**5K0 PRO HIGH VOLTAGE BATTERY**

Disclaimer
The contract stipulated between WeCo S.r.l. and the customer regulates the purchase and use of the agreed products, services and features. Some or all of the items described in this document may not be within the scope of the customer's purchase or use. Unless otherwise specified in the agreement, all representations, information and recommendations contained in this document are provided "AS IS", without warranty of any kind, either express or implied.
The information contained in this document is subject to change without notice. Although every effort has been made to ensure the accuracy of the contents, WeCo S.r.l. does not provide any warranty, explicit or implicit, as to their completeness, reliability or suitability for a particular purpose.
WeCo S.r.l. always recommends consulting an experienced technician or professional before purchasing, requesting the most recent version of the manual and technical data sheets from WeCo. Purchase and installation should only be made after careful evaluation of the product, its warranties, and technical documentation.
Although WeCo batteries and inverters do not require constant maintenance, they still need to be monitored and checked on a weekly basis. This allows you to prevent any alarms or malfunctions which, if neglected, could cause greater damage. In addition, batteries and inverters should be inspected regularly, ensuring that the dissipation areas are clean, that the system is functioning properly, and that the installation, connections, and water tightness are adequate.
In the event of an alarm or error that does not self-reset within 24 hours, no manual restart should be attempted. In these cases, the system should be shut down immediately and a specialist technician should be contacted for diagnosis and intervention. Restarting manually is not a solution – it may temporarily clear the error memory without fixing the underlying problem, potentially making the situation worse and increasing the risk of future damage.


## Warning
## Mandatory Reading of the Entire Manual

Failure to review the manual in its entirety may lead to installation errors, improper use, and potential risks to people and property. For correct installation, maintenance, and safe operation of the batteries, always follow all instructions contained in this manual.

## Preface and Disclaimer

Thank you for choosing our product. Our goal is to offer you a high-quality product and reliable after-sales service.
Before purchasing, installing, operating, or maintaining the 5K0 PRO Battery, please read this manual carefully to prevent accidents and protect the product, operators, and users from damage.
This manual contains detailed information on the operation, maintenance, troubleshooting, and safety rules of the product.
Disclaimer
WECO shall not be liable for any damage, malfunction, or injury resulting from installation, use, or maintenance not in accordance with the instructions contained in this manual, including but not limited to the following:
Installation or use in environments that do not comply with local regulations.
Installing, using, or maintaining the battery under conditions inconsistent with those described in the manual.
Disassembly of the product or modification of software code without permission from WECO.
Failure to follow the safety instructions in this manual.
Use of unauthorized or unqualified parts or modules for the system.
Damage caused by abnormal natural conditions (force majeure, such as lightning, earthquakes, fires, storms, etc.).
Damage caused by the transport of the product if the shipment has been arranged by the customer, including unloading by the customer.
Damage due to storage conditions that do not comply with the requirements of the product documentation.
Hardware damage resulting from customer misuse.
Capacity and performance notes
The rated capacity of the battery module is 5.12 kWh with 100% to 0% SOC discharge under the control of the BMS, measured when new and within three (3) months from the date of manufacture, provided that the storage conditions are in accordance with the provisions of this manual.
The capacity is not constant for each cycle and can vary depending on several factors.
The degradation of battery energy is typical of any accumulator and is irreversible, in addition the degradation of a battery is not linear in time and/or cycles and is strongly affected by factors such as temperature, C-Rate and Depth of Discharge (DoD) and frequency of charge and discharge.
Residential models are designed to perform about 1 maximum two cycles per day and the charging and discharging process must normally be spaced out by about 30-40 minutes of waiting in order to allow proper temperature dissipation and limit thermal degradation
The Limited Performance Warranty document defines the parameters to get the best performance out of the battery.
Intellectual Property Rights Notice
All trademarks mentioned in this manual are the property of their respective owners. Any third-party trademarks, product names, trade names, company names, and company names mentioned are trademarks or registered trademarks of other companies, used solely for

descriptive purposes and in the interest of the present manual and interactions with it, without any intent to violate copyright laws.

## The following are strictly prohibited:

Reverse engineering or decompiling the battery software.
Removing or replacing the BMS
Turn around BMS protection functions to achieve performance or to bypass safety actions or BMS lock
Deletion of historical data and BMS alarms
Repairs not authorized by WeCo
Fraudulently obtaining the source code or functions of the software to change its battery thresholds and/or limits
Product specifications may be changed without notice, please ask WeCo for the most updated datasheet

## ATTENTION

THIS MANUAL MUST BE READ IN ITS ENTIRELY

WARNING: The battery may explode and/or catch fire if subjected to strong impacts or punctures and/or if used outside of operating conditions.
WARNING: Use suitable lifting systems to install the battery, as it weighs over 50 kg. The use of mechanical systems is required.

WARNING: The battery may explode or catch fire if exposed to flames, sparks, and/or heat. The technical room must be suitable for the type of battery and must be equipped with appropriate safety systems.

CAUTION: The battery may accumulate stray currents. After switching it off, always wait at least 5 minutes before working on the terminals.
Ensure that the voltage on the low voltage terminals is always 0Vdc.
The high voltage terminals must always be protected by the rubber covers provided during operation and must only be removed immediately before connecting the HV cable.

CAUTION: Always use mandatory PPE when working on the battery.

At the end of its life, this battery must be recycled in accordance with current regulations.
Contact your nearest COBAT center to arrange delivery of your end-of-life product. The product must be delivered by a company that meets the legal requirements, and the customer is always responsible for the cost of return delivery.

Do not open the battery cover for any reason.
Opening the battery is prohibited and potentially dangerous.
Do not short-circuit the battery terminals as this may cause fire or explosion.
Do not use charging devices, cables, connectors, fuses, or switches that are not approved by WeCo.
The battery and its connections, such as cables, switches, fuses, bars, etc., must be inspected, cleaned, and tightened every three months or when necessary, taking into account the environmental conditions and/or stress of use of the system.
Cables and insulators may experience an early reduction in their insulation coefficient if exposed to excessive environmental conditions and stress during use.
Therefore, it is necessary to verify the safety of the system through regular checks, which must be defined by the designer during the design phase.
WeCo declines all responsibility for illegal or unauthorized actions on the battery.

## IMPORTANT SAFETY NOTICE

## System Lock Condition

The battery is equipped with an automatic protection function that stops operation in case of out-of-specification parameters.
In this condition, the system opens the power circuit (technical block).
The status LED and LED bar will show alternating red light with other operating statuses.
In this condition, the battery cannot be used and must be isolated from the rest of the system.
Restoration of operation may only be carried out by qualified personnel and verification of the operating parameters.
An unauthorized or unverified restart attempt on the BMS and inverter may cause risk to people and property, as well as void the warranty.

## Safety disclaimer — Abuse / out-of-spec use

If battery has been abused, over-discharged, over-charged, damaged, tampered with, or operated outside the limits in this manual, stop using it immediately. Isolate it on a non-combustible surface in a ventilated area, keep people away, and contact an authorized installer to handle, inspect, and—if necessary—dispose of it under local regulations. Do not attempt to charge or "revive" any pack or cell at extreme under-voltage; recharging LFP from deep low voltage can cause irreversible damage, venting, or fire. Do not reuse, repair, or harvest parts from a damaged pack. Use contrary to these instructions voids the warranty and releases the manufacturer from liability.

## Safety Disclaimer

Trigger conditions (examples, not exhaustive): any suspected abuse, over-discharge, over-charge, physical damage, liquid ingress, puncture/impact, corrosion, tampering/bypass of BMS, or operation outside the published environmental, electrical, or mechanical limits in the Technical Data Sheet and this Manual.
Stop all use immediately. Power down associated equipment and open the DC disconnect/breakers to isolate the battery from inverters or other batteries.
Isolate and quarantine the battery on a non-combustible surface in a well-ventilated area, away from flammables and out of reach of people and animals.
Do not charge, discharge, or "revive" the battery. Do not reconnect to any charger/inverter.
Contact a qualified/authorized installer or service center to handle, inspect, and—if required—dispose of the battery in accordance with local laws and the manufacturer's instructions.
Mark the unit clearly: "DANGER DO NOT USE ONLY FOR QUALIFIED PERSONNEL".

## Prohibitions

Do not attempt to reuse, repair, recondition, or recycle cells/parts from a battery that has been abused, damaged, or driven into extreme under-voltage, do not remove change BMS or exchange and or reuse parts or an out of spec used battery.
Do not attempt "forced charging" or jump-starting of a battery whose pack voltage or any cell voltage is below the minimum allowable limits specified for the product.
Recharging a lithium-iron-phosphate (LFP) battery from an extreme low-voltage state can cause irreversible internal damage and presents serious safety risks (internal shorting, gas generation, thermal runaway, smoke/fire).

Do not open, disassemble, or bypass the BMS. No user-serviceable parts inside.
Do not transport a damaged/abused battery except if conducted by a qualified professional and in compliance with dangerous-goods rules.

## IMPORTANT INFORMATION

In the event of product updates or other reasons, this document will be adjusted accordingly without prior notice or publicity, it will be made available on the WECO website in the download section.
Unless otherwise agreed, this document is to be used as a guide only and never supersedes the Laws of your State. All statements, information and advice in the documentation do not constitute any express or implied action that contradicts local regulations or standards.
For further information or clarification, please contact us before installing the product.
Official information and the latest data sheet can be found on www.wecobatteries.com.
It is essential that the battery module is equipped with the latest firmware version available. New batteries are always shipped with the latest firmware version available at the time.
From time to time, the firmware will be updated to improve the functionality and performance of the battery.
Firmware is always available on the www.wecobatteries.com/download-area website. Check the website or monitor the APP, in case of critical updates will be sent to WeCo customers by e-mail.
The latest firmware version is always available for free and can be updated by your local installer. You can always contact service@wecobatteries.com for more information on the upgrade process

**CAUTION CRITICAL RELEASE FIRMWARE INSTALLATION REQUIREMENT**
**Firmware & Connectivity Policy, integral part of the Warranty Document**

Critical Firmware Updates. “Critical” releases are mandatory and must be installed within 60 days of release to keep the product safe and the Limited Warranty in force. Critical updates may include safety and performance improvements; adoption is required. Non-installation within 60 days may suspend or void warranty coverage for related failures.
5K0 PRO BATTERY + MASTER CONTROLLER systems includes built-in Bluetooth and Wi-Fi. Updates can be performed directly from a phone via the WeCo Noor Bluetooth App
If you cannot complete the update or need help, contact WeCo Support.
If an update cannot be completed promptly, it is advisable to power the battery off during the transitional period until the update is installed.
Online requirement for 10-year performance warranty.

To benefit from the 10-year performance warranty, the battery must remain continuously online via the WeCo App throughout the warranty term. A cumulative offline allowance of up to 60 days per year is permitted.
If a claim arises while the unit is offline and required telemetry/logs are unavailable either on the cloud or BMS, WeCo may reject the claim due to lack of evidence, per the Limited Warranty.
Ensure your battery is constantly online, this will grant you the latest firmware upgrade, and remote intervention of the tech Support

**WARNING**
**WARNING — ENVIRONMENT & LOCATION LIMITS**
This battery module is intended only for indoor or weather-sheltered, temperature-controlled installations.
No unsheltered outdoor use. Do not install where the unit can be exposed directly to rain, spray, flooding, snow, ice, sand/dust storms, direct sunlight, or wind-driven debris.
Protect against dripping/splashing water, high humidity, condensation, and standing water.
Do not install in locations with aggressive vapors (e.g., chlorine, ammonia, acid/base fumes, solvents, salt-spray/coastal air) or in agricultural/industrial washdown areas.
Operate and store only within the ambient temperature range specified in the Technical Data section. Provide ventilation/thermal management to keep the product within limits at all times.
Shield from direct solar radiation and other heat sources that could elevate enclosure temperature beyond specified limits.
Although the enclosure is rated IP66 for dust/water ingress, this does not make the product suitable for unsheltered outdoor installation.
IP ratings address ingress protection only. T
he unit must still be housed in a protective, weather-sheltered environment that ensures all environmental limits are respected.
Installation must be performed by qualified personnel and must comply with applicable codes and the instructions in this manual and in the Country that shall prevail.
Use outside the intended environment constitutes misuse and may void warranty and shift all risks and liabilities to the installer/owner.
If installation in an outdoor area is unavoidable, the product must be placed in sheltered area that maintains the environmental conditions specified in this manual (temperature, humidity, condensation control, and protection from UV, chemicals, and weather).

DO **NOT OPEN THE BATTERY COVERS. DO NOT REPAIR OR DISASSEMBLE ANY PART OF THE BATTERY.**
**DO NOT OPEN THE BATTERY COVER AND/OR REMOVE THE WARRANTY SEALS**.

## Preamble Disclaimer

Thank you for choosing our product. Our goal is to offer you a high-quality product and reliable after-sales service.
Before purchasing, installing, operating, or maintaining the PRO -Battery Module, please read this manual carefully to prevent accidents and protect the product, operators, and users from damage.
This manual contains detailed information on the operation, maintenance, troubleshooting, and safety rules of the product.

## Disclaimer

WECO shall not be liable for any damage, malfunction, or injury resulting from installation, use, or maintenance not in accordance with the instructions contained in this manual, including but not limited to the following:
Installation or use in environments that do not comply with local regulations.
Installing, using, or maintaining the battery under conditions inconsistent with those described in the manual.
Disassembly of the product or modification of software code without permission from WECO.
Failure to follow the safety instructions in this manual.
Use of unauthorized or unqualified parts or modules for the system.
Damage caused by abnormal natural conditions (force majeure, such as lightning, earthquakes, fires, storms, etc.).
Damage caused by the transport of the product if the shipment has been arranged by the customer, including unloading by the customer.
Damage due to storage conditions that do not comply with the requirements of the product documentation.
Hardware damage resulting from customer misuse.

## Capacity and performance notes

The rated capacity of the battery module is 5.12 kWh with 100% to 0% SOC discharge under the control of the BMS, measured when new and within three (3) months from the date of manufacture, provided that the storage conditions are in accordance with the provisions of this manual.
The capacity is not constant for each cycle and can vary depending on several factors.
The degradation of battery energy is typical of any accumulator and is irreversible, in addition the degradation of a battery is not linear in time and/or cycles and is strongly affected by factors such as temperature, C-Rate and Depth of Discharge (DoD) and frequency of charge and discharge.
Residential models are designed to perform about 1 maximum two cycles per day and the charging and discharging process must normally be spaced out by about 30-40 minutes of waiting in order to allow proper temperature dissipation and limit thermal degradation
The Limited Performance Warranty document defines the parameters to get the best performance out of the battery.

## Intellectual Property Rights Notice

All trademarks mentioned in this manual are the property of their respective owners.
Any third-party trademarks, product names, trade names, company names and company names mentioned are trademarks or registered trademarks of other companies, used solely for descriptive purposes and in the interest of this manual and interactions with it, without any intent to violate copyright laws.
The following are strictly prohibited:
Reverse engineering or decompiling the battery software.
Removing or replacing the BMS
Turn around BMS protection functions to achieve performance or to bypass safety actions or BMS lock
Deletion of historical data and BMS alarms
Repairs not authorized by WeCo
Fraudulently obtaining the source code or functions of the software to change its battery thresholds and/or limits

Product specifications may be changed without notice

## Declaration

In the event of product updates or other reasons, this document will be adjusted accordingly without prior notice or publicity, it will be made available on the WECO website in the download section.
Unless otherwise agreed, this document is to be used as a guide only and never supersedes the Laws of your State. All statements, information and advice in the documentation do not constitute any express or implied action that contradicts local regulations or standards.
For further information or clarification, please contact us before installing the product.
Official information and the latest data sheet can be found on www.wecobatteries.com.
It is essential that the battery module is equipped with the latest firmware version available. New batteries are always shipped with the latest firmware version available at the time.
From time to time, the firmware will be updated to improve the functionality and performance of the battery.
Firmware is always available on the www.wecobatteries.com/download-area website. Check the website or monitor the App, in case of critical update will be sent to WeCo customers by e-mail.

The latest firmware version is always available for free and can be updated by your local installer.
You can always contact service@wecobatteries.com for more information on the upgrade proces

**CAUTION CRITICAL RELEASE FIRMWARE INSTALLATION REQUIREMENT**
**MANDATORY FIRMWARE UPDATES (CONDITION OF SALE)**

By purchasing, installing, commissioning, or using this product, you acknowledge and agree that ongoing firmware updates released by WeCo are required to maintain safety, regulatory compliance, interoperability, and performance.
"Critical Update" means any firmware that WeCo designates as addressing safety, compliance, battery protection, reliability, or material performance improvements.

You must install or delegate others to install on your behalf any Critical Update within 60 (sixty) calendar days of WeCo's notice; failure to do so may void warranty coverage for related faults and constitute misuse/non-compliant operation under the Limited Warranty.
The batteries include integrated Bluetooth® and Wi-Fi hardware; firmware can be updated directly from a phone via the Bluetooth app without the need of a local Wi-Fi network, just a mobile phone is needed.

If you are unable to complete an update, you must promptly contact WeCo for support.
During the transitional period before a required Critical Update is applied, it is advisable to switch the battery OFF and keep it out of service in accordance with site safety and lock-out/tag-out procedures.
The installation or use of unauthorized or modified firmware is prohibited and voids the warranty.

This update requirement forms part of the product's operating conditions and the condition of sale and use.
Nothing in this disclaimer limits any non-excludable rights you may have under applicable consumer law. For full details, including consequences of non-installation, refer to the Limited Warranty.

To benefit from the 10-year performance warranty, the battery must remain continuously online via the WeCo app throughout the warranty period. Offline cumulative allowance is allowed for up to 60 days per year.
If a claim occurs while the unit is offline and the required telemetry/logs are not available on either the cloud or the BMS, WeCo may reject the claim for lack of evidence, according to the Limited Warranty.
Make sure your battery is constantly online, this will ensure you get the latest FW update, remote control and full coverage for the extended performance warranty

## Preliminary notes

### Declaration

The information and indications contained in this manual refer to the WECO stackable battery model 5K0 PRO

In the event of product updates or other reasons, this document will be adjusted accordingly without prior notice or publicity, it will be made available on the WECO website in the download section.
Unless otherwise agreed, this document is to be used as a guide only and never supersedes the Laws of your State.
All statements, information and advice in the documentation do not constitute any express or implied action that contradicts local regulations or standards.
For further information or clarification, please contact us before installing the product.
Official information and the latest data sheet can be found on www.wecobatteries.com.
It is essential that the battery module is equipped with the latest firmware version available. New batteries are always shipped with the latest firmware version available at the time.
From time to time, the firmware will be updated to improve the functionality and performance of the battery and/or inverter.
Firmware is always available on the www.wecobatteries.com/download-area.
The latest firmware version is always available for free and can be updated by your local installer. You can always contact service@wecobatteries.com for more information on the upgrade process.
Keep your system connected to the internet to benefit from firmware update notifications issued by WeCo.

Premise:
To avoid injury to personnel and damage to the product, please read this manual carefully.
This manual provides detailed information on the operation, maintenance, and troubleshooting of the product, as well as health and safety recommendations.
Some users may not find all the information in this manual sufficient or unclear. Therefore, before installing or purchasing WeCo products, they may request a dedicated training course in person or via remote connection.

The Lithium battery installation and maintenance guide is an integral part of the manual and is located on the https://wecobatteries.com/download-area/ website and should be read before installing the batteries.
The general terms and conditions of sale are available on the website wecobatteires.com download area, they must be read before purchasing.

## Declaration

The manufacturer reserves the right to final explanation of any contents of this manual.
These batteries cannot be used to power life-saving devices or for UPS or Back-up use to power or support life-saving medical devices.
The battery capacity is intended to be 5.12kWh in the 100-0% range of the BMS.
Capacity is not constant with each cycle and can vary based on many factors, energy degradation is not constant over time or cycles, and is strongly influenced by temperature, C-Rate, and DoD (Depth of Discharge).
The first 500 cycles are typically affected by a greater decrease in capacity than subsequent cycles.
Before purchasing this product, please read the warranty terms available on our website.
Always check the latest technical data on our website as it may be changed.
If this manual is not clear to you, do not purchase or install the battery, ask for a technical meeting by writing to service@wecobatteries.com.
Limited Performance Warranty Documents set parameters to get the best performance out of the battery based on the standard test condition used by WeCo.
Any additional details about this battery, its BMS and compatibility with inverters can be requested by writing to service@wecobatteries.com.
This battery and its accessories are intended to be installed, maintained, and supervised only by experienced and qualified installers.
All trademarks in this manual belong to their legitimate owners; Third party trademarks, product names, trade names, company names and companies mentioned may be trademarks owned by their respective owners or registered trademarks of other companies and are used for explanatory purposes only and for the benefit of the owner, without any purpose of infringing applicable copyright.
The evaluation of the product is an important and necessary phase and must precede the purchase, it is advisable to evaluate the latest technical data sheets made available on the www.wecobatteries.com website or request a copy directly from sales@wecobatteries.com.
Our products and manuals are mainly dedicated to installers and technicians who are experts in the sector with specific qualifications for electrical systems.
The manual, the system certification and the "first start-up" test certificate or system conformity, of the entire system carried out according to the national standards of your country, must be given to the end user after adequate training on the use and maintenance of the battery and the system in general.
These batteries are intended to be marketed for integration into more complex systems installed only by professional operators.
After reading the manual in full, we hope you can purchase our products.
Before purchasing, please carefully evaluate the technical characteristics with the data provided on our website or by requesting the updated version of the battery model currently in production.
Pay attention to the distinction between BMS temperatures and the operating temperatures of the battery as a lithium accumulator, i.e. the temperatures to which the BMS can be exposed without being damaged, malfunctioning or being affected in the reading of data such as temperatures voltage current (an incorrect reading of the data for exposure to out-of-range temperatures could affect the control and safety logic).
The lithium battery, on the other hand, should not be exposed to temperatures that are too low( below -10°C) or too High ( +55°C), while the temperature excursions of the environment in which they will be installed should remain as constant as possible.
Below you will find correct instructions on the use of the battery and the permissible and recommended temperatures.
The technical data sheets may be subject to change due to market or industrial needs, therefore, the technical data sheets present on third-party websites or in any case distributed in the past may not be updated and in any case correct. Get the latest official releases from sales@wecobatteries.com.
The pre-purchase evaluation is an important phase and for this reason it must be conducted carefully and perhaps with the help of qualified and experienced technicians if your knowledge of the subject is not sufficient.
WeCo batteries are developed for domestic and industrial applications and can only be installed and maintained by experienced and qualified personnel; they are not produced for direct sale to private individuals.
ESS (Energy Storage Systems) batteries for domestic applications are designed to maximize the self-consumption of energy from renewable sources. Use for backup systems, or for UPS systems, is possible within the charge/discharge current limits of the ESS.
This manual provides detailed information on the operation, maintenance, and troubleshooting of the product, as well as health and safety advice; the information contained in this manual may not be sufficient to cover specific applications, so, if your specific case is not mentioned, please do not purchase our batteries until every technical and safety aspect of your specific application has been clarified.
You can request technical support from service@wecobatteries.com.
End of life, end of use and disposal
The Product (battery) is designed for a maximum service life of the first of:
a) 10 (ten) years from the Production Date indicated on the label
b) 7,000 equivalent charge/discharge cycles (DoD 90% at 25°C and C-rate 0.5C)
Upon reaching the first of the limits, the User is required to cease using the battery or undergo a safety assessment validate the safety of the system
Within a reasonable period of time from reaching the limit (point 1), the User must start the end-of-life management according to the applicable legislation in the country of installation, delivering the battery to the collection systems indicated by the manufacturer or to

operators authorized to transport, treat, recycle and/or recover.
The instructions and delivery channels are shown on the label/manual and in the official references of the manufacturer. Abandonment or improper disposal is prohibited.
Any overhaul/regeneration of the battery after the limit specified in point 1 has been reached may only be carried out by a qualified and legally authorized third-party company. This company assumes all responsibility for compliance, safety, and post-intervention performance. The original manufacturer does not warrant or assume responsibility for products that are used beyond limits or remanufactured/tampered without its written permission.
Use of the battery beyond the limit indicated or in violation of the instructions will result in the forfeiture of any conventional warranty and liability and is at the User's sole risk.
Determining Limit Reach
The achievement of the useful life limits is determined by means of BMS logs and/or other objective technical evidence (diagnostic reports, cycle counters, maintenance logs).
WeCo offers two types of warranty on its products, the warranty on manufacturing defects also known as the European warranty and in addition the warranty on performance, this subject to compliance with installation requirements well defined in the warranty document. More information can be found in this manual and on the specific warranty document available for each battery model.

## SYSTEM DESIGN BY EXPERIENCED TECHNICIANS

Systems Design is the process of defining the architecture, components, modules, interfaces, and load data for a system by the customer in order to meet the specified requirements
For a solar system, these components are the PV modules, the inverter/charge controller, and the batteries, as well as the different interfaces of these components.
These systems must be integrated with each other following the respective technical rules and must be compatible with each other.
The design must take into account functional guarantees and performance guarantees in order to guarantee the end customer full satisfaction of the product he will use.
For safety reasons, if the battery is not operating at the temperatures, currents and DODs specified in the performance warranty requirements, it should be inspected frequently according to the conditions of use applied.
WeCo bases warranty and safety on the standard conditions of use described above; Heavier uses and at suboptimal temperatures will have direct effects on premature battery aging and intrinsic safety.
With System Design, the designer, based on the prescriptions of this manual and on his own experience, must guarantee some important steps:
System longevity: Establishing an appropriate frequency for maintenance and inspections can extend the useful life of the system, prevent premature failures, and ensure that the system operates at optimal levels for as long as possible.
Safety: Regular maintenance and inspections help identify and fix potential safety issues before they can cause accidents or malfunctions.
Operational efficiency: A well-maintained system tends to operate more efficiently, with fewer interruptions due to failures or malfunctions, thus ensuring better performance and reliability.
Cost Consideration: While regular maintenance incurs additional costs, it can actually help reduce overall costs in the long run, preventing costly failures and extending the life of the system.
Breakdowns and rapid intervention: in the event of a battery failure and/or alarm, it is mandatory to immediately disconnect the battery from the inverter and keep it off until the technician arrives.
To ensure that these maintenance practices are followed correctly, it is essential that they are well documented and passed on to the end of customer or maintenance person. This includes preparing a detailed maintenance plan, specifying the frequency of various maintenance and inspection activities, based on the specific characteristics of the site and application where the system is installed.

