



Extra 2000
Lithium-Iron Phosphate Battery
Product Manual

Information Version: 1.3

Pylon Technologies Co., Ltd.



ecolectric



No. 73, Lane 887, Zu Chongzhi Road, Zhangjiang Hi-Tech
Park, Pudong, Shanghai, China
Tel: +86 021-51317697
Fax: +86 021-51317698
Postal Code: 201203
Skype: Pylon Technology
E-mail: service@pylontech.com.cn

Pylon Technologies Co., Ltd.
No. 73, Lane 887, Zu Chongzhi Road, Zhangjiang Hi-Tech Park
Pudong, Shanghai 201203, China
Zip Code: 201203
Phone: 021-51317697
Fax: 021-51317698
Skype: Pylon Technology
URL: <http://www.pylontech.com.cn>
E-mail: service@pylontech.com

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Revise History

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1.0	2010.9.10	First Release
1.1	2012.5.20	Product Updates
1.2	2013.4.10	Product Updates
1.3	2014.5.29	Product Updates

Introduction

Manual Explains

Extra 2000 (V1.4) lithium iron phosphate battery is power module for energy storage system. In this system, inverter manages battery charging or discharging, users can choose energy from solar panel, main power or battery for loads, which saves energy.

Extra 2000 Product Manual exposted the basic processes and methods of battery, includes structure, parameters, installation and operation. The main content following:

Chapter	Abstract
Chapter 1 Introduction	Main application and features of Extra 2000
Chapter 2 Structure and Parameters	External structure, panel description, management module parameters and others
Chapter 3 Installation and Collocation	Product installation, network usage and requires attention in installation process of Extra 2000
Chapter 4 Maintenance and Troubleshooting	Common operating state descriptions and Troubleshooting of Extra 2000

Safety Instructions

This equipment only be installed, operated and maintained by people who professional trained and qualified by Pylontech. In the process of installation, operation and maintenance, local safety regulations and related procedures must be complied, or it may cause injury or equipment damage. Safety precautions mentioned in manual only as a supplement for local safety regulations. Pylontech does not assume any responsibility for breaching common security operation or equipment safety standards.

Symbols

The following format described some contents need attention for Extra 2000



Note: If warning ignored, the product might be malfunction.

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1 Introduction

1.1 Introduction

Extra 2000 lithium iron phosphate battery is one of new energy storage products developed and produced by Pylontech, it can be used to support reliable power for various types of equipments and systems. Extra2000 is especially suitable for application scene of high temperature, limited installation space, restricted load-bearing and long cycle life.

Extra 2000 has built-in BMS battery management system, which can manage and monitor cells information including voltage, current and capacity. What's more, BMS can balance cells charging and discharging to extend cycle life. Multiple batteries can be in parallel for larger capacity and longer power supporting duration requirements.

1.2 Product Features

Extra 2000 product from Pylontech is using lithium iron phosphate technology, with BMS for effective management of cells. The module has following characteristics:

- The whole module is non-toxic, non-polluting and environmentally friendly;
- Cathode material is made from LiFePO_4 with safety performance and long cycle life;
- Battery management system (BMS) has protection functions for over-discharge, over-charge, over-current and high/low temperature;
- The system can automatically manage charge and discharge state and balance current and voltage of each cell;
- The centralized monitoring module is intelligent designed with three remote

functions of test, signal obtaining and control;

- Flexible configuration, multiple battery modules can be in parallel for expanding capacity and long power supporting duration;
- Adopted self-cooling mode rapidly reduced system entire noise;
- The module has less self-discharge, up to 6 months without charging in storage; no memory effect, excellent performance of shallow charge and discharge;
- Working temperature range is from $-5\text{ }^{\circ}\text{C}$ to $50\text{ }^{\circ}\text{C}$, (Charging $0\sim 50\text{ }^{\circ}\text{C}$; discharging $-5\sim 50\text{ }^{\circ}\text{C}$) with excellent discharge performance and cycle life in high temperature;
- Small size and light weight, standard of 19-inch embedded designed module is comfortable for installation and maintenance;

2 Structure and Parameter

2.1 Equipment Structure

2.1.1 Equipment Model

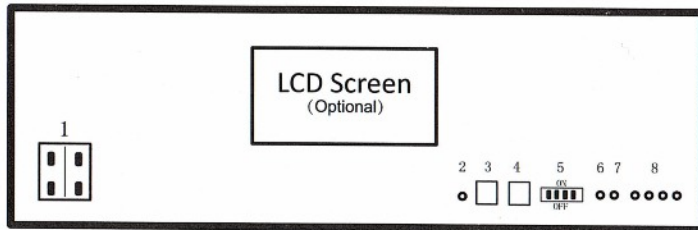
Table2-1 Extra 2000 Equipment Model

Product Series	Model	Rated Voltage	Rated Capacity	Size	Net Weight
Extra Series	Extra 2000	48V	50Ah	436×370×132mm	25kg

2.1.2 Equipment Front Interface Instruction

This section details the front panel of the interface functions.

