Extension Batteries will be recognized and added in series. (in series refers to the fact that the batteries will be charged and discharged one after the other.



TECHNICAL SPECIFICATIONS

General Specs

Net Weight	30.9lbs (14kg)
Dimension	15.7 x 8.3 x 10.6in (40 x 21 x 27cm)
Capacity	22Ah / 24Ah （50.4V）
AC Output (x2)	600W (Surge 1200W)total

DOWNLOAD THE CRAFTSTROM APP

Download Craftstrom App and Set Up Devices

The CraftStrom app is free and allows you to monitor your devices

& management of production vs. storage. But the app can do so much more...

Monitor devices and your success. Check your monthly electricity

bill – simply compare the readings of our electricity meters in “kWh”.

“kWh” stated on the electricity bill. Share your success with yours

Friends on Social Media See how your efforts are helping the environment.

CRAFTSTROM APP AND SET UP DEVICES

Step1
Create username and Password

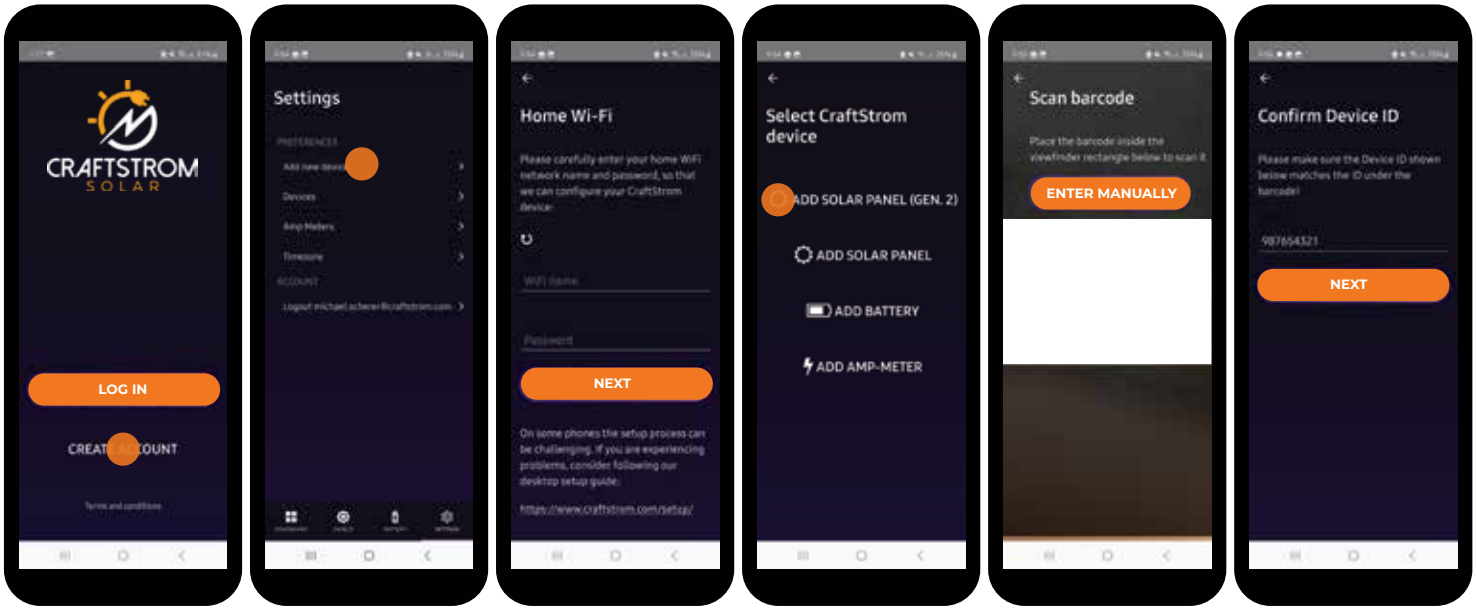
Step2
Go to add new device

Step3
Pick your home wifi and enter Password

Step4
Pick Add Battery

Step5
Scan barcode or enter ID manually

Step6
Confirm ID



Step7
Open Network setting by pressing button below

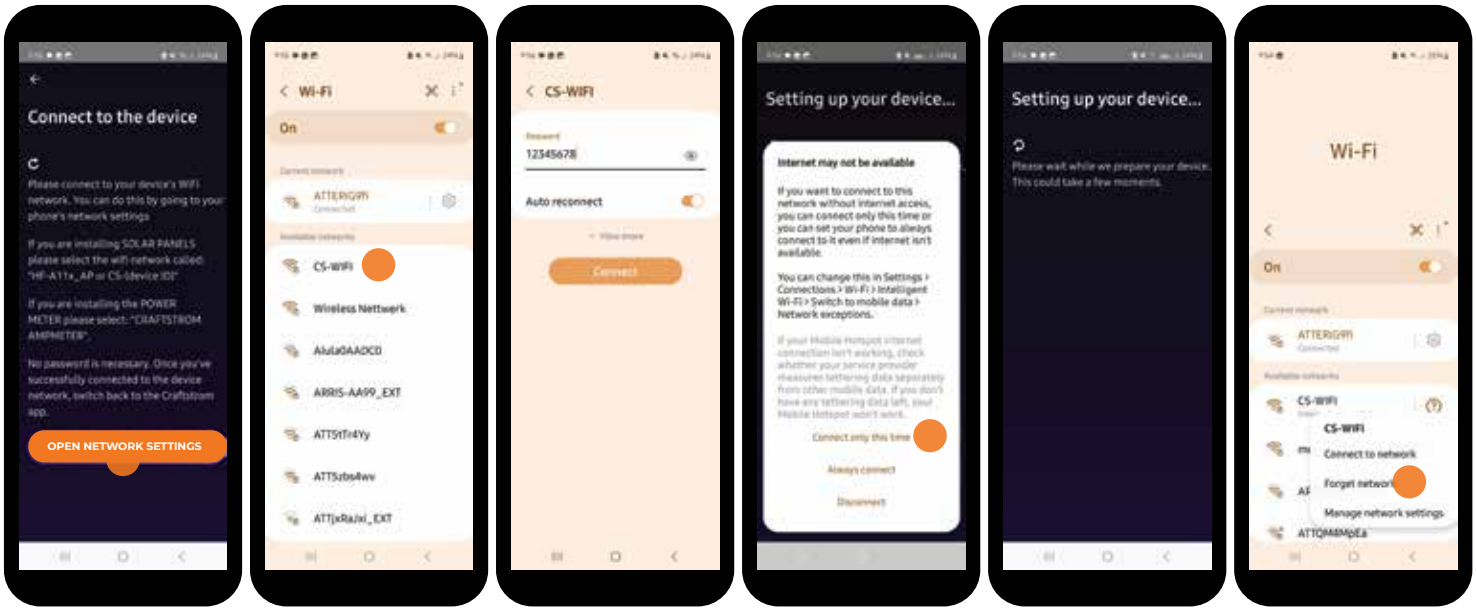
Step8
Pick CS-Wifi

Step9
Enter Password: *12345678*

Step10
On Android allow to connect only this time

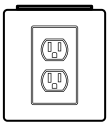
Step11
Success! Your Battery is being setup! Give it a moment to populate

Step12
If you are installing other Inverters go to network settings and tell it to forget network! Repeat Install with new Inverter

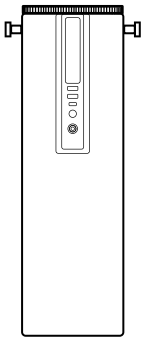


