APstorage Sea Family
EZHI
Installation & User Manual

(For EMEA)

Please scan this QR code to have access to our APPs and Products Information.

Rev1.2 2025-03-03

Table of Contents

1.Important Safety Instructions

This manual contains important instructions to be followed during installation and maintenance of the EZHI. To reduce the risk of electrical shock and ensure the safe installation and operation of the EZHI, the following symbols appear throughout this document to indicate dangerous conditions and important safety instructions.

DANGER:

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

WARNING:

This indicates a situation where failure to follow instructions may be a safety hazard or cause equipment malfunction. Use extreme caution and follow instructions carefully.

NOTE:

This indicates information that is very important for optimal system operation. Follow instructions closely.

1.1 Safety Instructions

IMPORTANT SAFETY INSTRUCTIONS. SAVE THESE INSTRUCTIONS. This guide contains important instructions that you must follow during installation and maintenance of the EZHI. Failing to follow any of these instructions may void the warranty. Follow all of the instructions in this manual. These instructions are key to the installation and maintenance of the EZHI. These instructions are not meant to be a complete explanation of how to design and install EZHI. All installations must comply with national and local electrical codes and standards.

DANGER:

- Perform all electrical installations in accordance with local codes.
- To reduce risk of burns, do not touch the body of the EZHI.

WARNING:

- Do NOT attempt to repair the EZHI. If it shows abnormal performance, Contact APsystems Customer Support to obtain adequate support. Damaging or opening the EZHI will void the warranty.

NOTE:

- Before installing or using the EZHI, please read all instructions and Cautionary markings in the technical documents and on the EZHI.

1.2 Radio Interference Statement

This equipment could radiate radio frequency energy which might cause interference to radio communications if you do not follow the instructions when installing and using the equipment. But there is no guarantee that interference will not occur in a particular installation. If this equipment causes interference to radio or television reception, the following measures might resolve the issues:

A) Relocate the receiving antenna and keep it well away from the equipment.

B) Consult the dealer or an experienced radio / TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

1.3 Communication Disclaimer

The EMA system provides a friendly interface to monitor the working status of the whole energy storage system. At the same time, it can also help to locate problems during system maintenance. If communication has been lost for more than 24 hours, please contact the technical support of APsystems.

1.4 Symbols Replace Words on the Equipment, on a Display, or in Manuals

	Caution, risk of electric shock.
	Caution, hot surface.
	NOTICE, danger! This device directly connected with electricity generators and public grid.
	After the inverter is turned off, wait for at least 5 minutes before opening the EZHI or touching live parts.
	Refer to the operating instructions.
	Products shall not be disposed as household waste.
	CE mark.

Hereby, [ALTENERGY POWER SYSTEM INC.] declares that the radio equipment type [EZHI] is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address:
https://emea.apsystems.com/resources/library/

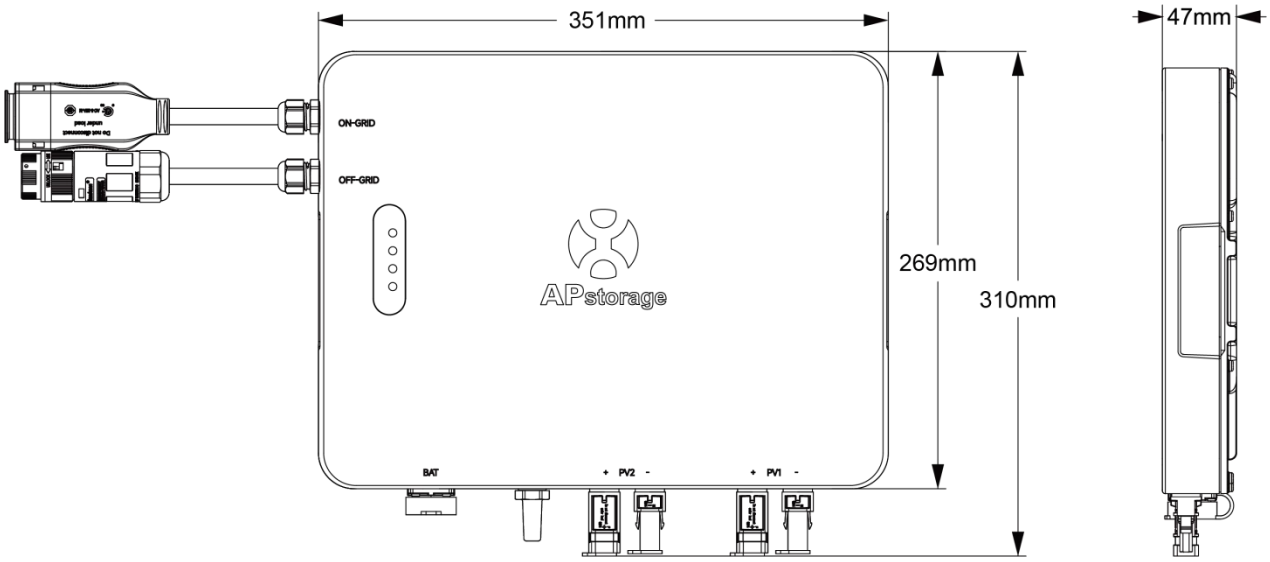
2. APstorage EZHI Introduction

EZHI is a micro energy storage solution specifically designed for balcony and residential photovoltaic (PV) setups. The highlight of this system is that it can store energy for nighttime or future use, thereby improving energy utilization efficiency and optimizing cost-effectiveness according to customer needs.

