

# PytesB.V.

## 2022

## COMPANY PROFILE



Pytes B.V.

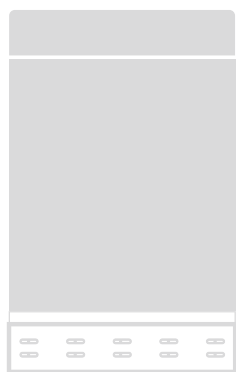
BATTERY EXPERT-GREEN ENERGY PROVIDER

## LI-ION BATTERY FOR ENERGY STORAGE



# 2022 COMPANY PROFILE

LI-ION BATTERY FOR ENERGY STORAGE



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# Pytes

PYTES, a national high-tech enterprise founded in 2004, focuses on Lithium-ion battery solutions for e-bikes, e-motorcycles, 3C products, vacuum cleaners 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.





**\$ 104M**  
Total investment

**18 Years**  
Industry experience

**1000+**  
Staff

**\$ 220M**  
Turnover in 2021

**1.82Gwh**  
Annual capacity

Headquarter in Shanghai



Add: No. 3492 Jinqian Road, Fengxian District, Shanghai, China

# Global Marketing & Service



## Europe

PYTES EU office  
(The Netherlands)



Factory in Shandong

## North America

PYTES USA office (Seattle)

PYTES USA office  
(LA)

PYTES USA warehouse  
(Savannah)

Factory in  
Hungary

PYTES office  
in France

PYTES office  
in Germany

## United Mexican States

PYTES Mexico office  
(Mexico City)

## Vietnam



Factory in Ho Chi Minh City



Headquarter/  
Factory in Shanghai

## China

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





## Testing Labs



SGS



BV



TUV



DEKRA

## Mechanical Tests



Vibration Test



Drop Test



Shocking Test



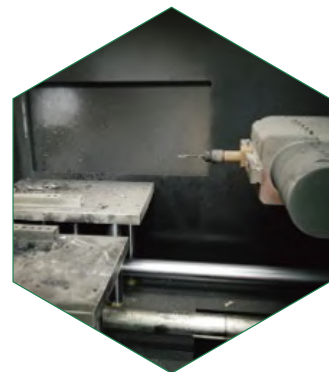
## Safety Tests



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



## 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 to 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



### Back-Up Power Supply

provide emergency power supply during grid outage



### Electricity Bills Reduction

charge the battery during off-peak period and discharge the battery during peak period



### Smart Energy Management

measure, monitor and manage the system in real-time  
optimize the system life span by intelligent algorithms



