Pytes

User Manual
E-BOX 12100

Rechargeable Li-ion Battery

Information Version: 1.1

CONTENTS

This manual introduces E-BOX12100 from Pytes.

Please read this manual before installing the battery and follow the instruction carefully during the installation process. Any confusion, please contact Pytes immediately for advice and clarification.

1 Product introduction

1.1 Key features

PYTES E-BOX 12100 is a high current carrying lithium iron phosphate (LFP) battery pack specially designed for the safe, reliable and long term operation in various 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 situations.

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 cycle life over 4000 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 safety in use.

3 **Supports CAN and RS485 communication**

Equipped with waterproof ports (M12) for RS485 and CAN communication.

4 **Excellent discharge rate performance.**

Capable of continuous discharge at 100A to meet high power output.

* Temperature protection will functionally fail when there's a system error.

1.2 Application

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

2 Product parameters

2.1 Technical parameters

| Battery Model	E-BOX 12100
Nominal Capacity	100Ah
Nominal Voltage	12.8Vdc
Voltage Range	DC 10.8V~14.4V
Maximum Continuous Charging Current	DC 50A
Maximum Continuous Discharge Current	DC 100A
Peak Discharging Current	200A@15sec
Discharge Working Temperature	-10°C~55°C/14°F~131°F
Charge Working Temperature	0°C~50°C/32°F~122°F
Storage Temperature	Within1month:-20°C~55°C/-4°F~131°F, 1-3months:0°C~35°C/32F~95°F, 3-12months:20°C~25°C/68F~77°F
Altitude	<4000m(13123.35ft)
Operating Relative Humidity	0%~95%RH No Condensation
Unit Dimension	320mm*166mm*200mm 12.6 inch*6.5 inch*7.9 inch
Unit Weight	15.2kg/33.6 lbs
BMS Communication	RS485, CAN
System Connection	Up to 2S8P
Cycle Life	4000 cycle(@80% DOD)
Heating	Supported
Certification	UN38.3, CE, IEC62619
Warranty	5 Years

Notice:

1.If battery discharges to under voltage, it will shut down automatically in 6 hours without charging.

2.If powering heating pad with DC charger, constant voltage is recommended. Alternatively, please set right charging current (3.3A for each heating pad).

2.2 Panel definition

To wake up the battery from dormant status, press and hold the SW button for 0.5S. The red light will be on for 1.5S, after which the green light comes on and keeps flickering, indicating that the battery has been awakened. To shut down the battery, press and hold the SW button for 1S, the light goes off indicating the battery is in dormant status.
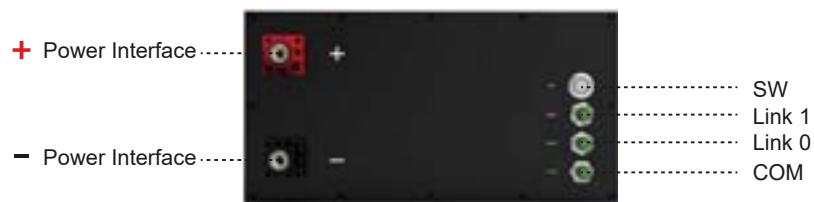
2.2.1 Indicator light description:

|	Idle	Charge	Discharge	Alarm	Protect
RUN (GREEN)	Slow flash	Solid	Fast flash		
Alm (RED)				Flash	Solid

Slow flash:light 0.5S, dark 1.5S.   Fast flash:light 0.5S, dark 0.5S.   Solid:always light.

2.2.2 Communication port definition

M12 8Pin Acode RJ45	pin	wire color		
	1	Orange	GNDS	Bluetooth only
	2	Black	GNDS	Bluetooth only
	3	Green	NC	Bluetooth only
	4	Red	CAN -H	
	5	Blue	CAN -L	
	6	Yellow	12VS	Bluetooth only
	7	Purple	RS485-A	
COM	8	Brown	RS485-B	

2.3 System connection

Before wiring the battery model, make sure all batteries are turned off. Follow the steps shown below for wiring. The "LINK 1" of the first battery is connected to the "LINK 0" of the second battery, and so on. After the "LINK" lines are connected, the "LINK 0" of the first battery and the "LINK 1" of the last battery are suspended. Press the power button of the first battery, and the other batteries will turn on automatically.

