



# Battery box BA001 User manual

# Contents

Preface .....	3
Important information .....	4
Safety instructions .....	4
General safety notes .....	8
Repairs .....	9
Manufacturer's declaration .....	9
Misc. on the DESKLINE® and HOMELINE® .....	11
Mounting instructions .....	12
Charging BA001 .....	13
Packaging and transportation .....	15
Transportation .....	16
Disposal of LINAK products .....	17
Accessories .....	18
Labels .....	18
Drawing appendix .....	19
Addresses .....	24

# Preface

Dear User,

We are delighted that you have chosen a product from LINAK®. LINAK systems are high-tech products based on many years of experience in the manufacture and development of actuators, electric control boxes, controls and chargers.

This User Manual does not address the end-user. It is intended as a source of information for the manufacturer of the equipment or system only, and it will tell you how to install, use and maintain your LINAK electronics. It is the responsibility of the manufacturer of the end-use product to provide a User Manual where relevant safety information from this manual is passed on to the end-user.

We are sure that your LINAK product/system will give you many years of problem-free operation. Before our products leave the factory they undergo full function and quality testing. Should you nevertheless experience problems with your LINAK product/system, you are always welcome to contact your local dealer. LINAK subsidiaries and some distributors situated all over the world have authorised service centres, which are always ready to help you.

LINAK provides a limited warranty on its products. This warranty is, however, subject to correct use in accordance with the specifications, maintenance being done correctly, and any repairs being carried out at a service centre, which is authorised to repair LINAK products. Changes in installation and use of LINAK products/systems can affect their operation and durability. The products are not to be opened by unauthorised personnel.

You can review the full terms of the LINAK warranty on the LINAK website [www.linak.com/warranty](http://www.linak.com/warranty).

The User Manual has been written based on our present technical knowledge. We are constantly working on updating the information and we therefore reserve the right to carry out technical modifications.

**LINAK A/S**

## Important information

Important information on LINAK® products can be found under the following headings:



### Warning!

Failure to comply with these instructions may result in accidents involving serious personal injury.



Failing to follow these instructions can result in the product being damaged or being destroyed.

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## Safety instruction



### General

Safe use of the system is possible only when the operating instructions are read completely and the instructions contained are strictly observed.



It is important for everyone who is to connect, install, or use the systems to have the necessary information and access to this User Manual. Follow the instructions for mounting – risk of injury if these instructions are not followed.



The appliance is not intended for use by young children or infirm persons without supervision.



If there is visible damage on the product it must not be installed.



Note that during construction of applications, in which the actuator is to be fitted, there must be no possibility of personal injury, for example the squeezing of fingers or arms.



Assure free space for movement of application in both directions to avoid blockade.

## Only for EU markets



This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.



Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

## Only for Non EU markets



Persons who do not have the necessary experience or knowledge of the product/products must not use the product/products. Besides, persons with reduced physical, sensory or mental abilities must not use the product/products, unless they are under surveillance or they have been thoroughly instructed in the use of the apparatus by a person who is responsible for the safety of these persons.



Moreover, children must be under surveillance to ensure that they do not play with the product.



It is the operator's responsibility to ensure that there is free space for the application to move without risk for the operator or bystanders before operating the application.

## Misuse



Do not overload the actuators – this can cause danger of personal injury and damage to the system.



Do not use the actuator system for lifting persons. Do not sit or stand on a table while operating – risk of personal injury.



Do not use the system in environments other than the intended indoor use

## **IMPORTANT INFORMATION**

### **Li-Ion battery disclaimer**

Li-Ion batteries are moving in the direction of minimising the physical size and, at the same time, increasing the capacity. This gives a very compact battery with a high energy concentration. It also increases the risk of thermal runaway (see note below) due to internal short circuits.

The general use of Li-Ion batteries has increased, and the inherent risk of thermal runaway has led to stricter rules within the transport industry, specifically air transport with tightened restrictions on the quantity, handling, and storage of specific products.

