

# LIFEPOWER **A<sup>2</sup>**

USER GUIDE



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# Important Safety Instructions

READ CAREFULLY BEFORE USE

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



DANGEROUS VOLTAGE

This symbol indicates that dangerous voltage is present within this device constituting a risk of electric shock or personal injury.




WARNING!

This symbol indicates that there are important operating and maintenance instructions in the user guide accompanying the device.

- NEVER TRY TO INSERT AN OBJECT INTO THE PRODUCT THROUGH VENTS OR OPENINGS. High voltage flows within and inserting an object can cause electric shock and/or short internal parts.
- MISUSE OR INCORRECT CONNECTIONS MAY DAMAGE THE PRODUCT AND/OR YOUR EQUIPMENT AND/OR CREATE HAZARDOUS CONDITIONS FOR THE USER.

WARNING: THIS PRODUCT IS NOT A TOY. It will produce the same potentially lethal AC power as your normal household outlet. TREAT THE PRODUCT WITH RESPECT AND FOLLOW ALL INSTRUCTIONS. KEEP AWAY FROM CHILDREN.

- Keep these instructions.
- Pay careful attention to all warnings. The LifePower A2 is referred to as the Product.
- Use caution while inserting an AC plug into the AC outlet: Keep your fingers clear of the outlet at all times. Ensure that your fingers never make contact to the prongs of a plug when it is partially inserted into the Product.
- Always plug-in equipment before powering on the Product.
- Always turn off the Product before plugging-out equipment.
- AC Output not sinusoidal! Never try to power equipment that needs a pure sine wave power source.
- Never connect the AC output straight to an AC utility power outlet: this will destroy the Product.
- To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.
- Never use this unit near water.
- The device should not be exposed to dripping or splashing, and no objects filled with liquids, such as vases, should be placed on or near the device.
- Clean only with a dry cloth.
- Do not use the product in ambient temperatures above 40°C (100F)

- The product and its power adapter may become uncomfortably warm under extended high power usage. (60°C/140F)
- Do not use the product on your lap for more than 30 minutes, without a 5-minute break at least.
- To avoid overheating, do not leave the product in a non-ventilated space (e.g. a laptop bag) when it is turned on.
- Do not use near any heat sources such as radiators, heat registers, stoves or other appliances (including amplifiers) that produce heat
- Only use Class II double insulated devices with this product. They are marked with a square  and do not require a grounded connection.
- Protect the power cord from being walked on or pinched, particularly the plug and adaptor.
- Only use accessories specified by the manufacturer.
- The use of universal (travel) adaptors to connect foreign plugs is at your own risk, even when this adapter is included by the manufacturer.
- Unplug this unit during lightning storms or when unused for long periods of time.
- Do not overload wall outlet. Use power source only as indicated.
- Upon completion of any service or repairs to this product, ask the service technician to perform safety checks.
- Keep the device away from metallic objects (coins, keys...). Do not leave it near magnetic fields.
- When charging the product, make sure that the charger and outlet are readily accessible
- Do not drop the device. Do not expose it to mechanical shock, friction, impact or any other mechanical load. When transporting the device, put it in a proper protective carrier.
- Do not touch the power cord when your hands are wet and do not pull on the charger to unplug it.

- To prevent interference, do not use the device near other electronic devices, artificial pacemakers or near medical equipment.
- Shut off the device in locations that are susceptible to explosions and when travelling by airplane.
- Do not use the product near flammable or explosive sources.
- Keep the device out of prolonged exposure to sunlight and away from other sources of extreme heat or cold.
- Do not attempt to disassemble the device; it would no longer be covered by the warranty.
- Do not place objects on top of the device.
- Any device is sold or supplied on the basis that the product is used and/or handled only by a person who is sufficiently competent, qualified and experienced to work in the necessary capacity, with the device.
- LifePower provides this manual 'as is'. Any specifications or information contained herein are for informational purpose only and are in no way a commitment by LifePower. This manual is subject to change at any time without notice. For more information and if you wish to be sure you have the latest version or your preferred language of this user guide, please visit [www.lifepower.be](http://www.lifepower.be)

## Limitation of Liability

In no event shall LifePower be liable for any damages of whatever nature, to property or life, resulting from or connected with the use or misuse of our products, nor for damages arising from unforeseen events such as natural disasters, lightning... All resulting costs are therefore exclusively at the expense of the user and will not be covered by the warranty terms.