### Longest Life and Highest Safety

more than 6000 cycles @90%DOD



### Wide Compatibility

compatible with 16 mainstream inverters in the market

**10 Years Warranty**



**UN38.3**





# Batteries

## E-BOX-4850

440mm \* 420mm \* 89mm (2U)  
48V50Ah 2.4kWh

05-024528-11



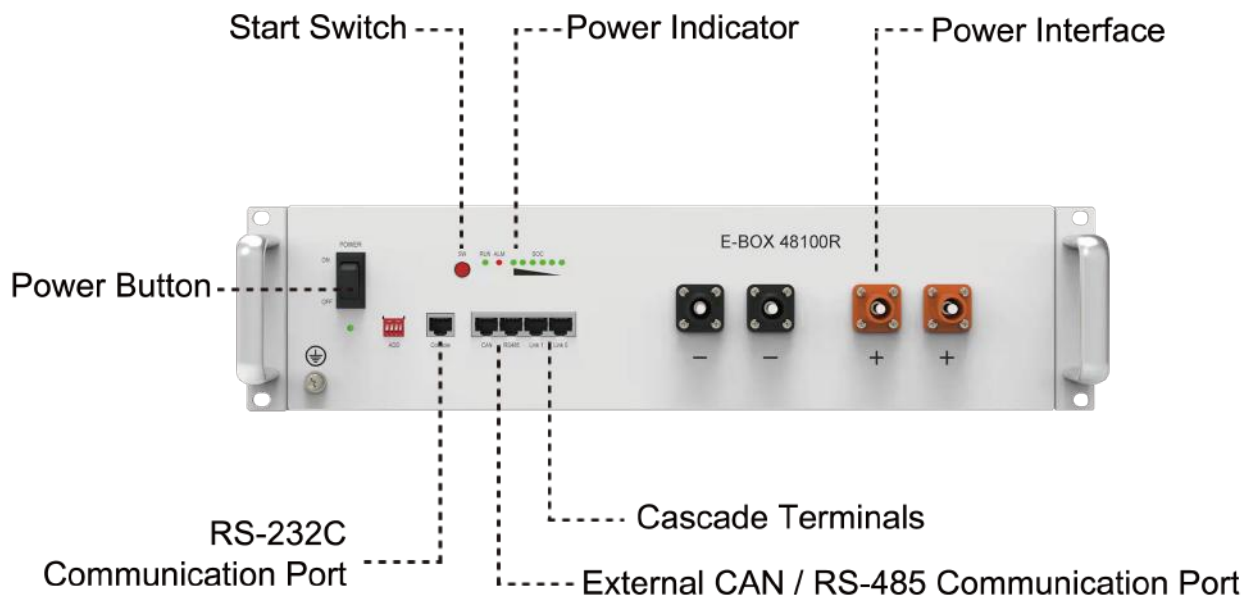
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## E-BOX-48100R

L440mm\* W620mm \* H117mm (2.6U)  
51.2V100Ah 5.12kWh

## Operation Panel



## Technical Specifications

Battery Model	E-BOX-48100R	E-BOX-4850
Chemistry	LFP	LFP
Nominal Voltage	51.2V	48V
Voltage Range	47.5V-57.6V	45V-54V
Nominal Capacity	100Ah	50Ah
Nominal Energy	5.12kWh	2.4kWh
Unit Dimension	L440mm* W620mm * H117mm (2.6U)	440mm* 420mm * 89mm (2U)
Unit Weight	51kg	25kg
Maximum Charge Current	100A	50A
Support Charge Current	50A	25A
Maximum Discharge	100A	50A
Support Discharge Rate	50A	25A
Round-Trip Efficiency	≥95%	≥95%
Communication Protocol	RS232, RS485, CAN	RS232, RS485, CAN
Cycle Life	≥6000cycles	≥6000cycles
Calendar Life	≥10years	≥10years
Operating Temperature	-10°C~50°C	-10°C~50°C
Connect style	Parallel	Parallel
Storage Temperature	Within 1month: -20~55°C, 1-3months: 0~35°C, 3-12months: 20~25°C	Within 1month: -20~55°C, 1-3months: 0~35°C, 3-12months: 20~25°C





## 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	10.24kWh
Usable capacity	9.22kWh
Chemistry	Lithium iron phosphate(LFP)
Nominal voltage	51.2V
Max. charge/ discharge current	100A
Communication	CAN, RS485
Certificate	UL1973, IEC62619, CE, UN38.3
Operating Temperature	Charge:0~45°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.

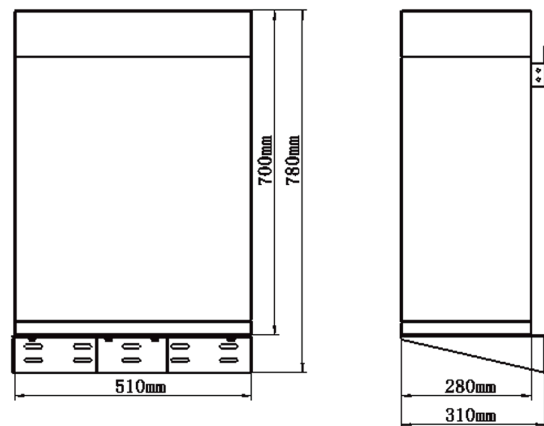


Mechanical Design	Parameter
Dimensions(W*D*H)	280*510*700mm 310*510*780mm(including holder)
Weight	120kg
Mount	Wall/Floor mount
Enclosure rating	IP20
Enclosure material	Cool-rolled steel
Cooling	Natural convection
Warranty	6000 cycles or 10 years

