CEGASA

Energy you can trust

E/Bick LV Home

User Manual

Original manual
May 2025

Control of revisions

VERSION	DESCRIPTION
May 2025	Format update

Table of Contents

1 INTRODUCTION

1.1 PURPOSE

This complete manual provides the description, configuration, operation, and maintenance of the energy storage system made up of the following products.

Table 1-1. Glossary.

Term	Definition
Module	EBick LV HOME Module
Inverter	Hybrid inverter.
EViewer web app	Module monitoring platform.
CEGASA Cloud	Cloud platform.

1.2 TARGET

The instructions contained in this document can only be carried out by qualified people with the following skills:

- ✓ Knowledge of how Battery Systems work.
- ✓ Knowledge of how an inverter works and is operated.
- ✓ Knowledge of and compliance with applicable requirements, standards, and connection requirements.
- ✓ Knowledge of and compliance with this document and associated system documentation, including all safety instructions.
- ✓ Training to address the risks associated with the installation and operation of electrical equipment and batteries.
- ✓ Training in installation and commissioning of electrical equipment.

If this is not observed, the manufacturer's warranty and/or liability will be null and void unless it can be proven that the damage is not related to failure to comply with this requirement.

1.3 PAGE FORMAT

Each page of this manual has the following information:

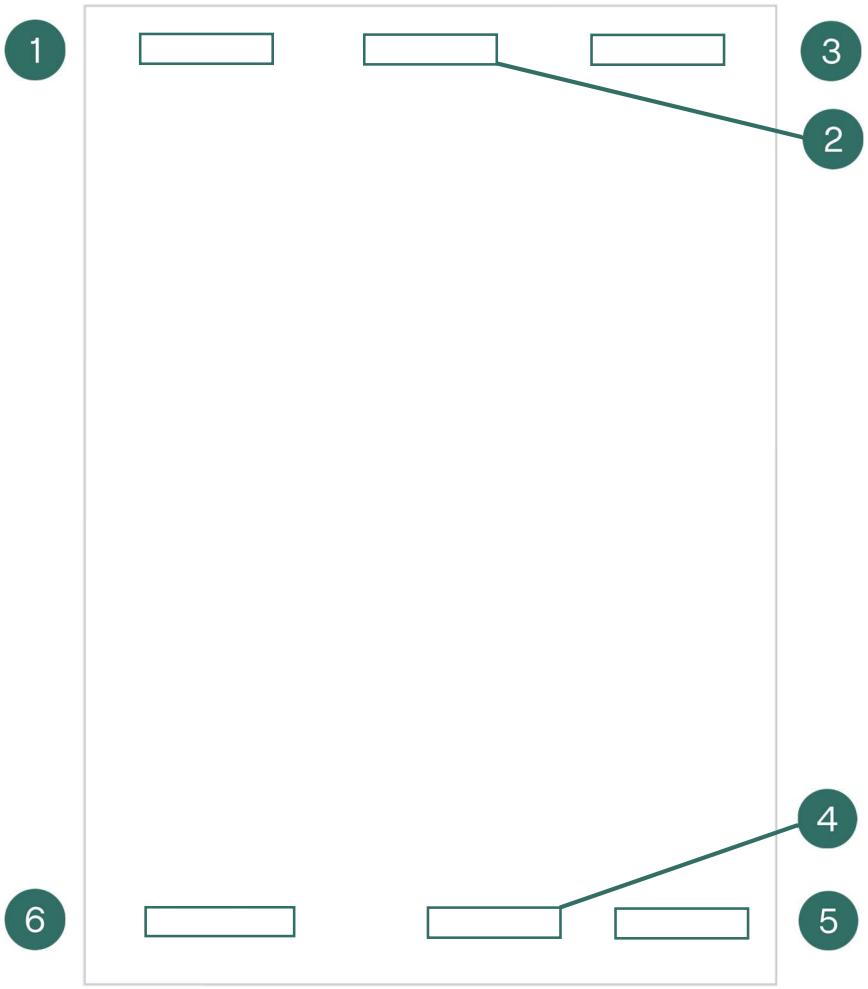


Figure 1-1. Page format.

Table 1-2. Page format.

Item	Description
1	Product name.
2	Manual name.
3	Revision of the manual.
4	Brand slogan.
5	Page number.
6	CEGASA logo.

1.4 SYMBOLS USED

The following information tables are used throughout this manual:

DANGER!

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING!

Indicates a hazardous situation which, if not avoided, may result in death or serious injury.

CAUTION!

Indicates a hazardous situation which, if not avoided, may result in moderate or minor injuries.

NOTICE

Information related to conditions, practices, or procedures that may pose a risk to machine integrity.

INFORMATION

Information to bear in mind.

ENVIRONMENTAL

Information related to conditions, practices or procedures that may pose a risk to the environment.

The following short notes can also be used to replace full-size notes:

Danger: Information related to conditions, practices, or procedures that pose a risk to individual safety.

Warning: Information related to conditions, practices, or procedures that pose a risk to machine integrity.

Caution: Information related to conditions, practices, or procedures that pose a risk to machine integrity.

Notice: Information related to conditions, practices, or procedures that may pose a risk to machine integrity.

Information: Information to bear in mind.

Environmental: Information related **to** conditions, practices, or procedures that may pose a risk to the environment.

1.5 ACRONYMS

Table 1-3. Acronyms.

	Meaning
LFP	LiFePo4
BMS	Battery management system
SoC	State of charge
SoH	State of health
SoP	State of power
CB	Circuit breaker

1.6 LANGUAGE

The original language of the equipment manufacturer is Spanish. Any other language in which the user manual is written is considered a translation from Spanish to the language used by the end user.

If any section or part of the translated manual is not clearly expressed or is not correctly understood, users have the manual in the original language of the manufacturer supplied together with the translated manual.

1.7 DECLARATION OF CONFORMITY

The Module described in this document complies with applicable European directives.

1.8 LIMITATION OF WARRANTIES AND LIABILITY

The limitation of warranties and liability will be described in the contractual agreements between CEGASA ENERGIA SLU and the purchaser (see Annex A1 *Warranty document*").

The information included in this manual has been written to provide users with the highest degree of detail and clarity on all the content. However, CEGASA ENERGIA SLU reserves the right to modify the content of this manual through future revisions at any time and without prior notice.

This document does not replace nor does it aim to replace any local, state, provincial, federal or national laws, regulations and codes applicable to the installation, electrical safety, and use of the Module. CEGASA ENERGIA SLU assumes no liability for compliance or non-compliance with such laws or codes in relation to the installation of the Module.

