



EGUANA



Evolve ES8™

Owner's Manual

IMPORTANT INSTRUCTIONS

This manual contains important product information for your Evolve home energy storage system. This document is accurate at the time of publishing. Eguana reserves the right to make updates to the product without notice. For the latest Evolve documents, please visit our website at www.eguanatech.com

WARNING! Read this document in its entirety before using this product. Failure to follow instructions or warnings can result in electrical shock, serious injury, or death. Operating the product in a way that it was not intended can also result in permanent damage to the product.

This manual applies to the following products:

Evolve 0513 ESS - Energy Storage System
Evolve Hub - Energy Management System EMS-A

Table of Contents

- 1 SAFETY..... 1**
 - 1.1 IN CASE OF EMERGENCY..... 1
 - 1.2 GENERAL SAFETY PRECAUTIONS..... 2
 - 1.3 ENVIRONMENTAL PROTECTION..... 2
- 2 INTRODUCTION..... 3**
 - 2.1 OVERVIEW..... 3
- 3 SYSTEM MONITORING..... 4**
 - 3.1 SETTING THE EMERGENCY RESERVE CAPACITY 4
- 4 OPERATION..... 5**
 - 4.1 LED DISPLAY INDICATORS..... 5
 - 4.2 LED DISPLAY DEFINITIONS..... 5
- 5 BACKUP POWER OPERATION 5**
 - 5.1 BACKUP POWER DISPLAY MODES. 6
 - 5.2 RESTARTING THE BATTERY SYSTEM IN BACKUP MODE 6
- 6 MAINTENANCE..... 7**
- 7 TROUBLESHOOTING..... 7**
- 8 WARRANTY..... 8**
- 9 INSTALLATION RECORDS..... 8**

1 Safety

Throughout this manual, the following symbols will be used to highlight important information and procedures:

Symbol	Definition
	WARNING! A dangerous voltage or other condition exists. Use extreme caution when performing these tasks.
	CAUTION! This information is critical to the safe installation and or operation of the system. Follow these instructions closely.
	NOTE: This statement is important. Follow instructions closely.

1.1 In case of emergency

In all cases:

If safe to do so, switch off the AC breakers (external to the system) for the system.

Contact the fire department or other required emergency response team.

Evacuate the area, and if applicable, follow your emergency evacuation plan if others are in proximity to the installed location.

In case of fire:

When safe, use a fire extinguisher suitable for use; including A, B, and C dry chemical fire extinguishers or carbon dioxide extinguishers. Do not use type D extinguishers.

In case of flooding:

Stay out of water if any part of the system or wiring is submerged.

Do not attempt to operate batteries that have been submerged in water even after they have been dried.

In case of unusual noise, smell or smoke:

If safe to do so, ventilate the area.

In case of weather alerts including tornado, hurricane or potentially wind-damaging risk:

The system is capable of automatically generating emergency backup power on loss of utility power, however, in the case where winds are potentially threatening to your building structure and safety, it is recommended to shut down your system in advance of, and for the duration of, the extreme weather event, and to return to operation only after it appears safe to do so.

1.2 General safety precautions



Important! Never operate the system in a manner not described by this manual.



Only qualified personnel should service this product.

Risks of Fire

Do not expose the system to temperatures exceeding 45 degrees Celsius.

Avoid installation in direct sunlight.

Do not store objects on top of the cabinet.

Do not obstruct the intake or exhaust of the forced airflow system.

Do not store combustible objects and corrosive chemicals directly adjacent to the system.

Risks of Shock



WARNING! Hazardous Voltages. The Inverter contains hazardous voltage and energy that may be lethal. It may only be installed by qualified personnel who have read this manual and are familiar with its operation and hazards.



Only connect the PCS cabinet to a compatible electrical service as defined in the model specifications. The PCS must be connected to a dedicated branch circuit in the main electrical panel.

Ensure proper electrical grounding in accordance with code requirements.



