FREE YOURSELF FROM THE WALL SOCKET

ARROE LAER
ARLA-60

LAER - User Guide

20,000 mAh Portable Battery & Charging Hub

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ΛΓΓΟΞ

1. LAER

INTRODUCTION

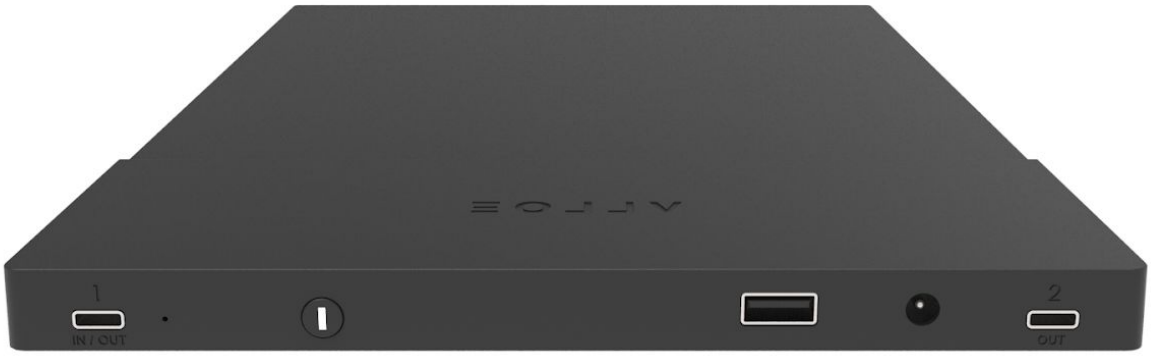
LAER is a portable battery and charging hub made for travel and working on the go. LAER replaces all chargers/adapters/power banks with one compact device for charging all the personal devices including: laptops, tablets, mobile phones and more.

It is the only charging solution controlled by mobile app and the only portable battery capable of safely charging any laptop make and model using our proprietary technology and customisable voltage.

The ARROE app controls LAER and acts as a virtual battery management assistant, monitoring and proactively managing the battery levels in all your personal devices.

CAPACITY/PORTS

- 20,000 mAh (74Wh) lithium ion battery;
- 1x USB-C Power Delivery (PD) 3.0 in/out port
- 1x USB-C PD 3.0 out port
- USB-A Quick Charge (QC) 3.0 port
- DC port (with customisable voltage)
- Wireless charging



FEATURES

Safely charge any laptop.

The ARROE mobile app and the firmware on the LAER device can customise the voltage and current output of the battery to match the device it is charging. This is particularly important when charging laptops which all charge at different voltages. Other power banks output set voltages (i.e. 12/16/19 V) which do not match the voltage inputs on most laptops. This means that the charging of a laptop/Microsoft Surface device at these set voltages results in permanent damage of the laptop battery and also potential damage to the laptop's circuitry. The LAER device is the first portable battery that can safely charge any laptop including Microsoft Surface.

Charge all of your devices including laptops on the go.

Use LAER as a portable battery to charge all of your personal devices on the go, including laptops, tablets, mobile phones, wireless charging devices and more. LAER can charge any personal devices that charge via: USB-A, USB-C, DC output or wireless charging.

Charge all your devices from one socket.

Use LAER as a charging hub when travelling to charge all of your devices from one socket. International adapter plugs are provided for the USB-C PD 3.0 charger so you can charge anywhere in the world and streamline your travel.

Bring as much power as you need with our battery cartridge system.

An interchangeable battery cartridge system lets you carry as much power as you need even on flights. Choose between a 20,000 mAh (74 Wh) or 10,000 mAh (37 Wh) cartridge depending on how much power you need and the weight you would like to carry. Bring multiple cartridges with you on long flights, both sizes are airline approved.

Superfast charging

Charge LAER fully in 1h20 minutes using our 60W USB-C PD 3.0 charger and USB-C PD 3.0 cable.

Charging notifications

Receive charging notifications on your phone in the ARROE mobile app. Get notified when your LAER device is fully charged or needs charging.

Specifically designed for luggage and bags

LAER is designed for luggage and bags. It's form factor was designed to sit in a tablet pocket next to the laptop in your bag, allowing you to charge your laptop from within your luggage. Monitor and manage LAER hands free from outside the bag using the ARROE mobile app.

ARROE SOFTWARE/FIRMWARE

Our database

Our database in the cloud stores battery and voltage information necessary to safely charge any device (initially focused on laptops). Laptop profiles containing voltage and current information by laptop manufacturer and model are stored in the cloud, downloaded automatically from the virtual server and stored locally on the ARROE app.

Power management algorithm

The power management algorithm which has been devised by ARROE permits the continuous assessment of available power so that the LAER device can route the correct amount of power to the correct port at the correct time and at the correct voltage. This enables LAER to charge multiple devices at different voltages simultaneously.

OCR technology

If a laptop profile is not present within the database, the user can also submit new laptop profiles by using the ARROE app's optical character recognition (OCR) function. This software intelligently scans the DC properties (voltage, current and power) from the AC/DC power adaptor of the user's laptop.

Bluetooth 4.2.

Using the ARROE app, LAER can communicate with mobile applications on personal electronic devices (PEDs) such as smartphones and tablets using Bluetooth 4.2 technology. This feature also permits the user to perform Over The Air-Device Firmware Upgrades (OTA-DFU), which are applied to the updatable hardware, enabling improved performance over time.

Battery Management System / Protection Circuit Module

The LAER battery cartridge consists of a 14.8 V 74 Wh battery pack. The cartridge's Battery Management System (BMS) communicates with LAERs printed circuit board assembly (PCBA) via its battery connector pins.

The LAER PCBA communicates with the cartridge BMS to confirm the authenticity of the cartridge, along with the batteries other properties such as state of charge, battery capacity, temperature, voltage, current and impedance. The advanced BMS allows LAER to calculate the number of charge/discharge cycles experienced by each individual battery, battery health and the degree of aging over time. This information is collected and stored on our database along with the user's charging profile and habits. This information gives ARROE a way to greatly improve the user's charging experience by keeping us informed of individual battery usage and performance.

The top end of the cartridge displays a battery connector pin system while the bottom end of the cartridge displays 2 keepers (open/close mechanism). This is accompanied by a centre cartridge pull recess for easy removal. Every cartridge also possesses a visual display system which can communicate the Battery State of Charge (%) when the battery cartridge is ejected from LAER. This system utilises 4 white LEDs (1 LED on (0-25%), 2 LEDs on (26-50%), 3 LEDs on (51-75%), 4 LEDs on (76-100%)). The LEDs are activated via a small mechanical button positioned on the battery cartridge and can be activated when the cartridge is not inserted into LAER.

SAFETY

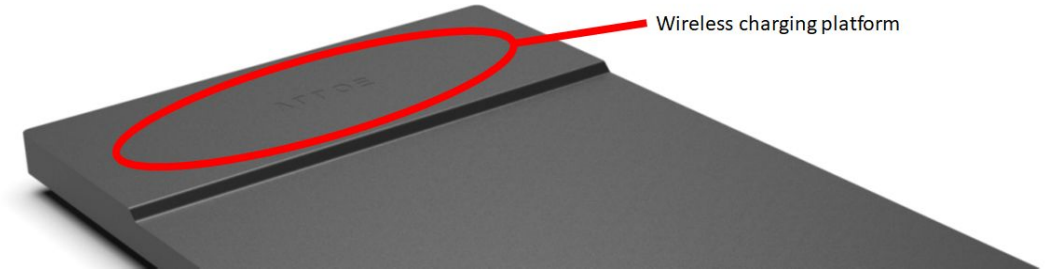
The safety of the user is essential. The BMS possesses cell balancing during charge/discharge, overvoltage protection, overcurrent protection, over discharge protection, high temperature protection and low temperature protection, among many others.