EZHI is compatible with various PV microinverter systems and can be seamlessly integrated into existing balcony or residential PV setups without replacing any equipment.

EZHI enables off-grid emergency power supply (EPS), which provides backup power for lighting and household appliances in case of sudden power outages. Additionally, EZHI can serve as a portable power source to meet users' various off-grid power needs. The plug and play design offers users flexibility and convenience.

2.1 Dimensions



2.2 Basic System Architecture of Balcony Micro Storage

A balcony energy storage system can store excess electricity generated in the daytime for nighttime or future use, improving energy utilization efficiency and optimizing cost-effectiveness according to customer needs.

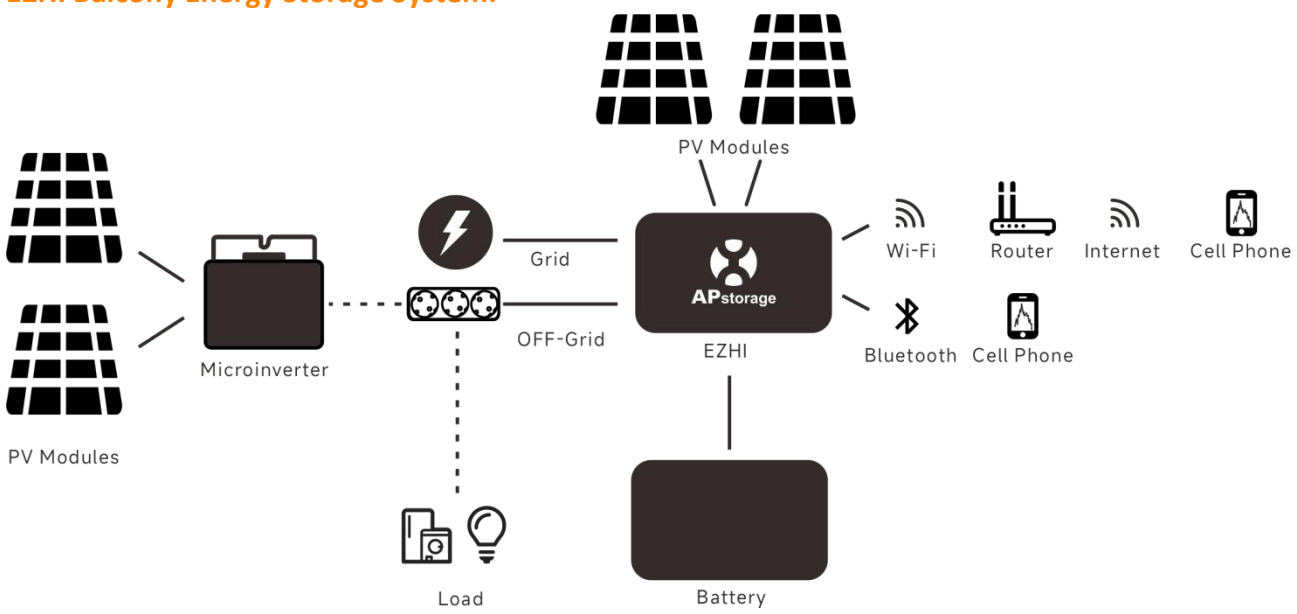
A typical APstorage system includes two main elements:

APstorage EZHI, a smart power conversion system:

EZHI comes with a communication module for monitoring the entire system during its operation. Users can connect their smartphones directly to EZHI via Bluetooth to access real-time data of the solar system. In addition to direct connection, EZHI can connect to a router via Wi-Fi and send data to a cloud server for remote monitoring.