The OEMs and consumers must recognise that although safe to use, Li-Ion cells always have a very small risk of thermal runaway. The risk could be as little as 1 PPM or even less.

LINAK currently bases its Li-Ion battery design on cell types with an industry-proven history (e.g. electric cars). The use of well-proven cell technology reduces the risk of thermal runaway, but it does not eliminate it. LINAK has completed activities to reduce this risk and the complete battery package is approved in accordance with UL.

An external, internationally recognised expert has also reviewed the design to ensure that it is manufactured according to the latest recommendations. Further to that, we only use cells from well-recognised manufacturers.

LINAK recommends that when using Li-Ion batteries, the customers should carry out a proper risk analysis on their applications. The risk analysis must also take into consideration that these products are not mounted in positions where they are in direct contact with flammable material.

LINAK Li-Ion batteries have no greater risk of thermal runaway than other Li-Ion cells from well-recognised manufacturers within the market. Therefore, LINAK cannot take responsibility for any failures that occur due to a failure that is inherent in the nature of Li-Ion batteries.

If any or all of the Li-ion batteries built into LINAK products are found to be defective within a period of 12 months from the production of the LINAK product as stipulated on the product label, LINAK® will provide a new product to the OEM. LINAK explicitly disclaims all other remedies. LINAK shall not in any event be liable under any circumstances for any special indirect punitive incidental or consequential damages or losses arising from any incident related to the inherent risk of thermal runaway in the Li-ion cell and any use of LINAK products. Moreover, LINAK explicitly disclaims any responsibility for profit loss, failure to realise expected savings, any claim against our customer by a third party, or any other commercial or economic losses of any kind, even if LINAK has been advised of the possibility of such damages or losses. You can review the full terms of the LINAK warranty on the LINAK website [www.linak.com/warranty](http://www.linak.com/warranty).

Note: 'Thermal runaway' is overheating of a cell and it could lead to a small fire and smoke from the cell

## General safety notes that must be taken into consideration especially referring to BA001



Do not pack the BA001 in heat insulating material. Place the BA001 so it can emit heat through its surface to the surroundings.



Only the CBD6S and the SMPS006 can be used for charging the BA001 battery pack.



In connection with charging/discharging notice that the charger/battery can become warm. Keep away inflammable objects.



Keep the charger and the battery away from children. The battery must be stored on a non-flammable base.



In case of damaged batteries, the battery must be removed and replaced immediately to avoid danger and malfunction.



The BA001 must not be exposed to heat or fire. Avoid any contact with water and direct sunlight.



Do not cover neither the charger nor the BA001 during charging.



The surface where the battery is mounted must be suitable and correspond to the demands for e.g. weight and temperature.



In case of suspicious smoke, do not use the battery.



Observe the storage requirements for the BA001



The capacity of the BA001 will deteriorate over time.

The deterioration will depend on use and temperature. Under ideal conditions, the discharge capacity is at least 70% after 500 cycles.



A BA001 with below 25% capacity must not be stored. The battery must be recharged before storage (25% equals to 1 LED light bar).



For best performance, perform a full battery charge every time.



# Repairs

In order to avoid the risk of malfunction, all DESKLINE® and HOMELINE® repairs must only be carried out by authorised LINAK service centres or repairers, as special tools must be used and special gaskets must be fitted.

Further information on the LINAK warranty can be found on the LINAK website [www.linak.com/warranty](http://www.linak.com/warranty).



## Warning!

If any of the DESKLINE® and HOMELINE® products are opened, there will be a risk of subsequent malfunction.



## Warning!

The DESKLINE® and HOMELINE® systems do not withstand cutting oil.

