



## 310484 Modular Battery Cabinet Keor Mod

**EN**

ENGLISH

3

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## 1. Introduction



### **INDICATION**

The instructions in this manual are intended only for a **SKILLED TECHNICIAN** (paragraph 2.2.1)

### **1.1 Purpose of the manual**

The purpose of this manual is to provide the skilled technician (see paragraph 2.2.1) with instructions for safely installing the modular battery cabinet Keor MOD, also called "equipment" in the rest of the manual and carry out ordinary maintenance procedures.

Extraordinary maintenance operations are not dealt with because they are the sole preserve of the LEGRAND Technical Support Service.

The reading of this manual is essential but does not substitute the skill of technical personnel who must have received adequate preliminary training.

The intended use and configurations envisaged for the equipment as shown in this manual are the only ones allowed by the Manufacturer.

Any other use or configuration must be previously agreed with the Manufacturer in writing, and in this case, the written agreement will be attached to the installation manual.

This manual also refers to laws, directives, and standards that the skilled technician is required to be aware of and consult. The original text of this publication, drafted in English, is the only reference for the resolution of disputes of interpretation linked to translations into other languages.

### **1.2 Symbols in the manual**

Some operations are shown in graphic symbols that draw the attention of the reader to the danger or the importance they imply:



### **DANGER**

This indication shows a danger entailing a high degree of risk that, if not avoided, will lead to death or serious injury or considerable damage to the equipment and things around it.



### **WARNING**

This indication shows a danger entailing a medium degree of risk that, if not avoided, could lead to death or serious injury or considerable damage to the equipment and the things around it.



### **CAUTION**

This indication shows a danger entailing a low level of risk that, if not avoided, could lead to minor or moderate injury or material damage to the equipment and the things around it.

### **INDICATION**

This symbol indicates important information which should be read carefully.

## 1. Introduction

### 1.3 Where and how to keep the manual

This manual must be kept in a safe, dry place and must always be available for consultation.

It is recommended to make a copy of it and file it away.

If information is exchanged with the Manufacturer or the authorized assistance personnel, it is essential to refer to the equipment's rating plate data and serial number.

#### **INDICATION**

The manuals provided with the equipment are an integral part of it and must therefore be kept for its entire lifetime. In case of need (for example in case of damage that even partially compromises its consultation) the skilled technician is required to get a new copy from the Manufacturer, quoting the publication code on the cover.

### 1.4 Update of the manual

The manual reflects the state of the art when the equipment was put onto the market. The publication conforms to the directives current on that date. The manual cannot be considered inadequate when new standards come into force or modifications are made to the equipment.

Any addition to the manual the Manufacturer considers appropriate to send to the users, must be kept together with the manual of which they will become an integral part.

The version of the manual updated to its latest release is available on the Internet at [hiip://www.ups.legrand.com](http://www.ups.legrand.com)

### 1.5 Manufacturer's liability and guarantee

The skilled technician and the operator shall scrupulously comply with the precautions and installation instructions indicated in the manual. In particular they must:

- always work within the operating limits of the equipment.
- always carry out constant and careful maintenance through a skilled technician who complies with all the procedures indicated in the installation and maintenance manual.

The Manufacturer declines all indirect or direct responsibility arising from:

- assembly and battery cabling made by personnel not fully qualified according to national standards to work on equipment presenting electrical hazards.
- assembly and battery cabling made without using safety equipment and tools required by national safety standards.
- failure to observe the installation and maintenance instructions and use of the equipment which differs from the specifications in the manuals.
- use by personnel who have not read and thoroughly understood the content of the user manual.
- use that does not comply with the specific standards used in the country where the equipment is installed.
- modifications made to the equipment, software, functioning logic unless they have been authorized by the Manufacturer in writing.
- repairs that have not been authorized by the LEGRAND Technical Support Service.
- damage caused intentionally, through negligence, by acts of God, natural phenomena, fire, or liquid infiltration.
- damage caused by the use of battery types and protections not specified in the manual.
- accidents caused by a wrong assembly of the safety protections or due to the lack of application of the safety labels specified in this manual.

The transfer of the equipment to others also requires the handing over of all the manuals. Failure to do it will automatically nullify any right of the buyer, including the terms of the guarantee where applicable.

If the equipment is sold to a third party in a country where a different language is spoken, the original owner shall be responsible for providing a faithful translation of this manual in the language of the country where the equipment will be used.

## 1.5.1 Guarantee terms

The guarantee terms may vary depending on the country where the equipment is sold. Check the validity and duration with LEGRAND's local sale representative.

If there should be a fault in the product, contact the LEGRAND Technical Support Service which will provide all the instructions on what to do.

Do not send anything back without LEGRAND's prior authorization.

The guarantee becomes void if the equipment has not been brought into service by a properly trained skilled technician (see paragraph 2.2.1).

If during the guarantee period the equipment does not conform to the characteristics and performance laid down in this manual, LEGRAND at its discretion will repair or replace the equipment and relative parts.

All the repaired or replaced parts will remain LEGRAND's property.

LEGRAND is not responsible for costs such as:

- losses of profits or earnings.
- losses of equipment, data, or software.
- claims by third parties.
- any damage to persons or things due to improper use, unauthorized technical alterations, or modifications.
- any damage to persons or things due to installations where the full compliance with the standard regulating the specific usage applications have not been guaranteed.

## 1.5.2 Extension of the guarantee and maintenance contracts

The standard guarantee can be consolidated in a single extension contract (maintenance contract).

Once the guarantee period has passed, LEGRAND is available for giving a technical assistance service able to meet all requirements, maintenance agreements, 24/7 availability and monitoring.

Please, contact the LEGRAND Technical Support Service for further information.

## 1.6 Copyright

The information contained in this manual cannot be disclosed to any third party. Any partial or total duplication of the manual by photocopying or other systems, including electronic scanning, which is not authorized in writing by the Manufacturer, violates copyright conditions and may lead to prosecution.

LEGRAND reserves the copyright of this publication and prohibits its reproduction wholly or in part without previous written authorization.

## 2. Safety regulations



### **DANGER**

**Before carrying out any operation on the equipment, it is necessary to read the entire manual carefully, especially this chapter.**

**Look after this manual carefully and consult it repeatedly during installation and maintenance by a skilled technician**

### **2.1 General notes**

The equipment has been made for the applications given in the manual. It may not be used for purposes other than those for which it has been designed, or differently from those specified in this manual.

The various operations must be carried out according to the criteria and the chronology described in this manual.

### **2.2 Definitions of “Skilled Technician” and “Operator”**

#### **2.2.1 Skilled Technician**

The figure that will carry out the installation, start up and ordinary maintenance is called “Skilled Technician”.

This definition refers to people who have the specific technical qualification and are aware of the method of installing, assembling, repairing, bringing online, and using the equipment safely.

In addition to the requirements listed in the section below for a general operator, the Skilled Technician is qualified according to national safety standards to work under dangerous electrical voltage and uses the personal protective equipment required by national safety standards for all the operations indicated in this manual (see the examples listed in paragraph 2.3).



### **WARNING**

The safety manager is responsible for protection and company risks prevention according to what is indicated in European directives 2007/30/EC and 89/391/EEC regarding safety in the workplace.

The safety manager must ensure that all the people working on the equipment have received all the instructions concerning them in the manual, especially those contained in this chapter.

#### **2.2.2 Operator**

The company safety manager, in choosing the person (operator) who uses the equipment, must consider

- the person's work fitness according to the laws in force.
- the physical aspect (not disabled in any way).
- the psychological aspect (mental stability, sense of responsibility);
- the educational background, training and experience.
- the knowledge of the standards, regulations, and measures for accident prevention.

He shall also provide training in such a way as to provide thorough knowledge of the equipment and its component parts.

Some typical activities the operator is expected to carry out are:

- the use of the equipment in its normal functioning state and restoring it to working order after it shuts down.
- adoption of the necessary provisions for maintaining the quality performance of the UPS.
- cleaning the equipment.
- working with people responsible for ordinary maintenance activities (skilled technicians).



## 2.3 Personal Protective Equipment



### DANGER

The battery cabinet poses a considerable risk of electric shocks and a high short circuit current. During installation, use and maintenance operations, the equipment mentioned in this section must be used.

People responsible for operating this equipment and/or passing close to it must not wear garments with flowing sleeves, nor may laces, belts, bracelets or other metal pieces that might cause a danger.

The following list sum up the minimum Personal Protective Equipment to wear at all times. Additional requirements may be needed according to national safety standards.



Anti-accident and non-sparking shoes with rubber sole and reinforced toe



Protective gloves for handling operations



Isolated rubber gloves for operations of connection and work under hazardous voltage



Protective garments for electrical work



Protective face and head shield



1000 V Isolated tools

### INDICATION

The skilled technician must work on electrical insulated carpet, and he must not wear any kind of metal objects like watches, bracelets, etc.

## 2.4 Hazard signs in the workplace

The following signs must be exhibited at all points of access to the room where the equipment is installed:



Electric current  
This sign indicates the electrical live parts.



How to proceed in an emergency  
Do not use water to quench fires but just the extinguishers specially designed for putting out fires in electrical equipment.



No smoking  
Indicates that smoking is not allowed.

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## 2. Regulatory and safety requirements

### 2.5 Signs on the equipment

Displayed on the EBC are explanatory plates that can vary depending on the country the equipment is intended for, and constructional standards applied.

Make sure the instructions are adhered to. Removing these plates and working in a way that differs from what written there, is strictly prohibited.

The plates must always be clearly read, and they must be cleaned periodically.

If a plate deteriorates and/or it is no longer legible, even partially, the Manufacturer must be contacted for another one.



The plates must not be removed or covered. Signs in different languages are provided along with the cabinet in order to replace the default ones in English. No other plates may be affixed to the equipment without the Manufacturer's prior written authorisation



Potential risks can be drastically reduced by wearing the Personal Protective Equipment listed in this chapter, which are indispensable. Always operate with due care around dangerous areas marked by the appropriate warning notices on the equipment.

### 2.6 General warnings



**The battery cabinet works with dangerous voltages. SKILLED TECHNICIANS shall perform the installation and ordinary maintenance operations. No part of the equipment can be repaired by the operator.**

Extraordinary maintenance operations must be carried out by LEGRAND Technical Support Service personnel.



Before beginning any installation and/or maintenance operation, make sure that all the DC and AC power sources are disconnected.

The UPS and the battery cabinet must be installed with an earth connection to avoid high leakage currents. First connect the earthing cable.

Check during each installation and/or maintenance operation the continuity of the earthing system.



A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries:

- a) remove watches, rings, or other metal objects.
- b) use tools with insulated handles.
- c) wear rubber gloves and boots.
- d) do not lay tools or metal parts on top of batteries.
- e) disconnect the charging source prior to connecting or disconnecting battery terminals.
- f) determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground.  
Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).
- g) never leave live cable terminals without an insulated protection.

Do not dispose of batteries in a fire. The batteries may explode.

Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic. The batteries installed inside the cabinet must be disposed of correctly. For the disposal requirements refer to local laws and relevant standards.



Do not open the battery fuse holders while the UPS is powering the loads in battery mode.

## **WARNING**

To reduce the risk of fire or electric shock, the equipment must work in closed, clean environments with controlled temperature and humidity. It must be kept away from inflammable liquids and corrosive substances.

## **CAUTION**

- The equipment must be maintained and used according to the instructions of this manual.
- The departmental manager must instruct the operating and maintenance personnel on the safe use and maintenance of the equipment.
- Only specifically trained, highly skilled personnel are allowed access to the equipment in order to perform maintenance. While the maintenance operation is being carried out, signs saying "Maintenance work in progress" must be affixed in the department in such a way that they can be easily seen from any access area.
- The connection of the equipment (and of any accessory devices) must always be perfectly grounded to discharge short-circuit currents and electrostatic voltages. The input voltage must correspond with the value shown on the rating plate. Current adapters must not be used under any circumstances. Pay attention to polarity when connecting.
- Any intervention on the equipment must be done only after it has been disconnected from the power supply network by means of a switch disconnecter and must be locked with an appropriate padlock.
- The UPS must not be turned on if liquid is leaking from the batteries.
- The equipment used for any maintenance operations (pliers, screwdrivers etc.) must be electrically insulated.
- Depositing flammable material near the equipment is strictly forbidden. The equipment should always be locked, and only specifically trained personnel are allowed access to it.
- Do not disable any safety, notification or warning device and do not ignore any alarm, warning message or notice, no matter whether they are generated automatically or represented by plates fixed to the equipment.
- Do not run the equipment with fixed protections not installed (panels etc.).
- In case of breaking, buckling, or malfunctioning of the equipment or parts of it, repair or replace immediately.
- For no reason can the structure of the equipment, the devices mounted on it, the operation sequence etc., be modified, manipulated, or tampered with in any way, without prior consultation with the Manufacturer.
- When replacing fuses, only use ones of the same type.
- The replacement of the batteries is an operation intended to be carried out by a skilled technician.
- Keep a register in which to enter the date, time, type, performer's name and any other useful information about each and any routine and extraordinary maintenance operation.
- Do not use oils or chemical products for cleaning because they could scratch, corrode, or damage certain parts of the equipment.
- The equipment and workplace must be kept completely clean.
- Upon completion of the maintenance operations, before connecting the power supply, carefully check that no tools and/or material of any kind have been left next to the equipment.

## **2.7 How to proceed in an emergency**

The following information are general. For the specific interventions consult the regulations in force in the country where the equipment is installed.

### **2.7.1 First-aid procedures**

When administering first aid, adhere to the company rules and the usual procedures.

### **2.7.2 Fire procedures**

Do not use water to quench fires but just the extinguishers specially designed for putting out fires on electrical equipment.

## 3. Transportation and placement

### 3.1 Visual check

Carefully inspect the packaging and the equipment for any damage that might have occurred during transport. Check there is no damage to the indicator on the outer label reading "Shock Watch".

If there is possible or ascertained damage, immediately inform:

- the transporter.
- the LEGRAND Technical Support Service.

Check that the equipment corresponds with the items indicated in the delivery documentation.

If the equipment must be stored, follow the instructions of Chapter 7.

### 3.2 Equipment check

The equipment and the relative supplied accessories must be in perfect conditions.

Check that:

- the shipping data (address of the recipient, no. of packages, order no, etc.) correspond to what is contained in the delivery documentation.
- the technical rating plate data on the label applied to the UPS correspond with the material described in the delivery documentation.
- the documentation accompanying the equipment includes the installation manual.

In case of discrepancy, immediately inform the LEGRAND Technical Support Service before commissioning the equipment.

The content of the supply is subject to thorough checking before the shipment. Nonetheless it is always advisable to check that it is complete and in order on receiving the material.

#### **INDICATION**

The battery drawers to be installed must be bought separately.