Figure 2-1 Draft of Extra 2000 Product Front Interface



LCD Screen

The LCD screen on the middle instruction is showed on 4.3 GUI Manual

Power Port (1)

Power cable terminal: there are two terminals with same function, one connect to equipment, the other one paralleling to other battery module for capacity expanding. For each single module, each terminal can achieve charging and discharging function.

Reset (2)

Shut Down Button: When the battery is storage in transportation or other non-using state, press the button to shutdown. If there is no external load or external power supply for 5 hours, it will automatically shutdown.

Communication Interface (3, 4)

- RS485 port (No. 3, Figure 2-1): when using multiple batteries in parallel, cascade each RS485 interface, or concentrate together in one communication box, and information of other modules can be checked from the main module (address 1). The definition of main battery and others please check "ADD Switch Table 2-3."
- RS232 port (No. 4, Figure 2-1): The interface is for the local network management, but it can also be the docking tube interface of network with other equipments.

Table 2-2 Definition of RS232 Port Pin

RS232 Pin	Definition Description
1	Land
2	Veneer Reception, Computer sends
3	Veneer Sends, Computer Receives
4	Land

ADD Switch (5)

- ADD Switch: 4 ADD switches, to definite different address code for each battery module when multiple modules are cascaded, up to 8 addresses. The coding and description please see "Table 2-3 ADD Switch."

Table 2-3 ADD Switch

Coded Bit				Address	Pack	Description
1	2	3	4			
ON	OFF	OFF	OFF	(1)	Pack1	Master Pack, Corresponding with RS232
OFF	ON	OFF	OFF	(2)	Pack2	Slave Pack1
ON	ON	OFF	OFF	(3)	Pack3	Slave Pack2
OFF	OFF	ON	OFF	(4)	Pack4	Slave Pack3

Note: The coded bits 1 to 4 in table separately represent ADD keys from left to right. (Set up for the "ON", down to "OFF"). The address of each equipment in accordance with the binary coded bits, 1 is low, 4 is high, Table 2-3 Example 1-4 address coding, 5-8 address and so on. The battery module with address 1 is the main module, others are assistants.

LED Status Indicators (6,7,8)

- RUN Lamp (No.6 Figure 2-1): green, long lighting when charging and flash when discharging;
- ALM Lamp (No. 7 Figure 2-1 7): red, flashes when alarm and long bright if equipment failure or protected;
- Battery capacity indicator (No. 8 Figure 2-1): 4 green lamps, each light represent 25% capacity. The four lights lit when capacity is 100%, if 75%, the first left a lamp off, and the right three lights; if 50%, the left two lights out, the right two lights; if 25 %, the left three lights off, the right one lights.

Table 2-4 LED Indicators Instructions

Battery Statuses	Protection / Alarm / Normal	RUN	ALM	Capacity LED				Descriptions
Shut Down		Off	Off	Off	Off	Off	Off	All off
Standby	Normal	Flash1	Off	Off	Off	Off	Off	Indicates Standby
Charge	Normal	Light	Off	Based on capacity				the highest capacity indicator LED flashes (flash 2), others lighting
	Protection	Off	Light	Off	Off	Off	Off	Stop charging, ALM lighting

Discharge	Normal	Flash3	Off	Based on capacity				Indicate based on capacity
	Protection	Off	Light	Off	Off	Off	Off	Stop discharging, ALM lighting

Note: The flashing instructions, flash 1 - light 0.25s / off 3.75 seconds; flash 2 - 0.5s light / 0.5s off; flash 3 - 0.5s light / 1.5s off

2.2 Battery Management System (BMS)

2.2.1 Voltage Protection

Low Voltage Protection in Discharge:

When discharging, the protection will turn on if the module or any single cell has lower voltage, and the module will stop discharging. When module voltage or all single cells return to the normal, protection will be removed.

High Voltage Protection in Charge

When charging, the system stops charging when the total voltage of the battery or any cell achieves the voltage protection value. When total voltage and cell voltage are all back to normal, protection will be removed. Voltage protection parameters please see "Table 2-5 Protection Parameters".

2.2.2 Current Protection

Over-current Protection in Charge:

If the charging current is too higher than the limit value, the system will stop charging. As current back to normal, protection will be removed after the system delay time.

Over-current Protection in Discharge:

When the discharge current is greater than the protection value, discharge stopped. Protection removed after the system delay time. Protection parameters please read "Table 2-5 Protection function parameters".

Charging/Discharging Current Limit:

To ensure the load equipment working safety, Extra 2000 product sets the maximum charge/discharge current limit values; please read "Table 2-6 Charging Parameters." In products working, the maximum operating current of electrical load should be less than the maximum battery discharge current.