1.9 CONFIDENTIALITY

All the information provided by CEGASA ENERGIA SLU by virtue of this manual and any data or aspects that may become known as a result thereof will be absolutely confidential, and may not be provided to third parties or used for any purpose other than that intended, without the prior and express written authorisation of CEGASA ENERGIA SLU, (hereinafter CEGASA).

1.10 MANUFACTURER INFORMATION

Contact CEGASA with any questions or queries at the following address:

Parque Tecnológico de Álava
Marie Curie 1, CP 01510 Miñano, Álava (Spain)
+34 945 228 469
info@cegasa.com
cegasa.com

2 SAFETY

DANGER!

The person responsible for the use of the system must ensure that anyone who operates the Module reads, understands, and follows everything indicated in this user manual.

The Module has been designed and tested in accordance with international safety standards. Nonetheless, to avoid personal injury and property damage and ensure long-term operation of the system, please read this section carefully and follow all recommended safety measures.

2.1 INTENDED USE

The intended use of the Module is described below.

- ✓ Under no circumstances should Modules be connected to each other in parallel.
- ✓ It must only be used as stationary equipment.
- ✓ It can operate in on-grid and off-grid mode with exclusively compatible inverters. Consult with CEGASA for the list of compatible inverters.
- ✓ It can be connected to the internet via a network cable for monitoring, maintenance, and firmware update tasks.
- ✓ It is suitable for indoor use, never outdoors.
- ✓ Alterations to any of the components that make up the Module, for instance, changes or modifications, are not permitted without prior written authorisation from CEGASA. Unauthorised modifications will void the warranty and rights over it. CEGASA will not be responsible for any damage caused by such changes to the equipment.

DANGER!

The EBick LV HOME Module cannot be used for any other purpose than that described in this manual.

2.2 RATING PLATES

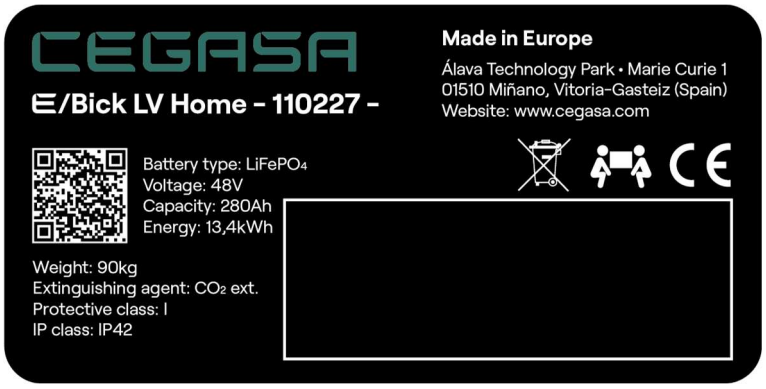


Figure 2-1. EBick LV HOME Module - Rating plate 1.

2.3 GENERAL INFORMATION

The Module has a high energy capacity. To minimise the risk of electric shock, short-circuit, explosion, and/or fire, follow the relevant procedures and local guidelines, as well as the instructions set out in this manual.

To ensure that the Module is safe, all direct connections and terminals must be covered. Systems with visible electrical connections must also be isolated from public access.

Please read, understand and carefully apply the requirements indicated in this section.

2.4 SAFETY INSTRUCTIONS

NOTICE

Failure to follow safety instructions could result in serious injury, death or property damage.

DANGER!

Never connect EBick LV HOME Modules in parallel.

DANGER!

To avoid high energisation currents, pre-charge the bus. A direct connection could damage the system. This pre-charge is managed from the Modules.

DANGER!

Before connecting the Module to the inverter, check that the voltage of the Module (45–50 Vdc) is within the working range of the inverter.

DANGER!

Never open and eliminate, bypass, or modify the cutting and protection systems included in the Modules.

DANGER!

Use safety tools (EN 60900) and protective equipment during installation and service to avoid short-circuits and electric shock.

DANGER!

Do not expose the Module to room temperatures higher than 50°C. The equipment must not be operational above these temperatures. In fact, even when the equipment is not operational, the exposure of the cells to high temperatures can cause fire and/or explosion.

DANGER!

Never drop or knock the Modules.

DANGER!

If using inverters, only use those authorised by CEGASA. Misuse of the Module during charging or discharging can cause premature ageing of the equipment or even fire and/or explosion. The communications of both units are complex and must be run by authorised specialised personnel.

DANGER!

Do not open the covers of the Modules. Do not place or drop conductive objects inside the Module or between its terminals.

DANGER!

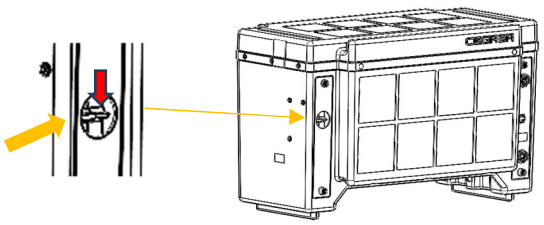
Do not short-circuit the terminals (positive and negative) of the Modules. The short-circuit current can be several thousand amperes, generating a dangerous electrical arc.

DANGER!

Do not bring into contact or fully or partially submerge the Module in water or any other liquid.

DANGER!

In case of fire, turn off the circuit breaker (CB) located on the front left of the Modules by removing the cover and lowering the switch. Use a CO_2 extinguisher or extinguishing agent recommended by local regulations to extinguish the fire. Do not try to put out the fire with water. The Modules contain flammable materials. Always notify firefighters about the installed Module.



2.4.1 General

- ✓ The area around the Module must be kept clear and free of combustible materials, petrol, and/or other flammable vapours and liquids.
- ✓ Any air inlet or outlet in the room must be clear and free of obstacles.
- ✓ There must be no signs of deterioration in any component of the Module. Contact CEGASA with any questions.
- ✓ Whenever the button on the Modules is in the ON position, there will be voltage in the Module (40–53 Vdc).
- ✓ Do not use the Module if any of its parts have been totally or partially submerged in water or any other liquid. A water-damaged lithium cell is potentially dangerous. Attempts to use the Module could cause a fire or an explosion. In this case, contact CEGASA for an equipment inspection.
- ✓ Do not access the interior of the Module or handle any internal components.
- ✓ Do not use or handle the Module components if your feet or hands are wet.
- ✓ In the event of a fault or incident, cut off the power to the inverter as an initial measure.
- ✓ When a Module is not installed in the system, ensure that the circuit breaker (CB) on the front left of the Module is disabled in the off position (down position).
- ✓ Ensure that there is no short-circuit between positive and negative terminals at any point in the system.
- ✓ Follow the specifications proposed by CEGASA for the power and communications cables of the installation.
- ✓ Do not use, handle, install, or store any of the Module components in locations with high humidity levels or subject to adverse weather conditions.
- ✓ Furthermore, a Module should never be installed in locations at an altitude of more than 2000 metres above sea level.