## BATTERY OPERATION

There are several factors that affect the operation of the battery in terms of its ability to provide capacity and life expectancy.
If you respect the battery, it will work safely and efficiently for many years.
Storage
The battery module should be stored in its original packaging, in a clean, level, dry, cool place, and shaded.
The recommended storage temperature is 25°C +/-5 (case b.), but different storage ranges are acceptable:
14°F to +32°F / -10°C to +0°C range: Inspection and recharge required every three months, SOC required at 40-60%
32°F to +86°F range / +0°C to +30°C: Inspection and recharging every six months required. SOC required at such ranges 40-70%
86°F to +113°F / +30°C to +45°C range: Inspection and refilling every three months required. SOC required at such ranges 25-30%
NOTE: Maximum charge is 0.2C at an ambient temperature below 11°C and maximum 0.5C in the range of 12°C to 35°C.
The maximum SoC for maritime transport is regulated by the UN directives or by the transport companies, so it may vary over time.
Inspection parameters: Identify the state of charge, search for alarms and act accordingly, and look for physical damage to the battery module.
For trickle charging, charging between 0.1C and 0.2C up to 50%-70% SOC is suggested and then discharging to the SOC limit allowed by

local regulations.
SOC suggested 30%~50% if stored in stock.
Do not recharge below +10°C
If shipped by sea, you must refer to the UN38.3 standard; for road, rail or air handling, refer to the local ADR codes or similar.

Operating Temperature and Thresholds (even outside the thresholds allowed by the performance warranty)
Many chemical reactions are affected by temperature, and this is also true for the reaction that occurs in a WeCo storage battery.
The chemical reaction of a lithium ion is slowed down by the lowering of the temperature of the electrolyte contained in the battery, which results in a lower capacity and a higher long-term performance decay index in direct proportion to the departure from the optimal temperature prescribed by WeCo.
A new battery that provides 100% of the rated capacity at 25°C will only provide about 75% of the rated capacity when deployed at 10°C.
At 0°C charging is not normally allowed by the BMS, except for the emergency condition managed by the BMS. ( -7°C allowed for emergency charging)
At temperatures below -7°C, the BMS will only allow 0.03C of charging current for emergency situations; at temperatures below -10°C, charging is prohibited.
Although it is possible to discharge the battery down to -20°C, it will then be impossible to recharge it as the charging phase is prohibited at 0°C.
These thresholds do not mean that the battery warranty applies even under such conditions, even if allowed by the BMS as extreme values.
The logic of the BMS does not coincide with the thresholds to be respected in order to benefit from the performance warranty, as compliance or non-compliance with the latter is up to the end customer, while the limitations inherent in the battery safety thresholds are set by the BMS as factory data.
The warranty conditions (Functional and Performance) are well described in the "Limited Warranty" document and should be read before purchasing the product.
For the performance warranty, WeCo requires that the batteries are installed in a closed environment that allows the maintenance of a temperature in the range of +11°C and +35°C, (thermoregulated) that does not allow condensation or humidity formation above 80%, ventilated and healthy.
For example, the functional guarantee (pursuant to European Regulations) prescribes that the installation of batteries with IP20 must be indoors, i.e. indoors, with controlled humidity and temperatures, while the performance warranty prescribes that charging and discharging must be carried out between 11°C and 35°C at 0.5C and DoD 80%; any use outside these requirements is not covered by the performance warranty.
For the warranty against manufacturing defects, higher temperatures are allowed, i.e. +0°C + 40°C, always indoors, ventilated room and without condensation formation in order not to lose the right to the warranty for manufacturing defects (European warranty).
Most battery capacity/life issues can be traced back to improper charging. Incorrect charging settings can lead to overcharging or undercharging conditions; any incorrect charging process will affect the battery's life or its ability to retain power.
The lower the C-Rate of the charge/discharge process, the more the battery will benefit from long-term performance.
Depth of Discharge (DoD %)
The depth of discharge is a function that is implemented through the setting of the hybrid inverter, compatible with WeCo.
The deeper the discharge, (e.g. DoD 100% means completely discharging the battery), the shorter the battery life over its estimated useful life.
The number of cycles and the DoD specification will affect the expected life in years that the battery/battery system will provide prior to replacement.
To maximize the remaining capacity over the battery's useful life, set the inverter's DoD to 20%, this will help maintain health (SoH) for longer.
The functional warranty indicates the maximum DoD at 100% because both the logic and the hardware of the battery have been verified and tested to achieve it, while the performance guarantee establishes that the maximum value of the DoD % (to be set in the inverter) must not exceed the value of 90% at 25°C 0.5C, without prejudice to the previous requirements.
For safety reasons, if the battery is not operating at the temperatures, currents and DODs specified in the performance warranty requirements, it should be inspected frequently according to the conditions of use applied.
WeCo bases warranty and safety on the standard conditions of use described above; heavier use and at suboptimal temperatures will have direct effects on the premature aging of the battery and with its intrinsic safety.
C-Rate
The value of the current used to charge and discharge the battery is expressed in C (1C = 100A, 0.1C = 10A in the case of the PRO -100Ah battery).
Charge/Discharge
Most battery capacity/life issues can be traced back to improper charging also due to improper location. Improper charging settings can lead to an overcharge or over-discharge condition or out-of-range current for the temperature condition and SOC%.
WeCo only guarantees batteries connected via CAN/BMS line to the compatible inverter (see compatibility list on the www.wecobatteries.com website) and used according to the warranty instructions published on the website.
CAN/BMS communication is essential both for active and passive safety reasons and in order to be able to conduct all active control interactions with the inverter. The BMS has dynamic algorithms that vary according to current or previous conditions stored during the charge-discharge or stand-by phases.
Modern inverters/charge controllers are equipped with a CAN/BMS interface and no special settings are required to charge and discharge the battery, except for the setting of the charge/discharge power and the DoD% (if the customer wants to comply with the

STC requirements, he must read and comply with the warranty conditions defined as STC and set them on the inverter).
Maintenance at optimal temperature, on the other hand, must be guaranteed by the technical room and the air conditioning equipment installed in it, the inverter is not able to interact with the settings with reference to the temperature of the environment in which it is installed, also because the inverter and battery could be exposed to different environmental factors in different environments.

Warranty (Functional Warranty Against Manufacturing Defects) and Performance Warranty
Although the battery BMS allows a wide range of use both in terms of temperature and charging currents, this should not be interpreted as an implicit authorization to use the battery at these levels with reference to the performance warranty.
For the purposes of the performance warranty, it is mandatory that the battery is used within the range of temperature and charge/discharge current and depth of discharge indicated in the warranty itself and also reported in these paragraphs.
Any other use, even if permitted by the BMS thresholds, is not covered by the performance guarantee.

## Firmware Updates

In the event of BMS firmware updates as a result of improvements, corrections, or other reasons, this manual and warranties may be updated accordingly. Check the release notes for critical firmware on the site www.wecobatteries.com at your distributors. Critical Release Firmware must be installed as per warranty requirements.
To obtain support if your system is not equipped with a Wi-Fi module, please contact service@wecobatteries.com.
All WeCo batteries produced since the beginning of 2019 can be equipped with a Wi-Fi system for connection to the WeCo Cloud if they are not directly equipped with it, this solution ensures that you are always updated to the latest firmware version notified in the APP, the Upgrade function must still be piloted by the user as during the update the battery will have to turn off for safety reasons and it is therefore necessary to plan this action in such a way that no inconvenience is created for the users of the system.
The firmware update can also be carried out locally via Bluetooth App, even in the absence of Wi-Fi; you must have a 4G connection and keep the Bluetooth App open until the App displays: ''NEW FIRMWARE AVAILABLE'' after which you can reach the battery in an area not covered by data signal and/or Wi-Fi and perform the firmware update via the BT connection.
The customer has the right to subscribe to the newsletter to obtain information regarding the firmware release and any other communication regarding the products and their use.
Any security enhancement update is released as critical and must be installed by the customer or their designee within the deadline
Sign up for the WeCo newsletter to receive emails with your battery's technical updates and critical firmware update

## ERRORS

In the event of a permanent error on the LCD display or on the APP, do not attempt to restart or reset the battery and contact the after-sales service, incorrect maneuvers could cause damage to people or property, isolate the battery from the inverter immediately if such errors are detected.
BMS
acronym for Battery Management System, which is a combination of sensors and processors assembled in PCBs in order to monitor and control cells under various aspects such as: Temperature, Current, Voltage.
The logical part, on the other hand, has multiple functions of processing all this data and controlling the battery to stay within defined thresholds.
The BMS also serves as an external communication interface with the inverter or charger controller to actively set the operating parameter that the battery can withstand at that particular time.
The BMS logic part is also responsible for calculating the SOH SOC and storing real-time battery data, warnings, alarms, operating time and various other useful parameters
SOC
The soc is not measured; it is a calculation derived from quantities such as voltage, current, and temperature.
State of charge (SOC) calculation in lithium batteries is a method used to estimate the percentage of charge remaining in a battery.
The calculation is based on voltage, current, and temperature, and can also be used with algorithms to account for age and battery usage history.
The SOC value is an estimate and is not accurate as many factors may affect the daily calculation, for this reason it is important to reset the SOC calculation by fully charging a battery to the maximum, to reach 100%, at least once a month, the user is responsible for charging the battery at least once a month to 100%, Reaching 99% is not enough.
This will reach the upper limit of the battery and the SOC can be reset to a known point.
SOH
SOH is an estimate expressed as a percentage, which indicates the current capacity of a battery compared to its initial condition when it was new.
It reflects the battery's ability to store and provide energy during aging, SOH is not a reliable value and has no contractual value, it serves as a statistical approximation of battery use.
It is an indicative and statistical figure with no contractual value
Optimal chemical reactions: Chemical reactions within the battery occur efficiently within the cell temperature of +15 °C +30 °C, providing a balance between performance, longevity and safety
Optimal temperatures: For any lithium-ion battery the best operating cell temperature is between 20 °C and +30 °C, which means staying within an ambient temperature of +15 °C + 25 °C

Optimal temperatures for improved safety and performance: Optimal capacity, charging speed, and cycle time are guaranteed within the temperature ranges stated above. Installing batteries in air-conditioned environments such as cabinets or technical rooms is always the best solution for their safety and longevity.
Reduced capacity: caused by the temporary effect of temperature on chemical reactions but it is also an irreversible effect caused by the three factors: Use/current ratio – Temperature of use -Aging
Slower charging: This is typically a reaction of the BMS to impose a slow current due to low temperature; this leads to an irreversible effect in addition to the reduced capacity effects explained above. Slow charging is also a good practice when the battery is at its optimal temperature, in fact using the battery at 0.2/0.5C will ensure greater capacity/safety/longevity
Plating effect: In low-temperature operations, so charging and discharging at very low temperatures, lithium deposits on the anode can lead to internal battery damage, early loss of capacity, and reduced safety.
Higher capacity and conductivity: High cell temperatures (above 30-35°C) can increase the relative capacity and conductivity of the battery. Giving a false effect of ‘better performance'. This is a short-term benefit as battery degradation accelerates to high temperatures. Accelerated aging/degradation: Exposure to high temperatures leads to accelerated aging of the battery. It can cause electrolyte degradation, separator damage, and increased internal resistance, especially under low voltage and persistent low temperature conditions. Thermal runaway: The cell exposed to high temperatures can overheat and potentially lead to a cell valve vent and/or fire due to electrolyte gasification.
Thermal runaway due to plating and dendrites: a "sneaky" consequence due to misuse of a lithium battery, e.g. exposure to low or high temperatures, excess discharge, excess exposure to low voltage in a cold environment, thermal runaway, cell venting due to an internal short circuit, and increased resistance that will cause persistent short circuit and cell deformation.
The galvanic effect is also a consequence of extreme undervoltage and subsequent reuse of the battery and in the long term could cause cell malfunction and possible short circuits, which is why a lithium battery found in extreme undervoltage conditions must never be reused and must be disposed of at a center authorized by a qualified company.
Temperature Management Systems:
The fact that the battery PRO All-In-One is equipped with a heating system should not be understood as an implicit authorization to install the product in cold and/or unhealthy places, the heating system serves as an aid in the event that the temperature of the room falls below the permissible value for recharging.

## ATTENTION

External protection switches between inverters and batteries
External protection switches. Switches and external protections must be sized, selected and installed according to the indication of the system designer according to the wiring diagram, the available short-circuit currents, the installation environment and the safety requirements of the site.
These devices (e.g. switches-disconnectors, MCB/MCCB, RCD/RCCB, SPD, DC/AC disconnectors, emergency stops) must guarantee visible disconnection, adequate breaking capacity, selectivity and coordination with the internal protections of the inverter and batteries.
Additional safety systems (e.g., fire, barriers, ventilation/extraction, monitoring) may be required depending on site characteristics and applicable regulations. Compliance with local standards and regulations remains the responsibility of the designer/installer.

Legal Information
Unless otherwise agreed, this document is intended to be used only as a guide to the installation, maintenance and management of the product, all statements, information and advice contained in the documentation do not constitute any express action or implied statement in contradiction with local regulations or standards.
For more information, please contact us.
Official information and the latest data sheet are available on www.wecobatteries.com; however, they can be requested in real time at service@wecobatteires.com. Hyperlinks, third-party links, digital datasheets published on web social media or even printed in print media may not be updated to the current version of the product. Before purchasing the product, check the website for technical data and warranties updated to the current date.
It is essential that the battery unit is equipped with the latest firmware version available on the www.wecobatteries.com site or WeCo APPs.
From time to time, WeCo will release a new firmware to improve the functionality of the battery, if your battery is equipped with Wi-Fi (paid accessory) and you are registered on our APP, the new firmware will be visible in the APP and can be updated with a simple click from your phone.
The latest firmware version is always available for free; the battery firmware can be updated by the local installer via RS232/USB and Windows PC (reserved for installation technicians) or via APP for batteries equipped with Wi-Fi dongles.
You can also write an email to service@wecobatteries.com to understand and be supported in the upgrade process.
To benefit from the guarantee, the request must be received within 10 days of the event, by sending a request via email to service@wecobatteires.com or by filling out the RMA ticket

The 5K0 PRO is designed to be used only in sheltered and restricted access environments.
The IP rating should not be understood as implicit authorization for outdoor installation.
In any case, installation must be provided in protected and sheltered environments from the weather
The place must be ventilated and dry, sheltered from extreme temperatures, which are harmful to the life and safety of the battery.
Use in direct outdoor environment without any shading and and or sheltering or not compliant with the IP degree is prohibited and potentially dangerous to the health of people and/or property

## Production guarantee

Although the battery BMS allows for a wide range of use, both in terms of temperature and charging currents and DOD, this should not be interpreted as an implied authorization to use the battery at these levels.
For purposes of the Performance Warranty, it is mandatory that the battery be used in the range of temperature and charge/discharge current and depth of discharge indicated in the Performance Warranty.
The capacity is understood to be of the new product, within 3 months of production and stored as prescribed, the capacity test must be carried out at a base temperature of 25°C with saturation charge of the cells and then discharge test at 0.2C as prescribed by the warranty conditions. Write to service@wecobatteires.com for more information.
See the Limited Warranty Document for more details

## Performance guarantees

This is an additional warranty and applies to the performance warranty expressed in cycles, provided that the battery has been used in accordance with the performance warranty usage criteria and only to batteries connected via a BMS line to an approved inverter. The battery's operating parameters must remain within the performance warranty terms throughout its useful life, otherwise the performance warranty will not apply.
Any other use, even if permitted by the BMS ranges such as limits exceeding the values indicated by the performance warranty, is not covered by the performance warranty, but the legal warranties remain valid.
See the limited warranty document available on the website www.wecobatteries.com in the download and warranty area.

## Important Battery Safety Information

Knowing a lithium battery is important for good and optimal storage. An additional information guide to the manual is available and you can request it from WeCo by writing to service@wecobatteries.com

## MISUSE

It is not allowed to use a battery that has been affected by:
-Overvoltage
-Under voltage (excess discharge beyond the safe limit)
-Overtemperature
-Under temperature
-Overcurrent.
It is forbidden to use a battery that exceeds the operating limits of the BMS and the storage and use limits indicated in this manual
Nor is it prohibited, as it is absolutely dangerous, the battery must be disposed of in an authorized landfill
The use of batteries that have been used outside the operating parameters is dangerous and must be avoided at all costs.
It is absolutely forbidden to remove the BMS and replace it in order to continue using the battery.
Do not attempt to restart or re-operate the battery after such events by acting on the BMS or changing the functions of the BMS

# Scheduled Maintenance and Inspection Procedure – WeCo PRO

Maintenance and Inspection Procedure – WeCo 5K0 PRO Battery + Master controller

## 1. Purpose and Responsibility

This procedure defines activities, frequency, acceptance criteria and records for the routine maintenance of the PRO System system. The execution is reserved for qualified and authorized personnel. The designer/installer/operator is responsible for compliance with applicable standards and for maintaining the required environmental conditions.

## 2. Preliminary safety (mandatory)

PPE: Insulated gloves, goggles/visor, anti-static shoes; DPI arc-flash when appropriate.
LOTO: Apply Lock-Out/Tag-Out on all sources (AC network, PV/DC, groups).
No voltage: Check with a CAT III/IV multimeter that the terminals are ≈ 0 V before operating.
Work area: forbidden to non-professionals; ensure adequate ventilation and lighting.
Prohibitions: no DC hot plug, no live parts, no use of non-approved spare parts.

## 3. Conditions and tools

Environment: site sheltered from precipitation/splash/dust; no persistent condensation.
Minimum tools: calibrated multimeter, torque wrenches with certificate, suitable anti-oxidation protective spray, non-conductive cleaning kit, PRO phone with WeCo APP.
Tightening torques: Only follow the official table in the PRO manual.

## 4. Frequencies

Monthly (30 days): 100% SOC verification via APP; alarm/log check, the system must be 100% calibrated with a forced charge if necessary
Quarterly (3 months): general cleaning/inspection; electrical checks; APP/SOC-SOH verification.
Six-monthly (6 months): in-depth HV BOX checks, breakers, contactors, fast-plug, RJ45; tightening and mechanical status recheck.

## 5. Activities and acceptance criteria

5.1 Monthly verification (30 days)
Activity
Check via WeCo APP: SOC, SOH, voltages/currents, temperatures, events/alarms.
Confirm SOC achievement = 100% at least 1 time/month (full equalization cycle, if expected to be forced by the inverter logic).
Acceptance criteria
No active/pending alarm; SOC 100% achieved; deviations readings consistent with specifications.
Corrective
In case of repeated alarms or failure to reach 100% SOC for 2 consecutive cycles: open tickets to WeCo Service, register Case ID and follow instructions.

## 5.2 Quarterly Audit (3 months)

Activity
Cleaning/visual inspection: Remove dust and foreign bodies; check for oxidation/rust on terminals, BUS BARS, connectors, body.
Electrical connections: check tightness (see torque table in the manual); check the integrity of the DC/AC cable insulation and correct installation (no crushing/radius < minimum).
APP & monitoring: analyze SOC/SOH graphs; check V/I consistency between modules.
Acceptance criteria
Dry and clean surfaces; no visible oxidation; tightening within tolerance; no sheath damage; regular SOC/SOH trends; Differences in module voltages within manual limits.
Corrective
Cleaning with a suitable product; restoration of rubber/silicone protections; restoration of tightening; replacement of damaged components/kits only with WeCo spare parts.

## 5.3 Semester Verification (6 months)

Activity
HV BOX: check power and communication wiring; inspect power and CAN terminals; open/close test breaker; contactor test with emergency stop simulation.
Fast-Plug: check for play/wear/deformation; check for water tightness (gaskets, contact surfaces).
RJ45/CAN: check cables free of crushing/cuts; inspect plugs/ports for absence of oxide/corrosion; check firm hooks and correct 120 Ω termination where provided.
Mechanical checks: recheck tightening with a torque wrench; check brackets, screws and anchors.
Advanced cleaning: remove any deposits, use anti-oxidation spray where necessary.

## Acceptance Criteria

Breakers/contactors with smooth functionality (no gluing/delays); stable CAN continuity (no errors/CRC in log); undamaged fast-plugs; RJ45 oxide-free; compliant couples; no cracking, no foreign body.

## Corrective Action

Replacement of faulty/worn components; gasket restoration; oxidation restoration; firmware update when requested by WeCo.
6. Records and traceability (mandatory)
Fill in maintenance checklists with date, time, operator, serial numbers and results.
Store APP logs/screenshots (SOC/SOH/ALARMS) and tightening reports (applied values).
Open tickets to WeCo in case of anomalies and write the case ID on the checklist.
Keep records for at least 5 years (or period required by local law/contract).
7. Non-conformity and warranty
Failure to carry out the planned activities, the use of non-approved spare parts or environmental non-compliance may result in warranty limitations/exclusions within the limits of the law and the WeCo Warranty Terms.
Any non-conformity must be removed before recommissioning; commissioning with open defects on safety/insulation/tightening is prohibited.

## Operational annexes

Maintenance checklist (monthly/quarterly/half-yearly) with signature fields and notes.
Tightening torque report (official manual table )
Intervention report form and attachments with "before/after" photos.
This document introduces the main features, component composition, installation and use, maintenance and maintenance of the hybrid bidirectional inverter The All-in-One Solar Storage System (hereinafter referred to as 5K0 PRO ).

Maintenance Checklist

| | | | |
|---|---|---|---|
| Operator Name Surname | | Date | |
| Company | | Site/Plant | |
| Verification Type | □ Monthly (30 days)<br>□ Quarterly (3 months)<br>□ Half-yearly (6 months) | APP saved logs | □ Yes □ No |
| SERIAL BATTERIES | HV BOX SERIES | INVERTER MODEL | SERIAL INVERTER |
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| Activity | Outcome (□ OK / □ N.C.) | Note |
|---|---|---|
| APP – 100% SOC Achievement Verification (at least 1x/month) | □ OK □ N.C. | |
| APP – No Alarms/Warnings and SOC/SOH Reading Consistency | □ OK □ N.C. | |
| Cleaning – No dust/deposits/moisture | □ OK □ N.C. | |
| Visual inspection – No oxidation/rust on the body, clamps, connectors | □ OK □ N.C. | |
| Electrical connections – Tightening according to WeCo manual table | □ OK □ N.C. | |
| DC/AC Cables – Integrity, Insulation and Proper Routing | □ OK □ N.C. | |
| HVBOX – Intact power/COM wiring | □ OK □ N.C. | |
| HVBOX – Breaker: open/close test | □ OK □ N.C. | |
| HVBOX – Tripping contactors: emergency stop simulation test | □ OK □ N.C. | |
| Fast Plug – Mechanical integrity (no play/wear/deformation) | □ OK □ N.C. | |
| Fast Plug – Tenuta acqua: guarnizioni integre e sedi pulite | □ OK □ N.C. | |
| RJ45 – Cables without abnormal crushing/cuts/bends | □ OK □ N.C. | |
| RJ45 – Oxide/Corrosion Free Plugs and Interior Doors | □ OK □ N.C. | |
| RJ45 – Firm hooks, no false contacts | □ OK □ N.C. | |
| Mechanical Fixings – Brackets and screws intact, no cracks | □ OK □ N.C. | |
| Advanced Cleaning – Contacts treated with anti-oxide protective (if necessary) | □ OK □ N.C. | |
| Notes/Anomalies found | □ OK □ N.C. | |

Operator Declaration:
The activities listed above have been carried out according to procedure and in compliance with safety regulations.
THERE ARE NO DISCREPANCIES □
DISCREPANCIES FOUND, THE SYSTEM IS ISOLATED AND MADE SAFE □

| Operator signature | | Time and data |
|---|---|---|
| | | |

# About this document

## Validity and acquisition of information

This manual applies to the WECO PRO - battery module + Master controller. Only qualified personnel authorized under the laws of their country may install, troubleshoot, and maintain battery modules.
In the event of a product revision, this manual will be modified accordingly. Unless otherwise agreed, this document is intended solely as a guide, and all statements and information contained in the documentation must not contain any express contradiction with local regulations or standards.
For further information, please do not hesitate to contact us.
Official information and the latest technical data sheet are available at www.wecobatteries.com.

## Subject matter

The instructions contained in this document may only be carried out by qualified persons within the meaning of applicable laws:

- Installation and maintenance person (authorized supplier or installer)
- Owner or User trained and informed by the installer

Failure to do so shall result in any warranty or liability of the manufacturer being disclaimed.

## Contents of the manual

This manual contains information and instructions on safety, battery module overview, installation, electrical connection, maintenance and storage, battery module disposal, and technical parameters. Please finish reading this manual carefully before performing any operation on the battery module.

## Firmware and software

It is essential that the battery module is equipped with the latest firmware version available. The new batteries are equipped with the latest firmware version, however before commissioning please check via Bluetooth or Wi-Fi APP for the latest available firmware version or search for it on https://wecobatteries.com/download-area/.
From time to time, the firmware will be updated to improve the features and capabilities of the battery.
The latest firmware version is always available for free and can be updated by your local installer. You can always contact service@wecobatteries.com for more information about the upgrade process.
In the case of a critical update release, the user must install the firmware within 60 days of release.
To stay up to date on firmware releases, please register for the newsletter, check the APP for new firmware notifications and/or check the weco website download area for your battery model.