### 3D image

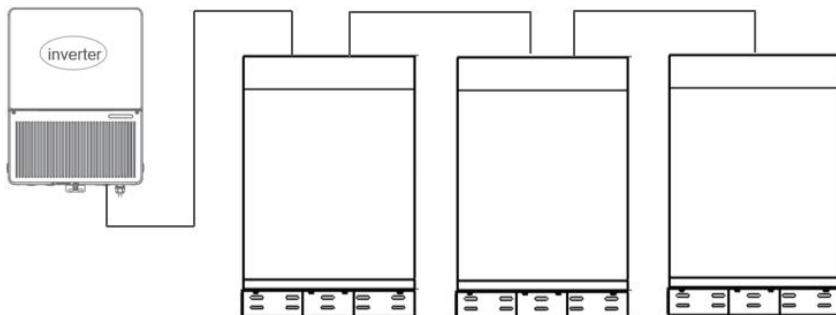


### Mechanical drawing



### Battery Expansion

Home Energy Storage System can connect R-BOX up to 3 pcs without additional kit. You can use our 1uHUB to get max 28 R-BOX connected in parallel.





## F-BOX

Battery Capacity	4.8kWh	7.2kWh	9.6kWh	14.4kWh
Protect Level	IP20			



## R-BOX-IP64

### Introduction

The PYTES R-BOX-IP64 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 PYTES R-BOX-IP64 can provide smart configurable backup power during grid outages and power smart homes with solar energy, day and night.

### Technical Specifications

Model	IP64
Total capacity	10.24kWh
Usable capacity	9.22kWh
Chemistry	Lithium iron phosphate(LFP)
Nominal voltage	51.2V
Max. charge/ discharge current	100A
Communication	CAN, RS485
Certificate	UL1973, IEC62619, CE, UN38.3
Operating Temperature	Charge:0~45°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.

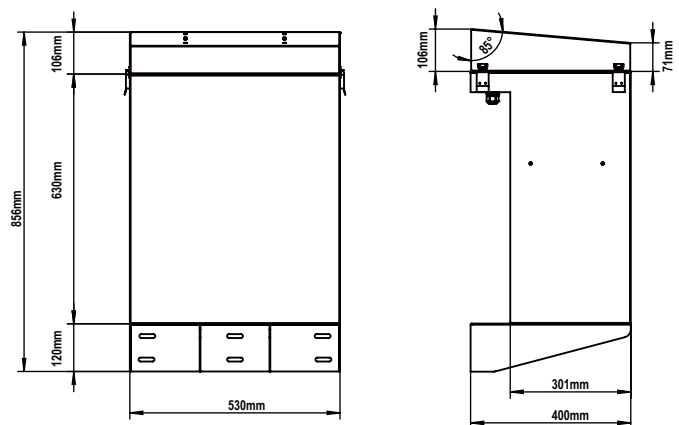


Mechanical Design	Parameter
Dimensions(W*D*H)	310*530*736mm 310*530*856mm(including holder)
Weight	120kg
Mount	Wall/Floor mount
Enclosure rating	R-BOX-IP64
Enclosure material	Cool-rolled steel
Cooling	Natural convection
Warranty	6000 cycles or 10 years

