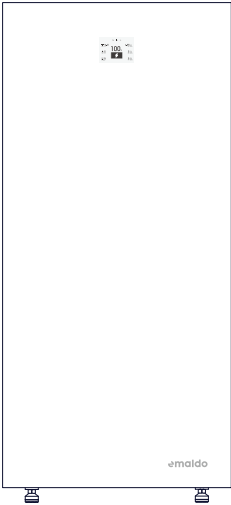
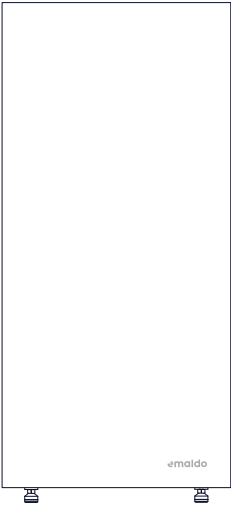


# Full Installation Manual

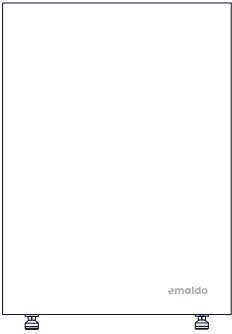
Emaldo® Systems



Power Core



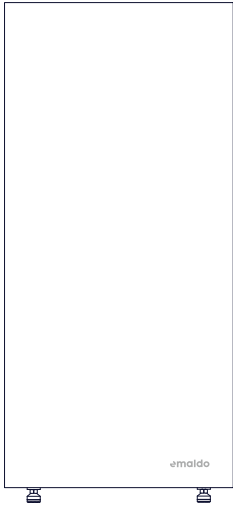
Power Store



Power Pulse



KeepON™ Backup Kit



Battery Expansion Cabinet

# Support



For the latest and most efficient installation experience, please scan the QR code above.  
This printed guide may be outdated if the product has been in storage for a while.

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# Safety

This guidance is exclusively intended for individuals with a professional background, possessing a thorough understanding of local regulations, standards, and electrical systems. It is imperative that users have received formal professional training and are well-versed in the pertinent knowledge related to this product.

The Emaldo® products has been meticulously crafted in adherence to stringent safety regulations and has successfully undergone rigorous testing. It is imperative to adhere to the applicable safety regulations of the installation site during the processes of installation, operation, and maintenance. Any deviation from proper operational procedures may pose a risk of electric shock, potentially leading to equipment damage and property losses.

## Warning Labels



Warning



Do not dispose in trash



Handle with care



Risk of burns



Component is recyclable



EU conformity



Risk of electric shock



This way up



Importance



## Disclaimer

Carefully read all safety instructions before commencing any work and strictly adhere to the rules and guidelines when working on or with the Emaldo® products. Emaldo® shall not be held liable for any consequences resulting from the violation of the following instructions:

- Incorrect transportation, storage, installation or use.
- Non-professional installation.
- Non-compliance with the operational instructions and safety precautions outlined in this document.
- Unauthorized modifications or removal of the software package.
- Operation in extreme environments which are not allowed in this document.
- Repair, disassemble, or change the Emaldo® products without authorization.
- Damages due to force majeure, such as, but not limited to; lightning, earthquakes, fire, and storms.
- Warranty expiration.



## General safety

- This product is not suitable for life support equipment or medical equipment.
- Only utilize components or accessories that are either produced by Emaldo® or recommended by our authorized partners.
- Do not attempt to install the equipment in the presence of any damage.



## Personal safety

- Heavy lifting is involved. Ensure that more than one person is present during the lifting process, or use appropriate lifting.
- Use safety equipment, such as safety glasses, protective devices, steel-toed safety boots and helmets.
- Adhere to standard safety measures, including the removal of all jewelry, the utilization of insulation tools, and wearing non-conducting clothing.
- Ensure that children, pets, and other animals are kept at a safe distance from the energy storage system, photovoltaic array, and power grid modules.
- Using the equipment in a manner not specified by the manufacturer may compromise the protection provided by the equipment.



## Product safety







- Use HVDC isolators per regulations. Turn off the energy storage system 5 mins before installation for safety.
- Disconnect all power supplies before maintenance. Avoid opening the upper right-side compartment and pulling AC/DC cables during system operation.
- Cabinet becomes hot during operation; refrain from opening or touching internal parts. Allow adequate cooling time before conducting maintenance on the system.



- Avoid installing or using the system in wet or moist environments, or areas with corrosive gases or liquids.
- Avoid storing flammable and explosive items or equipment in the same room.
- Verify that the AC cable, DC cable, and ground cable dimensions comply with local specifications.
- Strictly adhere to spacing requirements. Maintain open vents and ensure smooth air circulation around the equipment.
- Do not disassemble or modify the Emaldo® inverter, Emaldo® Power Boxes, or any other system component.
- Verify that the proposed photovoltaic array's output voltage is below the system's maximum rated input voltage to prevent potential damage and maintain warranty validity.
- Solar modules must have an IEC61730 A rating.
- Make sure that the installation location complies with spacing requirements.
- Do not charge the batteries if in a frozen state.
- Avoid exposing the battery to high-temperature environments or near heating equipment, including sunshine, fire sources, transformers, and heaters, as overheating may lead to fire and explosion.

## Emergency responses

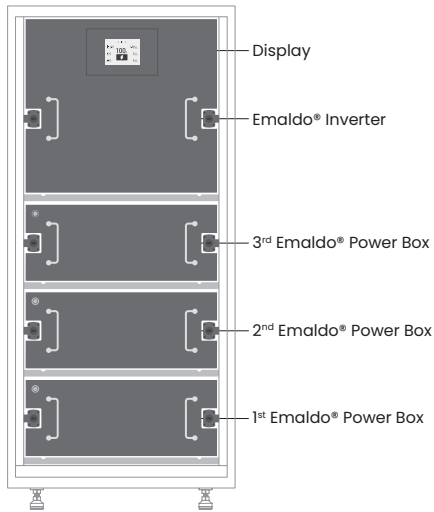
Emaldo® considers foreseeable risk scenarios and designs to minimize hazards. However, in the event of the following situation, follow the instructions below:

Emergency	Action
 Leakage	<p>Avoid contact with leaking liquid or gas. If you come into contact with leaking electrolyte, follow the instructions below immediately:</p> <ul style="list-style-type: none"><li>- Inhalation: Evacuate the contaminated area and seek medical help.</li><li>- Eye contact: Rinse eyes with flowing water for 15 minutes and seek medical help.</li><li>- Skin contact: Rinse the affected area thoroughly with soap and water and seek medical help.</li><li>- Ingestion: Induce vomiting and seek medical help.</li></ul>
 Fire	<p>Emaldo® systems are very unlikely to ignite spontaneously. In the event of a fire, do not attempt to extinguish it; instead, evacuate people immediately.</p>
 Liquids	<p>If the Emaldo® system is flooded or submerged, refrain from accessing it. Contact Emaldo® promptly for technical assistance.</p>
 Damage	<p>Damaged systems pose a risk and require special attention. They are no longer suitable for use and may pose a danger. If the Emaldo® system is damaged, discontinue use and promptly contact Emaldo® or the distributor.</p>

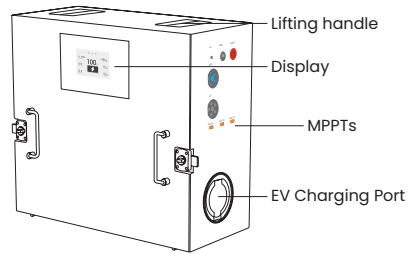
# Overview

## Power Core

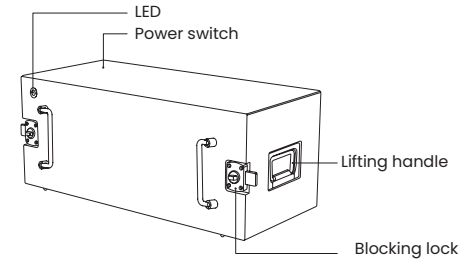
**Emaldo® Power Core**



**Emaldo® Inverter**

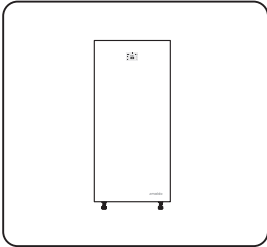


**Emaldo® Power Box (Battery)**

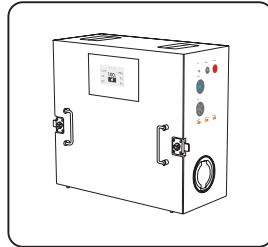




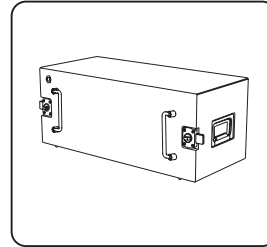
# Included



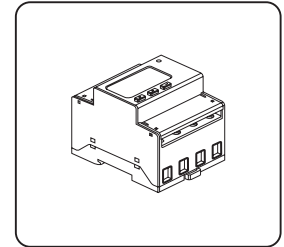
Emaldo® Cabinet x 1



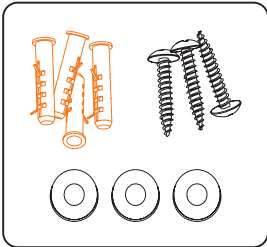
Emaldo® Inverter x 1



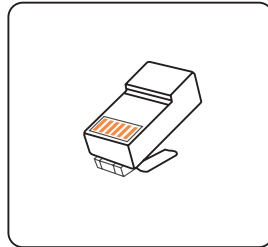
Emaldo® Power Box  
(Battery)



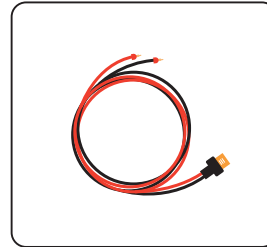
Smart Meter x 1



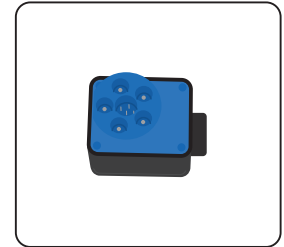
Installation Kit x 1



COM Connector x 2



MPPT Cable x 3



Main AC Connector x 1

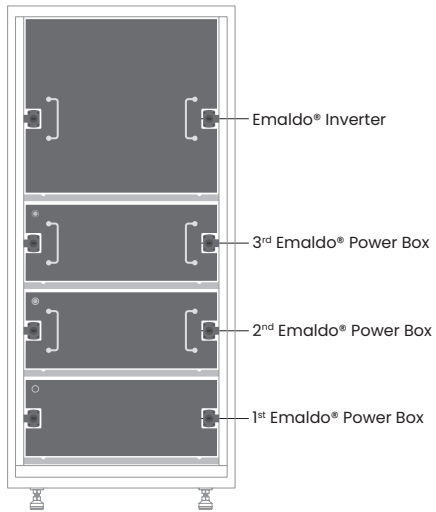


Not Included: RCD Type A & Fuse - Comply with local specifications and regulation

