Zineric F1 Energy Storage

ZINERIC

User manual

1. INTRODUCTION

This document contains information on the installation, initial start-up, regular maintenance and troubleshooting of the described high-voltage battery. This is a lithium iron phosphate battery. The instructions are intended for specialists and all work described should only be carried out by authorised and trained technicians. After installation, the installer must discuss the operating instructions with the end user.

2. SYMBOLS

 Danger! Failure to comply appropriate requirements may result in serious bodily injury or even death.	 Install the device in place out of reach of children
 Caution, risk of electric shock.	 It is not allowed to be placed either install near materials flammable or explosive
 In the event of electrolyte leakage, do not allow the electrolyte to come into contact with eyes or skin	 Before starting maintenance or repairs, disconnect the device
 Do not connect the positive (+) reversely and negative (-) terminal.	 Societe Generale de Surveillance SA
 Follow the precautions regarding the handling of sensitive devices to electrostatic discharges.	 Instructions: Read the instructions before starting installation and operation.
 Caution, risk of electric shock electric, temporary discharge battery	 CE Mark: The inverter complies with CE directive.
 It is recyclable.	NOTE Note: Procedures taken to ensuring proper operation.
 Do not use the kit outside of its specified use. conditions	 Grounding Terminal Inverter must be reliably grounded.
 Be careful! This set is enough heavy to cause serious injuries.	 EU WEEE marking: This The product should not be disposed of together with regular household waste.

Zineric F1 SPECIFICATIONS
The battery system is primarily used in residential solar power systems and includes a switch to easily control and quickly protect the home installation.

3. SECURITY

3.1 Safety rules

To prevent property damage and personal injury when working with potentially hazardous components of the battery energy storage system, the following precautions must be observed:

- Make sure the system is inaccessible for accidental use.
- Prevent it from restarting unintentionally.
- Check and confirm the absence of voltage in the work area.
- Provide grounding protection and short circuit protection.
- Protect or insulate any adjacent live parts.

3.2 Safety information

Damage to components or a short circuit creates a risk of electric shock, which can lead to death. A short circuit can be the result of connecting the battery terminals, allowing current to flow. This type of situation must be avoided at all costs by following these guidelines:

- Insulated tools and protective gloves should be used.
- Do not place any tools or metal objects on the battery module or high-voltage control box.
- Before working on the battery, remove any metal jewelry such as watches and rings.
- Installation and operation of the system in places with an increased risk of explosion or high humidity are prohibited.
- Before carrying out any work on the energy storage system, first turn off the charge controller and then the battery, ensuring that they cannot be accidentally turned on again.

Using the system for purposes other than its intended use is unacceptable and poses a serious risk. Improper handling of the battery energy storage system carries a risk of loss of life, serious bodily injury or even death.

Warning! Improper use may damage the battery cell.

· Do not expose the battery module to rain or immerse it in any liquid.
· Do not expose the battery module to corrosive agents (such as ammonia and salt).

3.3 Installation

· After unpacking, inspect the product for damage and missing parts.
· Before starting installation, make sure the inverter and battery are completely powered off.
· Do not reverse the positive and negative terminals of the battery.
· Make sure there is no short circuit at the terminals or with any external device.
· Do not exceed the inverter's battery voltage rating.
· Do not connect the battery to any incompatible inverter.
· Do not connect different types of batteries together.
· Make sure all batteries are properly grounded.
· Do not open the battery for repair or disassembly purposes.
· In case of fire, use only a dry powder fire extinguisher.
· Install the battery in a place away from children and pets.
· Do not install together with other batteries or cells.

4. RESPONDING TO EMERGENCIES

The battery system consists of multiple batteries connected in series. It is designed to prevent hazards or failures. However, Zineric cannot guarantee their absolute safety. In case of exposure to internal materials, the user should carry out the following recommendations.

- In case of inhalation, leave the contaminated area immediately and seek medical attention.
- In case of eye contact, flush eyes with running water for 15 minutes and seek immediate medical attention.
- If skin contact occurs, wash the affected area thoroughly with soap and seek medical attention immediately.
- If ingestion occurs, induce vomiting and seek medical attention.

4.1 Fire situation

In the event of a fire in the area where the battery is installed, use FM-200 or carbon dioxide (CO_2) fire extinguishers. Wear a gas mask and avoid inhaling toxic gases and harmful substances produced by the fire.