### 3D image

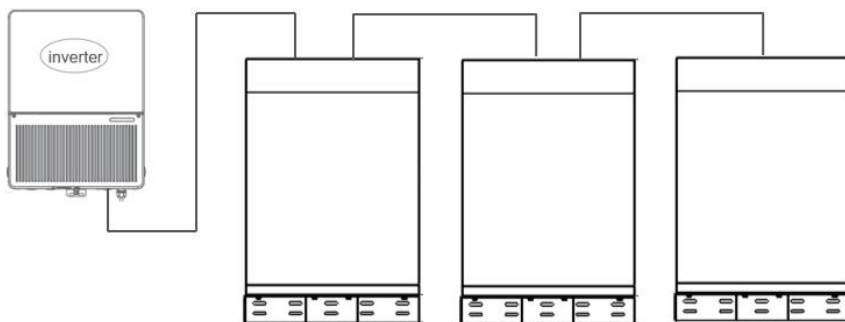


### Mechanical drawing

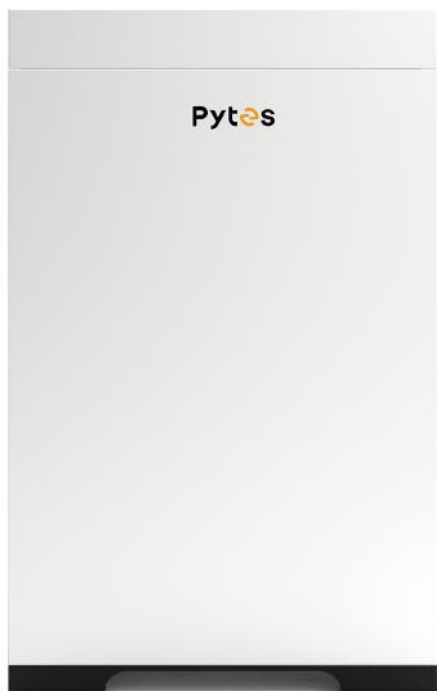


### Battery Expansion

PYTES Home Energy Storage System can connect R-BOX IP64 up to 3 pcs without additional kit. You can use our PYTES 1uHUB to get max 27 IP64 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



