



Shanghai PYTES Energy Co., Ltd.



**Pytes**

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# LFP BATTERIES FOR ENERGY STORAGE

## COMPANY PRODUCT BROCHURE

Power a Better Life



Other catalogues



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**Pytes**

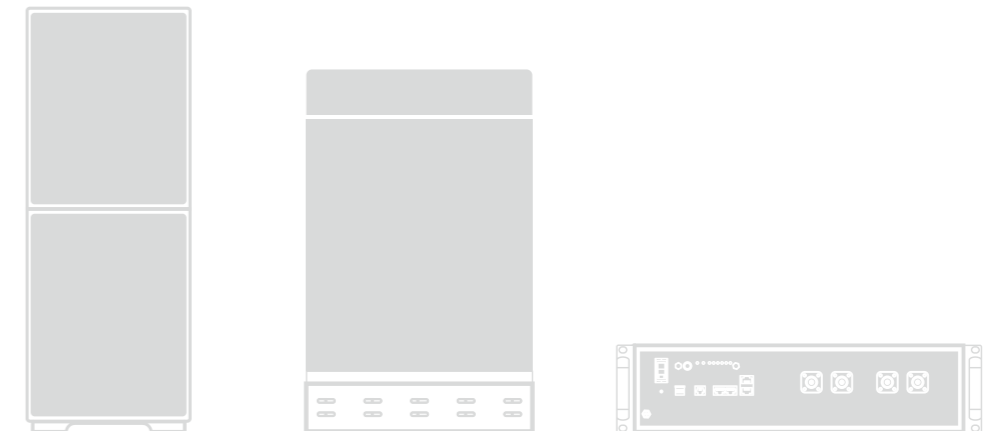
# LITHIUM ION BATTERIES FOR ENERGY STORAGE

Power a Better Life

**Pytes**

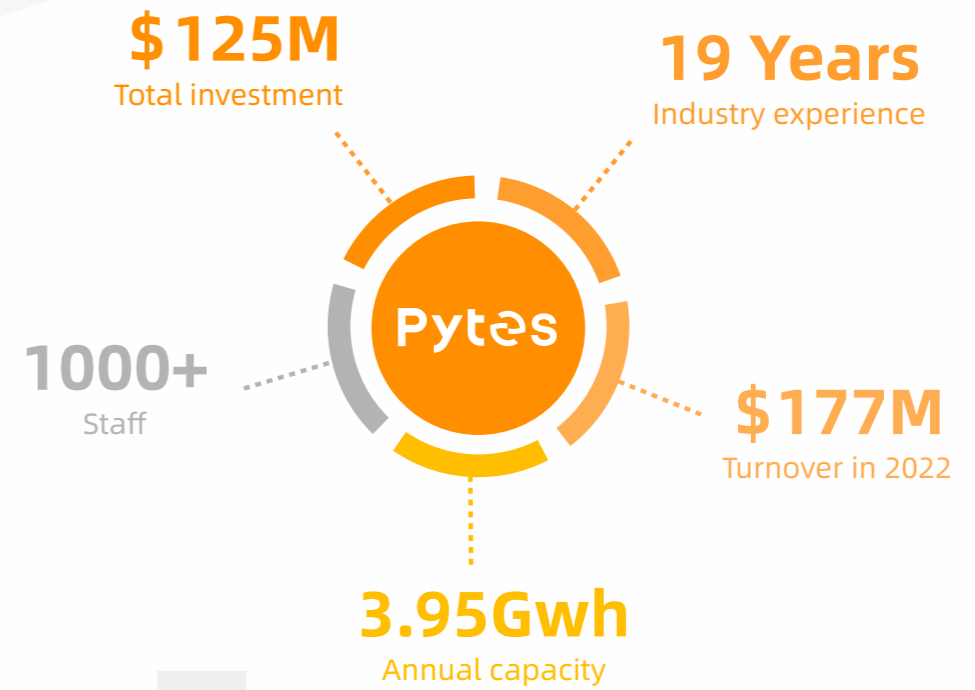
CONTENTS

About Us .....	01
Laboratory Introduction .....	05
Qualification & Certification .....	07
<b>Standard Products Introduction</b>	
Batteries .....	09
Accessories .....	23
HUB .....	25



# Pytes

PYTES, a national high-tech enterprise founded in 2004, focuses on Lithium-ion battery solutions for e-bikes, e-motorcycles, 3C products and energy storage systems, etc. Headquartered in Shanghai, PYTES has been expanding globally, setting up three production bases in Shanghai (China), Shandong (China), and Vietnam, two marketing & service centers in Europe and North America. PYTES is strong in R&D, with advanced laboratories certified by TUV, DEKRA, SGS & BV, etc.



