Ultra Slim LiFePO4 Battery Series User Manual

TIGFOX-TB5120 PLUS

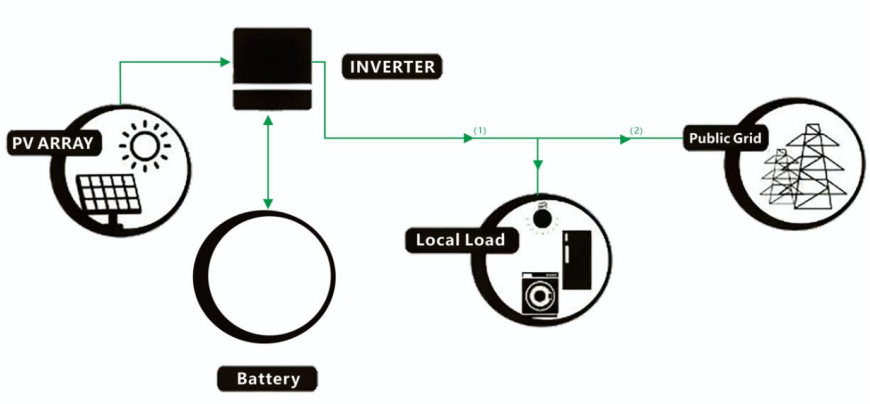
Change history

Change Record	Change time	Versions	Describe
00/01	2023/11/6	A0	New Issue
00/02	2025/04/03	A1	ADD BLE

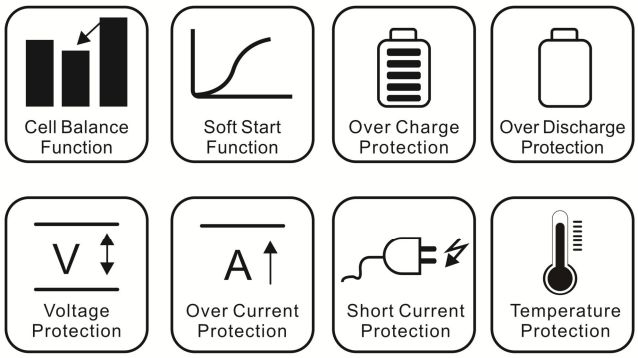
Contents

1.Application

Be specially designed for multiple energy storage application scenarios including household, data center, and commercial building, bank, hospital, school, railway station, airport and telecom, etc.



2.Feature



3.Advantages

❶ Long Design Life ❷ Multiple Protection

❸ Modular Design ❹ Dekra Certification

❺ Scalable & Flexible ❻ Easy Maintenance

4. Specification

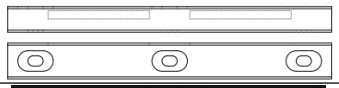
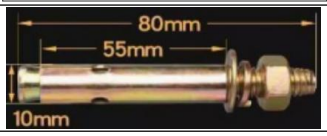
No.	Items	Specification
1	Product Name	Ultra Slim LiFePO4 Battery
2	Module Model	TB5120PLUS
3	Battery Type	LFP 16S
4	Nominal Capacity	51.2V/100Ah
5	Usable Capacity	(95% DOD)
6	Nominal Voltage	51.2V
7	Working Voltage	43.2 ~57.6Vdc
8	Charging Voltage	57.6V
9	Max. Charge Current	100A
10	Max. Discharge Current	100A
11	Communication Port	RS485, CAN, DRY CONTACT, COM
12	Storage Temperature	-10℃~35℃ (Recommended)
13	Storage Humidity	≤85% (RH)
14	Working Temperature	Charging：0℃ ~ 50℃ Discharging：-20℃ ~ 60℃
15	Working Humidity	≤95% (RH) No Condensation
16	Working Altitude	≤2000m
17	Ingress Protection	IP20
18	Protective Class	1
19	Weight	49kg
20	Dimension	780*698*68mm
21	Shelf Life	5 Years (25℃)
22	Cycle Life	＞6000 (25℃) , 60% EOL
23	Scalability	Module: Max.16 in parallel
24	Certification	CE, IEC62619, UN38.3 (upcoming)