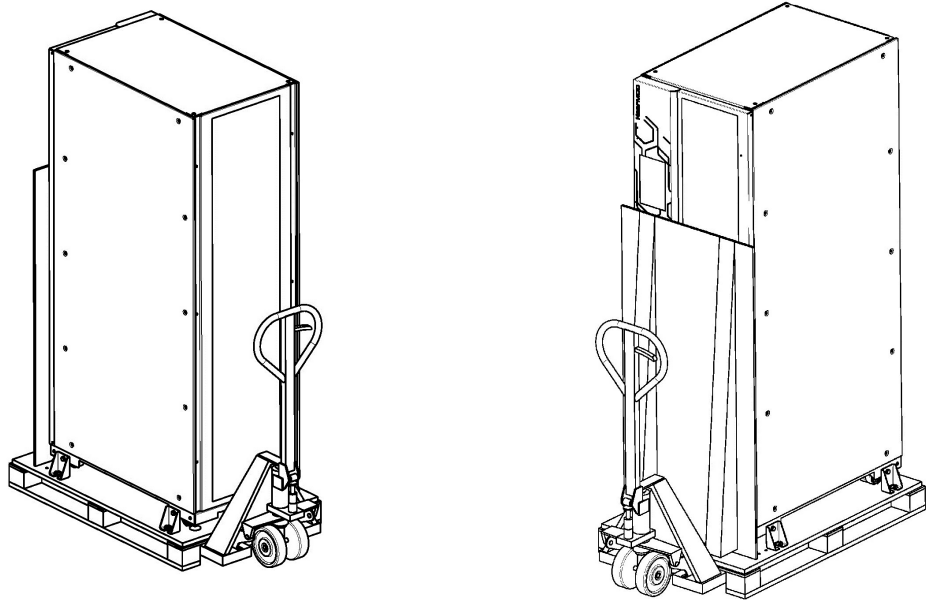
### 3.3 Transportation

 **WARNING**

The equipment must be placed and stand in a vertical position throughout the transportation. It shall also be packed properly. Move it very carefully, lifting it as little as possible and avoiding dangerous swings or falls. Follow always the directions indicated in the symbols present on the packaging.

The equipment must always be handled by trained and instructed personnel. Comply with the safety regulations in force in your country relative to the usage of lifting equipment and/or accessories.

For any lifting, use a forklift or a pallet truck with an adequate carrying capacity, placing the forks in the specific spaces of the base, and making sure they come out on the other side by at least twenty centimeters.



The battery cabinet has four wheels at the bottom. Before installations and while it is still empty, it can be moved by hand by at least two people.

 **CAUTION**

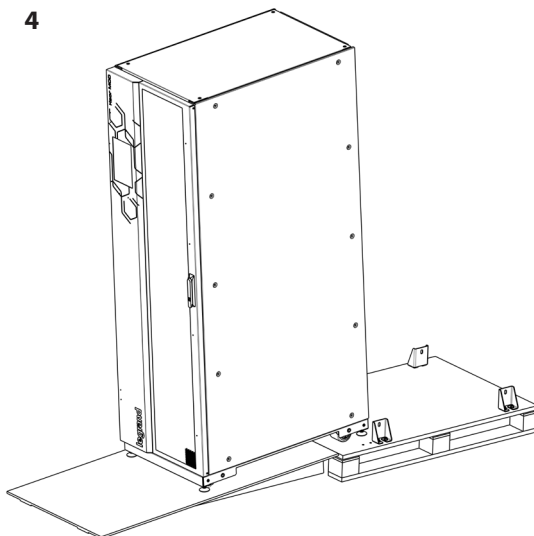
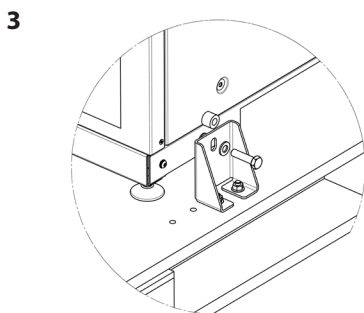
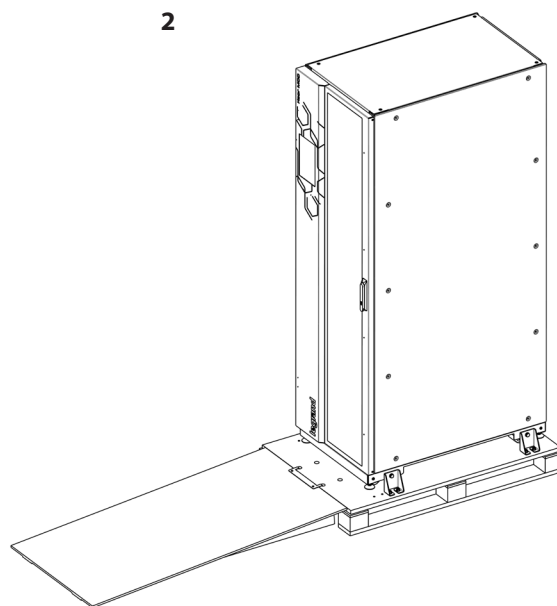
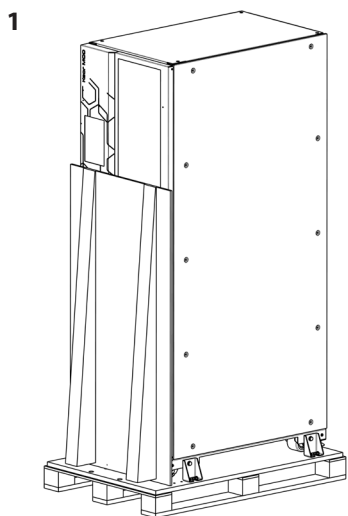
Do not move the cabinet after the installation or following the insertion of the battery drawers.

### 3. Transportation and placement

#### 3.4 Unpacking

To remove the packaging material, comply with the following procedure:

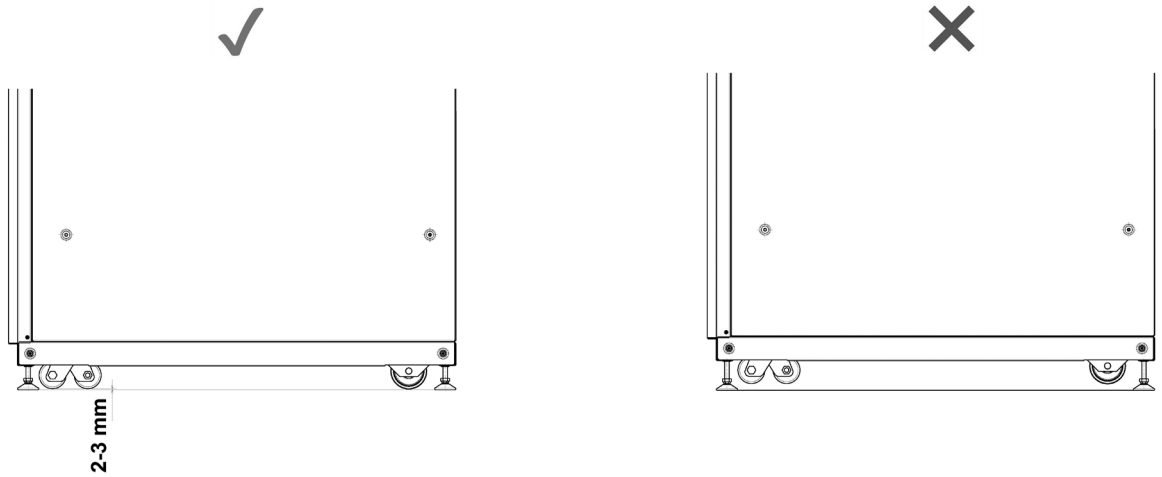
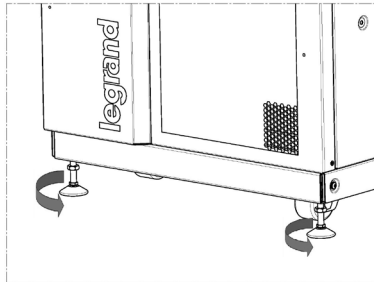
- bring the equipment to the installation site using a forklift and/or a pallet truck with suitable characteristics (see fig.1).
- remove the plastic film and cardboards.
- bring down the wooden chute attached to the pallet (see fig. 2).
- loose the screws of the brackets that fix the equipment on the pallet (see fig. 3).
- gently slide by hand the equipment along the chute using the wheels (see fig. 4).



### 3.5 Placement

When the equipment is in the final position with the UPS for the installation, unscrew counterclockwise the feet on the front and rear of the cabinet to position it.

Make sure that all the wheels and feet adhere to the floor.



(all the dimensions are in mm)

### 3. Transportation and placement

The UPS system installation, including the modular battery cabinet, must meet the following guidelines:

- The support surface must be scaled in for the carrying capacity necessary to support the equipment.
- Dust or corrosive/explosive gasses must be absent.
- The site must be free of vibration and there should be enough lighting.
- The system must be installed in a temperature and humidity controlled indoor. The ambient temperature range is 0-40°C (32-104°F) with a maximum relative humidity of 95%, non-condensing. However, the recommended operating range is 20-25°C (68-77°F) to ensure nominal battery lifetime.
- The rear and side space must be enough to guarantee an adequate circulation of air for cooling.
- The cooling flow of air must be guaranteed.
- The external battery cabinet must be accessible on all sides for assistance or periodic servicing.



#### **WARNING**

The battery cabinet should be installed in a room with adequate air ventilation flow to avoid dangerous concentration of hydrogen gas that can be produced during battery recharge. The maximum concentration of hydrogen in the room should be kept below 0,8% by volume. The room ventilation air flow should be adequate to renew the air especially in the volume of the room above the battery cabinets and below the ceiling where the hydrogen gas concentrates. The necessary minimum air flow in m<sup>3</sup>/hour is depending on the battery technology, the number of cells, the nominal cell capacity. Refer to stationary battery installation standards and battery manufacturer recommendation.

#### **INDICATION**

Operating temperatures above the recommended range will result in decreased battery life and performance and will reduce or void the battery warranty.



## 4. Installation

### 4.1 Safety regulations



Before carrying out any installation operation you must read and apply the following:

- Consult chapter 2 of the manual containing mandatory safety regulations and wear the Personal Protective Equipment mentioned in paragraph 2.3.
- Check that the UPS is turned off and no voltage is present.
- The connection to the earth ground is essential for safety and proper installation and operation. Before carrying out any other installation operation, connect the earthing wiring. Check that the earthing has been carried out in compliance with IEC (International Electrotechnical Commission) standards or local regulations.
- Do not carry out the installation in presence of water or humidity.
- Open only the cabinet panels necessary for the electrical connections. After that, close and fix them.
- Check there is no voltage present on the modular battery cabinet.

### 4.2 Electrical connections

The electrical hook-up of the modular battery cabinet to the UPS is part of the installation that is not normally performed by the UPS manufacturer. For this reason, the indications that follow are to be considered approximate and it is recommended that the electrical connections are based on local installation standards.

After removing the battery cabinet from the packaging and positioning it in its definitive place, the Skilled Technician can begin to make the electrical connections.

The electrical hook-up must be done before installing the battery drawers to the cabinet.



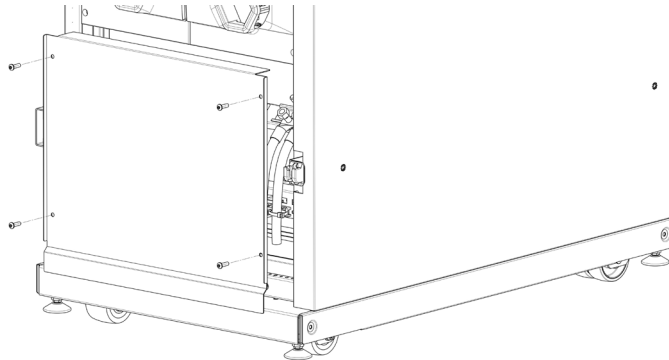
The choice of cables type and their cross sections depending on the rated current and their installations must be made as indicated by the local installation standards and it is a responsibility of the Skilled Technician.  
Check the KEOR MOD UPS installation manual for more information.

## 4. Installation

### 4.2.1 Protective devices

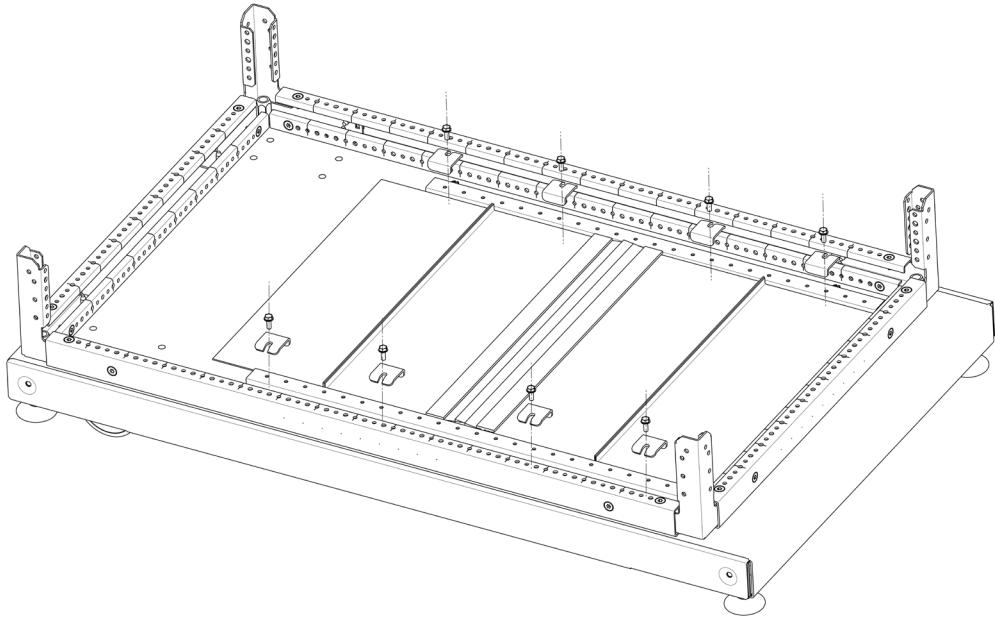
To carry out all the electrical connection operations, it is necessary to unscrew the screws that fix the distribution panel to the cabinet. The screws must be saved to close the distribution panel at the end of the installation (hex socket M6x20 screws along with M6 toothed washers).