CAUTION! Both AC and DC voltage sources are terminated inside this equipment. Each circuit must be disconnected before servicing.

Risks of Damage

The PCS is compatible with the LG Chem battery model EM048126P3S7 only. Do not attempt to connect any other battery to the system.

Do not connect any other loads directly to the battery power bus.

Do not drop, tip, or puncture the cabinet during transport and installation. Visible damage to the cabinet and/or internal components should be reported to the manufacturer immediately.

Do not store this system for periods longer than six months without a battery maintenance charge. This may result in permanent damage to the batteries.

Do not operate the system outside the operating temperature range (-10 to 45C)



1.3 Environmental Protection

Do not dispose of the system or any of the components within the cabinet. Batteries, electronics, cables, and metal parts are recyclable. Consult your municipal waste management authority to determine required methods of component recycling.

2 INTRODUCTION

2.1 Overview

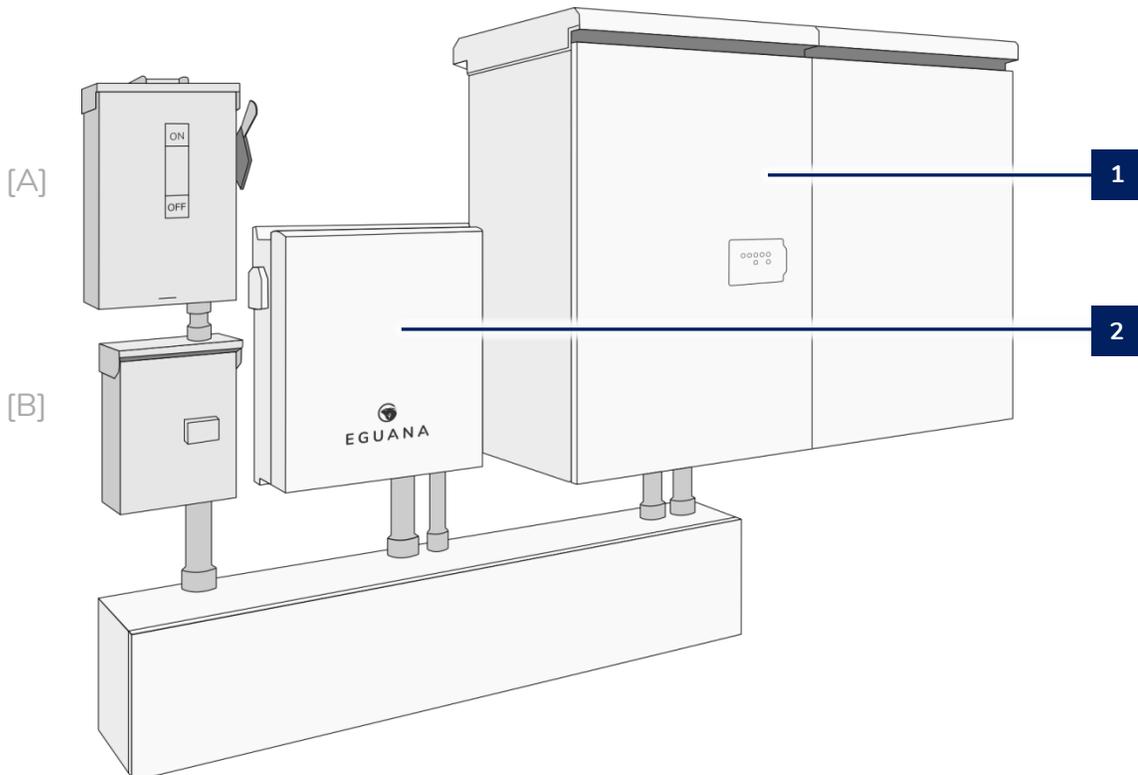
This manual contains instructions for the operation of the Eguana Evolve™ home energy storage system. This product is intended to operate in parallel with a utility connected solar PV system, and is designed to optimize the delivery of utility or solar energy within the home. The system is capable of providing limited backup power to the home in case of a power outage, with the ability to charge batteries from the solar PV system.