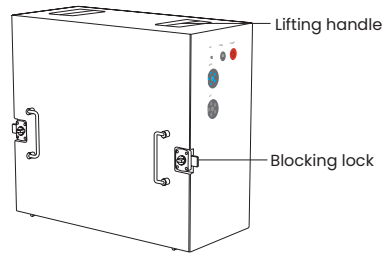
# Overview

## Power Store

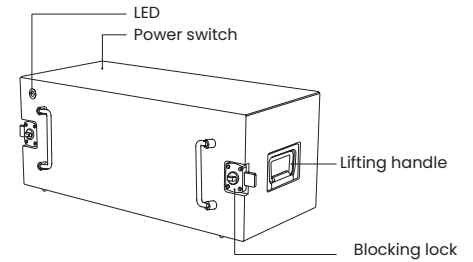
Emaldo® Power Store



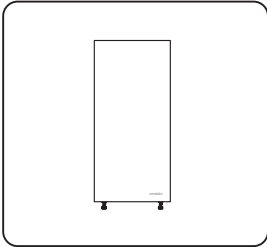
Emaldo® Inverter



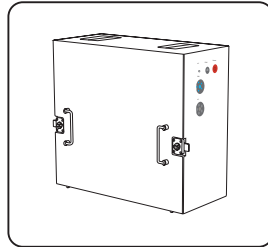
Emaldo® Power Box (Battery)



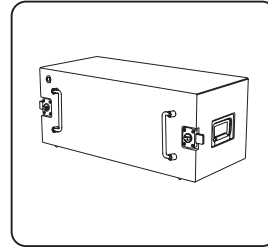
# Included



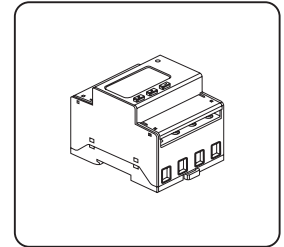
Emaldo® Cabinet x 1



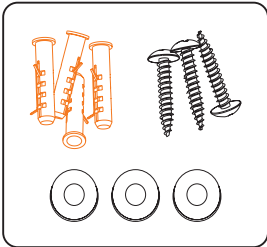
Emaldo® Inverter x 1



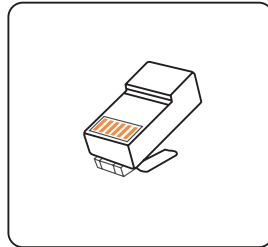
Emaldo® Power Box  
(Battery)



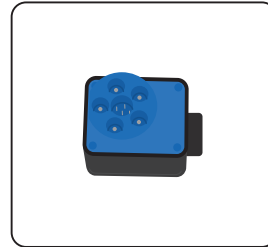
Smart Meter x 1



Installation Kit x 1



COM Connector x 2



Main AC Connector x 1

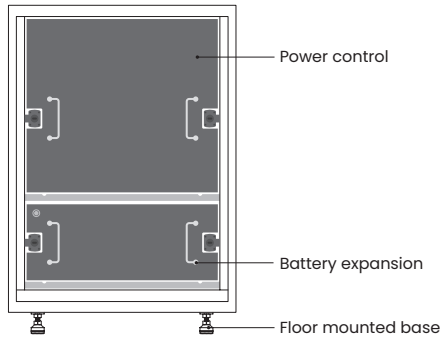


Not Included: RCD Type A & Fuse - Comply with local specifications and regulation

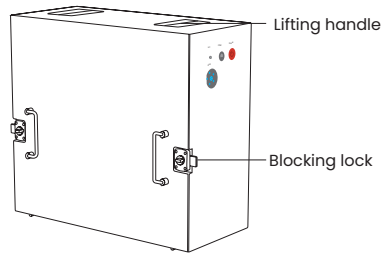
# Overview

## Power Pulse

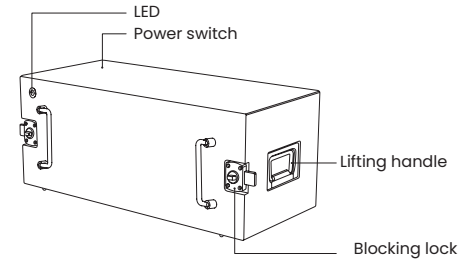
Emaldo® Power Pulse



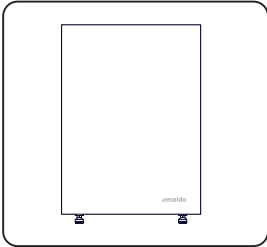
Emaldo® Inverter



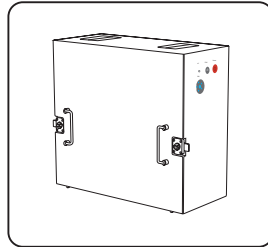
Emaldo® Power Box (Battery)



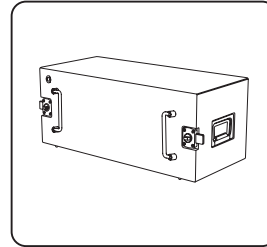
# Included



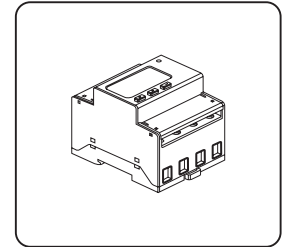
Emaldo® Cabinet x 1



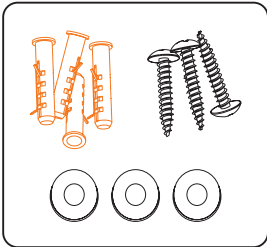
Emaldo® Inverter x 1



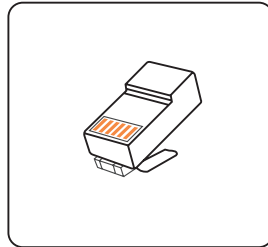
Emaldo® Power Box  
(Battery)



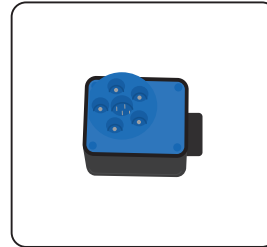
Smart Meter x 1



Installation Kit x 1



COM Connector x 2



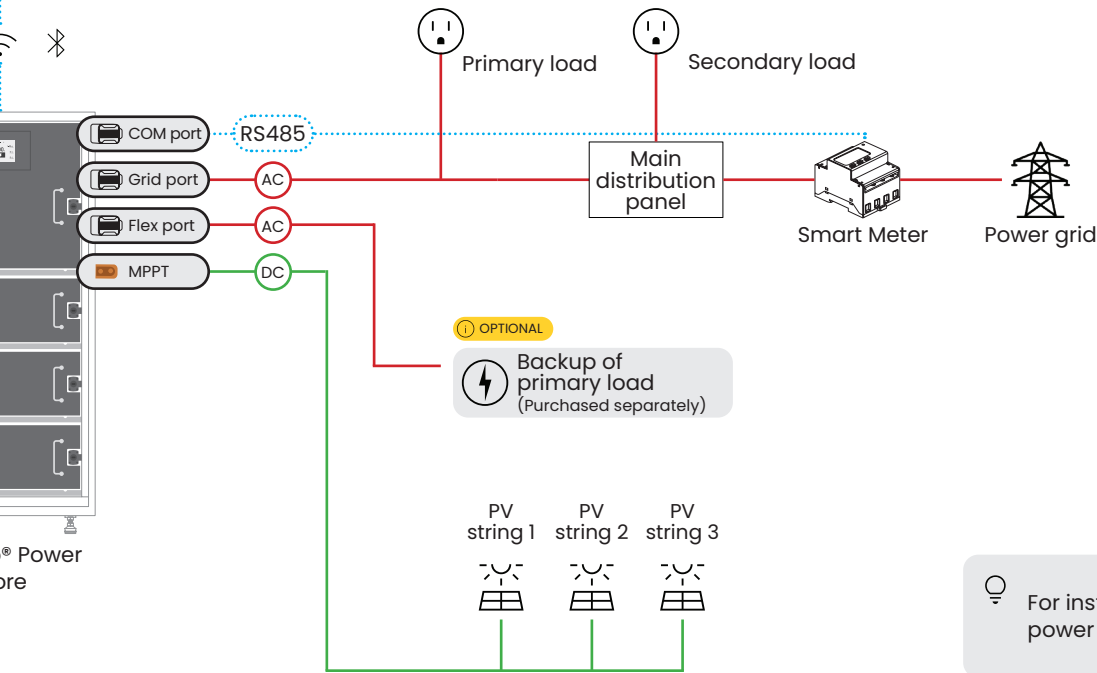
Main AC Connector x 1



Not Included: RCD Type A & Fuse - Comply with local specifications and regulation



Emaldo® app &  
Emaldo® installer platform



OPTIONAL

Backup of  
primary load  
(Purchased separately)

PV string 1  
PV string 2  
PV string 3

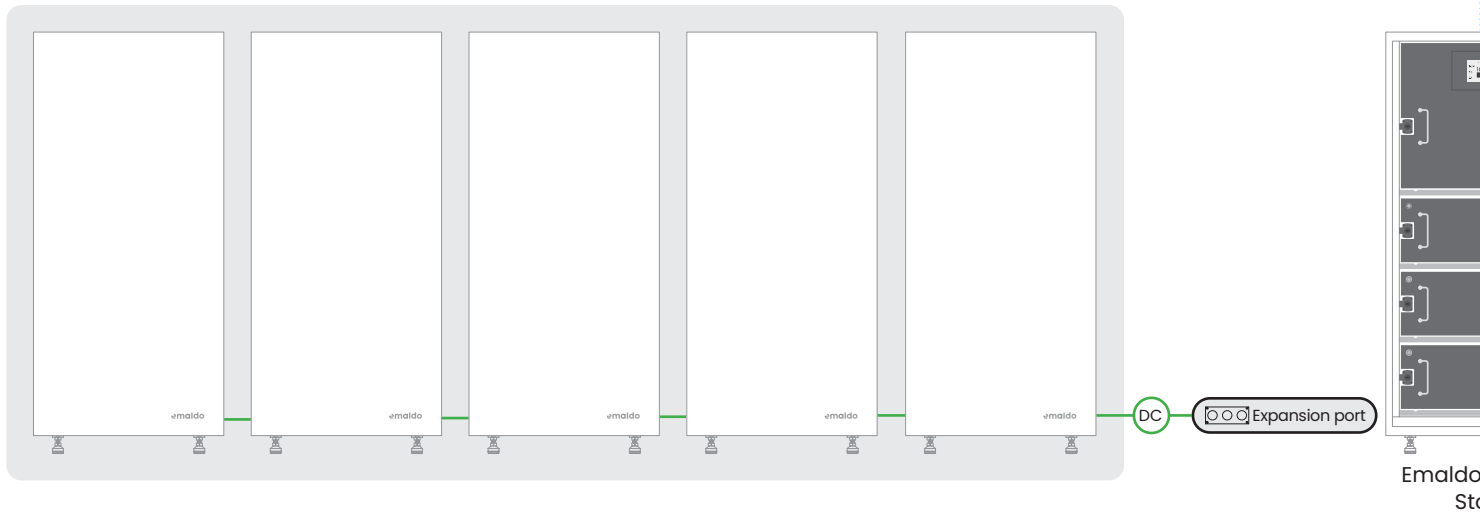
For instruction on installations with  
power backup, see page 33.