5. TRANSPORT

5.1 Battery module transport regulations

It is necessary to comply with the relevant laws and regulations regarding the transportation routes of lithium-ion products in the relevant countries.

- Smoking is prohibited in the vehicle during transportation or in its vicinity during loading and unloading.

- Vehicles transporting dangerous goods must comply with the relevant road transport regulations and be equipped with two approved CO_2 fire extinguishers.

- The battery's energy storage system may be damaged if not properly charged.
  transported. The battery module can only be transported vertically. Please note that that these parts may be heavy. Failure to follow these instructions could result in damage devices.

- If possible, do not remove the shipping packaging until you arrive at the installation site. Before removing the shipping cover, check that the shipping packaging is not damaged.

- Improper transportation of battery modules can cause personal injury. A single battery module weighs 57.5 kg. This can cause personal injury if it falls or slips. To ensure safe transportation, use only appropriate transportation and lifting equipment.

- Wear safety shoes to avoid the risk of injury. During transport of the battery module, their parts may be crushed due to their heavy weight. Therefore, all persons involved in transport must wear safety shoes with hubcaps. The safety regulations for transport at the end customer's location must be observed, especially during loading and unloading.

- During transportation and installation of unpacked battery cabinets, the risk of injury increases, especially in the case of sharp metal panels. Therefore, all workers involved in transportation and installation must wear protective gloves.

- Improper transportation of the vehicle can cause personal injury. Improper transportation or improper transportation locks can cause the load to slip or tip over, causing personal injury.

6. STORAGE

- Do not expose the battery to open flame.
- Do not use the product in direct sunlight.
- Do not place the product near flammable materials. An accident may result in fire or explosion.
- Store the device in a cool, dry and well-ventilated place.
- Store the product on a flat surface.
- Keep the device out of the reach of children and animals.
- Do not damage the device by dropping, deforming, hitting, cutting, or puncturing it with a sharp object. This may cause electrolyte leakage or fire.
- Do not touch any liquid leaking from the device. There is a risk of electric shock or skin damage.
- Always handle the battery with insulated gloves.
- Do not step on the product or place any foreign objects on it. This may cause damage
- Do not charge or discharge a damaged battery.

7. PRODUCT INFORMATION

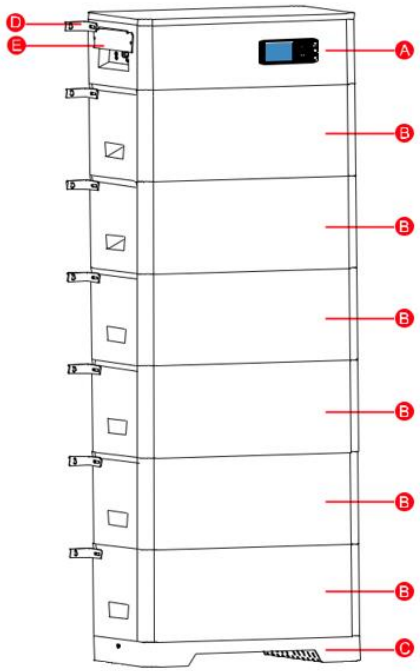
1. Zineric F1s is a battery module, must be used with the Zineric F1 controller;
2. The Zineric F1 is a system-wide driver, so each system must have at least one Zineric F1s;
3. The system consists of at least 1x Zineric F1 and up to 6x Zineric F1s.

8. ELECTRICAL CONNECTIONS

8.1 Battery System Functions

- These batteries have numerous built-in safeguards to ensure safe operation of the entire system. Key elements of the protection system include:
- **Inverter interface protection:** Protection against over voltage, over current, external short circuit, abnormal grounding, reverse polarity, overheating and over inrush current.
- **Battery protection:** Protection against internal short circuit, over voltage, over current, overheating and under voltage.
- The battery system is equipped with the following interface features that enable its efficient connection and operation:
- **LiFePO4:** Lithium iron phosphate technology for higher safety and longer cycle life.
- **Installation flexibility:** Possibility to install modules in a stack.
- **Broad compatibility:** Works with inverters from leading manufacturers.