Pytes



# Global Marketing & Service



- Global pre-sales & after-sales services
- 7\*24H support, efficient feedback



**Testing Labs**

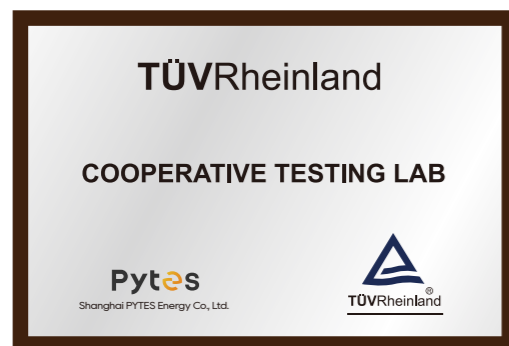
WE TEST ALL THE BATTERIES **100%**



SGS



BV



TUV



DEKRA

**Mechanical Tests**



Vibration Test



Drop Test



Shocking Test

**Safety Tests**



Short circuit Test



Impact Test



Needle Test

**Environmental Tests**



Altitude Simulation



Thermal Shock

**Electrical Tests**



# Qualification & Certification



ISO9001:2015



ISO14001:2015



ROHS



CB



UL



PSE



KC



REACH



UN38.3



GB31241



CU



IEC62133

# Standard Products Introduction



# E-BOX-48100R



## Batteries

### E-BOX-4850

440 mm \* 420 mm \* 89 mm (2U)  
48 V 50 Ah 2.4 kWh



110402100004

110402100003









### E-BOX-48100R

L440mm\*W620 mm\*H117mm (2.6U)  
51.2V 100 Ah 5.12 kWh

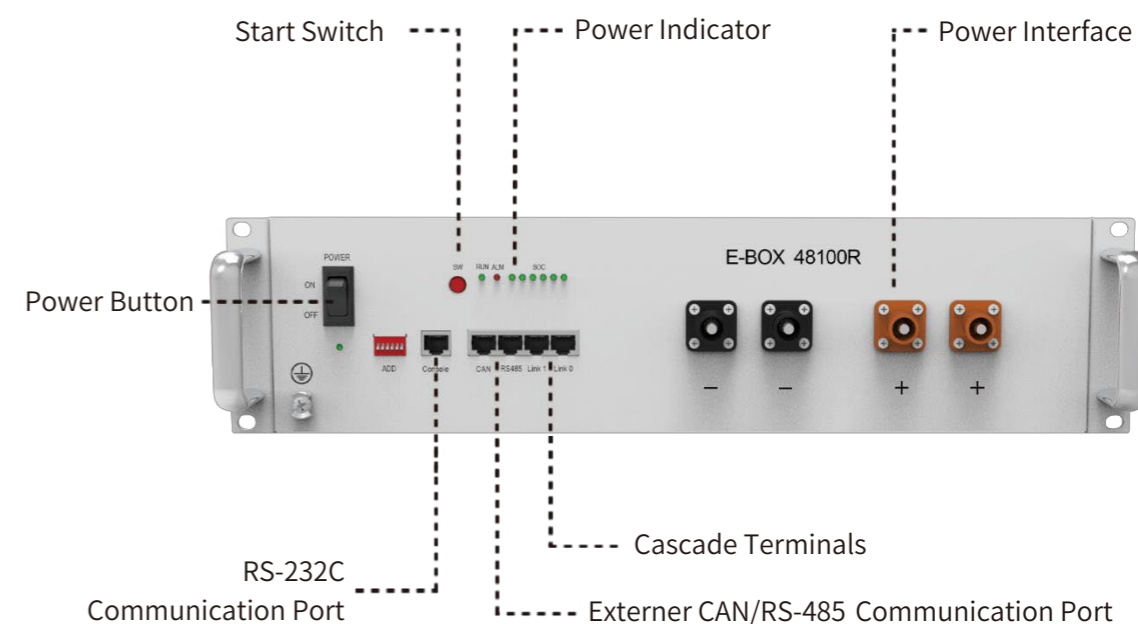
## Introduction

E-BOX series, the new generation LFP battery for home energy storage system. It provides safe, well-designed and high-performance standard LFP battery pack for you. The battery pack is compact, easy to install, free of maintenance, and could be deployed as the building block of energy storage system by being assembled in parallel. It is widely applied in home applications, small commercial and industrial energy storage system as well as telecom stations.

## Features

- 
**Self-Consumption**  
store excess energy generated by solar panels and use it whenever needed
- 
**Smart Energy Management**  
measure, monitor and manage the system in real-time, optimize the system life span by intelligent algorithms
- 
**Back-Up Power Supply**  
provide emergency power supply during grid outage
- 
**Longest Life and Highest Safety**  
more than 6000 cycles @90%DOD
- 
**Electricity Bills Reduction**  
charge the battery during off-peak period and discharge the battery during peak period
- 
**Wide Compatibility**  
compatible with more than 16 mainstream inverters in the market

## Operation Panel



10 Years Warranty

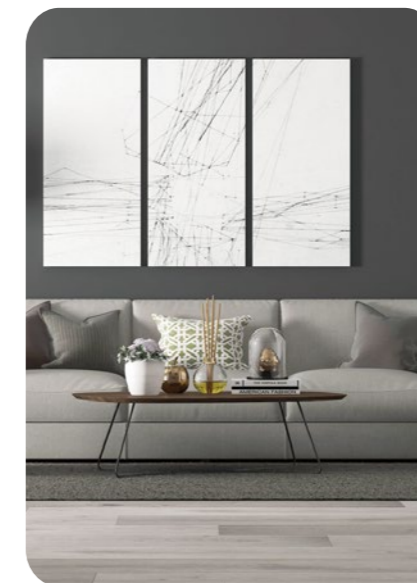




## Technical Specifications

Model	E-BOX-48100R	E-BOX-4850
Chemistry	LFP	LFP
Nominal Voltage	51.2 V	48 V
Voltage Range	47.5 V - 57.6 V	45 V - 54 V
Nominal Capacity	100 Ah	50 Ah
Nominal Energy	5.12 kWh	2.4 kWh
Unit Dimension	L440mm * W620mm * H117mm (2.6U)	L440mm * W420mm * H89mm (2U)
Unit Weight	51 kg	25 kg
Maximum Charge Current	100 A	50 A
Recommended Charge Current	50 A	25 A
Maximum Discharge Current	100 A	50 A
Recommended Discharge Current	50 A	25 A
Round-Trip Efficiency	≥95%	≥95%
Communication Protocol	RS-232, RS-485, CAN	RS-232, RS-485, CAN
Cycle Life	≥ 6000	≥ 6000
Warranty	≥ 10 years	≥ 10 years
Charge	0~50°C	0~50°C
Discharge	-10~50°C	-10~50°C
Connect style	Parallel	Parallel
Storage Temperature	Within 1 month: -20~55°C 1-3months: 0~35°C, 3-12months: 20~25°C	Within 1 month: -20~55°C 1-3months: 0~35°C, 3-12months: 20~25°C

\* The recommended and max. continuous operation current is for a battery cell temperature within 10~40°C to consider, out of such temp. range will cause a derating on operation current.