Compatible battery packs (refer to the battery compatibility list):

EZHI Balcony Energy Storage System:

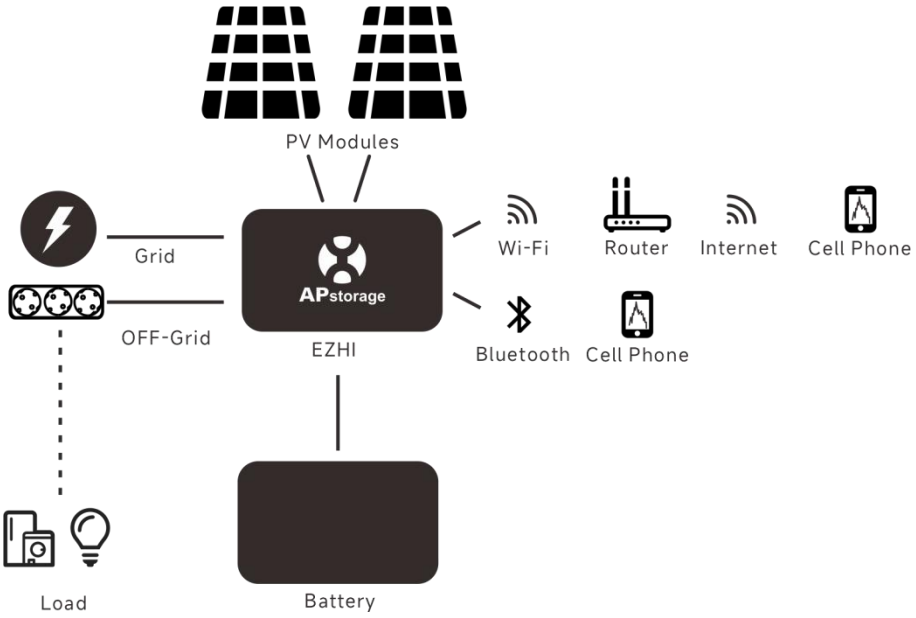


EZHI has two input channels that feature independent MPPT and high input current and output power to adapt to today's larger power modules. The off-grid port supports AC-coupled microinverter systems. Both DC-coupled and AC-coupled microinverter systems can charge the battery. The output power of the system (on-grid) can supply energy to the household load.

2.3 Portable Power Source

The portable power system can provide backup power for lighting and household appliances in response to sudden power outages. It can also serve as an outdoor power source to meet users' off-grid power needs.

EZHI Portable Power Station Scene:



When used in the Portable Power Station scene, EZHI can charge the battery using grid and PV power.

2.4 Indicator Light Description

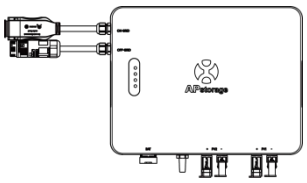
LED	Condition	Description
SYSTEM		Normal on-grid power generation or off-grid operation or PV charging
		The device is starting up and conducting a power-on check
		The device is powered on and in standby mode
		System fault
		Back-up port output overload
		Incorrect PV wiring, PV overvoltage
		The device is powered off
OFF GRID		The grid power is normal; the back-up port power is normal
		The grid power is abnormal; the back-up port power is normal
		No power supply from the back-up port
BATTERY		The battery is charging
		The battery is discharging
		Low battery level/state of charge (SOC)
		The battery is disconnected/malfunctioning
WI-FI		Wi-Fi connected
		Wi-Fi resetting
		Wi-Fi not connected

: Light on
: Every 2 seconds light on for 1 second.
: Every 5 seconds light on for 1 second.
: Light on
: Every 2 seconds light on for 1 second.
: Every 5 seconds light on for 1 second.
: Light off

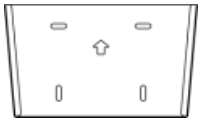
3. Installation

3.1 Packing List

Upon receiving the product, check whether all items listed below are included and are free of damage.
Users need to properly store the disassembly tools, protective cover, and other accessories.



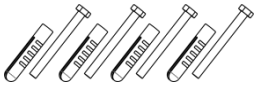
EZHI × 1



Wall-mounting bracket × 1

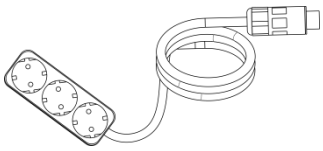
Mounting bracket × 2

M4 x 8mm Screw x 4
M4 x 14mm Screw x 1

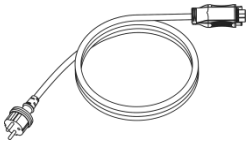


M6 expansion bolt × 4

Quick Installation Guide × 1



Off-grid power strip x 1



EU power cord × 1

Unlock tool × 1

3.2 Installation Tools

The following tools are recommended for use during installation. Other auxiliary tools may be used on-site as needed.