## Warning symbol

| Label | Detail |
|---|---|
|  Warning | WARNING provides information that should be noticed and taken care of tag. |
|  ATTENTION! | CAUTION represents situations that may cause property damage if not avoided. |
|  Danger | DANGER represents hazardous situations that can cause injury if not avoided. |
|  Information | Used to highlight important/critical information, best practices, tips, etc. "Instructions" are not safety information and do not include information about people, equipment, and environmental injuries. |
|  Electric Shock Warning | This label indicates that there is high voltage inside the product and touching it may cause an electric shock. |
|  Class 9 Miscellaneous Hazardous Substances and Objects | Substances and objects which, during transport, present a hazard that is not included in any of the other classes are classified in class 9. |
|   The battery must be recycled. | The battery must be recycled |
|  No fire symbol | Fire is strictly forbidden within 40mt |
|  Dangerous goods | This label indicates that there is a hazardous risk of explosion that could be induced by the product |
|  Limit temperature mark | This label indicates that there is a temperature limit of the product. |
|  Keep dry | This label indicates that the product is capable of continuing to do so. |
|  Caution: may generate flames | This label indicates to avoid fire to the product. |
|   UN Mark 3480 | Follow the UN regulations in place to ensure the safety of those transporting for lithium battery products. |

## Description of the certification mark

| Icon | Name | Meaning |
|---|---|---|
|  | Follow current UN regulations to ensure the safety of those transporting products with lithium batteries | This product meets CE certification standards |
|  | EU WEEE logo | EU WEEE logo EU RAEE Logo |
|  | RoHS Mark | This product is RoHS compliant. |
|  | Recycle Mark | The battery is recyclable |

The battery is recyclable and must be recycled by a specialized company in accordance with the directives of your municipality or country of residence.
The battery, when is at the end of its life, shall be delivered to the nearest recycled center appointed by your distributors.

## Safety Instructions

### Intended Use

5K0 PRO is a lithium iron phosphate battery module with DCDC converter from 51.2V to 450Vdc
If used with a high-voltage inverter, it must be equipped with HV BOX.

 **WARNING!**

The working voltage range is 420/480Vdc via DC/DC converter
The nominal voltage is 450Vdc
(*Voltage ranges are estimates only as they always depend on interactions with other devices and environmental conditions).
Make sure you use the correct inverter type or charging parameters before connecting it to the battery.
Ensure that the battery configuration is compatible with the inverter's operating range.
Use only WeCo-approved inverters.

### PERSONNEL REQUIREMENTS

Subjecting the battery to an unsuitable operating environment or damage, misuse, or abuse may result in health and safety hazards such as overheating or the potential for electrolytic smoke. All personnel must comply with safety precautions and observe all warnings as detailed in this document.
If any of the safety precautions or procedures described in this manual are not fully understood by the reader, the reader should not perform any operations on the battery until it has contacted the WeCo Technical Service Representative for clarification and confirmation of understanding of the correct procedure.

 **WARNING**

Installation personnel should not wear metal objects, such as watches, jewelry, and other metal objects when performing installations.
Do not store uninsulated tools in tool pockets or belts while working near the battery to avoid short circuits and personal injury.

## WARNING!

The safety guidelines included in this document may not include or consider all regulations in the area of installation/operation.
When installing and operating this product, the installer must review and consider applicable state and local laws and regulations in accordance with the product's industry standards.
Never install the battery within 40 m from gas pipes, fuels, flammables materials and near to the fire escape routes.
Always follow the safety inspector's instructions for the design and safety precautions.
Battery Handling and Moving
Use the original packaging and follow all safety instructions if the battery module needs to be moved, to avoid damage to the product and personal injury.
• The battery module and its accessories must be protected from damage before and during transport and handling.
• Do not pull, drag, or impact the battery module.
• Before handling and moving the battery module, measure the voltage at the point of the terminal before coming into contact with any terminal surface, to verify that there is no risk of electric shock.

Hazardous material
The materials contained in this product may pose a hazard only if the integrity of the cell or battery is compromised, physically, thermally, or electrically abused.
The following are the expected risks in such conditions: Causes skin irritation. It causes severe eye irritation. It can cause an allergic skin reaction. It causes damage to organs (bones, teeth) in the event of prolonged or repeated exposure. Very toxic to aquatic life. Harmful to aquatic life with long-lasting effects.

## Protection

Do not eat, drink, or smoke when using this product.
Wear gloves/protective clothing/eye protection/face protection.
Wash thoroughly after handling.
Work clothes contaminated during processing should be cleaned before the next use.
This product is a "hazardous chemical" as defined by the OSHA hazard communication standard, in any case it is classified as DG9 and UN 3480, so precautions are necessary in its processing, storage, transport and disposal, Read the regulations in force in your country.
Additional information is provided in the MSDS SDS Safety Data Sheet and UN 38.3 Report

## WARNING

Additional notes: Do not open or disassemble the battery. Do not dispose of in fire, mix with other types of batteries, charge beyond the specified speed, improperly connect, or short circuit, which may cause overheating, explosion, or loss of cell contents. Do not open or disassemble. Keep away from heat sources/sparks/open flames/hot surfaces.
Do not wear metal ornaments. Always use personal protective equipment and personal protection against electric shock, shock, and ejection.
Action in case of exposure
Under normal conditions of processing and use, exposure to the chemical constituents of this product is unlikely but not impossible. The chemicals are contained in sealed aluminum housing, while the cells are fixed in a steel casing. The risk of exposure occurs only if the battery is used mechanically, thermally or electrically abnormally or as a result of an accident.

## INFORMATION

If battery modules leak electrolytes, exposure to the leaking chemicals should be avoided. Contact may cause skin irritation and chemical burns. If someone is exposed to the spilled chemicals, follow these steps:
Inhalation or ingestion: Induce vomiting if swallowed, evacuate the contaminated area, and seek immediate medical attention.
Skin contact: Wash thoroughly with water. If irritation or rash occurs, seek medical attention. Remove contaminated clothing and wash it before using it again.
Eye contact: Rinse thoroughly with water for several minutes and seek medical attention immediately.
Provide the SDS/MSDS document of the batteries to the clinicians

## Battery Storage

Store as instructed in the Storage section of this manual, do not exceed six months without an inspection via Bluetooth debugging APP or via PC software to monitor the charging status. The storage temperature affects the SOC retention, if the storage temperature is not between 15 and 30 degrees, the self-discharge may be 1-2% faster per month. Consider these factors in your storage strategies.

• Do not expose to strong oxidants.
• Do not short-circuit the battery module.
• The battery module cannot be stored in a high humidity environment.

• The battery module cannot be stored at high temperatures
• The battery module cannot be stored directly under the sun.
• Do not open or damage the battery. Leaked electrolyte is harmful, so contact should be avoided.
• Batteries should be stored separately in the package. Do not store batteries in the open air and stack them too high.
• Damaged batteries should be monitored during storage to avoid signs of smoke, flame, electrolyte leakage, or heat.

Battery Disposal
Dispose of the contents/container in accordance with local/regional/national/international regulations.
Always contact a professional company to disassemble and dispose of the battery.
Transport to an affiliated batteries collection center must be carried out by and at the expense of the customer, by means of qualified companies, by and at the expense of the owner of the goods.
SYMBOLS
This document is intended to:
System Installation Engineers
Technical Support Engineers
Product Maintenance Engineers
End users

## Symbol conventions

The symbols that can be found in this document are defined as follows.

| Symbol | Description |
|---|---|
|   | Indicates a hazard with a high level of risk that, if not avoided, will result in death or serious injury. |
|   | Indicates a hazard with a medium level of risk that, if not avoided, could result in death or serious injury. |
|   | Indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury. |
|   | Indicates device or environmental safety warning information that, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.<br>NOTICE is used to address practices not related to personal injury. |
|   | It complements the critical information contained in the main text.<br>NOTE is used to indicate information unrelated to personal injury, equipment damage, and environmental deterioration. |

# Information on this Document

## 1.1 Validity and information acquisition

This manual is valid for the WECO 5K0 PRO stackable battery module + Master controller . Only trained and authorized personnel should install, troubleshoot battery Modules.
In case of product revised, this manual will be modified accordingly. Unless otherwise agreed, this document is intended to be used only as a guide and all statements, information in the documentation shall not contain any express in contradiction to local regulations or standards.
For more information, please contact us.
The official information and the latest data sheet are available on www.wecobatteries.com.

## 1.2 Reader object

The instructions in this document may only be performed by qualified persons :

- Installation and maintenance person (Authorized provider or installer)
- Owner or Users.

Failure to do so will make any manufacturer's warranty or liability not covered.

## 1.3. Content of this Manual

This manual contains safety information and instructions, battery module overview, installation, electrical connection, maintenance and storage, disposal of the battery module, technical parameters. Please finish reading this manual carefully before taking any operations on the battery module.

## 1.4. Firmware and software of battery acquisition

It is essential that the Battery Module is equipped with the latest firmware version available. New batteries are equipped with the latest Firmware Version, however before commissioning please check via Bluetooth or WiFi APP the latest FW release or search it on https://wecobatteries.com/download-area/.
From time to time, firmware will be updated to improve the functionalities and battery capabilities.
The latest version of the firmware is always available free of charge and can be updated by your local installer. You can always contact service@wecobatteries.com for additional information on the upgrade procedure.

## 1.5 Designation of this manual

| No. | Term | Explanation |
|---|---|---|
| 1 | SoC | State of Charge |
| 2 | DoD | Depth of Discharge |
| 3 | Charge | Store electrical energy |
| 4 | Discharge | Battery output energy |
| 5 | BMS | Battery Management System |
| 6 | Firmware | Software in BMS |

## 2 Safety Instruction

### 2.1 Intended Use

5K0 PRO is a Stackable Battery Module with HIGH VOLTAGE mode that can be used in a High Voltage configuration.

**ATTENTION!**

HIGH VOLTAGE BATTERY 450V nominal voltage and a voltage range of 420~480Vdc (*Voltage ranges are estimates only as they always depend on interactions with other devices and ambient conditions).

**Warning**

The battery module must only be operated in connection with a compatible inverter. Make sure to use the correct inverter charging parameters before connecting to the battery.
Each WeCo 5K0 PRO battery module has the DCDC circuit and depending on the inverter voltage range, the installer must choose the correct battery configuration for that range.
The type label should always be attached to the battery module.

### 2.2 Important Safety Instruction

In order to prevent personal injury and property damage and ensure long-term safe operation of the battery module, please read this section carefully and notice all safety information all the times.

#### 2.2.1 Installation Environment Requirements

For installation, it must be installed in a location complying with IP65. 5K0 PRO can be used in both indoor and outdoor environments. The battery should be installed in a well ventilated environment to ensure good heat dissipation. Do not expose the battery to direct sunlight, rain, and snow.

Warning

Installations in locations that do not comply with IP65 may cause failure and/or damage to the product, in which case the product warranty will become void.

#### 2.2.2 Personnel Requirements

All electrical connections on the WeCo 5K0 PRO battery module shall be made only by qualified personnel.

Warning

Subjecting the battery to an unsuitable operating environment or to damage, misuse or abuse may result in health and safety risks such as overheating or electrolyte smoke potential. All personnel must comply with the safety precautions and observe all warnings as detailed in this document.
If any of the safety precautions or procedures detailed in this manual are not fully understood by the reader, the reader must not perform any operation on the battery until they have contacted the WeCo technical service representative for clarification and confirmation of understanding of the correct procedure.

Warning

Installation personnel shall not wear metallic objects, such as watches, jewelry and other metal items when performing installations. Do not store un-insulated tools in pockets or tool belt while working in vicinity of battery to avoid short circuits and personal injuries.

ATTENTION!

The safety guidelines included in this document may not include or consider all the regulations in your area of installation/operation. When installing and operating this product, the installer must review and consider applicable State and Local laws and regulations in accordance with the industry standards of the product.

## 2.2.3 Battery Handling and Moving

The weight of an individual WeCo 5K0 PRO battery module is 114.64 lb /52kg. Please use original packaging and follow all safety instructions if the Battery Module is to be moved, to avoid damage to the product and personal injury.

• Relocating a battery to another system is not suggested as the aging and the differences in usage might affect the safety of the system when connected together. Always use new batteries, expansion of existing systems is allowed within 300 cycles or 1 year.
• The battery module and its accessories should be protected from damage before and during the transporting and handling.
• Do not pull, drag, impact the battery module.
• Before handling and moving the battery module, measure the voltage at the terminal point before contacting any terminal surface, to confirm that there is no risk of electric shock.
• Do not affect the terminals during moving battery modules and lifting the battery modules through side bolts is strictly forbidden.

 Warning

Each stacking tower can have a maximum of four modules (due to height and stability). A maximum of 12 modules can form a stack system. Before stacking modules, ensure that the supporting surface is solid enough to support the weight.

## 2.2.4 Hazard Material

The materials contained in this product may only represent a hazard if the integrity of the cell or battery is compromised, physically, thermally, or electrically abused.
The below are the hazards anticipated under those conditions:Causes skin irritation. Causes serious eye irritation. May cause an allergic skin reaction.Causes damage to organs (Bone, teeth) through prolonged or repeated exposure. Very toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Protection
Do not breathe dust. Do not eat, drink or smoke when using this product. Wear protective gloves/ protective clothing/ eye protection/ face protection. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment, read the MSDS of the 5K0 PRO model before installing.
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard.
Additional information is given in the Safety Data Sheet.

 Warning

Additional Notes: Do not open or disassemble the battery. Do not dispose in fire, mix with other battery types, charge above specified rate, connect improperly, or short circuit, which may result in overheating, explosion or leakage of cell contents. Do not open or disassemble. Do not puncture, deform, incinerate, or heat above 85°C/185°F. Keep away from heat/ sparks/open flames/hot surfaces. Do not wear metallic ornaments. Always use protective personal devices and personal protections against electrical shocks, impacts and ejections.

Action If Exposure
Under normal conditions of processing and use, exposure to the chemical constituents in this product is unlikely. The chemicals are contained in a sealed aluminum housing, while the cells are secured into a steel enclosure. Risk of exposure occurs only if the battery is mechanically, thermally or electrically abused.

 Information

If the battery modules leak electrolytes, exposure to the leaking chemicals should be avoided. The contact may cause skin irritation and chemical burns. If anyone is exposed to the leaked chemicals, follow these steps:
Inhalation or ingestion: Induce vomiting if ingestion, evacuate the contaminated area, and seek medical help immediately.
Skin contact: Wash with plenty of water. If skin irritation or rash occurs, get medical advice/ attention. Take off contaminated clothing and wash it before re-use.
Eye contact: Rinse cautiously with water for several minutes and seek medical help immediately.

## 2.2.5 Battery Storage

Store as indicated in the Storage section of this manual, do not exceed one year without an inspection via Bluetooth debug APP or via PC software to monitor the status of charge. Storage temperature affects the SOC retention, if your storage temperature is not within 15 and 30 degrees the self- discharge might be faster than 1- 2% a month. Consider these factors in your storage strategies.

• Do not expose to strong oxidizers.
• Do not short circuit the battery module.
• The battery module cannot be stored in a high humidity environment.
• The battery module cannot be stored at high temperatures
• The battery module cannot be stored directly under the sun.
• Do not open or damage the battery. The leaked electrolyte is harmful so contact should be avoided.
• Batteries must be stored separately in the package. Do not store batteries in the open air and stack batteries too high.
• Damaged batteries should be monitored during storage to ensure to avoid signs of smoke, flame, electrolyte leakage, or heat.

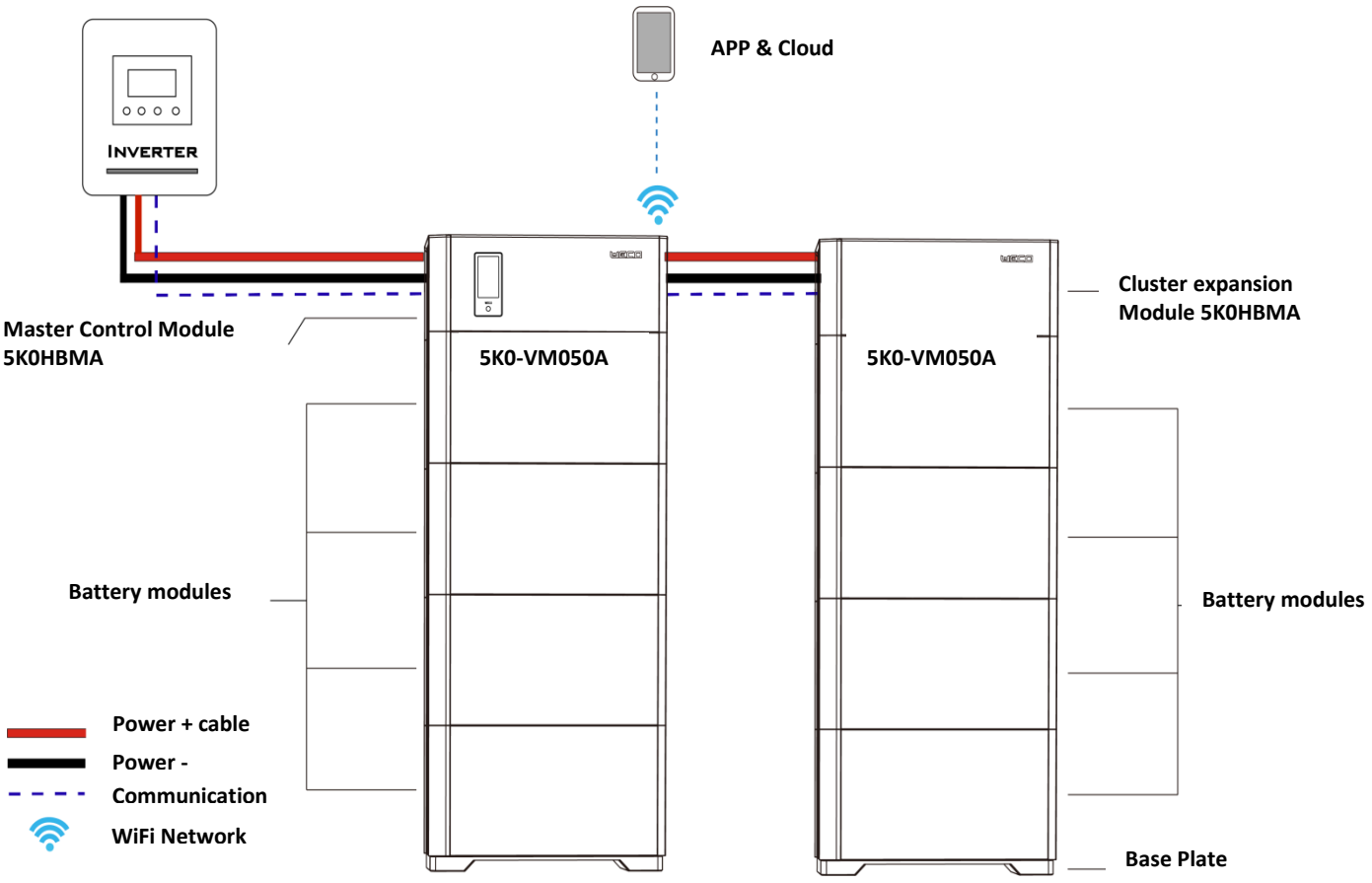
### 2.2.6 Battery Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.
Always contact a professional company to dismount and dispose the battery.

## 3 Battery Module Overview

3.1 Product Introduction

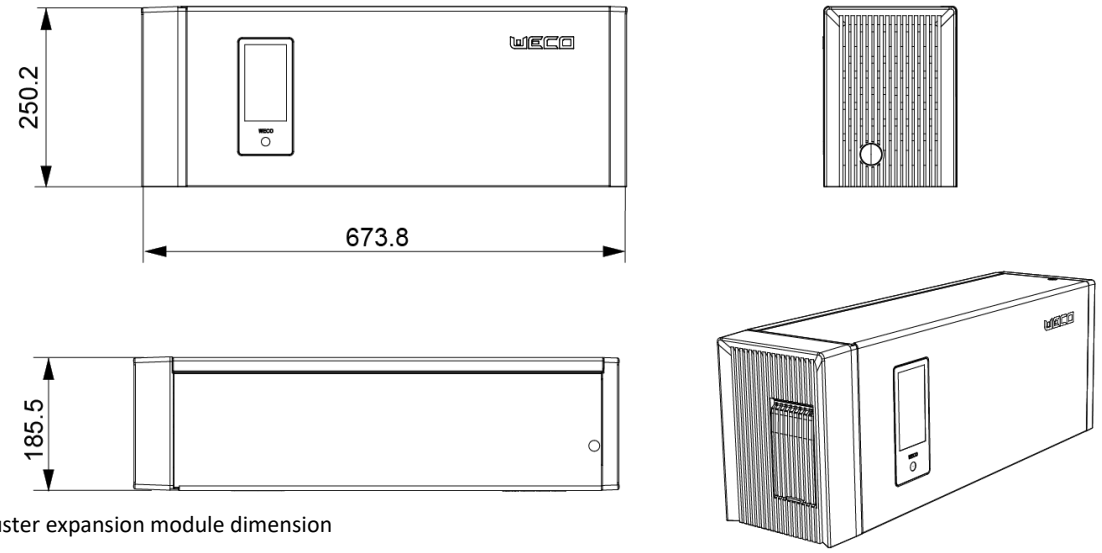
The WECO 5K0 PRO is a stackable battery module with a DC-DC converter module that can be used in a High Voltage configuration.
It is a lithium iron phosphate(LFP) battery storage system, with the control module on itself. It could be operated in on-grid, backup and off-grid modes with compatible inverters.
Several battery modules can be stacked together to form a stacking tower/cluster. In a stacking tower, each 5K0 PRO battery module connects each other by stacking method which requires no additional power cables for connection. One stacking cluster/tower consists of a Master control module/box or a cluster expansion module and up to 4 5K0 PRO battery bodies. The Master control module or the cluster expansion module needs to be placed/stacked on the top of the stacking tower.
The HV system will be connected to the inverter by the master control module for power supply. If there are more than 4 battery modules in one HV system, a cluster expansion module will be required to form another stacking tower which can be connected to the master control module through the cluster expansion module.
At most 4 battery modules form a stacking tower, and at most 3 stacking towers form a HV system, which means one HV system can has up to 12 battery modules.