Communication base station



Residential electricity

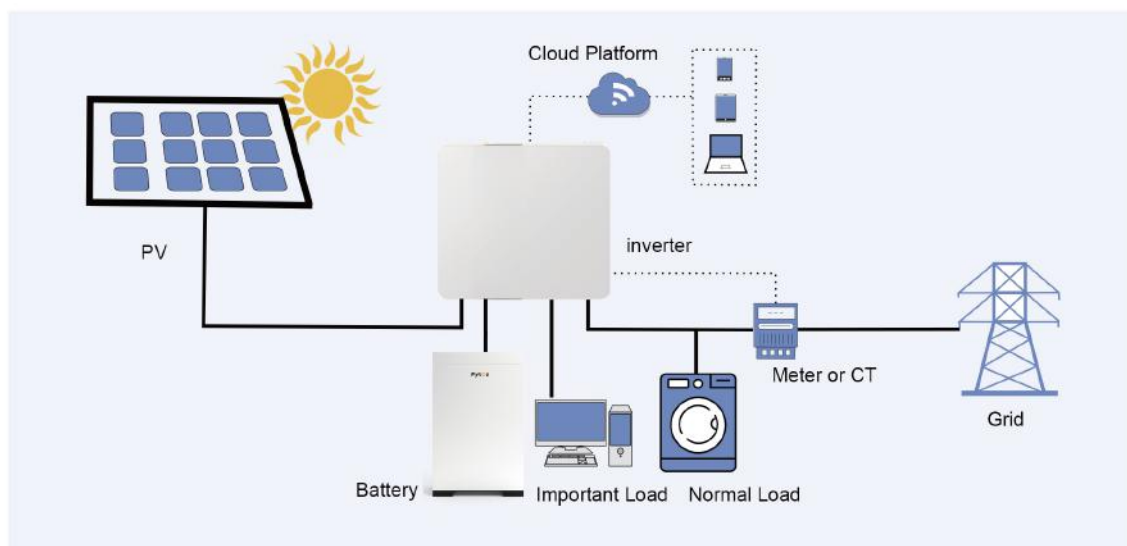


Farm

## Introduction

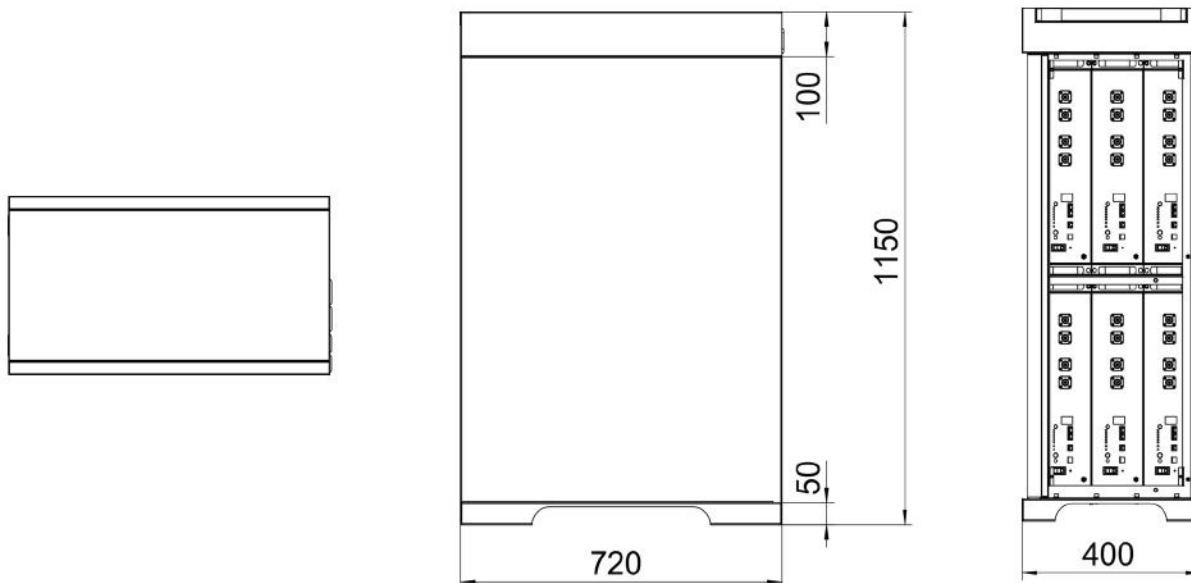
Expand your energy storage with the Forest RB Cabinet! This iron enclosure stores up to 6 E-BOX-48100R batteries. The Forest RB Cabinet paired with multiple batteries can build a 48V UPS server rack or provide storage capacity to home solar arrays.

## Product Topology



## Product Topology

	B2	B3	B4	B5	B6
Battery capacity	10.24kWh	15.36kWh	20.48kWh	25.6kWh	30.72kWh
Nominal voltage	51.2V				
Standard Charge/Discharge Current	100A	150A	200A	250A	300A
Maximum Charge/Discharge Current	100A	150A	200A	250A	300A
Operating Temperature	Charging:0~45°C; Diacharge:-10~50°C				
Warranty	Cabinet: 3 years Battery: 10 years				
Positive and Negative Battery Busbars	2*8 points; M8 terminal rings				
Weight	120kg	170kg	220kg	270kg	320kg
Dimensions(W*D*H)	720mm*400mm*1150mm				
Enclosure Protection	IP20 (indoor)				
Altitude	<4000m				
Certificate	UL1973, IEC62619, CE, UN38.3				





Pytes

Forest R



## Introduction

The Forest R, a new generation of energy storage products that integrate inverters and batteries, and is a landmark "New Home appliance". Forest R can manage your energy usage throughout the day, provide smart configurable backup power during grid outages and power smart homes with solar energy, day and night.

## Specification

### General Specification

Capacity	5.12kWh per battery module, up to 6 modules
Transfer switch	Automatic, integrated
Listed and recognized certificates	Battery modules: UL1973, IEC62619, CE, UN38.3 Inverter : IEC62109, IEC61727, TOR, IEC62116, IEC60068, IEC61683, NRS 097-2-1
Warranty	Battery: 10 years or 6,000 cycles Inverter: 5 years Cabinet: 10 years
Temperature range	Charge: 0~45°C Discharge: -10~50°C