2.2.3 Temperature Protection**Charging/Discharging Temperature Protection:**

Operation temperature of battery module is -5~50°C, when temperature is below -10 or above 55, protection will turn on and cut off power.

2.2.4 Additional Protection Features**Short Circuit Protection:**

If short circuit occurs, the system starts short circuit protection and cut off power lasts 30 seconds.

Automatic Shutdown:

The system will shutdown automatically after 7 days in idle state without charging or discharging.

The protection parameters of Extra 2000 please read table below:

Table 2-5 Protection Function Parameters

Order Number	Type	Protective Function	Parameter to Protection	Parameter to Remove Protection
1	Voltage	Cell Under-voltage in Discharging	2.7V	3.25V
2		Cell Over-voltage in Charging	3.75V	3.5V
3		Pack Under-voltage in Discharging	42V	49V
4		Pack Over-voltage in Charging	54V	51V
5	Current	Over-current in Charging	53A	15 Seconds Delay
6		Over-current in Discharging	55A	15 Seconds Delay
7	Temperature	Over Temperature	60°C	55°C
8		Under Temperature	-10°C	-5°C

2.3 Charge Parameters

When the equipment working, reasonable charge voltage you should set, recommended charge voltage range shown in Table 2-6. The Extra 2000 product sets the maximum charge current to protect the power supply and load equipments.

Table 2-6 Charging and Discharge Parameters

Model	Voltage Range in Charging		Current Limit in Charging
	Min	Max	Max
EXTRA 2000	52.5V	54V	50A

2.4 Discharge Parameters

To protect the load equipment, Extra 2000 products limited the maximum discharge current shown in Table 2-7.

Table 2-7 Discharging Parameters

Model	Voltage Range in Discharging		Current Limit in Discharging
	Min	Max	Max
EXTRA 2000	42V	54	50A



Note: the maximum discharge current of pack should be greater than maximum operating current of electrical load.

3 Installation and Configuration

3.1 Installation Preparation

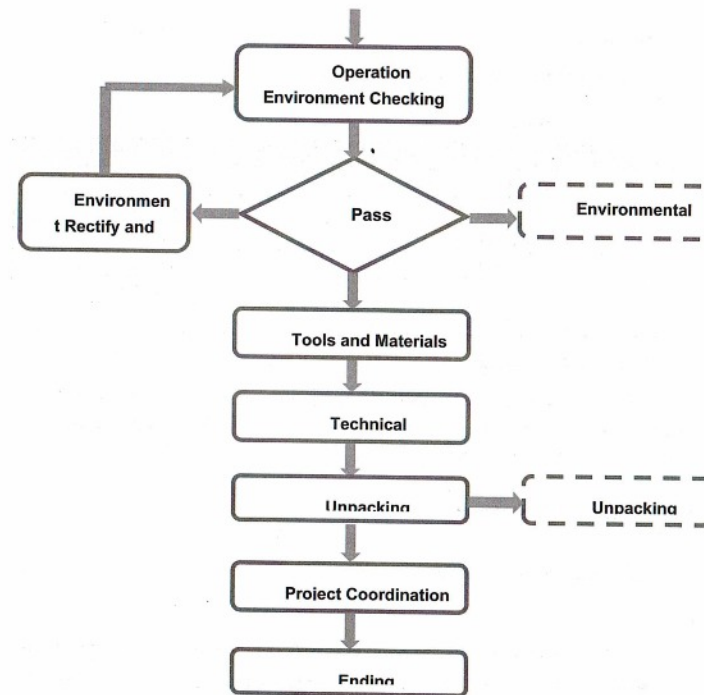
Safety Stipulations

Only the people with enough knowledge of power system, and have been trained by Pylon can install the system. During installation process, installers must always observe the local safety regulations and safety requirements listed below.

- All the circuit under 48V connected to the external power supply system must meet SELV Requirements defined in IEC60950.
- If installation is in cabinet, all the power system must be turned off first, at the same time battery modules must be also turned off.
- Cables distribution must be reasonable and protective to prevent from touching these cables.

Equipment installation preparation process shown in Figure 3-1

Figure 3-1 Schematic of Installation Process



3.1.1 Environmental Requirements

Ambient Temperature: -5°C~+50°C

Relative Humidity:5%~93% RH

Altitude: Under 4000m

Working environment: No conductive dust or corrosive gas

3.1.2 Tools and Information

Hardware

Tools and instruments are shown in Table 3-1:

Table 3-1 Tools and Meters

Name	
Screwdriver (Slotted, Phillips)	Multimeter
Wrench	Clip-on Ammeter
Diagonal Pliers	Insulating Tape
Pliers	Thermometer
Clip Pliers	Antistatic Wrist Ring
Strippers	Ties