The following picture show how to disassemble the panel:

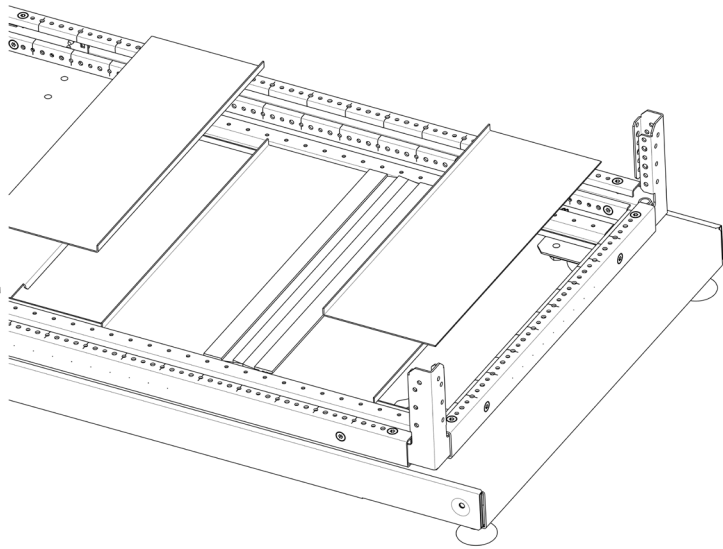


To insert the cables in the cabinet, it is necessary to remove the panels at the bottom of the cabinet according to the following sequence:

1

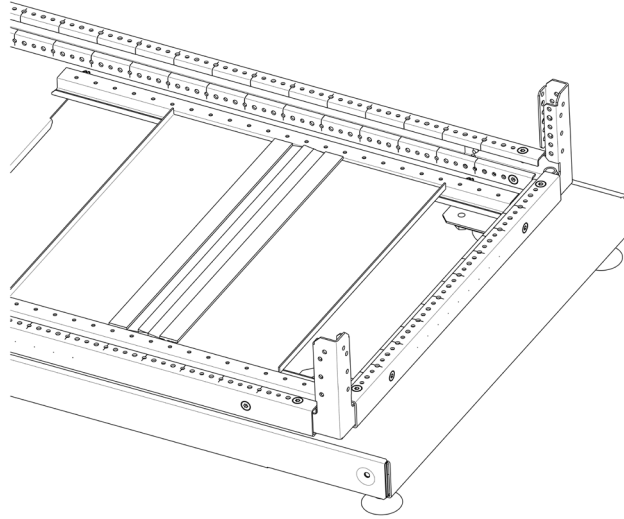


2

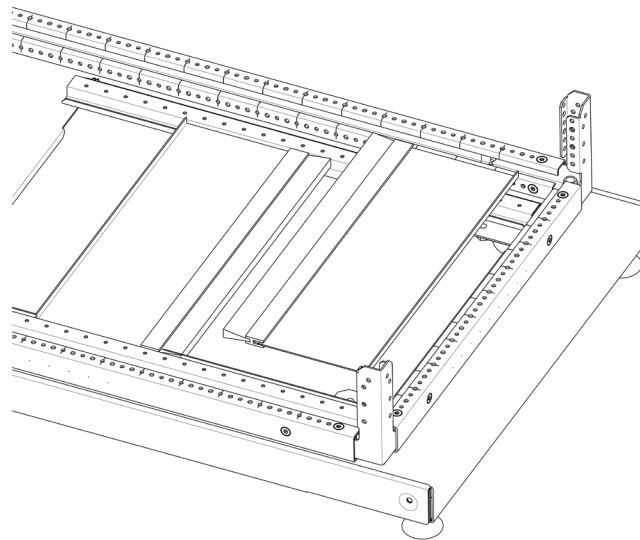


## 4. Installation

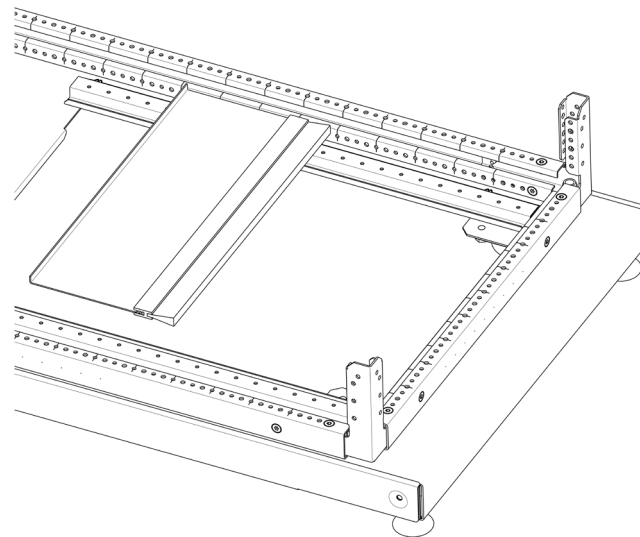
3



4

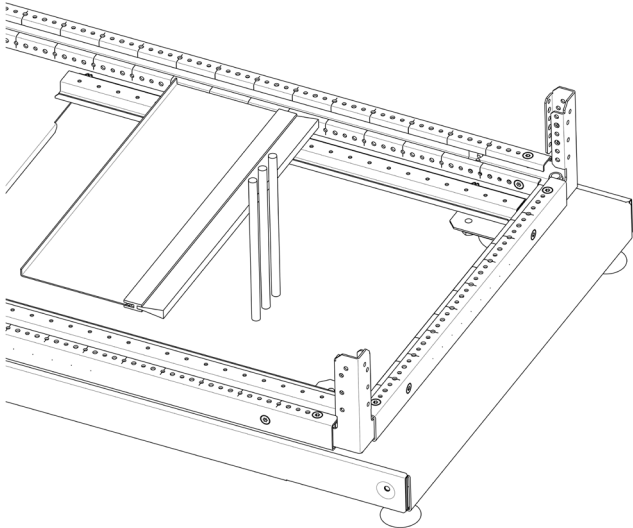


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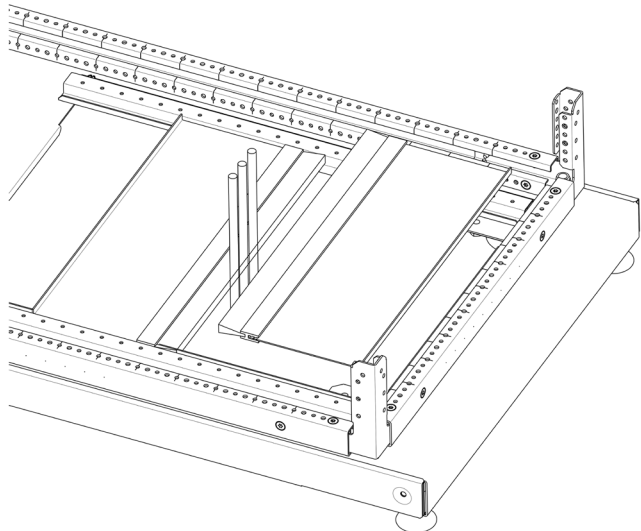


Insert the cable and add the panels according to the following sequence:

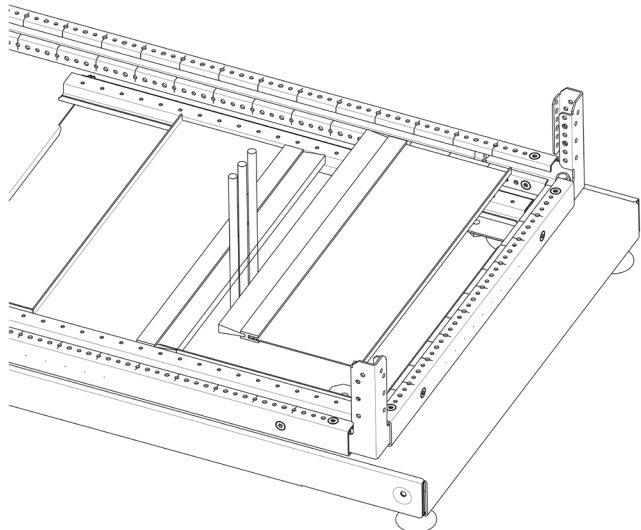
6



7

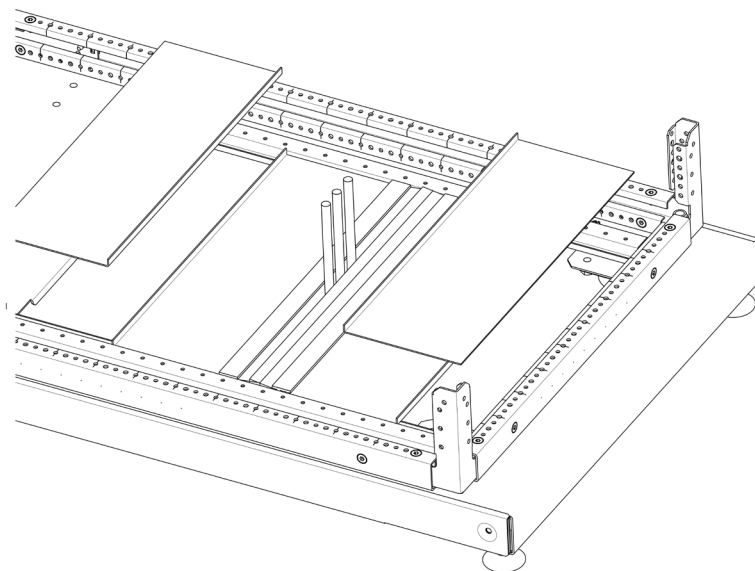


8

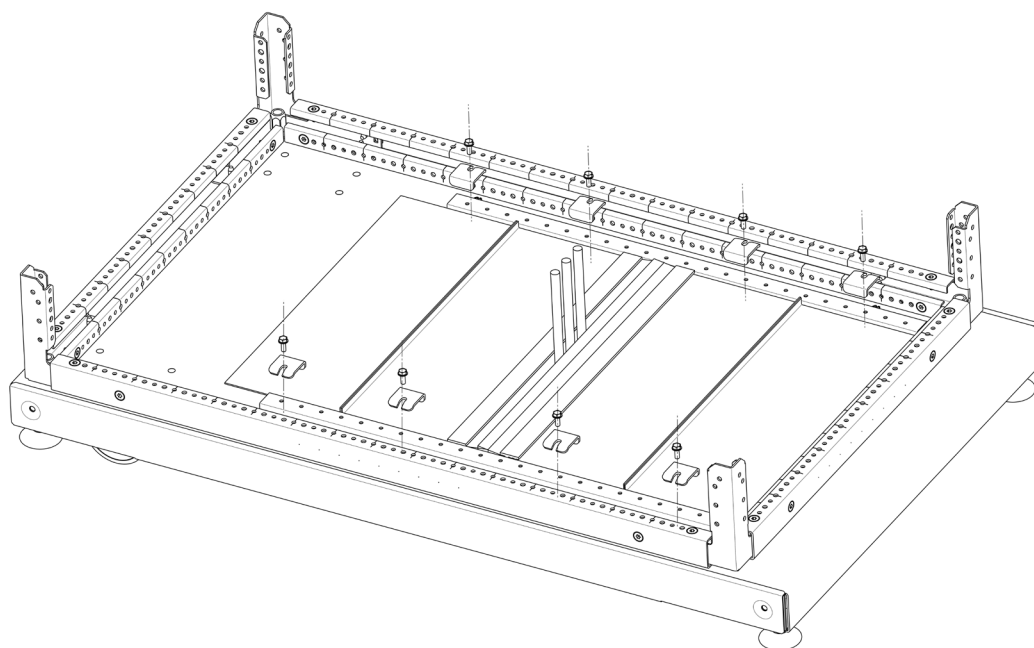


## 4. Installation

9



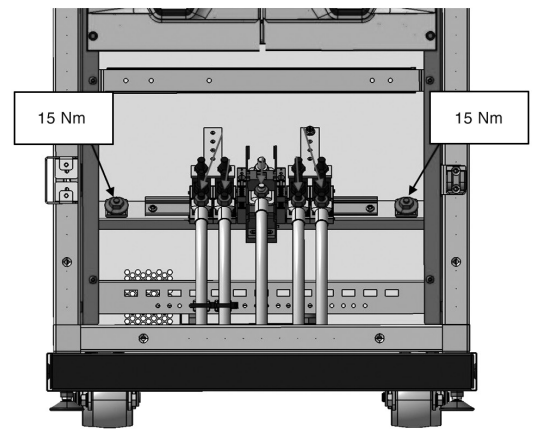
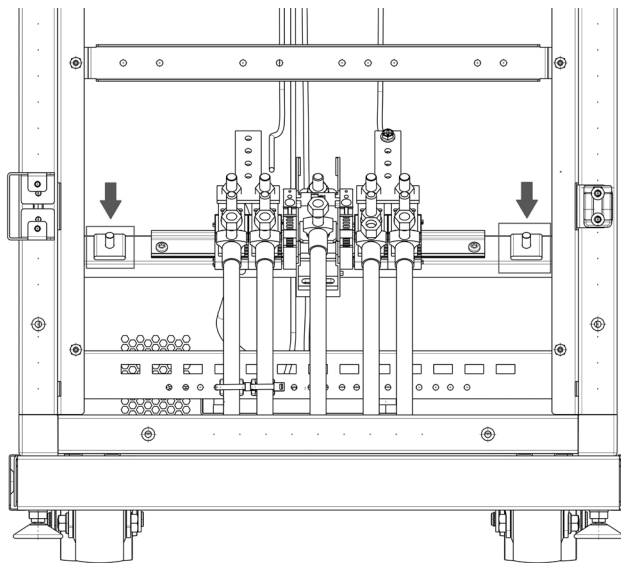
10



## 4.2.2 Earthing connection

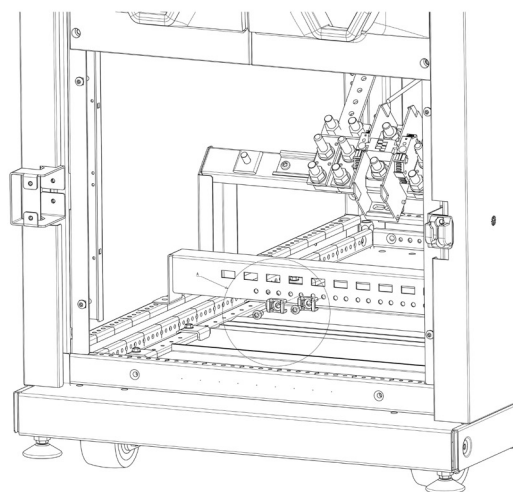
Before carrying out any other installation operation, connect the earthing wiring coming from the low voltage switchgear or from the UPS to one of the threads located on the left and right side of the connection DIN bar.

Each earthing cable must be crimped with M8 eyelets and fixed to the threads along with M10 flat washers and M10 nuts. The tightening torque values for the M10 nuts is 15 Nm. The nut must be put on the top of the flat washer.

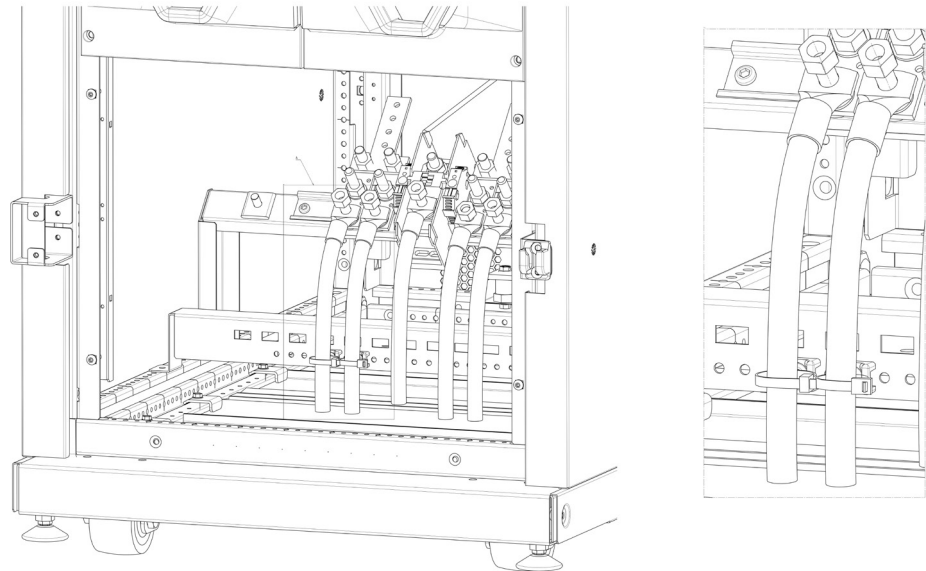


## 4.2.3 Cable fastening

In the accessory envelope there are plastic supports for cable ties to be fixed on the support bar using the M6 torx pan head screws.