2.4.2 Mechanical

- ✓ The floor must be able to withstand the weight of the entire unit. The floor must be in optimal condition.
- ✓ Due to the weight of the Module (>90 kg), it must be installed by several people.

2.4.3 Fire prevention measures

- ✓ Ensure that a CO_2 extinguisher or extinguishing agent recommended by local regulations is nearby.
- ✓ Do not use water to extinguish the fire.
- ✓ Full protective clothing and self-contained breathing apparatus are required for firefighters to extinguish the fire.

2.4.4 Anti-electrolyte measures

If the Module loses electrolyte due to a Module malfunction, avoid contact with the leaking liquid or gas.

Electrolyte is corrosive and contact can cause skin irritation and chemical burns. In case of exposure to this substance, proceed as follows:

- ✓ Inhalation: Evacuate the contaminated area.
- ✓ Contact with eyes: Rinse eyes with cold water for 15 minutes.
- ✓ Contact with skin: Thoroughly wash the affected area with cold water and soap.
- ✓ Ingestion: Induce vomiting.

In any of the above cases, seek immediate medical assistance.

3 DESCRIPTION OF THE SYSTEM

3.1 DESCRIPTION

The EBick LV HOME line is European-manufactured equipment for the stationary environment with LFP technology, providing optimum quality, service, safety, and cyclability.

The line consists of the following parts:

Parts	Measurements (cm)	Weight (kg)
EBick LV HOME Module	78x41x48	94

1. **EBick LV HOME Module** (48 V–280 Ah; 13.4 kWh)

   Designation according to standard (IEC 62620:2014); IFpP73/175/208[1p15s]M/-20+55/90

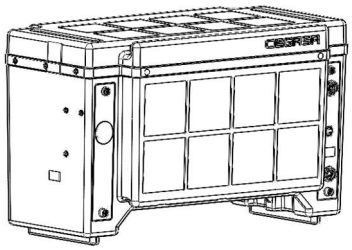


Figure 3-1. EBick LV HOME Module.

3.2 MAIN FEATURES

- ✓ Communications connections are made on the front, while power connections are made on the rear (close to the wall) with quick and safe connectors (without the need for tools).
- ✓ Compatible with the most relevant 48 Vdc inverters (single-phase and three-phase) on the market. Communications (CAN Bus and Modbus)
- ✓ Start and stop with ON/OFF button on the front, which has a DC bus pre-charging system controlled by the module.
- ✓ Circuit breaker (CB) on the front, which provides the Module with short-circuit protection and also makes it possible to cut off the two poles (positive and negative) in the event of overcurrent (automatically), overdischarges, or maintenance work (manually).
- ✓ General protections for overcurrent, voltages, temperatures, etc.
- ✓ Simple system designed to facilitate the disassembly and repair of electronic components.
- ✓ Remote diagnosis with the EViewer web app developed by CEGASA.

3.3 CONNECTING THE MODULE

The module connections within the installation and the corresponding list of cables are shown below.

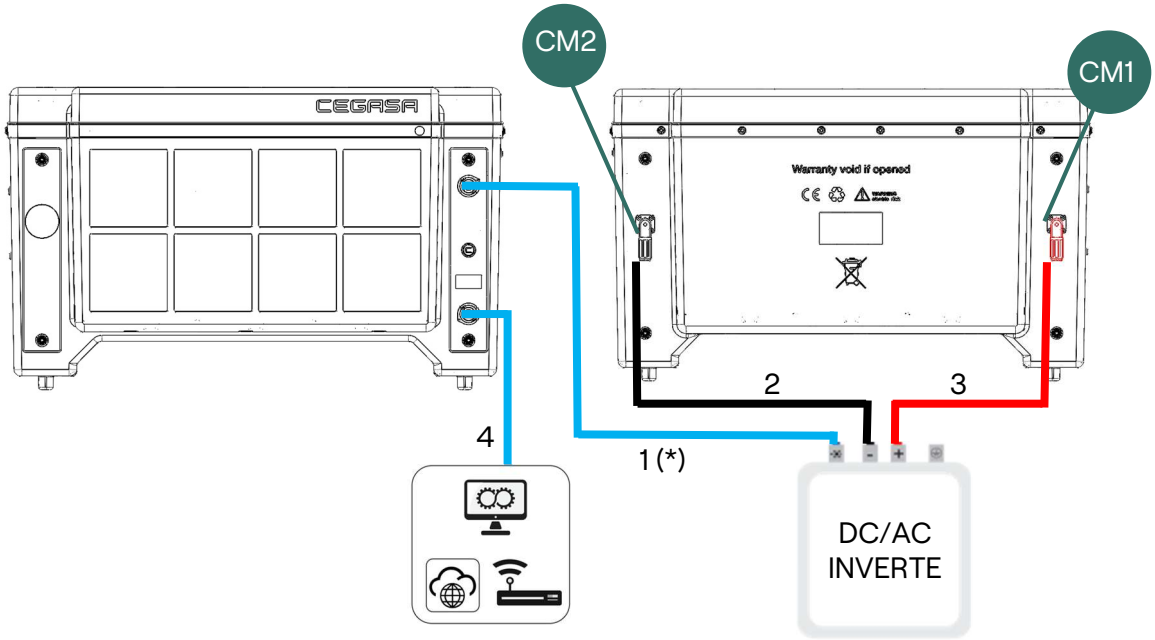


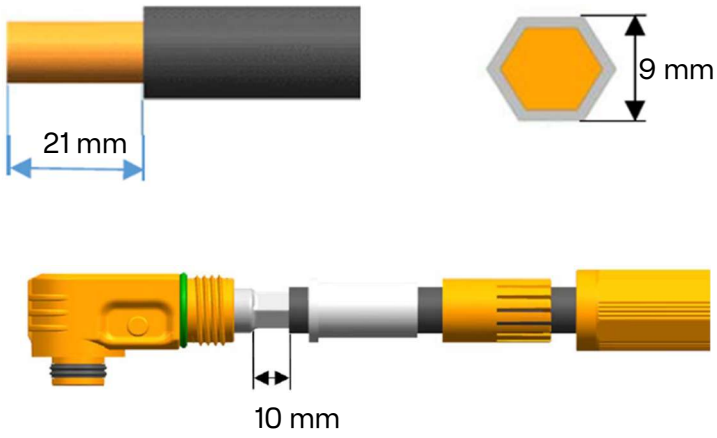
Figure 3-2. Installation connections.