Technical Information

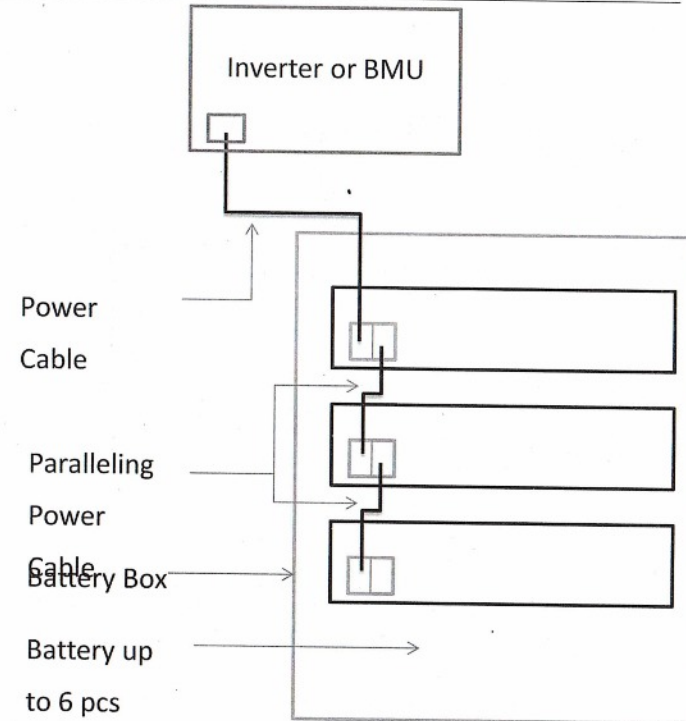
"Project Exploration Station Report", "Extra 2000 lithium iron phosphate Power User's Manual" and "installation and inspection reports", "Safety Precautions", "FAQ Pylon Battery" and "Trouble Shooting Steps"

3.1.3 Technical Preparation

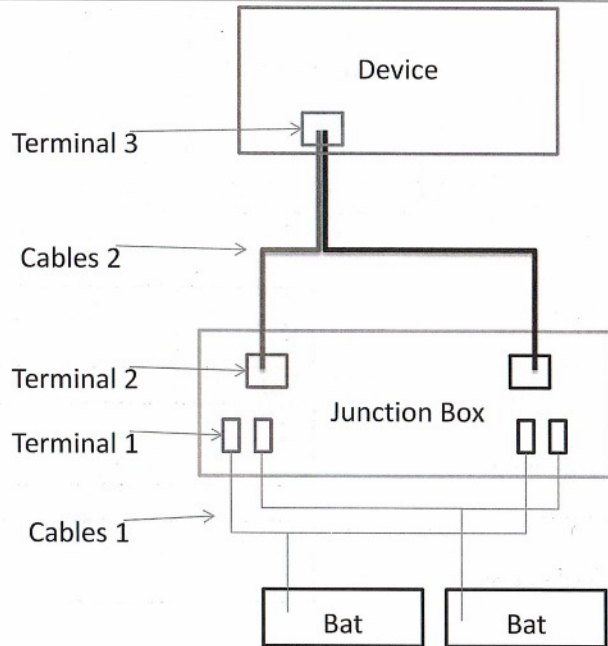
Electrical Interface Checking

In energy storage system, battery modules connect to Inverter or Charger, Pylon need to do the test of cooperation between inverter/charger and battery module, then confirm the parameters setting in inverter and battery module.

There are two ways of paralleling, if current is under power cable limit, we advice the first connection:



If current is above the power cable limited, we advice to configure a Junction Box:



The battery module also can be connected directly to user equipments, power supply or other power equipments. There are two typical interface equipments with power cable:

1. DC Power Interfaces

If the battery directly connects to the user equipment, please check:

- To check whether the equipment with DC power interface and whether the output voltage electrical equipment meets the voltage range requirements in Table 2-6.
- To confirm the maximum discharge current capability of user interface to the equipment DC power, must be greater than the maximum discharge current products in Table 2-6; if not, the limiting function is required.

- To confirm the maximum operating current by battery-powered user equipment must be less than the maximum discharge current products mentioned in Table 2-7.

2. Power Supply

If the battery is connected to power supply, it must be confirmed the positive and negative power connector, and measure whether the output voltage meets the requirements in Table 2-6; and also recognizing the maximum operating current of the battery-powered load equipments must be less than the maximum discharge current related products in Table 2-7.

Grounding Confirmation

In energy storage system, battery modules are in a cabinet, grounding is not compulsory if the cabinet is earthed. While if it is stipulated, the battery grounding collocation must conform to local standard.

Security Checking

Fire-fighting equipments must be available near the battery system such as powder fire extinguishers. For more case of requirement, it should be equipped with automatic fire extinguishing system. No flammable, explosive or other dangerous items placed next to battery.