# Introduction

Hello there! Congratulations. You are the lucky owner of the LifePower A2.

We are proud to present you the smallest AC powerpack with the highest power rating available. We specifically designed it to be massively powerful, yet compact and lightweight so you can take it with you anywhere you'd like. The A2 will keep you powered, no matter where you are.

POWER UP YOUR WILDEST DREAMS

You now have the freedom to go anywhere you want and power up all of your everyday low power devices just like home. The options are endless.

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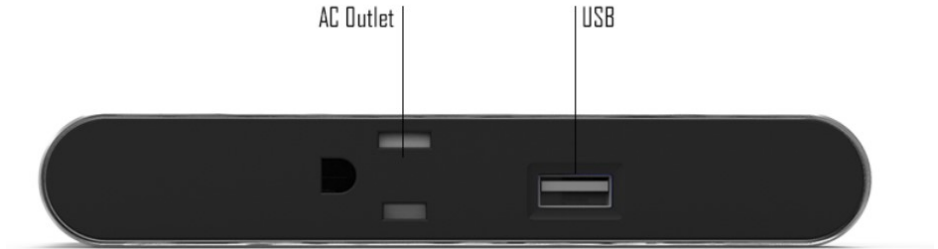
LifePower

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# Product Overview

The LifePower A2 is a portable power supply unit that offers both an AC outlet and a DC USB output. It stores energy that can be used to power and/or charge a wide variety of applications and devices at any location you desire.

At the front you will find the two output ports:



The builtin AC outlet port accepts AC power plugs and is capable of powering all devices that consume 120W or less. The technical specifications can be found on page 16.

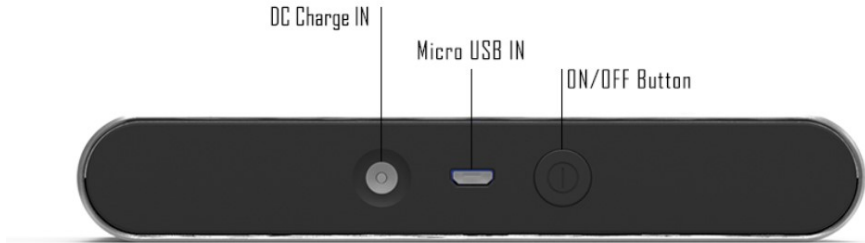
The AC waveform is created by a method called Pulse Width Modulation and is therefore called “modified sine wave” rather than a “pure sine wave”. It was designed however in a way so that it will act very similar to a standard utility power outlet.

The USB output port will accept USB charging to power and or charge any USB powered device.

The USB and AC OUTPUT can work simultaneously.



The back side features two input ports to charge the A2 and one ON/OFF button:



On top of device there is an indicator strip that shows functionality modes and capacity.

Before using the A2, we assume that you have read all safety instructions preceding this introduction and that you will read the operation instructions below. Upon arrival the A2 is partly charged. We suggest that you fully charge it before using it the first time.

There are several safety features built-in:

- Overload protection with automated shutdown and recovery.
- Overheating protection with automated shutdown.
- Non usage automated shutdown (when no load is detected, the product will auto-shutdown)
- Output short circuit protection
- Low voltage battery cut-off
- Over current/voltage battery cut-off

# Operation

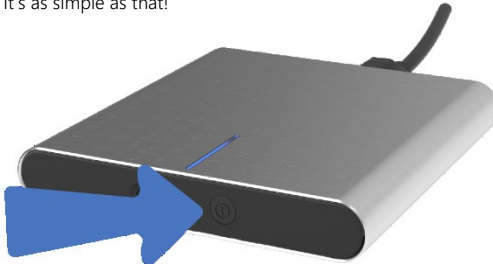
## Power Up

- Always first plug in the device you wish to power or charge BEFORE turning the A2 ON.



- Turning ON the A2:

There is only one button, by pushing it once quickly 'click', the A2 will power on. By pressing and holding\* it, the A2 shuts down. It's as simple as that!