# Application Diagram

## Power Store

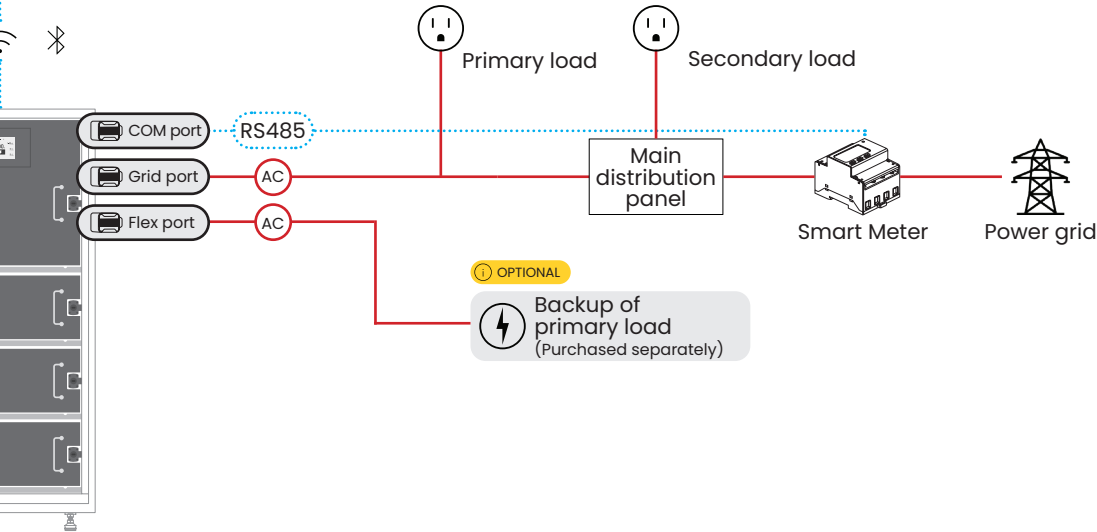
① OPTIONAL

Battery capacity expansion (Purchased separately)





Emaldo® app &  
Emaldo® installer platform

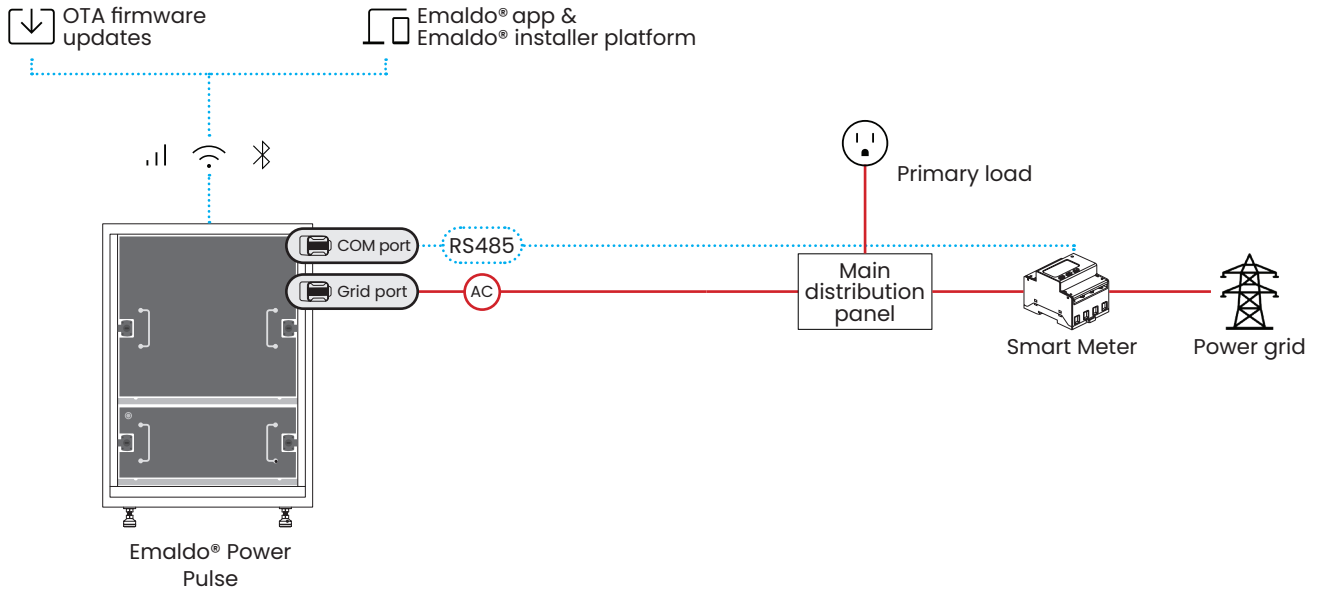


® Power  
ore

💡 For instruction on installations with power backup, see page 33.

# Application Diagram

## Power Pulse



# Tools required



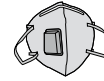
Safety glasses



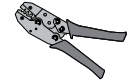
Safety shoes



Safety gloves



Dust mask



Crystal head wire crimper



Diagonal pliers



Wire stripper



Impact drill



Marker



Spirit level



Rubber hammer



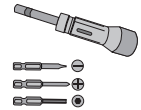
Vacuum cleaner



Multimeter



Zip ties



Torque wrench

# Before Installation



## Avoid

- Avoid installing the Emaldo® System in any other way than upright vertically as illustrated in this manual.
- Avoid installing the Emaldo® System in areas containing flammable or explosive materials.



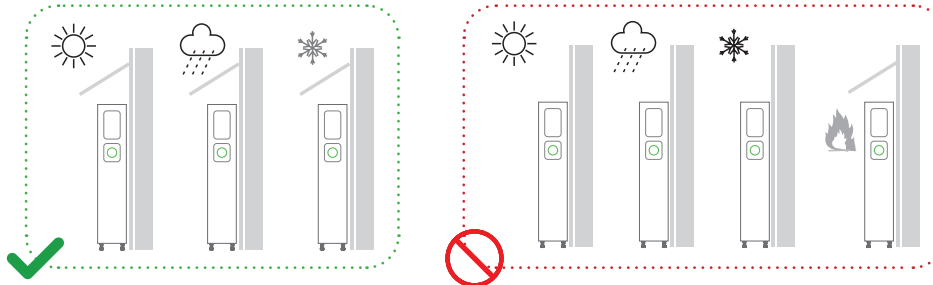
## Pay special attention to

- Install the Emaldo® System in a secure location with restricted access for children and pets to minimize potential risks.
- Ensure the Emaldo® System is securely positioned on a stable surface and properly anchored to the wall to prevent any possibility of toppling.



## When installing outdoors

- Do not install the Emaldo® System outdoors without protective covering. When installing it in an outdoor environment, ensure placement under a roof or eaves, preventing direct exposure to sun, rain and splashing.
- The Emaldo® System is designed to operate within ambient temperatures ranging from  $-20^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ . However, system efficiency may be adversely affected in sub-zero temperatures and when ambient temperatures exceed  $45^{\circ}\text{C}$ .




## Check delivered parts


Before proceeding to unpack the Emaldo® system, carefully inspect the outer packaging for visible damage, such as holes, cracks, or any indicators of potential internal issues. Confirm that the energy storage system's model matches the expected one. In case of any packaging anomalies or model discrepancies, refrain from opening the package and promptly contact your dealer.

Upon unpacking the equipment, conduct a thorough check to ensure all delivered components are present and free from any noticeable external damage. Should there be any missing items or signs of damage, please notify your dealer immediately.

# Installation of the cabinet

The Emaldo® system is IP54 rated and can be installed both indoors and outdoors. Outdoor installation should be done under eaves overhang.

 Prior to drilling holes, it is imperative to exercise caution and avoid potential interference with concealed water supply lines and electrical power lines within the wall.

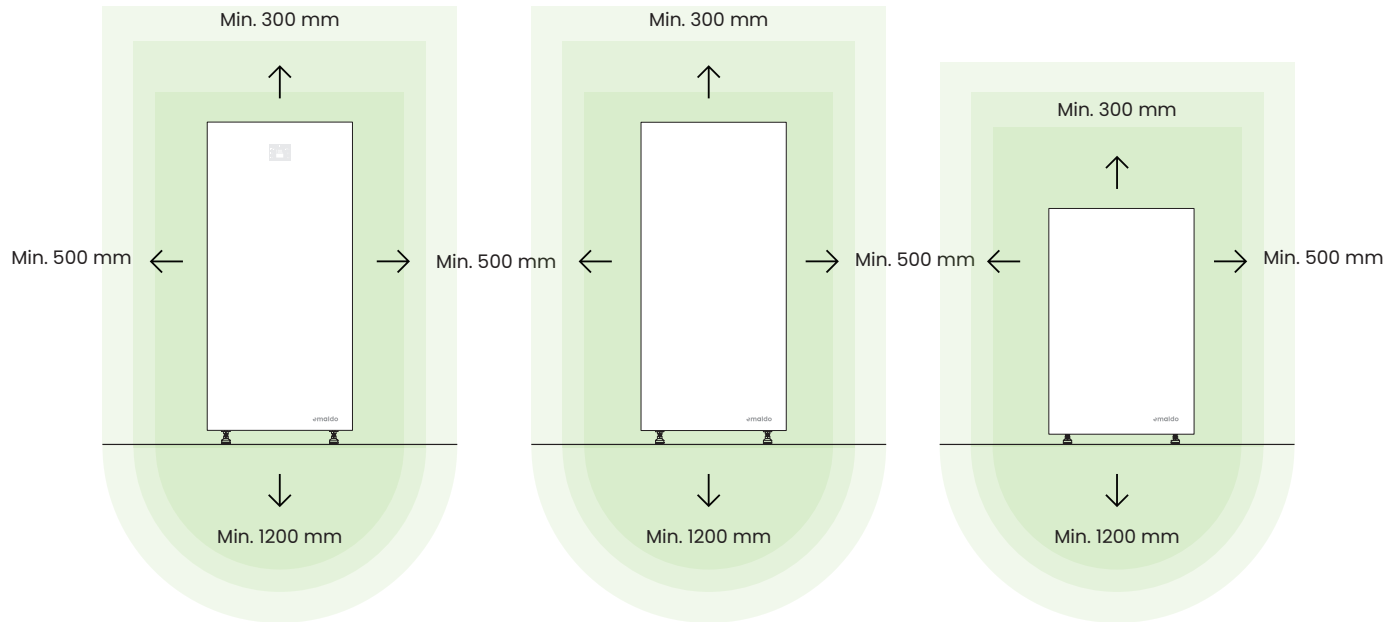
 It is imperative to use appropriate anchors when securing the Emaldo® system cabinet to the wall. Emaldo® will not assume any responsibility for any damage resulting from the use of unsuitable anchors for product installation. Emaldo® supplies components and parts, but the diverse nature of installation surfaces may necessitate the use of additional components and parts.

## Step 1

- Make sure the installation location allows for enough free space on all sides of the Emaldo® system, except for the backside, which must be secured to the wall.

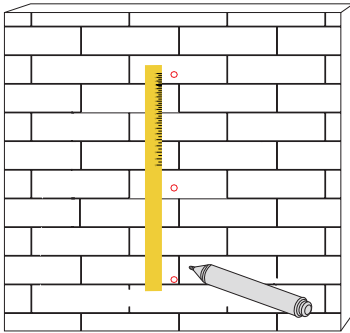


For installations without battery expansion cabinets, it is advisable to position the Emaldo® Power Core to the right side on the designated installation point. This arrangement facilitates potential expansion of battery cabinets on the left side in the future.



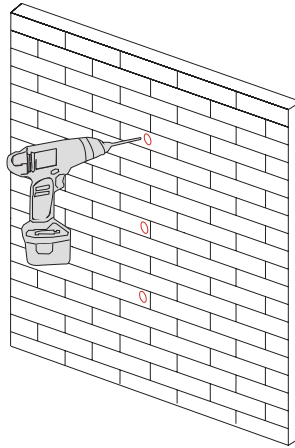
## Step 2

- Use a line marking template to determine drilling locations.
- Level the hole location with a leveling instrument.
- Mark the locations with a marker.