3.1.4 Unpacking

- When products arrive at the installation site, before unpacking, please check whether the box appearance is intact or not, and calculate total number according to freight list. The disassembly and installation must follow regulatory requirements and avoid direct sunshine or rain;
- To open box slightly to protect the object surface coating;
- Reading technical documents and verifying the list firstly after unpacking the

box, to ensure object is complete according to the configuration tables and packing list, if packaging is damaged please scrutinize and record.

3.1.5 Project Coordination

Previous Work:

- Specifications of Power Cables
Power cables must meet the requirement of maximum discharge current;
- Installation Space and Load-bearing
To ensure there is enough space for installation, and sufficient load-bearing capacity for battery cabinet and brackets.
- Cable Wiring
Ensure the power cable and ground wiring is reasonable. No short circuit, water and corrosion.

3.2 Equipment Installation

Table 3-2 Installation Steps

Step 1	System Powered Down	
Step 2	Mechanical Installation	1. Tab installation
		2. Equipment installation
Step 3	Electrical Installation	1. Grounding
		2. Electrical installation
		3. Load connection
		4. Communication cable cascade
		6. Power on

3.2.1 Mechanical Installation

Before installation, to ensure there is no electrification, please isolate system from grid, and confirm the battery modules are shut down (disconnect power cable and switch off).

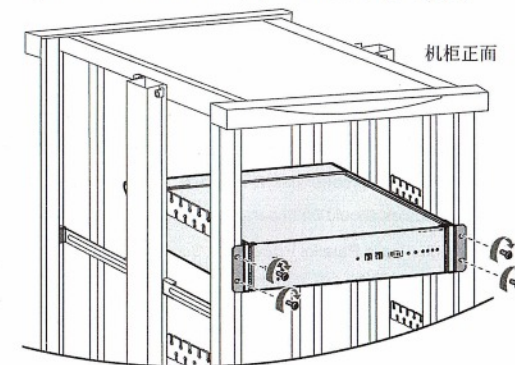
1 Tab Installation

There are tabs and mounting accessories equipment box. Before the equipment fixed, install tabs on both sides of the equipment, and confirm screws are tightly connected.

2 Equipment Installation

Extra 2000 battery is 19-inch designed, which can be installed in the special chassis designed with battery. Place battery module on the plate, push it into the cabinet to be sure batteries are stable The position is flexible according to the actual for arrangements equipment in a cabinet.

Figure 3-2 Schematic of Equipment Fixed to the Cabinet



3.2.2 Electrical Installation

We advice to measure cable continuity, short circuit, and confirmed anode and cathode with multimeter, and mark labels before connecting power and grounding.

Measuring methods:

- Cable continuity: Select buzz mode, put probes touch the both sides of the same color cable, if buzzer means cable is available;
- Short circuit: Select resistance mode, put probes touch anode and cathode, if the resistance displayed infinite, means cable is available.
- Anode and cathode: after power cable connected, the battery positive and negative should be connected correct to equipment.

Cables Connection Sequence:

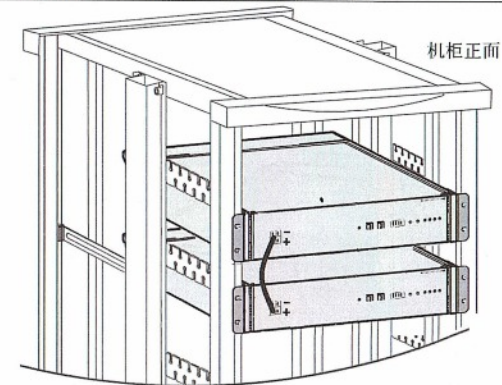
1 Grounding Cable

Connect cable to the cabinet, and the other side connects to the right backside of battery with 4mm² cable, make sure connections are tight and well earthed.

2 Batteries in Parallel

Please ignore this step and go to Step 3 when installing one single battery. If it is configured multiple batteries in parallel, firstly parallel each station batteries with the power cable. Extra 2000 product has 2 terminals with same function on left front panel. Battery modules should be in parallel with parallel cable from Pylon.

Figure 3-3 Multiple Batteries in Parallel Power Line Connection Diagram:



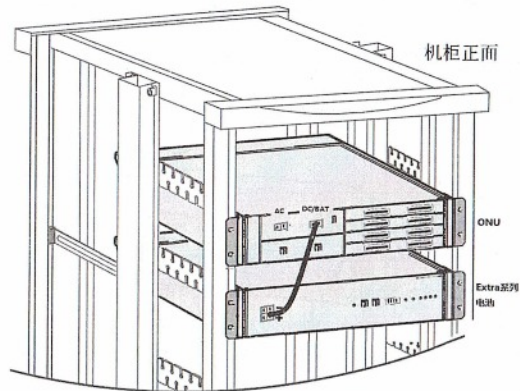
3 Load Connection

In energy storage system, battery modules always connect to Inverter or Charger, there are negative/positive power terminals for charge/discharge, and communication terminal which is used for information transfer. Please connect the equipment side with power cable first, and then connect the battery terminal.