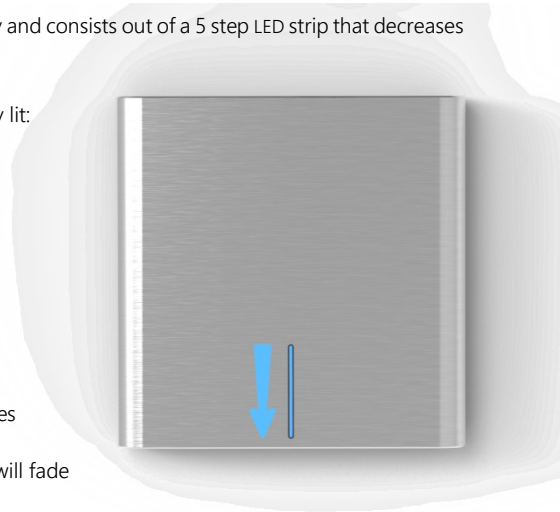


- If you wish to shut down the AC output, but keep the USB port activated, simply press the button twice quickly. The green LED will fade but the blue capacity LEDs will still be lit, to indicate this state.
- When no usage is detected after powered ON (no load) the blue capacity LEDs will fade after 10s and the A2 will automatically shut down after approx. 30s to conserve energy.

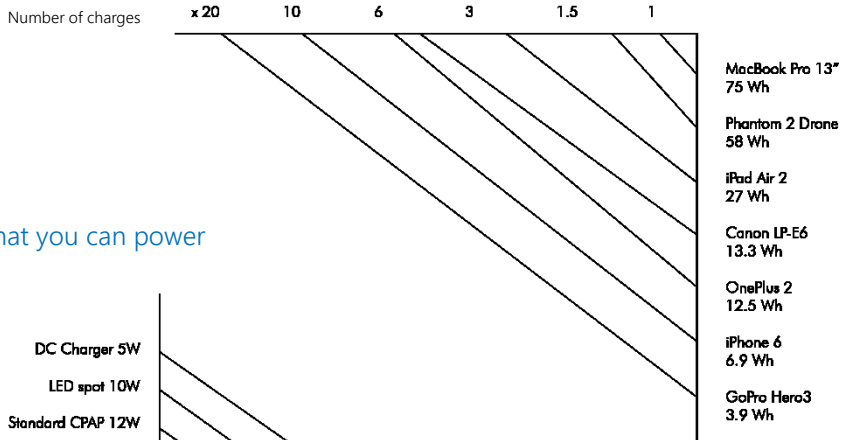
\* For 3 seconds or longer. All LEDs will fade to indicate shutdown.

## Indicator Lights

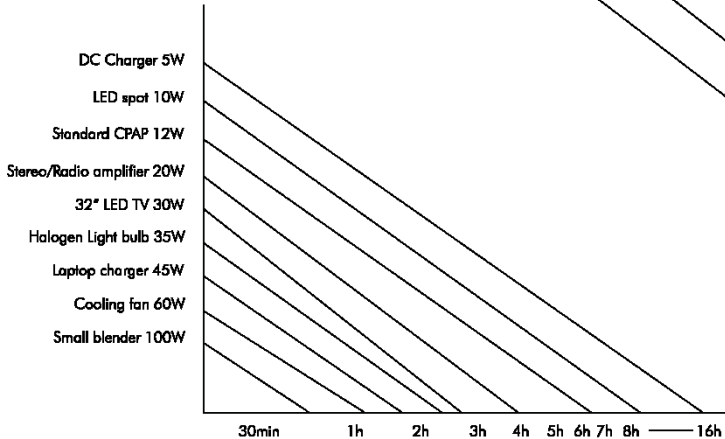
- Powering-up is indicated by a **RED** light (initiate) followed by a **GREEN** light (AC ON). The A2's output ports are now active (AC and USB) and the **BLUE** lights will show the remaining capacity.
- The **RED** light also indicates error situations such as an overload (e.g. when trying to power a device that demands too much current). The A2 will automatically reboot when this occurs, if however the light remains **RED**, please shut down the plugged-in device immediately. Use a lower load instead (<120W peak) before trying to reboot.
- The **BLUE** light indicates the remaining capacity and consists out of a 5 step LED strip that decreases in length when the capacity drops.
  - battery = 80-100% : the strip is fully lit
  - battery = 60-80% : 4/5 lit
  - battery = 40-60% : 3/5 lit
  - battery = 25-40% : 2/5 lit
  - battery = 5-25% : 1/5 lit
  - battery = 5% and lower: 1 led flashes
  - battery = 0%: Shutdown. all lights will fade



## What you can charge



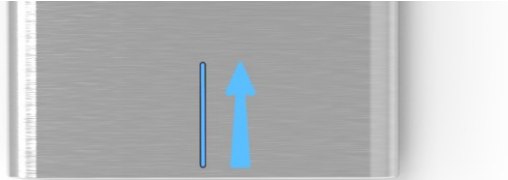
## What you can power



NOTE: The above values are for continuous operation. When no load is detected, the A2 will shut down automatically after 30s to ensure that it is not left on unintentionally. This may cause unwanted shut-down situations for very low power AC loads that consume less than 2.3mA or <0.5W.