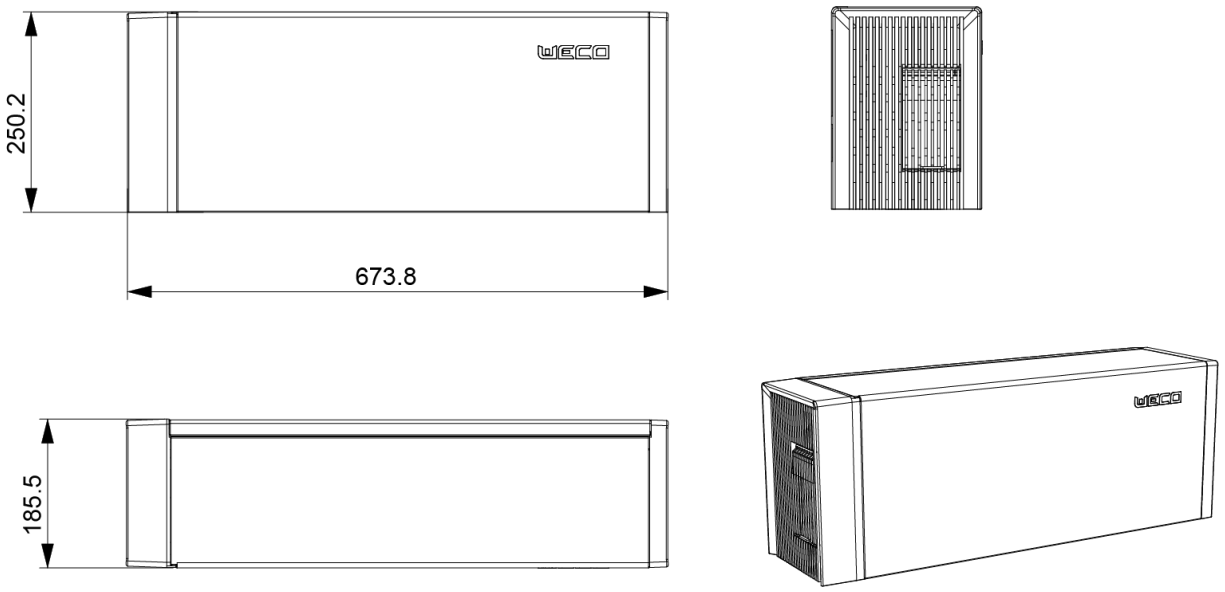

*** Stacking tower formed by master control module or cluster expansion module and several battery modules (Up to 4 batteries per stacking tower)**

## 3.2 Product Structure Dimension

Master control module dimension
5K0-VM050A MASTER CONTROLLER

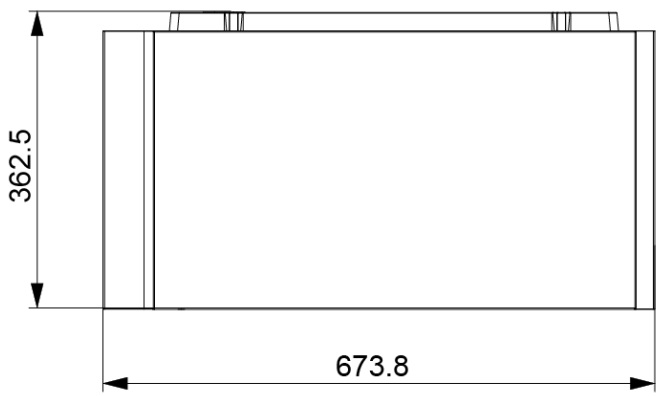


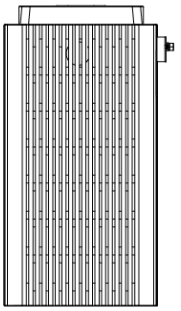

Cluster expansion module dimension

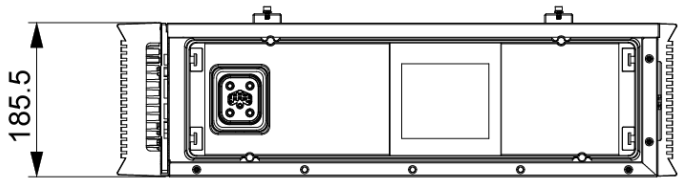


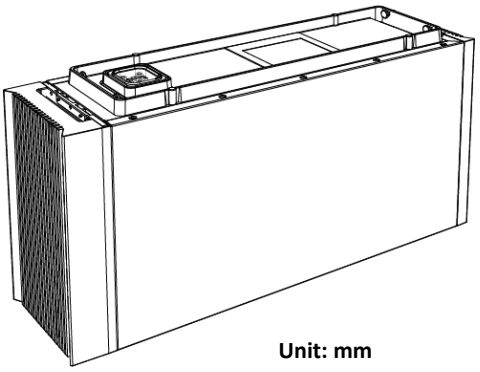

**Unit: mm**

Battery module dimension 5K0-VM050A



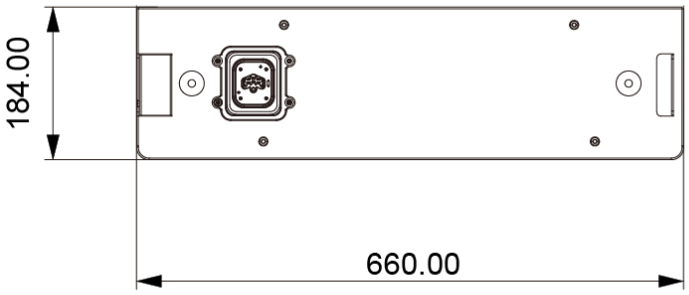



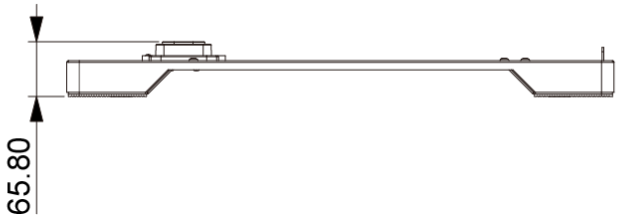


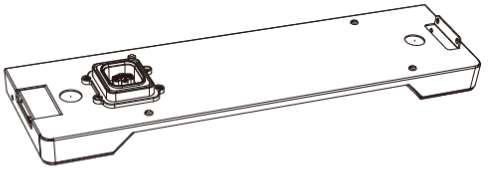



**Unit: mm**

Base dimension



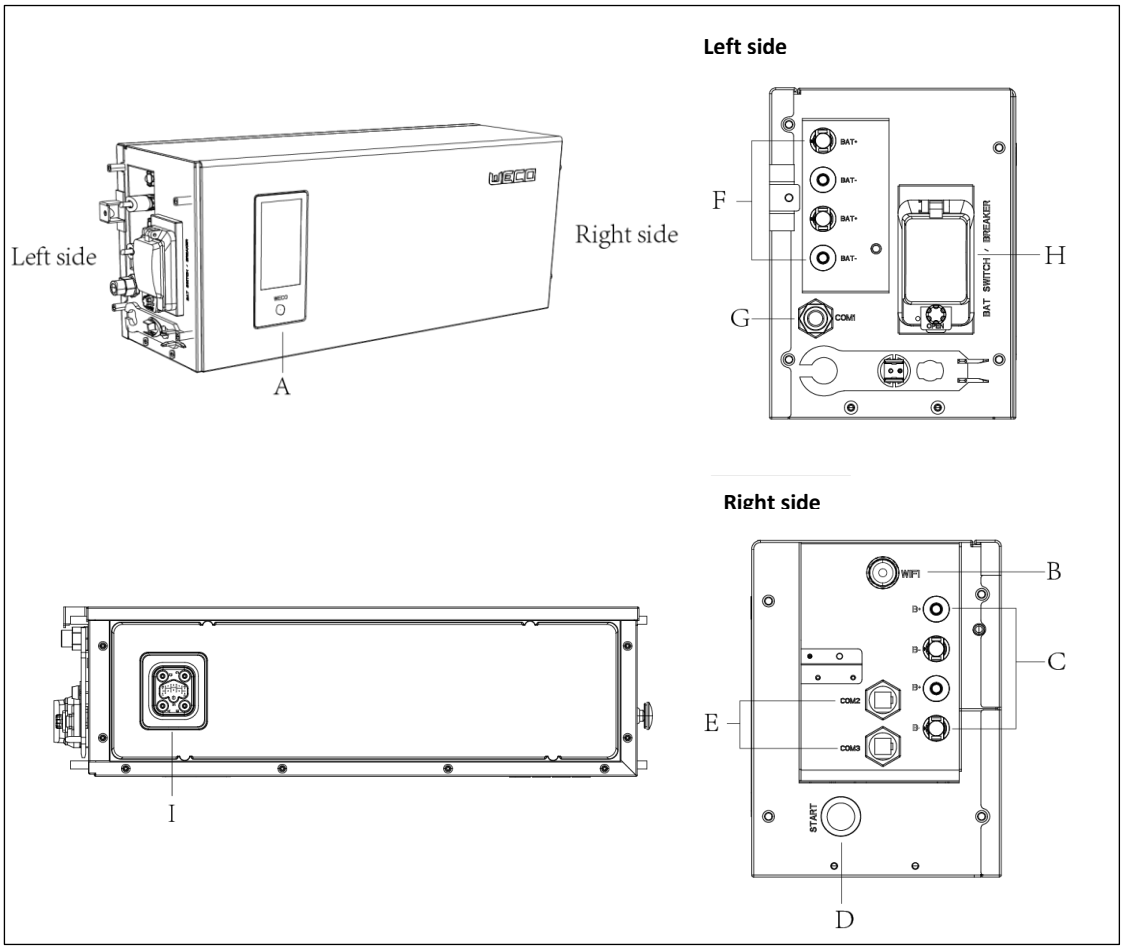



**Unit: mm**

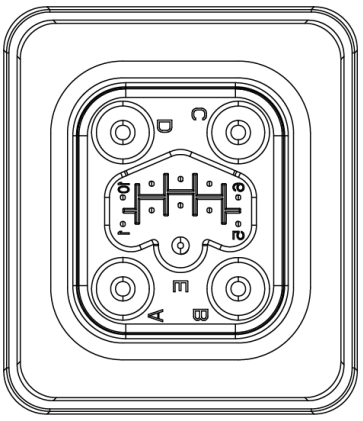
### 3.3 Product Terminal Description

### 3.3.1 Master Control Module Terminal Definition



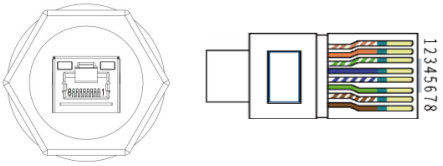

| Item | Name | Function |
|---|---|---|
| A | Display panel | Display battery system running information |
| B | WiFi Terminal | Connect to external WiFi module for communication |
| C | Power cable Terminal | Positive and negative power cable connection to cluster expansion module |
| D | Start button | System start up button |
| E | Can port/Com2, Com3 | Parallel communication cable connection to cluster expansion module |
| F | Power cable Terminal | Positive and negative power cable connection to inverter |
| G | Can port/Com1 | Communication cable connection to inverter |
| H | Switch/Breaker | System power switch/breaker |
| I | Stack connection Terminal | Used for stacking connection to battery module |

## Stack Connection Terminal Pin Definition




| Pin | Name | Pin | Name |
|---|---|---|---|
| 1 | NC | 9 | STARTON - |
| 2 | Addresss | 10 | STARTON + |
| 3 | 24V_GND | A | Power + |
| 4 | 24V_BUS | B | Power - |
| 5 | NC | C | NC |
| 6 | NC | D | NC |
| 7 | CAN_H | E | Earth |
| 8 | CAN_L | | |

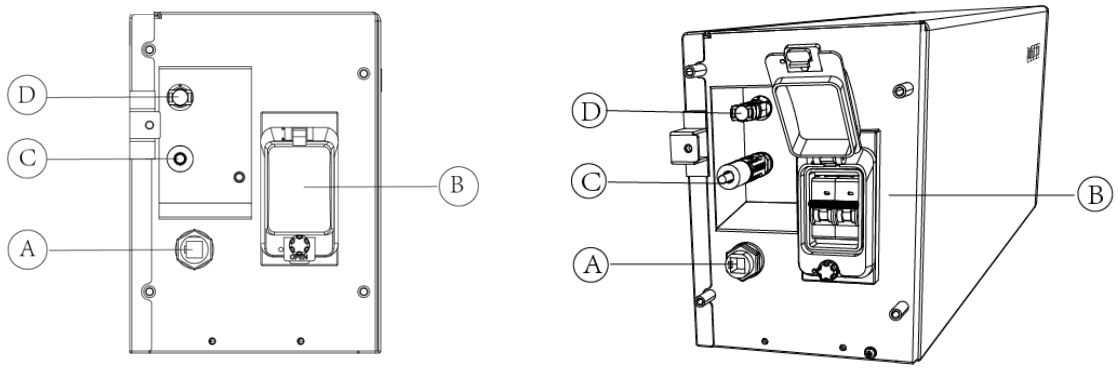
WiFi / Com 1/Com 2/ Com 3 Terminal Pin Definition



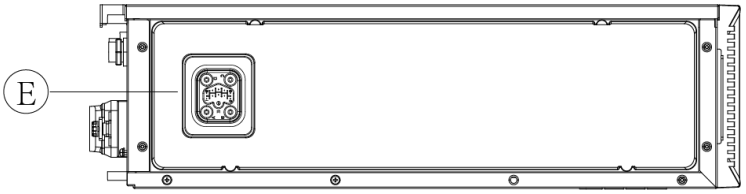

| PIN | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| WIFI | STARTON- | STARTON+ | 24VGND | 24VBUS | / | Address | CAN_L | CAN_H |
| COM 1 | DO- | DO+ | / | CAN_L | CAN_H | GND | 485B | 485A |
| COM 2 | STARTON- | STARTON+ | 24VGND | 24VBUS | / | Address | CAN_L | CAN_H |
| COM 3 | STARTON- | STARTON+ | 24VGND | 24VBUS | / | Address | CAN_L | CAN_H |

### 3.3.2 Cluster Expansion Module Terminal Definition

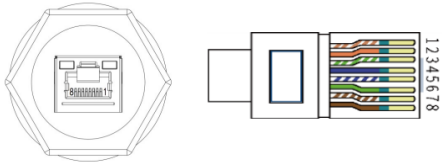
**Left side**




**Bottom side**



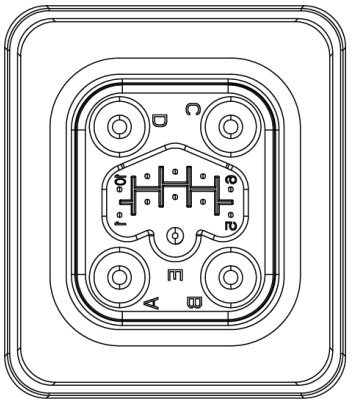

| Item | Name | Function |
|---|---|---|
| A | Can Port | Communication connection to master control module |
| B | Switch | Power switch/Breaker |
| C | Positive Terminal | Positive power cable connection to master control module |
| D | Negative Terminal | Negative power cable connection to master control module |
| I | Stack connection Terminal | Used for stacking connection to battery module |




CAN Port PIN Definition

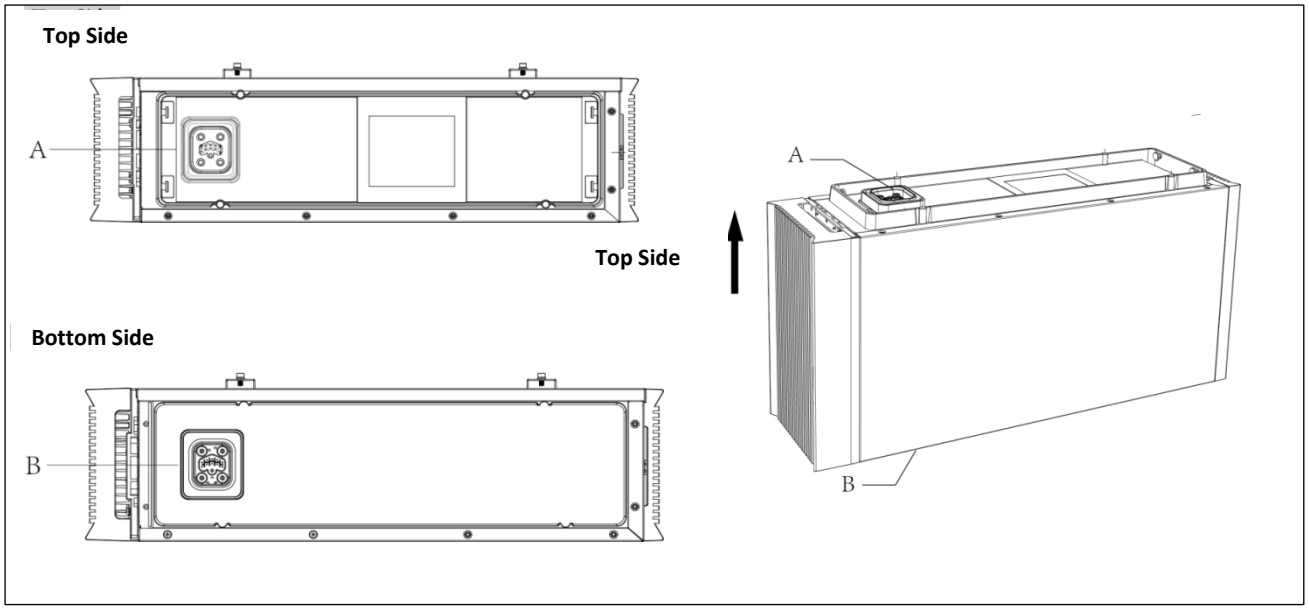
| PIN | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| | STARTON- | STARTON+ | 24VGND | 24VBUS | / | Address | CAN_L | CAN_H |

Stack Connection Terminal PIN Definition



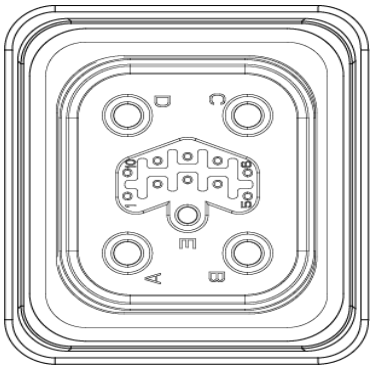

| Pin | Name | Pin | Name |
|---|---|---|---|
| 1 | NC | 9 | STARTON - |
| 2 | Addresss | 10 | STARTON + |
| 3 | 24V_GND | A | Power + |
| 4 | 24V_BUS | B | Power - |
| 5 | NC | C | NC |
| 6 | NC | D | NC |
| 7 | CAN_H | E | Earth |
| 8 | CAN_L | | |

## 3.3.3 Battery Module Terminal Definition



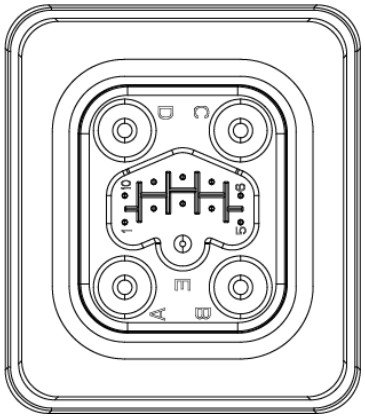

| Item | Name | Function |
|---|---|---|
| A | Stack Connection Top Terminal | Used for stacking connection to upper battery module or master control module or slave module |
| B | Stack Connection Bottom Terminal | Used for stacking connection to lower battery modules |

Stack Connection Top Terminal PIN Definition




| Pin | Name | Pin | Name |
|---|---|---|---|
| 1 | NC | 9 | STARTON - |
| 2 | Addresss | 10 | STARTON + |
| 3 | 24V_GND | A | Power + |
| 4 | 24V_BUS | B | Power - |
| 5 | NC | C | NC |
| 6 | NC | D | NC |
| 7 | CAN_H | E | Earth |
| 8 | CAN_L | | |

Stack Connection Bottom Terminal PIN Definition




| Pin | Name | Pin | Name |
|---|---|---|---|
| 1 | NC | 9 | STARTON - |
| 2 | Addresss | 10 | STARTON + |
| 3 | 24V_GND | A | Power + |
| 4 | 24V_BUS | B | Power - |
| 5 | NC | C | NC |
| 6 | NC | D | NC |
| 7 | CAN_H | E | Earth |
| 8 | CAN_L | | |

# 4 Installation

## 4.1 Pre-Installation Package List Checking

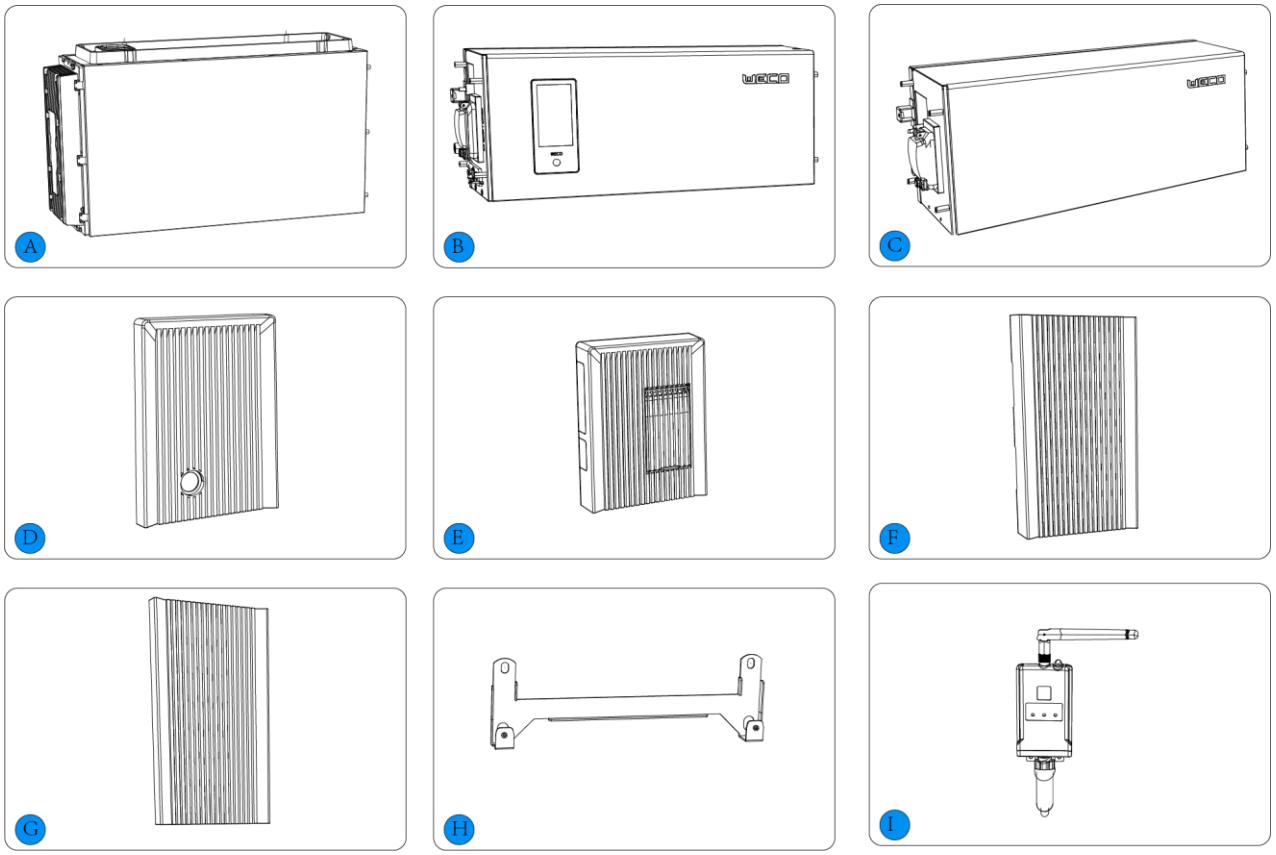
The battery Module is packed in cartons with accessories.
Upon receipt, review the packing list carefully to make sure that the battery module and accessories are received in the correct quantities and type and visually inspect to ensure that they are free from damage.
If battery is damaged and/ or components missing, contact your local WECO representative.

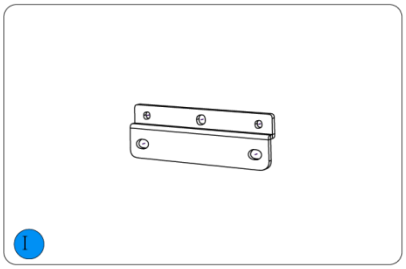
ATTENTION!

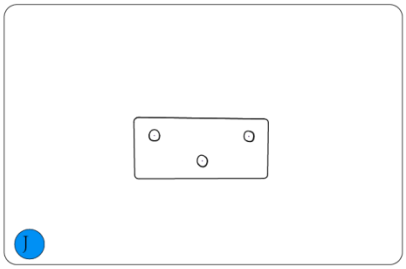
Use of this product not following the instruction in this document will nullify the product warranty. The substitution of any components of this battery module will nullify the product warranty. The use of any components contained within or connected to this Battery Module other than the products sold as part of this product or recommended by the manufacturer will nullify the product warranty.

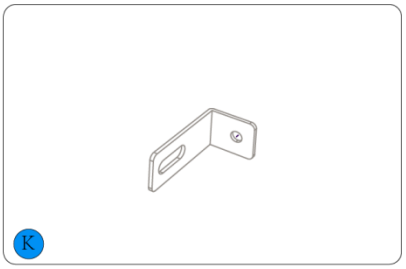
For the number of deliverables shipped with the box, please refer to the Packing List inside the box. Following is the packing list only for reference , deliveries of goods based on actual packing list inside box, if there's any questions about the deliveries please contact your dealer. Refer to Appendix D for how to select corresponding kits.