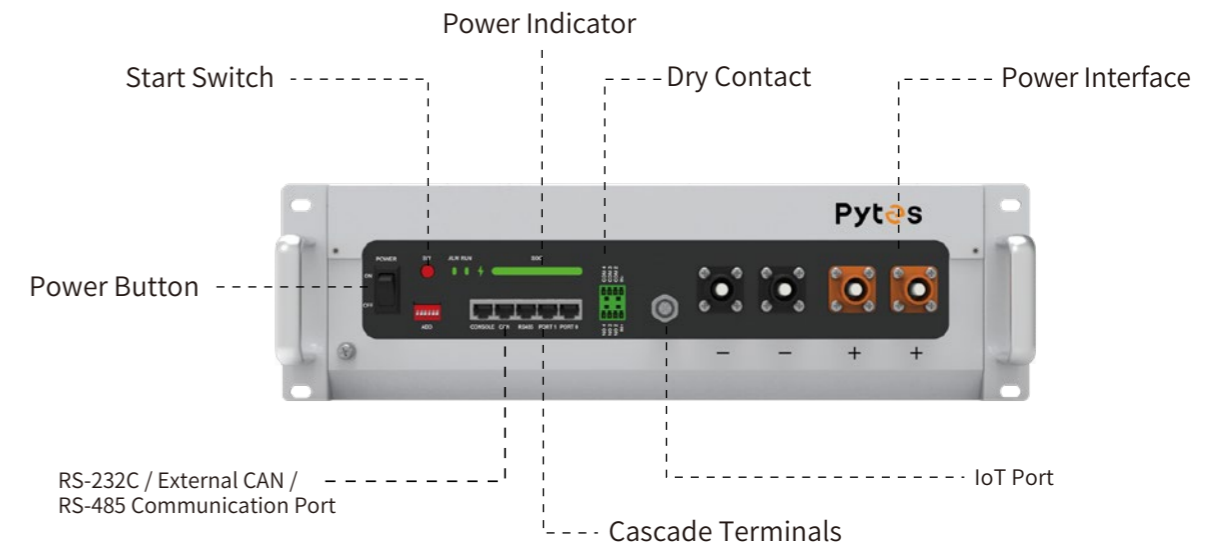




# V5° COMING SOON



## Operation Panel









10 Years Warranty



## Introduction

V5°, the new generation LFP battery for home energy storage system. It provides safe, well-designed and high-performance standard LFP battery pack for you. The battery pack is compact, easy to install, free of maintenance, and could be deployed as the building block of energy storage system by being assembled in parallel. It is widely applied in home applications, small commercial and industrial energy storage system as well as telecom stations.

## Features

- 
**Basic Functions**  
 self-consumption, electricity bill reduction, back-up power supply, wide compatibility
- 
**Smart Energy Management**  
 add dry contacts and IoT interfaces for remote upgrades and real-time monitoring
- 
**Short-Time Charging/Discharging**  
 maximum continuous charge/discharge current: 100A
- 
**Longest Life and Highest Safety**  
 more than 6000 cycles @90%DOD
- 
**Easy Connection**  
 new terminals are compatible with copper bar/wire connection up to 3 pcs connected in parallel without using busbars
- 
**Self-Heating System**  
 low temperature resistance to ensure normal charging

## Technical Specifications

Model	V5°
Chemistry	LFP
Nominal Voltage	51.2V
Voltage Range	44.8V-57.6V
Nominal Capacity	100Ah
Nominal Energy	5.12kWh
Unit Dimension	L483mm*W530mm*H140mm(3.2U)
Unit Weight	46.2kg
Standard Charge/Discharge	75A
Maximum Continuous Charge/Discharge	100A
Peak Charge/Discharge	150A(15s)
Round-Trip Efficiency	≥95%
Communication Protocol	CAN/RS485/RS232
Cycle Life	≥6000
Warranty	≥10 years
Operating Temperature	-10°C~55°C
Connect style	Parallel
Heating system	8~10°C/h

# E-BOX 12100

Flexible configuration

Heating module system

Fully intelligent design

Self-protecting function



COMING SOON

## Introduction

PYTES E-BOX 12100 is high current carrying Lithium Iron Phosphate (LiFePO4) battery pack specially designed for the safe, reliable and long-term operation in different high current applications. It has high energy density, robust design and long life. The pack has an inbuilt heating system and a BMS for centralized monitoring and protection against unexpected situation.

## Features

### 1 High reliability, high energy density and high temperature cycling performance

Long lifespan and high performance Lithium Iron Phosphate (LFP) cells are adopted in the battery module, which effectively ensures safety, and lifespan over 6000 cycles.

### 2 High-performance power management module (BMS)

The BMS provides protection against over discharge, overcharge, overcurrent, short circuit, reverse connection, and high or low temperature to ensure the battery safety.

### 3 Supports CAN and RS485 communication

The battery panel provides a M12 port for RS485 and CAN communication.

### 4 Excellent discharge rate performance.

The battery can continue to discharge at 1C to meet high power output.