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### DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

**LINAK A/S**  
Smedevænget 8  
DK - 6430 Nordborg

Herewith declares that LINAK DESKLINE® products as characterized by the following models and types:

Control Boxes	CBD4, CBD5, CBD6, CBD6S
And	
Linear Actuators	LA31, DB4, DB5, DB6, DB7, DB9, DB12, DB14, DB16, LA23
Lifting Columns	DL1A, DL2, DL4, DL5, DL6, DL7, DL8, DL9, DL10, DL11, DL12, DL14, DL15, DL16, DL17, LP2, LP3, BASE1
And	
Desk Panels	DP, DPA, DPB, DPH, DPF, DPT, DP1C, DP1K, DP1L, DP1V, DP1U, WDPL1
RF Controls	HB10, HB20, RFR and RFT
And	
Accessories	BA001, SLS

comply with the following parts of the Machinery Directive 2006/42/EC, ANNEX I, *Essential health and safety requirements relating to the design and construction of machinery*:

#### 1.5.1 Electricity supply

The relevant technical documentation is compiled in accordance with part B of Annex VII and that this documentation or part hereof will be transmitted by post or electronically to a reasoned request by the national authorities.

**This partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC where appropriate.**

Nordborg, 2014-04-10

**LINAK A/S**  
John Kling, B.Sc.E.E.  
Certification and Regulatory Affairs  
Authorized to compile the relevant technical documentation

**DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY**

**LINAK A/S**  
Smedevænget 8  
DK - 6430 Nordborg

Herewith declares that LINAK HOMELINE® products as characterized by the following models and types:

Control Boxes           CB7, CB9H, CBH Advanced, CBH Basic

And

Linear Actuators       LA27, LA27CS, LA28, LA29, LA31 HOMELINE

Dual Actuators         TD1, TD3

And

Controls                HB10, HB10RF, HB20, HB20RF, HB40, HB60, HC10, HC10RF, HC20RF,

And

Accessories           BA001, DC CONNECTOR, DJBH, LED Lightbox, Lightplug001, Massage Motor, SMPS001, SMPS002, SMPS006, TR6, USB Connector

comply with the following parts of the Machinery Directive 2006/42/EC, ANNEX I, *Essential health and safety requirements relating to the design and construction of machinery*:

1.5.1 Electricity supply

The relevant technical documentation is compiled in accordance with part B of Annex VII and that this documentation or part hereof will be transmitted by post or electronically to a reasoned request by the national authorities.

**This partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC where appropriate.**

Nordborg, 2014-12-12



**LINAK A/S**  
John Kling, B.Sc.E.E.  
Certification and Regulatory Affairs  
Authorized to compile the relevant technical documentation

## **Misc. on the DESKLINE® and HOMELINE®**

This BA001 battery box is developed for furniture and for indoor use. Do not use it in industrial kitchens or in other environments that have to be cleaned with aggressive detergents.

### **Warranty**

If a BA001 battery is found to be defective within 12 months from the production of the individual product as stipulated on the product label, LINAK will at its sole discretion offer cost-free repair or replacement, or credit such products. LINAK will only provide cost-free repair or replacement, or credit in so far as the equipment has been used and maintained correctly and has not been tampered with. Furthermore, the system must not be exposed to violent treatment. A loss of capacity over time must be expected. You can review the full terms of the LINAK warranty on the LINAK website [www.linak.com/warranty](http://www.linak.com/warranty).

### **Maintenance**

Clean dust and dirt on the outside of the BA001 at appropriate intervals and inspect them for damage and breaks. Inspect the connections, cables, and plugs and check for correct functioning as well as fixing points.

## Mounting instructions:

Guidelines for mounting the BA001.

The battery box is to be fastened with 2 screws with a head diameter between  $\varnothing$  8 and  $\varnothing$  10 mm.

With regard to the surface pressure,  $\varnothing$  10 mm is preferable. See drawing for placing of mounting holes and the space the box takes up. M6 nut and screw counterpart is supported too.

The mounting surface to which the battery box is attached should have a surface evenness better than  $\pm$  0.5 mm.

The mounting screws must be fastened with a max. torque of 1 Nm.

Alternatively, mount the enclosed bracket following the same guidelines for fastening using the four mounting holes.

The BA001 must not be packed in heat insulating material, but must be placed so that it can emit waste heat to the surroundings. There are no ventilation holes to consider, the BA001 emits heat through its surface.