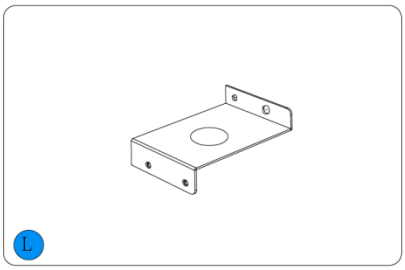
4.1.1 Packing List

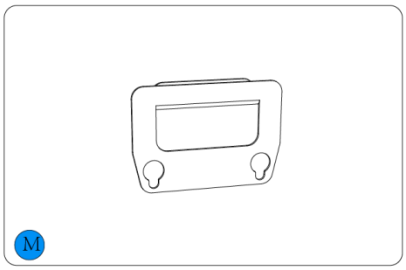


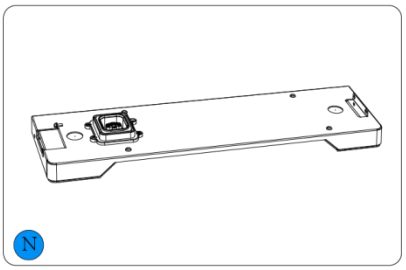


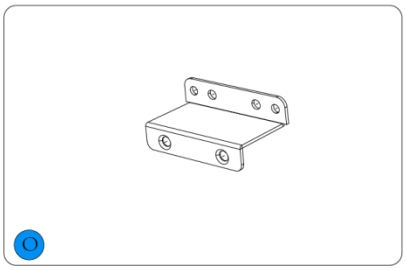



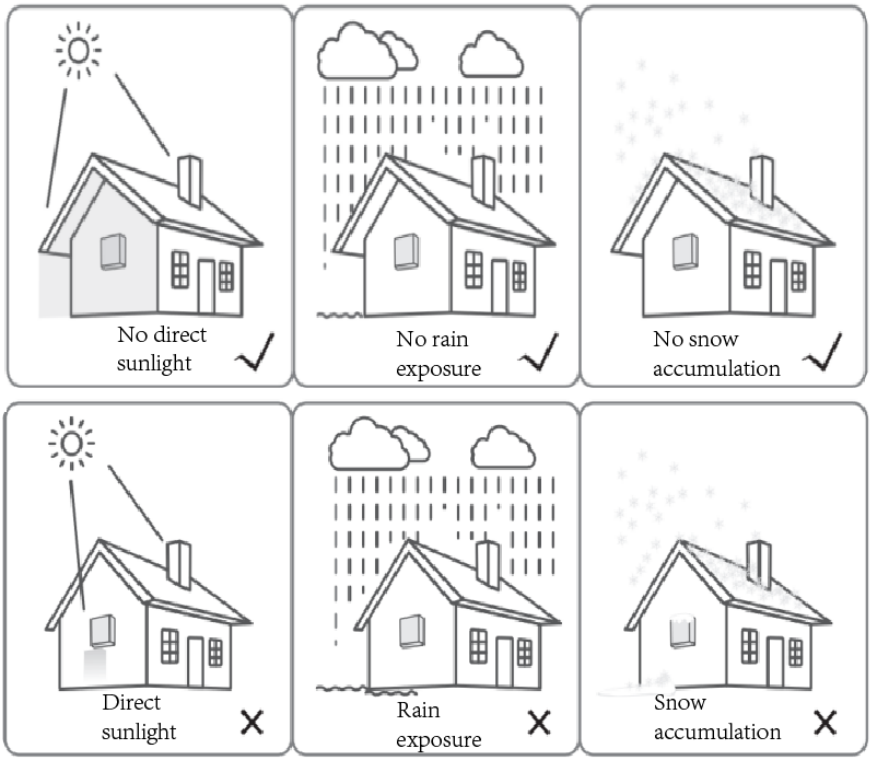

| Item | Name | Function &Description | QTY |
|---|---|---|---|
| A | 5K0 PRO battery module | Battery module body | 1 |
| B | Master Control Module | Master Control Module | 1 |
| C | Cluster Expansion Module | Cluster Expansion Module | 1 |
| D | Master control module side cover | Installed on the right side of the master control module | 1 |
| E | Master control module side cover | Installed on the left side of the master control module | 1 |
| F | Cluster expansion module side cover | Installed on the let side of the cluster expansion module | 1 |
| G | Cluster expansion module side cover | Installed on the right side of the cluster expansion module | 1 |
| H | Bracket | Installed on back side of the battery to fix on the wall | 1 |
| I | WiFi Module | Installed on the master control module for communication | 1 |
| J | Battery Lock plate | Use to fix the battery | 1 |
| K | Control Module lock plate | Use to fix the control modules to wall | 2 |
| L | WiFi lock plate | Use to fix the external WiFi module | 1 |
| M | Square shaped handle | Use to lift the battery module | 2 |
| N | Base | Installed on the ground for place batteries | 1 |
| O | Base lock plate | Fix at the battery corner | 1 |

## 4.2 General Preparation

### 4.2.1 Installation Place

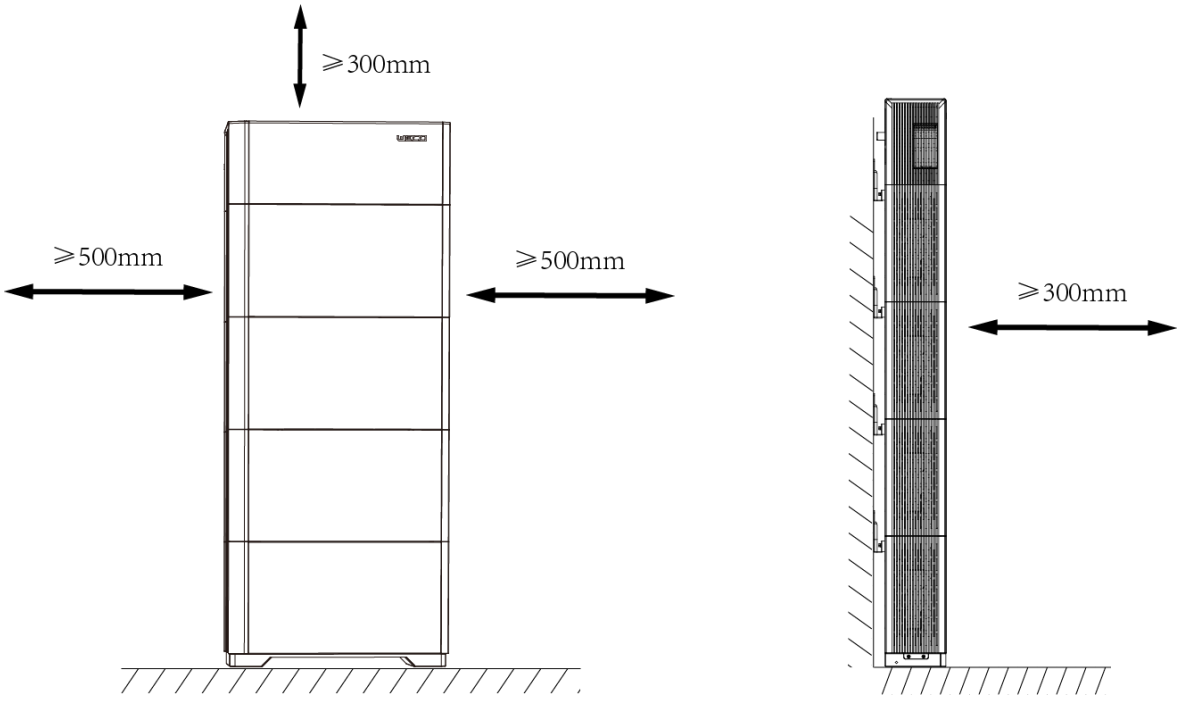
Battery module shall be installed in a proper place in accordance with IP66 level.

The installation and operating environment need to comply with local codes as well as relevant international, national and regional standards for lithium-ion battery. Keep away from direct sunlight, rain exposure, snow accumulation during installation and operation. It is recommended to choose a sheltered installation site and install under a sunshade. Please refer installation location on below figure.




The distance between the system and surrounding objects should meet the minimum following conditions:

left and right distance ⩾ 500mm; Upper distance ⩾500mm； Lower distance ⩾ 500mm; The distance ahead should be ⩾ 500mm to ensure sufficient installation and heat dissipation space.



## Australia minimum clearance distance and installation prescriptions

## INSTALLATION LOCATION, BESS ZONE AND FIRE / SAFETY PREVENTION

New systems – general rules for location
The general principle of AS/NZS 5139 is to install batteries on an external wall or in a non-habitable room and to keep them away from people, escape routes and combustible materials.
Preferred locations:
External solid wall in concrete or non-flammable material wall at ground level or on a suitable balcony.
Garage, service room or dedicated plant room.
Certified outdoor or indoor battery enclosure.

## Prohibited locations

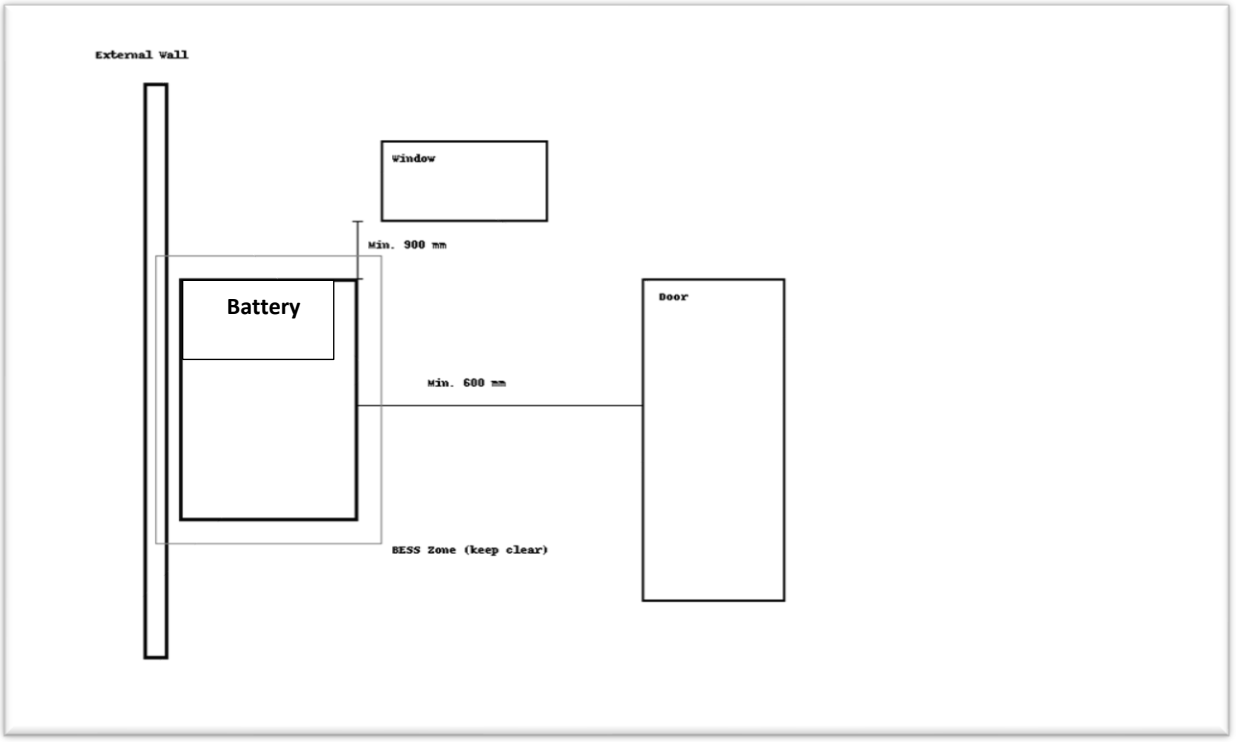
- Habitable rooms (bedrooms, lounge rooms, kitchens, studies, playrooms and similar).
- Roof spaces, ceiling voids, wall cavities and under staircases.
- Passages, walkways, exits and escape routes, or directly beneath them.
- Habitable rooms (bedrooms, living rooms, kitchens, studies, playrooms, etc.).
- Roof spaces, ceiling voids and wall cavities.
- Under staircases, in stairwells or escape routes.
- Narrow passageways that form the evacuation path.
- Areas too close to doors, windows, vents, gas equipment or unrelated appliances.

Any area where switchboards or generation systems are prohibited by AS/NZS 3000 or local rules.
BESS Zone and clearances
Maintain a dedicated BESS Zone around the battery where no unrelated electrical equipment is installed within the minimum horizontal and vertical clearances required by AS/NZS 5139 and this annex.
Maintain safe working space in front of the battery for commissioning, inspection and emergency isolation.

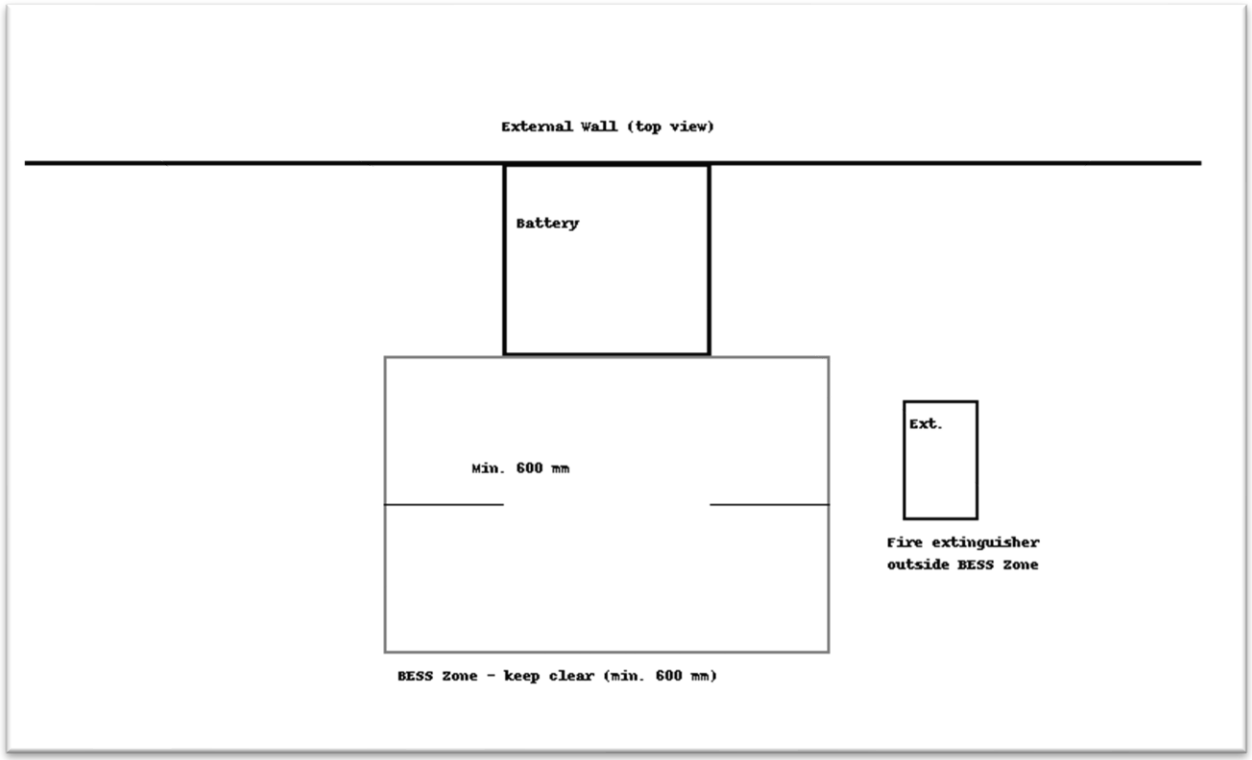
Do not use the BESS Zone for storage of any objects, especially combustibles and flammables.
Protection from weather and damage
For outdoor installations, provide shading or a canopy to minimize direct solar heating and avoid locations subject to flooding, ponding water splashes liquids spray, dusts, moisture and dirty in general.
Maintain the enclosure IP rating by using appropriate cable glands and ensuring all seals and gaskets are correctly fitted.
In garages, driveways or loading areas, provide physical protection (e.g. bollards) against vehicle impact.

Installers must use the latest AS/NZS 5139 tables and diagrams to calculate exact clearances and exclusion zones, in addition to the distance provided by the manufacturer
All electrical work must be performed by licensed electricians using appropriate PPE for high-energy DC systems.
Before commencing work, isolate all energy sources: PV, AC mains and battery DC isolators, and verify absence of voltage in accordance with safe work practices.
Use cable sizes, insulation types and routing methods that comply with AS/NZS 3000 and the manufacturer's recommendations for current rating, voltage drop and fault protection.
Use properly crimped lugs; do not solder high-current DC terminations.
Tighten all terminals to the specified torque values and record these in the commissioning documentation.
Ensure all cable glands and seals are correctly installed to maintain the enclosure rating and prevent water and dust ingress.
Connect communication cables (CAN, RS485, Ethernet) exactly as per wiring diagrams, using shielded cables where recommended and ensuring correct polarity and termination.
Use only inverters and accessories that are listed as compatible with the battery by the manufacturer.

## Installation Distance diagram




Fire extinguisher location
Keep the fire extinguisher away from the BESS and in a safe location easily accessible



## Warning!

Ensure that all the modules are turned OFF. Ensure a clean environment, keep away from water sources such as taps, sewers, sprinklers, etc. to avoid water infiltration.
Ensure the enclosure is free from damages dents or any deformations caused by impacts.
Battery installation location should be away from sources of heat, protected from any source of fire, free flames and any other sources of extreme temperature.
Battery connecting cables shall be as short as possible to prevent excessive voltage drops.
Battery installation must be away from any gas, FUEL or any INFLAMMABLE GAS OR LIQUID.
The internal electronic devices can cause internal sparks during the normal usage.
Before connecting the battery, the battery positive and negative poles shall be checked to ensure correct installation.
The installation location must be suitable for the weight and dimensions of the battery system.

4.2.2 Necessary Installation Tools
Following installation tools is necessary for the battery installation.

| | | | |
|---|---|---|---|
|  Multimeter + Current clamp |  Insulated Screwdriver Set |  Insulated Allen Key Set from 2 mm to 8 mm |  Drill + Hammer |
|  Electrician Scissors |  Insulated Torque Wrench Set |  Lifting Strap + Mechanical Lifter |  RS2 32/ USB + Screw Terminal ( insulated) |

4.2.3 Personal Protective Equipment

+1000 Vdc Insulated Tools
Personal Protective Equipment +1000 Vdc Insulated Tools is necessary for protection during the installation.

## 4.3 Install the Battery Module

**ATTENTION!**

There is risk of injury due to weight of the battery module if the battery module is lifted incorrectly or dropped while being transported or installed.

- Lift and install the battery module carefully.
- Wear correct personal protective equipment for all work on the battery module.

The installation operation should be implemented by qualified person authorized by WECO company.

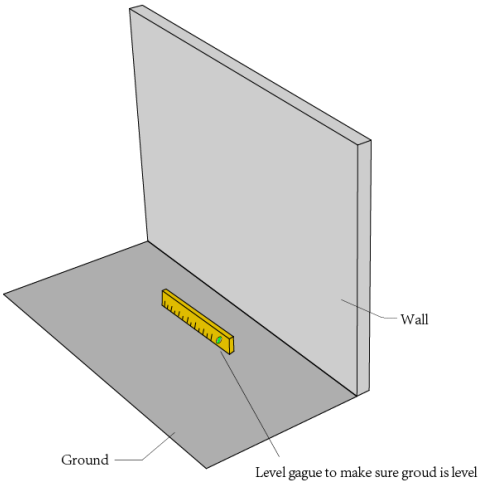
The battery is always delivered in stack and wall mode, and it is therefore necessary for the installer to make simple. Changes to install the modules. Below are the installation phases.

**ATTENTION!**

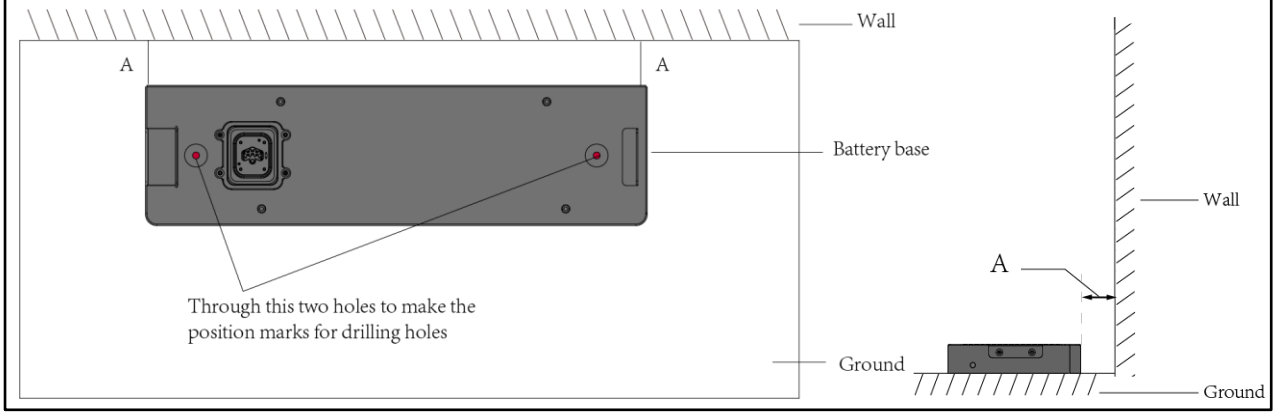
The battery requires two square-shaped handles, which can be moved by two people.
Before starting any operation on the battery, make sure to position the modules in their final position and structurally fix all the modules that make up the system on a previously verified surface.

Procedure:
Step 1: Use the level gauge to make sure the ground is level for installation. Use the battery base in the packaging box to determine the drilling position, level the hole position with the level gauge, and mark it with a marker pen.

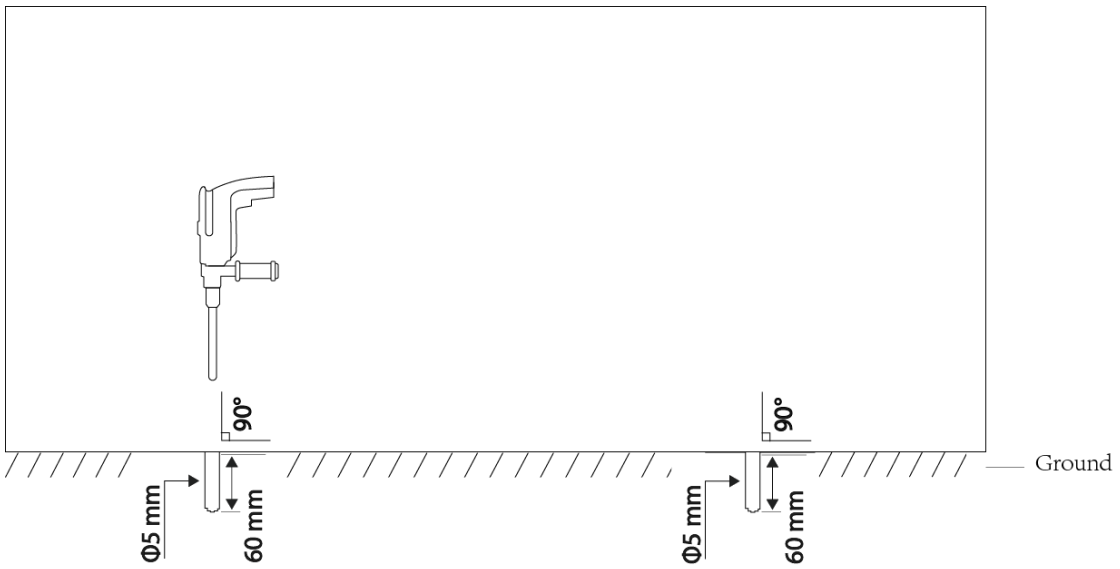
1. Use the level gauge to make sure the ground is level for installation



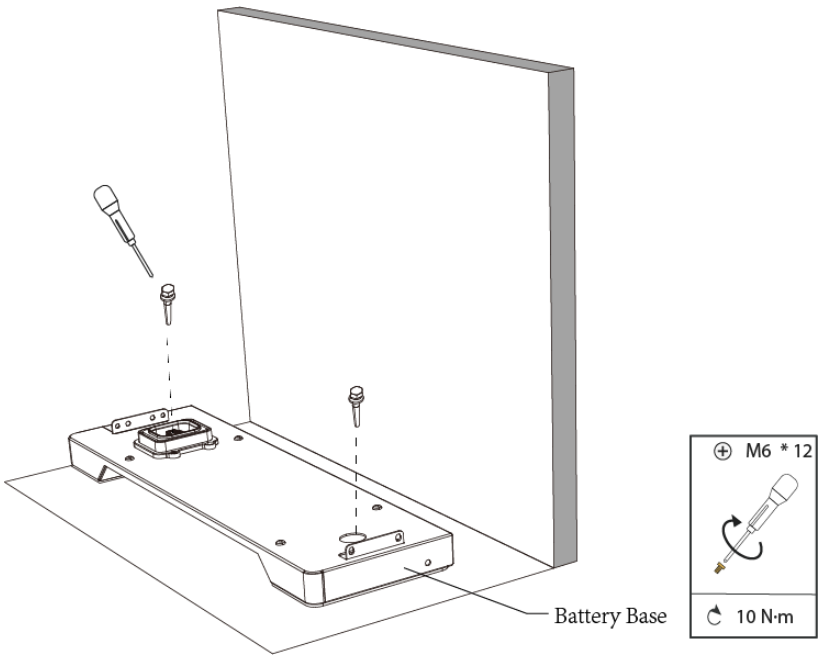

2. Place the base on the ground and make sure following distance A = 35mm (distance between wall and base), then make the position marks



Step 2: Select a drill with a diameter of 5mm and use an impact drill to mark the hole position perpendicular to the ground, with a hole depth of 60mm.

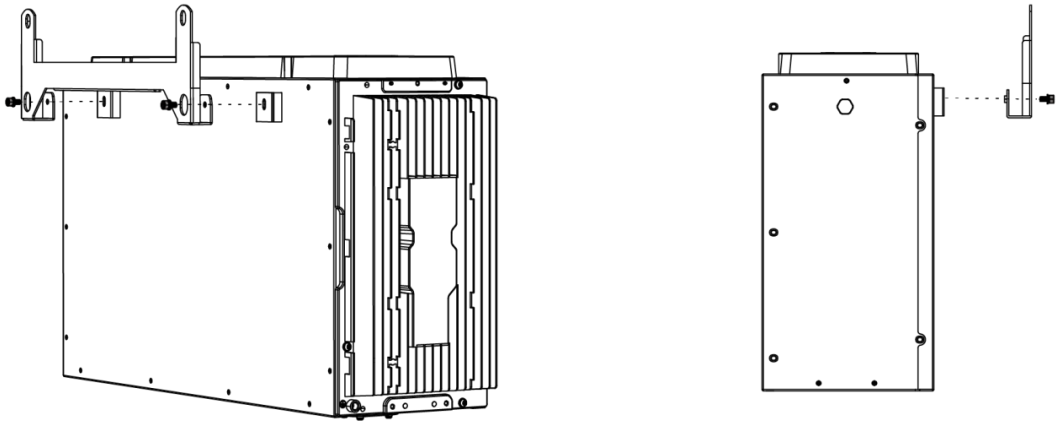



Step 3: Align the base plate with the hole position, and mount the expansion bolt through the back plate into the hole. Tighten the expansion bolt with an open-ended torque wrench. Fix the battery base.

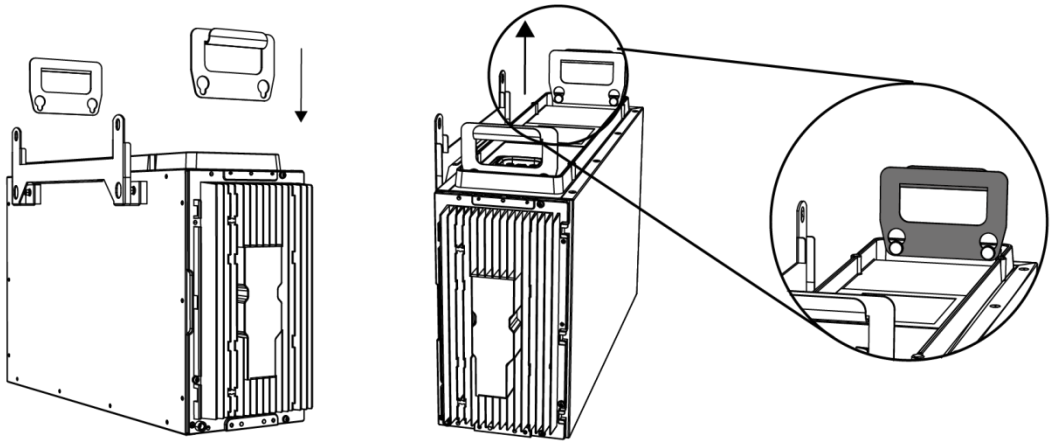


Step 4: Install the bracket on the back side of the battery module first, and use the square-shaped handles to lift the battery module by the both top sides of battery, then install the battery vertically on the battery base. Do not tilt the installation. Then use locking plates to secure the battery and base.