The cartridge also contains two stainless steel (SUS304) metal plates which are secured to the internal casing wall of all battery cartridges. The plates cover the battery pack inside to prevent perforation and other methods of damage, therefore dimensions are approx. 180 × 158 mm (or have a slightly larger surface

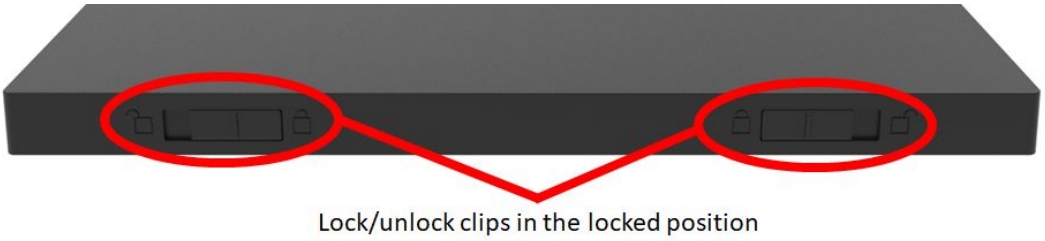
area than the face of the battery pack). The cartridge also contains sponge mat to allow for expansion and swelling (5-10%) of the cells during cycling.

FRONT SIDE VIEW

TOP VIEW



BACK SIDE VIEW



2. Quick Start Guide

1. nsert the LAER battery cartridge into the LAER device. Lock the battery cartridge into position using the clips on the back side of LAER..

2. Push the power button '⏻' to turn on the LAER device. The power button '⏻' will illuminate pale blue light when LAER is on. The wireless charging platform will be enabled immediately so you can start charging your wireless charging device (e.g. smartphone, smartwatch, wireless charging earbuds) straight away.

3. Connect your peripheral device (e.g. smartphone, tablet, laptop) to the appropriate USB-C or USB-A ports. Upon connecting your device to this port, the port will be enabled and the peripheral device will begin charging straight away.

   ⚠ **WARNING:**

   Ensure that the charging cables and connector tips supplied with your LAER device are used during charging. Using unapproved accessories may cause inefficient charging performance of the LAER device.

4. To charge a laptop via the DC port on the LAER device, please refer to the section entitled 'Charging your laptop using the LAER device' on Page 8.

To turn off the LAER device:

Push the power button '⏻' for 3 seconds. The power button '⏻' will stop illuminating white light and all peripheral devices connected will stop charging.

To charge the LAER device:

1. Insert the battery cartridge into the LAER device. Lock the battery cartridge in position by ensuring the battery locking clips are positioned towards the centre of the LAER device.

2. Select the correct plug set for your current region (e.g. US, Europe, UK, Asia) and clip this onto the ARROE AC/DC 60 W adapter.

3. Connect one end of the USB-C cable to the ARROE 60 W AC/DC adapter and the other end to USB-C port 1 on the LAER device.

   WARNING:

   Ensure that the AC/DC adapter and the USB-C charging cable supplied with your LAER device are used during charging. Using unapproved accessories may cause inefficient charging performance of the LAER device.

4. Insert the ARROE 60 W AC/DC adapter into the wall socket.

5. It is not necessary to push the power button '⏻' to turn on the LAER device. The LAER device battery will begin to charge automatically once the charging ARROE adapter is connected. This is signified by the power button '⏻', which will illuminate white light upon connection.

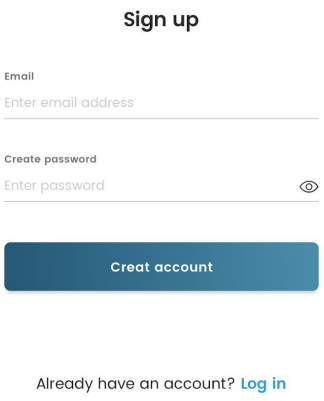
3. The ARROE App

1. Find the ARROE mobile application download leaflet which has come inside the LAER box. Scan the display QR-code for instant access to the Apple App Store and/or the Google Play Store, where you can download and install the ARROE app. **Alternatively, use your smartphone to search for ARROE on the Apple App Store or Google Play Store and download and install the ARROE app.**

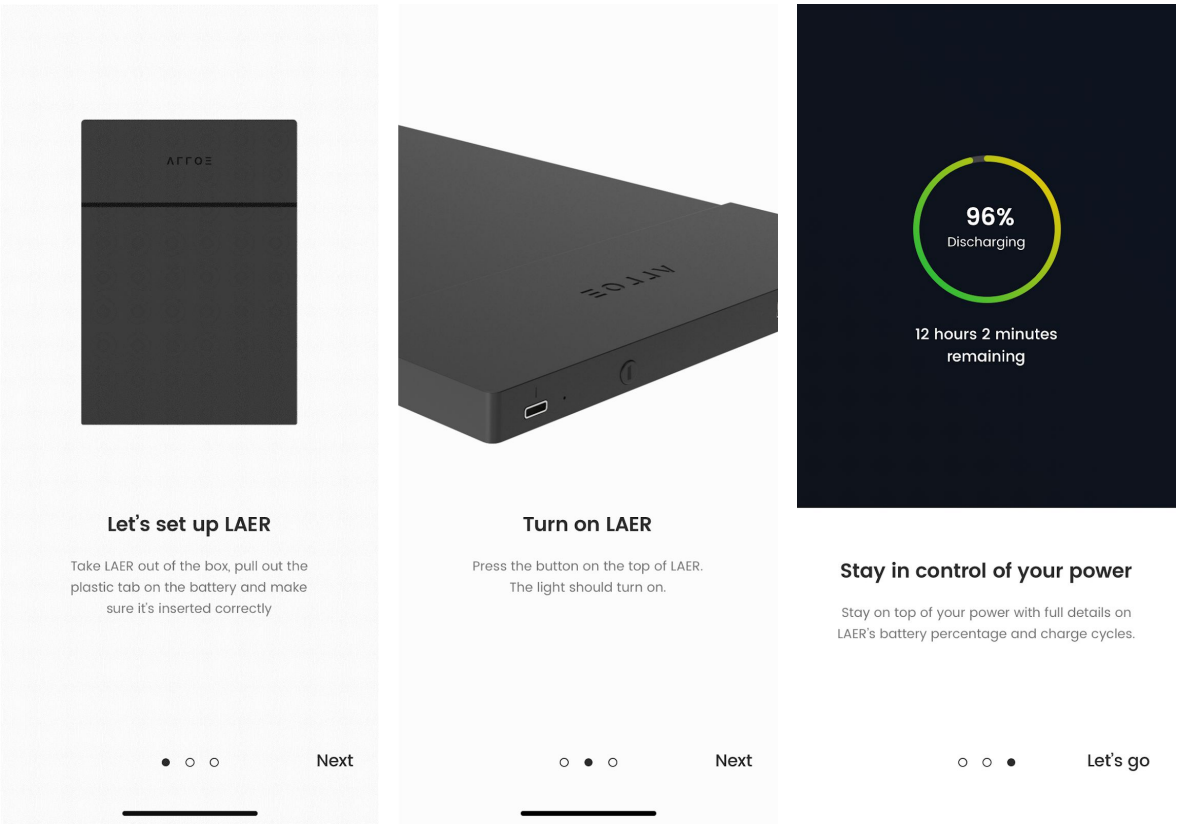
Once installed find the ARROE app saved to your smartphone's app screen.