Impact driver

Phillips screwdriver

Goggles

Protective gloves

Safety shoes

Dust mask

Flathead screwdriver

Wrench

3.3 EZHI Installation Steps

3.3.1 Selecting the mounting location

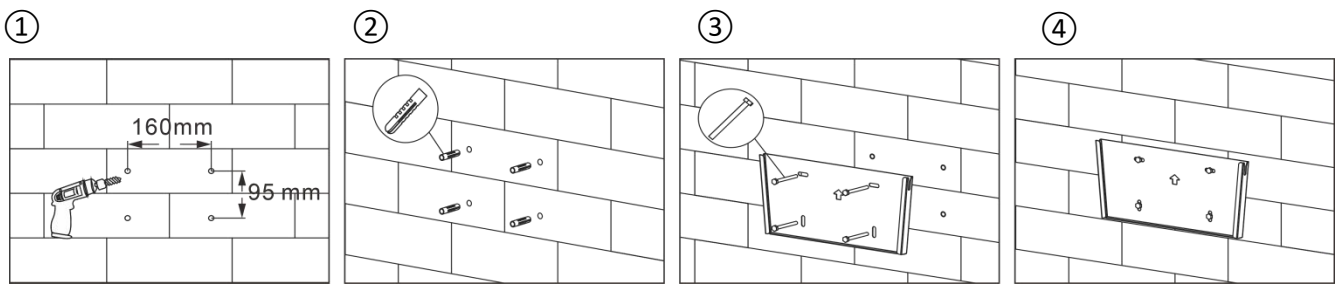
1. The inverter should be installed in a location away from direct sunlight.
2. The inverter should be installed on a sturdy surface appropriate for its size and weight.
3. The inverter should be installed either vertically or with a backward tilt of no more than 15°.
4. The inverter should be installed in a well-ventilated location.
5. Ambient temperature should be between -40°C and 65°C. High ambient temperatures may cause derating (reduced inverter output power).
6. Relative humidity should be less than 90% with no condensation.
7. The inverter should be installed away from flammable and explosive materials.

NOTE:

Ensure no electrical connections are made before installation. To avoid electric shock or other injuries, do not drill into any electrical parts or pipe installations.
For installations in Germany, professional electricians are required if the power exceeds 800 W.

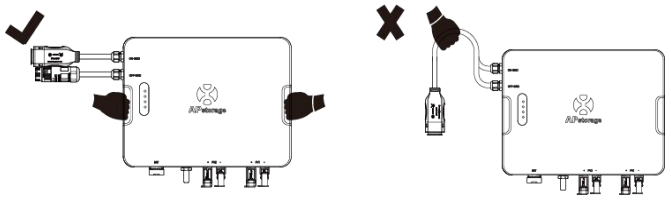
3.3.2 Installing the bracket

Use the wall-mounting bracket and expansion bolts provided for wall mounting.
Step 1: Hold the bracket against the wall and mark the positions of the four holes. Drill the holes using an impact driver, and ensure the product is at least 500 mm above the ground and the holes have a 10 mm diameter.
Step 2: Fully insert the plastic drywall anchors into the holes.
Step 3: Place the bracket. Ensure the arrow on the wall-mounting bracket is pointing up. Tighten the hex bolts with a wrench or Phillips screwdriver to fully expand the plastic drywall anchors.
Step 4: Ensure the wall-mounting bracket is level after installation.



3.3.3 Mounting EZHI on the wall

Take out EZHI with both hands.
Do not pull it out directly with just one hand.

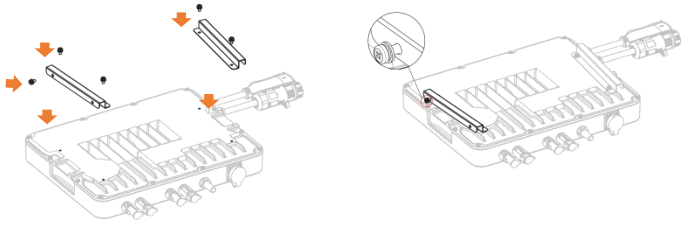


Step 1: Use screws to mount the mounting brackets onto the casing and pre-lock the side screws.

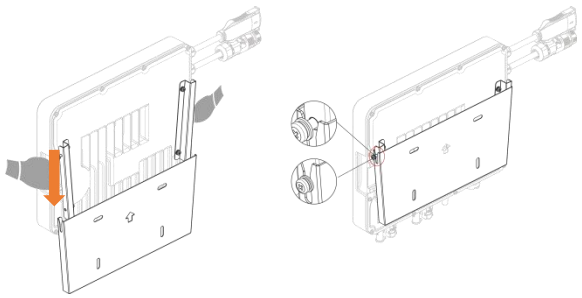
Note:

The side screw holes on the mounting brackets should face outward.

Do not fully tighten the pre-locked screws at this step. Leave a gap when pre-locking the screws to allow the device to be inserted into the wall-mounting bracket.



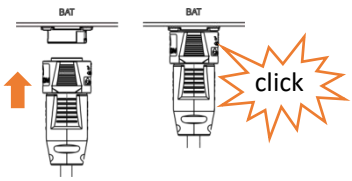
Step 2: Lift EZHI with both hands, insert it from top to bottom into the wall-mounting bracket, and fully tighten the pre-locked screws after the device is in place.



3.3.4 Connecting cables

Connecting the Battery Connector at EZHI Side

Remove the dust cover of the battery cable connector. Plug in the wire-side connector from the battery until you hear a click sound.