8.2 Introduction to the battery system



Control cabinet

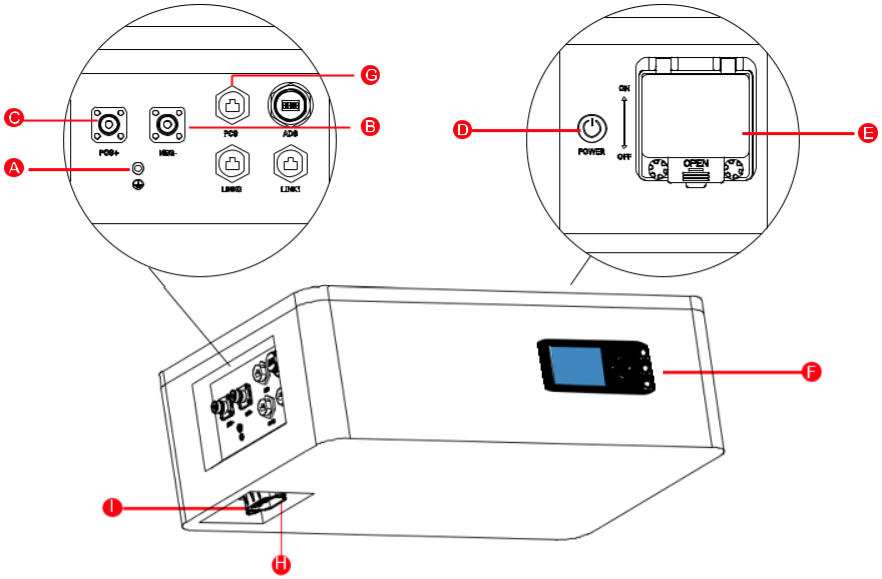
Battery box

Base

Fixed base

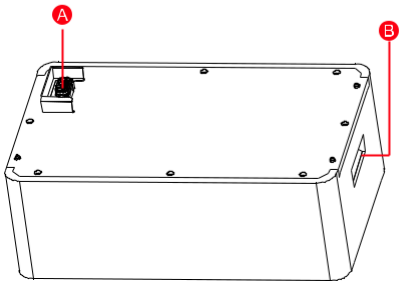
Safety cover

8.3 Description of the electrical interface of the control cabinet



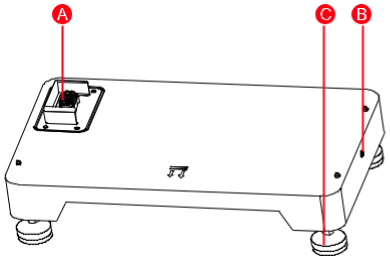
Code	Name
AND	Ground terminal
B	NEG-
C	POS+
D	Power switch
E	Switch
F	LCD display
G	PCS Communication
H	End cap
AND	Vent valve

8.4 Battery Box Introduction



Code	Name
AND	End cap
B	Handle

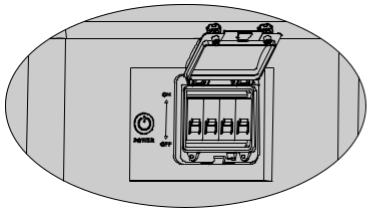
8.5 Basic Introduction



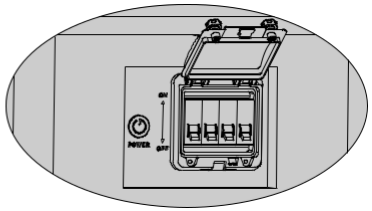
Code	Name
AND	End cap
B	Ground terminal
C	Mounting foot

8.6 On/Off switch

Turn on: Close the breaker to the power block, press and hold the power switch for 2-3 seconds, the battery will do self-test before output. The LCD will display SOC. Turn off: Close the breaker to the OFF block, the battery will shut down directly.