5. Capacity Expansion Solution

Product Name	High Capacity Expandable Battery System			
Product Model	2P	3P	4P	5P
Normal Capacity (Ah)	200	300	400	500
Normal Voltage (V)	51.2	51.2	51.2	51.2
Working Voltage(V)	43.2~57.6Vdc	43.2~57.6Vdc	43.2~57.6Vdc	43.2~57.6Vdc a
Charging Voltage(V)	57.6	57.6	57.6	57.6
Max. Charge Current (A)	200	300	400	500
Max. Discharge Current (A)	200	300	400	500
Weight (KG)	49*2	49*3	49*4	49*5
Dimension(MM)	780*698*68(*2)	780*698*68(*3)	780*698*68(*4)	780*698*68(*5)
Scalability	Max.16 in parallel	Max.16 in parallel	Max.16 in parallel	Max.16 in parallel

6. Folding Inspection

Please check the product before installation. Make sure nothing in the packaging is damaged or missing. You should receive the following items in the package:

No.	Picture	Category	Quantities
1		Ultra Slim LiFePO4 Battery	1
2		User's Manual (Please keep it for future reference)	1
3		Mounting Plate	2
4		Expansion Screw	6
5		Parallel power cable of battery (L=900mm) Connecting two batteries in order to connect two or more batteries in parallel	Optional Accessories
6		Paralle communication line RJ45(L=900m) Communication cable between batteries, keeping two or more batteries	Optional Accessories

7. Preparation before Inspection

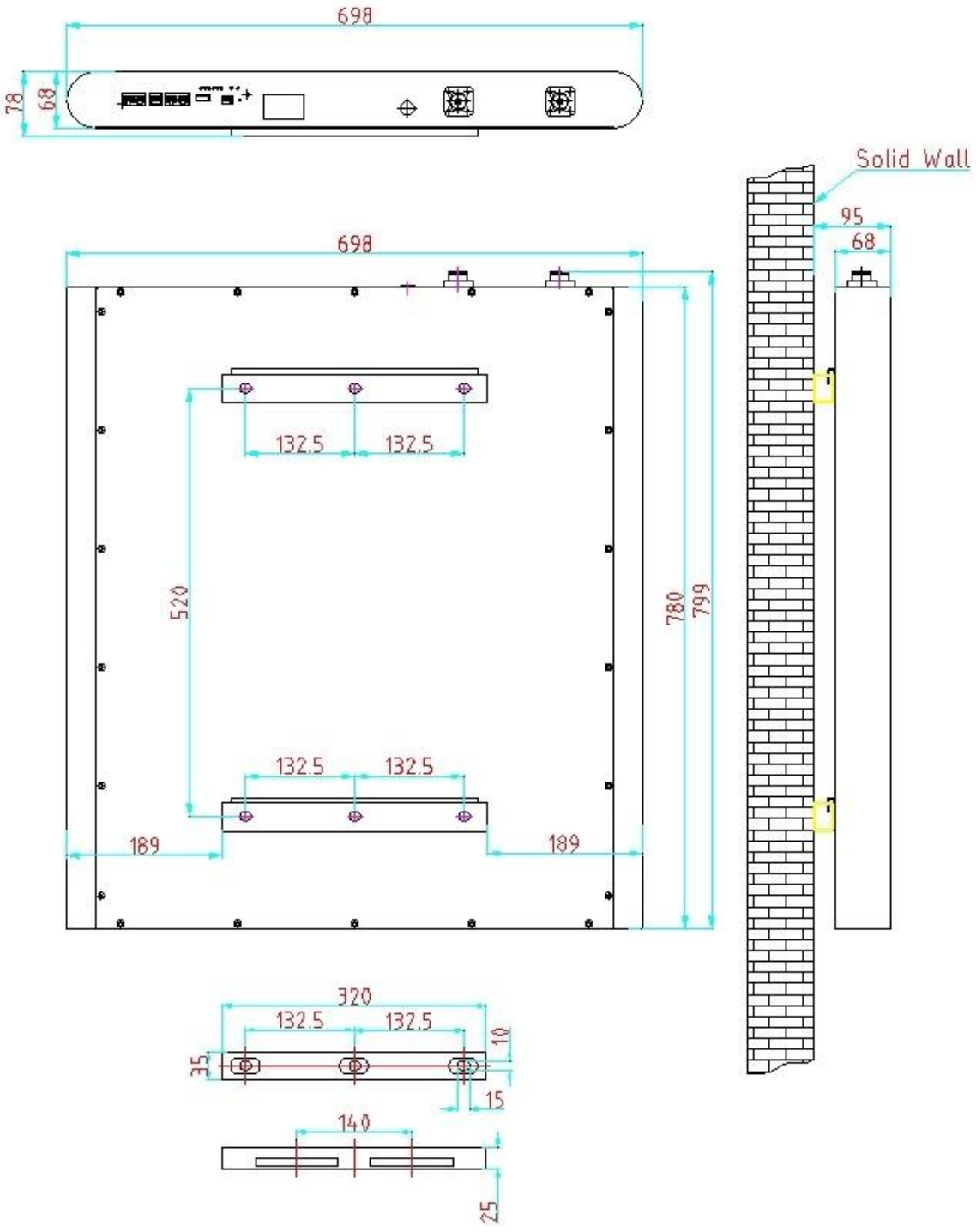
Before choosing an installation location, consider the following:

7.1 Do not install this product on surfaces of flammable building materials.
7.2 Mounted on the surface of a solid material.
7.3 Please install this energy storage battery at eye level for a more intuitive view of the the LCD.
7.4 For heat dissipation, ensure that the distance is 20cm from both sides and 50cm from the bottom of the unit.
7.5 The ambient temperature of the installation location should be between 0~45 degrees Celsius to ensure optimal operation.
7.6 The recommended installation position should e vertically attached to the wall and kept at a safe distance from other objects and surfaces to ensure sufficient space for heat dissipation and wire collection.

8. Installation Dimension Drawing

NOTE: The following picture is only a schematic diagram of the equipment. If the actual chassis does not conform to the schematic due to a structural upgrade, it is subject to prior notice.

Only suitable for installation om concrete or other non-combustible solid surface.



9. Ports introduce

1.Battery Positive

2.Battery Negative

3.On/Off button

4.On/Off indicate LED

5.Reset and multi-function button

6.BMS alarm and fault indicate LED

7.BCD code(refer to appendix 2.3)

8.BMS run indic ate LED

9.LED SOC

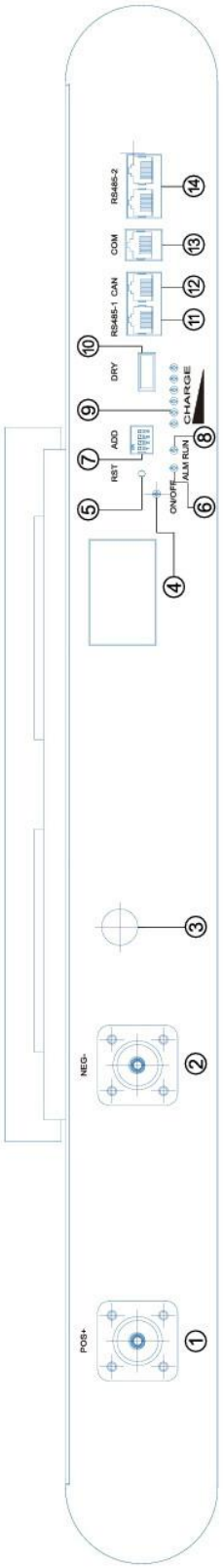
10.DRY contact port

11.Inverter RS485 communication port

12.Inverter Can communication port

13.Computer communication port

14.Battery parallel RS485 ports

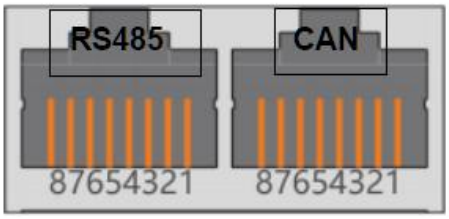


Appendix

Communication Setting With Multiple Brands' Inverters

1. lithium battery RS485/CAN Communication Cable Order (sequence) Instruction as below:

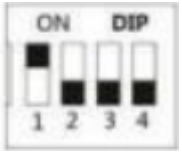
Dual RJ45 Port:

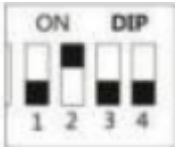


PIN Number	RS485 PORT		PIN Number	CAN Port
Pin1	RS485-B		Pin1	NC
Pin2	RS485-A		Pin2	NC
Pin3	GND		Pin3	GND
Pin4	NC		Pin4	CANH
Pin5	NC		Pin5	CANL
Pin6	GND		Pin6	GND
Pin7	RS485-A		Pin7	NC
Pin8	RS485-B		Pin8	NC

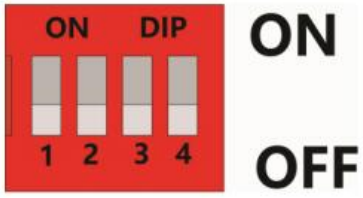
2. Dial-up switch settings when PACK is used in parallel