Table 3-1. Connection cables.

Item	Type of cable	Features
1 (*)	COMMS cable to the inverter (CANBUS)	Cat5e UTP network cable (PARALLEL) (*included*)
2	Inverter negative cable	25 mm² 60 Vdc power cable (*not included*)
3	Inverter positive cable	25 mm² 60 Vdc power cable (*not included*)
4	COMMS Cable (ISO/SPI)	Cat5e UTP network cable (PARALLEL) (*not included*)
CM1	Positive female module connector	*(Included)*
CM2	Negative female module connector	*(Included)*

(*) The cable supplied with the Module is ONLY compatible with VICTRON inverters. If another inverter is used in the application, a category 5e or higher standard parallel UTP network cable must be used.

Details of the crimping required on 2-3 power cables with CM 1-2 connectors:



3.3.1 BMS – Module

At this level, the unit voltages of each cell and their temperatures at various points are recorded and sent via a CAN Bus communication bus to the next higher control level (MASTER BOX MCS control unit, located inside the Module).

At this level, each BMS unit in the Module is equipped with protection systems to open the circuit during charging or discharging processes if any problems arise (voltage, temperature, overcurrent, etc.).

For additional safety redundancy in the Module, the BMS commands the front internal circuit breaker (CB), which makes it possible to cut off both poles (+/-) in the event of overcurrent problems or short-circuits. In such cases, the circuit breaker must be reset manually.

3.3.2 Master MCS

The second level in the control architecture is the Master Box MCS unit (included in the Module). Electronics that enable System connectivity and allow for communication between the inverter, CEGASA Cloud, EViewer platform, and EMS.

The Master unit has two communication protocols to communicate with different inverters: CAN Bus and Modbus TCP/IP.

3.4 INTERFACE – EBICK LV HOME

3.4.1 EBick LV HOME front face

Figure 3-3. EBick LV HOME front face.

3.4.2 EBick LV HOME rear face

Figure 3-10. EBick LV HOME rear face.

Table 3-2. Front and rear interface.

Item	Name	Description
1	Start/stop button	Button to start up, switch on (including the pre-charging process) or turn off the Module. It includes a two-colour (red/green) LED to indicate the Module status.
2	CANBUS (Out)	CAN bus output connector.
3	MODBUS (Out)	MODBus output connector.
4	Circuit breaker (CB)	Thermal magnetic circuit breaker. To connect/disconnect the Module for long shutdowns. It adds short-circuit and extreme overdischarge protection.
5	OUT+	Positive-pole power output connection.
6	IN+	Positive-pole power input connection.
7	2P connector	Connector for voltage test and recovery charge. *See item 11.1.8*

4 PROCESSES AND MODES OF OPERATION

4.1 STATE MACHINE DESCRIPTION

The Module has different ways to show the state it is in at all times. Users will be able to connect to the module through the EViewer web app where they will find detailed information about it. The Module also integrates light indicators with different codes detailed below.

4.1.1 Working state

The Module passes through different states depending on the work mode. The light indicator on the start/stop button modifies its emission code depending on the state of the Module.

Each of the possible states is described below.

INFORMATION

 The LED flashes slowly.

 The LED flashes quickly.

Table 4-1. State

LED button	State	Description
	Start-up	The Module is powered up by enabling the circuit breaker (CB) on the front left (up position). The Module will go into the ***Start-up*** state while initialising (several seconds). Once started and enabled by the Master, the System shifts to the next state, ***Ready***.
	Ready	From the ***Ready*** state, users can close the BMS contactor by pressing the start/stop button for 5 seconds and shifting to the ***Connecting*** state.
	Connecting	Contactor closure is executed by performing a pre-charge to protect the BMS electronics and the inverter, an action that is carried out automatically in this state. Once the pre-charging process is completed, the System will automatically shift to the ***Run*** state. This process can take several seconds depending on the inverter.
	Run	Once in the ***Run*** state, the BMS contactor will be closed and therefore current will be able to flow through the Module. (*)
	Shutdown	The Module should preferably be switched off from the ***Ready*** state. To shift to the ***Ready*** state, press the Module's start/stop button for 5 seconds.

LED button	State	Description
		From this state you can definitively turn off the Module by disabling the circuit breaker (CB) on the front left in the OFF position (down position).

(*) If the Module cannot reach this state, see chapter 8 "Troubleshooting".

NOTICE

In case of transport or long-term storage (more than 2 weeks), the circuit breaker (CB) on the front left must be in the OFF position (down position).

4.1.2 States of protection

The Modules also have three protection levels: **Caution**, **Warning** and **Alarm.**

Table 4-2. States of protection.

LED button	State	Description
	Caution	The first protection level is ***Caution***. In this state, the Master limits the corresponding current setpoint to 0 (Charge and/or Discharge) depending on the event. (*)
	Warning	If the Module exceeds any ***Warning*** level, the BMS of the corresponding Module will shift to the ***Ready*** state of operation and the contactor will open to protect the Module.(**)
	Alarm	Finally, at the ***Alarm*** level, the BMS of the corresponding Module shifts to the alarm state and the affected BMS will need to be reset manually via the circuit breaker (CB) on the front left. Check the cause of entry into this alarm state with the help of the EViewer web app.

*(*) If the event conditions are restored, the BMS will perform up to 6 automatic resets for 1 hour in case of **Caution**. If the problem persists, the Module's BMS will shift to the alarm state.*

*(**) If the event conditions are restored, the BMS will perform up to 3 automatic resets for 1 hour in case of **Warning**. If the problem persists, the BMS will shift to the alarm state.*

4.2 EQUALISATION

Each Module is equipped with a passive equalisation system with the objective of balancing the state of capacity of the cells in the event of an imbalance.

5 SYSTEM CONFIGURATION AND START-UP

5.1 EVIEWER CONNECTION

The Module has a web app called EViewer that helps the user and/or installer to configure, monitor, and update the equipment. This app runs on any web browser and therefore can be used with any device that has a browser installed, such as a smartphone, laptop, or tablet.

To run the EViewer web app, the first step is to turn on the Module to power the Master unit and achieve connectivity.