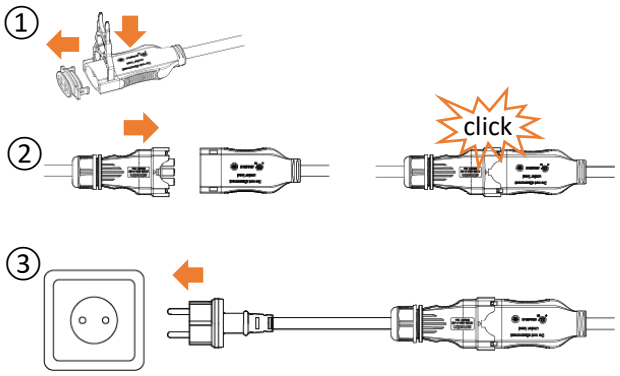


Connecting the EU Power Cord

1.Fully insert the unlock tool into the gap and remove the protective cover.
2.Connect the on-grid cable of EZHI to the EU power cord.
3.Plug the connector into the outlet.

NOTE:

If the microinverter is connected to grid by plug, please comply with the local regulation about the power limit.

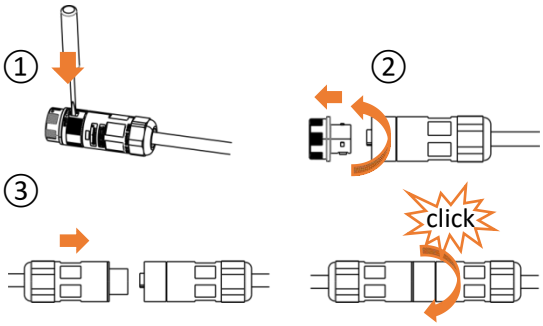


Connecting the Off-Grid Cable

1. Insert a flathead screwdriver into the gap left between the connector and protective cover and depress the plastic latch.
2. Rotate counterclockwise and remove the protective cover.
3. 3.Connect the off-grid cable of EZHI to the off-grid power strip. Rotate clockwise the front end of the off-grid cable of EZHI connector until you hear a click sound.

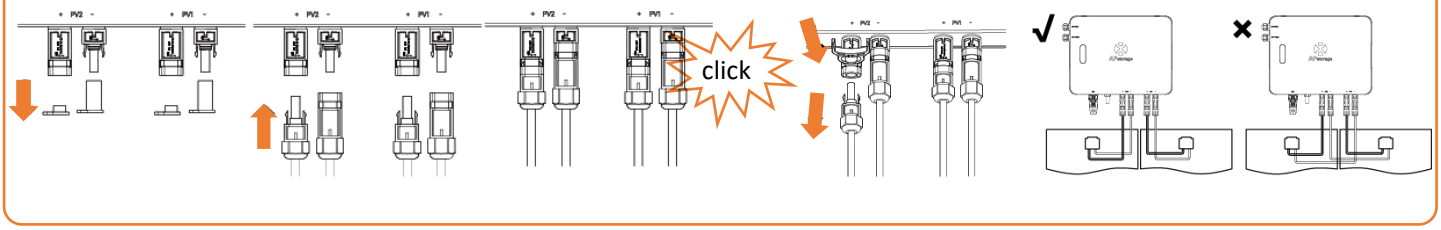
NOTE:

The electrical power cannot exceed 1200 W.



3.3.5 Connecting DC connectors

Remove the DC connector protective sleeves. Connect the PV panels to the connectors until you hear a click sound.



NOTE:

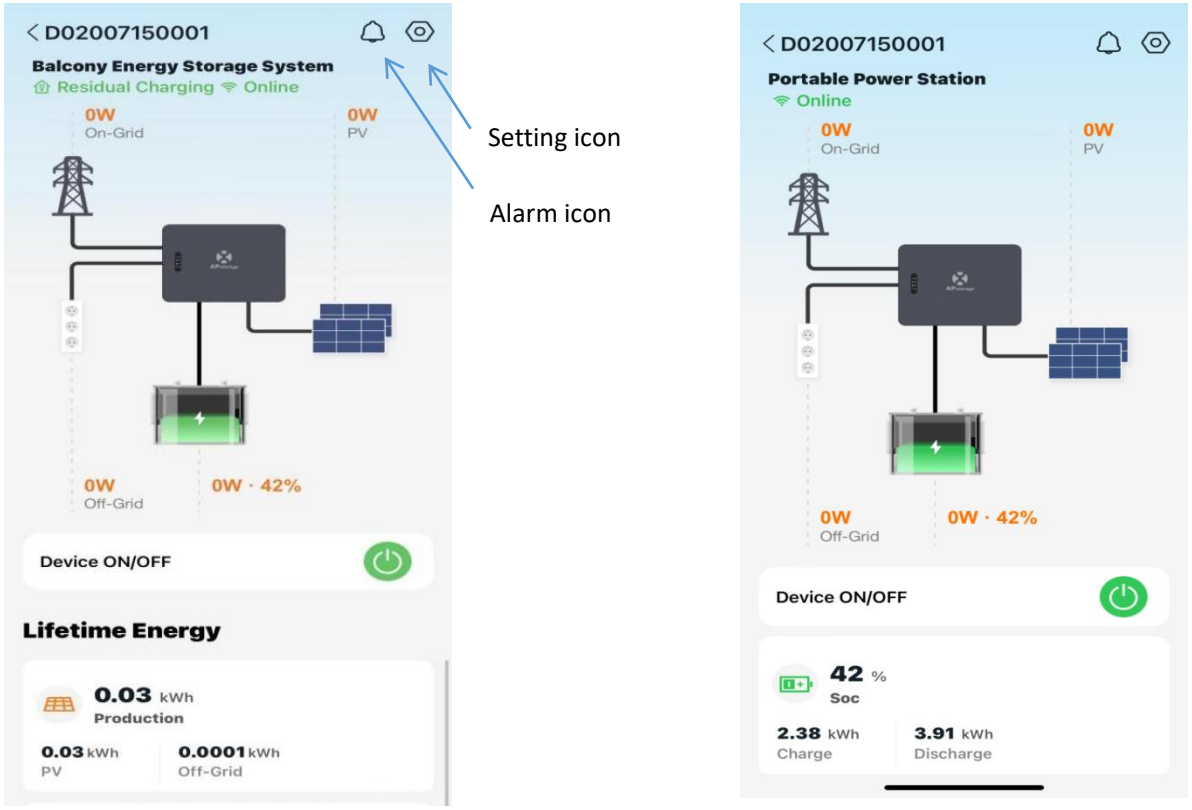
1. Each PV panel must be carefully connected to the same channel. Make sure to not split positive and negative DC cables into two different input channels: microinverter will become damaged and warranty will not apply.
2. Please ensure each DC cable's length within 3 meters.
3. The open-circuit voltage of the component is less than 60V.
4. All connectors need to be installed in place for normal use.
5. Do not connect a module to both PV1 and PV2 using a Y connector because this may cause damage to the EZHI.

4. AP EasyPower Using

4.1 Main

Scene 1: Balcony Energy Storage System

Scene 2: Portable Power Station



In the Balcony Energy Storage System scene, EZHI complies with the output grid strategy, defaulting to 200 W on-grid output. In this mode, the on-grid port cannot charge the battery.
In the Portable Power Station scene, the battery is charged using PV and grid power based on the recommended charging power. It serves as a backup power source.

On this page, user can visualize

- **Live Data**: The real-time data of the device, including the input/output power according to the PV side, battery side, on-grid side and off-grid side.
- **Lifetime Energy**: The lifetime energy for the production side, Off-Grid side and battery side.
- **Work Status:** The status of the device according to the light on it.

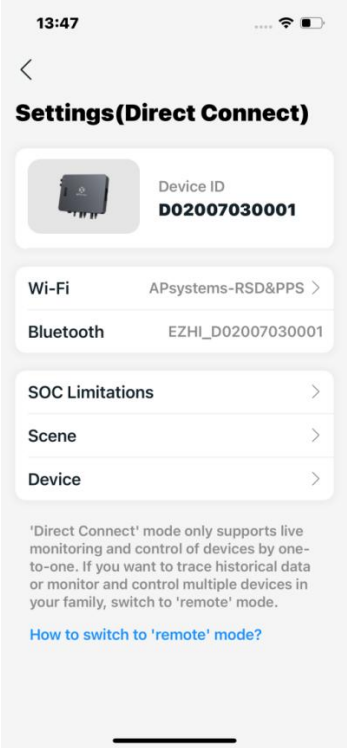
Running Status
Green light: The device is Normal.
Grey light: The device is off.

Network Status
Green light: The device succeeds to connect to the Wi-Fi.
Grey light: The device fails to connect to the Wi-Fi.

By pressing "***alarm icon***" to check the alarm information if the device status is alarm. (For details on alarm information, refer to Chapter 5.)