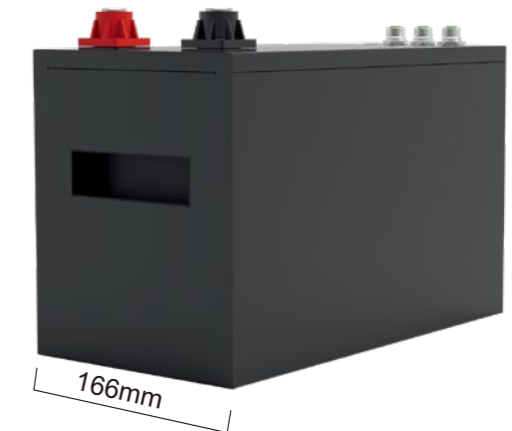
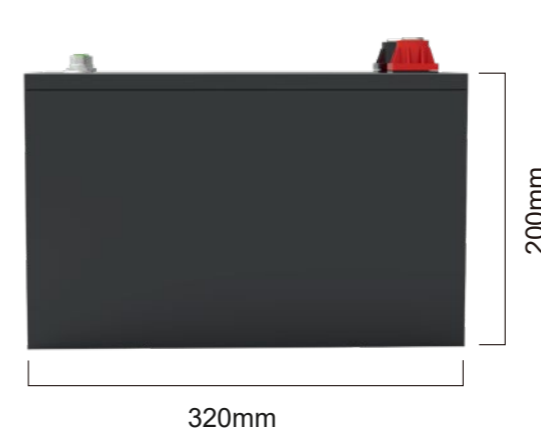
## Technical Specification

Model	E-BOX 12100
Nominal Capacity	100Ah
Nominal Voltage	12.8Vdc
Voltage Range	DC 10.8~14.4V
Maximum Continuous Charging Current	DC 50A
Maximum Continuous Discharge Current	DC 100A
Charge working temperature(°C)	-10°C~55°C
Discharge working temperature(°C)	-20°C~55°C
Operating Relative Humidity	5~95% No Condensation
Unit Dimension	320mm*166mm*200mm
Unit Weight	≤15.2kg
Protection class	IP65
BMS Communication	RS485, CAN
Parallel Connect	Up to 8 batteries can be connected in a system
Heating	Supported
Certification	UN38.3, CE, IEC62619

## Suitable For

PYTES E-BOX 12100 is suitable for diverse applications requiring high discharge current and least supervised operations. A few of the applications of the battery pack are:

- Van life and Van building
- RV Camper Trailers
- Construction and Work Trucks
- Solar Energy Storage
- Off Grid Electrical Systems
- Recreational Vehicles
- Overland and Truck Builds
- Marine Applications
- Off-Grid Homes





Mechanical Design	Parameter
Dimensions(W*D*H)	280*510*700mm / 310*510*780mm (including holder)
Weight	120 kg
Mount	Wall/Floor mount
Enclosure rating	IP20
Enclosure material	Cool-rolled steel
Cooling	Natural convection
Warranty	Cabinet: 3 years Battery: 10 years

## Introduction

The R-BOX is a state-of-the-art home energy storage system solution. It has a total usable energy capacity of 10kWh. Product features include quick and easy installation, a compact and elegant home style design and great extensibility. The R-BOX can provide smart configurable backup power during grid outages and power smart homes with solar energy, day and night.

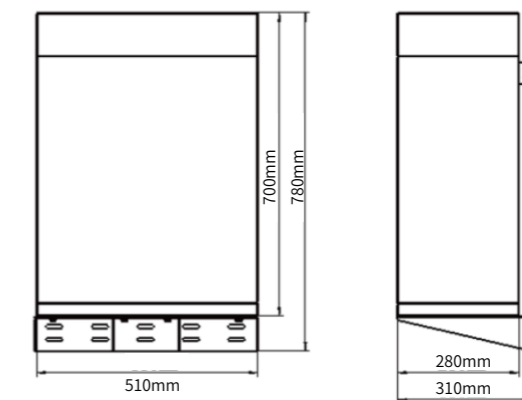
## Technical Specifications

Model	R-BOX
Total capacity	10.24 kWh
Usable capacity	9.22 kWh
Chemistry	Lithium Iron Phosphate
Nominal voltage	51.2 V
Max. charge/ discharge current	100 A
Communication	CAN, RS-485
Certificate	UL 1973, IEC 62619, CE, UN 38.3
Operating Temperature	Charge:0~50°C; Discharge:-10~50°C
Altitude	Max. 2000 meters
Compatibility	Deye, Solis, Victron, Voltronic, Sol-Ark, Growatt, SRNE, Luxpower, Kelong, GoodWe, Studer, SMA, Sermatec, Megarevo, etc.

## 3D image

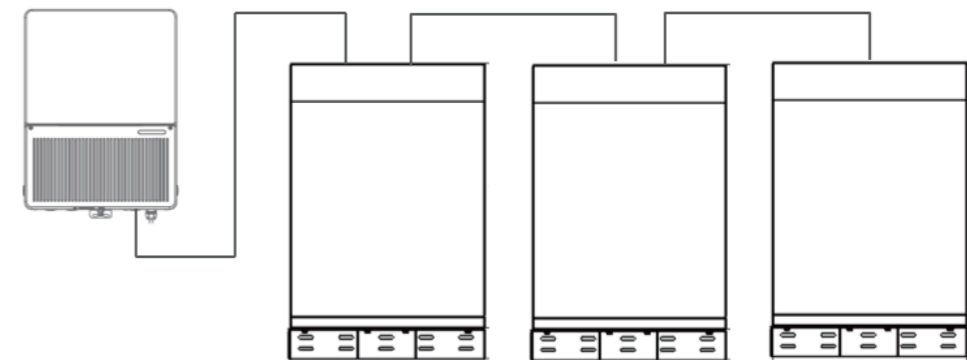


## Mechanical drawing



## Battery Expansion

Home Energy Storage System can connect R-BOX up to 4 pcs without additional kit. You can use our 1uHUB to get max 28 R-BOX connected in parallel.