5.2 POWERING THE SYSTEM

The steps to follow to power the Module and achieve connectivity are described below.

INFORMATION

Check the Module's power and communications connections.

NOTICE

Do not connect the Module to the inverter until configuration is completed.

1. To energise the Module, access the circuit breaker (CB) located on the front.

   To do so, remove the cover and switch the circuit breaker to the up position (on) using a flat-head screwdriver.

NOTICE

To enable the circuit breaker, the two steps shown below must be followed.

Firstly, put the circuit breaker down into the 'O' position (fully lowered position) and then put it up into the 'I' position (up position). Use a flat-head screwdriver to do this.

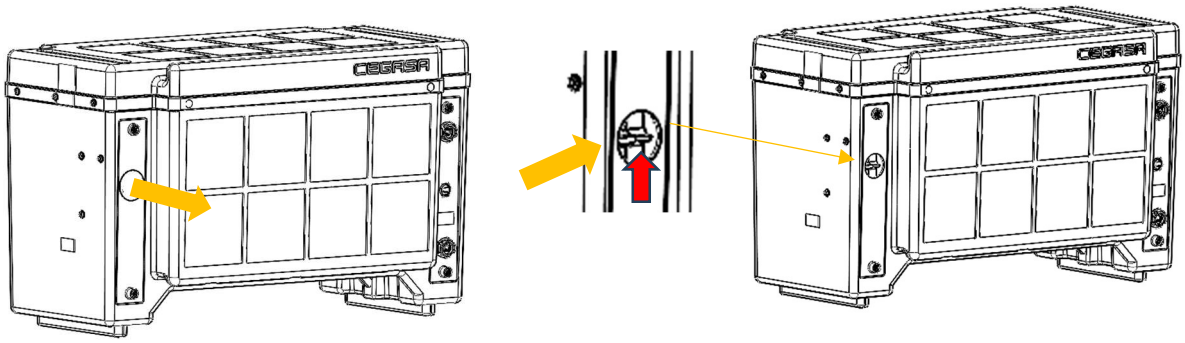
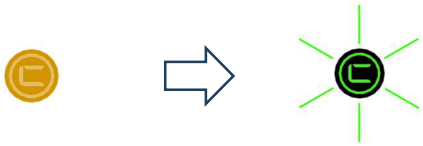


Figure 5-1. Connect the circuit breaker (CB).

Note that the LED on the front button of the module first lights up in orange (steady) and then turns green (slowly flashing). This process can take several seconds.



NOTICE

DO NOT PRESS the front button until the final System configuration is complete. See next item

2. Using an Ethernet cable, connect the System via the EViewer web app.

   - Connect the laptop and the Module's Ethernet port (lower port) with an Ethernet cable. A Cat5e or higher parallel network cable is recommended.

Figure 5-2. Ethernet connection.

   - Configure the IP of the device connected to the Master to adjust the IP range to the 192.168.55.XXX network (when in doubt, see Annex 5 *"IP configuration of PC devices"*).

   - Open a web browser on the device and enter the following IP address: http://192.168.55.180.

INFORMATION

From this point, continue with the system configuration as explained in **Annex *A4 System configuration with the EViewer web*** app**".**

In case of connection problems, see Chapter 8, Troubleshooting.

6 SYSTEM OPERATION

Once the Module is powered, configured, and connected to an inverter, users can charge or discharge the System through the inverter.

INFORMATION

Fully charging the system at the start to calibrate the system's SoC value is recommended.

6.1 SYSTEM START-UP

When the system has been configured in the EViewer platform, the Module's button will be lit in the **Ready** state (slowly flashing green) waiting to be initiated.

To start up the Module, press the front start/stop button of the Module for 5 seconds. This initiates the DC bus pre-charging process to prevent any damage to the Module's safety components. In this process, the System passes through the **Connecting** state (green LED flashing quickly).

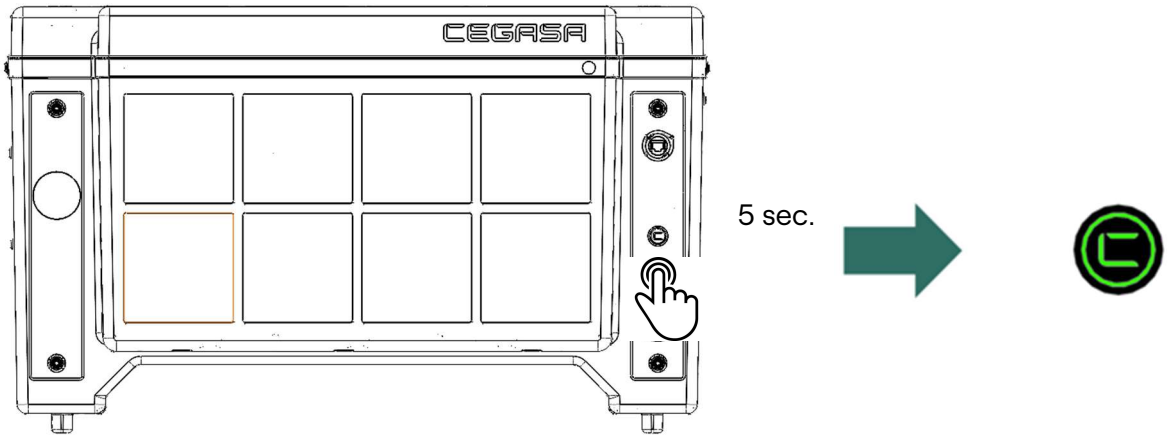


Figure 6-1. System start-up.

Once the pre-charging process is completed, the System enters the **Run** state and the Module can receive or deliver current from the inverter if it requires it.

In this **Run** state, the LED of the button remains in a **steady green state**.

Customers can use the EViewer platform to check if the Module is connected and is being charged/discharged correctly.

If the Module cannot reach this state, see chapter 8 *"Troubleshooting".*

6.2 SYSTEM SHUTDOWN

To shut down the Module, users must first ensure that no charging or discharging current is circulating. This can be checked using the EViewer Platform, viewing the current passing through the System and its state.

Once the circulating current has stopped, press the start/stop button (5 seconds) on the Module until all the contactors open, moving from the **Run** state to the **Ready** state.