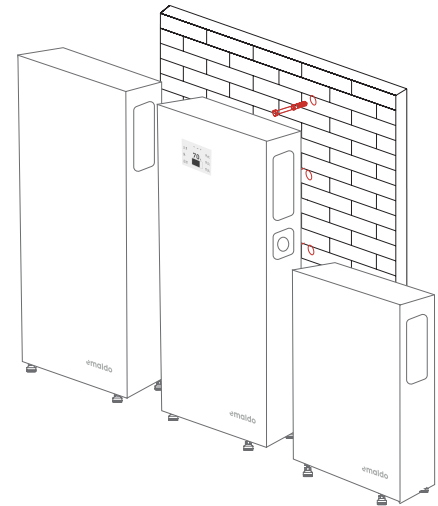
## Step 3

- Use an electric drill to create installation holes for M6 bolts at the marked points.



## Step 4

- Align the cabinet with the installation holes.
- Tap expansion bolts into the wall holes with a hammer.
- Install nuts, including flat washers.
- Tighten the nuts securely using a wrench.



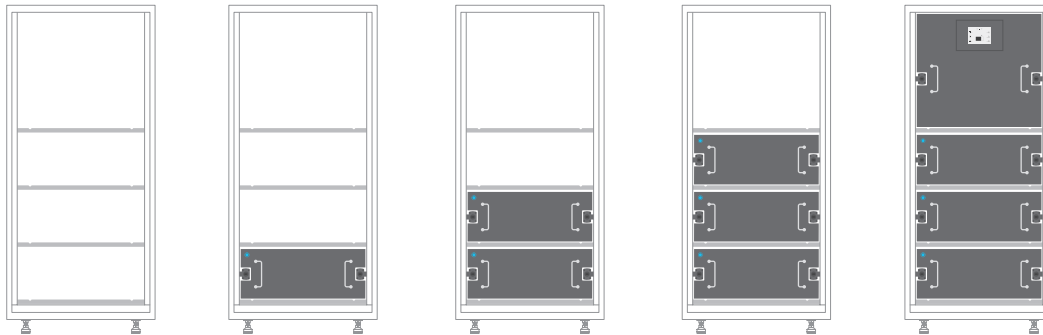
# Installation of inverter and batteries

## Step 1

- Securely grip the top handle of the Power Box using both hands or with assistance from two individuals.
- Align the Power Box with the SlideON™ guide rails in cabinet, release the handle, make any necessary adjustments to its position push it in place.
- Turn the safety lock on both sides of the Battery Box to secure it in place.

## Step 2

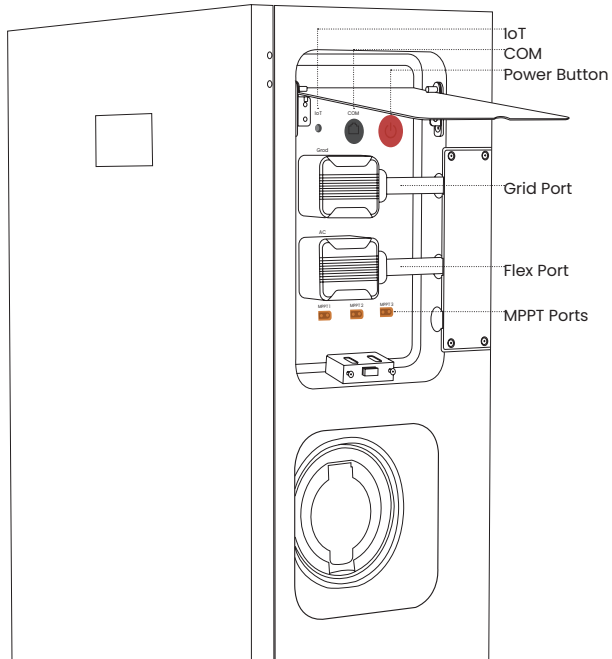
- For the Power Core and Power Store models proceed to install the second and third Power Box and the inverter, in a bottom-up sequence, using the same approach.





# Electrical connection

## Power Core

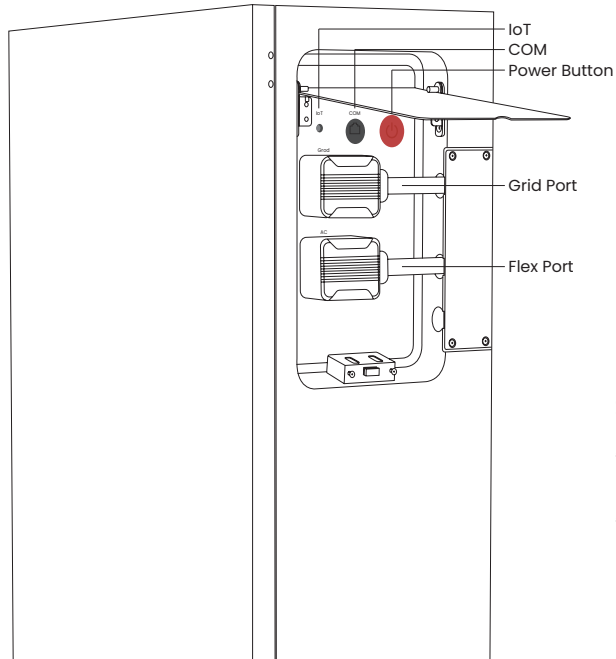


## Step 1

- Connect the Main AC connector to the Grid Port on the Emaldo® Power Core.
- Ensure the connection is done to a RCD of at least Type A.

# Electrical connection

## Power Store

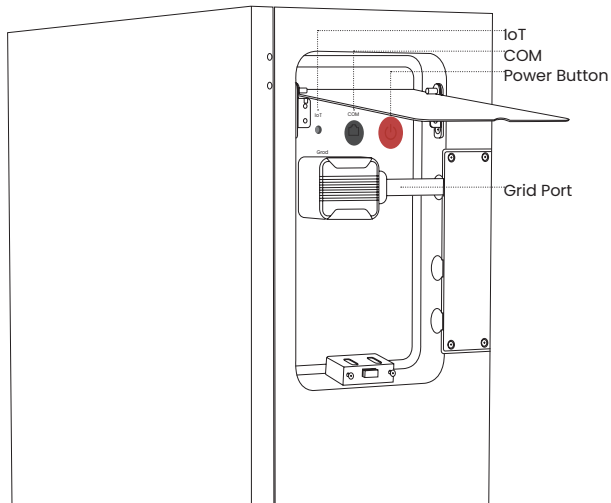


## Step 1

- Connect the Main AC connector to the Grid Port on the Emaldo® Power Store.
- Ensure the connection is done to a RCD of at least Type A.

# Electrical connection

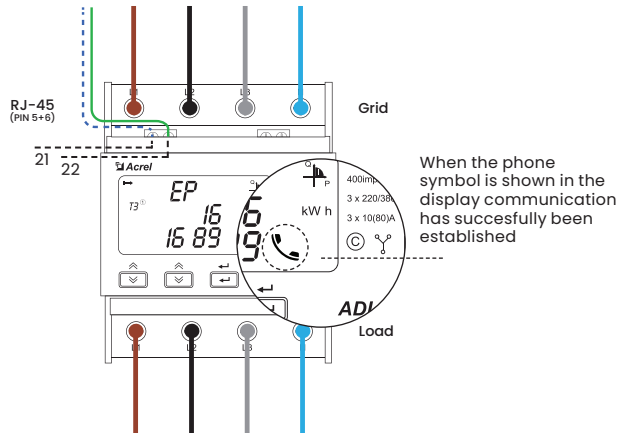
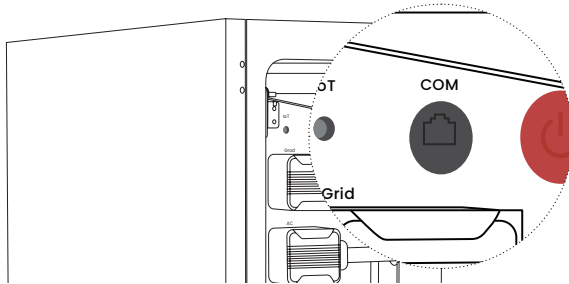
## Power Pulse



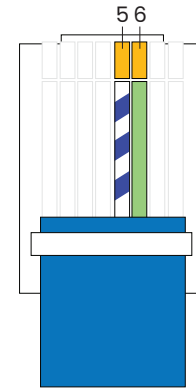
## Step 1

- Connect the Main AC connector to the Grid Port on the Emaldo® Power Pulse.
- Ensure the connection is done to a RCD of at least Type A.

# Installation of smart meter



1	2	3	4	5	6	7	8
⊗	⊗	⊗	⊗	⊙	⊙	⊗	⊗



## Step 1

- Wire the RJ-45 Ethernet cable according to the illustration. Make sure the wiring is done the same way in the RJ-45 plugs in both ends of the cable.
- Connect the cable to the COM port in the Emaldo® Power Core and to the smart meter.



The communication cable between the Emaldo® system and the Smart or CT meter is 5 & 6 in the Emaldo® system (RJ45) to 21 & 22 in the smart or CT meter.

Recommended cable type is Cat6 shielded or better.

For more information refer to the user manual that comes with the smart meter.

## Installation of direct smart meter

The direct smartmeter must be installed at the first point of the power supply.  
For wiring connection please see the illustration below.

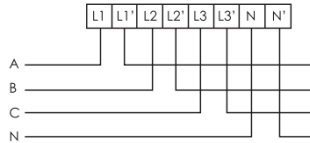


Fig 2 Three phase four lines direct connect

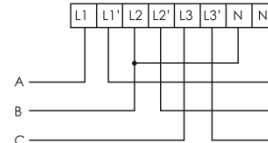


Fig 4 Three phase three lines direct connect

## Installation of CT-meter (optional purchase)

The CT-clamps must be installed at the first point of the power supply.  
For wiring connection please see the illustration below.

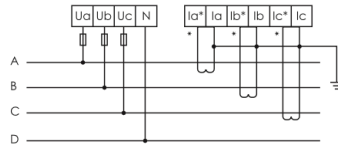


Fig 1 Three phase four lines connect via CT

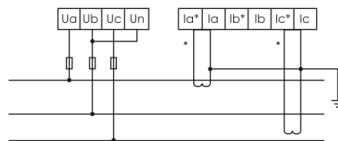
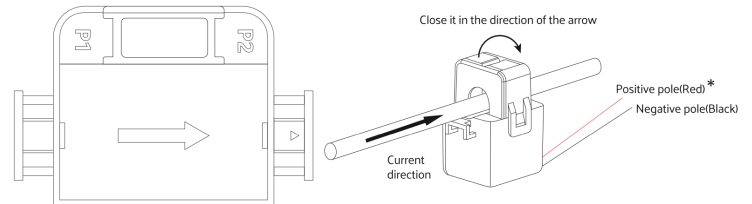
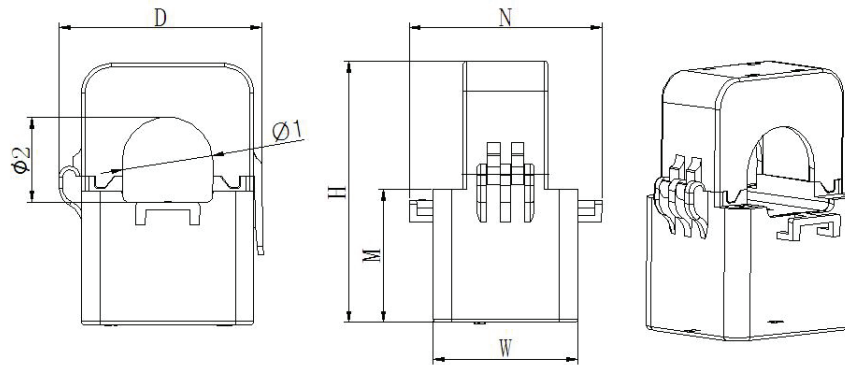


Fig 3 Three phase three lines connect via CT

The direction of the CT-clamps.