(1) Connection of battery and the load equipment in DC power interface

If the load equipment has a DC power interface, this installation can be used. Single load equipment: the power cable directly connected to the load equipment DC power interface. Multiple load equipment: use a division multiple power cables and the power cable directly connected to each of the DC power load equipment interface.

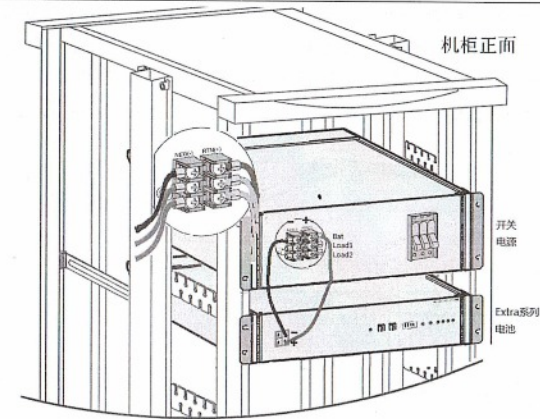
Figure 3-4 Connection Diagram Interface between Battery and Load Equipment of DC Power



(2) Connection of the Battery and Power

This installation method can be used when power supply to loads. Installing the battery power cable priority access battery interface first; if power supply without a battery interface, the power line can also be inserted interface of load power supply, it should pay attention to that maximum load current should be greater than the maximum discharge current of relevant battery in Table 2-7.

Figure 3-5 Battery and Power Connection Diagram



Note:

- Confirm the positive and negative of power cable before connecting, the red power cable to positive and black one to negative;
- Before connecting, verify the charging parameters of interface power supply battery. Voltage and current should satisfy charging parameters in Table 2-6 Battery.

4 Cascade Communication Interface

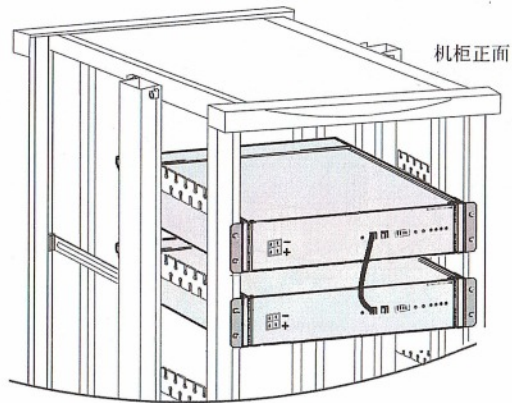
If using a single station battery, please skip this step and proceed to step 5;

When using more than one battery, please continue with this step. (If not using the net management, this step is not required)

To check network management information of all batteries through one battery, please parallel each battery through RS485 terminal. When there are more than two modules, the junction box for communication is necessary to parallel each one.

After cascading, ADD switches is used for each battery sequentially assigned address code starting from 1, the ADD switches using refer to the on slip 5 "ADD switch" in manual "2.1.2 Equipment Front Panel".

Figure 3-6 Cascading of Multiple Batteries in Parallel Network Schematic



5 Communication Terminal Connection

If using the local network, put the specially equipped RS232 communication cable to connect the battery and computer serial RS232 interface.

For the communication between battery module and Inverter/Charger, after test of cooperation between inverter/charger and battery module, Pylon will confirm the connection terminal in inverter/charger and provide specification.

If multiple network cascade battery, connect the battery RS232 interface with ADD Address is 1.

6 Equipment Power on

After completing these steps, power on and activate the entire system, installation completed.



Note:

After power on, if the red ALM indicator in front panel continuously lighting or flashing over 5 seconds, disconnect the power cable and shutdown the battery, re-check whether the cable connection specially positive and negative terminals are correctly connected, if problem still existing, please contact Pylontech.



Note:

- ① Confirm the positive and negative terminal cable before connecting. The red cable should be positive and black one to negative.
- ② Before connecting, verify the charging parameters of inverter/charger. Please refer to the manual of inverter/charger. Verify the charging parameters of inverter/charger before connecting.

4 Cascade Communication Interface

If using a single station battery, please skip this step and go to step 5. When using more than one battery, please continue set the step of RS232 using the net management. This step is not required.

To check network management information of all batteries through one battery, please parallel each battery through RS232 system. When there are more than two modules, the parallel line for communication is necessary to connect each one.

4 Using, Maintenance and Troubleshooting

4.1 Alarm Description and Processing

When faultly appeared and protection turned on, the red ALM indicator on the front panel will be lighting.

4.1.1 Output Alarm

Please follow Table 4-1 processing if faultly appears.