Turning on the battery system



Turning off the battery system

9. INSTALLATION

9.1 Tools

Screwdriver

Modular clamp

Safety shoes

Multimeter

Protective gloves

Goggles

Pliers

Tape

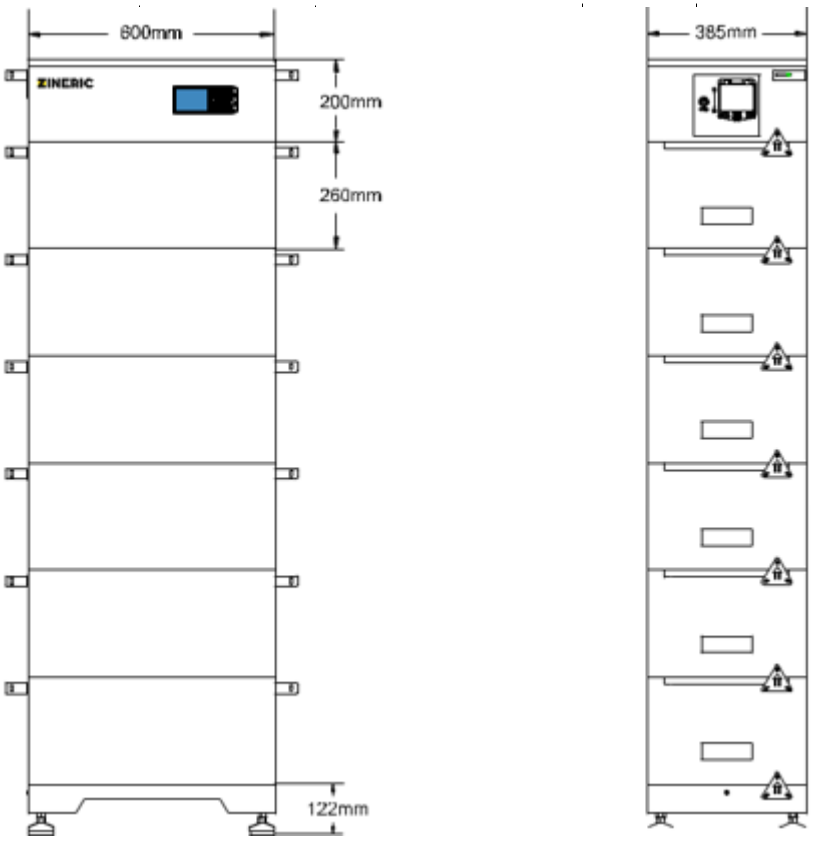
Electric hand drill

9.2 Items included in the package

Packaging Information

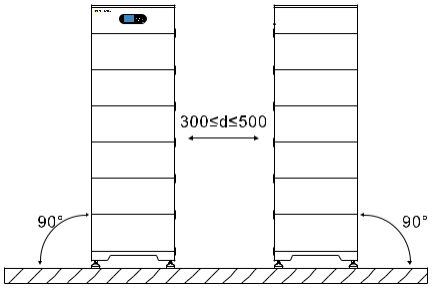
- The battery system consists of a battery, a control box and a base.
- Before unpacking the battery system, please check whether the package is damaged and confirm the battery system model. If something goes wrong, do not open the package and contact the after-sales service center as soon as possible.
- After unpacking the battery system, please check the completeness of the product delivery based on the packaging information. If any irregularities occur, please contact the after-sales service center as soon as possible.

9.3 Product size information

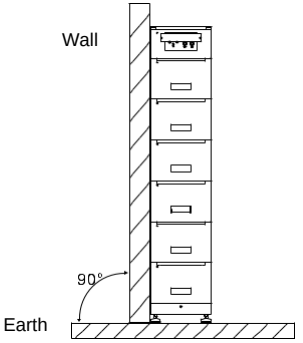


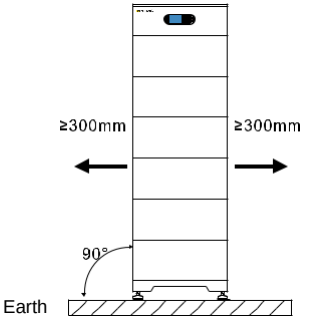
9.4 Floor installation with base

Installation Location Requirements

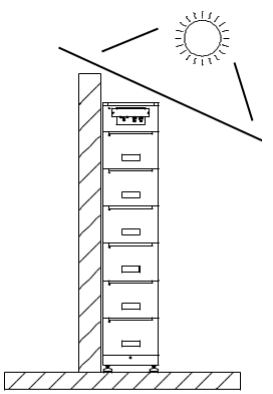


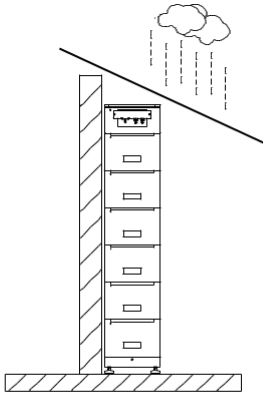
Earth (two row assembly)





9.5 Installation environment





Max. +50°C.