# Forest RB

- Easy to install
- Expandable up to 6 units E-BOX-48100R (30kWh in total)
- Long usage life
- Adapt to multiple inverters

## Application Scenario



Villa



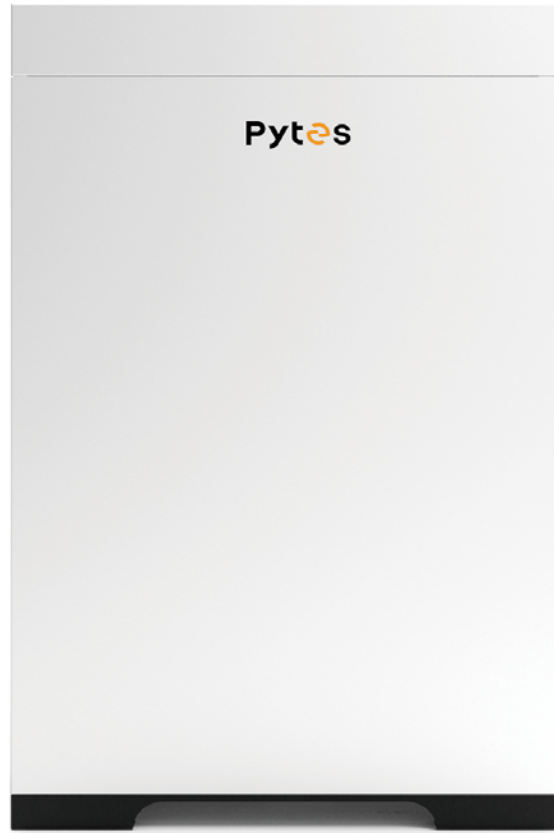
Residential building



Farm



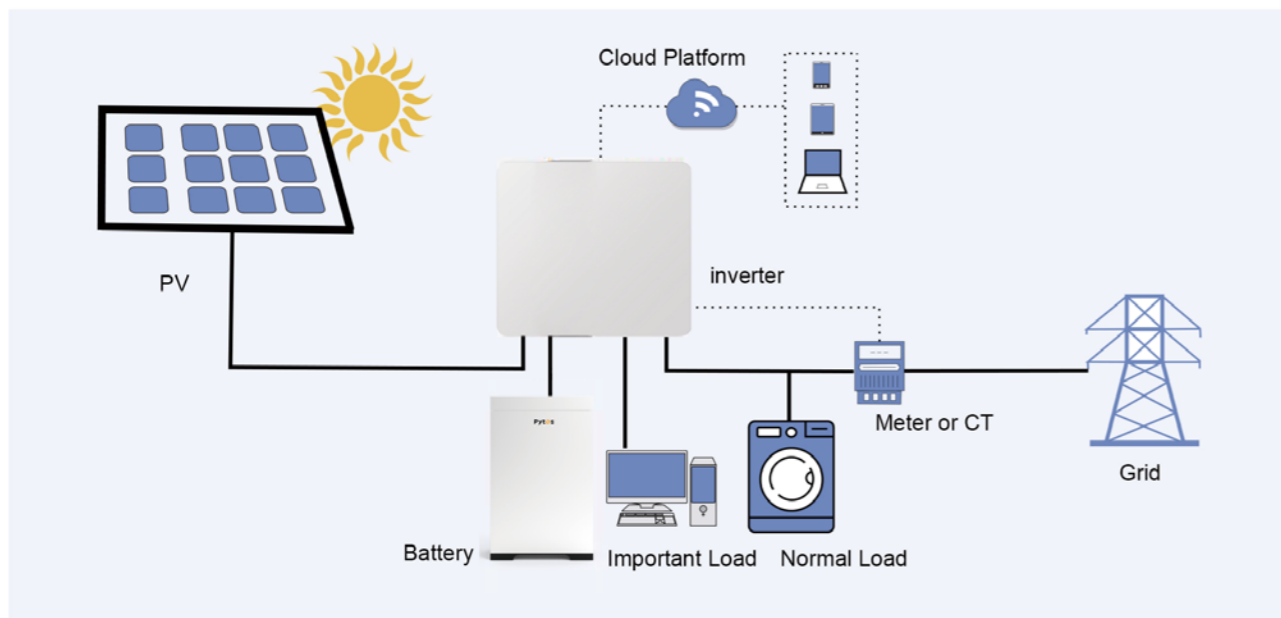
Data center



## Introduction

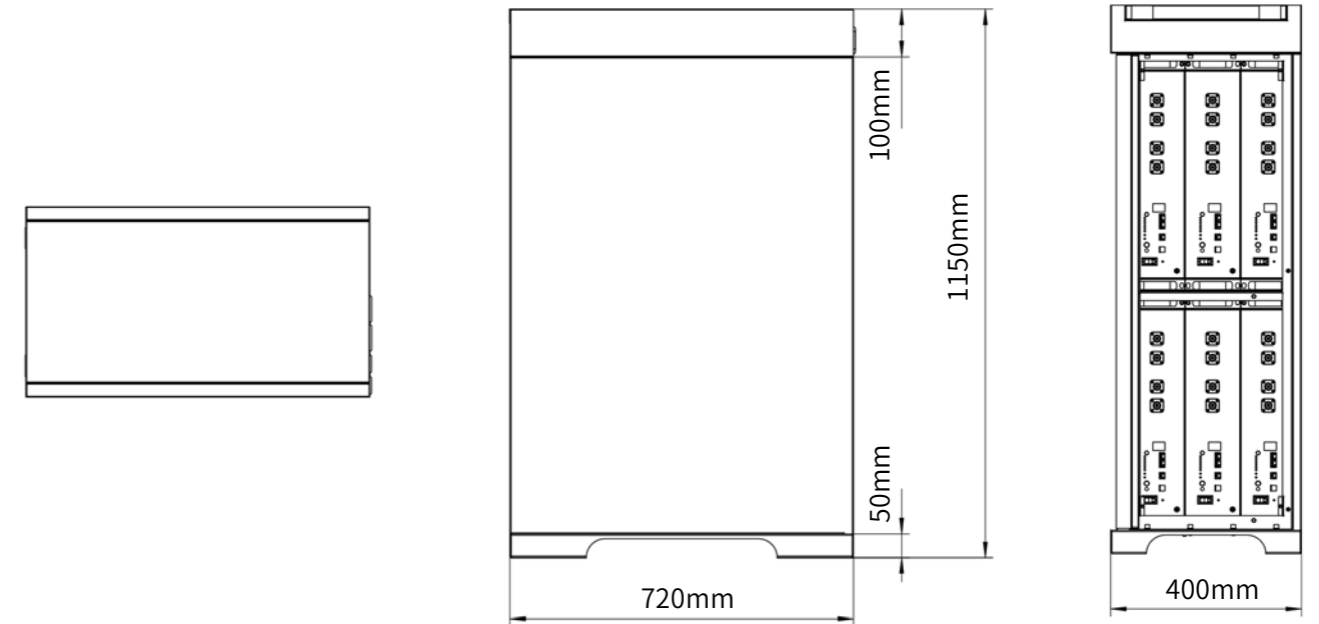
Expand your energy storage with the Forest RB Cabinet! This iron enclosure stores up to 6 E-BOX48100R batteries. The Forest RB Cabinet paired with multiple batteries can build a 48V UPS server rack or provide storage capacity to home solar arrays.