2. Register an account with ARROE.

3. Confirm your account via your email. This will be necessary for future logins and to download laptop profiles which will be saved locally on your smartphone for safe charging of your laptop.



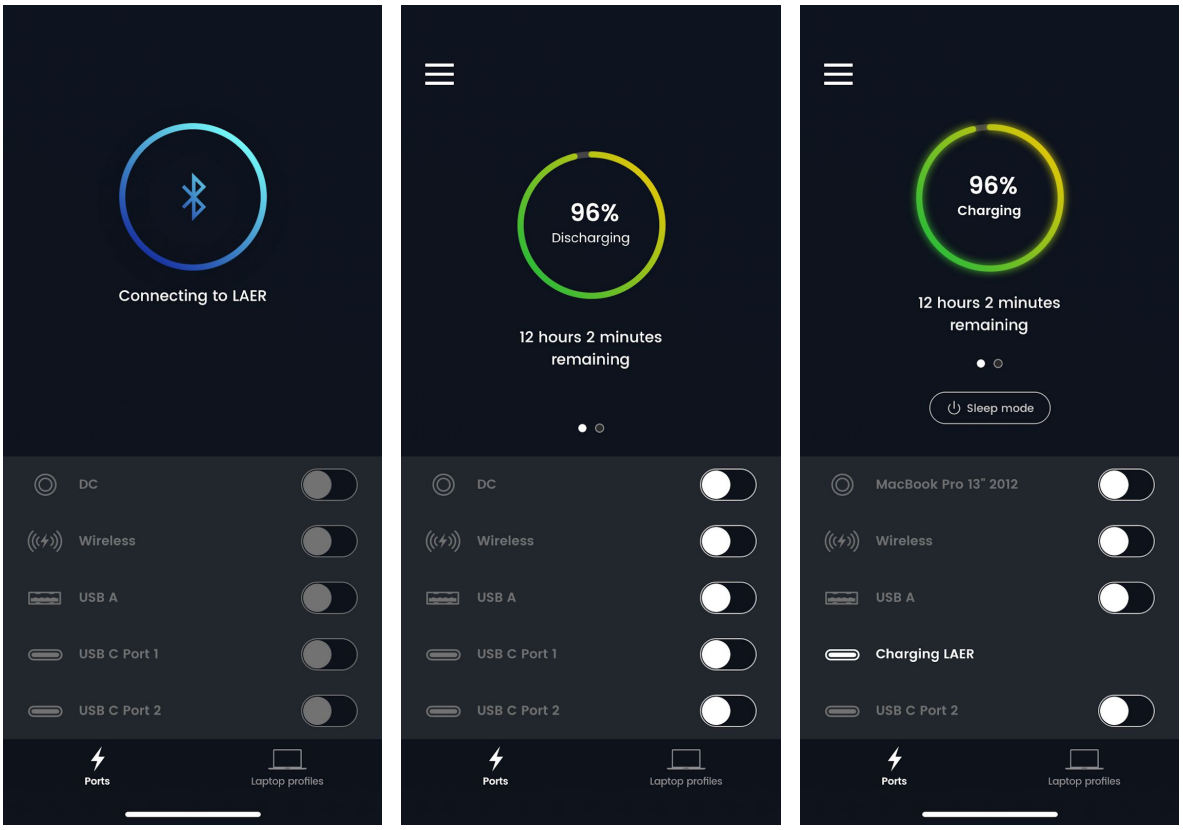
4. Follow the onscreen instructions to learn about your LAER device and how it operates.



5. Make sure Bluetooth is enabled on your phone. Your phone will pair and connect to LAER.

The ARROE app will then display LAER's current status.

6. Charge LAER using a USB-C the USB-C Port 1 toggle button will disappear and 'Charging LAER' will appear.



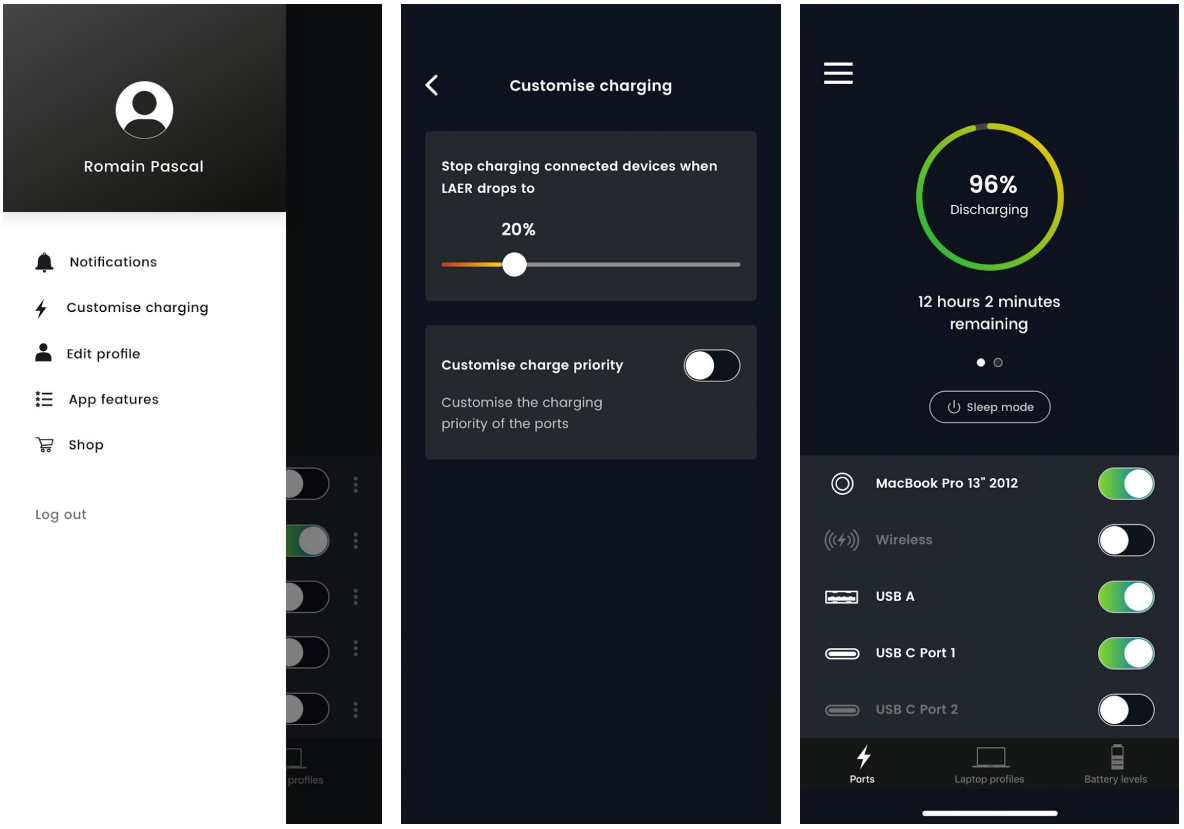
7. Swipe right on the screen or tap the menu key to display various options within the ARROE app.