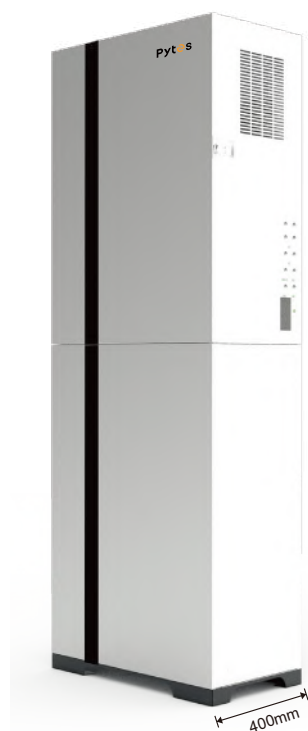
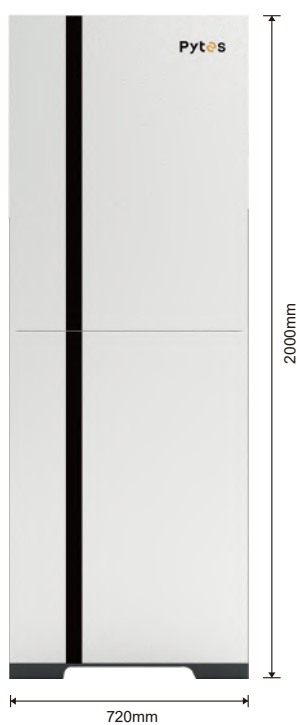
### Battery Module Specification

DC battery input voltage	47.5~57.6V
Max charge current	50 A per module
Cell discharge	5.12kWh with 90% DoD
Overcharge Protection	MOSFET & Fuse protection

## Technical Specification

	R2	R3	R4	R5	R6
Capacity	10.24kWh	15.36kWh	20.48kWh	25.6kWh	30.72kWh
Nominal voltage	51.2V				
Weight (approximate)	180kg	230kg	280kg	330kg	380kg
Dimensions W"/H"/D" (approximate)	720*400*2000mm				

Inverter	8K	10K	12K
PV input power	10400W	13000W	15600W
PV input voltage	550V(150V~800V)		
MPPT voltage range	200V~650V		
Start-up voltage	160V		
No.of MPPT trackers	2		
No.of strings per MPPT tracker	1+1	2+1	2+1
Rated AC output power	8000W	10000W	12000W
AC output rated current	12A	15A	18A
Grid type	Three Phases		



