



# Installation Manual

## Battery Module

### M48112-P

V1.0



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## Copyright Statement

This manual is under the copy right of Alpha ESS Co., Ltd., with all rights reserved. Please keep the manual properly and operate in strict accordance with all safety and operating instructions in this manual. Please do not operate the system without reading through the manual.

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# 1. Safety Precautions

 **Warning - electrical hazards**

**Please read through this manual carefully before operation**

- In unlikely event of smoke or fire, turn off main switch immediately and contact your installer for further instructions.
- Battery should be installed indoor and kept away from water, high temperature, mechanical force and flames.
- Do not disassemble, move or modify any parts of the battery without authorization and instruction from AlphaESS.
- Do not install the battery in any environment of temperature below  $-10^{\circ}$  C or over  $50^{\circ}$  C, and humidity over 80%.
- Do not touch the system with wet hands.
- Do not put any heavy objects on the top of the battery.

# 2. Introduction

## 2.1 Features

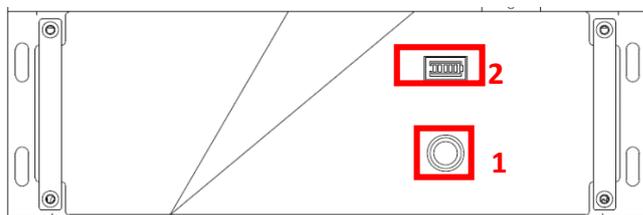
The M48112-P battery pack has the following features:

**Photovoltaic system:** This battery pack is designed for household photovoltaic systems.

**Battery management system (BMS):** The battery packs built-in BMS monitors its operation and prevents the battery from operating outside design limitations.

**Expandability:** This battery pack can be easily expanded by adding expansion battery packs.

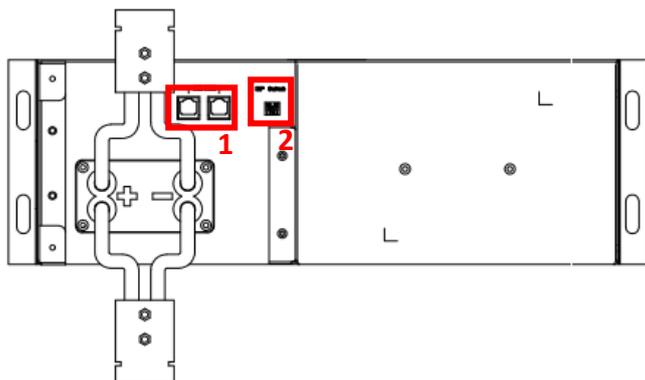
## 2.2 Specifications



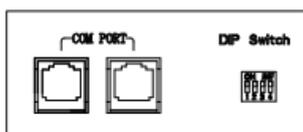
1: Switch Button

2: LED Display

### Specifications



- 1: Switch Button
- 2: LED Display

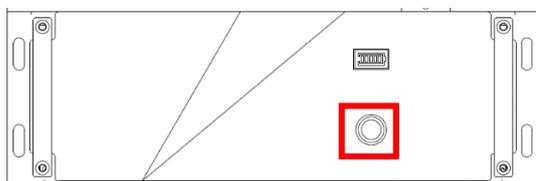


NOTE: if you use AlphaESS storage system please set the DIP switch 2 to “on” of the bottommost module .if you only use battery set the DIP switch 4 to “on” all the batteries.

### 3. Switch On/Off and Display

#### 3.1 Switch On/Off

System shall be turned on in the correct sequence to avoid any damage.



switch

**Switch on**, pressing the power button for about 2-4 seconds. The BMS will start up. The LCD display and power button will light up as well.

**Switch off**, pressing the power button for >5 seconds, Turns off battery modules.

**NOTE:** when the battery is working pressing the power button for <5 seconds, LCD display will light up for 30 seconds. Power button must be press in 30 seconds when you use more than 1 battery.