# Charging BA001

The BA001 can be charged either via the DESKLINE Control Box CBD6S or via the Switch Mode Power Supply SMPS006 using a DC cable with 2-poled minifit plug. LINAK offers various cables with straight plug which can be used (e.g. 0705894-200).

Actual capacity

Turn on the light for a few seconds by pressing the small black button below the LED light bars. The four LED light bars indicate the actual capacity.



Capacity	Lit up LED light bars
0 to 5 %	None
5 to 25 %	LED1
25 to 50 %	LED1 and LED2
50 to 75 %	LED1, LED2 and LED3
75 to 100 %	LED1, LED2, LED3 and LED4

## Notes:

- When the capacity is below 25 %, the audio alarm sounds once each time the BA001 is activated.
- The battery turns off to protect itself when the capacity is approx. 5 %. Below 5 % capacity, the audio alarm sounds once each time the BA001 is activated. No LED light bars can be lit.
- During charging, the LED light bars indicate the actual capacity.
- When the charging is complete the LED light bars turn off.
- Charging will not start if the capacity is above 75 %.
- The BA001 has a built-in protection to ensure battery and system lifetime.
- The battery limits the discharge current to approx. 10 A.
- The battery can go into a protected mode. Then a reset is made only after disconnecting the cable and in some cases charging the battery



Transportation by plane is not allowed for batteries that are more than 30 % charged.

## The BA001 switches off

In overload situations, the LED light bars will still turn on when the button is pressed. However, if the capacity is below approx. 25 % it is not possible to identify if the BA001 has switched off due to overload or low capacity.

If the battery is sufficiently charged and still switches off, it is due to an overload situation.

Solution: Reset the battery

1. Disconnect cable from BA001.
2. Press button on BA001 for minimum 10 seconds to reset battery.
3. If no LED light bars turn on, charge battery.
4. Connect BA001 again.

## Charging via CBD6S:

In a DESKLINE system, the BA001 is connected to the CBD6S. Preferably, charge the battery while it is mounted on the application.

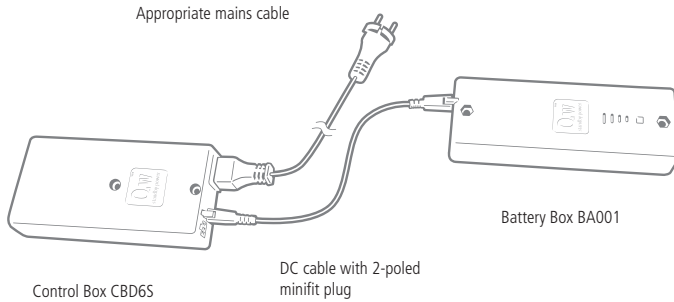
1. Connect mains cable to CBD6S.
2. Plug cable into mains.

When the charging starts, the BA001 beeps twice. After approximately five hours (at room temperature,  $\approx 20\text{ }^{\circ}\text{C}$ ), the BA001 is fully charged and the LED light bars turn off.



The BA001 can be charged via all CBD6S 200 W.

The BA001 can be charged via CBD6S 300 W delivered from factory with SW version 1.57 and later.

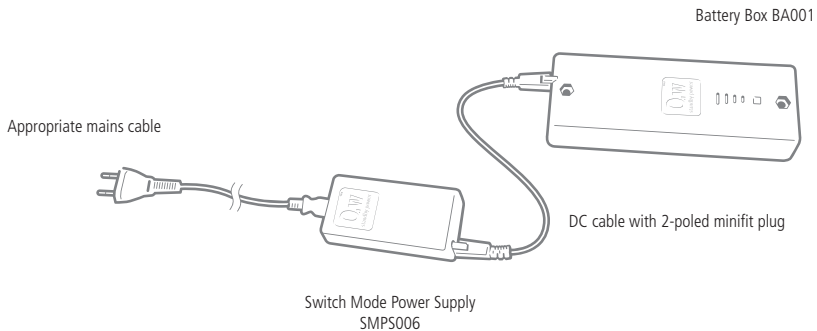


### Charging via SMPS006:

In a HOMELINE application or in an application in which the battery box is dismantled/replaced during charging, the BA001 is typically charged via an SMPS006.