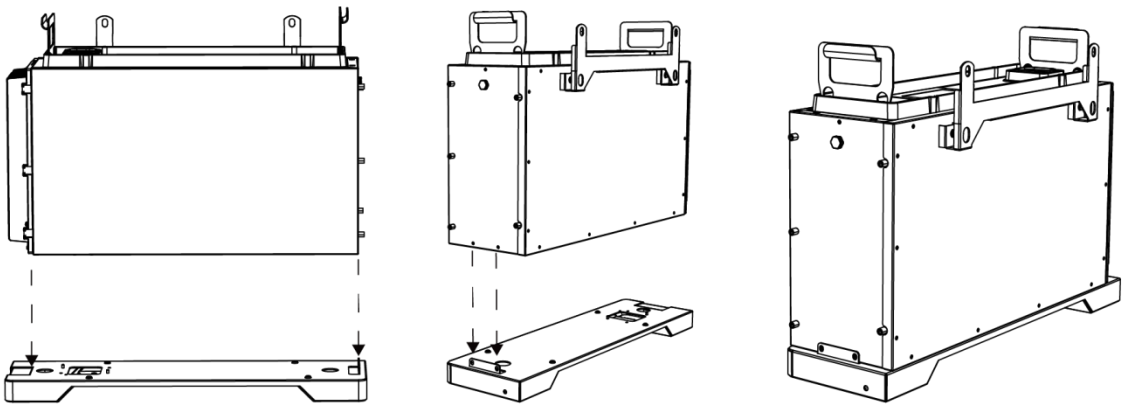
1. Install the mounting bracket



2. Install the battery handle

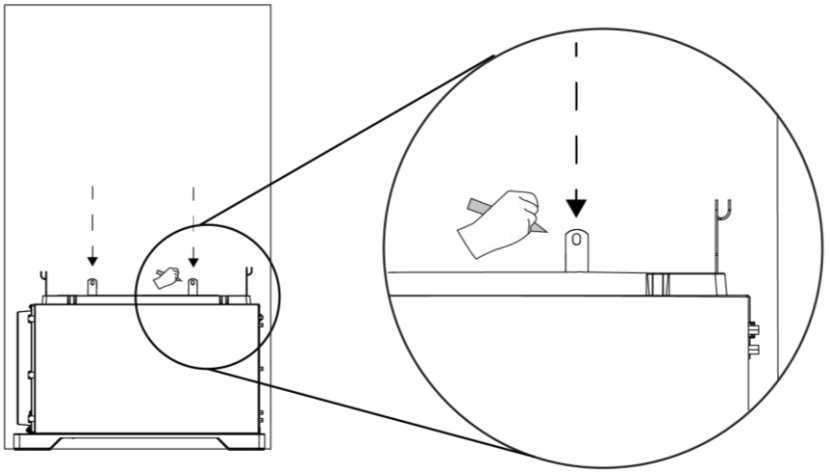


3. Place the battery and align with the base

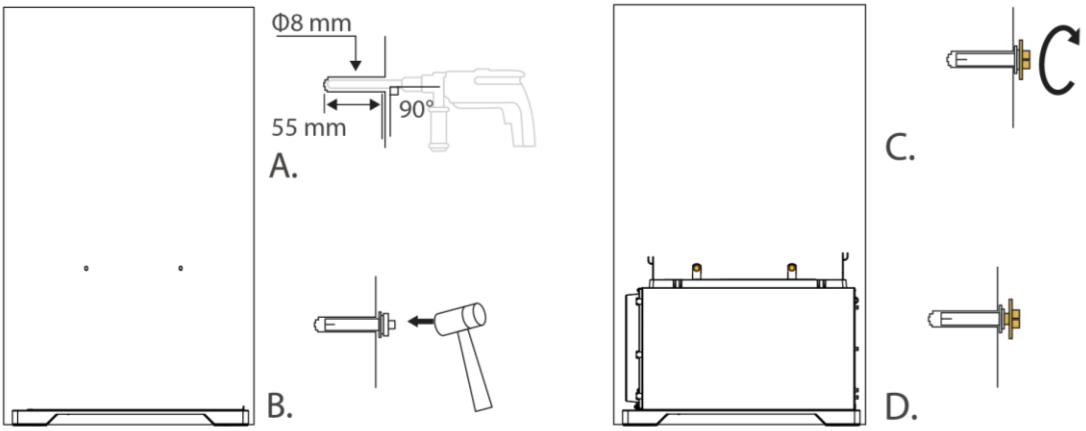


Step 5: The battery module is vertically backed against the wall, make the marks for the drill position holes by aligning the bracket to the wall. Then Drill holes to fix the battery wall mounted back bracket. (The bracket is mainly used to prevent battery falling from the wall.)

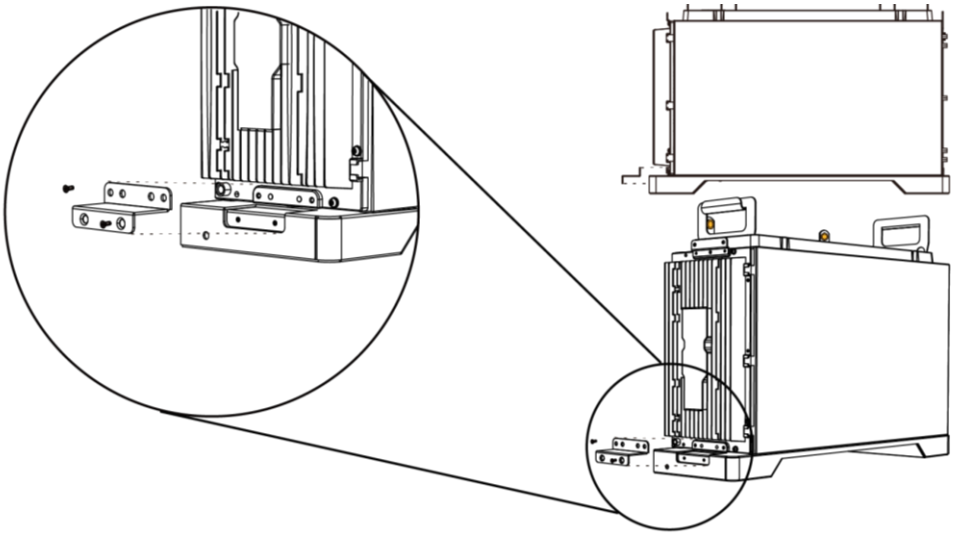
1. Mark the drilling holes



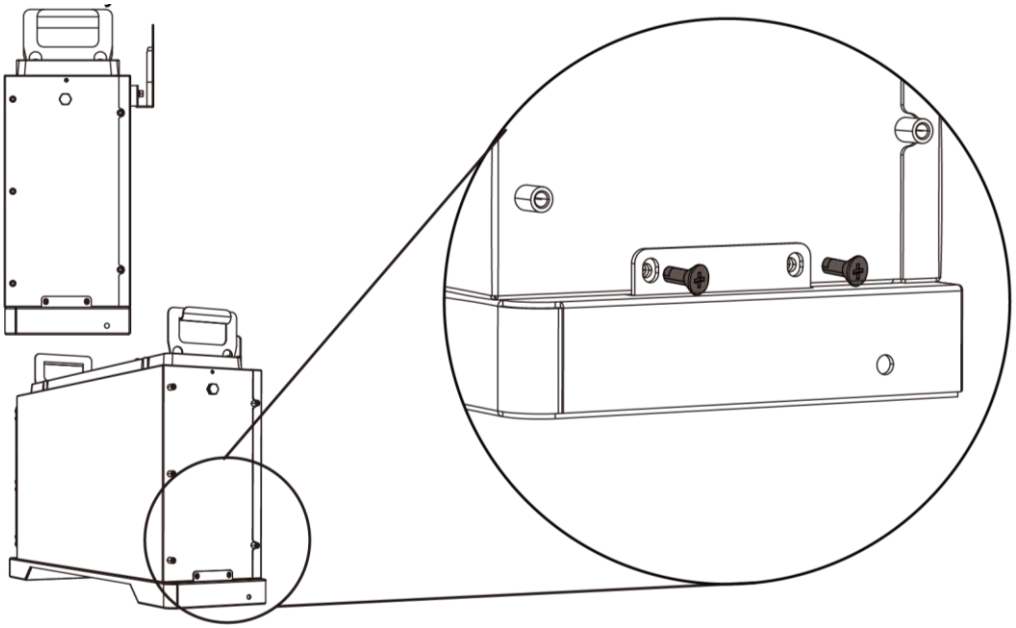
2. Drill the holes and fix the battery on the wall



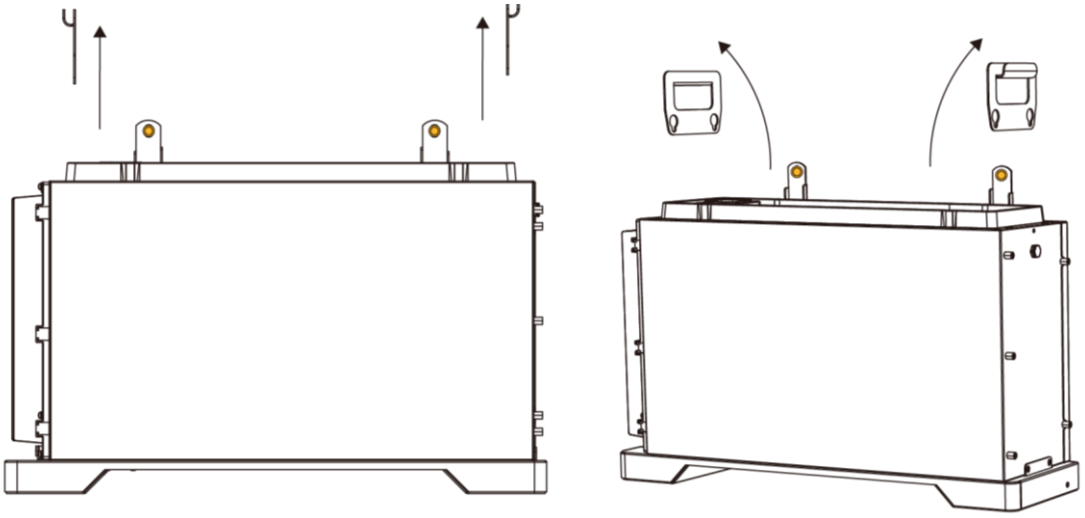

3. Install left side bracket



4. Fix the battery to the base

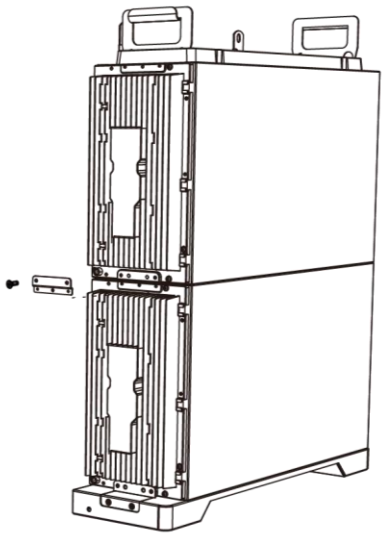


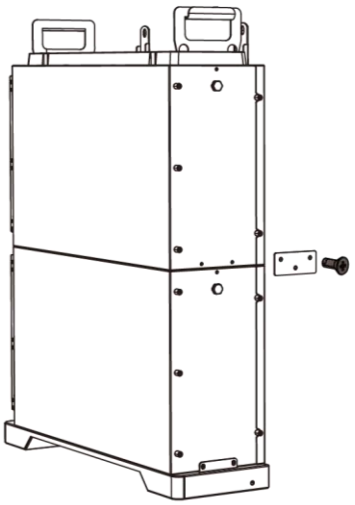
5. Remove the battery handle



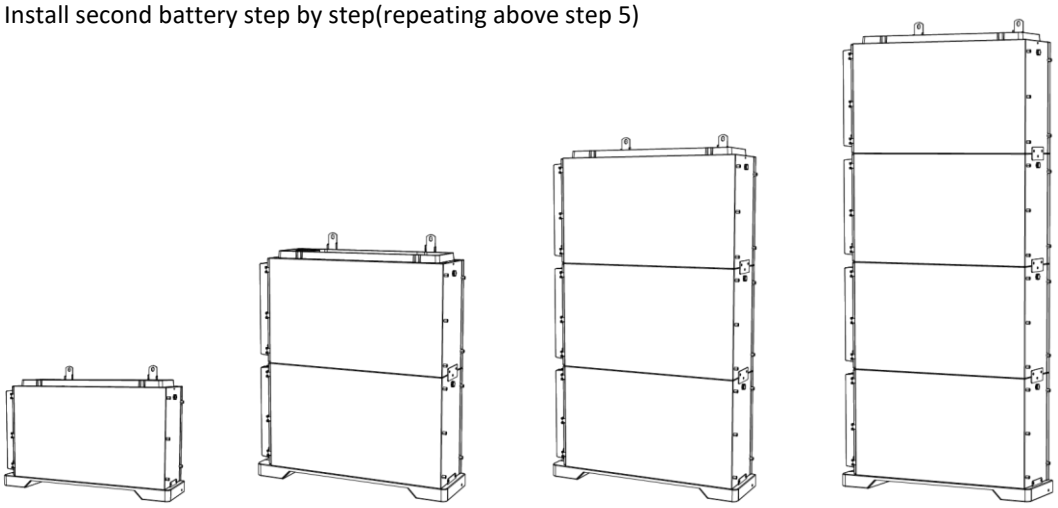
Step 6: Repeat the step 5 to finish the installation of the balances of the battery modules.

Install second battery step by step(repeating above step 5)



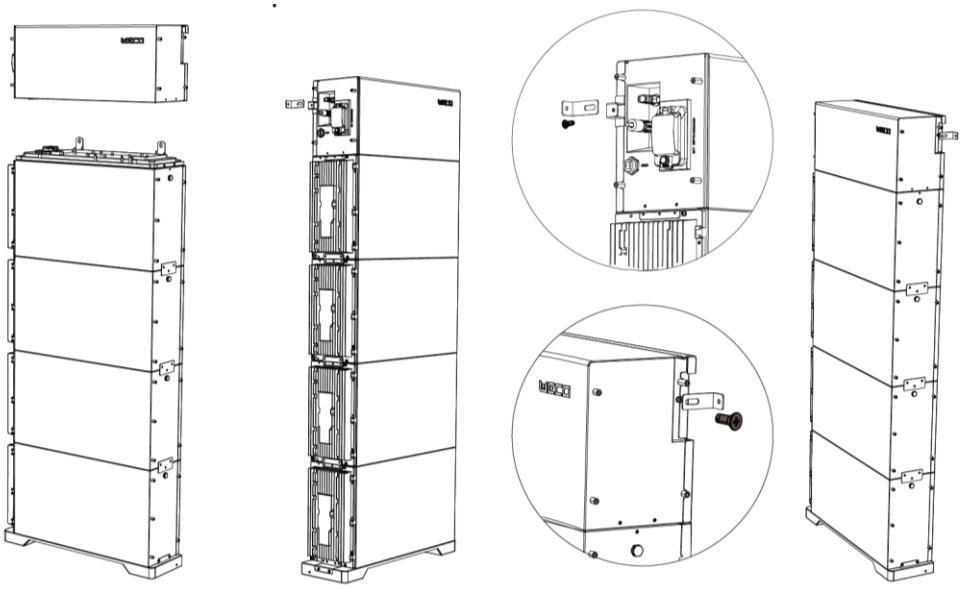


Install second battery step by step(repeating above step 5)

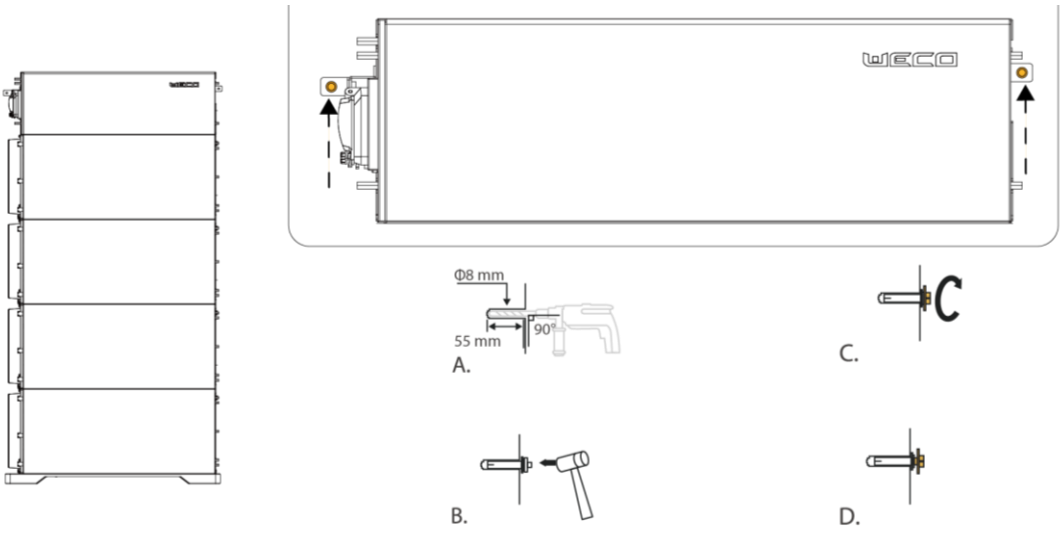


Step 7: After installing all the battery modules, then install the master control module and cluster expansion control module.

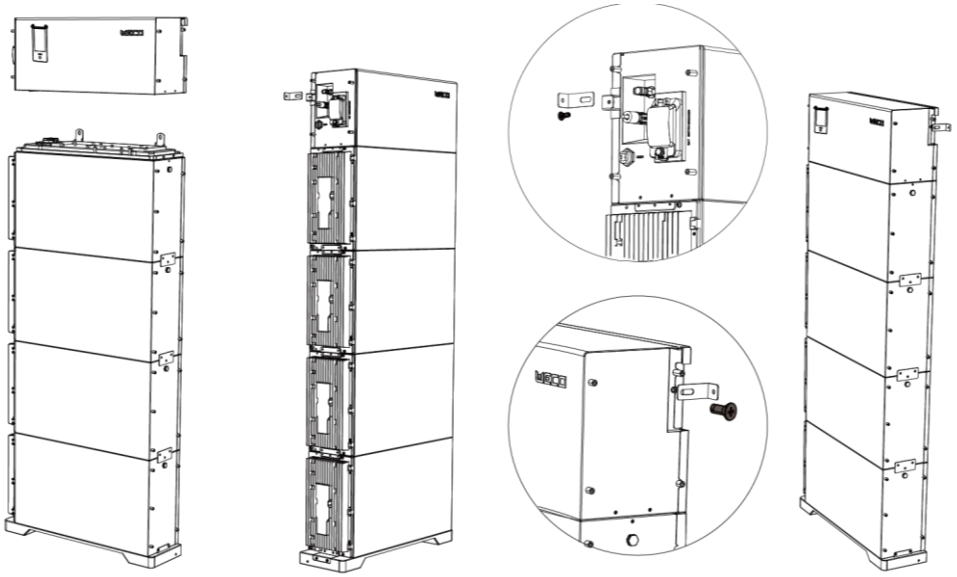
1. Install the cluster expansion control module



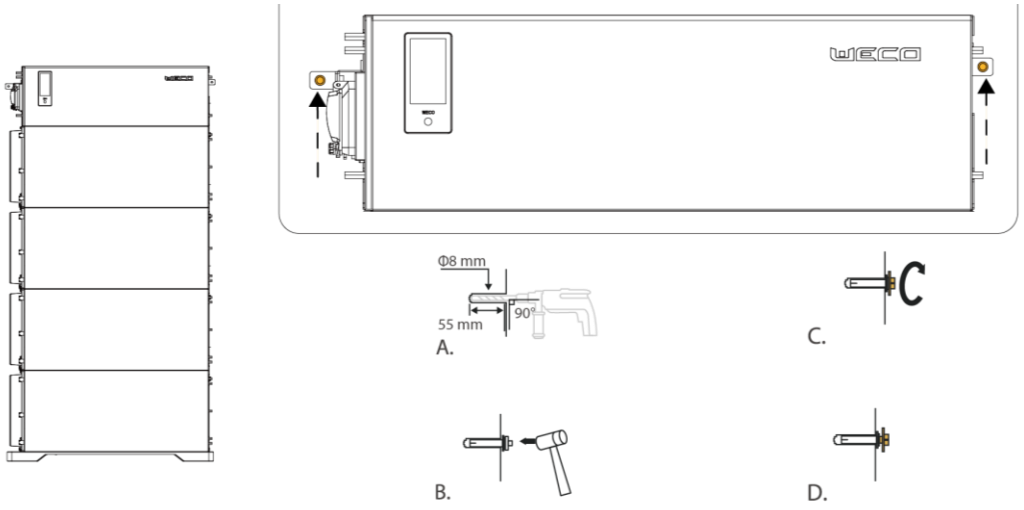
2. Fix module to the wall



3. Install the master control module



4. Fix module to wall

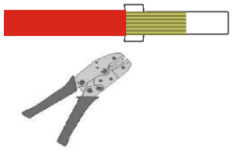


Step 8: Make the power + and power - cable connector, then connect the power cable between the master stacking tower and the cluster expansion stacking tower. Then connect the communication cable between the master control module and the cluster expansion control module.

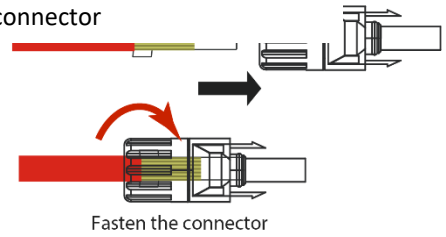
1. Make the power cables for stacking tower connection

a. put the power + to male pin


b. crimp the power +

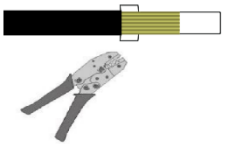


c. make the power + connector

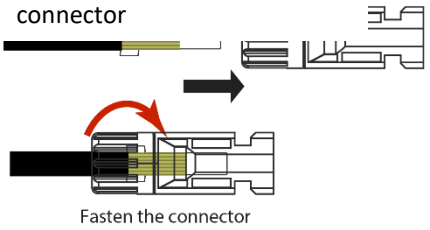



a. put the power - to male pin


b. crimp the power -

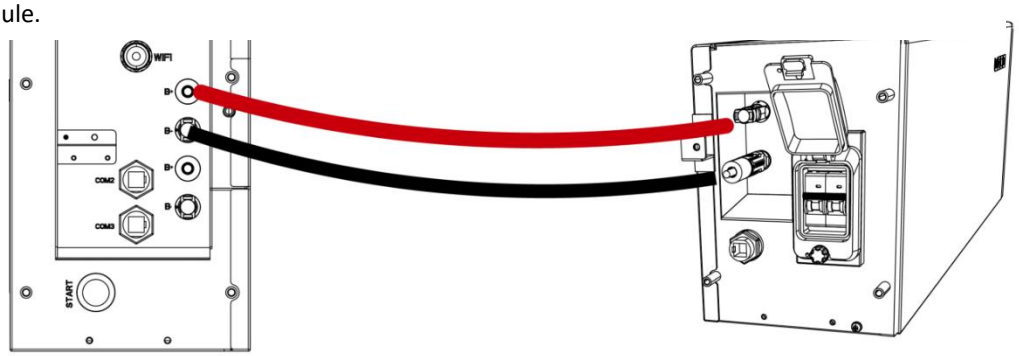


c. make the power - connector




| Cable Size | 8 AWG |
|---|---|

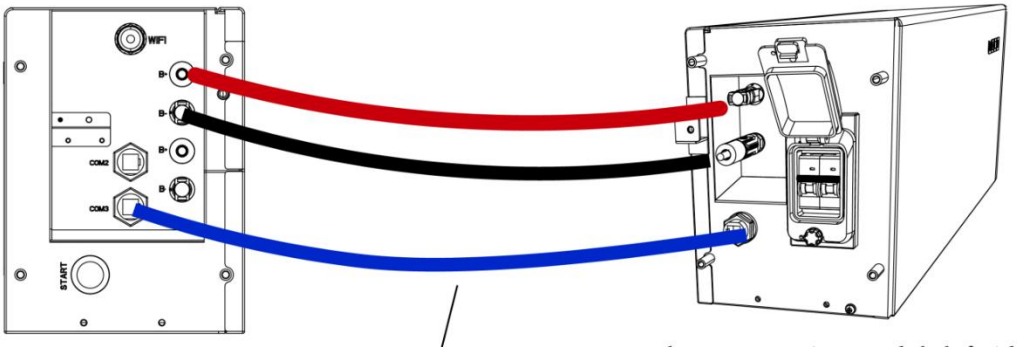
2. Connect the power cables between the master control module and cluster expansion module.