8. Customise charging to receive notifications when LAER falls to a user defined State of Charge (%) and prevent discharging of LAER when connected to peripheral devices.

The ARROE app user interface is very intuitive. Buttons can be toggled on and off to enable and disable charging ports when devices are connected.

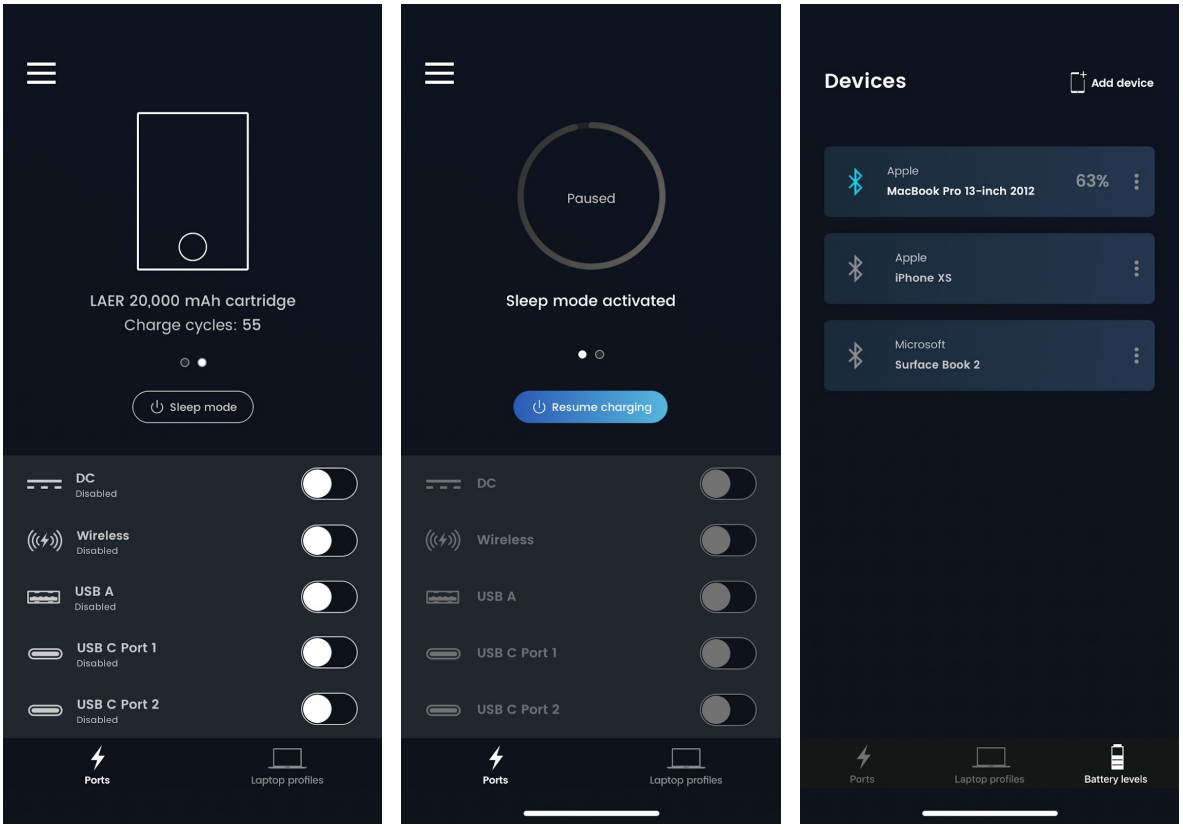
LAER battery State of Charge will change during charging/discharging.

The ARROE app will calculate how much time is left to either fully charge or fully discharge the battery cartridge depending on the devices/adapter connected.



9. Swipe left on the ARROE app menu screen to display various properties of the currently inserted battery cartridge. This presents the size of the battery cartridge with regards to capacity. The number of battery charge/discharge cycles are also shown.

10. Activate 'Sleep mode' at any time to stop the charging of all connected peripheral devices. This can be resumed by tapping the same button once again.



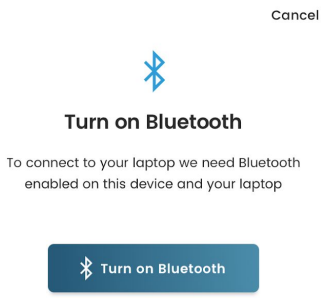
4. Charging your laptop

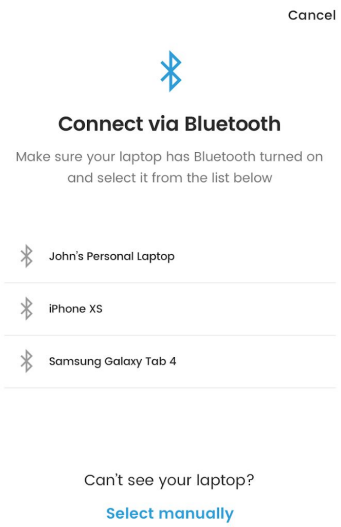
1. Select the correct laptop connector tip from those supplied in the LAER box and connect this to the DC to DC cable also supplied.

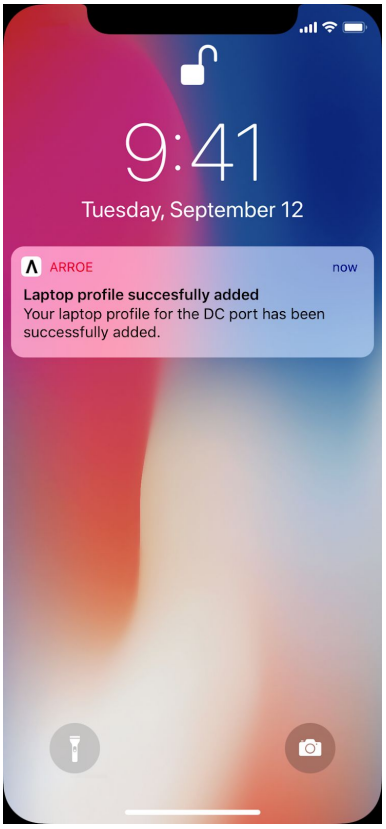
2. Insert the laptop connector tip cable end into your specific laptop device and insert the DC to DC cable into the LAER device, using the 5.5 × 2.5 mm end.

3. The LAER device is now physically connected to your laptop via the DC port. To begin charging of your laptop, perform the following steps:

4. Open the ARROE app and tap the 'Laptop Profiles' option. You will then enable Bluetooth on your laptop and connect to the laptop via the ARROE app.