1. Connect BA001 and SMPS006 using DC cable.
2. Connect mains cable to SMPS006.
3. Plug cable into mains.

When the charging starts, the BA001 beeps twice. After approximately five hours (at room temperature,  $\approx 20\text{ }^{\circ}\text{C}$ ), the BA001 is fully charged and the LED light bars turn off.



### Note:

#### Change between mains supply and battery use on the CBD6S:

When you change from standard mains supply to the BA001, the very first operation may be at a lower speed/performance. The charge left in the control box after disconnection of the mains supply is still high. Thus, the control box assumes the mains supply is still connected and regulates according to mains supply characteristics.

After about 30 minutes, or after trying to operate without power, the charge is low enough to be detected as battery operation mode. Also, if operated with battery once, the control box detects the battery operation mode.

## Packaging, transportation and storage

The BA001 is a lithium ion battery and must be packed and transported according to applicable regulations. This must also be considered when repacking and in case of return shipment.

Note: Damaged batteries cannot be transported.

### Packaging

The BA001 boxes are packed according to UN3480. From the factory, the battery is packed in a primary and a secondary packaging. Each BA001 is packed in the primary packaging. The secondary packaging contains 10 individually packed batteries. Both the primary and the secondary packaging are supplied with a label stating that the package contains lithium-ion batteries.



Before unpacking, please inspect the packaging for damages to avoid any injuries.



Damaged batteries must be disposed according to the material safety data sheet of the BA001 and local regulations.



The BA001 can be packed with other products/components, but it must remain in the primary packaging and the new secondary packaging must be labelled with the label shown above. The label must be visible on the secondary packaging.

## Transportation

When transporting the BA001 (a lithium-ion battery) the applicable regulations must be observed. This applies to ADR (road transportation), IATA (air shipping) and IMDG (sea freight). When transporting the batteries, pay attention to handling them and minimise the risk of e.g. dropping them to prevent malfunction and injuries. New IATA (air shipping) rules from April 2016 require that lithium-ion batteries are charged max. 30 % to be eligible for air transportation by both passenger and freight aircrafts. Thus, only products ordered for express shipment will be shipped by air from LINAK A/S.

## Storage

The batteries must be stored in an applicable storage room and not be exposed to direct sunlight or high temperatures. A lithium-ion battery cannot be stored for longer periods without being recharged regularly.



If batteries are not checked and recharged on a regular basis, they will become defective.

As the BA001 battery pack contains electronics, the self-consumption is higher than the self-discharge of the cells. Thus, the product is to be regarded as equipment containing batteries and handled accordingly. The self-consumption of individual battery packs varies and does not influence normal usage in any way. To be sure not to damage the BA001, express shipment (BA001-MAX30%CHARGED) batteries must be fully charged upon receipt.



Do not store express shipment batteries upon receipt. They are charged to max. 30 % to allow for air freight. Fully charge express shipment batteries before storage.

Any stock storage of BA001 must comply with the following requirements:

- "First In – First Out" stock principle
- Temperature: 0 to 45 °C
- Relative humidity: 45 to 84 %
- Air pressure: 700 to 1060 hPa
- Altitude: < 2000 m
- Recharge the battery no later than 6 months after production date stated on the label depending on storage temperature

Temperature range	Max. storage time before recharging
25 °C	6 months
45 °C	3 months



Do not store BA001 with less than 25 % capacity (1 LED light bar).

Fully recharge the BA001 before storage.



## Disposal of LINAK products

As LINAK customers often ask us how our products can be disposed or scrapped we have prepared this guidance that enables a classification to different waste fractions for recycling or combustion.

### Guidance

We recommend our products to be disassembled as much as possible and divided into different waste groups for recycling or combustion.

For example, waste can be sorted into metals, plastics, cable scrap, combustible material, and recoverable resources.

Some of these main groups can be further divided into subgroups; e.g. metal can be divided into steel/aluminium/copper and plastic can be divided into ABS/PA/PE/PP.