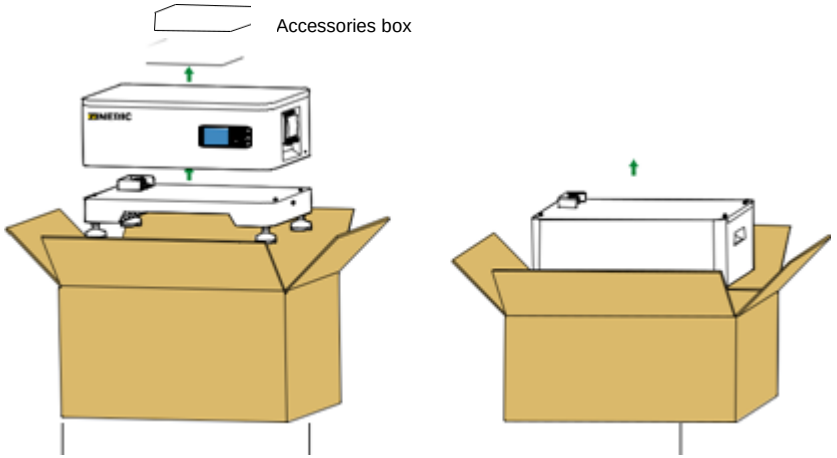
Min. -10°C.

RH.+5% to +95%

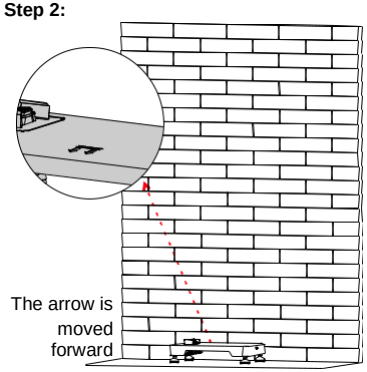
9.6 Installation Procedure

Step 1: Remove the battery, base, and control box from the carton.
Step 2: Place the base against the wall.
Step 3: Install 1~6 battery boxes on the base, and then place the control box above the installed battery to make sure it is placed firmly.
Step 4: Install the control box anti-tilt bracket, mark the punch position with a marker, and then remove the anti-tilt bracket and the control box.
Step 5: Use a hammer drill to drill the holes (hole: 10mm, depth: 60mm).
Step 6: Use a hammer to knock the plastic plug into the hole, install it on the wall, and then install the control box and the anti-tilt bracket, and then tighten the screws on the anti-tilt bracket.
The required torque is 10 N m to ensure that the control box is mounted securely.

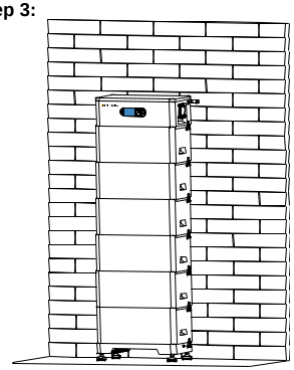
Step 1:



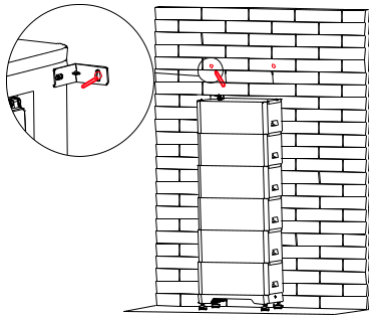
Step 2:



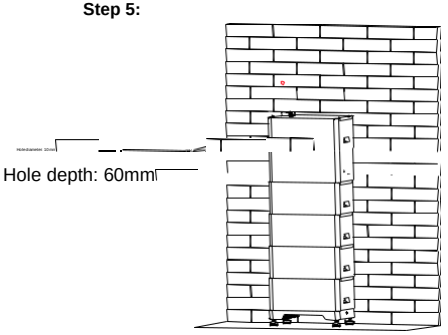
Step 3:



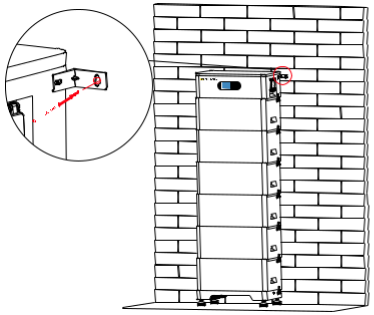
Step 4:



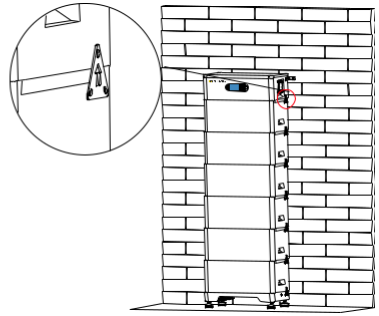
Step 5:



Step 6:

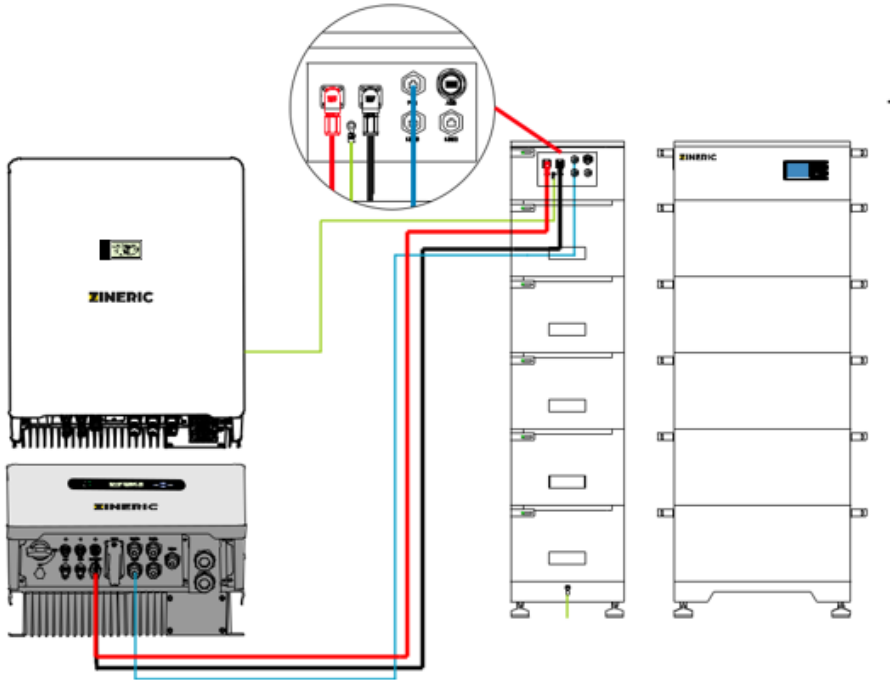


Step 7:



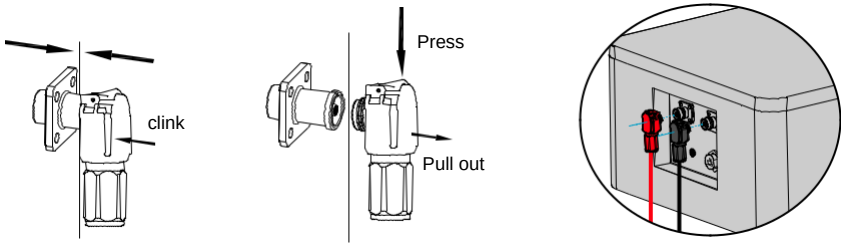
Attention:
1. Before installation, check that the ground is flat and free from tilt.
2. Make sure the base is vertical and close to the ground.
3. Make sure the base is pressed against the wall and the arrow on the base points outward when placing.
4. When placing the top battery, make sure the top and bottom holes are aligned.
5. Be careful not to drop the battery.
6. Do not install the anti-tip bracket on the same side
7. There is no gap between the batteries when installing the stack. If a gap occurs, place the battery with the gap at the bottom.

9.7 System wiring diagram



9.8 Clamp connection

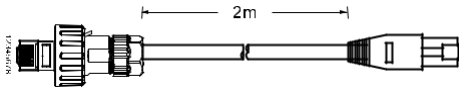
Power terminal



connect **to break away** **Battery terminal**

Note: Before disconnecting the power terminal, please press the position indicated in the above figure

9.9 Communication port description



PCS Port Pin Definition

Pin	Function Definitions	Function declaration
1	NC	NC
2	NC	NC
3	NC	NC
4	CAN-H	Communication between the battery and inverter via CAN port
5	CAN-L	
6	CAN-GND	CAN-GND
7	RS485-A	Communication between the battery and inverter via RS485 port
8	RS485-B	

10. LCD Display Icons

OBJECT	NAME	DESCRIPTION
A	LCD touch screen	Displaying battery information.
B	LED Status	Indicates the operating status of the battery, which is always on during normal operation.
C	LED lamp charging	Indicates the battery charge status, flashing means landing
D	Alarm LED	Indicates a battery fault condition and lights up when occurrence of a fault.
ESC	Function button	Esc: Return from the current interface or function
MOUNTAIN		Up: Move the cursor up or increase the value
HOLE		Down: Move cursor down or decrease value
PL		Enter: Confirm selection.