The ARROE app will automatically retrieve the specific model number of your laptop. It will then cross check these details with the ARROE database located on a virtual server. The ARROE app will then send the exact voltage (volts) and current

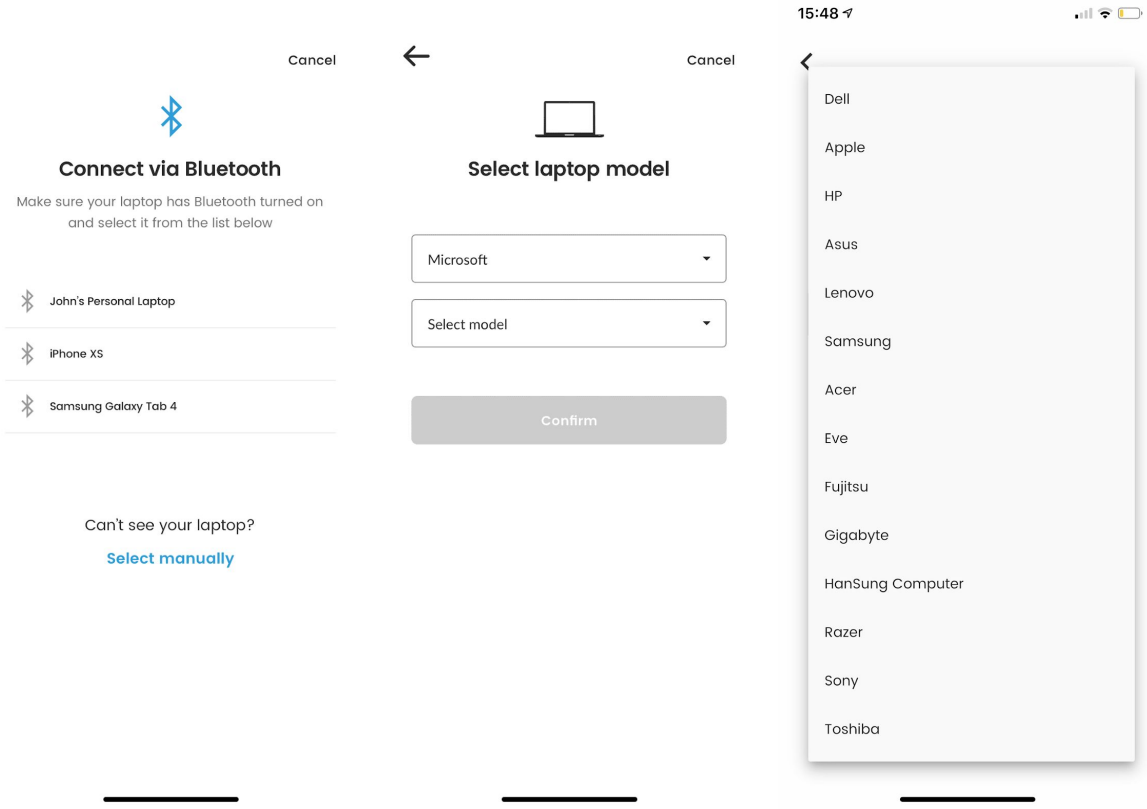
(amps) to LAERs DC port so you can power your laptop safely. It is this exact voltage (volts) and current (amps) requirement that is essential to prevent damage to your laptop battery when charging.

If you are unable to connect via Bluetooth:

If you are not able to see your laptop when trying to connect via Bluetooth, select the 'Select Manually' button foud below 'Can't see your laptop'.

This option will help you connect your laptop and select the appropriate voltage and current for charging your laptop by using the ARROE database.

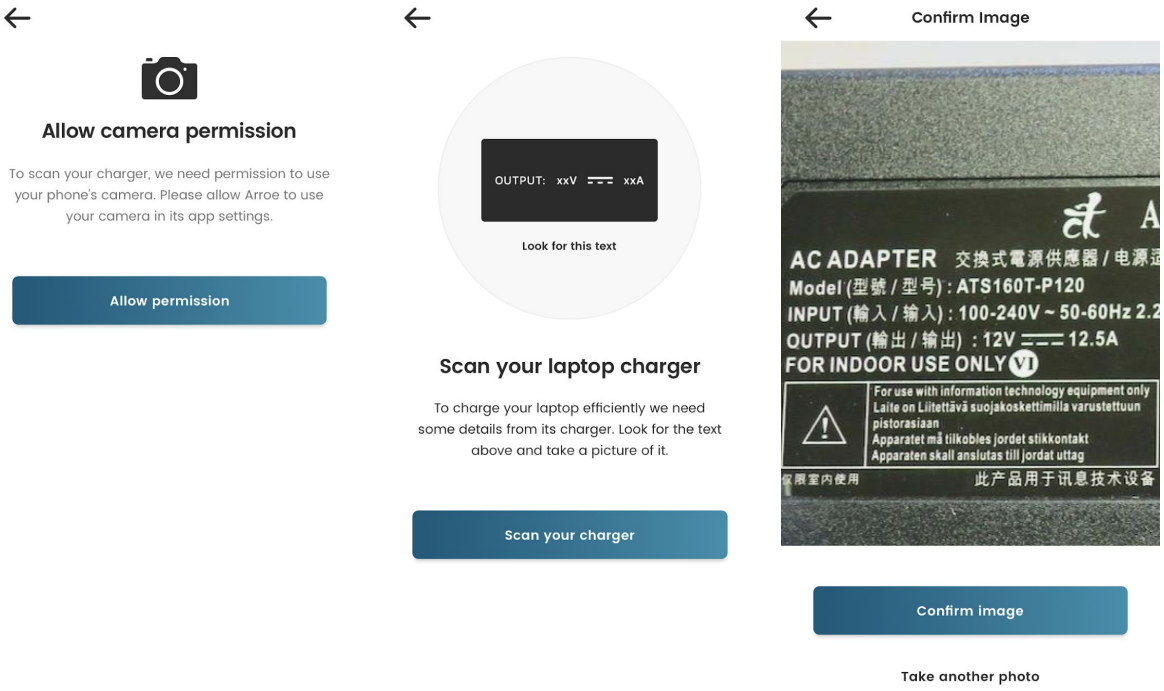
1. Select the laptop manufacturer and laptop model from a dropdown.



2. The ARROE app will then request you to use its OCR function to determine the required voltage and current for your specific laptop. To do this you will be requested to allow camera permissions.

3. The ARROE app will then request you to scan your laptop charger (power adapter located between the laptop DC input and the wall plug). The ARROE app will tell you which characters are required to be in the shot. This is the DC output voltage and output current coming from the adapter to the laptop.