## Recharging

To charge the A2, simply connect the supplied charger to the DC Charger port and plug it into your wall outlet. Charging will start automatically. Capacity leds will light up and increase according to the state of charge. When fully charged, the strip is fully lit and the charger should be disconnected.



You can use the USB OUT port whilst charging the A2. However you cannot simultaneously charge and use the AC OUT port (to ensure your safety and prevent over-heating).

When using the supplied charger it will take up to 3 hours for a full charge. Make sure to replenish whenever you can so that the A2 is ready to go whenever you need it.

NOTE: We offer alternatives to recharge the A2 besides the supplied wall outlet charger:

- The SUN<sup>2</sup> is a portable 40Wp solar pack, capable of charging the A2 in 3 hours of sunlight.
- A Car charger to charge the A2 from your car using the 12V DC Outlet.

Check them out on [www.lifepower.be](http://www.lifepower.be)

You can also use any standard micro USB charger (from your phone, tablet, solar pack, ...) to recharge the A2, but do note that this will be much slower and might take up to 24 hours to fully charge the A2.

# PRO USER GUIDE

## Battery Pack Tips & Tricks



We've listed some great advice for those that want to get the most out of their LIFEPOWER A<sup>2</sup>. These tips & tricks ensure extended lifetime and maximal performance for all your lithium based batteries (so also those of your phone, tablet, laptop, ...!).

- There are two situations that might destroy a lithium cell: over discharge (under-voltage) and over charge (over-voltage).
- A lithium battery should have a built-in circuit (BMS) to prevent this from happening by cutting of the battery from discharge or charge and thus protecting the battery\*. However:
- Pushing your battery to its limits by dropping to 0% battery or keeping it plugged into its charger (100%+) will drastically decrease the life of your battery so you should always try to prevent these situations:
  - When your battery is empty (fully discharged) always recharge it as soon as possible.
  - Never store a lithium battery that is completely empty, and at least charge it once every 6 months if you do not use it for longer periods of time.\*\*
  - Never charge too long (overnight) or recharge after a recent charge (recharge from 95% to 100%)
  - Ideally you should charge your lithium batteries between 20%->80% or 10%->90%  
Some people might think you must fully deplete a battery before recharge: this is absolutely not the case for lithium batteries.

\* The A2's built-in Battery Management System and Microcontroller will protect your device to keep it within safe ranges, but following these instructions will definitely have a positive impact on your lithium batteries behavior over time.

\*\* Ideally store a lithium battery around 50% state of charge when not in use.

## Battery Capacity

If you frequently charge and discharge your A2, charging only 80% of your battery can not only extend the battery's lifespan, but also save you a lot of time: near the end of a charging cycle less and less power will flow into the battery.

Charging 80% of the A2 will take around 2hours, while the final 20% will take another hour.

Capacity Disclaimer:

To calculate how long you can power a certain device with the A2, simply divide the total capacity (95Wh) with the power consumption (e.g. 10W):  $\frac{95Wh}{10W} = 9.5h$

However, during discharge about 15% to 20% of the battery capacity will be lost due to conversion losses. This means the A2's 95Wh built in battery will only provide approx. 80Wh of useful capacity at its best. Also note that the higher your load the less capacity you will get from the battery. This relates to the A2 as follows:

- 100% useful capacity on 20W load
- 95% useful capacity at 50W load
- 90% useful capacity at 95W load

Ambient temperature also affects the relative capacity of the battery. Below 0°C or above 40°C only 80% of the capacity will be available.

The A2 has been successfully tested to work at 40° C ambient temperature under full load (100W) for approx. 20min. Beyond this point, the internal temperature may rise above 60°C and the thermal overload protection will be activated.