# Brackets

# Pytes

## 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.

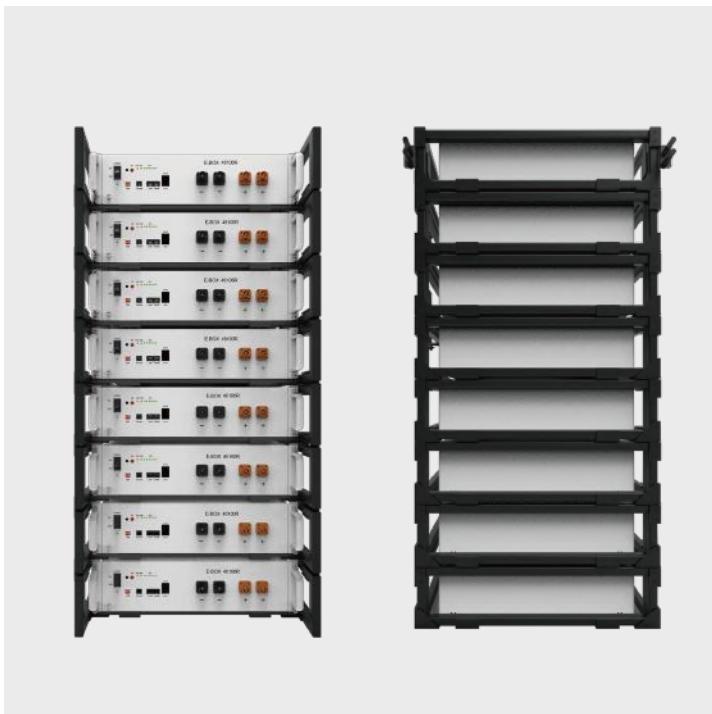




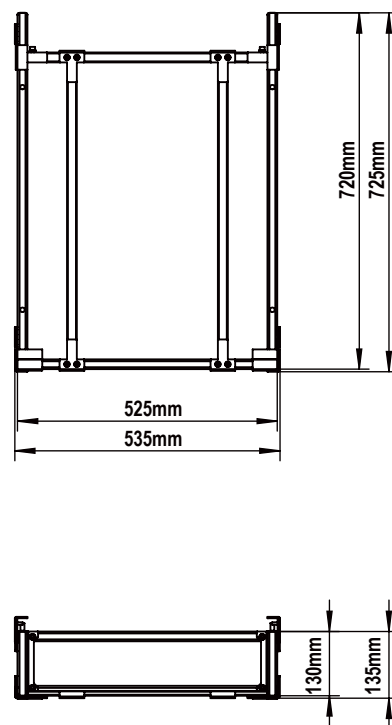
## Parameters

Unit Dimension	532mm*725mm*135mm
Unit Weight	8kg
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



For E-Box-4850 (2U)



22-ABUJ00390: Front Bracket

22-ABUJ00389: Rear Bracket

For E-Box-48100R (2.6U)

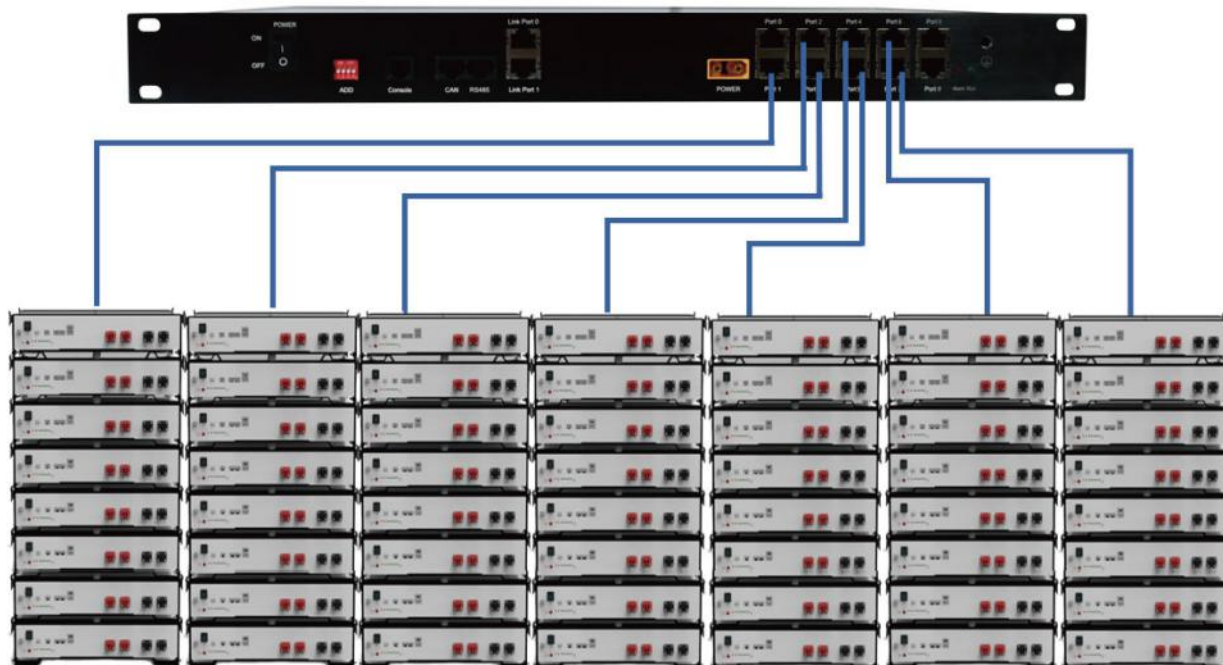


14-171385-31: Front Bracket

14-171384-31: Rear Bracket



Each communication hub connects maximum 7 battery groups



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



# Accessories

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Battery to Battery

- 18-041343-31: 160mm Positive Power Cable
- 18-041344-31: 160mm Negative Power Cable
- 18-041341-31: 560mm Positive Power Cable
- 18-041342-31: 560mm Negative Power Cable