## Product Topology



## Product Topology

Model	B2	B3	B4	B5	B6
Battery capacity	10.24 kWh	15.36 kWh	20.48 kWh	25.6 kWh	30.72 kWh
Nominal voltage	51.2 V				
Recommended Charge/Discharge Current	100 A	150 A	200 A	250 A	300 A
Maximum Charge/Discharge Current	100 A	150 A	200 A	250 A	300 A
Operating Temperature	Charging:0~50C; Diacharge:-10-50C				
Warranty	Cabinet: 3 years Battery: 10 years				
Positive and Negative Battery Busbars	2*8 points, M8 terminal rings				
Weight	120 kg	170 kg	220 kg	270 kg	320 kg
Dimensions(W*D*H)	720 mm * 400 mm * 1150 mm				
Enclosure Protection	IP20 (indoor)				
Alltitude	< 4000 m				
Certificate	UL 1973, IEC 62619, CE, UN 38.3				

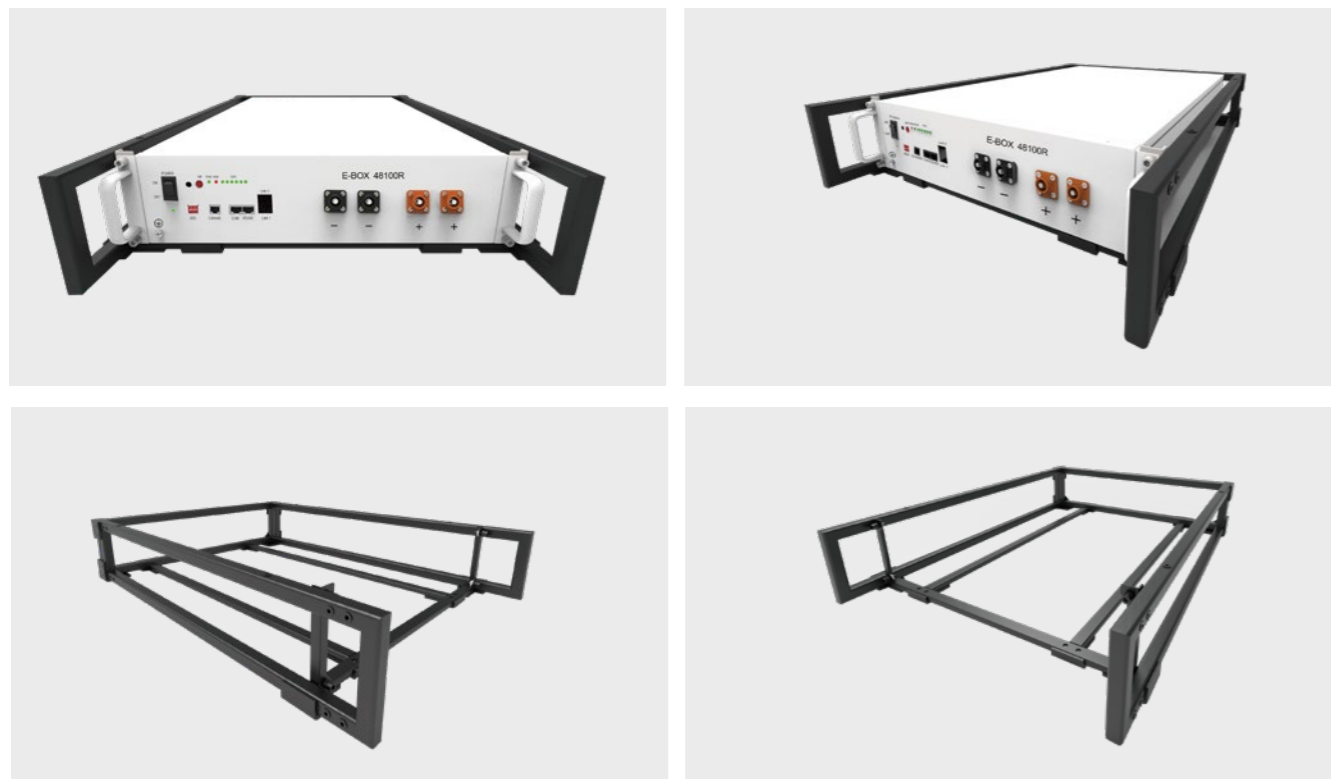


# R Bracket



## Introduction

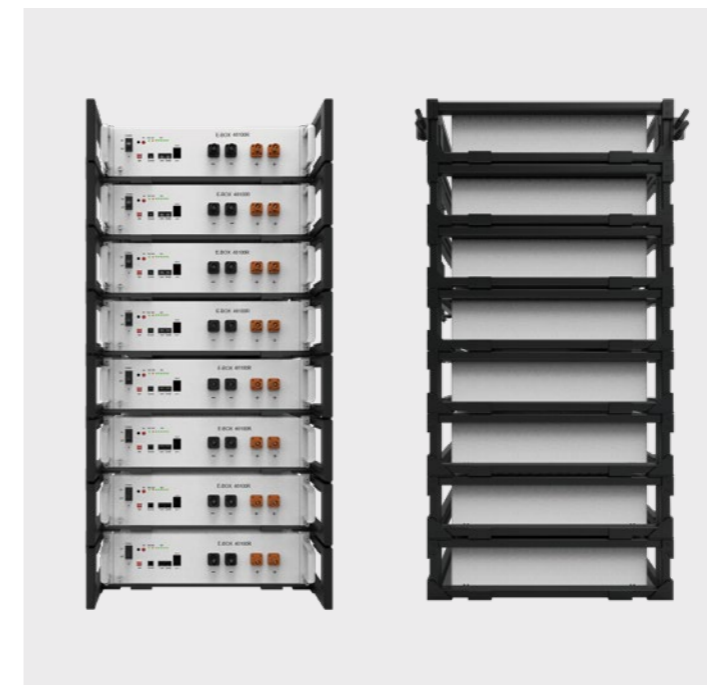
In order to install the E-BOX-48100R Battery more conveniently and reduce installation costs, PYTES has developed this battery bracket. You can use it on a single battery or on multiple battery packs. Compared with cabinet storage, besides taking up less space, the bracket can ventilate and reduce the heat much more easily.



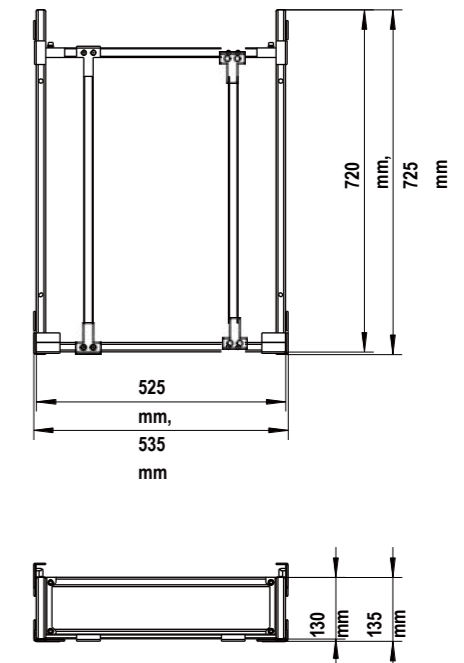
## Parameters

Unit Dimension	532 mm * 725 mm * 135 mm
Unit Weight	8 kg
Installation	<ol style="list-style-type: none"> <li>1.Install the parts by following the guide of the installation manual;</li> <li>2.Screws are needed to assemble single battery and rack;</li> <li>3.Multi-layer battery rack: after assembling all the single batteries and racks, stack them up