# CT-meter Specifications

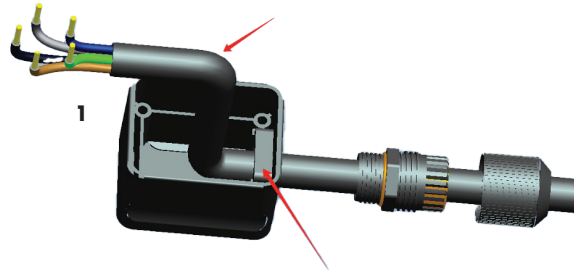


Type \ Size	Outline Size					Through Size		Tolerance
	W	H	D	M	N	Ø1	Ø2	
K-Ø 24	39	71	46	36	52	24	23,5	±1

# Assembly of grid connector

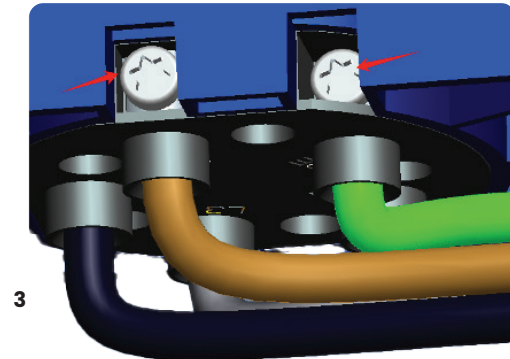
## Step 1

- Install the threaded part, and thread the wire through the front shell.



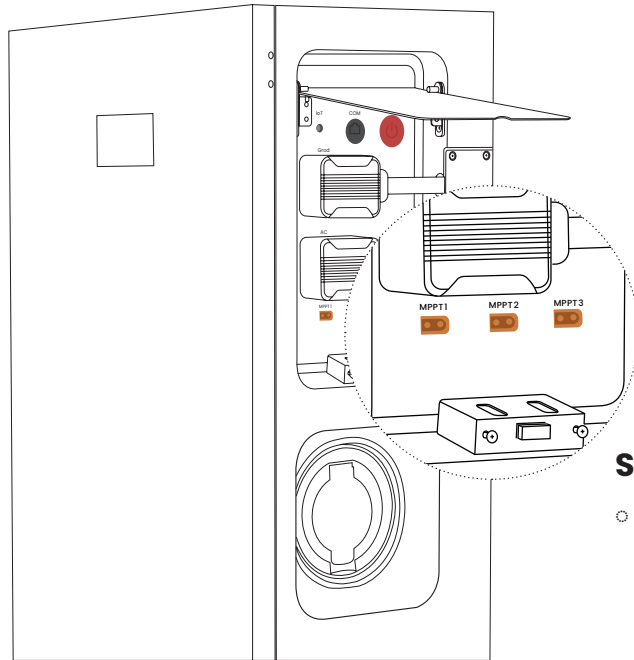
## Step 2

- Thread the wire into the needle hole, and fasten 5 slotted screws on the side.



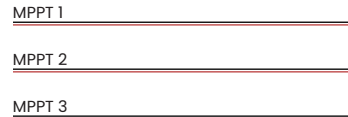
# PV array connection

## Power Core



Red wire = +

Black wire = -



## Step 1

- Connect the solar panels to the three MPPT ports on the Emaldo® Power Core. The maximum voltage of each port is 500V.



## Note

 ALWAYS SWITCH OFF THE SYSTEM WHEN CONNECTING OR DISCONNECTING PV CABLES

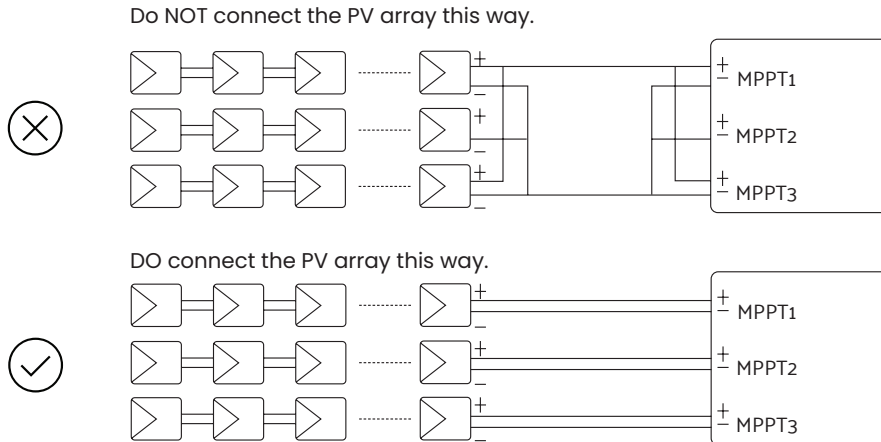
It is very important not to oversize each MPPT.

Each MPPT is max 4000W, 14.5A and Voltage Range 90–500Vdc. Max Input Open-circuit Voltage 550Vdc.

Always measure voltage and polarity on each pair.

Mixed PV or oversizing can damage the inverter and the warranty will be void.

Please ensure to connect the PV array according to the below illustration.



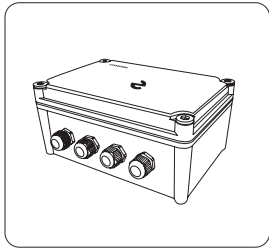
# KeepON™ 24/7 Backup Kit installation

(optional purchase)

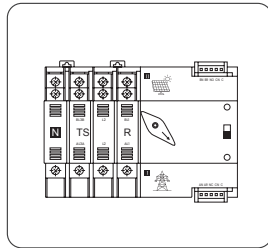
Power Core

Power Store

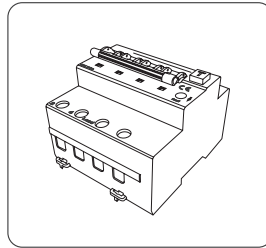
## Included



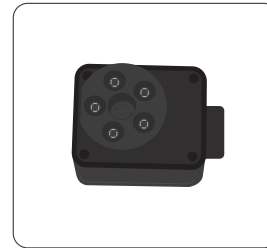
KeepON™ Backup Box x 1



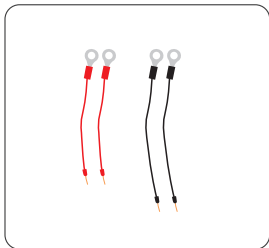
ATS x 1



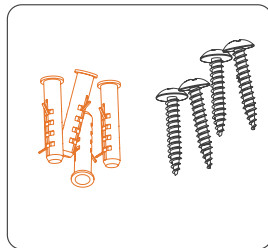
RCBO 40A 30mA x 1



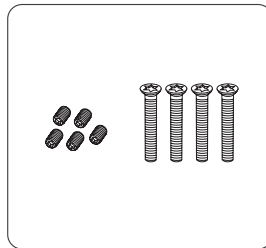
Flex Port Connector x 1



ATS Connectors x 1



Installation Kit x 1



M4\*6 + M3\*25 x 4

## Installation of the backup box

The Emaldo® KeepON™ Backup box kit is IP66 rated and can be installed both indoors and outdoors. Outdoor installation should be done under eaves overhang.



Prior to drilling holes, it is imperative to exercise caution and avoid potential interference with concealed water supply lines and electrical power lines within the wall.

### Step 1

- Make sure the installation location allows for enough free space on all sides of the Emaldo® KeepON™ Backup box, except for the backside, which must be secured to the wall.

### Step 2

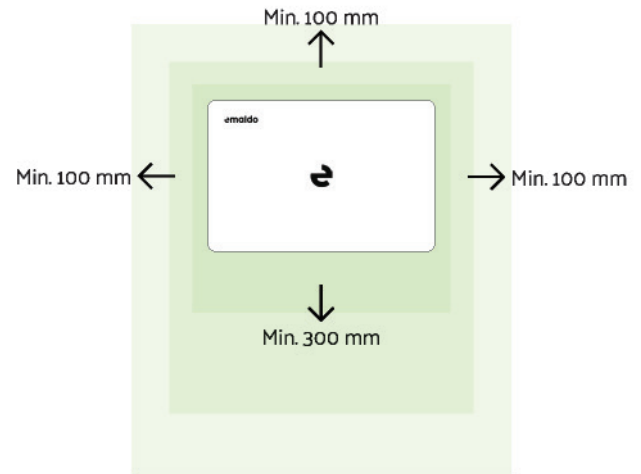
- Use a line marking template to determine drilling locations.
- Level the hole location with a leveling instrument.
- Mark the locations with a marker.

### Step 3

- Use an electric drill to create installation holes for 4X35mm screws at the marked points.

### Step 4

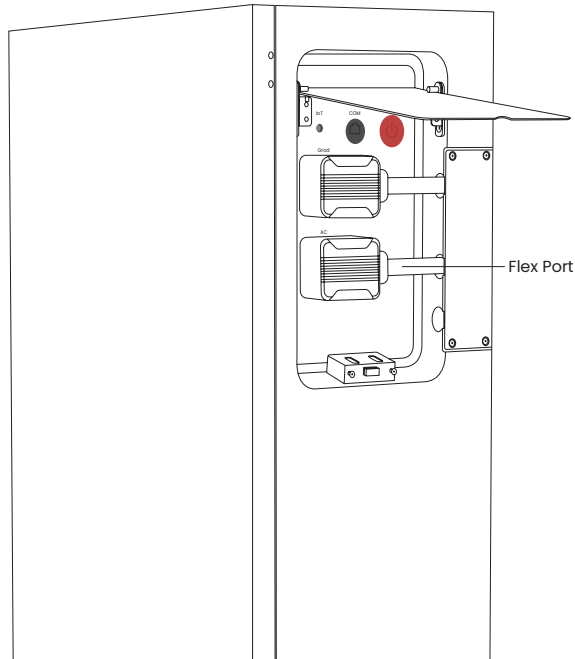
- Align the box with the installation holes.
- Secure the box to the wall using the screws.



# Electrical connection

Power Core

Power Store



## Step 1

- Connect the Main AC connector to the Flex Port on the Emaldo® Power Core or Store.

# How Emaldo® KeepON™ Backup works

Power Core

Power Store

The Emaldo® Power Core and Emaldo® Power Store can provide continuous AC backup power up to 10.800 W for AC Backup load connected to Flex output. The system can provide up to 21.600 WAC backup power to start the load. A large initial power is required when starting the load. If the ambient temperature exceeds 45°C, the output of the energy storage system will decrease; if the ambient temperature exceeds 60°C, the system will be shut down.

## Devices recommended for backup

**Critical Electronics:** These are the devices that are integral to your daily life or work. For instance, your computer or laptop is likely crucial for work or communication. Keeping them powered during outages ensures you can continue working or stay connected to important communications, which can be vital in emergencies.

**Security Systems:** Home security systems, including cameras, alarms, and smart locks, are essential for protecting your property and loved ones. Maintaining power to these systems ensures that your home remains secure, even if the main power goes out.

**Medical Equipment:** If you or someone in your household relies on medical devices such as CPAP machines, oxygen concentrators, or dialysis machines, continuous power is critical for health and safety. Backup power ensures that these devices remain operational, potentially preventing life-threatening situations during power outages.

**Refrigeration Appliances:** Fridges and freezers are essential for preserving perishable food and medications. During power outages, maintaining power to these appliances prevents food spoilage and medication loss, which can save money and prevent potential health hazards.

**Communication Devices:** Phones, routers, and modems are vital for staying connected to emergency services, loved ones, and important information during outages. Ensuring these devices remain powered allows you to make emergency calls, access critical information, and stay informed about the situation.