Master control module right side

Cluster expansion module left side

3. Connect the communication cables between the master control module and cluster expansion module.



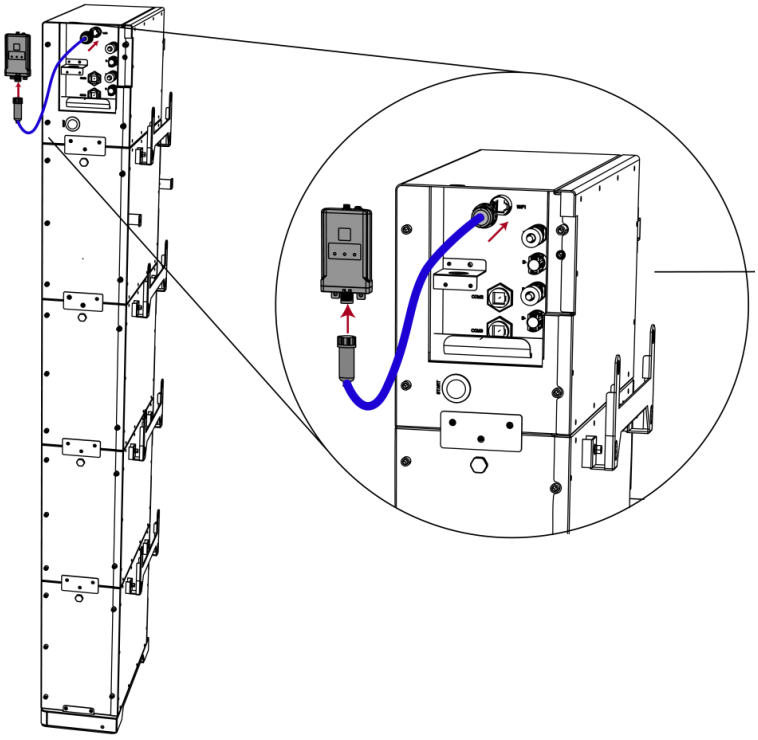
Master control module right side

Communication cable

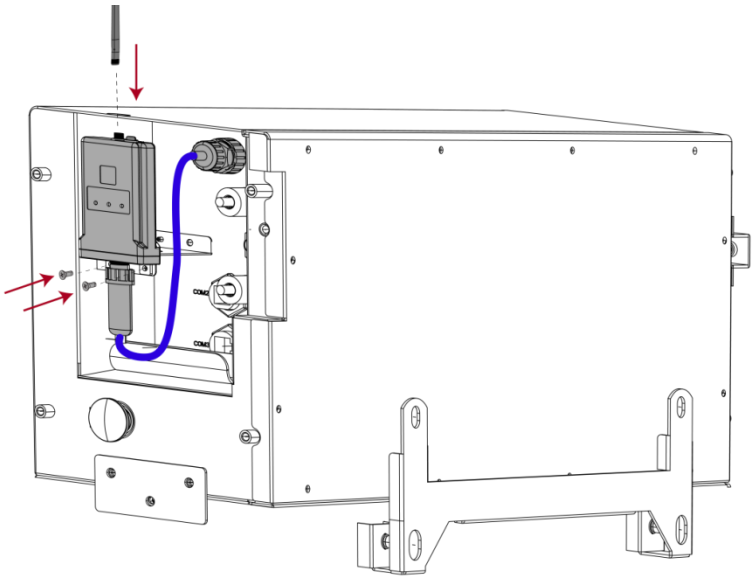
Cluster expansion module left side

Step 9: Install the WiFi bracket on the right side of the master control module, then fix the WiFi module to the bracket.

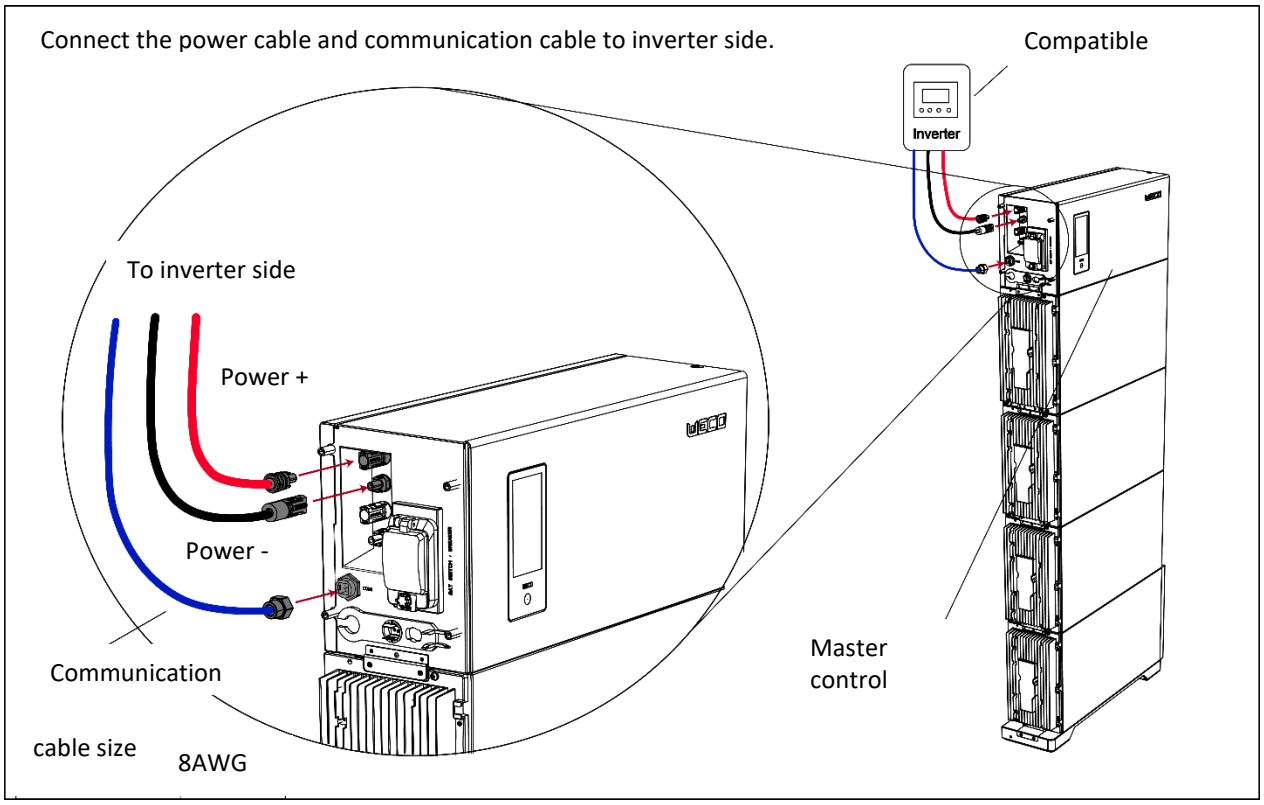
1. Connect the WiFi cable to the WiFi Port of the master control module




2. Fix the WiFi module and connect the WiFi antenna.

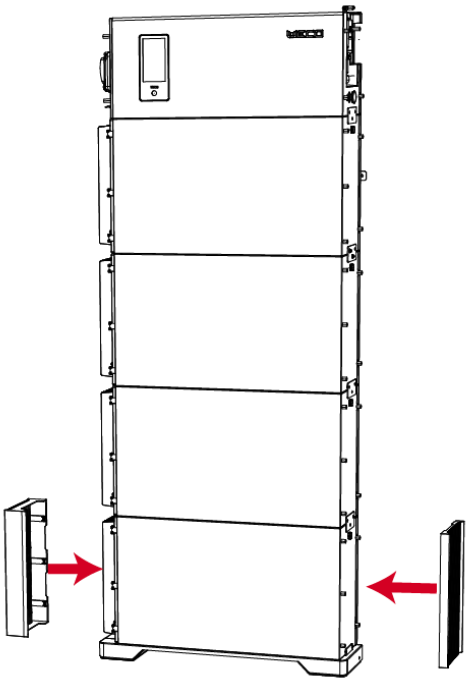


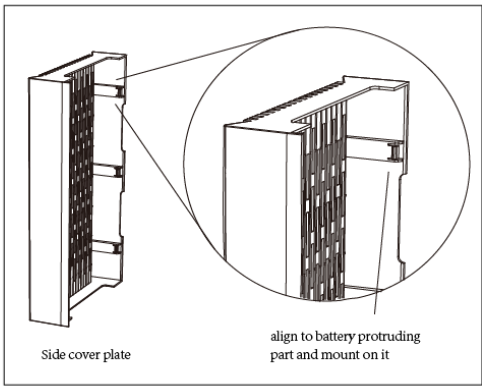
Step 10: Connect the power cable between the master stacking tower and the inverter. Then connect the communication cable between the master control module and the inverter.



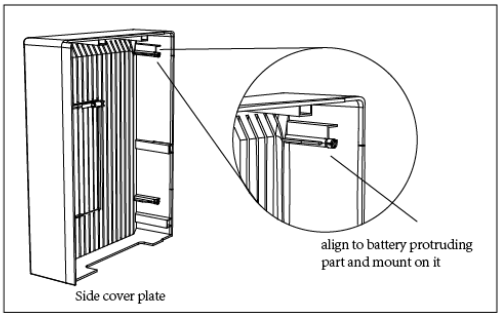
Step 11: Install the decorative side cover.

1. Install the side covers to the both sides of the battery modules one by one.






2. After finish the installation for battery modules, Install the side covers to the both sides of the control



## 5 System Commission & Decommission

### 5.1 Check Before commission

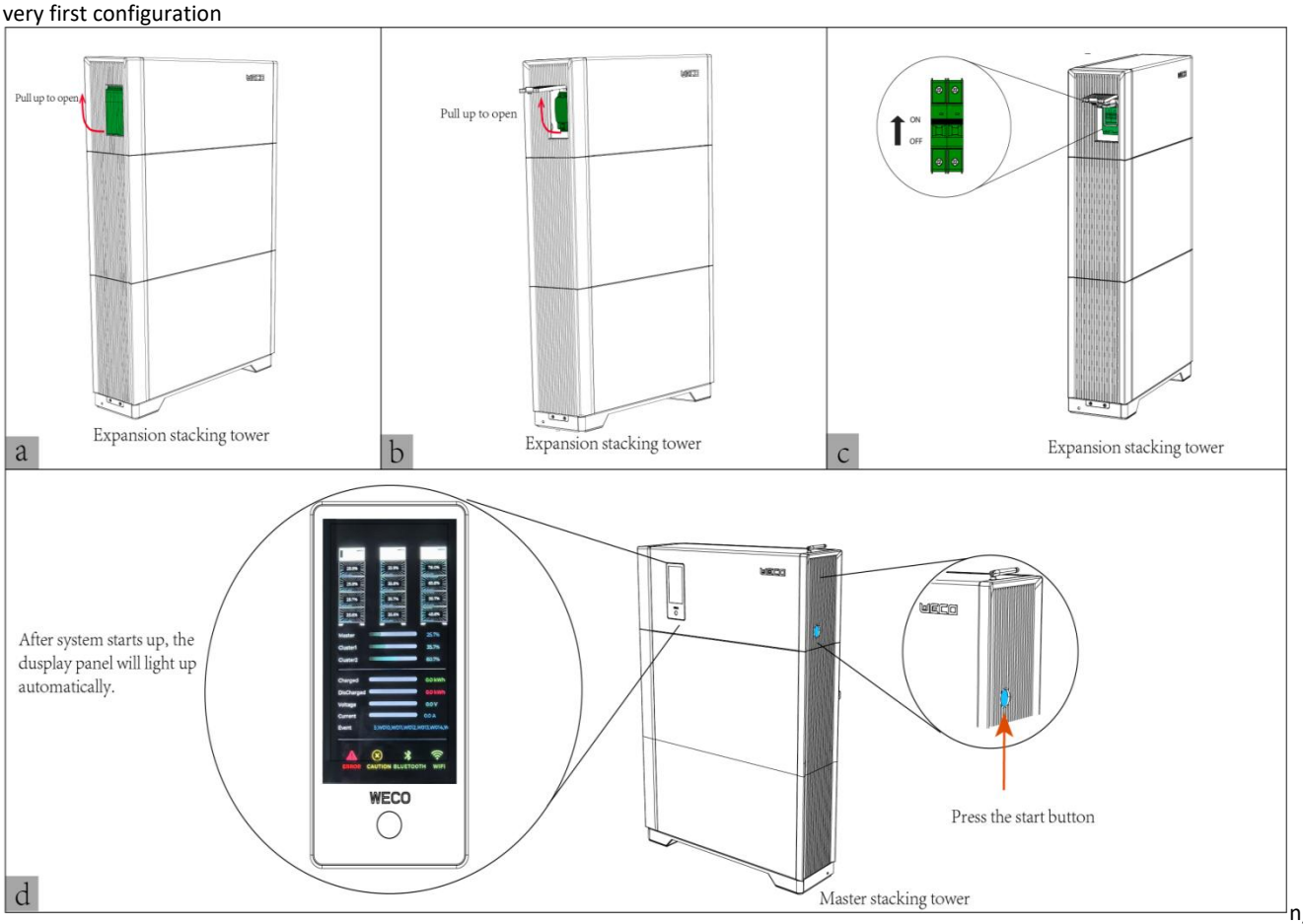
| Serial number | Check the item | Acceptance criteria |
|---|---|---|
| 1 | The inverter used to connect to the battery module is installed in place | The inverter is installed correctly and is robust and reliable. |
| 2 | The WiFi antenna is in place | WiFi antennas are installed correctly and are robust and reliable. |
| 3 | The cables are well arranged | The cable arrangement is reasonable to meet the user's requirements. |
| 4 | Cable ties are beautiful to lash | The cable tie should be even, and no sharp corners should be left at the shear. |
| 5 | Reliable grounding | The ground wire connection is correct and reliable. |
| 6 | Disconnect the switch | The "Power switch" of the control moduleand all switches connected to the battery modules are in the "OFF" state. |
| 7 | Cable connections into place | DC power cables, DC output cables, communication cables and are connected correctly and securely and reliably. |
| 8 | Seal unused terminals and connectors | Unused terminals and connections are covered with waterproof covers. |
| 9 | The installation environment meets the requirements | The installation space is reasonable, the environment is clean and tidy, and there are no construction residues. |

## 5.2 System Commission

### 5.2.1 System Configuration

After the batteries are installed and the inverter is installed correctly, and the electrical connection are finished correctly:

STEP 1: Switch on the cluster control module's breaker (if there is expansion stacking tower), Press the run button of the master control module, the system will be activated. Check the display panel light up and When all the WIFI module all LEDs are steady , use your mobile phone and open the WECO Bluetooth App as follows ( Also can use WECO WIFI App or PC software, since the WIFI App cannot set the protocol and the PC software needs RS232 cable for configuration, therefore we suggest to use WECO Bluetooth App for the very first configuration




n, it's a more convenient way, for more 7 details refer to chapter 7 ) :

## 5.3 System Decommission

 Warning

There's risk of injury due to the heavy weight of the battery modules.
At least above two operators to work and use lifting machine for moving stack tower modules.

Procedures:

STEP 1: Shut down the inverter according to the inverter manufacturer's instructions.
STEP 2: Shut down all the battery modules.
STEP 3: Switch off the DC switch box or the breaker (if there is any) between the inverter and the battery module.
STEP 4: Disconnect the DC cables between the inverter and the batteries, communication cables.
STEP 5: Remove the battery modules from the top of the stack tower one by one.
STEP 6: If the battery modules is going to be stored, refer to chapter 8 for more details.
STEP 7: If the battery modules is going to be disposed, refer to chapter 10 for more details.

# 6 WECO WIFI App Operation

## 6.1 App Introduction

### 6.1.1 Copyright Notice

The copyright of this manual belongs to WeCo and any unauthorized copying and excerpting, transmission in any form and other infringement shall not be carried out without the knowledge or permission of the Company. WeCo will pursue the infringement to the end. WeCo reserves the right of final interpretation of this manual and if the functions/pages of WeCo WiFi App are modified, the latest information of the company shall prevail.

### 6.1.2 Manual Content

This manual introduces the function introduction and operation process of WeCo WiFi App, to facilitate users to operate and manage WeCo WiFi App and meet the needs of users.

### 6.1.3 Manual Instruction

Dear users, thank you very much for using WECO's intelligent monitoring APP, we sincerely hope that this product meets your needs. The purpose of this manual is to provide users with detailed product information and operating instructions.

### 6.1.4 Usage Requirement

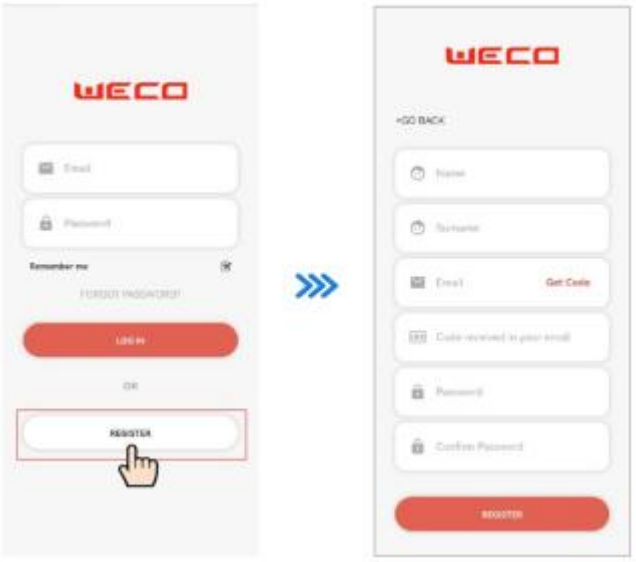
Download method: Google play, App Store app market search for "WeCo WiFi".

D ır mobile phone.


Android wifi

### 6.1.5 Register a WECO WIFI APP account

If you do not have a WeCo WiFi App user account, please follow the steps below to register.
Procedure:
1.On the WeCo WiFi App login page, click "REGISTER".
2.Follow the prompts on the page to complete the registration of the user account.
3.After the account is successfully registered, the user can log in to the WeCo WiFi App with the registered account and password.



## 6.2 Login and Logout the APP

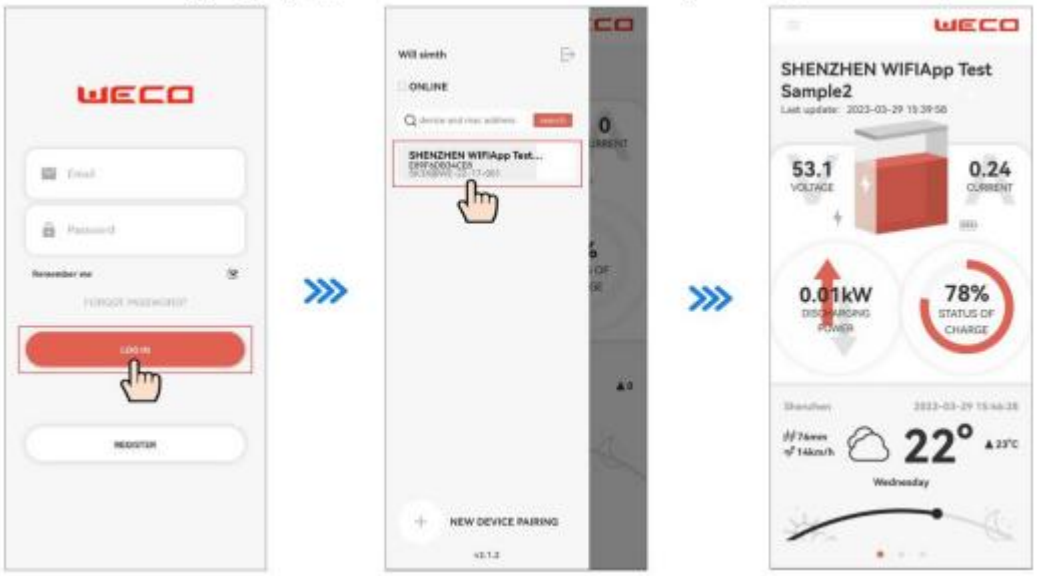
### 6.2.1 Log into the APP

After the app is properly installed on your phone, log in to the app to use it.

Procedure:

1.On the mobile client desktop, click the WeCo WiFi App application icon to enter the login page.

2.On the app login page, enter the account number and password, and click "Login".




### 6.2.2 Log out the APP

Procedure:

1.In the upper-left area of the home page, click “ ” icon to pop up the page on the left.

2.Click “ ”icon and you will logout the app.

## 6.3 Add a new device

### 6.3.1 The new user signs in for the first time to add the device

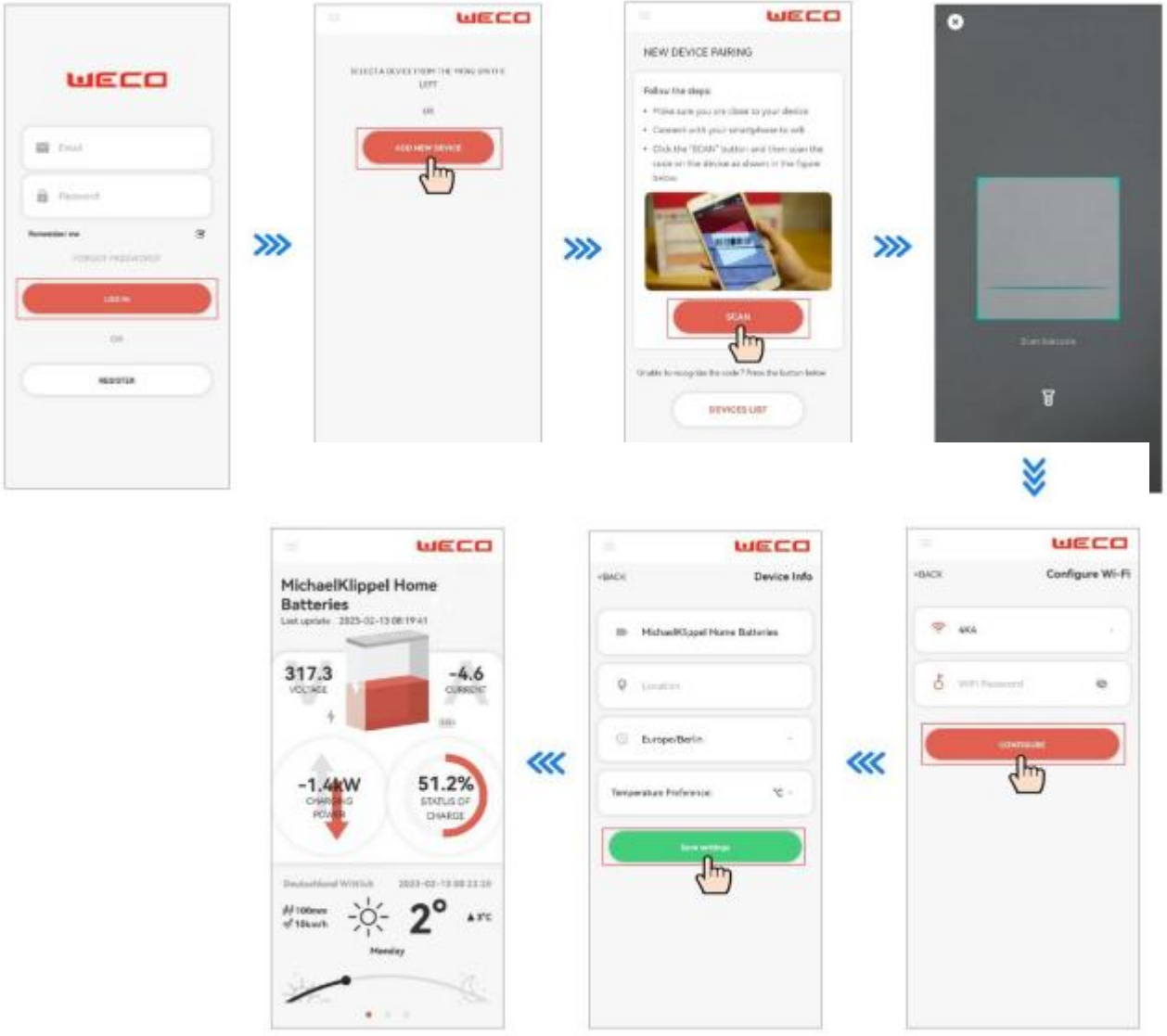
Procedure:

1.After logging in to the APP, click "ADD NEW DEVICE".

2.Go to the add device page, here you can click "SCAN" to scan the QR code on the device or click "DEVICE LIST "to select the device for Bluetooth connection.

3.Enter to the "Configure Wi-Fi" page, select 2.4G WiFi, enter the password and click "CONFIGURE" to configure the network.

4.After successful network configuration, enter the "Device Info" page, fill in the information according to the page prompts, click "Save settings" to save the information and automatically return to the home page.