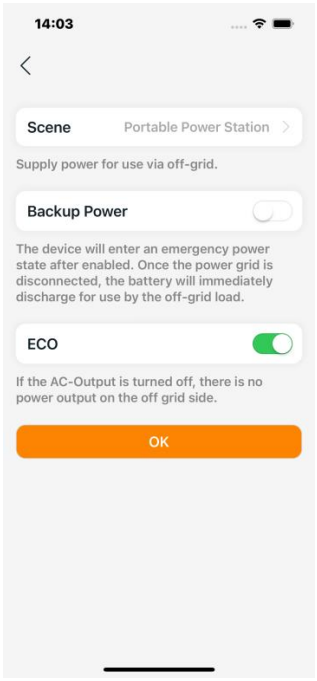
4.2 Settings

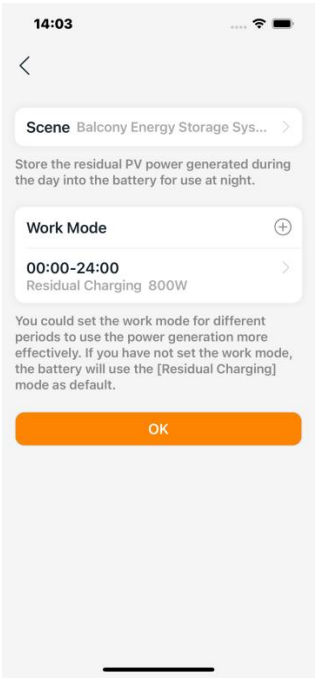
By pressing "***setting icon***" to set the device. The setting page is shown below.

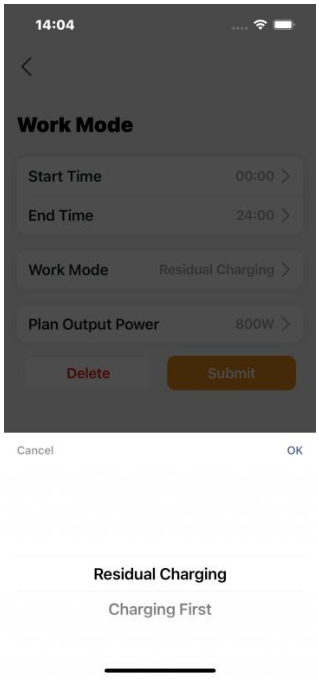


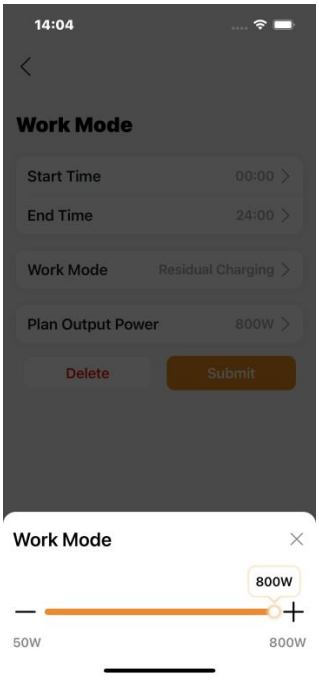
On the setting page, user can visualize

- **Device ID**: The serial ID of the device.
- **Wi-Fi:** The name of the connected Wi-Fi.
- **Bluetooth**: The Bluetooth name of the device.
- **SOC**: Set the maximum and minimum SOC. The upper limit for the battery SOC can be set from 80% to 100%, while the lower limit can be set from 0% to 20%.
- **Scene:** Switch the scene and set the corresponding work mode. In the Portable Power Station scene, users can toggle the Backup Power and ECO settings. In the Balcony Energy Storage System scene, users can set the start and end times, work mode (Residual Charging or Charging First), and output power, with the output power adjustable from 50 W to 800 W. (See the pictures for the setup pages.)









- **Device:** The details information and operations of the device; users can get the serial ID and mac address, and upgrade the software. In Basic Information, users can see the serial number, model name, firmware version, Bluetooth address, and Wi-Fi address of the device. In Firmware Upgrade, users can view and upgrade the device firmware. In Battery, users can check the brand and health status of the battery and update its software.

5. Alarm

The following table details the possible causes for EZHI warnings and their solutions.