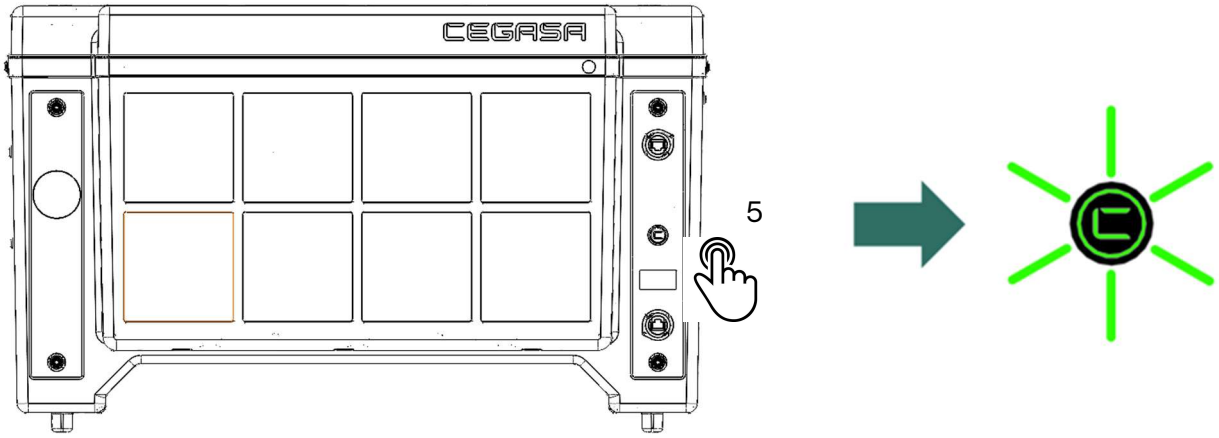


Figure 6-2. System shutdown.

In this ***Run*** state the LED of the button on the Module remains in a slow **flashing green state**.

If the Module cannot reach this state, see chapter 8 *"Troubleshooting".*

Once in this state, the Module can be turned off by switching the circuit breaker (CB) to the OFF position (down position).

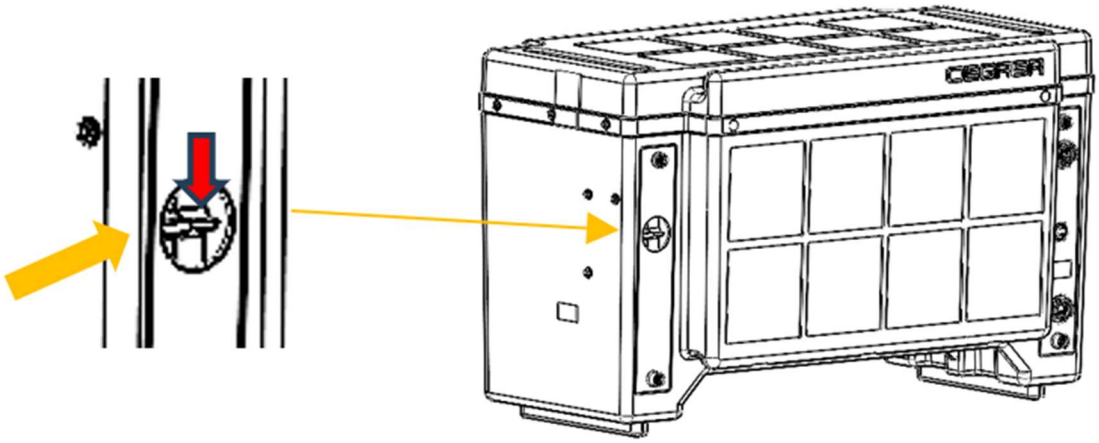


Figure 6-3. Disconnect the circuit breaker (CB).

NOTICE

Remember to disable the circuit breaker (CB) by placing it in the OFF position (down position) if the Module is not going to receive any charge for a period of time longer than two weeks, since the internal consumption of the electronics could use all the energy of the System.

6.3 RECOMMENDATIONS FOR USE (CHARGING AND DISCHARGING)

The Master adjusts the voltage and current setpoints depending on the working point and the state of the Module.

Table 6-1. Recommendations for use.

Working point	Recommendations for use
Charging	The Module must be charged respecting the limits specified in the technical information. The Module will automatically reduce the current and voltage limit by regulation both in the final charge and in case of temperatures exceeding 45°C or temperatures lower than 20°C in the cell.
Discharging	As with charging, the Module must be discharged respecting the limits specified in the technical information. The Module will automatically and gradually reduce this limit in the event of temperatures above 50°C or below 10°C in the cell. It must be taken into account that inverters in off-grid Systems do not respect the discharge setpoint limits sent by the Master and operations may be affected if the final application is not correctly sized.

If these usage recommendations are not followed, the Master has event recording tools to ensure fulfilment of the warranty. See Annex A1 *"Warranty document"*.

To guarantee the cyclability of the installations, deep discharges to the System (>80% DoD) are not recommended.

INFORMATION

If you require more technical information, please contact CEGASA.

7 TROUBLESHOOTING

If due to any problem the System is in an alarm state, it issues the following notices.

- ✓ The start/stop button LED, located on the right side of the Module, emits a solid red light.
- ✓ The Master unit sends the alarm to the inverter via communications and it can therefore be viewed on the inverter's monitoring platform.
- ✓ The alarm can also be viewed using the EViewer web app (see Annex A4 System *configuration* with *the EViewer web* app").
- ✓ The event is recorded in the Master's log files.

NOTICE

If you are not able to start the System and check the error, please contact CEGASA after-sales.

Possible failures that may occur in the Module are described below.

Table 7-1. List of failures.

Code	Error	Description	Solution
324	Connection error in BMS	Problem in pre-charge or BMS contactors	1. Contact the CEGASA after-sales service.
313	Failure in BMS	BMS internal problem	1. Contact the CEGASA after-sales service.
321	BMS communications error	Master does not communicate with one or several BMS	1. Check that the number of modules is correctly configured in the EViewer web app (always ONE for the EBick LV HOME). 2. Contact the CEGASA after-sales service.

443	Inverter communication error	Master is not communicating with inverter	1. Check that the wiring between the inverter and the Modules is properly connected. 2. Check that the inverter has been configured correctly in the EViewer web app. 3. Contact the CEGASA after-sales service.
-	Button LED off	The Module is not on or the LED has failed.	1. Check that the circuit breaker (CB) is correctly enabled (raised position). 2. Check that the voltage is correct in the Module. Test point located on the rear of the Module. Use a multimeter. 3. Contact the CEGASA after-sales service.
-	Current sensor failure	A Module is not measuring current.	1. Check the current value using a current clamp. 2. Contact the CEGASA after-sales service.
-	EViewer web app does not load	When entering the appropriate IP address in the browser, the EViewer web app does not load	1. If the connection is via ETH cable, check IP is configured correctly on PC.