If the Inverter does not show up on the panles page, then go back to Settings - Devices delete the ID number and repeat the installation - remember to forget network (CS WIFI) in network settings before you reinstall! To reset wifi module on Inverter - press silver button next to antennas for 1 second...

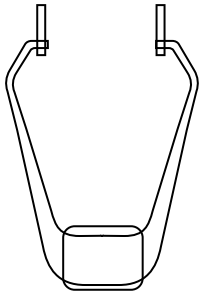
WHAT'S IN THE BOX



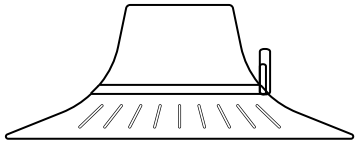
OFF GRID INVERTER



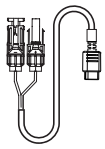
1KWH BATTERY



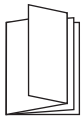
SHOULDER STRAP



SMART BASE



Solar Charge Cable (MC4 to 5.5MM Input)



User Manual & Warranty Card

FAQs

How do I care for EMILY?

EMILY is designed for various uses. If you need to clean EMILY, please use a dry and non-abrasive cloth to clean the surface. You can use cleaners designed for mobile phones or computer screeens can to clean EMILY, but do not give her a bath!

How do I store Emily?

1. Make sure to recharge Emily to around 85%.
2. Put Emily into its Base or store securely
3. Please store Emily in a dry environment without surrounded by abrasive objects. For optimal battery health, store Emily in room temperature.
4. Be sure to download our App to register your battery and see all the stats and graphs

How do I use Emily safely?

Please use Emily in its operating temperature range. Using Emily outside of its optimal operating temperature range can push the machine beyond its safe and effective limits. Do not submerge Emily in water. It is not waterproofed and this will void your warranty. If you want to protect Emily against moisture and dust, use a Waterproof Bag. Do not block the ventilation Fan while using Emily.