Error	Error cause	Measures
Battery_Temperature_Protection	1. The ambient temperature of the battery is too high or too low 2. Excessive number of high-power continuous charging and discharging 3. Internal fault of the battery	1. Check whether the ambient temperature is within the allowable use range 2. Whether to charge and discharge high power multiple times, if so, please reduce the operation after the battery cools down 3. If the ambient temperature is normal, please contact the dealer or after-sales service
Battery_Communication_Error	1. The battery is not connected to the main unit 2. The cable is damaged 3. The communication function of the battery or the host is abnormal	1. Check that the cable is connected correctly 2. Check the cable for damage 3. If it is normal, please contact the dealer or after-sales service
Battery_High_Low_Voltage	1. The battery is overcharged 2. The battery is running out of power 3. Battery failure	1. Check whether the battery SOC is within the safe range, if not, charge and discharge 2. If the SOC is normal, please contact the dealer or after-sales service
Battery_High_Current	1. The battery output power is too high 2. Short circuit at the output of the battery 3. Host failure	1. Check whether the load and grid-connected power are too large 2. Check whether the battery output is short-circuited 3. If it is normal, please contact the dealer or after-sales service
Battery_Error	1. Battery BMS failure 2. Battery system failure	Please contact the dealer or after-sales
Device_Temperature_Protection	1. The ambient temperature of the host is too high or too low 2. Internal failure of the host	1. Check whether the ambient temperature is within the allowable use range 2. If the ambient temperature is normal, please contact the dealer or after-sales service
AC_Abnormal	1. The grid is over, undervoltage or no power grid 2. Over- or under-frequency of the power grid	1. Check the status of the power grid and the wiring, if it happens occasionally, you can wait for the power grid to return to normal 2. If it is triggered for a long time, please contact the electricity operator
OFF_OverCurrent_Alarm	1. The power of the off-grid access load exceeds the usage limit 2. Not connected to the grid 3. Host failure	1. Check whether the off-grid load exceeds the allowable power range 2. Check whether the host is connected to the grid 3. If it is normal, please contact the dealer or after-sales service
PV_High_Voltage	1. The component configuration is inappropriate 2. The component is not properly connected to the host 3. Component failure 4. Host failure	1. Check whether the PV is connected to the host normally 2. Check whether the PV output voltage exceeds the allowable range of the main engine 3. Check if the component is working properly 4. If it is normal, please contact the dealer or after-sales service
PV_Over_Cur	1. The component configuration is inappropriate 2. Component failure 3. Host failure	1. Check whether the PV output current exceeds the allowable use range 2. Check if the component is working properly 3. If it is within the scope, please contact the dealer or after-sales service
PV_Wiring_Error	1. The positive and negative terminals of different components are connected to the same input. 2. Host failure	1.Please turn off the battery and the power grid, correctly connect the PV, and restart the device. 2. If it does not recover after restarting, please contact the dealer or after-sales service.
Off_Grid_Short_Circuit	1. The off-grid side connection line is damaged. 2. Electrical appliances on the off-grid side are damaged. 3. Host failure	1.Check if the off-grid side connection line is short-circuited. 2.Check whether the off-grid appliances are short-circuited. 3.If it is normal, please contact the dealer or after-sales service

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6. Technical Data

Model	EZHI
Region	EMEA
PV Input	
Maximum input power	600W×2
Recommended PV Module Power (STC) Range(1)	430Wp-900Wp+
Operating voltage range	12V-60V
Maximum input voltage	60V
MPPT voltage range	12V-48V
Start-up voltage	18V
Maximum continuous input current	17A×2
Isc PV	25A×2
AC Input and Output (On-Grid Port)	
Grid type	Single-phase
Nominal AC voltage(2)	230V
Nominal AC frequency(2)	50Hz
Default output apparent power(3)	800VA
Maximum continuous output power	1200VA
Maximum continuous output current	5.22A
Maximum continuous input power	1200VA
Maximum continuous input current	5.22A
Power factor range	>0.99(+/- 0.8adj.)
EPS Switch Time	5ms
AC Input and Output (Off-Grid Port)	
Grid type	Single-phase
Nominal AC voltage	230V
Nominal AC frequency	50Hz
Maximum continuous output power	1200VA
Peak output apparent power	1800VA, 10s
Maximum continuous output current	5.22A
Maximum continuous input power	2400VA
Maximum continuous input current	10.43A

Battery Ratings (Battery Port)

Battery voltage range	40-60VDC
Nominal battery voltage	51.2V
Communication Ports	CAN
Maximum Continuous Discharge Power	1200VA
Peak Discharge Power	1800VA,10s
Maximum discharge current	27A
Maximum charge current	40A

General Specifications

Dimensions W/H/D	351mm×269mm×47mm
Weight	8KG
Maximum Efficiency	96.2%
Operating Ambient Temperature Range	-40℃-65℃
Storage Temperature Range	-40℃-85℃
Ingress Protection	IP67
Relative Humidity	10%-90%
Cooling	Natural Convection-No Fans
Maximum Altitude	<2000m
Pollution Degree Classification	PD3
Overvoltage Category	OVC II For PV and Battery Input Circuit, OVC III For Mains Circuit
Frequency Range	2412MHz-2472MHz (WIFI), 2402MHz-2480MHz (Bluetooth)
RF Output Power (EIRP)	18.88 dBm (WIFI), 0.67dBm (Bluetooth)

Features

Communication	Built-in Wi-Fi and Bluetooth
Energy Management	AP EasyPower APP
Warranty	12 Years Standard

Compliances

Safety, EMC & Grid Compliances	EN 62109-1/-2; EN 62477-1; EN IEC 61000-6-1/-2/-3/-4; EN 62920; VDE-AR-N 4105;EN 303 645; EN 50549-1; NF EN 50549-1; EN 50549-10; NF EN 50549-10; G98; G99; G98/NI; G99/NI

(1)Two modules with STC less than 450 W can be connected in parallel for each input channel.
(2)The nominal voltage/frequency range may vary based on local requirements.
(3)It can be customized by using the AP EasyPower App and can be adjusted up to 1200 VA.