	This icon lights up while charging.
	This icon lights up to indicate that the battery is waiting to be charged. for connection and at this point there is no way out. After When switching to normal operation mode, the icon disappears.

Total data interface:

This interface displays the summary information of the battery parallel connection, including the average battery voltage, total battery current, average BMS temperature, number of parallel connections, charge limit voltage, discharge limit voltage, charge limit current, discharge limit current and fault information.

10.2 Fault Code Table

FAULT CODE	EXPLANATION	ACTION
01	High battery voltage	Stop loading
02	Low battery voltage	Stop discharge
03	High cell voltage	Stop loading
04	Low cell voltage	Stop discharge
05	High charging intensity	Reduce charging intensity
06	High intensity discharge	Reduce the discharge intensity
07	High temp. BMS	Stop loading and unloading, wait for temperature drop
08	Low temp BMS	Wait for the temperature to rise
09	High cell temperature	Stop charging discharging, wait for temperature drop
10	Low cell temperature	Wait for the temperature to rise
11	Afe glitch	Restart if the fault persists, contact our engineer
12	Soft start failure	Restart if the fault persists, contact our engineer
13	Subcommunication error	Check if the communication cable is not bad connected
14	Low output impedance	Restart if the fault persists, contact our engineer
15	Minor version error	Please contact our engineer to upgrade program

11. WARRANTY

The warranty does not cover defects caused by normal wear and tear, improper maintenance, operation, faulty warehouse repair, modifications to the battery or packaging by a third party other than Zineric, failure to comply with the product specifications stated herein, or improper use or installation, including but not limited to the following actions: Damage during shipping or storage.

- Incorrect installation of the battery in the kit or its maintenance.
- Using the battery in an inappropriate environment.
- Improper or inappropriate charging, discharging or production circuit other than that specified herein.
- Improper or inappropriate use.
- Insufficient ventilation.
- Ignoring appropriate safety warnings and instructions.
- Alteration or attempted repair by unauthorized personnel.
- In the event of force majeure (e.g. lightning, storm, flood, fire, earthquake, etc.).
- There are no warranties, implied or express, other than those set forth herein. Zineric shall not be liable for any consequential or indirect damages arising from or related to the product specification, battery or battery pack.

12. TROUBLESHOOTING AND SERVICE

12.1 Maintenance

1. Regularly check whether the battery operating environment meets the requirements, and the installation site should be away from the heat source.
2. If any of the following situations occur, it must be charged on time:
   - The battery is often undercharged;
   - The battery has been unused or stored for more than 3 months.
3. Regularly check that the battery and its support terminals, connecting cables and indicator lights are functioning properly.

12.2 Troubleshooting

When the red/white LCD light on the panel flashes or is normally on, it does not mean that the battery system is abnormal; it may only be an alarm or protection. Before troubleshooting, please check the "LCD Fault Message" in Chapter 7, whether the detailed information of the fault definition is provided in the chapter. Generally, the alarm indication is normal without manual intervention. After the alarm triggering condition is removed, the battery system will automatically return to normal use.

- **Define the problem based on the following points**

• Is the red light on the Zineric F1 on?

• Whether the battery can be output voltage or not.

• Whether the battery pack can communicate with the inverter;

- **Initial stages of determination**

The LiFePO4 battery system cannot operate when the DC power is on, the LCD does not light up or flashes, please contact your local distributor.

- Zineric F1 LCD display is normal, but it can't charge and discharge. Check if there is SOC on the inverter display screen. Check if the CAN communication between Zineric F1 and inverter is well connected. If the connection is good, replace the CAN communication cable. If the SOC indicator is still not displayed on the inverter screen, please contact your local distributor.
- If alarm information is displayed on the LCD and inverter after powering on the battery pack, please contact your local distributor.