Battery to Inverter

- 18-041339-31: 500mm Positive Power cable
- 18-041340-31: 500mm Negative Power cable
- 18-041336-31: 2000mm Positive Power cable
- 18-041337-31: 2000mm Negative Power cable



Battery to Battery

- 18-041315-31: 220mm Standard communication cable
- 18-041318-31: 350mm Standard communication cable
- 18-021080-31: 500mm Standard communication cable



Battery to Inverter

- 18-021080-31: B Class 500mm  
Compatible:solark、solis、growatt RS485/can SMA、goodwe can SRNE RS485
- 18-061206-31: B Class 2000mm  
Compatible:solark、solis、growatt 485/can SMA、goodwe can SRNE RS485
- 18-041316-31: B Class 3500mm  
Compatible:solark、solis、growatt 485&can、SMA、goodwe can、SRNE RS485
- 18-061224-31: B Class 3500mm  
Compatible: Victron can
- 18-061231-31: B Class 3500mm  
Compatible: Voltronic Off-grid RS485
- 18-061234-31: B Class 3500mm  
Compatible: Voltronic On-grid RS485



05-070000-11: RS 232 communication cable

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18-041317-31: 1000mm Earth Cable

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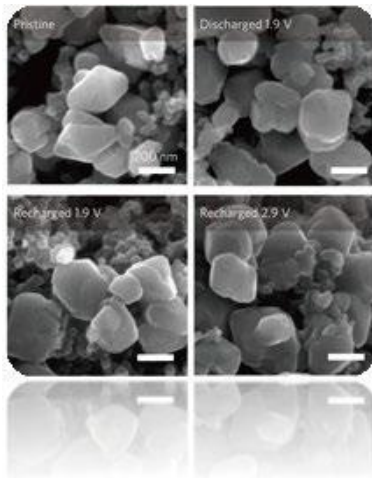
05-041382-11: Smart Meter

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81-155876-61: 48V 300A Bus Bar

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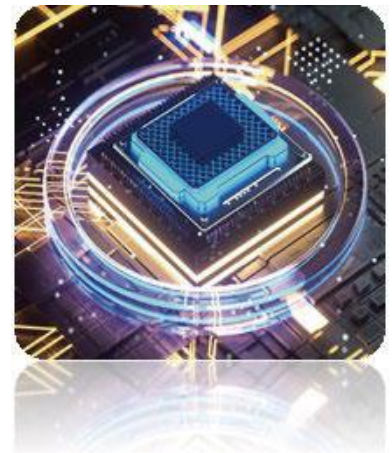


## Cells& Packs

- The olivine structure and the stability of P-O bond of LFP cells guarantee much higher safety than those of NCM cells.
- 17 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

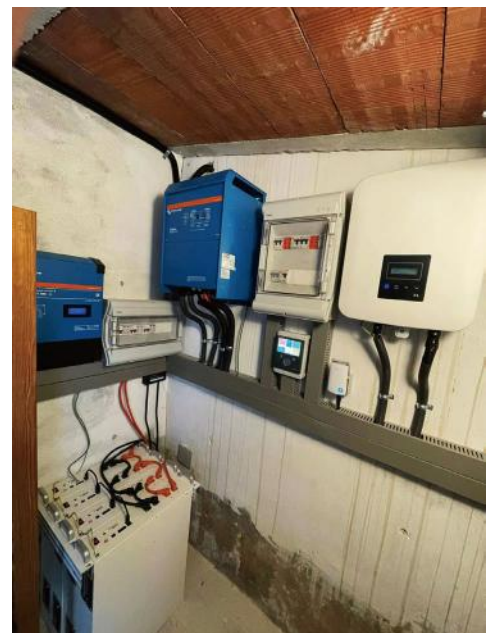
- UL1973/ IEC62619/ CE/ UN38.3 Certificates
- TÜV, SGS, BV International Certified Cooperative Testing Laboratories.

## Quick Response

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



# Case Study





## Compatibility List of PYTES ESS and Inverters



# PytesB.V.

## Pytes B.V.

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