As an example, the table below breaks down the different components in LINAK products to various recycling groups:

Product	Components	Recycling group
<b>Columns/ Actuator :</b>	Spindle and motor Plastic housing Cable PCB boards	Scrap Plastic recycling or combustion Cable scrap or combustion Electronics scrap
<b>Control Box :</b>	PCB boards Plastic housing Cable Transformer	Electronics scrap Plastic recycling or combustion Cable scrap or combustion Metal scrap
<b>Handset/Control :</b>	Plastic housing Cable PCB board	Plastic recycling or combustion Cable scrap or combustion Electronics scrap

By now almost all our casted plastic parts are supplied with an interior code for plastic type and fibre contents, if any.

## Main groups of disposal

Product main groups	Metal scrap	Cable scrap	Electronics scrap	Plastic recycling or combustin	Comments
BA001	X		X	X	

## Disposal of batteries

Details regarding safe disposal of used and leaking batteries:

Batteries should be disposed in accordance with appropriate federal, state and local regulations. LINAK recommends that used or leaking batteries are disposed through local recycling system. Please do not throw used or leaking batteries in normal household waste or in nature. This will cause damage to the environment.

### How to deal with leaking batteries.

Leaking batteries should be disposed as described above.

If leaking batteries are discovered in the product the batteries must be removed at once to minimise damage to the product.

If leaking batteries are left in the product it might become defect.

It is recommended to use plastic gloves when handling leaking batteries. The contents of a leaking batteries can cause chemical burns and respiratory irritation.

If exposed to the contents of a leaking battery, please wash with soap and water. If irritation persists, please seek medical attention. In case of eye contact, please flush eyes thoroughly with water for 15 minutes and seek medical attention."

## Accessories

### Ordering accessories

Order from your nearest LINAK® dealer or subsidiary.

### Accessories

Please contact your nearest LINAK dealer for information.



### Warning!

By unauthorised opening of the system there is a risk that it may malfunction at a later date.

### Spare parts

Please contact your nearest LINAK dealer for information on spare parts.

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## Labels

Label for BA001

**LINAK**   
Designed in Denmark  
DK - 6430 Nordborg

Item : BA001 24V 2.15Ah 52Wh **c**  **us**  
Rechargeable Li-ion Battery

U Out: 24V , I Out Max.9A  
U In : Charge 29V-40V , I In Max 0.5A

**CAUTION**

- RISK OF FIRE AND BURNS. DO NOT OPEN, CRUSH, HEAT OR INCINERATE. USE SPECIFIED CHARGER ONLY.
- RISQUE D'INCENDIE ET DE BRÛLURES. NE PAS OUVRIR, ÉCRASER, CHAUFFER OU INCINÉRER. UTILISEZ UNIQUEMENT LE CHARGEUR SPÉCIFIÉ.