## 4. Installation



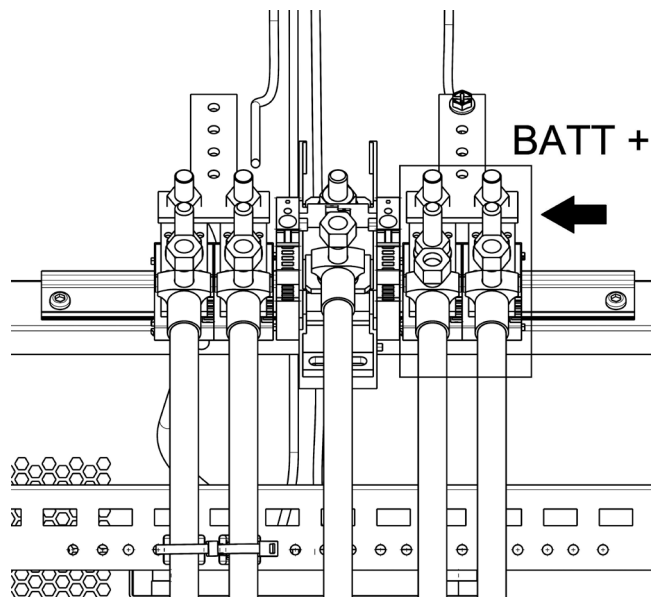
### 4.2.4 Battery cables installation

Check the following before the installation:

- install the battery cables before adding the battery drawers to the cabinet.
- no voltage must be present.
- the earthing cable must be properly connected (see paragraph 4.2.2).

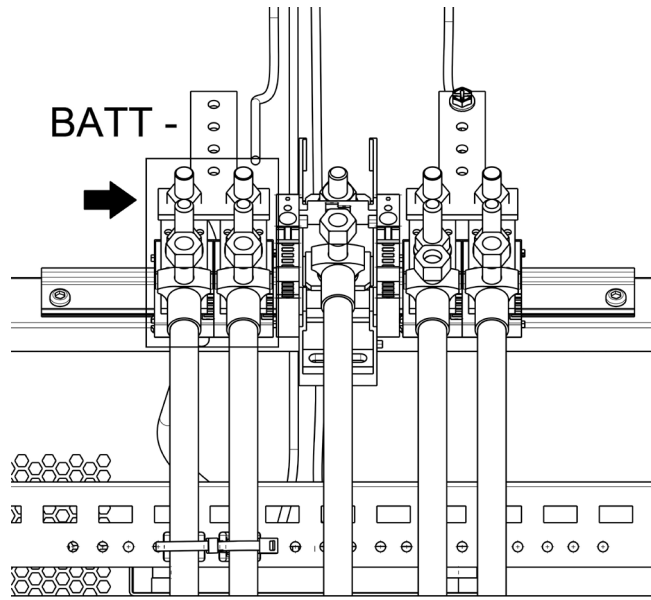
If no change is required, follow these steps:

- crimp the positive, negative, and neutral battery cables with M10 eyelets for the modular battery cabinet connection.
- connect the positive cable of the battery cabinet to the + BATT thread using a M10 flat washer and a M10 grower washer. The grower washer must always be put on top of the flat washer.

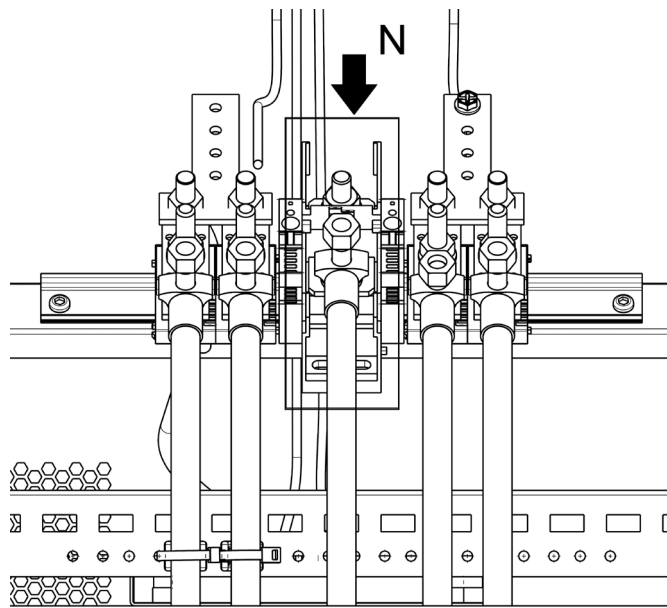


- connect the negative cable of the battery cabinet to the - BATT thread using a M10 flat washer and a M10 grower washer. The grower washer must always be put on top of the flat washer.



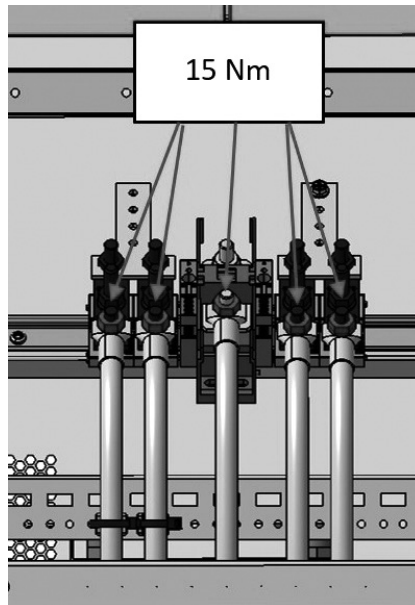


- connect the neutral cable of the battery cabinet to the neutral thread with a M10 flat washer and a M10 grower washer. The grower washer must always be put on top of the flat washer.



The tightening torque values for the M10 nuts is 15 Nm.

## 4. Installation



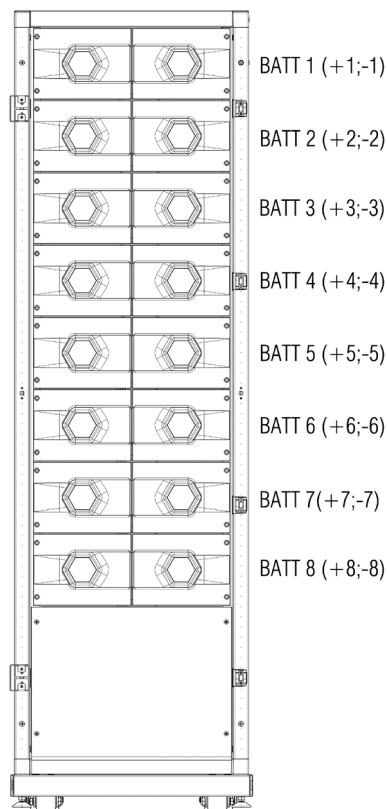
- for the connection of the battery cables to the Keor MOD UPS side, consult the installation manual of the UPS.

### 4.3 Battery drawers installation

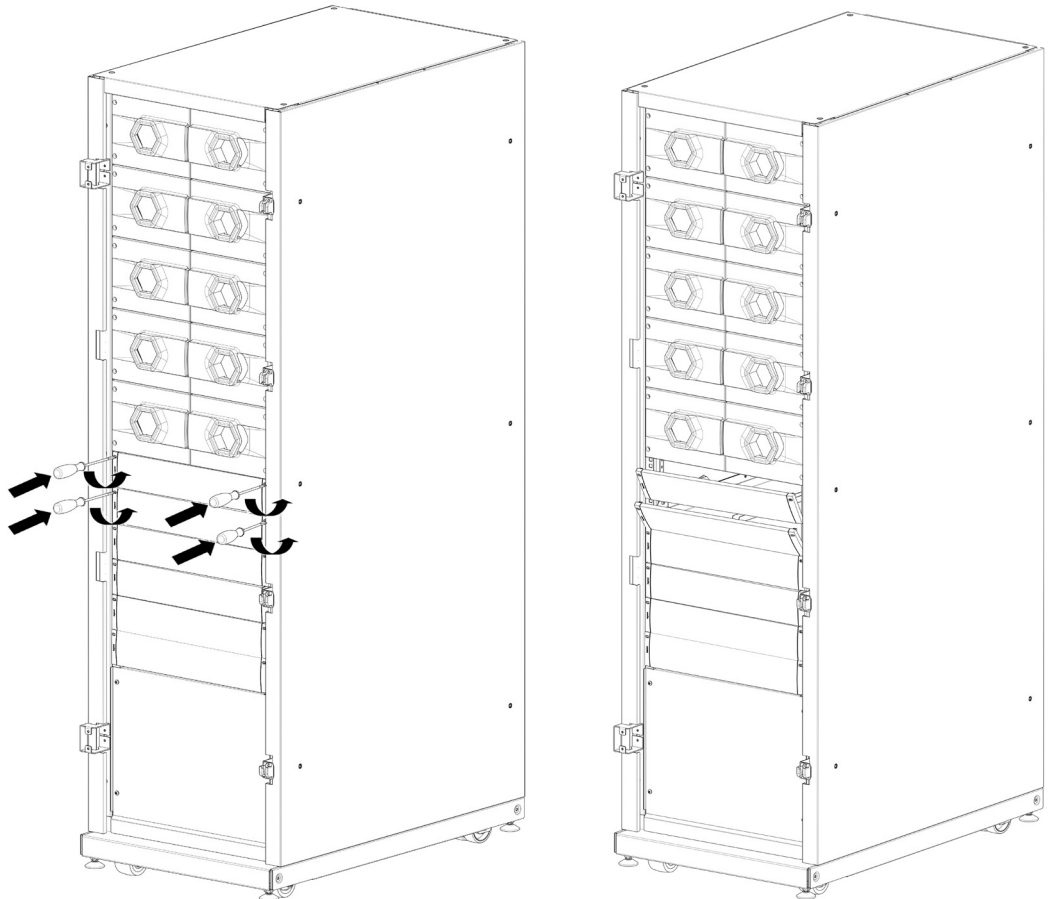
The modular battery cabinet for Keor MOD may include two to sixteen internal battery drawers. Each battery string is made up of two drawers, therefore it is necessary to install them two by two.

The battery drawers have a specific order in the cabinet that must be kept.

During the installation it is necessary to use the appropriate Personal Protective Equipment (see paragraph 2.3).

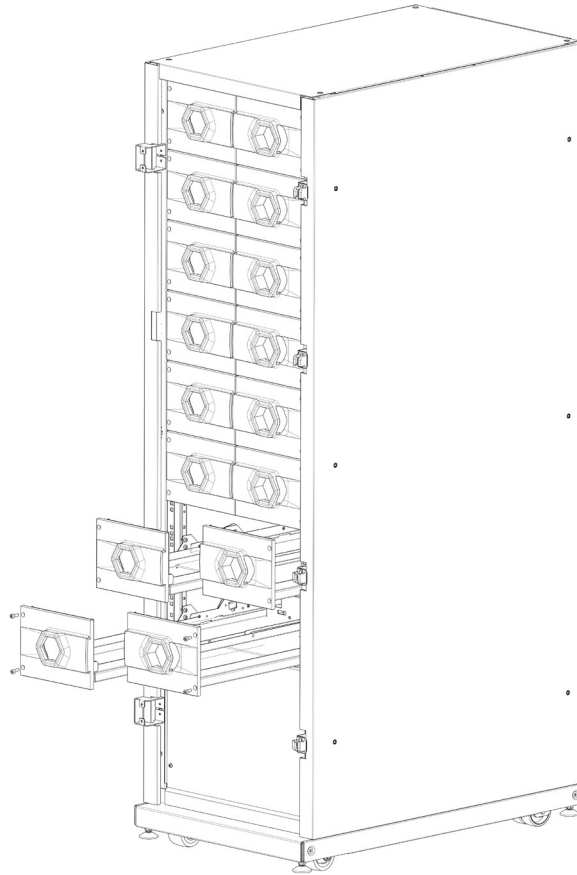


Starting from the bottom of the cabinet, insert two screwdrivers in the upper parts of the two plastic slot cover where the battery drawers must be installed. Slightly turn the screwdrivers down to unhook the covers.

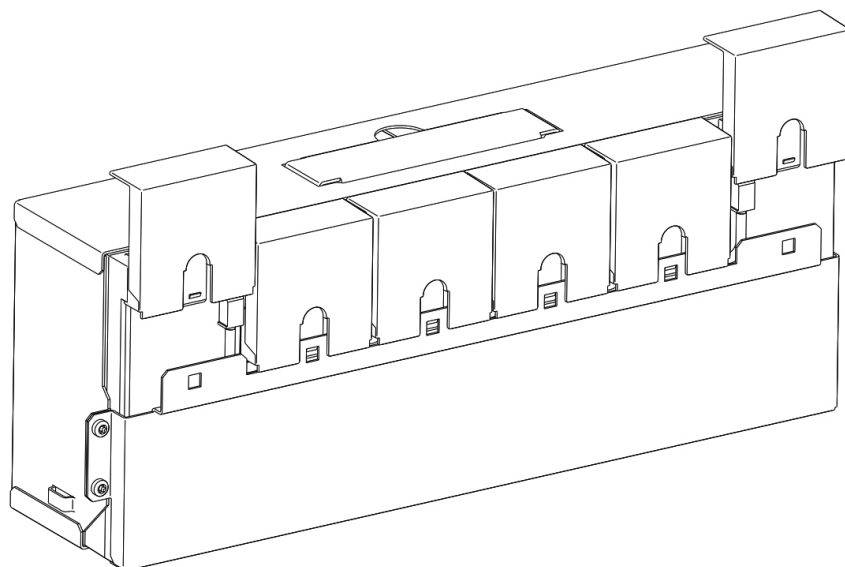


Insert the empty battery drawers in the free slots and push them till the 'click' of the safety block is heard. The battery packs must be added to the drawers only after the activation of the safety block.

## 4. Installation

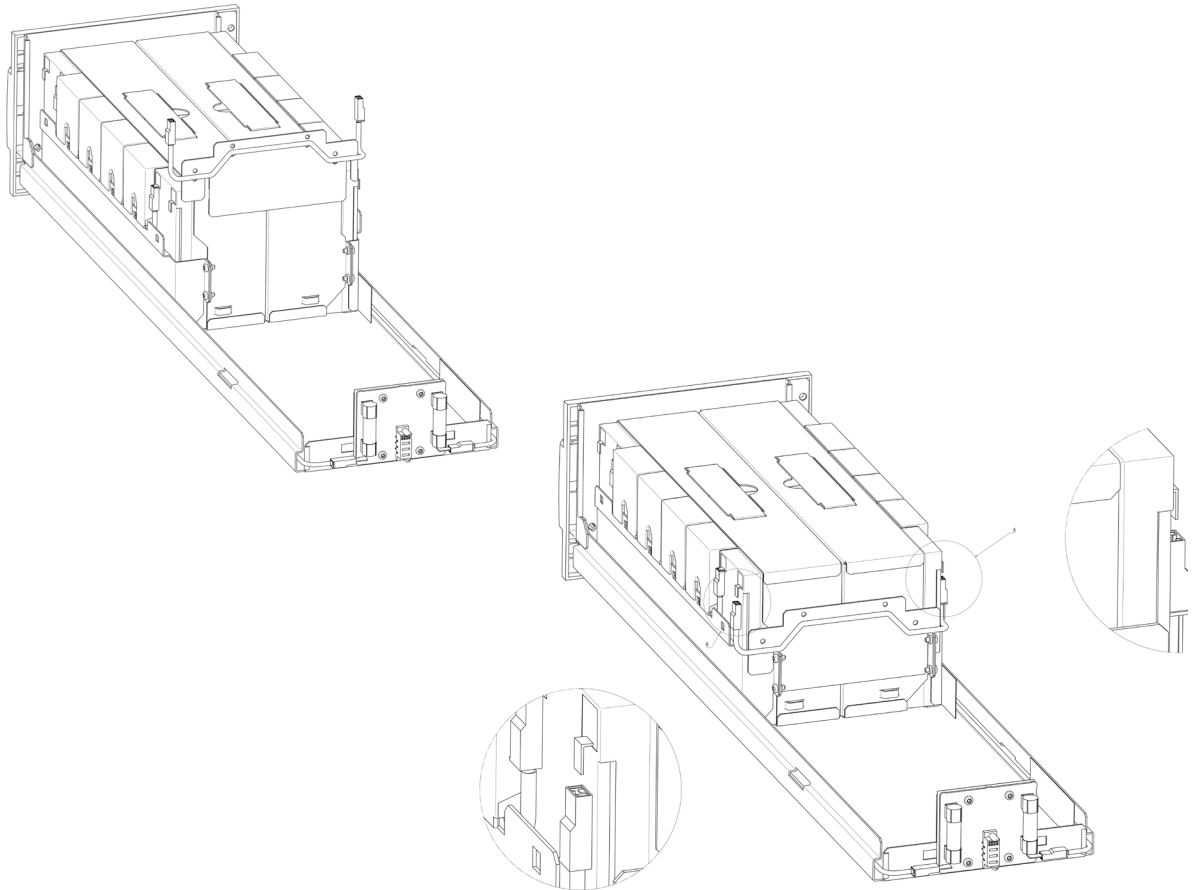


Remove the adhesive tape from the terminal covers at the extremes of the battery pack and remove the covers.