LED Display

LED ring  
State

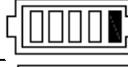
### 3.2 LED Display

In normal condition, LED display indicates the SOC as the figure below:

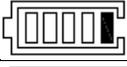
LED Ring	SOC	Description
Standby: Green light flickering 1 s Work: Green light flickering 10s		SOC<5%
		5%=<SOC<25%
		25%=<SOC<50%
		50%=<SOC<75%
		75%=<SOC<95%
		SOC>95%

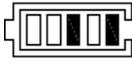
## 4. Error and Protection Code

### Protection Code

LED Ring	Protection Code	LED display	Description
Green light flickering every 3 seconds.	1		Temperature difference
	3		High temperature
	4		Low-temperature discharge
	5		Over-current charge
	6		Over-current discharge
	8		Cell overvoltage
	9		Cell under voltage
	11		Low-temperature charge

### Error code

LED Ring	Error Code	LED display	Description	Troubleshooting
Red light flickering	Error 01		Hardware error	Wait for automated recovery.
	Error 03		Hardware error	

every 3 seconds.	Error 05		Hardware error	In case problem is not resolved, call in for repair.
	Error 06		Circuit Breaker Open	Close circuit breaker after Shutting down the battery system.
	Error 07		DIP difference	Keep consistence of DIP switches, restart the system.
	Error 08		LMU Disconnect(slave)	Reconnect the communication cable
	Error 09		SN missing	Enter the serial number, restart the system or call in for repair.
	Error 10		LMU Disconnect(master)	Reconnect the communication cable
	Error 11		Software version inconsistent	Call installation for repair.

**NOTE:**

- If the battery constantly runs for 30 days and its SOC hasn't been corrected, the discharging function will not be allowed until the battery is fully charged for at least once and the SOC is corrected.
- In the case of parallel mode or work mode, if Protection 09 appears and the power button is pressed 5 times within 10 seconds, the BMS will be forced to turn on MOS of discharge so that the battery voltage can be detected by the inverter and the battery can be charged.

## 5. Emergency Situations

AlphaESS cannot guarantee M48112-P absolute safety.

### Fire

In case of fires, make sure that the following equipment is available near the system.

- SCBA (self-contained breathing apparatus) and protective gear in compliance with the Directive on Personal Protective Equipment 89/686/EEC.
- Novec 1230, FM-200, or dioxide extinguisher.

**NOTE**

**ABC extinguishers are not effective when the battery pack is on fire.**

Batteries may explode when heated above 150° C. If possible, move the battery pack to a safe area before it catches fire.

## Leaking Batteries

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed to the leaked substance, immediately perform the actions described below.

- **Inhalation:** Evacuate the contaminated area, and seek medical attention.
- **Contact with eyes:** Rinse eyes with flowing water for 5 minutes, and seek medical attention.
- **Contact with skin:** Wash the affected area thoroughly with soap and water, and seek medical attention.
- **Ingestion:** Induce vomiting, and seek medical attention.

## Wet Batteries

If the battery pack is wet or submerged in water, do not let people access it, and then contact AlphaESS or an authorized dealer for technical support.

## Damaged Battery

Damaged batteries are dangerous and must be handled with the utmost care. They are not fit for use and may pose a danger to people or property.

If the battery pack seems to be damaged, pack it in its original container, and then return it to AlphaESS or an authorized dealer.

### **NOTE**

**Damaged batteries may leak electrolyte or produce flammable gas. If such a damage occurs, immediately contact AlphaESS.**

# 6. Warranty

## 6.1 Warranty

Products that are operated strictly in accordance with the user manual and the AlphaESS Installation Manual are covered by the warranty. Any violation of this manual may void the warranty.

## 6.2 Limitation of Liability

Any product damage or property loss caused by the following conditions AlphaESS does not assume any direct or indirect liability.

- Product modified, design changed or parts replaced without AlphaESS authorization;
- Changes, or attempted repairs and erasing of series number or seals by non AlphaESS technician;
- System design and installation are not in compliance with standards and

regulations;

- The Product has been improperly stored in dealer's or end user's premises;
- Transport damage (including painting scratch caused by movement inside packaging during shipping). A claim should be made directly to shipping or insurance company as soon as the container/packaging is unloaded and such damage is identified;
- Failure to follow any/all of the user manual, the installation guide and the maintenance regulations;
- Improper use or misuse of the device;
- Insufficient ventilation of the device;
- The maintenance procedures relating to the product have not been followed to an acceptable standard;
- Force majeure (violent or stormy weather, lightning, overvoltage, fire etc.).
- Damages caused by any external factors.