4. Once focused, the ARROE app will automatically scan the adapter and you need to confirm the image quality.



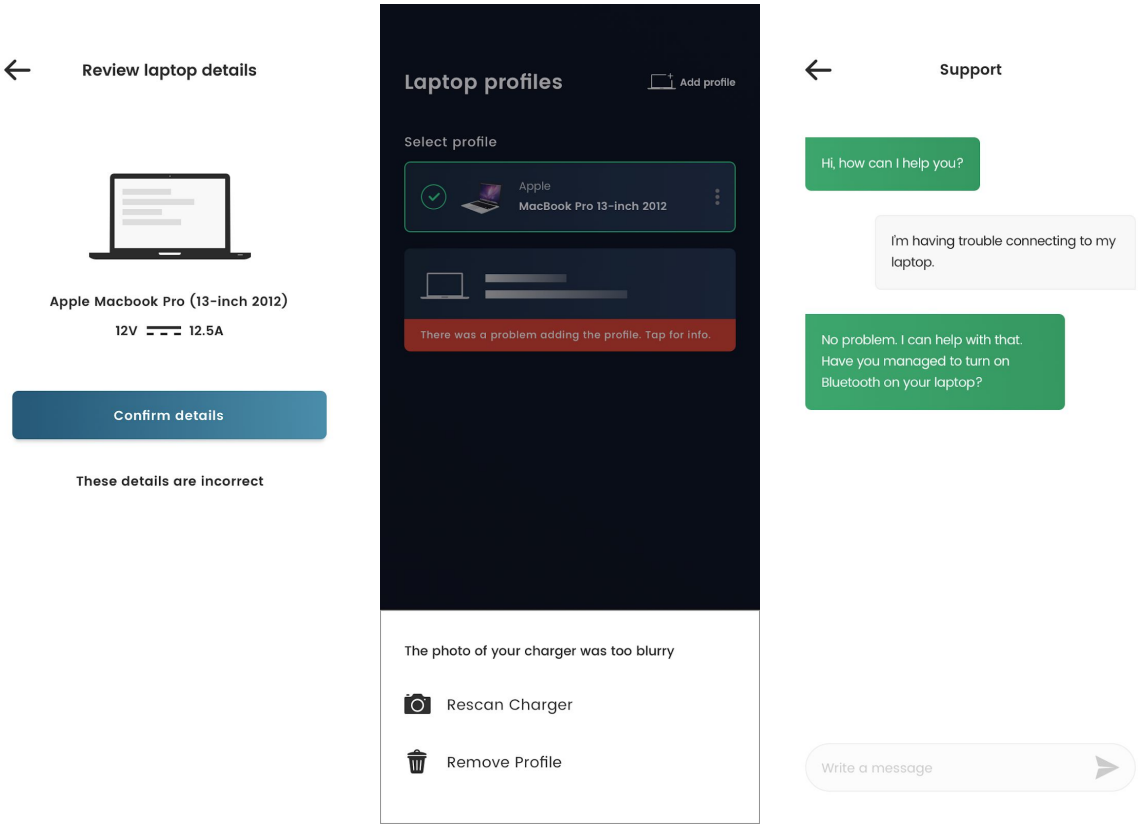
5. The ARROE app will automatically cross check these details with the ARROE database located on a virtual server. It will then request you to confirm the details retrieved from the scan.

6. If the details are correct, then tap the 'Confirm details' button. If the details are incorrect, tap the 'These details are incorrect' link.

7. This will allow you to either rescan the charger or remove the profile. Scanning the charger again will usually retrieve the correct profile from the database.

8. In the event that the specific laptop profile is not present on the database, the details of your laptop will automatically be sent to ARROE support for approval. While the profile is pending approval it will show as pending in the app. As soon as ARROE support has approved the profile it will be automatically added to your user profile and the database for future users. You will receive a message in the app to notify you of this. If there is an issue with the profile then you will receive a message in the app from ARROE support detailing next steps.

9. At any point during this process you can select the option to connect to ARROE support from the ARROE app. ARROE Support will help you add your laptop profile.



5. Charging your peripheral devices

1. Connect your peripheral device (e.g. smartphone, tablet, laptop) to LAER using either the USB-C port 1, USB-C port 2 or USB-A port.

2. Once connected, the LAER device will enable the port and begin to charge your peripheral device automatically.

3. To stop charging specific peripheral devices connected to the LAER device, remove the applicable cable from a LAER port or disconnect the device from the cable end. This will automatically disable that port and charging will cease. Alternatively, open the ARROE app and toggle the appropriate button within the menu to disable the port. The selected peripheral device will now stop charging.

4. To begin charging a peripheral device again, toggle the appropriate button to enable the port in the menu.

Wireless charging of peripheral devices using the ARROE app:

1. Place your peripheral device (e.g. smartphone, smart watch, wireless charging earbuds) on the centre of LAER's wireless charging platform.

2. Open the ARROE app and tap the 'enable' button next to the wireless option. The wireless charging platform will then be enabled and charging will begin.

Wireless charging of peripheral devices using the LAER device:

1. Place your peripheral device (e.g. smartphone, smart watch, wireless charging earbuds) on the centre of LAER's wireless charging platform.

Push the power button '⏻' located on the LAER device during. This will enable the wireless charging platform.

6. In The Box

1. LAER device with 1x battery cartridge (20,000 mAh/74 Wh).
2. 1x 60 W USB-C PD 3.0 wall adapter with integrated Type A pins (US/Canada/Mexico/Japan).
3. 3x modular plugs. Type C (Eur/Asia/S.Africa/S.America), Type G (UK//HK/ Singapore/Malaysia) and Type I (Aus./NZ/China).
4. 2x USB-C PD 2.0 to USB-C PD 2.0 cables (2 m cable, and 23 cm cable).
5. 1x Apple MagSafe 2 to DC (5.5 × 2.5 mm) cable.
6. 1x Microsoft Surface Connect to DC (5.5 × 2.5 mm) cable.
7. 2x DC (5.5 × 2.5 mm) to DC (5.5 × 2.5 mm) cables (23 cm and 2 m).
8. 8x DC port laptop connector tips of different sizes.
9. ARROE leaflet displaying QR-code for instant access to the Apple App Store and/or the Google Play Store.

Wall Adapter

Certifications/Approvals:

CE (EMC, RoHS, REACH) CB, ETL (Intertek), RCM, C-Tick, AS/NZS 3112 AS/NZS CISPR 32:2015 and SAA Approvals (Aus/NZ), FCC, ERP – EN 5056:2011+A1 Energy Efficiency, UL 60950-1, CAN/CSA C22.2 No. 60950-1-07.

Markings:

RoHS mark, WEEE mark, CE mark, FCC mark, UL listed US/Canada mark, IEC Class II Insulation Protection, International Efficiency Marking Protocol Level VI.

Specifications:

Matt black finish. Input: 100-240 V, 50/60 Hz, 1.5 A.

Max Output: USB-C PD 3.0 (5 V/3 A, 9 V/3 A, 12 V/3 A, 15 V/3 A, 20 V/3 A)

Total: 60 W. Dimensions: 62 × 62 × 32 mm.

Integrated Type A pins (US/Canada/Mexico/Japan).

Drawings:

Regional Plugs

Certifications/Approvals:

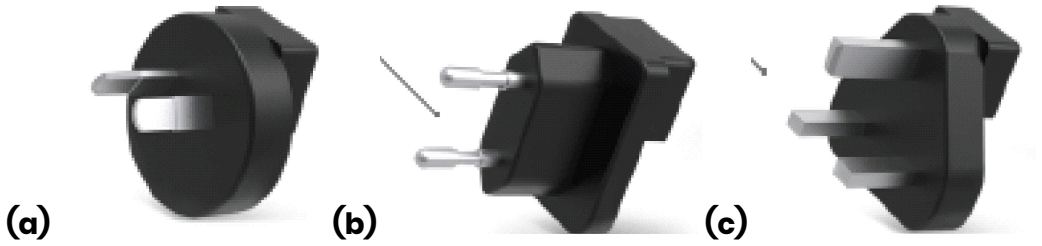
CE (EMC, RoHS, REACH) CB, ETL (Intertek), RCM, C-Tick, AS/NZS 3112 AS/NZS CISPR 32:2015 and SAA Approvals (Aus/NZ), FCC, ERP – EN 5056:2011+A1 Energy Efficiency, UL 60950-1, CAN/CSA C22.2 No. 60950-1-07.