vertically. Connection board is needed to install in between each two layers of battery racks;</li> <li>4.Secure multi-layer battery rack with accessories to the wall;</li> <li>5.Connect multi-layer battery rack to the distribution box.</li> </ol>

## Can bear more weight



## Mechanical drawing



	<p><b>For E-Box-4850 (2U)</b>          150208100010: Front Bracket          150208100011: Rear Bracket</p>
	<p><b>For E-Box-48100R (2.6U)</b>          150215100012: Front Bracket          150215100011: Rear Bracket</p>

# Accessories



Battery to Battery

- 161412100251: 160mm Positive Power Cable
- 161412100252: 160mm Negative Power Cable
- 161412100249: 560mm Positive Power Cable
- 161412100250: 560mm Negative Power Cable



161412100700: RS 232 communication cable



Battery to Inverter

- 161412100247: 500 mm positive Power cable SC25-8\*1
- 161412100248: 500 mm negative Power cable SC25-8\*1
- 161412100244: 2000 mm positive Power cable SC25-8\*1
- 161412100245: 2000 mm negative Power cable SC25-8\*1
- 161412100467: 2000 mm positive Power cable SC25-10\*1
- 161412100468: 2000 mm negative Power cable SC25-10\*1



161412100230: 1000mm Earth Cable



Battery to Battery

- 161412100228: 220mm Standard communication cable
- 161412100231: 350mm Standard communication cable
- 161412100133: 500mm Standard communication cable



- 161506100001: Busbar 300 A 2P with 12 screws and cover
- 110409100027: Busbar 600 A 2P with 6 stud terminals and cover
- 161506100003: Busbar 300 A 2P with 6 screws and cover