Busbar +

inverter

Busbar –
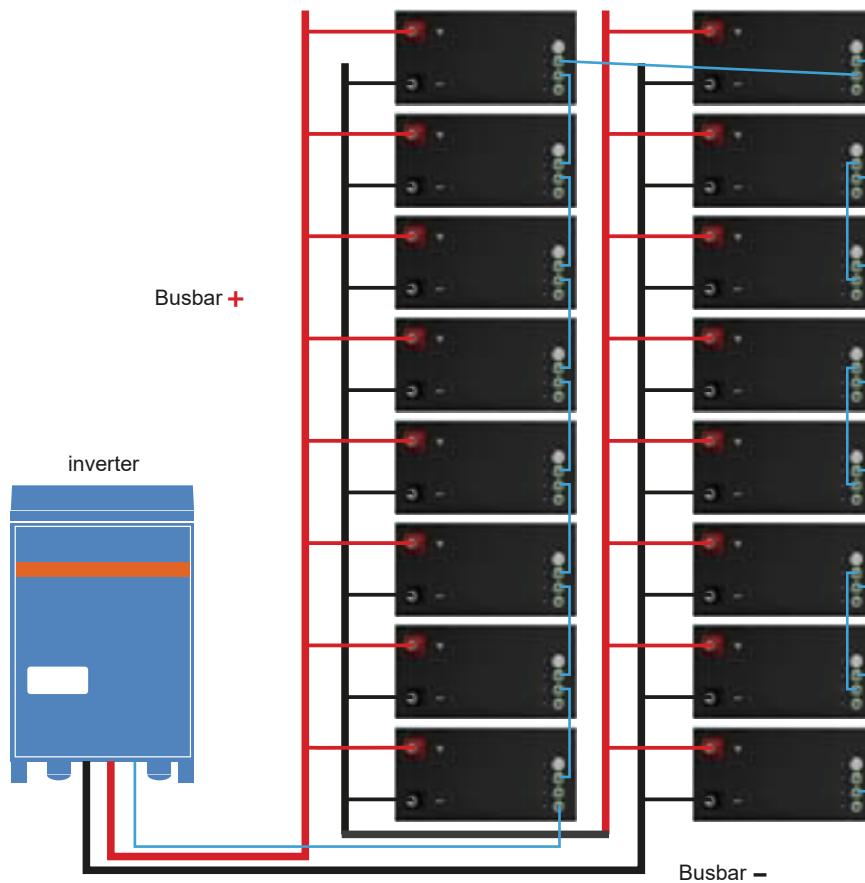
Notice:

1.The diagram of parallel connections is 1s8p for 12V system, it also can be extended to Max. 2S8P for24V system.

2.The diameter and length of the cables should be the same, and the contact surface of the terminals should be clean.

3.Open loop with inverter is recommended.

4.If batteries are parallel connected, the last slave battery shut down will trigger the rest slave ones off.

5.If batteries are parallel connected, fully charge and discharge the batteries regularly is recommended to help on SOC accuracy.

6.When closed loop with Victron MultiPlus-II (12V/3000VA/120AMP), high temperature protection will betriggered after a cycle at 0.5C charging and 1C discharging.

7.If batteries are parallel connected working in a temperature under 0°C/32°F, please do not charge right after battery/batteries enter under voltage protection since it will result in SOC diverse among each battery due to on/off mode contradiction between heating pad and charging MOS.

3 Operation environment

Battery operating environment requirements are as follows:

Working temperature：-10°C~55°C/14°F~131°F

Humidity：0%-95%RH Condensation

Altitude：＜4000m(13123.35ft)

The site environment：away from heat or flammable material, away from corrosive gas or liquid, avoid electricity induced dust.

Charging and discharging current will be limited with different working temperature and SOC.

Notice:

1.If working temperature is lower than 0°C/32°F, please charge the battery with constant voltage to activate heating pad before aging equipment charging.

2.If working temperature is lower than 0°C/32°F, parallel connected batteries will balance energy to each other in standby mode.

3.If temperature is under 0°C/32°F, battery can't be charged to 100% SOC in the closed loop working with Victron MultiPlus-II (12V/3000VA/120AMP) since the inverter will enter floating charging mode.

4 Transportation and storage requirements

4.1 Product transportation requirements

Battery in the process of transportation should prevent violent vibration, impact or extrusion, avoid direct sunlight and rainfall.

In the process of loading and unloading, the battery should be handled gently to prevent throwing, rolling and weight.

4.2 Product storage requirements

Batteries should be stored in clean, dry and ventilated rooms where the ambient temperature is -20℃ ~ 60℃ and the relative humidity is no more than 95%RH.

Battery should avoid contact with corrosive substances, should be far away from the source of fire and heat.

Battery storage SOC: 40% ~ 50%.

Long-term storage: before storage, the SOC should be more than 80%, and the battery should be recharged every six months.The charging amount should exceed 80% of the capacity.

218mm   226mm   200mm

320mm/   166mm
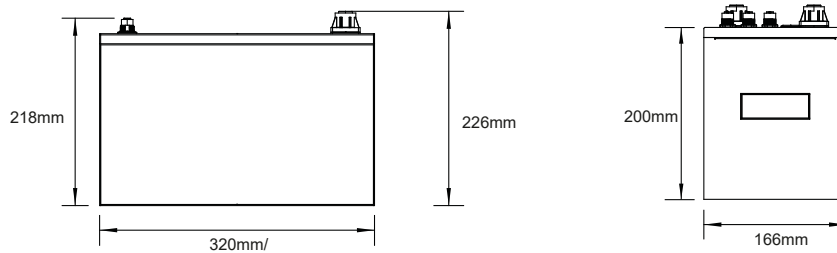
Pytes

Shanghai PYTES Energy Co., Ltd.

www.pytesgroup.com

NO.3492, Jinqian Road, Fengxian District, Shanghai, China