Specifications:

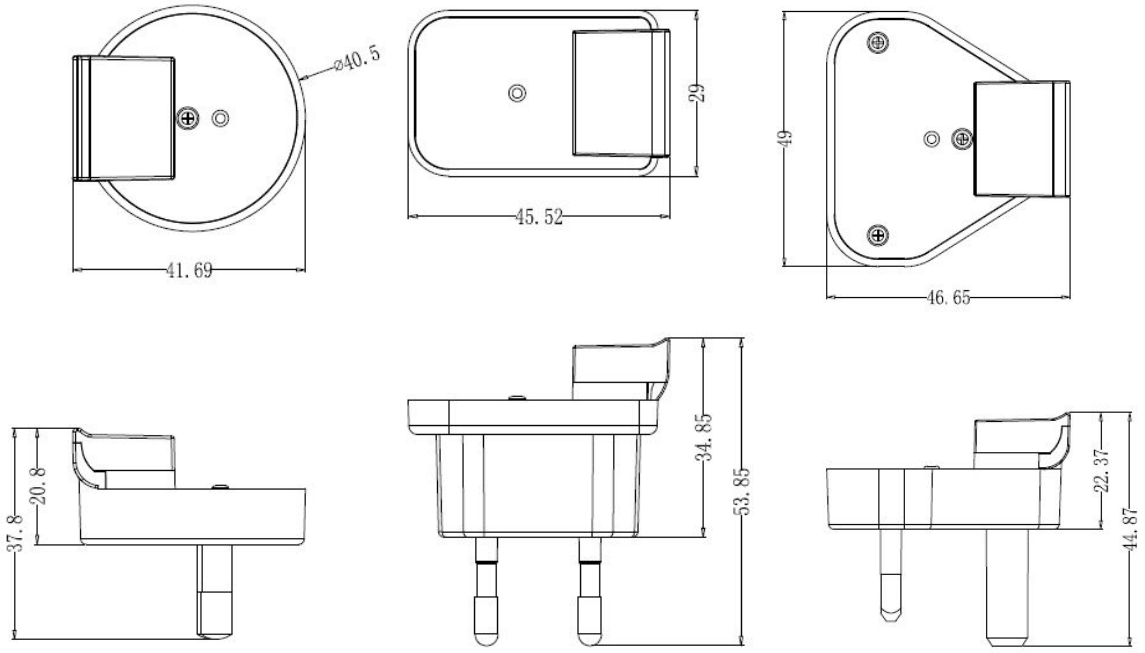
Input voltage: AC 100-240 V, 50-60 Hz. Output: USB-C PD 3.0: 5 V/3 A, 9 V/3 A, 12 V/3 A, 15 V/3 A, 20 V/3 A. Matte black finish.

Drawings:

(a) Aus/NZ/China (Type I), (b) Europe/Asia/S.Africa/S.America (Type C/F), (c) UK//Hong Kong/Singapore/Malaysia (Type G).



Dimensions:



Cables

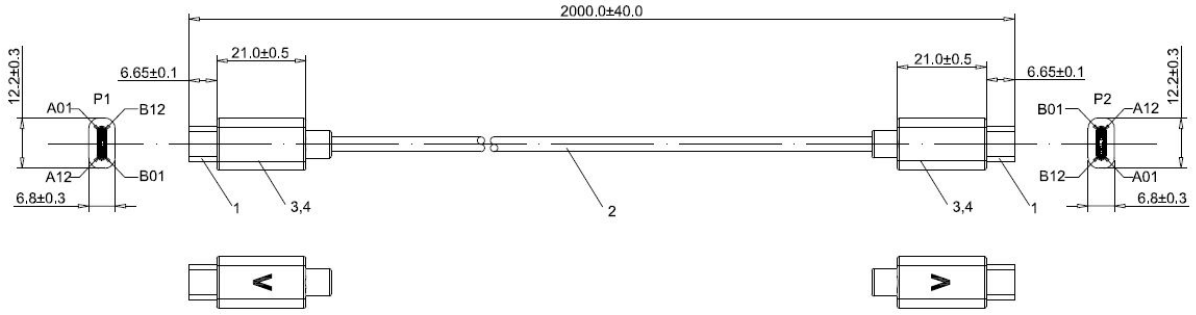
Certifications:

FCC, CE marking (EMC, RoHS, REACH)

2m USB-C to USB-C PD 2.0 cable

Specifications:

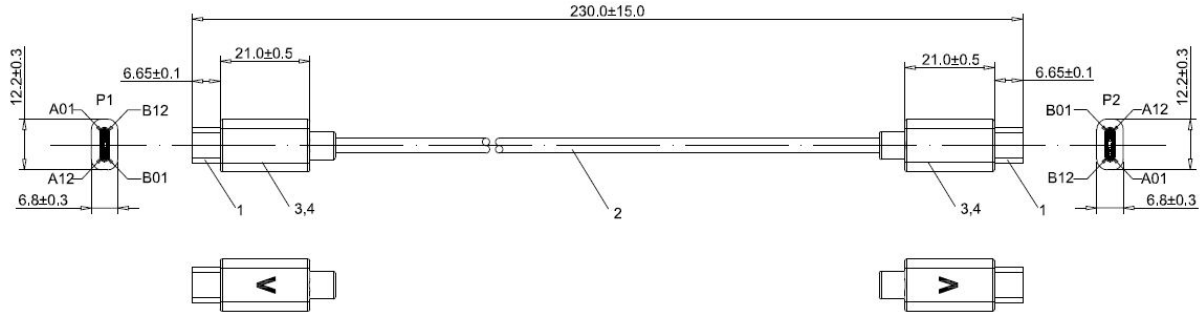
Length = 2 m, 20 V/3 A, PVC injection for USB-C connector, PVC cable, USB 2.0 Version, 480 Mbps, with ‘ Λ ’ logo print on each USB-C connector.



23 cm USB-C to USB-C PD 2.0 cable

Specifications:

Length = 23 cm, 20 V/3 A, PVC injection for USB-C connector, PVC cable, USB 2.0 Version, 480 Mbps, with ‘ Λ ’ logo print on each USB-C connector.



Certifications:

CE (EMC, RoHS, REACH), FCC.