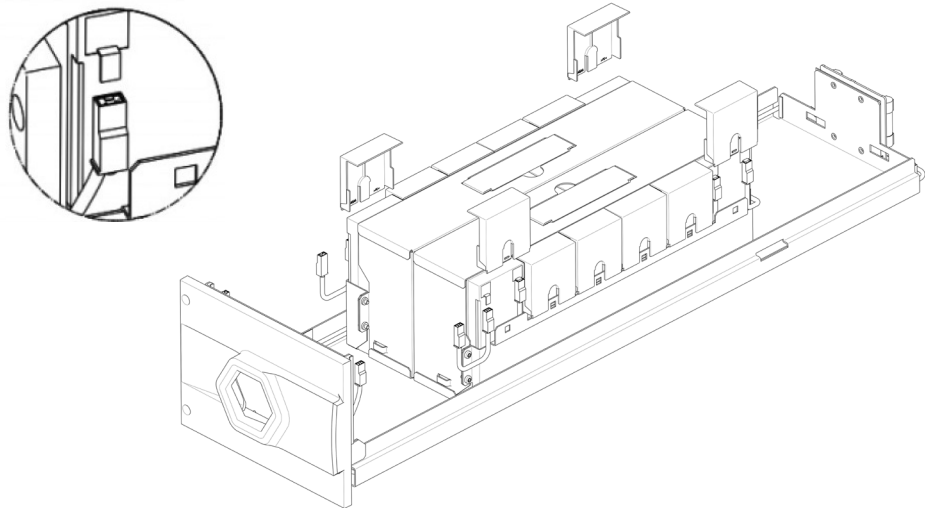
X 4

Add two battery packs on a drawer and connect in series the two packs using the provided cable fixed in the bracket and respecting the polarity (connect a positive terminal to a negative terminal).

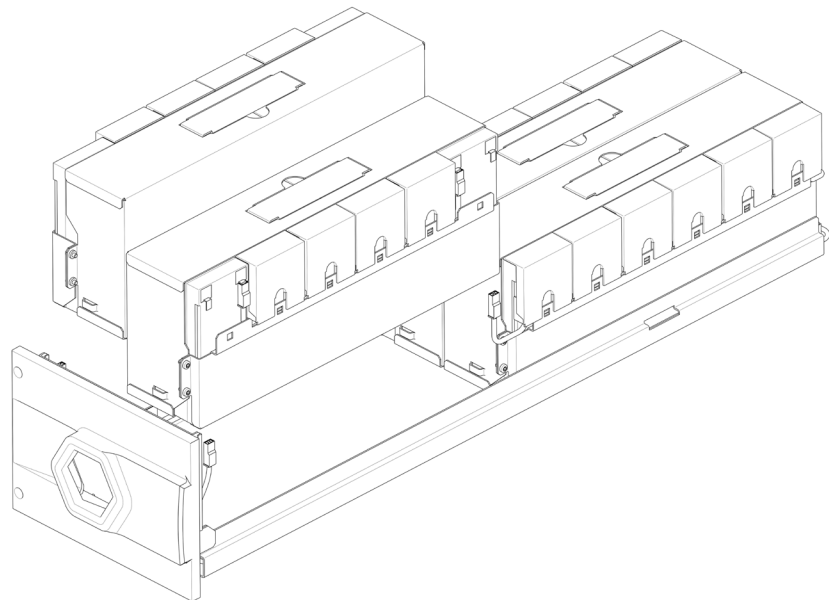


## 4. Installation

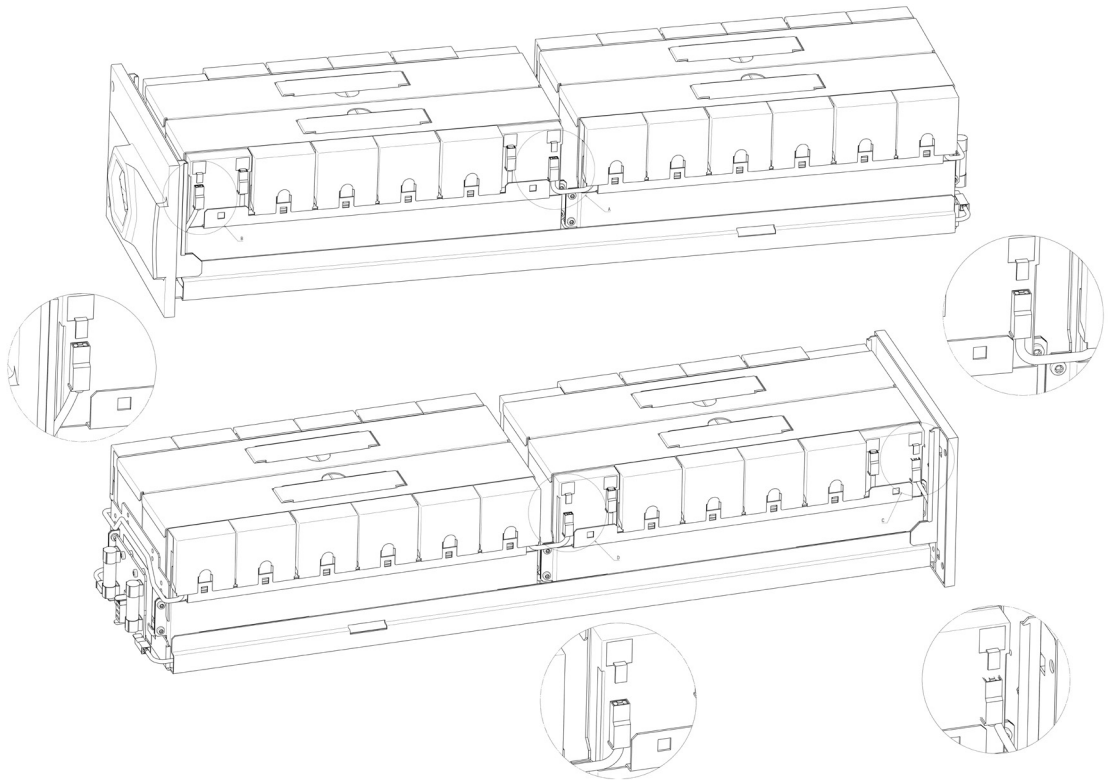
Connect the two provided cables on the free battery terminals that will connect the two battery packs with the other two that will be added in the next step. Insert the terminal covers and fix them to the packs with the adhesive tape.



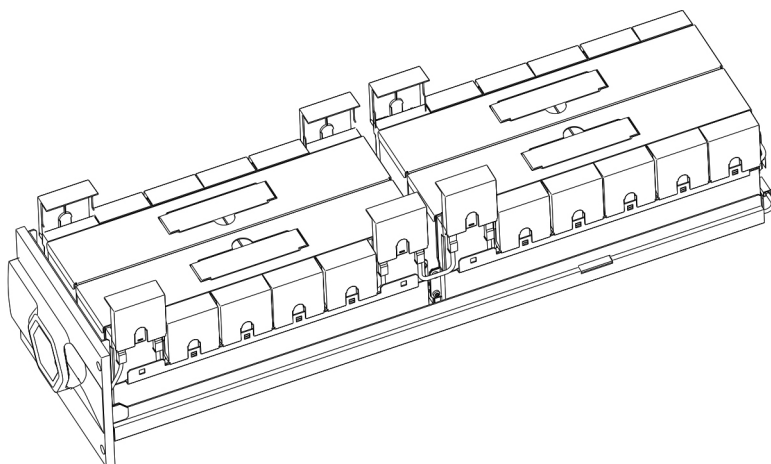
Add other two battery packs on the drawer.



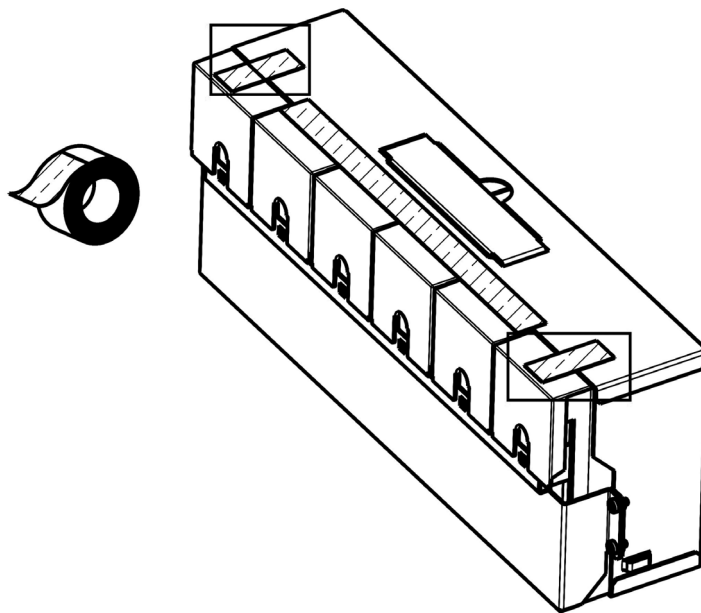
Connect in series the two new packs to the ones already in the drawer using the cable installed previously and respecting the polarity (connect a positive terminal to a negative terminal).  
Connect the free terminals of the two batteries located close to the handle of the drawer to the cables that are connected to the back of the drawer. Check the correct polarity of the whole cabling.



Insert the remaining terminal covers on the batteries and fix them with the adhesive tape to the battery pack.

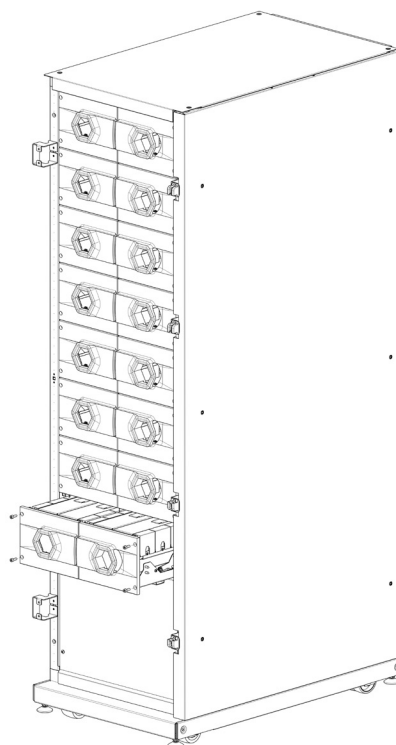


## 4. Installation



Fill the second drawer in the same way.

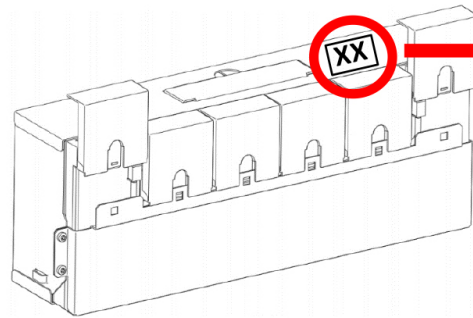
After the two drawers are ready, push them inside the UPS cabinet till they are abut and fix them with four screws included in the accessory kit.



**WARNING**

Do not move the EBC after the installation of the batteries

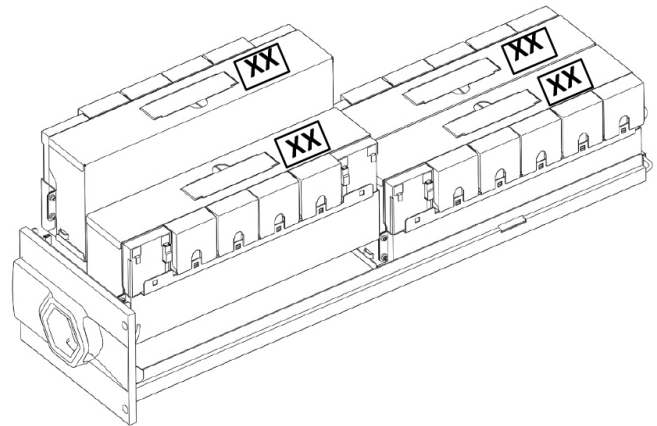




**CHECK THE BATTERY CODE LABEL ON THE BATTERY BLOCK**



XX	XX
XX	XX



XX	YY
YY	XX

**DO NOT MIX DIFFERENT BATTERY CODES ON THE SAME DRAWER!**

#### 4.4 Configuration and start-up

Check the Keor MOD UPS installation manual.

## 5. Maintenance



### **DANGER**

**INSTALLATION and ORDINARY MAINTENANCE operations must be carried out only by SKILLED TECHNICIANS (paragraph 2.2.1). EXTRAORDINARY MAINTENANCE operations must be carried out only by LEGRAND TECHNICAL SUPPORT SERVICE.**

### **INDICATION**

LEGRAND declines all liability for any injury or damage caused by activities carried out differently from the instructions written in this manual.

### **5.1 Preventive maintenance**

The modular battery cabinet does not contain parts for preventive maintenance by the operator.

The operator must periodically perform:

- a general external cleaning;
- a check to the area surrounding the UPS system to ensure that there is free access to the units.

### **5.2 Periodical checks**

The correct functioning of the external battery cabinet must be guaranteed by periodical maintenance inspections. These are essential to safeguard the reliability of the battery cabinet.

These inspections should be made to determine if components, wiring, and connections exhibit evidence of overheating.



### **WARNING**

The periodical checks involve operations inside the equipment in presence of dangerous voltages. Only maintenance personnel trained by LEGRAND are authorized to intervene.

### **5.3 Battery drawers replacement**



### **WARNING**

A battery can present a risk of electrical shock and high short circuit current. Read and apply the safety instructions in chapter 2 before operating on batteries

### **INDICATION**

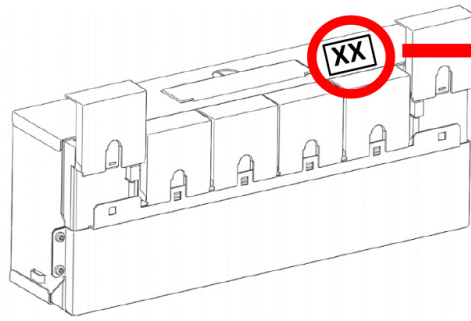
The battery drawers must always be added/removed in multiples of two (1 KB consists of two battery drawers). Always replace just one KB at a time. If one KB is added, start from the free slots at the top which are covered by protective covers.

If a KB is completely removed, install the protective covers to block any access to live parts.

If the installation/removal procedure changes the total number of KB installed in the UPS, it is necessary to update this setting from the control panel.