## Technical Specifications

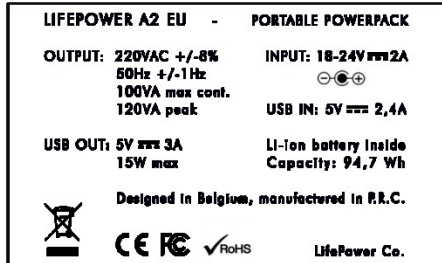
Dimensions	14.85 cm x 15.2 cm x 2.55 cm (5.85" x 5.98" x 1")
Weight	800g
AC Power	100W continuous
AC output	[EU model] AC 230V / 50 Hz / max 120Wpeak
AC output	[US model] AC 120V / 60 Hz / max 120W peak
AC Waveform	PWM modified sinewave
USB output	DC 5V / 3A
Charge input	19V / 2.1A
Recharge time	3 h
Battery type	Li-ion
Capacity	74Wh (S); 95Wh (M - Standard); 99.9Wh (L)
Battery life	over 600 full cycles
Working Temp.	0°-40°C ambient
Safety	Multi-layer full protection circuitry

## Declaration of Conformity

Products with the CE marking comply with the EMC Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC) issued by the Commission of the European Community.



## Product Label



<b>CAUTION</b>
<b>RISK OF ELECTRIC SHOCK</b>
<b>DO NOT OPEN</b>



## Air Travel Notification

You are allowed to carry devices with built-in Li-ion batteries up to 100Wh, without any limitation. This means you may carry multiple LifePower A2s in Checked and Carry-on baggage.

Some airlines however restrict battery powered equipment in Check-in baggage, but you may always take them with you as Carry-on.

These guidelines are approved by IATA and FAA as described in 49 CFR 175.10(a)(18) as of July 30, 2015.

## Troubleshooting

Please read through our FAQ & troubleshooting page before contacting our customer service:

Visit [www.lifepower.be/specifications/#FAQ](http://www.lifepower.be/specifications/#FAQ)

## Warranty and Return Information

Within the European Union our products are covered by a two (2) year warranty. Battery cells are covered by a one (1) year warranty. International product sales are covered by a standard one (1) year warranty which can be extended to 2 years. If you wish to benefit from this, please contact us on [support@lifepower.be](mailto:support@lifepower.be)

The Warranty period starts on the day of purchase. LifePower is responsible for the repair or replacement of the product in the case that issues are caused by manufacturing faults or component errors. LifePower is not required to replace or repair any product if the defect has been caused by damage, misuse, modifications or alterations that were applied by the user after the date of purchase. Return the faulty unit to your original local dealer and include the purchase receipt along with a note describing the problem.

Please contact LifePower before returning the product, many issues have been solved this way. When contacting us through the details below to report a product issue, please prepare visual content (photo and/or video) along with your description. With this information we can provide better and faster help and make the necessary actions.

Important note: No user-serviceable parts inside. When device is opened, a seal will break and your warranty will be void. If the unit is opened by a non-official service center the warranty will expire as well.

### Service and support

LifePower offers service and warranty in accordance to European law, which means that in case of repair (both during and after the warranty period), you should contact your local dealer. Please note: It is not possible to send repairs to LifePower directly, however we will assist you during the process.

Please note that the customer is responsible for returning goods under warranty, including possible shipping charges. LifePower and/or distributing partners will be responsible for the return of serviced or replaced products.

## Contact Information

LIFEPower bvba  
BE0632.577.085

Museumstraat 39  
2000 Antwerp  
Belgium

General inquiries Mail: [info@lifepower.be](mailto:info@lifepower.be)  
Warranty and Service: [support@lifepower.be](mailto:support@lifepower.be)  
Tel: +32484819498

We will be happy to help you on our helpdesk from Monday to Friday from 9AM till 6PM CET.

### Notice of Copyright

You acknowledge that all rights of this Manual remain with LifePower. All images and copy within this document or on the website are and shall remain the exclusive property of LifePower and should not be copied or reproduced in any manner without prior authorization. Nothing in this Manual intends to transfer any such rights.

LIFEPower A2 PATENT PENDING



This symbol indicates that the relevant electrical product or battery should not be disposed of as general household waste in Europe. To ensure the correct waste treatment of the product and battery, please dispose them in accordance to any applicable local laws of requirement for disposal of electrical equipment or batteries. In so doing, you will help to conserve natural resources and improve standards of environmental protection in treatment and disposal of electrical waste (Waste Electrical and Electronic Equipment Directive).