A sample diagram below demonstrates a typical layout of an installed system. The energy storage system consists of two main components:

1. Evolve ESS: includes the power control system (PCS), and the battery.
2. Evolve Hub : includes equipment which,
 - connects the monitoring system to the home's internet connection,
 - manages electricity flow to the home's electrical loads from a combination of solar, battery, utility power sources, and,
 - provides the automatic transfer to the home's emergency backup loads during a power outage.



Note: The system will require additional equipment to complete the installation, as supplied by the electrical installer. . Safety shutdown switches may be added to your installation in order to comply with electrical code requirements – see [A] below. Systems that support emergency backup power will require a dedicated electrical sub-panel – see [B] below.



3 System Monitoring

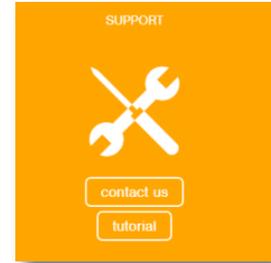


The system can be viewed online at www.mypowermyway.com. You will receive an automated invitation to setup your account after the installer has completed the system installation.

From the monitoring system, you will be able to:

- Monitor your solar, battery, and home energy consumption.
- Manually adjust the emergency battery reserve capacity.

For a complete tutorial on the monitoring system, login to your account, and select **tutorial** in the support widget at the center of the dashboard menu.



3.1 Setting the emergency reserve capacity

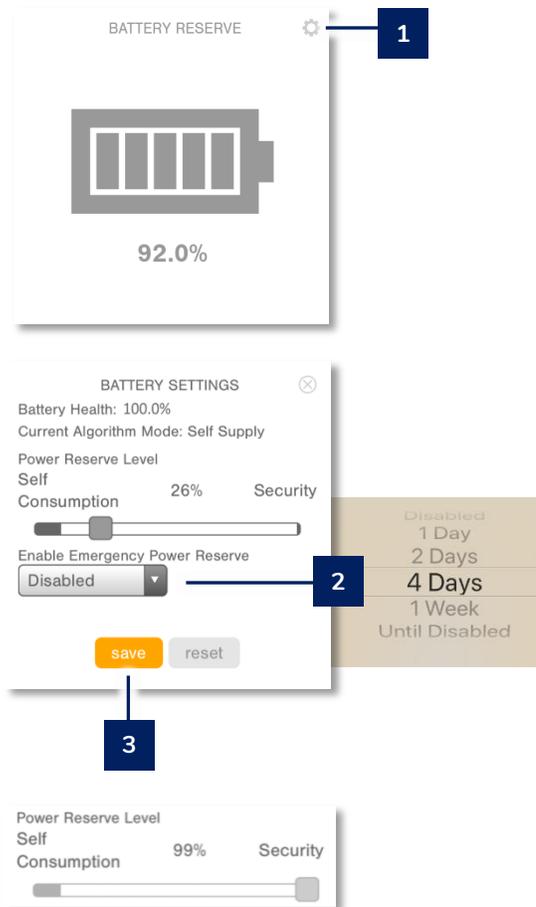
The default operating mode of the system will be set to maximize energy savings while the utility supply is operating; either through a time-of-use plan*, or via a solar self consumption plan . While in this operating mode, the battery capacity's default partition will assign 75% of the battery for daily energy savings, and 25% for emergency backup power.

* where applicable.

In the event of a planned utility outage, or due to an extreme weather event forecast, the battery reserve capacity can be changed to prioritize the entire battery for emergency backup power use.

1. Click on the gear icon at the top-right of the Battery Reserve widget.
2. Click the "Enable Emergency Power Reserve" drop-down list, and select the desired duration.
3. Click on the save button to update the settings.

The battery will return to the default mode after the selected day/week duration expires. Manual updates will be required if "until disabled" is selected.