## Devices not recommended for backup

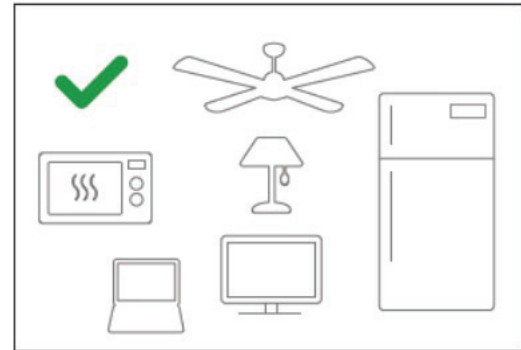
**High-Power Consumption Appliances:** Appliances like electric ovens, water heaters, or air conditioners draw a significant amount of power. Connecting these devices to backup power can quickly drain the battery, rendering it ineffective for powering essential devices for an extended period.

**Non-Essential Electronics:** Devices such as televisions, gaming consoles, and decorative lights are not critical for safety or essential functions during power outages. While they may provide entertainment or comfort, they should not be prioritized for backup power, as doing so may deplete limited resources needed for essential devices.

By prioritizing the connection of critical devices to backup power and avoiding unnecessary energy consumption from non-essential devices, you can ensure that your backup power supply is effectively utilized during emergencies, providing power where it's needed most.


### Example of AC backup load

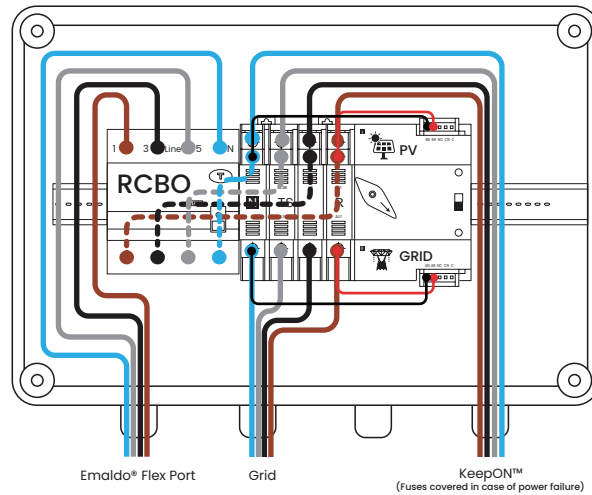
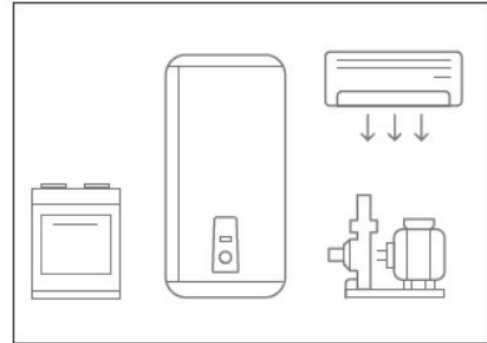
- Lighting (compact fluorescent lamp or LED recommended)
- Refrigerator and freezer
- Small-sized plug-in appliances, such as cooking utensils, microwave ovens, televisions, radios, computers



## Example of a high impact AC load

- Water pump
- Air-conditioner
- Hot spring/sauna
- Hot water heater
- Electric stove or oven

 If the above impact load is connected to the backup load, please confirm that the total starting power does not exceed the maximum starting power of 21.600 W



# Optional Battery Expansion

(optional purchase)

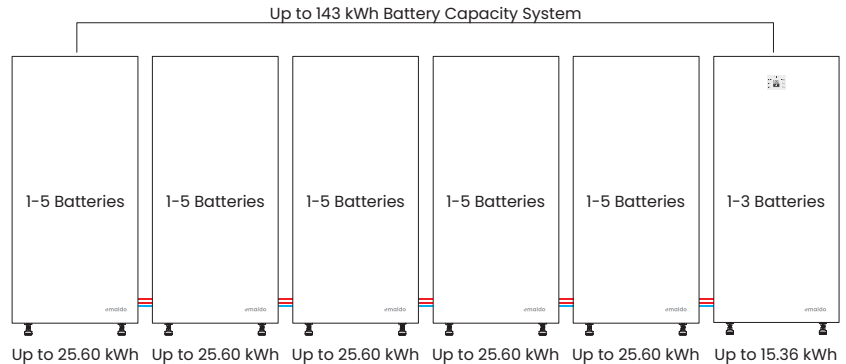
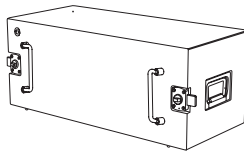
Power Core

Power Store

The Emaldo® Power Core and Emaldo® Power Store's battery storage capacity is extendable to a maximum of 143 kWh. This expansion is achieved by integrating up to five battery expansion cabinets, each accommodating up to five Emaldo® Power Boxes (batteries) into the system.


Specification	System Main Cabinet	Expansion Cabinet x 1	Expansion Cabinet x 2	Expansion Cabinet x 3	Expansion Cabinet x 4	Expansion Cabinet x 5
Battery Capacity (max)	15.36 kWh	40.96 kWh	66.56 kWh	92.16 kWh	117.76 kWh	143 kWh
Installation Space Required (horizontal wall space)	170 cm	290 cm	410 cm	530 cm	650 cm	770 cm

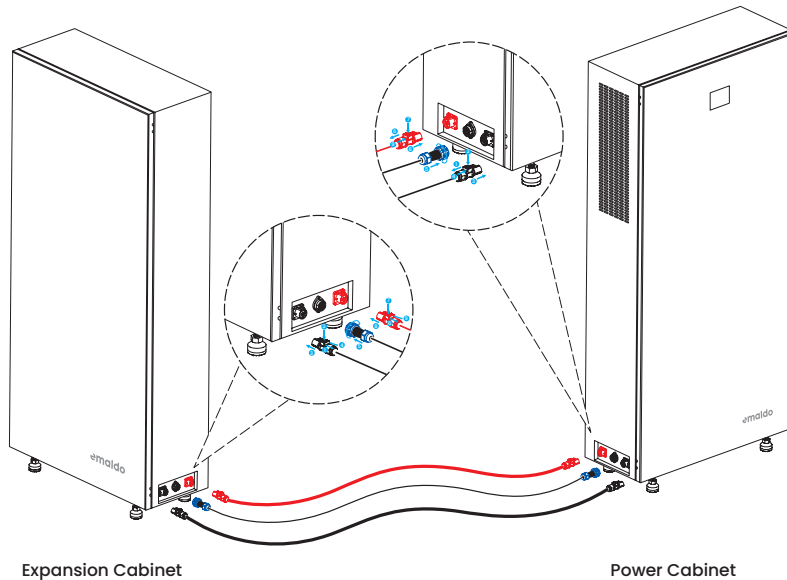
Battery	Specification
Capacity	5120Wh




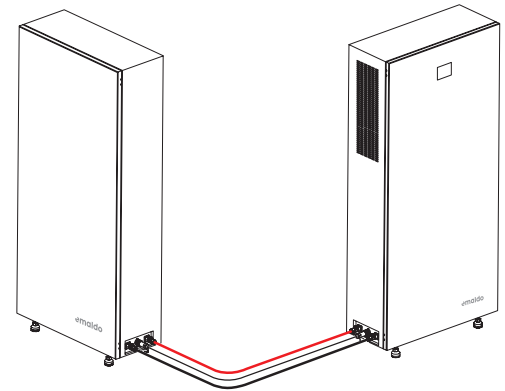





## Battery expansion connection diagram

 ALWAYS SWITCH OFF THE SYSTEM WHEN CONNECTING OR DISCONNECTING THE BATTERY EXPANSION



 NOTICE  
The included cables are only 1 meter long



-  Red positive pole connecting cable
-  Black signal connection cable
-  Black negative pole connecting cable

Before connecting the cables remove the cover from the bottom of the unit and punch out the 3 smaller covers.

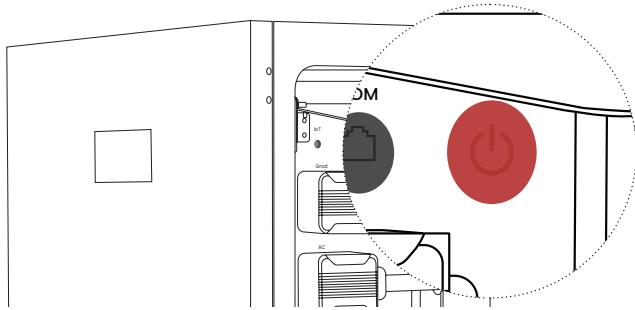
To connect the red and black pole cables

1. Pull the locking button back
2. Push down on the top
3. Connect the cable to the cabinet
4. Push the locking button forward


To connect the black signal cable

1. Connect the black signal cable to the cabinet and rotate the locking mechanism clockwise

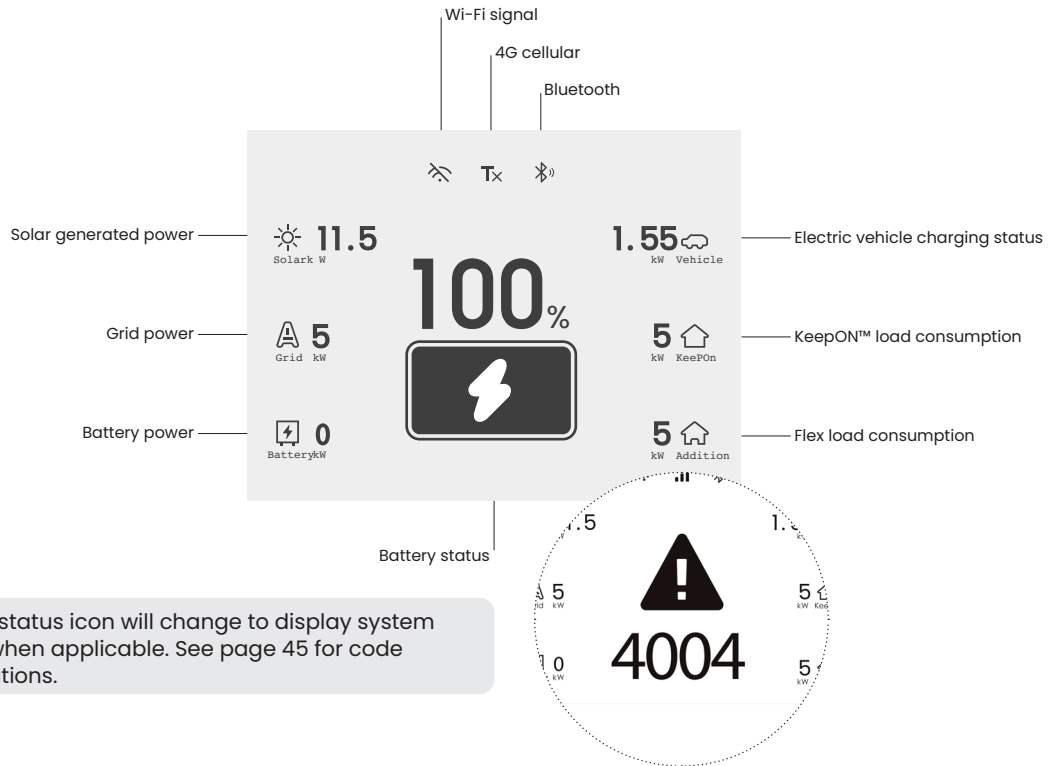
# Power on



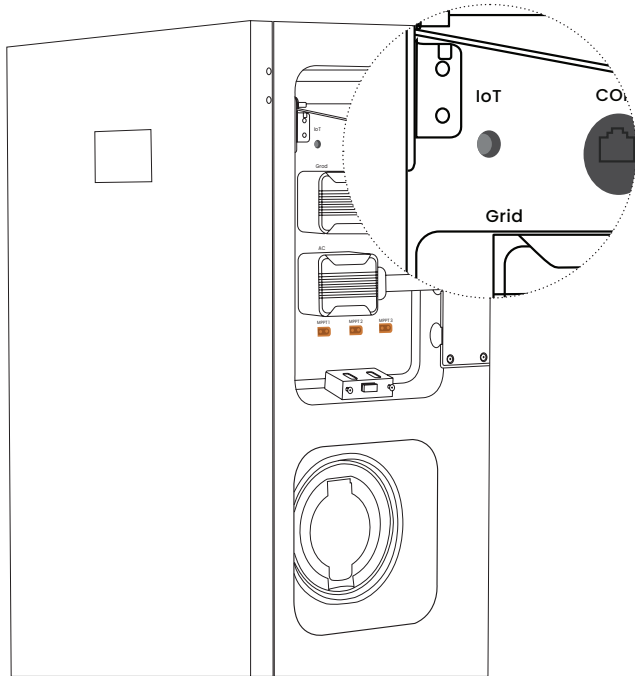
## Step 1

- Open the cover plate on the right side of Emaldo® system, and press and hold the power button until the display lights up.
- Wait for the Emaldo® system to initiate. You can continue setting up the Emaldo® system from the Emaldo® app, when you see this icon on the display 