8 SYSTEM DISASSEMBLY

⚠ CAUTION!

The Module must be disassembled by qualified personnel.

⚠ CAUTION!

Risk of injury due to the weight of the Modules.

Injuries can occur if Modules are lifted incorrectly or dropped during transportation or installation.

- Transport and lift the Modules carefully. Take their weight into account.
- Wear appropriate personal protective equipment for all work on the Module.

To disassemble the System, please follow the procedure below:

1. Turn off the connected inverter.
2. Turn off all circuit breakers and/or protection elements between the inverter and the Battery.
3. Press the ON/OFF switch of the Module for 5 seconds to shut down the System.

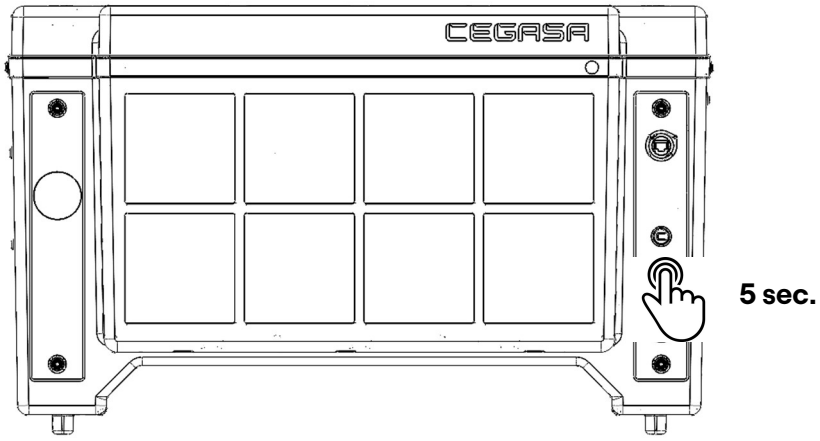


Figure 8-1. Press the ON/OFF button.

4. Remove the cover on the left side to access and disable the circuit breaker (CB), placing it in the OFF position (down position).

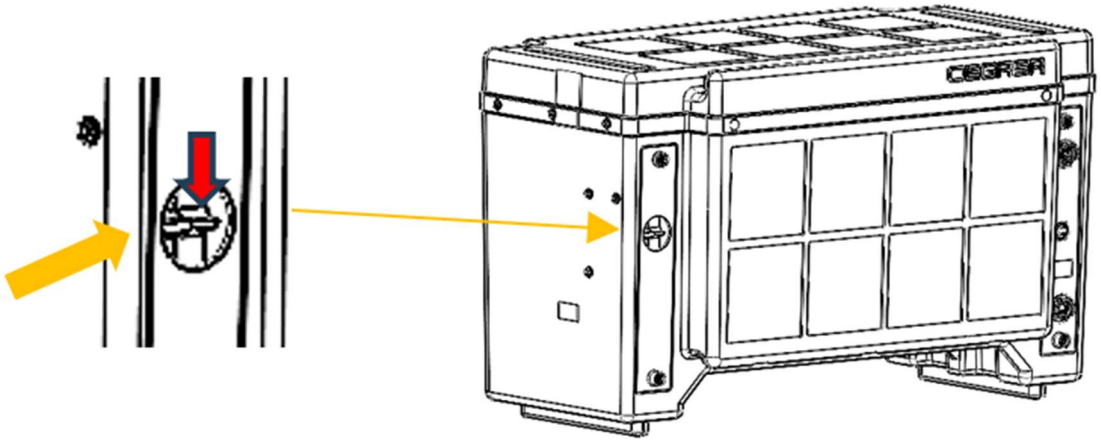


Figure 8-2. Disconnect the circuit breaker (CB).

5. Disconnect the communications cable between the inverter and the Battery.

6. Disconnect the positive and negative power cables of each Module. Press the connector to remove it.

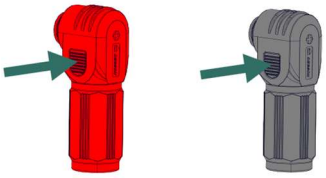


Figure 8-3. Press the sides to release the cable.

7. If the Module is to be stored or shipped, it must be packaged. Use the original packaging or packaging that is suitable for its weight and dimensions.

8. Dispose of or recycle the Module according to locally applicable disposal regulations.

9 DISPOSAL SYSTEM

The Module can only be disposed of in accordance with current local regulations on used batteries. If the Module is damaged, contact the manufacturer to receive appropriate instructions.

You must contact the installer or distributor before disposing of it.

ENVIRONMENTAL

Do not dispose of the Module with household waste under any circumstances.

Ensure that the Module is not exposed to moisture or direct sunlight once uninstalled.

Used Battery Systems may contain harmful substances that can be detrimental to the environment or health if not stored or disposed of properly.

Battery Systems contain important raw materials such as iron, zinc, manganese, copper, cobalt and nickel, which can be recycled.

10 TRANSPORT AND STORAGE REQUIREMENTS AND RECOMMENDATIONS

Battery Systems contain hazardous substances categorised as class 9 by the ADR 2013 document identified by number UN3481.

10.1 SHIPMENT

- ✓ Ship the Modules in packaging group 1, with approved boxes. Recommendation: do not discard the original shipping boxes.
- ✓ Transport with ADR authorisation to move Battery Systems.
- ✓ Smoking is prohibited in the vehicle during journeys and also in the vicinity during loading and unloading.
- ✓ It is prohibited for the carrier or any unqualified third party not associated with the installation to open the outer packaging of the Module.
- ✓ When transporting the modules, ensure that the front circuit breaker (CB) is in the OFF position (down position).

10.2 ENVIRONMENTAL REQUIREMENTS FOR USE

The area where the System is installed must be equipped with an air conditioning unit in order to carry out the System charging and discharging process within the recommended operating temperature.

- ✓ Operating temperature range for charging: 0°C to 45°C
- ✓ Operating temperature range for discharging: -10°C to 55°C
- ✓ Recommended operating temperature range: 15°C to 25°C
- ✓ Operating humidity range (HR): 15% to 90%

The Module control has an internal algorithm to modulate the charge and discharge current depending on the SoC and the temperature of the cells.

INFORMATION

Working outside the recommended temperature range may cause the Module to enter alarm or temperature protection state (over or under). It can also lead to a reduction in the life of the System and affect the terms of the system warranty (see Annex A1 *Warranty* document).