 **CAUTION**

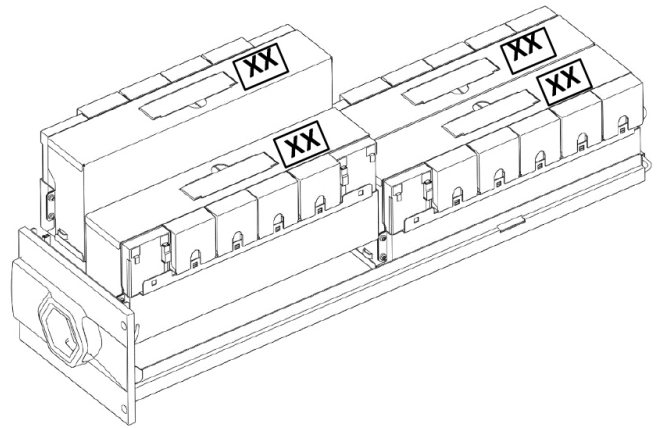
A drawer must be made up of batteries of the same brand and of the same manufacturing date.



**CHECK THE BATTERY CODE LABEL ON THE BATTERY BLOCK**



XX	XX
XX	XX



XX	YY
YY	XX

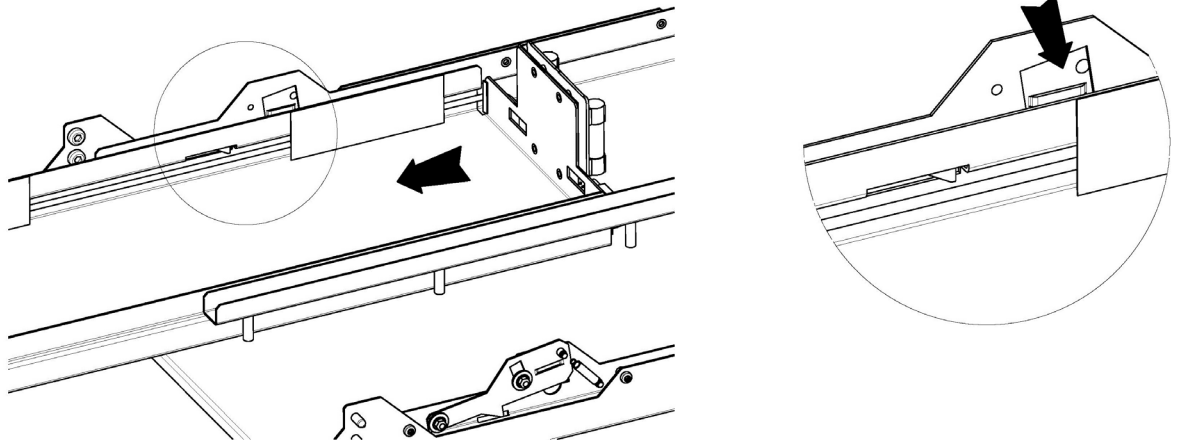
**DO NOT MIX DIFFERENT BATTERY CODES ON THE SAME DRAWER!**

## 5. Maintenance

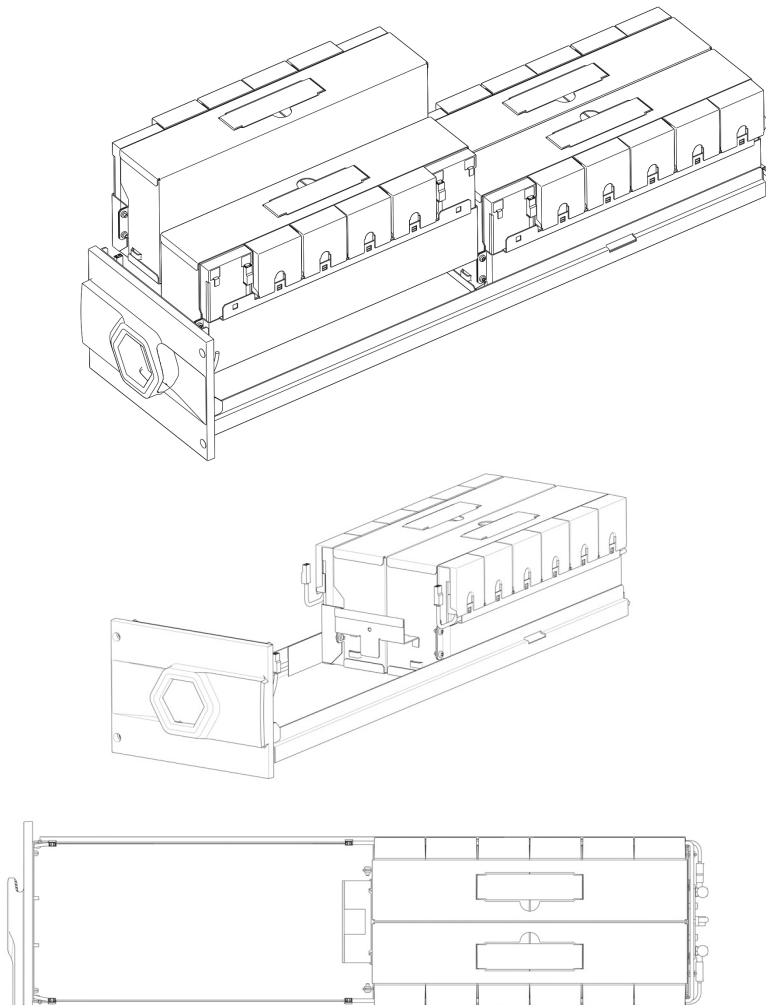
### 5.3.1 Installation/replacement of battery drawers with UPS in on-line mode

To replace a battery drawer:

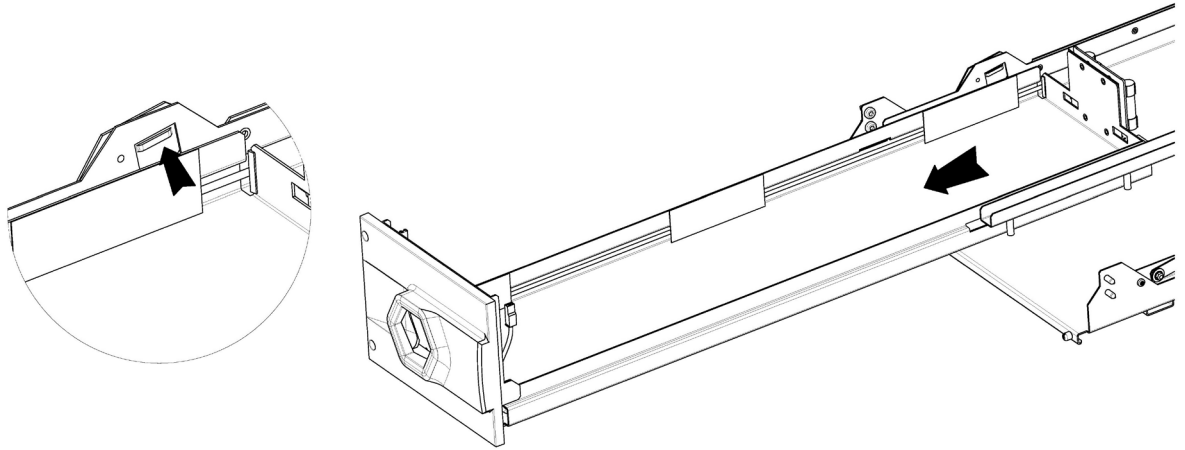
1. Check that the UPS has installed more than 1KB every 25kVA of power supplied to the output.
2. Check that the UPS is not working in battery mode and that the battery charger is in the "maintenance" or "standby" state.
3. Extract the battery drawer until the safety block prevents to continue the extraction.



4. Remove all the battery packs from the drawer. Use the handle included in the accessory kit to remove the battery packs at the back of the drawer.



5. Push up the safety hook located on the left side of the battery drawer to unlock the block and pull the drawer to finalize the extraction.



6. Follow the procedure shown at paragraph 4.3 to insert a new battery drawer

**INDICATION**

If the UPS turns to battery mode during these operations, do not continue the installation/replacement. It is possible to resume the operations when the UPS turns to on-line mode.

When there is a black-out during the replacement of battery drawers, the backup time is reduced. It is necessary to carefully assess this event before starting with the installation/replacement procedure.

To add a battery drawer:

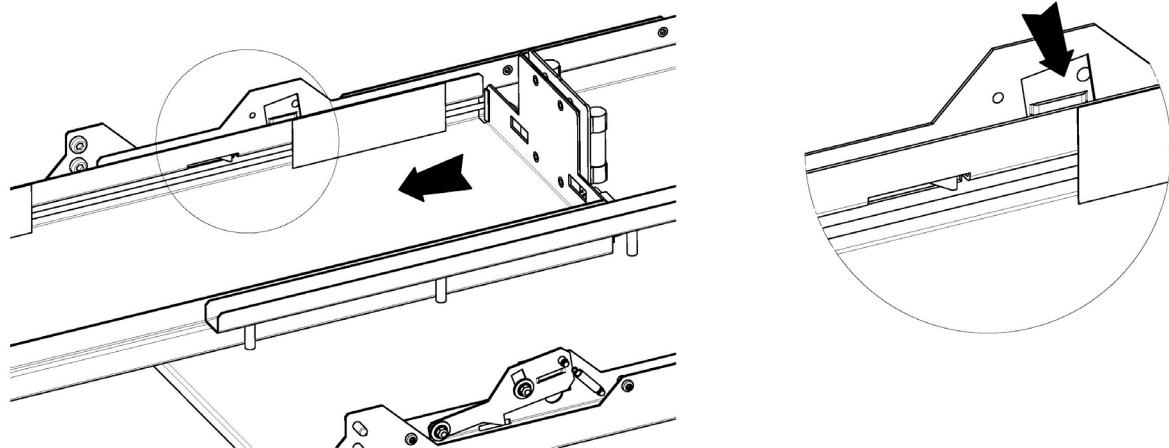
Follow the procedure shown at paragraph 4.3 to add a new battery drawer

## 5. Maintenance

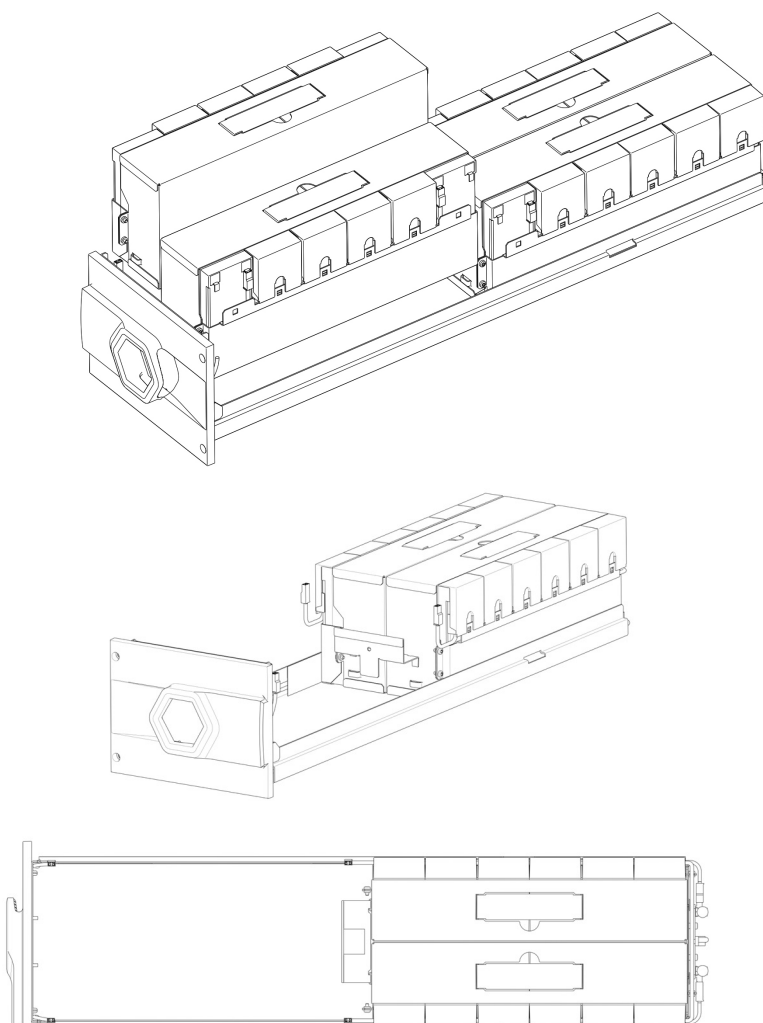
### 5.3.2 Installation/replacement of battery drawers with UPS in maintenance manual bypass

To replace a battery drawer:

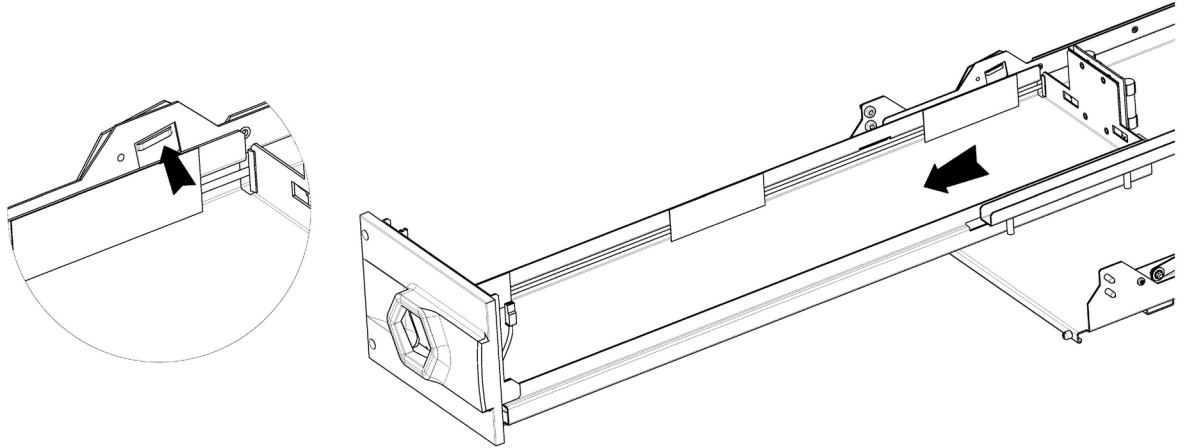
1. Set the UPS in maintenance bypass mode (check the Keor MOD UPS installation manual)
2. Extract the battery drawer until the safety block prevents to continue the extraction.



3. Remove all the battery packs from the drawer. Use the handle included in the accessory kit to remove the battery packs at the back of the drawer.



4. Push up the safety hook located on the left side of the battery drawer to unlock the block and pull the drawer to finalize the extraction.



5. Follow the procedure shown at paragraph 4.3 to insert a new battery drawer
6. Exit from the UPS maintenance bypass mode (check the Keor MOD UPS installation manual)

### 5.3.3 Battery drawer fuses replacement

If there is the need to replace the fuses present at the back of the battery drawer, use only 14x51 fuses, gG type, 40A rated In current, 500V rated voltage.

## 6. Warehousing



### **DANGER**

All storage operations must be carried out only by a **SKILLED TECHNICIAN** (paragraph 2.2.1)



### **DANGER**

**A SKILLED TECHNICIAN must check that there is no voltage present before disconnecting the cables. The battery drawers must be removed.**

### **6.1 Batteries**

It is possible to store batteries without recharging them in the following conditions:

- up to 6 months if the temperature is between +20°C (+68°F) and +30°C (+86°F);
- up to 3 months if the temperature is between +30°C (+86°F) and +40°C (+104°F);
- up to 2 months if the temperature is over +40°C (+104°F).



### **CAUTION**

Batteries must never be stored if partially or totally discharged.