# Reading the display



# Troubleshooting



## Reboot system

- Turn off the system, unplug all connections from the inverter, pull the inverter out and push it firmly back in place. Reconnect connection and turn on the system. Await system initiation.

## Restart IoT

- Press the IoT button briefly; a successful restart of the IoT is indicated by the audible confirmation of a "beep" sound.

## Factory reset IoT

- To factory reset the system please contact us at [help@emaldo.com](mailto:help@emaldo.com)



Following the IoT reset, all configurations for the Emaldo® system will be erased and reset to factory defaults.

## System codes

Code	Description	Effectuated module	Recommended solution
1	Low Battery Protection	IoT	Charge batteries as soon as possible
101	MCU Master Update Failure	IoT	Charge batteries and restart the inverter
102	MCU Slave Update Failure	IoT	Charge batteries and restart the inverter
103	Cabinet Update Failure	IoT	Charge batteries and restart the inverter
104	Inverter Update Failure	IoT	Charge batteries and restart the inverter
105	BMS 106 Update Failure	IoT	Charge batteries and restart the inverter
106	BMS Pack Update Failure	IoT	Charge batteries and restart the inverter
107	EV Update Failure	IoT	Charge batteries and restart the inverter
1001	Inverter - Battery Undervoltage	Inverter	Restart the inverter; if the issue persists, contact tech support
1002	Inverter - Battery Overtemperature	Inverter	Restart the inverter; if the issue persists, contact tech support
1003	Inverter - Battery Overcurrent	Inverter	Restart the inverter; if the issue persists, contact tech support
1004	Inverter - Battery Hardware Overcurrent	Inverter	Restart the inverter; if the issue persists, contact tech support
1005	Inverter - Booster Radiator 1 Overtemperature	Inverter	Restart the inverter; if the issue persists, contact tech support
1006	Inverter - Booster Radiator 2 Overtemperature	Inverter	Restart the inverter; if the issue persists, contact tech support
1007	Inverter - Booster Radiator 3 Overtemperature	Inverter	Restart the inverter; if the issue persists, contact tech support
1008	Inverter - Booster Radiator 1 Fault	Inverter	Restart the inverter; if the issue persists, contact tech support
1009	Inverter - Booster Radiator 2 Fault	Inverter	Restart the inverter; if the issue persists, contact tech support
1010	Inverter - Booster Radiator 3 Fault	Inverter	Restart the inverter; if the issue persists, contact tech support
1100	Inverter Output Overvoltage	Inverter	Restart the inverter; if the issue persists, contact tech support
1101	Inverter Output Undervoltage	Inverter	Restart the inverter; if the issue persists, contact tech support

## System codes

Code	Description	Effected module	Recommended solution
1103	High DC Component of Inverter Current	Inverter	Restart the inverter; if the issue persists, contact tech support
1104	Inverter Current Overcurrent	Inverter	Restart the inverter; if the issue persists, contact tech support
1105	Inverter Current Hardware Overcurrent	Inverter	Restart the inverter; if the issue persists, contact tech support
1106	Inverter Output Short Circuit	Inverter	Restart the inverter; if the issue persists, contact tech support
1107	105% Overloaded	Inverter	Restart the inverter; if the issue persists, contact tech support
1108	120% Overloaded	Inverter	Restart the inverter; if the issue persists, contact tech support
1109	200% Overloaded	Inverter	Restart the inverter; if the issue persists, contact tech support
1110	Inverter Radiator Overtemperature	Inverter	Restart the inverter; if the issue persists, contact tech support
1111	Inverter Radiator Failure	Inverter	Restart the inverter; if the issue persists, contact tech support
1200	Instantaneous Overvoltage of Power Grid	Inverter	Restart the inverter; if the issue persists, contact tech support
1201	Grid RMS Overvoltage Level 1	Inverter	Restart the inverter; if the issue persists, contact tech support
1202	Grid RMS Overvoltage Level 2	Inverter	Restart the inverter; if the issue persists, contact tech support
1203	Grid RMS Undervoltage Level 1	Inverter	Restart the inverter; if the issue persists, contact tech support
1204	Grid RMS Undervoltage Level 2	Inverter	Restart the inverter; if the issue persists, contact tech support
1205	Instantaneous Undervoltage of Grid	Inverter	Restart the inverter; if the issue persists, contact tech support
1206	Grid Frequency: Overfrequency Level 1	Inverter	Restart the inverter; if the issue persists, contact tech support
1207	Grid Frequency: Overfrequency Level 2	Inverter	Restart the inverter; if the issue persists, contact tech support
1208	Grid Frequency: Underfrequency level 1	Inverter	Restart the inverter; if the issue persists, contact tech support
1209	Grid Frequency: Underfrequency level 2	Inverter	Restart the inverter; if the issue persists, contact tech support
1210	Abnormal Grid Envelope	Inverter	Restart the inverter; if the issue persists, contact tech support

## System codes

Code	Description	Effected module	Recommended solution
1211	Abnormal Phase Locking of Grid	Inverter	Restart the inverter; if the issue persists, contact tech support
1212	Abnormal Detection of Stuck Buffer Relay	Inverter	Restart the inverter; if the issue persists, contact tech support
1213	Abnormal Detection of Main Relay Sticking	Inverter	Restart the inverter; if the issue persists, contact tech support
1300	Abnormal Inverter Insulation Detection	Inverter	Restart the inverter; if the issue persists, contact tech support
1301	Abnormal Inverter Leakage Detection	Inverter	Restart the inverter; if the issue persists, contact tech support
1303	Inverter Bus Overvoltage Level 1	Inverter	Restart the inverter; if the issue persists, contact tech support
1304	Inverter Bus Overvoltage Level 2	Inverter	Restart the inverter; if the issue persists, contact tech support
1305	Inverter Bus Undervoltage Level 1	Inverter	Restart the inverter; if the issue persists, contact tech support
1306	Inverter Bus Undervoltage Level 2	Inverter	Restart the inverter; if the issue persists, contact tech support
1307	Inverter Bus Fault	Inverter	Restart the inverter; if the issue persists, contact tech support
1308	Inverter Power Down	Inverter	Restart the inverter; if the issue persists, contact tech support
1309	Transformer Overtemperature	Inverter	Restart the inverter; if the issue persists, contact tech support
1310	Transformer Fault	Inverter	Restart the inverter; if the issue persists, contact tech support
1311	Inverter Communication Fault	Inverter	Restart the inverter; if the issue persists, contact tech support
1312	Inverter Fans Fault	Inverter	Restart the inverter; if the issue persists, contact tech support
1400	PV Overvoltage	Inverter	Restart the inverter; if the issue persists, contact tech support
1402	PV Overcurrent	Inverter	Restart the inverter; if the issue persists, contact tech support
1403	PV Radiator 1 Overtemperature	Inverter	Restart the inverter; if the issue persists, contact tech support
1404	PV Radiator 1 Fault	Inverter	Restart the inverter; if the issue persists, contact tech support
1600	Inverter Enabling Hardware Failure	Inverter	Restart the inverter; if the issue persists, contact tech support

## System codes

Code	Description	Effected module	Recommended solution
1601	Communication Fault between DC and Inverter	Inverter	Restart the inverter; if the issue persists, contact tech support
2000	EV Leakage Protection	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2001	EV Overvoltage Protection	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2002	EV Undervoltage Protection	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2003	EV Overcurrent Protection	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2004	EV Overheating Protection	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2005	EV Leakage Self-test Exception	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2006	EV Ground Wire Missing	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2007	EV CP Level Exception	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2008	EV Relay Abnormal	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2009	EV Auxiliary Processor Exception	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2010	EV System 5v Exception	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
2011	EV Connector Communication Failure	EV Charging Port	Reconnect charger; if the issue persists, contact tech support
3000	PV Overvoltage	PV	Reconnect PV cable, restart the inverter; if the issue persists, contact tech support
3002	PV Overcurrent	PV	Reconnect PV cable, restart the inverter; if the issue persists, contact tech support
3003	PV Radiator 1 Overtemperature	PV	Reconnect PV cable, restart the inverter; if the issue persists, contact tech support
3004	PV Radiator 1 Fault	PV	Reconnect PV cable, restart the inverter; if the issue persists, contact tech support
4000	Cabinet Water Sensor Alarm	Cabinet	Check installation environment; if the issue persists, contact tech support



## System codes


Code	Decription	Effected module	Recommended solution
4002	Fans in Cabinet Abnormal	Cabinet	Check installation environment; if the issue persists, contact tech support
4003	Accessories of Cabinet Communication Failure	Cabinet	Check installation environment; if the issue persists, contact tech support
5002	Battery Hardware Failure	Batteries	Contact tech support
5003	Battery Discharge High Temperature Alarm	Batteries	Contact tech support
5004	Battery Low Voltage Alarm	Batteries	Contact tech support
5005	Battery Discharge Overcurrent Alarm	Batteries	Contact tech support
5006	Battery Fet High Temperature Protection	Batteries	Contact tech support
5007	Battery Charging High Temperature Protection	Batteries	Contact tech support
5008	Battery Charging Low Temperature Protection	Batteries	Contact tech support
5009	Battery Discharging High Temperature Protection	Batteries	Contact tech support
5010	Battery Discharging Low Temperature Protection	Batteries	Contact tech support
5011	Battery Discharging Short Circuit Protection	Batteries	Contact tech support
5012	Battery Charging Overcurrent Protection	Batteries	Contact tech support
5013	Battery Low Voltage Protection	Batteries	Contact tech support
5015	Battery Pack Communication Failure	Batteries	Contact tech support
6000	Offline Overload Protection	System	Restart the inverter; if the issue persists, contact tech support
6001	The SOC Of Pack Is Too Low	System	Restart the inverter; if the issue persists, contact tech support
6002	Bus Voltage Is Too Low	System	Contact tech support
6003	The Temperature of the System Test Is Too High	System	Restart the inverter; if the issue persists, contact tech support
6004	The Temperature of the System Test Is Too Low	System	Restart the inverter; if the issue persists, contact tech support