2.1 Different PACK can be distinguished by setting the dialing switch on BMS to avoid setting the same address. The definition of BMS dial switch refers to the following table;

2.2 RS485 performing muti-machine parallel communication operation, it is necessary to configure the DIP address of each PACK first. The dialing code adopts BCD code format, the definition of address 1(master) is 

,address 2 is 

Dial switch:

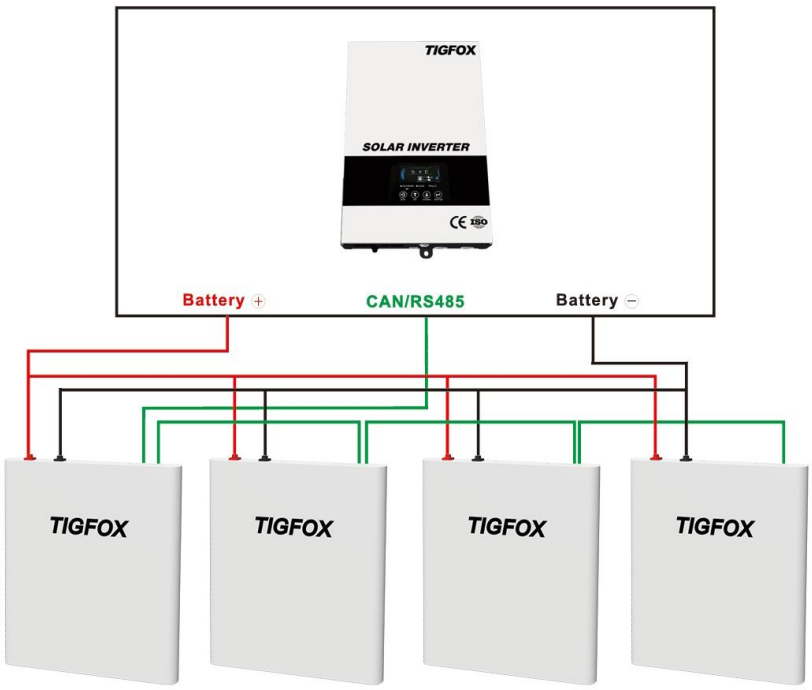


2.3 BCD CODE:

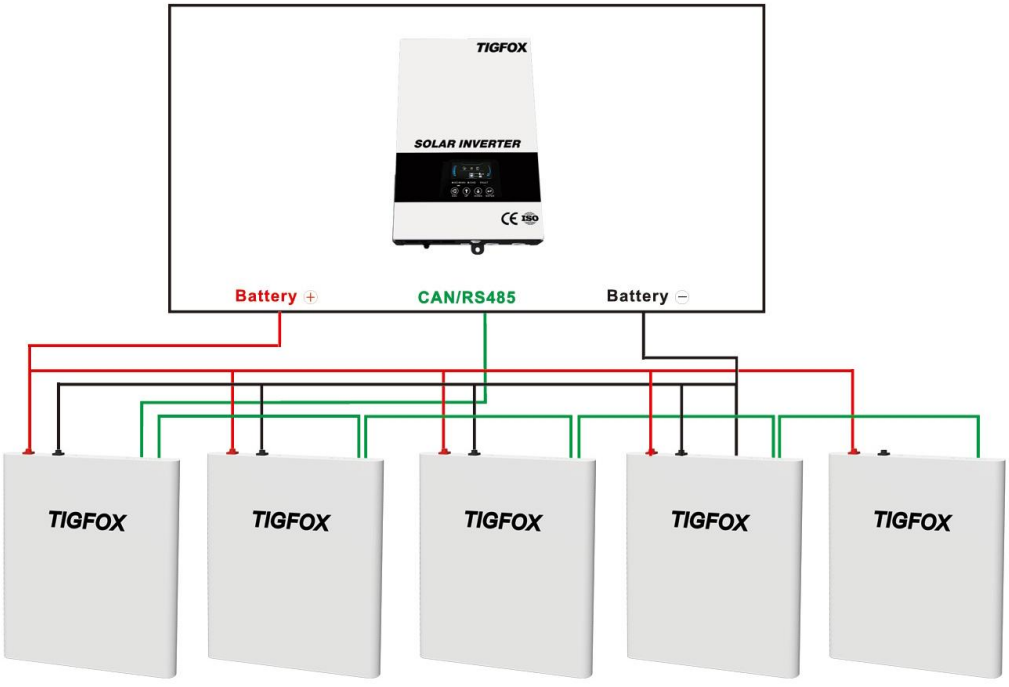
Address	Codes the switch position			
	#1	#2	#3	#4
1 master	ON	OFF	OFF	OFF
2 slave	OFF	ON	OFF	OFF
3 slave	ON	ON	OFF	OFF
4 slave	OFF	OFF	ON	OFF
5 slave	ON	OFF	ON	OFF
6 slave	OFF	ON	ON	OFF
7 slave	ON	ON	ON	OFF
8 slave	OFF	OFF	OFF	ON
9 slave	ON	OFF	OFF	ON
10 slave	OFF	ON	OFF	ON
11 slave	ON	ON	OFF	ON
12 slave	OFF	OFF	ON	ON
13 slave	ON	OFF	ON	ON
14 slave	OFF	ON	ON	ON
15 slave	ON	ON	ON	ON