LEGRAND is not liable for any damage or bad functioning caused to the UPS by wrong warehousing of the batteries.



## 7. Dismantling



### DANGER

Dismantling and disposal operations must be carried out only by a **SKILLED TECHNICIAN** (paragraph 2.2.1). The instructions in this chapter are to be considered indicative: in every country there are different regulations regarding the disposal of electronic or hazardous waste such as batteries. It is necessary to strictly adhere to the standards in force in the country where the equipment is used.  
**Do not throw any component of the equipment in the ordinary rubbish.**

### 7.1 Battery disposal

Batteries must be disposed of in a site intended for the recovery of toxic waste. Disposal in the traditional rubbish is not allowed.  
Apply to the competent agencies in your countries for the proper procedure.



### WARNING

A battery may constitute a risk of electric shock and high short-circuit current.  
When working on batteries, the prescriptions indicated in chapter 2 must be adhered to.

### 7.2 Cabinet dismantling

The dismantling of the cabinet must occur after the dismantling of the various parts it consists of.  
For the dismantling operations, it is necessary to wear the Personal Protective Equipment mentioned in paragraph 2.3.  
Sub-divide the components separating the metal from the plastic, from the copper and so on according to the type of selective waste disposal in the country where the equipment is dismantled.  
If the dismantled components must be stored before their disposal, be careful to keep them in a safe place protected from atmospheric agents to avoid soil and groundwater contamination.

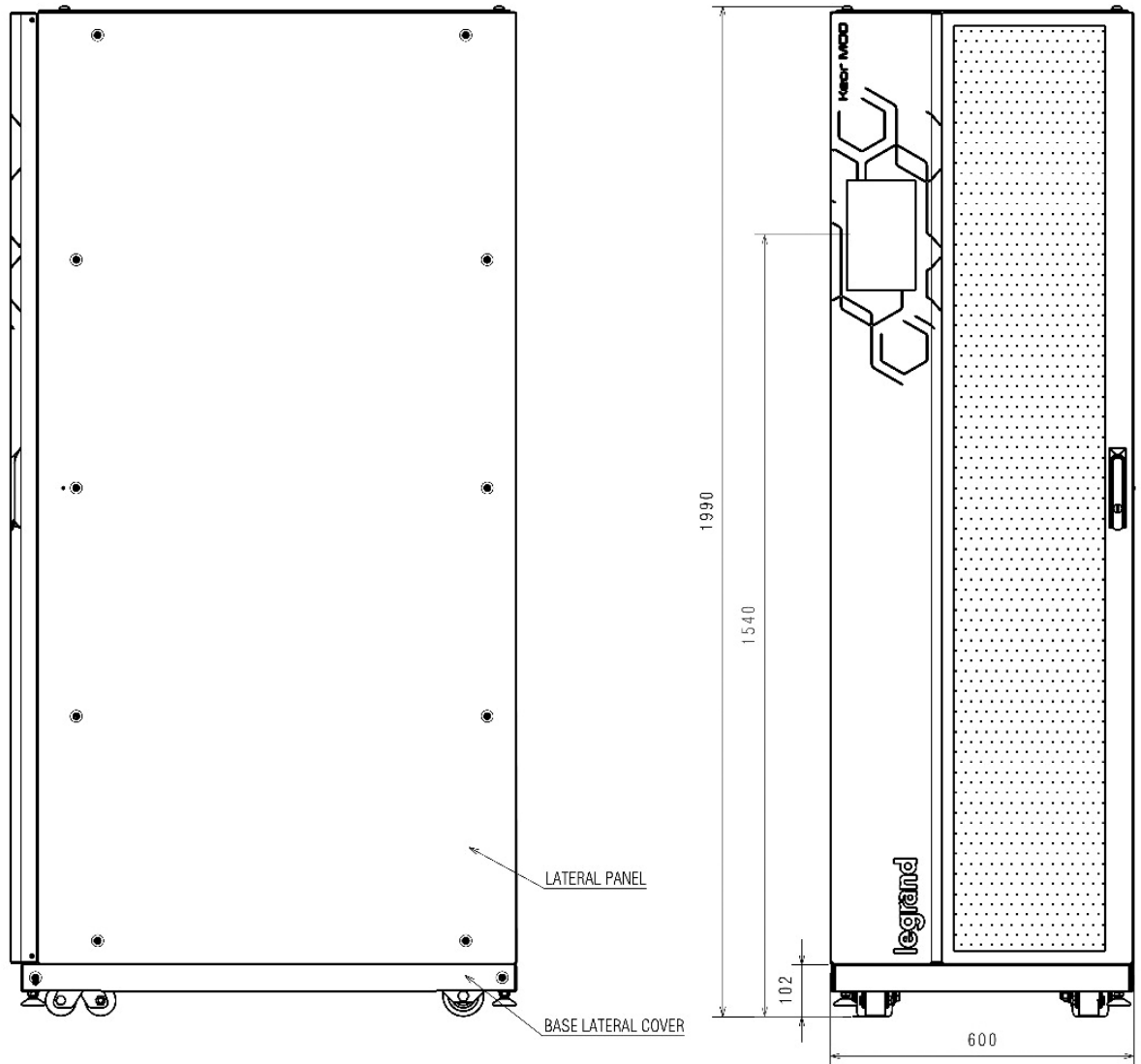
### 7.3 Electronic component dismantling

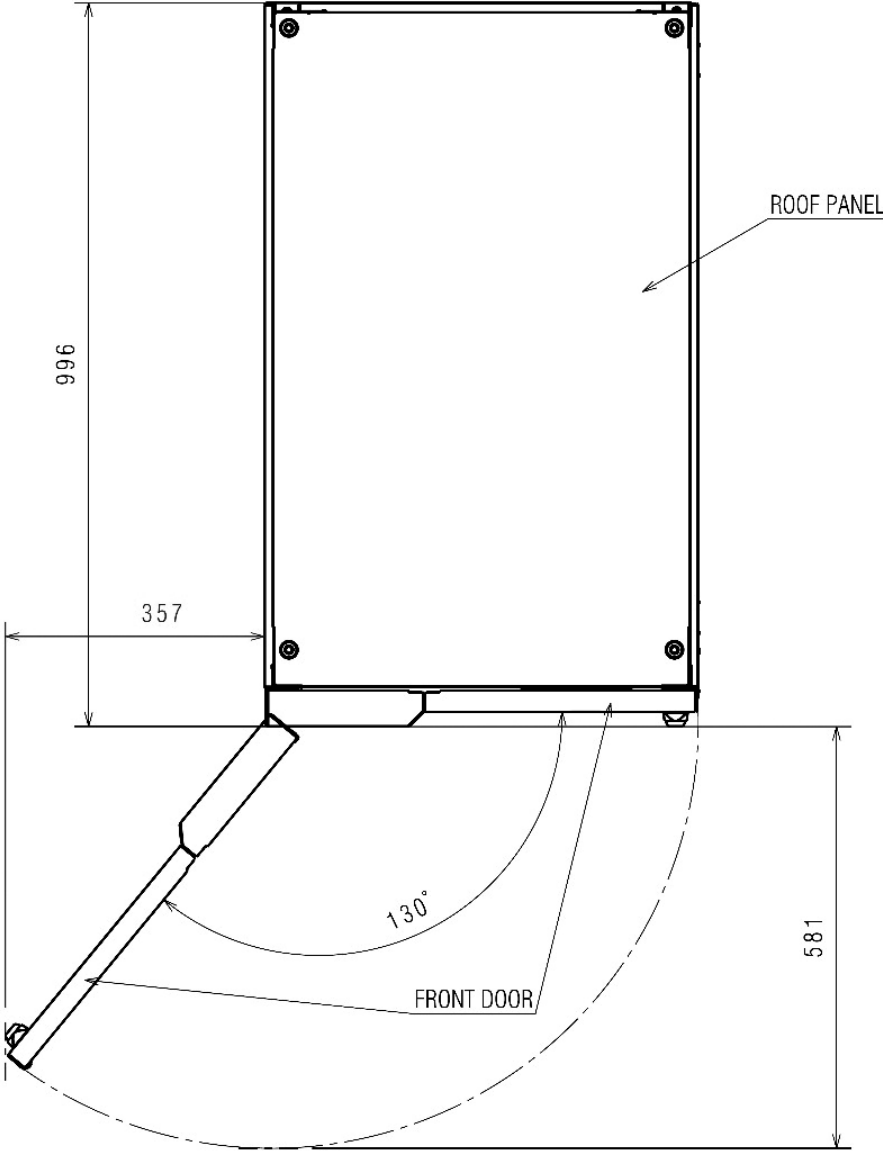
For the disposal of electronic waste, it is necessary to refer to the relevant standards.



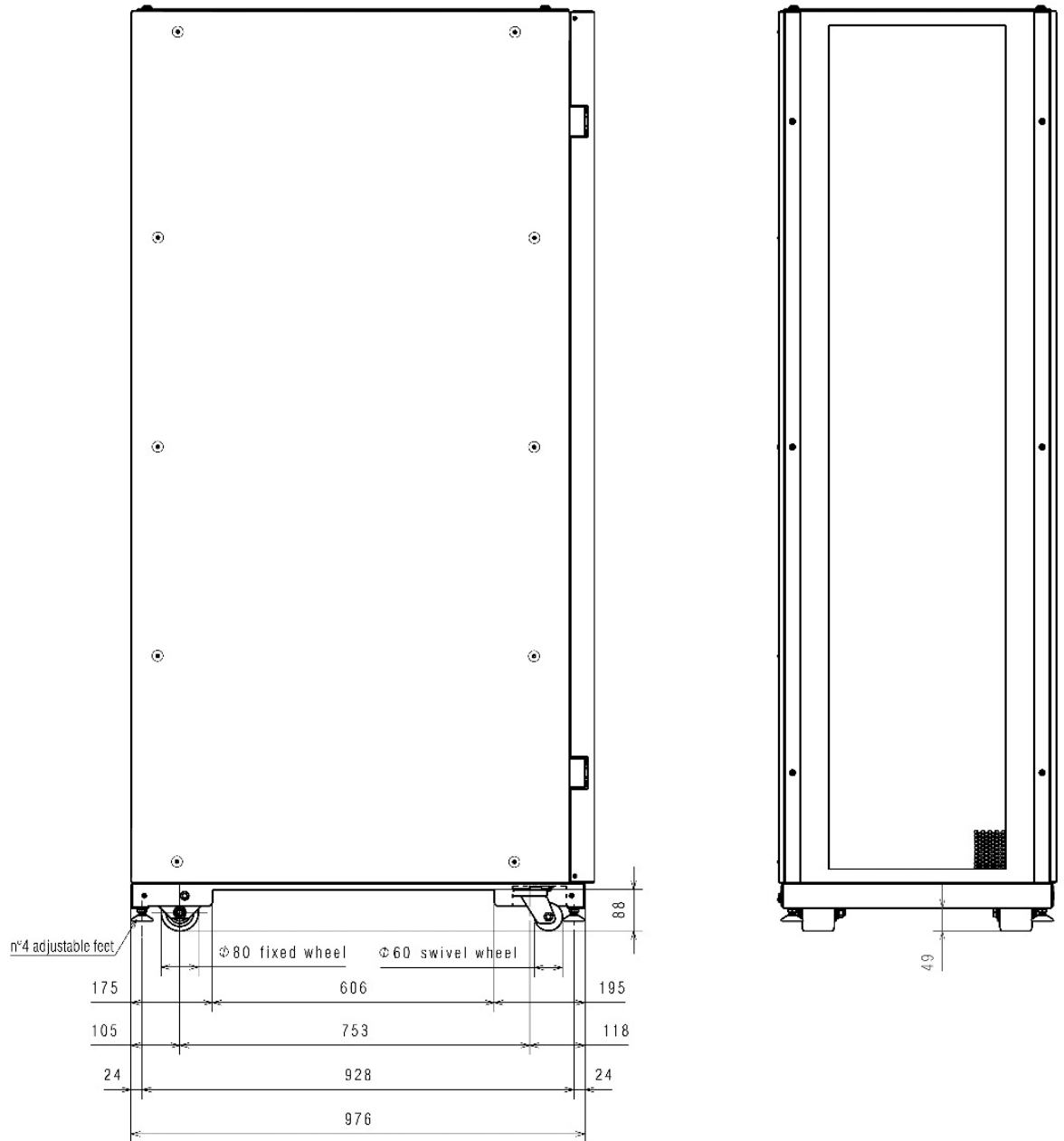
This symbol indicates that in order to prevent any negative effects on the environment and on people, this product should be disposed of separately from other household waste, by taking it to authorised collection centres, in accordance with the EU countries local waste disposal legislations. Disposing of the product without following local regulations may be punished by law. It is recommended to check that this equipment subject to WEEE legislations in the country where it is used.