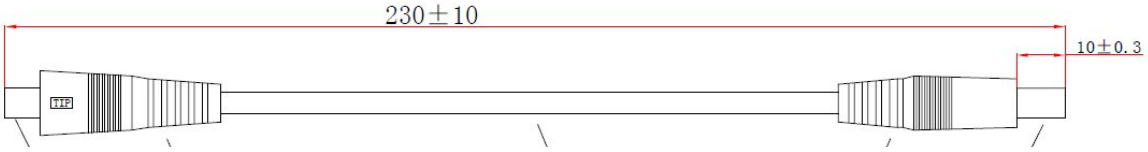
Specifications:

20 V/3 A, PVC cable, matt black finish.

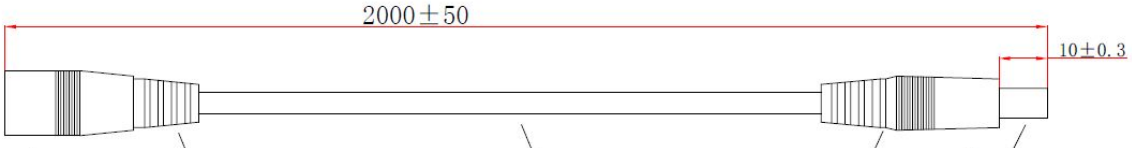
Drawings:

(a) DC to DC 23 cm recessed and (b) DC to DC 2 m extender

(a)



(b)



(a) DC to DC 23 cm recessed and (b) DC to DC 2 m extender

DC to Apple MagSafe 2 and DC to Microsoft Surface Connect

DC port laptop connector tips

The 10 DC port laptop connector tips include the following:

I.D.	Compatible laptop	Outer & Inner Dimensions	Tip colour
1.	Acer/Asus/Compaq/Delta/Fujitsu/ Liteon/Catewa/Toshiba/Gateway/Hasee/Lenovo	5.5 × 2.1 mm	black
2.	StandardLenovo/Standard	5.5 × 2.5 mm	yellow
3.	Dell	4.5 × 3.0 mm	black
4.	HP	4.5 × 3.0 mm	blue
5.	Lenovo/ThinkPad	rectangular	yellow
6.	Lenovo	4.0 × 1.75 mm	black
7.	Acer	3.0 × 1.1 mm	black
8.	Asus	4.0 × 1.35 mm	black

Certifications:

CE (EMC, RoHS, REACH), FCC.

Specifications:

Connectors are numbered with ID logo 1,2,3,4,5,6,7, and 8 as stated above. This is present on the side of the respective connector. 20 V/3 A, PVC cable, matt black finish.

7. Charging specifications

Charging method	Power	Voltage	I/O
USB-C port 1[1]	60 W	device selected	input & output
USB-C port 2[2]	60 W	device selected	output
DC port[3]	60 W	user selected	output
USB-A port[4]	18 W	device selected	output
Wireless charging	5-10 W	device selected	output

[1&2]USB-C port 1 and 2 support USB PD 3.0, permitting charging at 5, 9, 12, 15 and 20 V.

[3]DC port supports charging anywhere in the range of 12 to 20 V.

[4]USB-A port supports charging at 5, 9 and 12 V using the following charging protocols: Qualcomm Quick Charge (QC) 2.0, Qualcomm QC 3.0, Samsung Adaptive Fast Charging (AFC), Battery Charging (BC) specification 1.2 DC.

8. Transport and safety

WARNING:

The LAER battery cartridge contains lithium ion polymer composite battery cells. If shipping your LAER device by air your LAER device will be stored in the cargo hold.

Defective battery cartridges cannot be returned for replacement/repair using air freight shipping. Any equipment packed with or containing lithium batteries, in particular equipment returned for repair purposes exhibiting any type of defect/damage, must have the battery cartridge removed from the equipment in order to be accepted for carriage.

The equipment must be packed in strong rigid outer packaging constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the cell or battery is afforded equivalent protection by the equipment in which it is contained.

Maximum 5 kg net quantity of lithium batteries or cells per package (excluding the equipment).

The LAER device (with battery cartridge inserted) falls within the scope of IATA DGR PI967 Section II.

Section II of PI967 = total battery capacity is less than 100 Wh, cell capacity is less than 20 Wh each, 4 cells maximum per battery pack).

Labelling/markings (UN3481) and waybill statement "Lithium ion batteries in compliance with Section II of PI967" are not required when a maximum of 2 packages are present per consignment (shipment).

SAFETY INSTRUCTIONS - PLEASE READ BEFORE USE -

Never disassemble or attempt to modify the product in any way.

Do not attempt to submerge the product in water or expose it moisture, water or liquids of any kind.

Avoid hot and/or humid environments such as bathrooms, conservatories, cars or in direct sunlight.

Do not place or install the product near to sources of heat such as radiators or stoves.

Do not expose the product directly to naked flames, hot surfaces or other apparatus that produce heat.

The safe operating temperature range of this product is +5°C to +40°C.

Do not expose the product to objects or forces which may pierce or damage the enclosure.

Check USB port power supply specifications before use. Use ARROE branded power supply supplied.

CAUTION:

AC-DC USB power supplies may carry electric shock hazard. Read power supply safety information before use.

Do not short circuit or connect loads in excess of 3 A (3000 mA) to the power cable USB socket while the cable is connected to the product.

Do not daisy chain or connect multiple power cables to any single USB socket or USB power supply.

Do not daisy charging multiple LAER charging systems

Do not stress, bend, pinch or force cables in such a way as to incur damage.

Do not store the product with a low/flat battery or leave the unit unused for a long period of time. •

Do not use this product near medical devices.

Refer all servicing and repair to original manufacturer. Servicing is required when the product is damaged in any way such as power-supply cord is damaged, liquid has been spilled or objects have fallen onto the unit, the unit has been exposed to rain or moisture, does not operate normally or has been dropped.

SAFETY INFORMATION NOTE:

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or changes to this equipment. Such modifications or changes could void the user's authority to operate the equipment.

NOTE:

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

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

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.

Battery

This product contains a non-serviceable rechargeable lithium ion battery. DO NOT attempt to open or disassemble the unit to replace or remove the battery yourself. Please refer to the original manufacturer for battery servicing and replacement. Follow safety instructions above carefully. If fluid should leak from the unit or rechargeable battery, do not touch. If fluid comes in contact with eyes, wash thoroughly with water and seek medical advice. Do not rub eyes. If you suspect that the battery is faulty through unexpected behaviour such as not holding charge, please turn off and do not attempt to charge or use the product. Contact the original product manufacturer immediately.

Environment

All packaging materials are recyclable, please dispose of in accordance with your local recycling regulations. The product may contain batteries and harmful

substances so should not be treated as household waste. Where possible we will repair any faulty units to keep the product operational for as long as possible. If you wish to dispose of the product, please contact the original manufacturer to return it for recycling or for advice on suitable recycling methods.

Regulatory Compliance Statements

This product contains a 2.4 GHz radio transmitter and should be used in such a manner that human contact is minimised during normal product operation.

US: FCC ID: MODEL NUMBER: ARLA-60 This equipment complies with FCC radiation exposure limits set forth for portable use conditions. 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. No changes shall be made to the equipment without the manufacturer's permission as this may void the user's authority to operate the equipment.

EU (CE)

Hereby, ARROE Ltd. declares that the radio equipment LAER is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.arroe.com.

Warranty and Repairs

We hope that LAER will always keep you in charge and free from the wall socket. However, in the event there is a fault with your LAER we have a warranty and repair service. If our FAQ and troubleshooting section cannot remedy the issue and you believe your LAER is faulty, contact us through our support facilities.

At ARROE we hope to repair as many faulty products as possible so we can minimise any harmful or non-recyclable waste going to land-fill. Furthermore, when your LAER battery cartridge ages and no longer possesses it's full design capacity please contact us for returns and replacement at a small fee. Let's do all we can to help the environment.

The LAER by ARROE is covered by a full 1-year warranty service. Please see our terms and conditions page for all details. If your LAER product is faulty outside of the 1-year warranty period, please contact us for assistance.