Table 4-1 Major Alarm and Protection

Statue	Alarm Category	Alarm Indication	Processing
Charging	Cell Over-voltage	ALM Lighting	Stop charging and find the cause
	Over-current	ALM Lighting	Stop charging and find the cause
	high-temp	ALM Lighting	Stop charging
Discharging	Over-current	ALM Lighting	Stop charging and find the cause
	high-temp	ALM Lighting	Stop discharging
	Low Total Voltage Protection	ALM Lighting	Start charging
	Cell Voltage Protection	ALM Lighting	Start charging

4.2 Common Fault Analysis and Solutions

Common fault analysis and solutions shown in table 4-2:

Table 4-2 Common Faults and Solutions

Number	Fault Symptom	Reason Analysis	Solution
1	DC power supply time shorter	Battery capacity reduced	Change storage battery
2	Battery cannot be fully charged	Low voltage in charging	Adjust charging voltage in 52.5V~54V
3	Fire sparkle appeared when power up, alarm lamp lighting	Short circuit	Shutdown system, check the cause and exclusion

4.3 GUI Manual

Extra2000 from Pylontech are suitable to provide reliable DC for all types equipments. With the LCD interface, the product can display internal data more visually and also easier for parameter setting.

Before using, please read this manual carefully for better understanding.

First, turn on the switch and choose language:



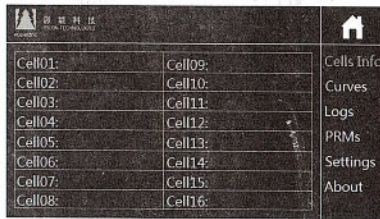
If it shows wrong time, touch to setting, then you can see the basic parameters and others on the right:



- ← Back to Homepage
- ← Cell Information
- ← Current and Voltage Curves
- ← History Log Record
- ← Check Parameters
- ← Set Parameters
- ← Other Information

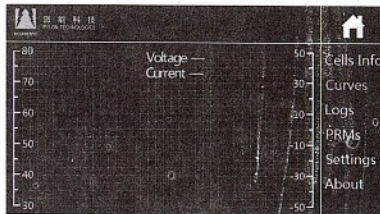
Cell Info

Voltage and Temperature of each cell, because the cells are in series, the current value is the same as pack current (showed on the previous image)



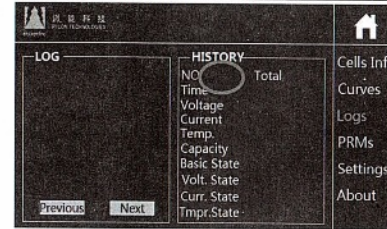
Curves

The Voltage and Current curves during charging or discharging



Logs

Logs and History Records

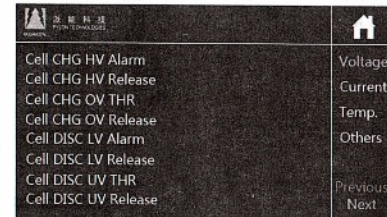


LOG on the left side shows the record of events, e.g. battery turn on/off, alarm/protection start or end, charging/discharging start or end, etc.

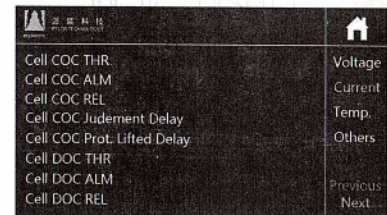
HISTORY shows records, press the number in the oval to choose record number (0-2048), and touch other area in the HISTORY to get the cells information. Cells information is including voltage, current, temperature, base state, voltage/C/T state (normal or low), and capacity retention.

PRMs

Voltage Parameters:



Current Parameters



Temperature Parameters

中文 Cell CHG Hi-Temp. Alarm Cell CHG Hi-Temp. Alarm Release Cell CHG Hi-Temp. Protection Cell CHG Hi-Temp. Prot. Release Cell DISG Hi-Temp. Alarm Cell DISG Hi-Temp. Alarm Release Cell DISG Hi-Temp. Protection Cell Disg Hi-Temp. Prot. Release	中文 Voltage Current Temp. Others Previous Next
--	---

Other Parameters

中文 Basic Parameters Update Cycle Standby Time DISC End Voltage Console Baud rate Host Baud rate	中文 Voltage Current Temp. Others Previous Next
---	---

Explanatory notes for abbreviations are on the last page, and the technical parameter values in the system are set suitable for the application, parameters setting function is not available:

Settings

中文 1. Time/Date Settings 2. Voltage Password 3. Current 4. Temp. 5. Function 6. Reset	中文 Time/Date Voltage Current Temp. Function Reset
---	---

About

Other information about the battery:

中文 Pack Model Nominal Capacity Nominal Voltage Max Charge Current Max Discharge Current	中文 Spec. Factory Version
--	-----------------------------------

中文 Bar Code	中文 Spec. Factory Version
中文 Software Version Hardware Version GUI Version	中文 Spec. Factory Version