## 6.4 Add a new device

Procedure:

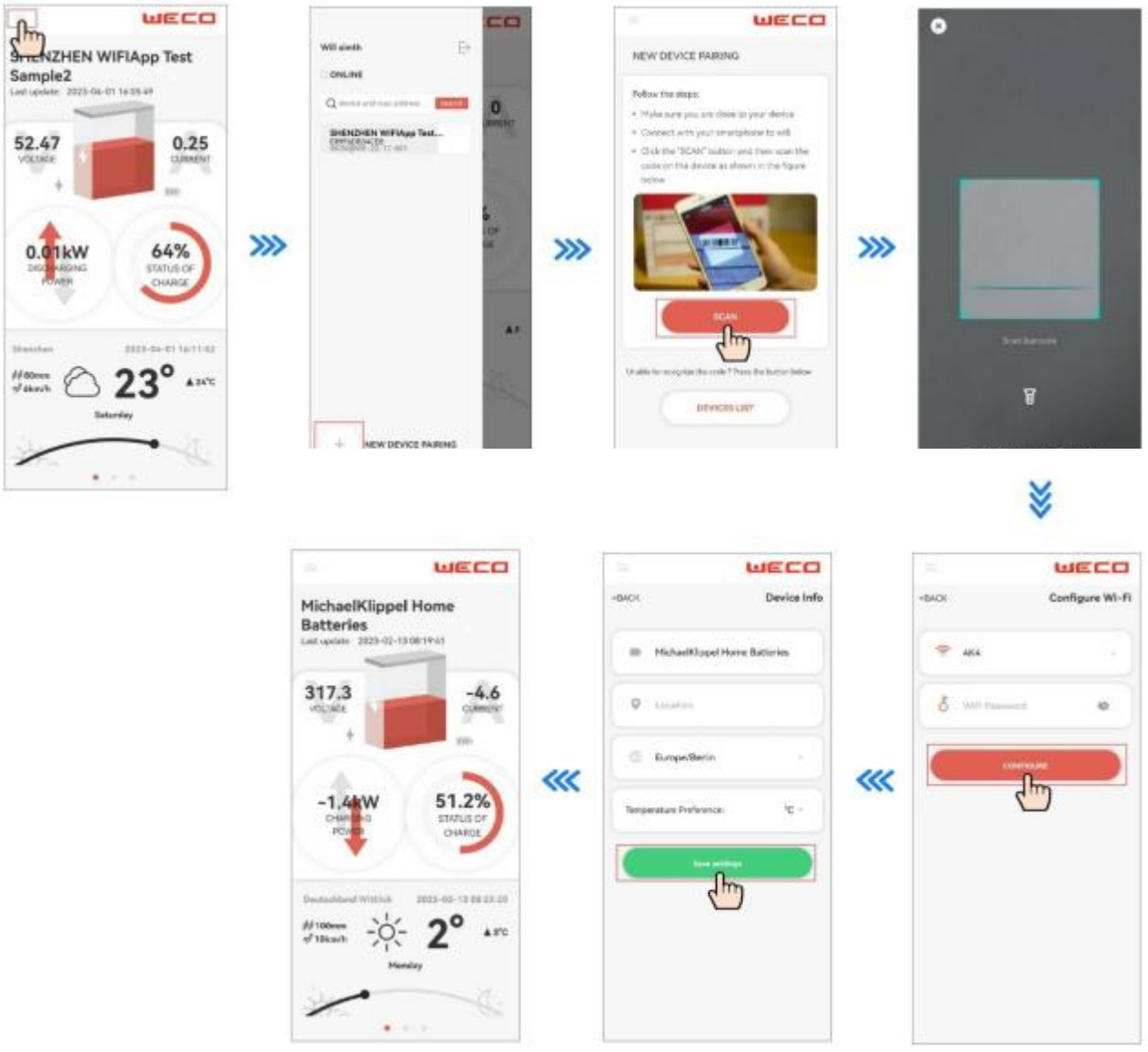
1.In the upper-left area of the home page, click “ ” icon to pop up the page on the left.

2.Click “ ” button icon to go to the Add Device page.

3.Go to the add device page, here you can click "SCAN" to scan the QR code on the device or click “DEVICE LIST “to select the device for Bluetooth connection.

4.Enter to the "Configure Wi-Fi" page, select 2.4G WiFi, enter the password and click "CONFIGURE" to configure the network.

5.After successful network configuration, enter the "Device Info" page, fill in the information according to the page prompts, click "Save settings" to save the information and automatically return to the home page.



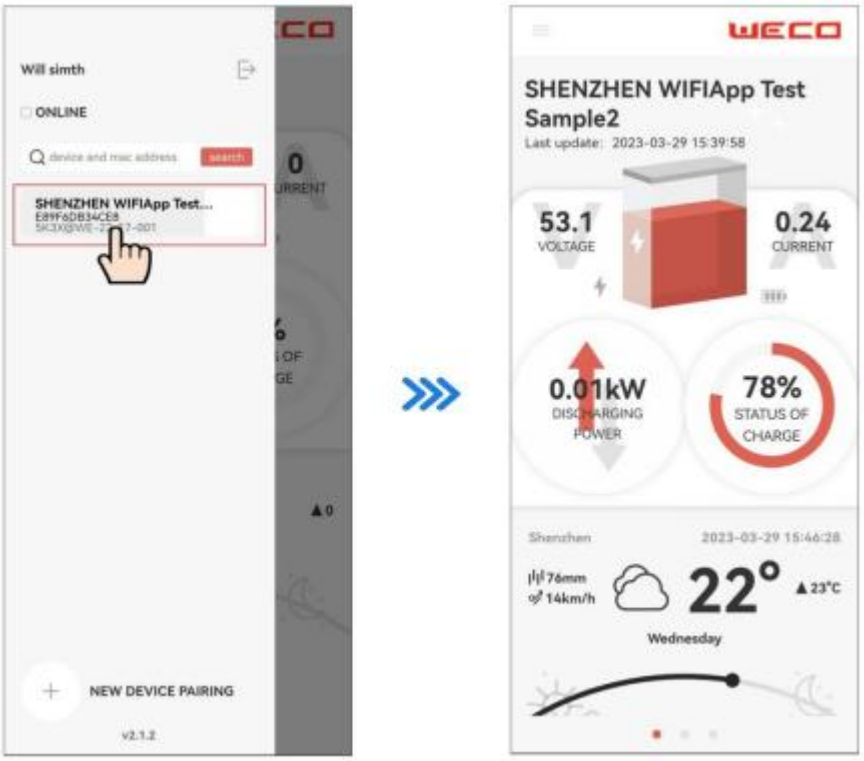
### 6.4.1 View the device

After logging in to the app, you can select the device you want to view on the pop-up page on the left.

### 6.4.2 View the main parameters of the device

Procedure:

1.After logging in to the app, select the device you want to view on the left.



### 6.4.3 View Trend Charts

Procedure:

1.After logging in to the app, select the device you want to view on the left.

2.After entering the main parameters page, "swipe left" to enter the trend chart page.


### 6.4.4 View the detailed parameters of the device

Procedure:

1.After logging in to the app, select the device you want to view on the left.

2.After entering the main parameters page, "swipe left" to enter the trend chart page.

3.Swipe left again to enter the device details page.

## 6.5 FAQ

6.5.1 How to reset your password via email if you forgot it?
Prerequisite: The user's email address can receive the verification code.
Procedure:
1.On the app login page, click "Forgot your password?" "Go to the Forgot Password page.
2.Enter your email account.
3.Click "Get verification code" and enter the verification code to verify the email account.
4.When prompted to enter a new password and enter your new password again, click “Confirm”.


### 6.5.2 Reset the user’s password

When users is unable to reset the forgotten password he can authorize his administrator to reset it.

### 6.5.3 When the user logs in to the app, he prompts how to solve the network abnormality?

Work around:
● Check whether the Wi-Fi or mobile network connection is working.
● Check whether the network permission is enabled for the app.

### 6.5.4 Device does not appear after adding

After the device is added, it is not displayed in the device list.
Work around:
● Please check whether the device communication or network connection is normal, if it is normal, please wait a few minutes.
● If there is an abnormality in the check, please contact the service provider.

### 6.5.5 Network changes: how to reconfigure the device network

Prerequisite: The user's email address can receive the verification code.
Procedure:
1.On the Device Details page, click parameters icon.
2.After entering the WiFi Setting page, click "Change WiFi" to enter the Configure Wi-Fi page.
3.Select 2.4G WiFi according to the prompts on the page, enter the password and click "CONFIGURE" to configure the network.

## 7 WECO Bluetooth App Operation

7.1 App Introduction
7.1.1 Copyright Notice

### 7.1.2 Manual Content

This manual introduces the function introduction and operation process of WeCo Bluetooh App, to facilitate users to operate and manage WeCo Bluetooth App and meet the needs of users.

### 7.1.3 Manual Instruction

Dear users, thank you very much for using WECO's intelligent monitoring APP, we sincerely hope that this product meets your needs. The purpose of this manual is to provide users with detailed product information and operating instructions.

### 7.1.4 Usage Requirement

Download method: Google play, App Store app market search for "WeCo Bluetooth".

Apple wifi Android wifi




Information

WECO Bluetooth App has similar function with WECO WIFI App.
The WECO Bluetooth App is intended to be used when the battery module is near to a mobile phone used to run the WECO Bluetooth APP. And it's suggested in the case rather than using the WECO WIFI APP. Following operations of WECO Bluetooth is for reference, battery example may be other WECO model.

## 7.2 Login and Logout the APP

### 7.2.1 Log into the APP

After the app is properly installed on your phone, log in to the app to use it.

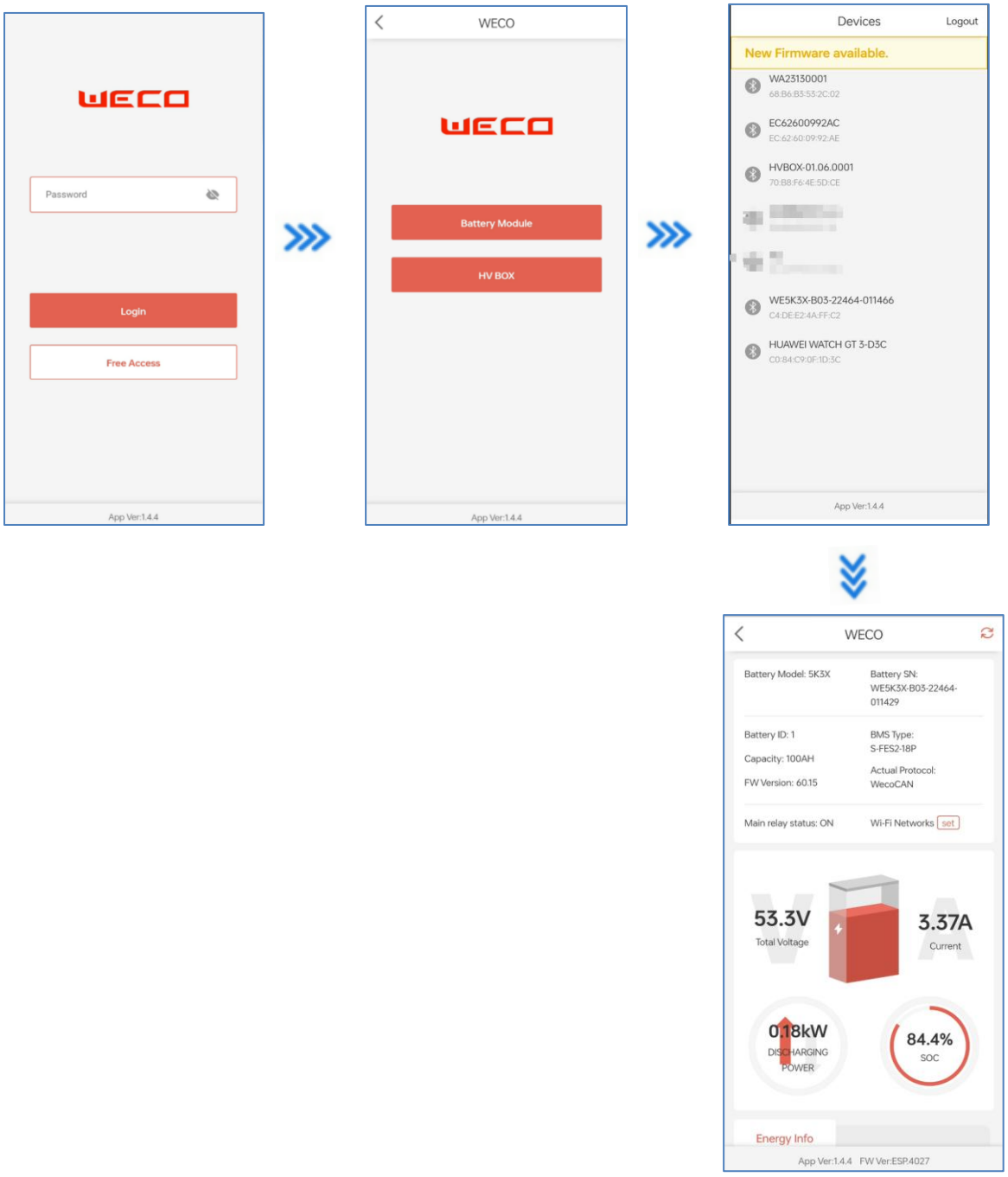
Procedure:

1.On the mobile client desktop, click the WeCo Bluetooth App application icon to enter the login page.

2.On the app login page, enter password, and click "Login".

3. In the pop up page, click “HV BOX” for HV system.

4. In the Devices page, select the related device and click it to enter to the homepage.



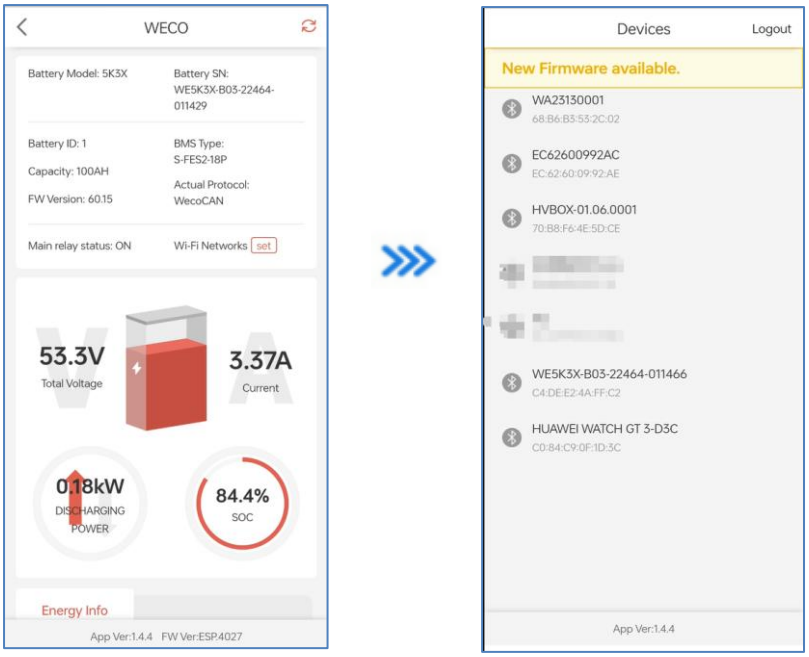
Information

| |
|---|
| Contact WECO Company for acquiring the password. It can be login by clicking “Free Access”, but the setting function will not be available, “Free Access” login is only for checking the devices status. |

### 7.2.2 Log out the APP

Procedure:

1. In the upper-left area of the home page, click “ ” icon to pop up the page on the left.
2. Click “Logout” and you will logout the app.

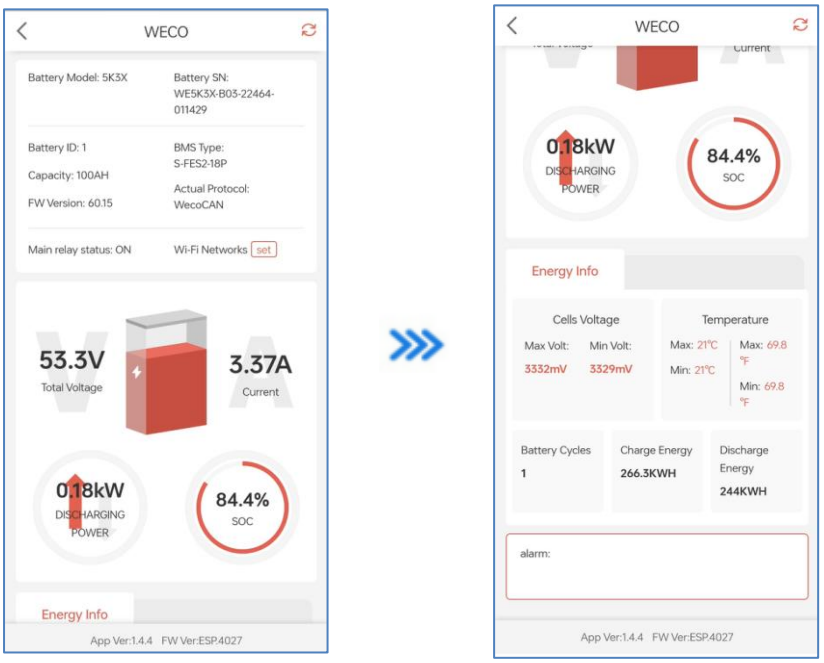


## 7.3 View the device and setup

### 7.3.1 View the main parameters of the device

Procedure:

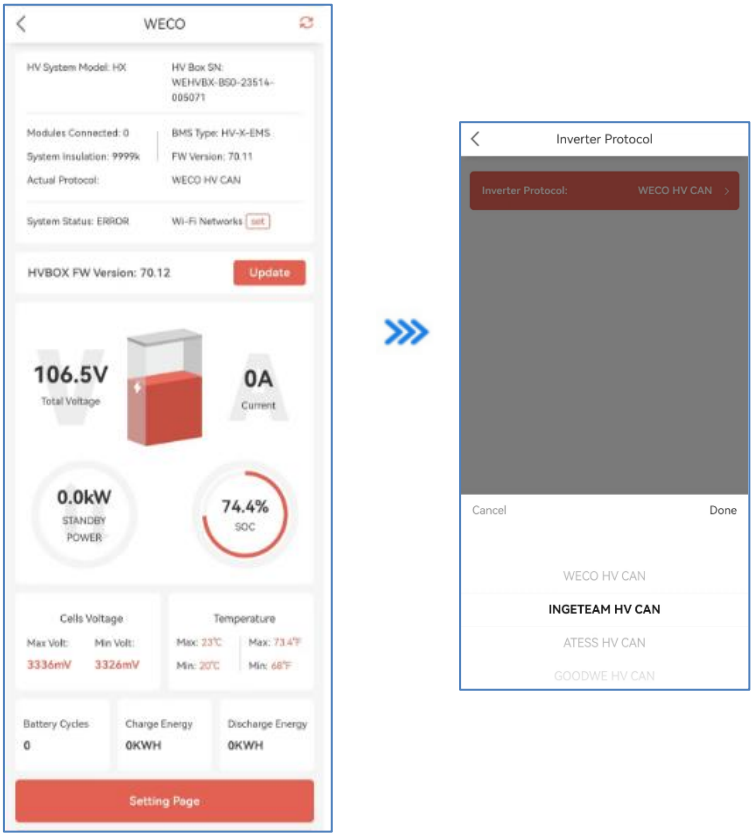
1.After logging in to the app, the homepage will pop up directly, you can view the main parameters of the battery directly.




### 7.3.2 Setup the protocol of the battery

Procedure:

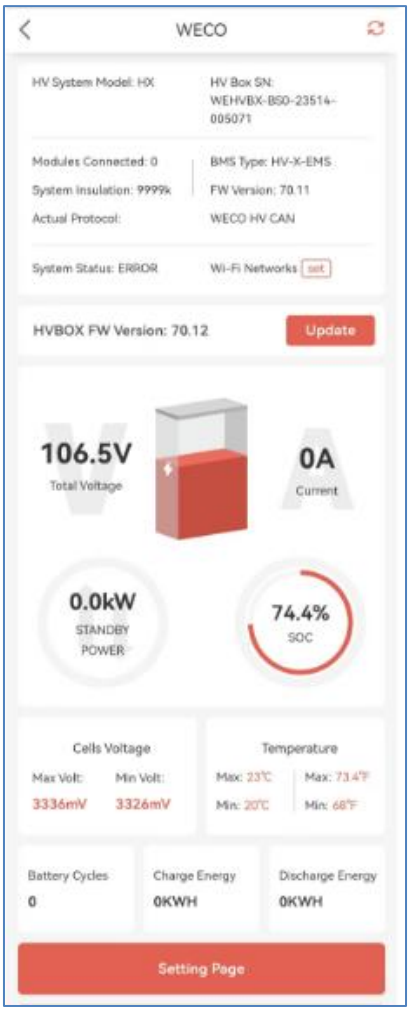
1. Click the “Setting Page” at the bottom of the home page.
2. After entering the pop up page, click the Inverter protocol to select the correct protocol for the inverter which is connected to the battery.



### 7.3.3 Upgrade the Firmware

Procedure:

1. Click the “Update” at the middle of the home page.
2. Then the inverter will start to upgrade to the indicated version.



## 8 Storage and Transportation

Storage - Transportation – Removing / Relocation of Batteries
This Battery is considered DANGEROUS GOODS by the United Nations and must be treated accordingly.
Each box comes from the factory with the below labels:



This battery can only be transported and stored with the original approved carton box, Certified as per UN CLASS 9 Y80.
This Battery must be stored in its original carton box in a dry and cool place. Carton box is marked as below:


The transportation and Storage State of Charge (SoC) shall not exceed 50%.

The shelf period without recharging is 6 months, and then requires a quick charge up to 50% DoD. Charge at
0. 1C and not more than 50% SOC. If shipped by sea, you must refer to the UN38.3 standard. If by road, refer to local codes.
To preserve the performance and shelf life, this battery should optimally be stored at 77°F /25°F and @70% humidity.
Acceptable storage temperature range of the battery is between +59°F and +95°F /+15°C and +35°C
The self-discharge in the range of +59°F to +119°F /+15°C to +35°C is around 1% a month. Anything outside this range could exceed 10% a month.

Do not store the batteries near sources of heat, vapor, gas, fuels, sparks or anything that could generate fire or explosion.
Store inside and protect from water and moisture.
Transportation of new and used or damaged modules must be in accordance with the UN 38. 3 Regulation and with the Federal, State and Local regulations.

If one or more working Battery Modules need to be removed or relocated, they must be marked as USED BATTERY ( follow local rules).

If one or more Battery Modules need to be replaced due to damage, they should be marked as DAMAGED USED BATTERY and follow any applicable procedures and all Federal, State and Local regulations.

The installer approaching this battery model for the first time must understand the use and operation of its accessories.

## 9 Maintenance and Replacement

Please follow following instructions for maintenance and replacement of the battery:

• The battery module should be maintained by well trained operators authorized by WECO company.
• The battery module must be powered down before maintaining, and follow the safety instructions in this manual and other relevant documents.
• Do not start up the battery again unless all faulty have been solved.
• After finish the maintenance, check to ensure that no parts are left in the battery module.
• Do not dis-assemble without authorization by WECO as there is a risk of electric shock. Any damages due to the above reason are not covered by the warranty.
• When not use the battery for long time, please store and charge the battery according to the instructions in this manual.

## 10 Battery module Disposal

### 10.1 Remove the battery

Procedure

Step 1 Perform a system power-down operation

Step 2 Disconnect all electrical connections to the battery modules.

Step 3 Remove the battery module.

 Caution

| |
|---|
| Please note that for no matter what reasons any personnel or installer do not disassemble / tear down the battery module without WECO authorization, otherwise the device will not be in warranty. |

### 10.2 Packaging Batteries

Please put it inside the original packaging and seal the package securely with tape

### 10.3 Scrap Batteries

Disposal of the 5K0 PRO battery module must comply with the local codes associated with disposal regulations for electronic waste and used batteries.

## Appendix A Technical Parameters

| 5K0 Pro Battery + Master Controler | | | | |
|---|---|---|---|---|
| System Model | 5K0 PRO VM050A | 5K0 PRO VM100A | 5K0 PRO VM150A | 5K0 PRO VM200A |
| Master Control Module | 5K0 HBMA | | | |
| Number of power control module | 1 | | | |
| Cluster expansion module | 5K0 HBMA | | | |
| Number of power control module | 1 every 4 batteries | | | |
| Battery Module | 5K0 VM050 ( 100/150/200) | | | |
| Number of battery module | 1 | 2 | 3 | 4 |
| Battery Module Capacity | 5KWh | 10KWh | 15KWh | 20kWh |
| *Battery usable capacity | 100% DoD | | | |
| Max. output current | 5.6A | 11.2A | 16.8A | 22A |
| Peak. output current | 7.8A | 15.6A | 23.4A | 31.2A |
| Max. output power | 2.5KW | 5KW | 7.5KW | 10kW |
| Peak output power | 3.5KVA(60S) | 7KVA(60S) | 10.5KVA(60S) | 14kW |
| Nominal Voltage(1P) | 450V | | | |
| Operating Voltage range (1P) | 420 – 480V | | | |
| Nominal Voltage (3P) | 450V | | | |
| Operating Voltage range (3P) | 420 – 480V | | | |
| Communication | | | | |
| Display | LCD indicator, APP | | | |
| Communication | CAN(Inverter); WiFi (PORTAL/APP) | | | |
| General Specification | | | | |
| Cell technology | Cobalt free Lithium-iron phosphate (LFP) | | | |
| Dimension | 669*185*622 | 669*185*962 | 669*185*1302 | 669*185*1642 |
| **Weight | 62KG | 114KG | 166KG | 218KG |
| HV master control module weight | 10KG | | | |
| Cluster expansion module weight | 10KG | | | |
| Battery Module weight | 55KG | | | |
| Installation | Floor stand/bracket(optional) | | | |
| ***Operating Temperature | -20° C ~ +55° C | | | |
| Max. operating altitude | 4000m(de-rating above 2000m) | | | |
| Relative humidity | 5% ~ 95% RH | | | |
| Enclosure | IP65 | | | |
| Cooling | Nature Cooling | | | |
| Noise emission | <29db @1m | | | |
| Scalability | Up to 12 batteries per system(Max 3 clusters) | | | |
| System Protections | DC breaker, auto contactor, fuse, EMS for current, voltage, temperature and CAN BUS communication | | | |
| ****Certificates | CE, RCM, CEC, VDE2510-50, IEC62619, IEC60730, IEC 62477, IEC 62040 UN38.3 | | | |

## COMPATIBILITY VIA CAN BUS

Below is the compatible inverter list and some inverter's PIN out for communication connection for reference. The pin number of inverter side could be modified by the inverter manufacturers, before connection please double check the corresponding manuals of the inverter in use.

| Inverter Compatibility List | | | | | | |
|---|---|---|---|---|---|---|
| Inverter | | Inverter Terminal | CAN Terminal | Inverter side (PIN number) | Battery side (PIN number) | Protocol Selection |
| WECO | WECO ESS | RJ45 | CAN L | 5 | 5 | WECO CAN |
| | | | CAN H | 4 | 4 | |
| Deye | DEYE | RJ45 | CAN L | 5 | 5 | DEYE CAN HV |
| | | | CAN H | 4 | 4 | |
| solis | SOLIS | RJ45 | CAN L | 5 | 5 | WECO CAN |
| | | | CAN H | 4 | 4 | |
| | | | CAN H | / | 4 | |

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