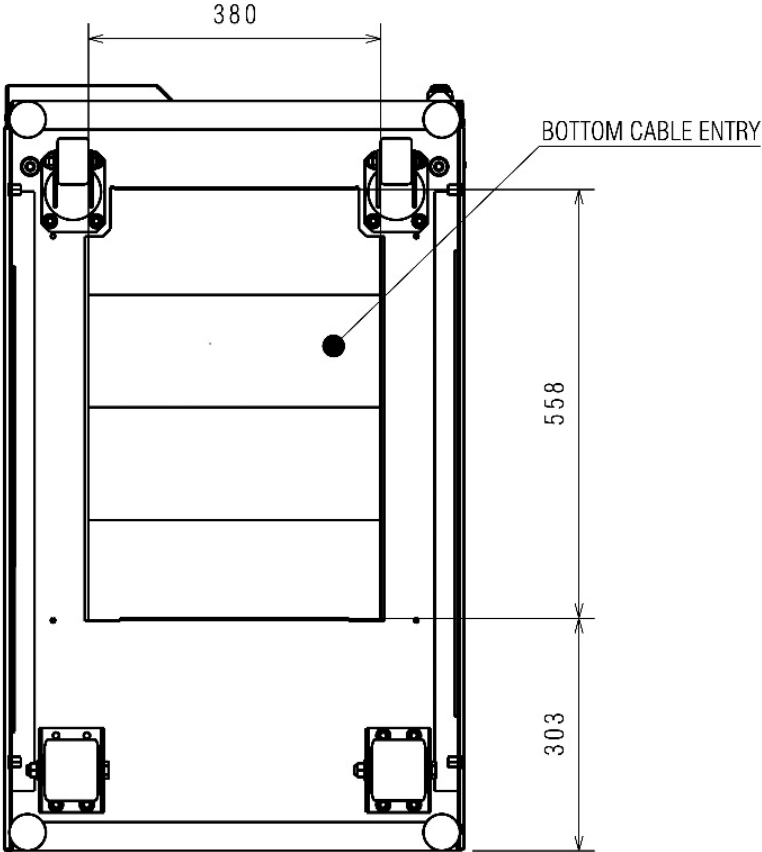
## 8. Mechanical characteristics





## 8. Mechanical characteristics

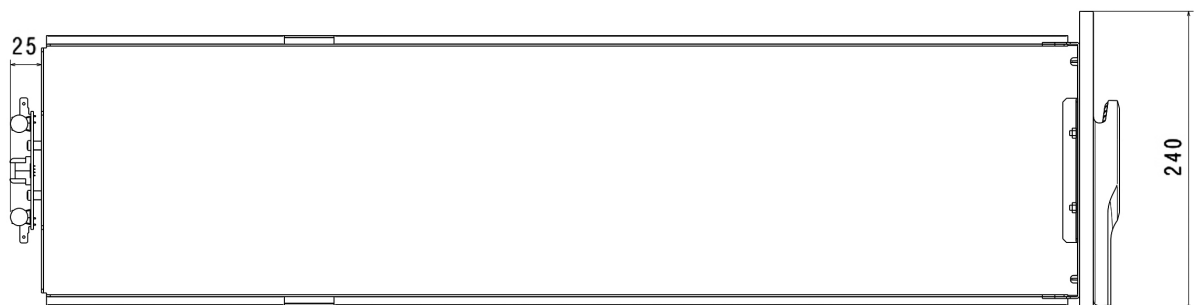
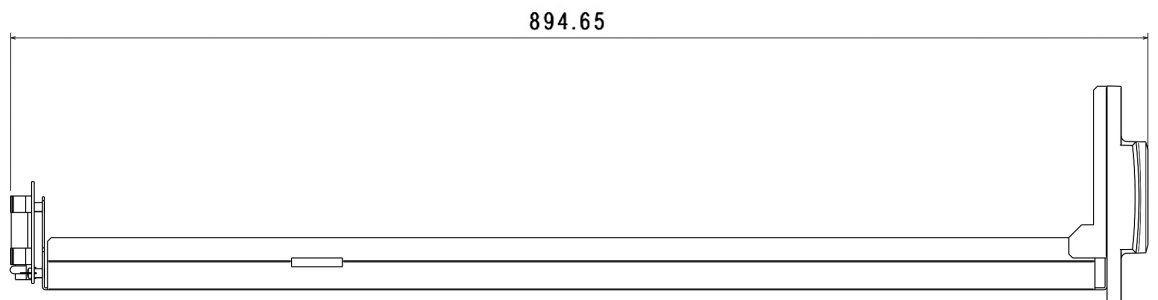
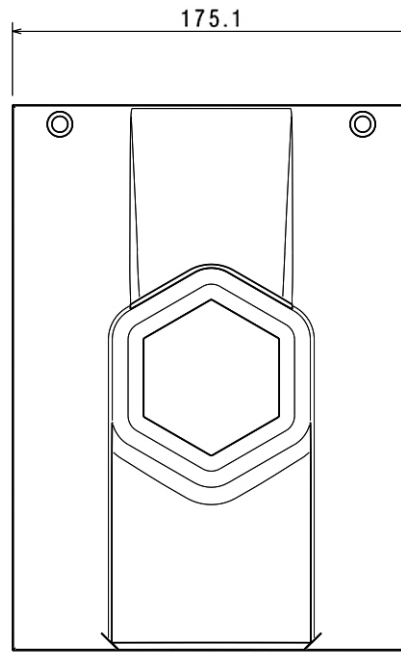




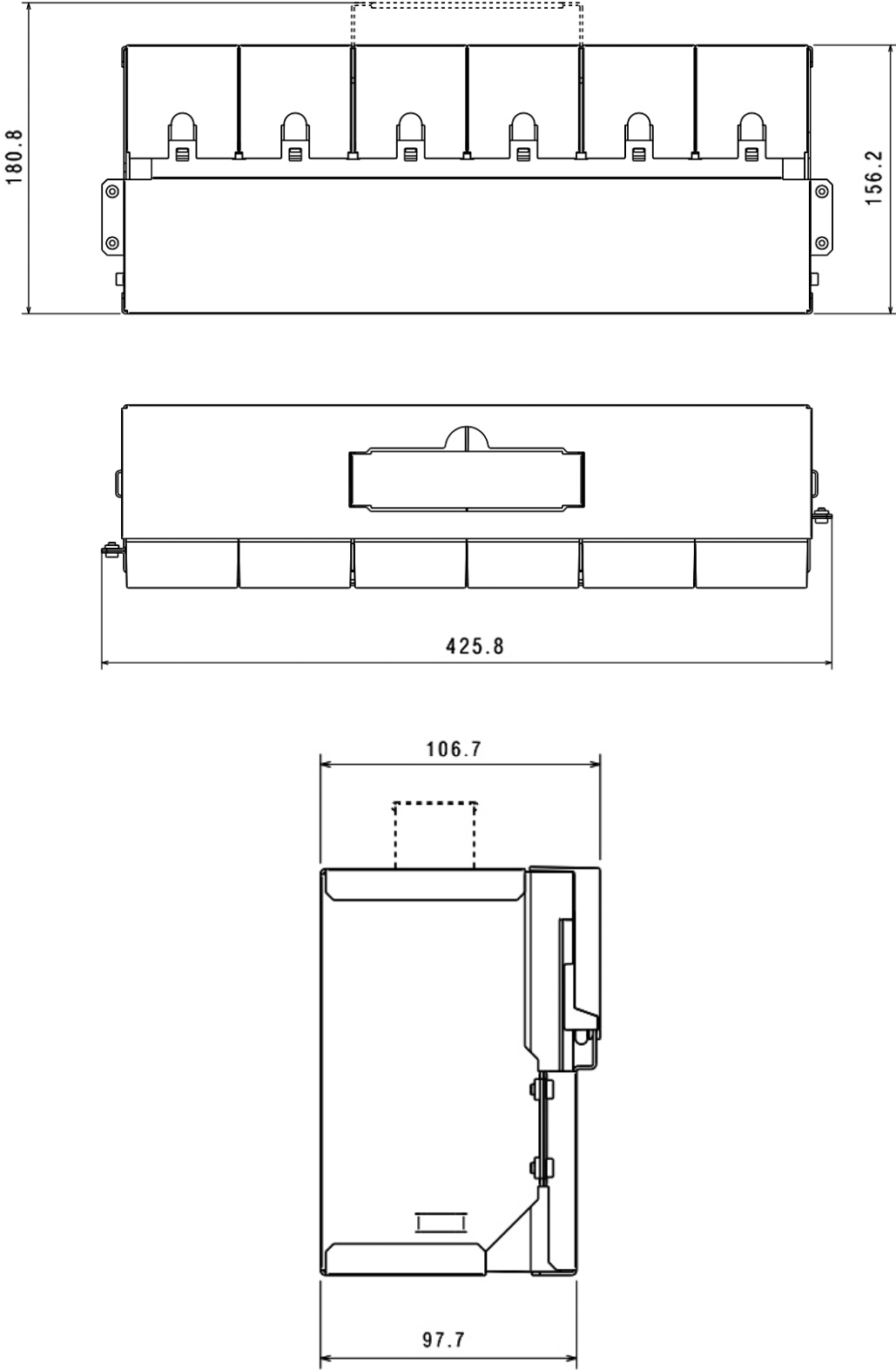
## 8. Mechanical characteristics

### 8.1 Battery drawer

(all the dimensions are in mm)



**8.2 Battery block**  
*(all the dimensions are in mm)*



## 9. Technical data

	3 104 84
Dimensions H x W x D (mm)	1990 x 600 x 1000
Net Weight (kg)	200
Nominal battery voltage (V)	±288 (48 blocks)
Installable Battery Drawers	Up to 16
Weight of one battery block (kg)	17 (9Ah batteries) 19,2 (11Ah batteries)
Weight of one battery drawer with four battery blocks (kg)	72 (9Ah batteries) 81 (11 Ah batteries)
Operating temperature (°C)	0 ÷ +40 (+20 ÷ +25 recommended for longer battery life)
Relative humidity during operation	0% ÷ 95% non-condensing
Ingress Protection Marking	IP 20
Pollution degree	PD2

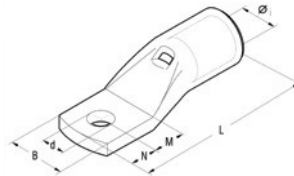
### Reference directives and standards

Marks	CE, EAC, CMIM, UKCA
Safety	2014/35/EU Directive EN 62040-1
EMC	2014/30/EU Directive EN 62040-2

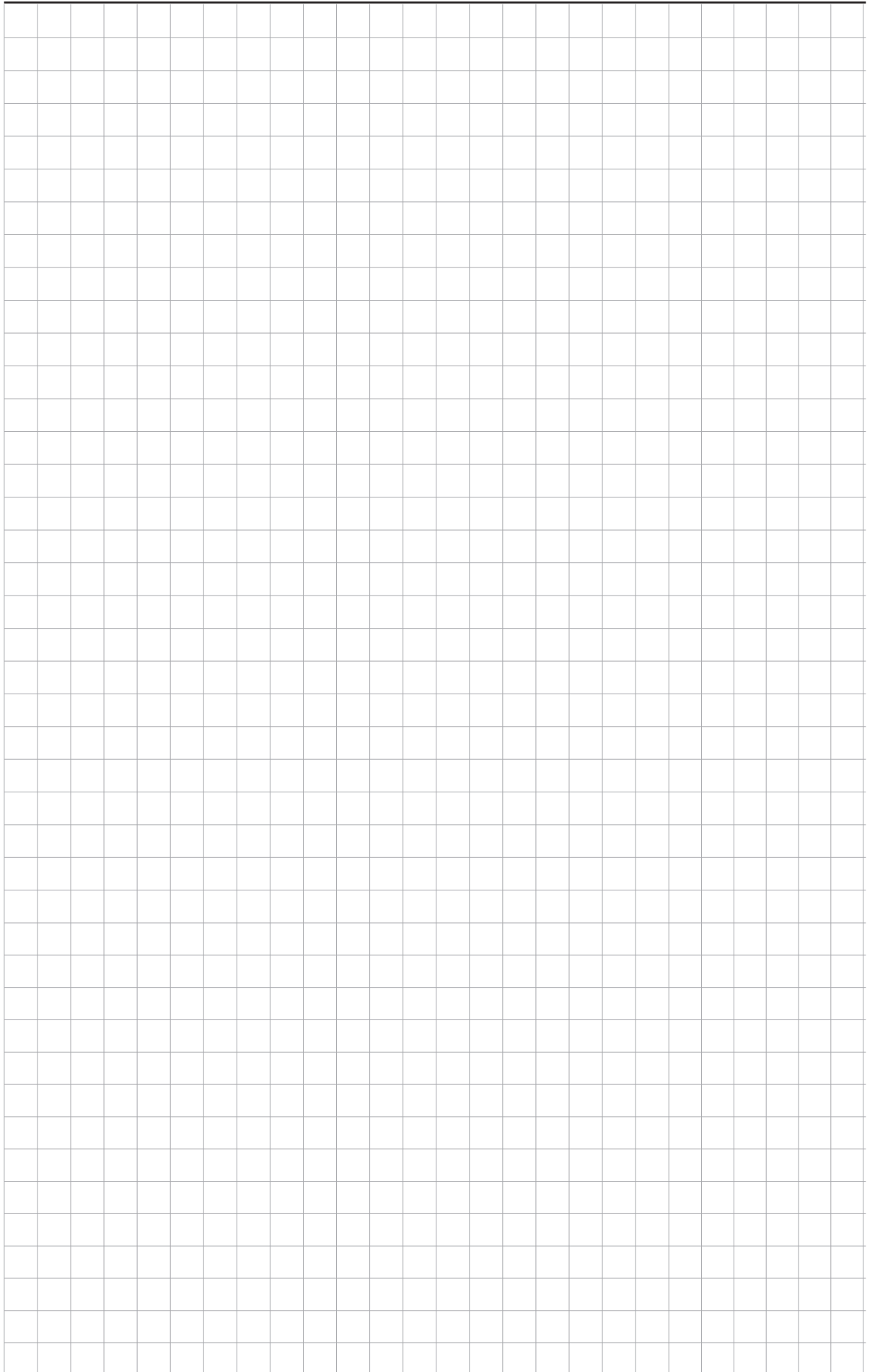


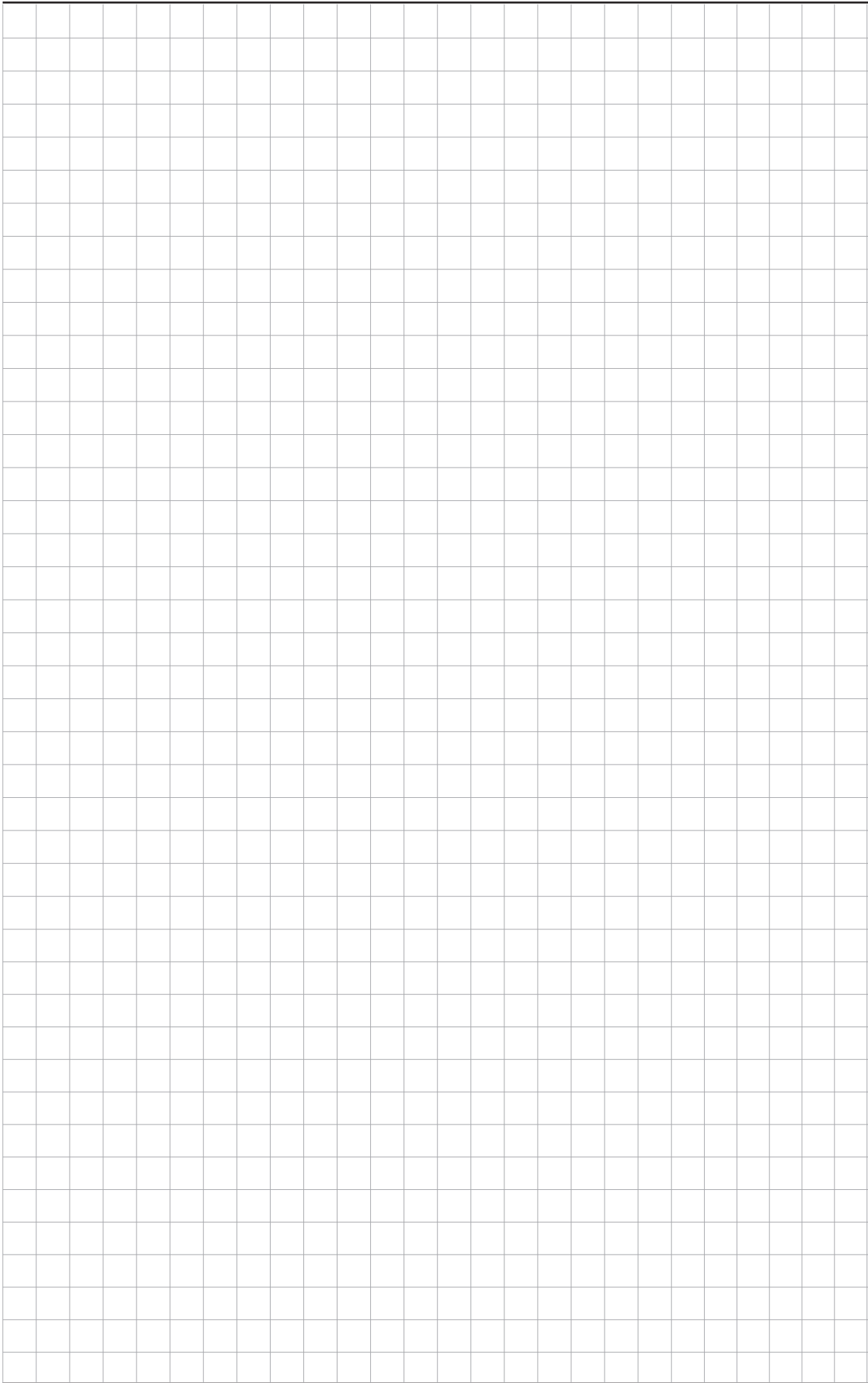
## 10. Tables

**TABLE 1**  
Maximum wire cross sections and maximum crimping lugs



M10 standard palm width	up to 120 mm <sup>2</sup> B = 28,5 mm
M10 contained palm width	up to 185 mm <sup>2</sup> B = 24,5 mm





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┌ Installer stamp ─┐  
└──────────────────┘

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