Produced by Geenway for LINAK      Made in China 11

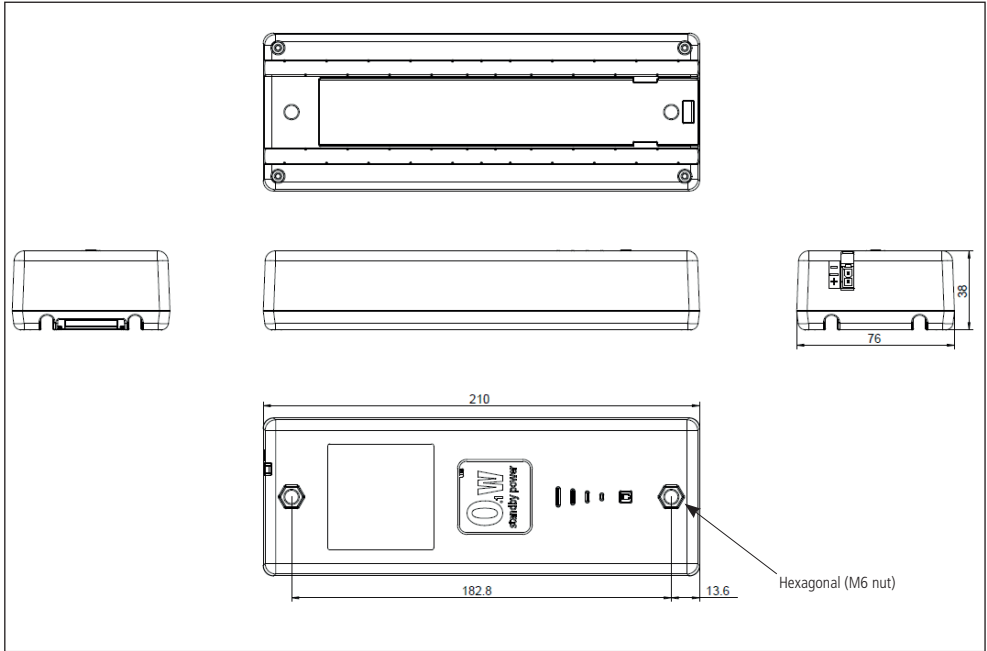
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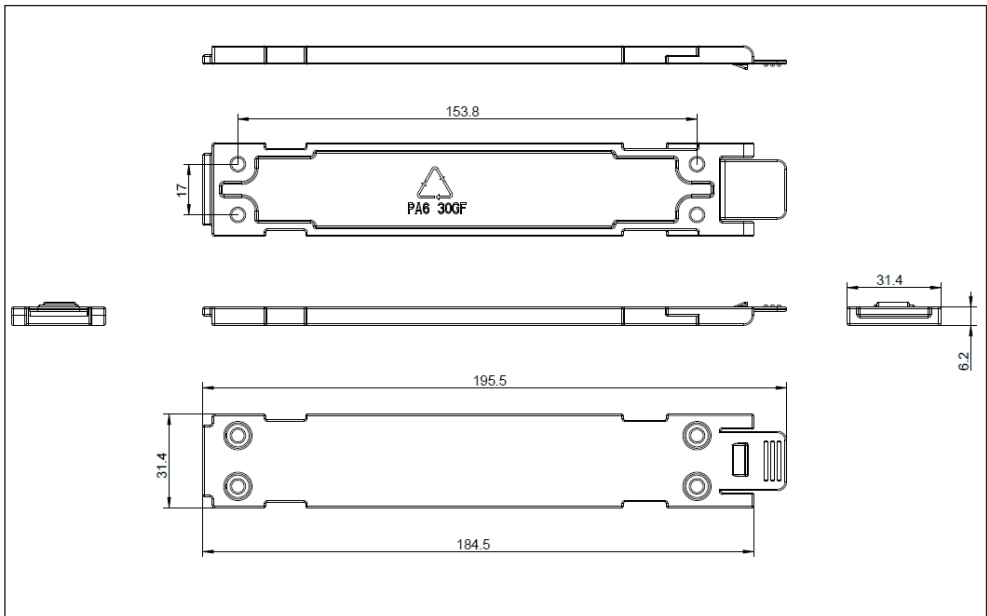
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# DRAWING APPENDIX

BA001



BA001 Battery mounting bracket



## **LINAK APPLICATION POLICY**

The purpose of the application policy is to define areas of responsibilities in relation to applying a LINAK product defined as hardware, software, technical advice, etc. related to an existing or new customer application.

LINAK products as defined above are applicable for a wide range of applications within the Medical, Furniture, Desk and Industry areas. Yet, LINAK cannot know all the conditions under which LINAK products will be installed, used, and operated, as each individual application is unique.

The suitability and functionality of the LINAK product and its performance under varying conditions (application, vibration, load, humidity, temperature, frequency, etc.) can only be verified by testing, and shall ultimately be the responsibility of the LINAK customer using any LINAK product.

LINAK shall be responsible solely that the LINAK products comply with the specifications set out by LINAK and it shall be the responsibility of the LINAK customer to ensure that the specific LINAK product can be used for the application in question.







## FACTORIES

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