10.2.1 Storage recommendations:

- ✓ If the modules are stored for more than 2 weeks, ensure that the circuit breaker (CB) is in the OFF position (down position).
- ✓ Do not store the Module in areas where it is exposed to direct sunlight or rainfall.
- ✓ Do not expose to saline and/or highly corrosive environments.
- ✓ Recommended storage SoC (30%-70%).
- ✓ Recommended storage temperature (15°C to 25°C).
- ✓ Recommended storage humidity range (HR): 15% to 90%.
- ✓ Do not exceed 6 months of storage without performing a charge/discharge cycle (*).

  (*) Recommended Module charging cycle: ***Ask CEGASA if you have any questions.***

10.2.2 Deviations:

- ✓ Do not store the Module below -5°C.
- ✓ Do not store the Module above 50°C.
- ✓ The Module can be stored for 6 months between 0°C and 25°C.
- ✓ The Module can be stored for 3 months between -10°C and 35°C.
- ✓ The Module can be stored for 1 month between -20°C and 45°C.

INFORMATION

If the above instructions for storing the Module are not followed, the life cycle will be reduced drastically (see Annex A1 *Warranty document*).

11 MAINTENANCE PLAN

11.1 MAINTENANCE PLAN

The Module requires little maintenance. However, a System maintenance procedure must be performed to ensure optimal operation.

This procedure provides the guidelines to follow to ensure proper maintenance, maximising performance and prolonging the service life of the Module. Follow these instructions to keep the System in optimal condition. Not following these instructions may lead to the reduced life of the System, also affecting the terms of the system warranty (see chapter 1.8 *"Limitation of warranties and liability"*).

11.1.1 Training and Safety

Ensure that the personnel responsible for maintaining the Module are adequately trained in maintenance and safety procedures. Use suitable personal protective equipment when handling Battery Systems and follow all relevant safety regulations.

11.1.2 Cleaning

It is recommended to periodically clean all the equipment comprising the energy storage Module. If the casing is dirty, use a soft dry cloth or a vacuum cleaner to remove dust. Do not use liquids such as solvents, abrasive products or corrosive liquids.

11.1.3 Storage

A System charge/discharge cycle must be carried out depending on the storage conditions (temperature and storage time), see Section 10 *"Transport and storage requirements and recommendations"*.

11.1.4 Temperature

In storage, keep the Modules in an environment with an appropriate and stable temperature. Install in a well-ventilated place protected from direct exposure to sunlight and severe weather conditions. See Section 10 "*Transport and storage requirements and recommendations".*

When in use, ensure that the Modules are working within the temperature range specified by CEGASA (see chapter 10.2 "*Environmental requirements for use*"). Otherwise, have the necessary resources available (isolation, air conditioning, etc.).

11.1.5 Regular Visual Inspection

Carry out periodic visual inspections to detect any physical damage to the System. Pay special attention to the terminals and connections.

11.1.6 Voltage control

Regularly check that the Module voltage is within the limits specified by CEGASA on the EViewer platform (Annex 4 *"System config. with web app"*).

11.1.7 Full charge

Fully charge the Module at least once a month to update possible deviations from the SoC calculation algorithm, see Annex A1 *Warranty document*".

11.1.8 Deep discharges

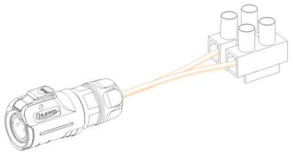
Avoid discharging the Module below an SoC of 10%. Deeper discharges will significantly affect the service life. If the Module is overdischarged, its protection will be triggered, but it is important to ensure the following:

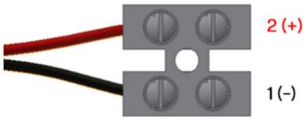
- ✓ Charge the overdischarged Module within 7 days if the room temperature is equal to or greater than 25°C, see Annex A1 *Warranty document*".
- ✓ Charge the overdischarged Module within 15 days if the room temperature is below 25°C, see Annex A1 *Warranty document*".

If the Module is in a state of deep discharge and there is no voltage at the terminals, a controlled recovery charge can be carried out by following the steps below:

a) Access the 2P connector located at the rear by removing its cover

b) Connect the 'EBICKLV_CB_External Power Connector' (223907) included in the Module accessories pack to an external power supply, as follows.





c) Without switching on the power supply, connect the above cable to the module's 2P contactor.

d) Connect the external power supply and program a 50 V recovery charge with a maximum current of 5 A. Under no circumstances should these values be exceeded.

⚠ CAUTION!

Respect the polarity (+/-) when connecting to the power supply.

Respect the 50 V // +5 A recovery charge conditions to avoid damaging the Module.

11.1.9 Checking notices and alarms

Regularly check for the absence of any notices and/or alarms on the EViewer web app, (see Section 7 *"Troubleshooting"*).

11.1.10 Log and documentation

Keep a detailed log of all maintenance activities performed on the energy storage Module, including inspection dates, voltage measurements, cleaning, and any other actions taken. Keep these logs up to date to make it easier to track the System status.

11.1.11 Updating firmware

Make sure your System is updated with the latest FW version.

ⓘ INFORMATION

Please contact CEGASA if you require more technical information.

ⓘ INFORMATION

This maintenance plan must be followed to make the product warranty effective.

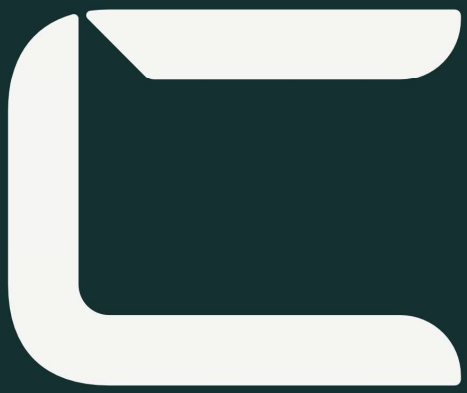
11.2 CORRECTIVE MAINTENANCE PLAN

In the event of a breakdown, if you need to replace any unit of the Module, please contact CEGASA's technical team (SAT) for assistance. Under no circumstances should you manipulate or open any unit; if you do, the equipment warranty will be fully void.

12 SPECIFIC ANNEXES

- ✓ **A1 WARRANTY DOCUMENT**
- ✓ **A2 CAN BUS COMMUNICATIONS PROTOCOL**
- ✓ **A3 MODBUS COMMUNICATIONS PROTOCOL**
- ✓ **A4 SYSTEM CONFIGURATION WITH THE EVIEWER WEB APP**
- ✓ **A5 IP CONFIGURATION OF PC DEVICES**

Energy you can trust



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