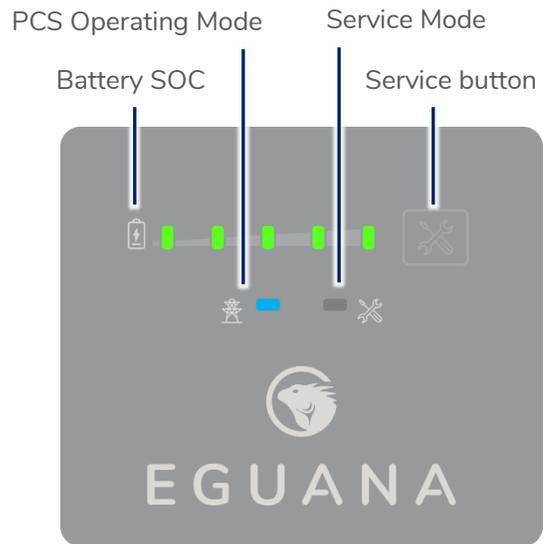
4 Operation

The system automatically runs the default energy savings mode after the system is powered. The monitoring system provides online access to the battery. With loss of internet, the operating state can be viewed on the front panel of the battery system.

4.1 LED display indicators

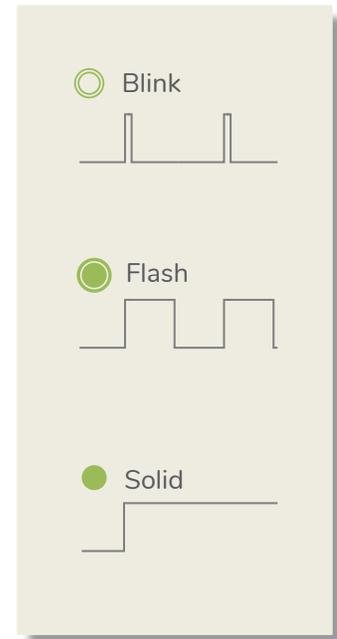
The PCS display panel indicates the following:

- Battery state of charge (SOC)
- PCS operating mode
- Service mode



4.2 LED display definitions.

LED	Mode	Definition
		State of charge. Each LED represents 20% SOC. Solid = battery idle.
		Charge = flash right. Discharge = flash left.
		Low battery.
		Sleep / Standby mode.
		Grid timing mode.
		Grid synchronization mode. Ten second test before grid connect mode.
		Grid connected mode.
		System OK.
		System out of service.
		User initiated service mode.



5 Backup Power Operation

This system will provide backup power to dedicated electrical circuits within the home via a permanently wired electrical sub-panel, referred to as the backup panel. Backup power is limited in rating and duration, both of which are dependent on the nature of the loads connected to the system, and the availability of the solar PV supply. This system is designed to reliably provide power to a refrigerator, home lighting, home electronics, and small appliances.



NOTE: This product is not an uninterruptible power source (UPS). Following a utility outage, a four second power interruption will occur before the backup power source commences. As a result of this interruption, a desktop or portable UPS is recommended if continuous operation is desired for any electronic devices.



IMPORTANT! Surge rated loads, ie) power tools, portable air conditioners, may cause an overload shutdown. Equipment of this type that is connected to the backup panel should be inspected and tested regularly as per manufacturer suggested schedules. Permanent damage to the battery system and/or your equipment may occur if exposed to chronic overloading cycles.



IMPORTANT! Portable extension cords connected to a backup circuit should be limited to 10 meters.



IMPORTANT! This product does not support automatic gas generator integration. Do not attempt to connect a gas generator to the battery system. If generator support is required, consult your installer regarding a separate manual transfer to your backup electrical panel.



NOTE: The power output / surge rating will be further limited when the battery is below 10% SOC.