Battery to Inverter

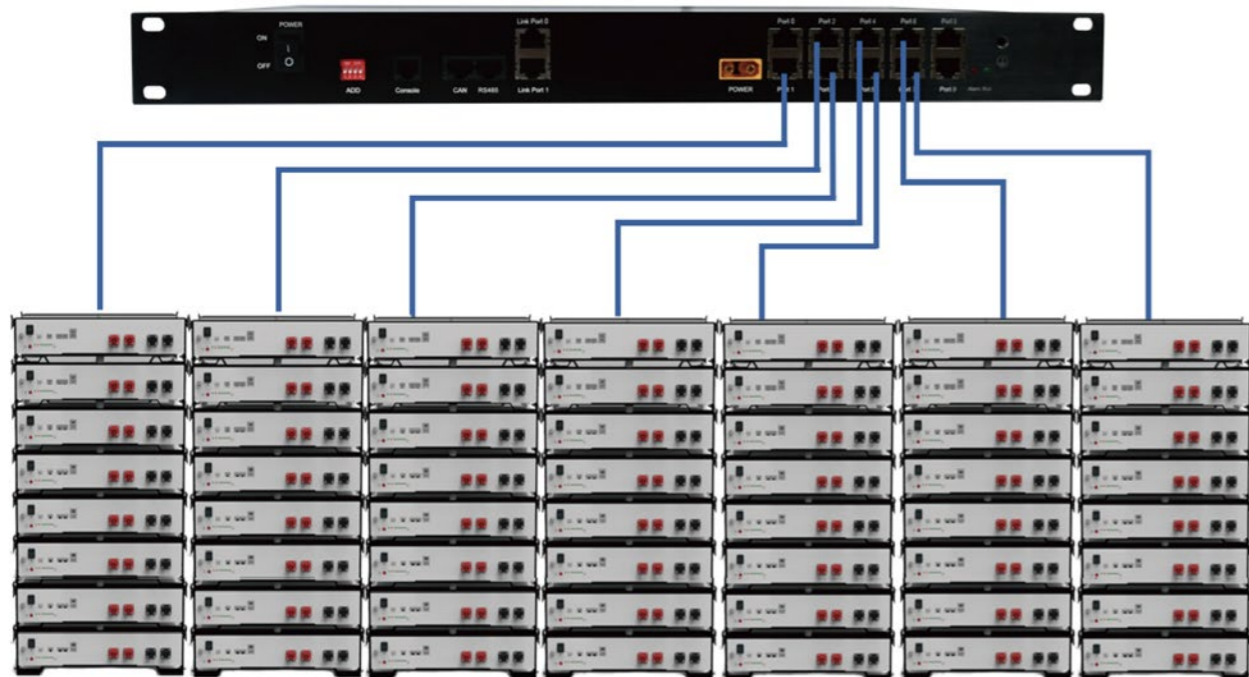
- 161412100133: B Class 500 mm
- 161412100431: B Class 2000 mm
- 161412100229: B Class 3500 mm
- Compatible: Deye Solis Growatt RS485/CAN SMA
- GoodWe CAN SRNE RS485
- 161412100444: B Class 3500 mm
- Compatible: Victron CAN
- 161412100451: B Class 2000 mm
- Compatible: Voltronic Off-Grid RS485
- 161412100452: B Class 2000 mm
- Compatible: Voltronic On-Grid RS485



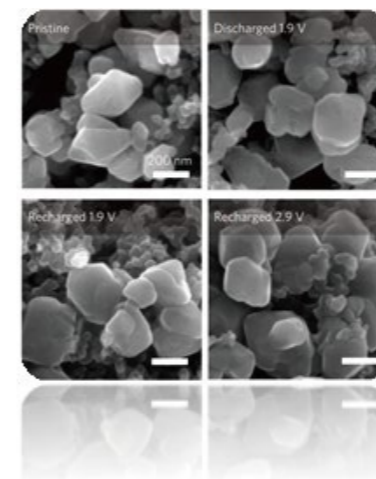
- 161412100461: 2000 mm positives Power Cable 0000AWG SC100-10\*2
- 161412100462: 2000 mm negatives Power Cable 0000AWG SC100-10\*2
- 161412100465: 2000 mm positives Power Cable 00AWG SC100-10\*2
- 161412100466: 2000 mm negatives Power Cable 00AWG SC100-10\*2



Each communication hub connects maximum 7 battery groups



Each group supports maximum 8 pcs E-BOX-4850 or E-BOX-48100 in parallel



## Cells & Packs

- The olivine structure and the stability of P-O bond of LFP cells guarantee much higher safety than those of NCM cells.
- 19 years experiences of pack R&D ensure longer cycle life of the battery.

## Self-designed BMS

- Equipped with automotive grade chips by TI® system.
- Double protection by master chips. When the main chip fails, the back-up chip keeps protecting the system.
- Real-time temperature, current, voltage measuring and monitoring.
- Accurate SoC and SoH calculation.



## Quality Assurance

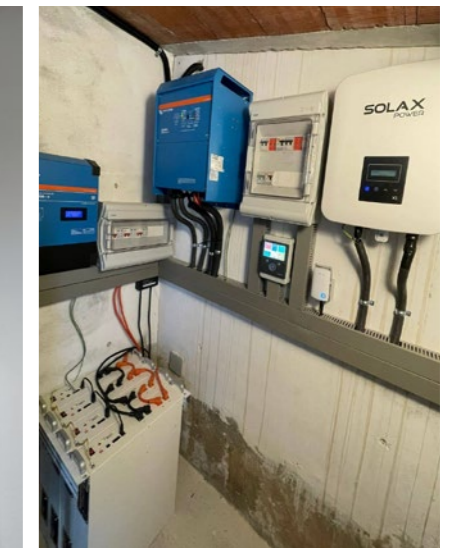
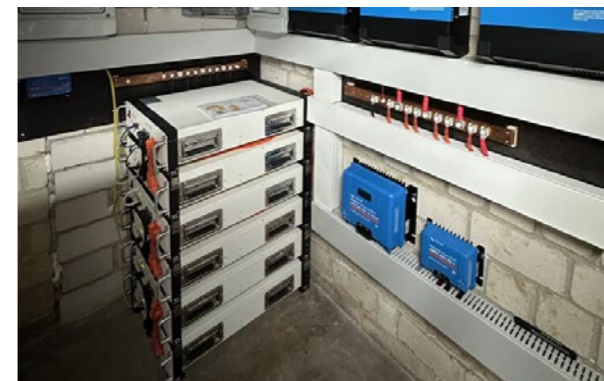
- UL1973/ IEC62619/ CE/ UN38.3 Certificates
- TÜV, SGS, BV International Certified Cooperative Testing Laboratories.

## Quick Response

- Quick local after-sales response/ 24hours\*7days



## Compatibility List of PYTES ESS and Inverters



Case Study