Abbreviations:

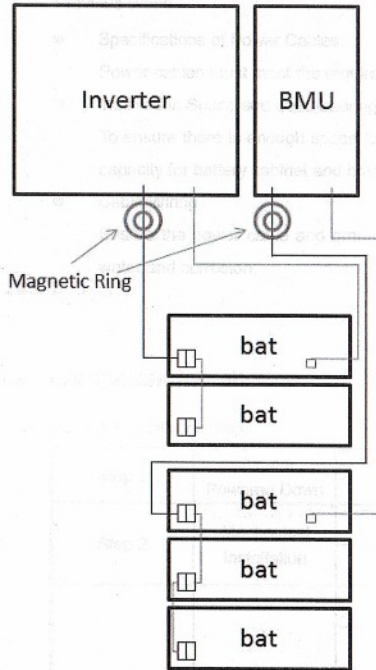
- CHG: Charge/Charging
- DISC: Discharge/Discharging
- HV: High Voltage
- OV: Over Voltage
- LV: Low Voltage
- UV: Under Voltage

DISC Termination

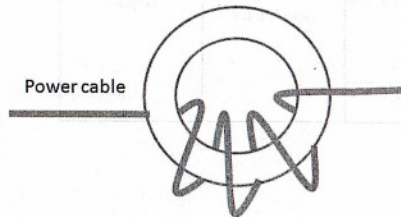
- THR: Threshold (after this value, the battery will start protection)
- REL: Release
- ALM: Alarm
- COC: Charging Over Current
- DOC: Discharging Over Current
- SC: Short Circuit
- CSC: Charging Short Circuit
- DSC: Discharging Short Circuit
- Hi-Temp: High Temperature
- Lo-Temp: Low Temperature

Installing magnetic ring and power cable

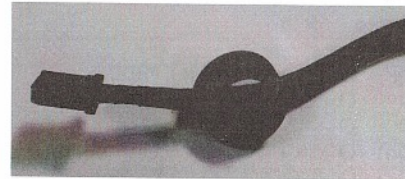
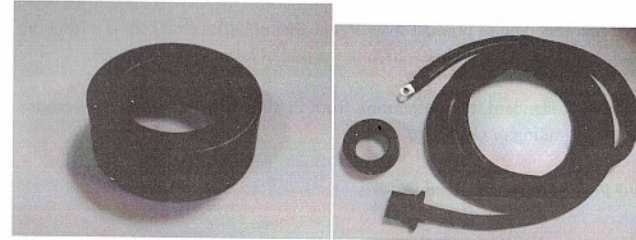
Focus on the problem of battery LCD display error appeared, we advice to add a magnetic ring on power cable, only for the long power cable connect between battery and inverter/BMU, the parallel cable is not necessary.



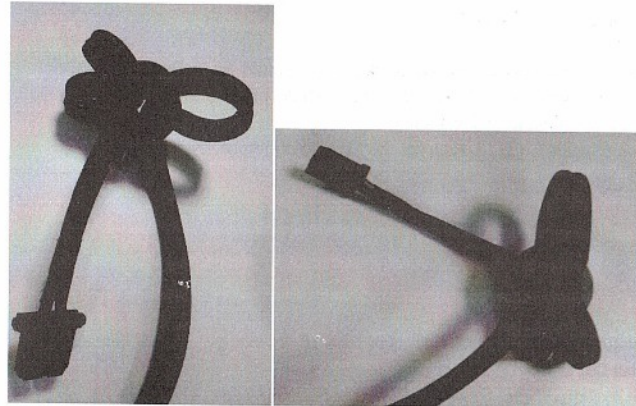
Coiling type, please keep the cable close to ring:



To avoid battery from electromagnetic interference, we add a magnetic ring to the power cable:



Cable and magnetic ring like this:



Then connect to inverter or BMU, only cable between battery and inverter (BMU) need the ring, the parallel cable is not required.



Hazardous Substance Declaration

It is declared that this type of product from Pylon Technologies Co., Ltd. is within the scope of trade standard of SF/T11363-2006 in the rate of hazardous substance.

Based on currently standard, the declaration from Pylontech do not warranty because of information upgrading or changing.

More details please see the table 4-4 below:

Table 4-3 Hazardous Substance Declaration

Parts	Hazardous Substance					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Structure	○	○	○	○	○	○
Cable and Auxiliaries	○	○	○	○	○	○
PCBA	○	○	○	○	○	○
Battery Block	○	○	○	○	○	○

○: the rate of this hazardous substance and its materials are within the scope of standard SJ/T11363-2006

The Hazardous Substance showed in the table should be included in products from Pylon Technologies Co., Ltd., while information will be upgraded as the technology developing;

Pylon Technologies Co., Ltd. reserves the final definition of "Parts" in the table.

Related special difficulties or questions of technology, please contact Pylon Technologies Co., Ltd.

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