## System codes

Code	Description	Effected module	Recommended solution
6005	Wrong Number of Cabinet Indication	System	Contact tech support
6006	Battery Performance Deterioration	System	Contact tech support
6007	Inverter and L-out Wiring Error	System	Contact tech support
6008	Meter Wiring Error	System	Contact tech support
6009	gb_box_unexist_for_hard 9	System	Contact tech support
6010	Battery in Maintenance	System	Contact tech support
7000	MCU Communication Failure	Communication	Contact tech support
7001	Three-phase Meter Communication Failure	Communication	Contact tech support

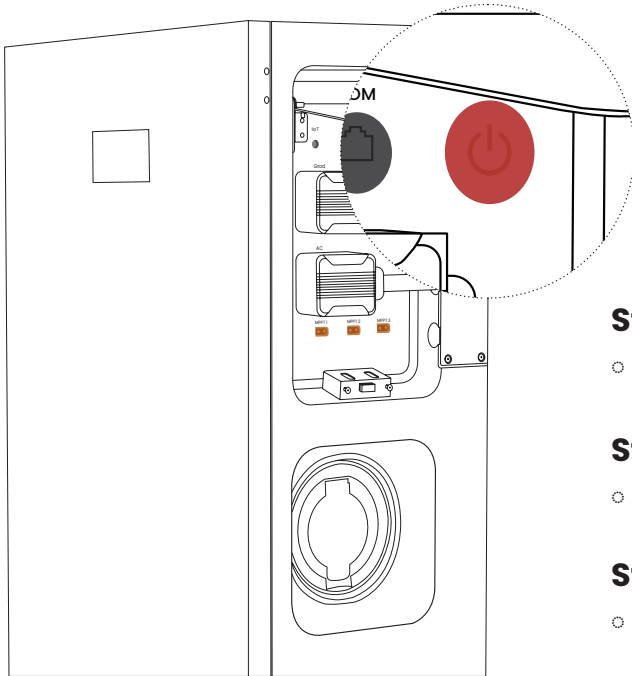
# Maintenance

For sustained and optimal performance of the Emaldo® system, it is advisable to follow the routine maintenance procedures outlined in this section.

 After powering down the system, residual electricity and heat may remain in the equipment, posing a risk of electric shock or burns. Therefore, wait for 5 minutes after system shutdown, wear protective gloves, ensure all indicators on the Emaldo® system are off before proceeding with maintenance operations.

 While the Emaldo® system is in operation, simply disconnecting the main switch doesn't fully power down the system, prohibiting maintenance operations.

## Ensure complete power down



### Step 1

- Briefly press the power button of the Emaldo® Power Core to power it off.

### Step 2

- Disconnect the DC isolator switch between the Emaldo® Power Core and the PV string.

### Step 3

- Switch the RCD (Grid, AC) circuit breaker in the main distribution panel to the OFF position.

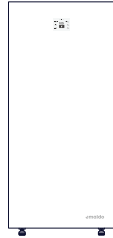
Task	Method	How often
System cleaning	Perform routine checks on the air inlet and outlet to identify and clear any obstructions, dust, or dirt.	Every 6-12 months
System operation checkup	Conduct visual inspections for damage or deformation of the Emaldo® system. Listen for any unusual sounds during operation. Ensure all parameters are correctly set while the system is running.	Every 6 months
Electrical connection checkup	Verify the cable connection for looseness or detachment. Inspect the cable for any damage, paying particular attention to the section in contact with the metal surface for signs of cuts. Ensure the unused DC input terminal and the waterproof cover of the charging base are securely closed.	First check after 6 months, then every 6-12 months hereafter
Grounding reliability checkup	Verify that the grounding cable is securely grounded.	First check after 6 months, then every 6-12 months hereafter

## Certifications and standards



Compliance	Description
Safety compliance	IEC62109-1:2010, IEC62109-2:2011, EMC IEC61851-21-2:20218 , IEC61000-6-1, IEC61000-6-3
Battery compliance	IEC62619:2022, UN38.3, MSDS
Grid compliance	TRLV/G98:2022/VDE 4105:2018/EIFS:2018/EN50549-1
System compliance	IEC61851-1:2017, IEC62955, IEC60529:2013, EN61984
Emissions compliance	RED 2014/53/EU

# Data Specs



	Emaldo® Power Core	Emaldo® Power Store	Emaldo® Power Pulse
<b>Artificial Intelligence</b>			
AI optimization	Yes, Energenie® AI inside	Yes, Energenie® AI inside	Yes, Energenie® AI inside
Automatically buys electricity when its cheapest	Yes	Yes	Yes
Use the cheap energy stored, when prices are highest	Yes	Yes	No
Earn passive income through Emaldo® Grid Rewards	Yes	Yes	Yes
<b>AC Input</b>			
Rated power	10800VA	N/A	N/A
Rated voltage	400Vac (3W+N+PE)	N/A	N/A
Rated current	15.6A*3	N/A	N/A
Max input current	16A*3	N/A	N/A
AC voltage range	184-264Vac	N/A	N/A
Frequency range	50/60Hz	N/A	N/A

	<b>Emaldo® Power Core</b>	<b>Emaldo® Power Store</b>	<b>Emaldo® Power Pulse</b>
<b>AC output (on-grid)</b>			
Rated power	10800VA	10800VA	10800VA
Rated voltage	400Vac(3W+N+PE)	400Vac(3W+N+PE)	400Vac(3W+N+PE)
Rated current	15.6A*3	15.7A*3	15.7A*3
Max output current	15.8A*3	15.8A*3	15.8A*3
Max power factor	>0.99	>0.99	>0.99
Frequency range	50/60Hz	50/60Hz	50/60Hz
Max efficiency	97%	97%	97%
Europe efficiency	96%	96%	96%
<b>AC output (off-grid)</b>			
Rated power	10800VA(PF=1)	10800VA(PF=1)	10800VA(PF=1)
Rated output voltage	400Vac(3W+N+PE)	400Vac(3W+N+PE)	400Vac(3W+N+PE)
Rated current	15.6A*3	15.7A*3	15.7A*3
Max output current	15.8A*3	15.8A*3	15.8A*3
Rated output frequency	50/60Hz±0.5	50/60Hz±0.5	50/60Hz±0.5
Max power output (startup)	21600VA	21600VA	21600VA
Switch time	10ms	10ms	10ms
Wave form	Pure sine wave	Pure sine wave	Pure sine wave

	<b>Emaldo® Power Core</b>	<b>Emaldo® Power Store</b>	<b>Emaldo® Power Pulse</b>
<b>PV input</b>			
Max input power	10800W(3600W*3)	N/A	N/A
Max input open-circuit voltage	550Vdc	N/A	N/A
MPPT Input string number	3	N/A	N/A
MPPT voltage range	90-500Vdc	N/A	N/A
Start-up voltage	100Vdc	N/A	N/A
Max input current	14.5A*3	N/A	N/A
Max short-circuit input current	18A*3	N/A	N/A
Max MPPT efficiency	>99%	N/A	N/A
Dynamic MPPT efficiency	>97%	N/A	N/A
<b>EV output</b>			
Rated charge power	10800W	N/A	N/A
Rated voltage	400Vac(3W+N+PE)	N/A	N/A
Interface type	IEC type2	N/A	N/A
Frequency range	50/60	N/A	N/A
<b>Battery</b>			
Battery type	LFP (LiFePO4)	LFP (LiFePO4)	LFP (LiFePO4)
Battery capacity	5120-15360Wh (1-3 batteries)	5120-15360Wh (1-3 batteries)	5120Wh

	<b>Emaldo® Power Core</b>	<b>Emaldo® Power Store</b>	<b>Emaldo® Power Pulse</b>
<b>Battery (continued)</b>			
Battery capacity expansion (up to)	143kWh	143kWh	N/A
Rated voltage	51.2V	51.2V	51.2V
Working voltage range	43.2V~57.6V	43.2V~57.6V	43.2V~57.6V
Max charging current (A)	100-200A (1-3 batteries)	100-200A (1-3 batteries)	100A
Max discharging current (A)	100-200A (1-3 batteries)	100-200A (1-3 batteries)	100A
Charging temperature	-20~55°C	-20~55°C	-20~55°C
Discharging temperature	-20~60°C	-20~60°C	-20~60°C
<b>Efficiency</b>			
Max efficiency	97.00%	97.00%	97.00%
European efficiency	96.00%	96.00%	96.00%
MPPT efficiency	99.90%	N/A	N/A
<b>Protection</b>			
Battery under-voltage protection(settable)	Yes	Yes	Yes
Battery over-voltage protection(settable)	Yes	Yes	Yes
PV under-voltage protection(80Vdc)	Yes	N/A	N/A
PV over-voltage protection(530Vdc)	Yes	N/A	N/A
AC input under-voltage protection(184Vac)	Yes	Yes	Yes



	<b>Emaldo® Power Core</b>	<b>Emaldo® Power Store</b>	<b>Emaldo® Power Pulse</b>
<b>Protection (continued)</b>			
AC input over-voltage protection (264Vac)	Yes	Yes	Yes
AC output under-voltage protection (184Vac)	Yes	Yes	Yes
AC output over-voltage protection (282Vac)	Yes	Yes	Yes
AC output over-temperature protection	Yes	Yes	Yes
AC output overload protection	Yes	Yes	Yes
Anti-island protection	Yes	Yes	Yes
Solar input reverse connection protection	Yes	N/A	N/A
Insulation impedance detection	Yes	Yes	Yes
Residual current detection	Yes	Yes	Yes
AC surge protection (three grade)	Yes	Yes	Yes
DC surge protection (three grade)	Yes	N/A	N/A
EV over-voltage protection	Yes	N/A	N/A
EV over-temperature protection	Yes	N/A	N/A
EV leakage protection (IEC 62955:2018)	Yes	N/A	N/A
<b>General</b>			
Dimensions(W/H/D)	700x1520x328mm	700x1520x328mm	700x980x328mm

	<b>Emaldo® Power Core</b>	<b>Emaldo® Power Store</b>	<b>Emaldo® Power Pulse</b>
<b>General (continued)</b>			
Gross weight ±2kg	Cabinet: 71,0 kg	Cabinet: 71,0 kg	Complete system: 140,0 kg
	Inverter: 52,5 kg	Inverter: 52,5 kg	
	Battery: 58,5 kg	Battery: 58,5 kg	
Battery slots	3	3	1
Topology	Transformerless	Transformerless	Transformerless
Cooling	Forced air	Forced air	Forced air
Noise	<50dB	<50dB	<50dB
Self-consumption	<150W	<150W	<150W
Heating film energy consumption	200W (Single Battery)	200W (Single Battery)	200W (Single Battery)
Altitude	2000m (degraded 1% per 100m above 2000m)	2000m (degraded 1% per 100m above 2000m)	2000m (degraded 1% per 100m above 2000m)
Relative humidity	0~95%	0~95%	0~95%
Operation temperature	Inverter: -20°C~60°C	Inverter: -20°C~60°C	Inverter: -20°C~60°C
	Charging: -20~55°C	Charging: -20~55°C	Charging: -20~55°C
	Discharging: -20~60°C	Discharging: -20~60°C	Discharging: -20~60°C
Storage temperature	0°C ~ 35°C	0°C ~ 35°C	0°C ~ 35°C
Display	E-INK+LED+APP	LED+APP	LED+APP
Communication	RS485 (Electrical Meter)	RS485 (Electrical Meter)	RS485 (Electrical Meter)
Connectivity	4G, Wi-Fi, Bluetooth®, LoRa	4G, Wi-Fi, Bluetooth®, LoRa	4G, Wi-Fi, Bluetooth®, LoRa





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