5.1 Backup power display modes.

Display	Definition
	Battery status LEDs indicate the following: <ul style="list-style-type: none"> • Charge = flash right. Discharge = flash left. • PCS and service lights off.
	Low SOC shutdown in backup mode. See section 5.2 to restart the system.
	Low SOC shutdown initiated while out of service. See troubleshooting – section 7, “service light on in backup mode”.

5.2 Restarting the battery system after low battery shutdown

The system will shutdown when the battery reaches a critically low level during backup operation.

To restart the system:



IMPORTANT! Ensure there is adequate sunlight for the solar PV system to charge the battery before restarting the system. If the battery system is installed without a PV system connected to the backup panel, do not attempt to restart the system. Wait for the utility power to return.

1. Press and hold the service button for 5 seconds.



The backup power will restart, allowing the PV system to reconnect* and begin charging the battery. The system will continue to operate if the battery charges to its minimal normal operating range. If the battery does not charge within 15 minutes of restart, the system will shut down to preserve the battery.

*PV system reconnect time is approximately 5 minutes.



Note: If necessary, the load circuits can be shut off inside the backup panel to increase the battery charge rate. Do not shut off the PV circuit.

6 Maintenance

The Evolve home energy storage system is a maintenance free product. Regularly scheduled inspection of the airflow path for the active cooling fans on the bottom side of the PCS cabinet is all that is required. This inspection should occur on an annual basis, or coincide with PV inspection. If the fan vents are obstructed with dust / debris, a soft-bristled brush can be used to wipe them clean. Do not use any solvents, scouring, or corrosive materials to clean the unit. Never remove or unplug connections or plugs during cleaning.

7 Troubleshooting

System faults are reported and logged in the monitoring system. All fault logs are also accessible remotely by your installer.



IMPORTANT! Contact your system installer as recommended below if any of the following conditions are present on the front display of the energy storage system.

Condition	Definition
Service light ON in grid mode	System is prevented from normal operation due to internal fault. Notify service personnel.
Service light ON in backup mode	If the system faults into service in backup operating mode, there may be an overload condition which prevents the system from operating safely. If the battery charge level is greater than 20% (one or more Green LEDs), reduce the load by shutting off circuits in the backup electrical panel, then press and hold the service button 5 seconds to resume backup power operation. If the battery low SOC shutdown mode is displayed, shut off all load circuits (keep PV ON) in the backup panel, and do not attempt to resume backup operation until adequate sunlight is present to provide a solar charge of the battery.
All panel lights flashing	System is attempting to communicate with the battery modules. Notify service personnel if this condition persists more than 30 minutes.
All panel lights OFF after service button wake command	This indicates loss of both AC And DC power sources to the PCS. Check the circuit breaker in the main electrical panel for the energy storage system.
Online monitoring system not accessible	Check the internet connection. If connection is via wi-fi, reboot the wireless router, and make sure the login user and password have not been changed since time of original installation. Check power to the energy management system via the orange indicator light on the right side of the panel. Note: the energy management system may lose power after an extended utility outage where there is not enough solar generation to maintain battery system power. Note: monitoring system servers may occasionally be down for service. If first attempts are not successfully, try again the following day before contacting your installer.

8 Warranty

The Eguana Evolve ESS includes a 10 year standard warranty with a performance pro-rating for the battery modules. Please review your warranty statement included with your product.

IMPORTANT! This product requires an internet connection for warranty claims of the battery.

9 Installation Records

Ensure your installer has provided you with the following information for your personal records. Note that we may ask you for this information in the event you need to make a warranty claim:

- Record of purchase, including date of installation, installer name and contact details.
- Serial numbers for the EMS and Battery System cabinets (PCS & Battery).
- EMS gateway UID – this is the unique identifier of your EMS gateway that connects to your internet service.
- Copy of the electrical permit.

Further to the information provided above, ask your installer to identify the following within your system installation:

- Location of circuit breakers and safety shutdown switches that operate this equipment.
- Location of the backup electrical panel, including a list and identifier of each circuit within the panel.
- Record of all loads tested at the time of installation.