3. Schematic diagram of parallel connection

3.1 batteries, connect the positive power line of each battery with the positive power line, and the negative power line with the negative power line, as follows:



3.2 batteries in parallel connection diagram (The positive cable connected to the inverter is connected from the master battery, and the negative cable is connected from the last slave):



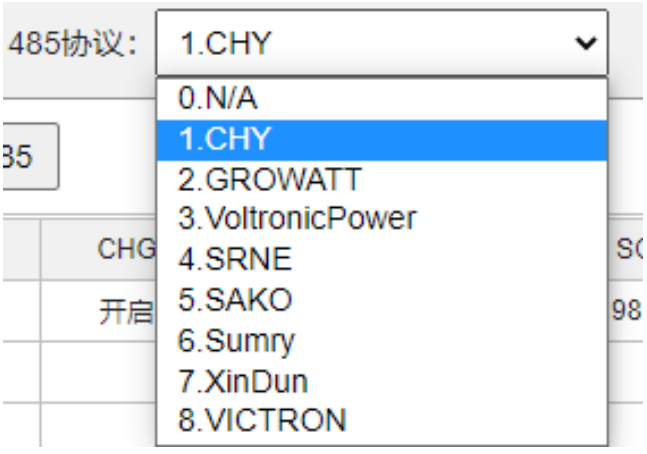
4. How to set the communication for multiple brands of inverters by host computer

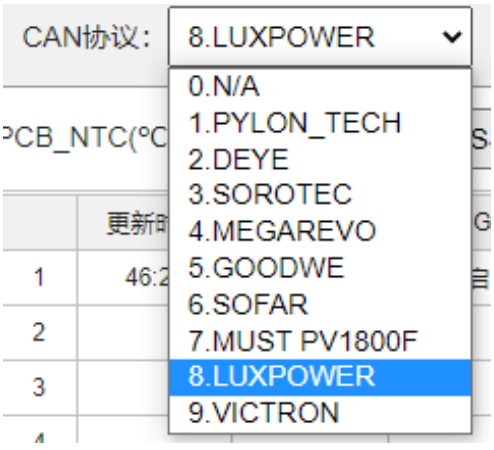
4.1 Factory default setting of inverter communicate, RS485 is Growatt, CAN is DEYE, SUNSYNK,LUXPOWER. If need switch to other protocol, the RS232 crystal head of the communication cable is inserted into the battery communication port, the USB end is inserted into the computer;

4.2 Open the BMS tool：

4.3 Select the corresponding inverter protocol from BMS Tool, click setting(设置),then restart the BMS ON/OFF , the inverter protocol will be set successful;

4.4 RS485 protocol and CAN protocol as below:





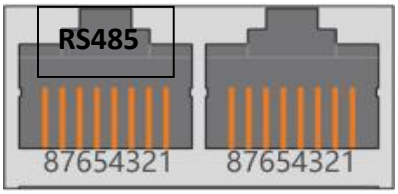
4.5 Remark of inverter protocol code:

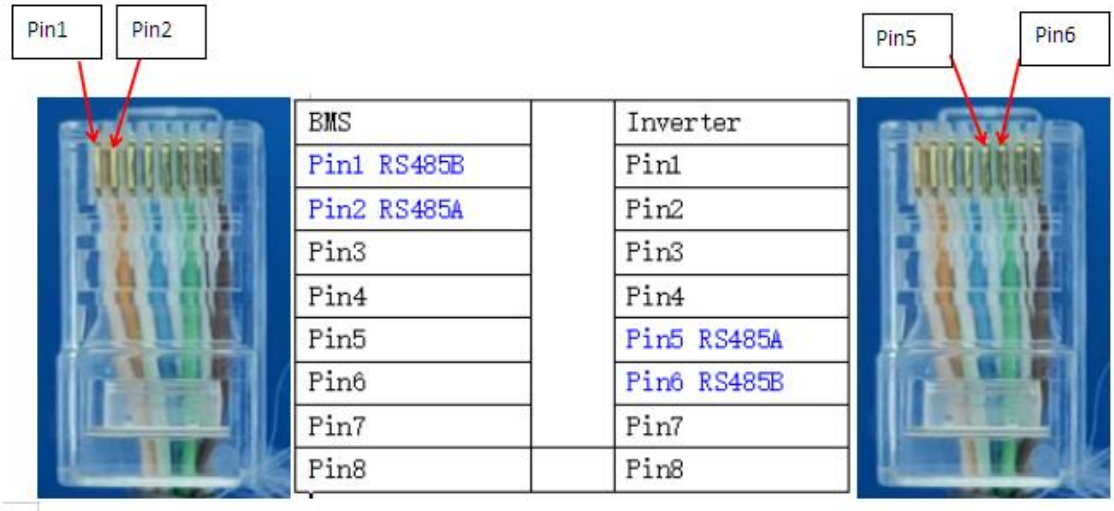
Inverter protocol code remark

RS485 Protocol			CAN Protocol	
Protocol code	**Inverter brand**		**Protocol code**	**Inverter brand**
CHY	ChuangHuiYuan 创汇原		PYLON TECH	PYLON TECH 派能
GROWATT	GROWAT 古瑞瓦特		DEYE	DEYE（SUNSYNK) 德业
VoltronicPower	VoltronicPower 日月元		SOROTEC	SORO Power 索瑞德
SRNE	SRNE 硕日		MEGAREVO	MEGAREVO 迈格瑞能
SAKO	SAKO 三科		GOODWE	GOODWE 固得威
Sumry	Sumry 三瑞		SOFAR	SOFAR 首航
XinDun	XinDun 欣顿		MUST PV1800F	MUST 美克
VICTRON	Victron 维克托		LUXPOWER	Luxpower 鹏程
PYLON485	Pylon 派能		VICTRON	Victron 维克托
ITEL	ITEL		SOLIS	Solis

5. CHY Inverter RS485 Communication Setting

Dual RJ45 Port(RS485 & CAN):





BMS		Inverter
Pin1 RS485B		Pin1
Pin2 RS485A		Pin2
Pin3		Pin3
Pin4		Pin4
Pin5		Pin5 RS485A
Pin6		Pin6 RS485B
Pin7		Pin7
Pin8		Pin8

Process of installation:

Step 1. Use the RS485 cable to connect inverter and lithium battery .

Step 2. Replace the battery BMS protocol to “CHY” by BMS tool and host computer.(Please refer to **page 4,point 4.2**)

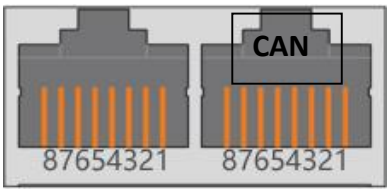
Step 3. Turn on the switch of battery , power output ready .

Step 4. Turn on the inverter (**Warning: Turn on the battery first and then the inverte**r), and set the program 05 as “LIB” on the LCD, then restart the inverter.

Step 5. Press the ESC button continuously 5 seconds and you can view the BMS communication data.

6. LUXPOWER Inverter CAN Communication Setting (Default protocol)

Dual RJ45 Port(RS485 & CAN):



BMS		Inverter
Pin1		Pin1
Pin2		Pin2
Pin3		Pin3
Pin4 CANH		Pin4 CANH
Pin5 CANL		Pin5 CANL
Pin6		Pin6
Pin7		Pin7
Pin8		Pin8

Process of installation:

Step 1. Use the CAN cable to connect inverter and lithium battery .

Step 2. Replace the battery BMS protocol to “LUXPOEWR” by BMS tool and host computer.(Please refer to **page 4,point 4.2**)

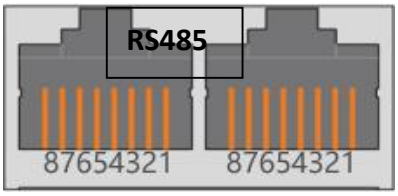
Step 3. Turn on the switch of battery , power output ready .

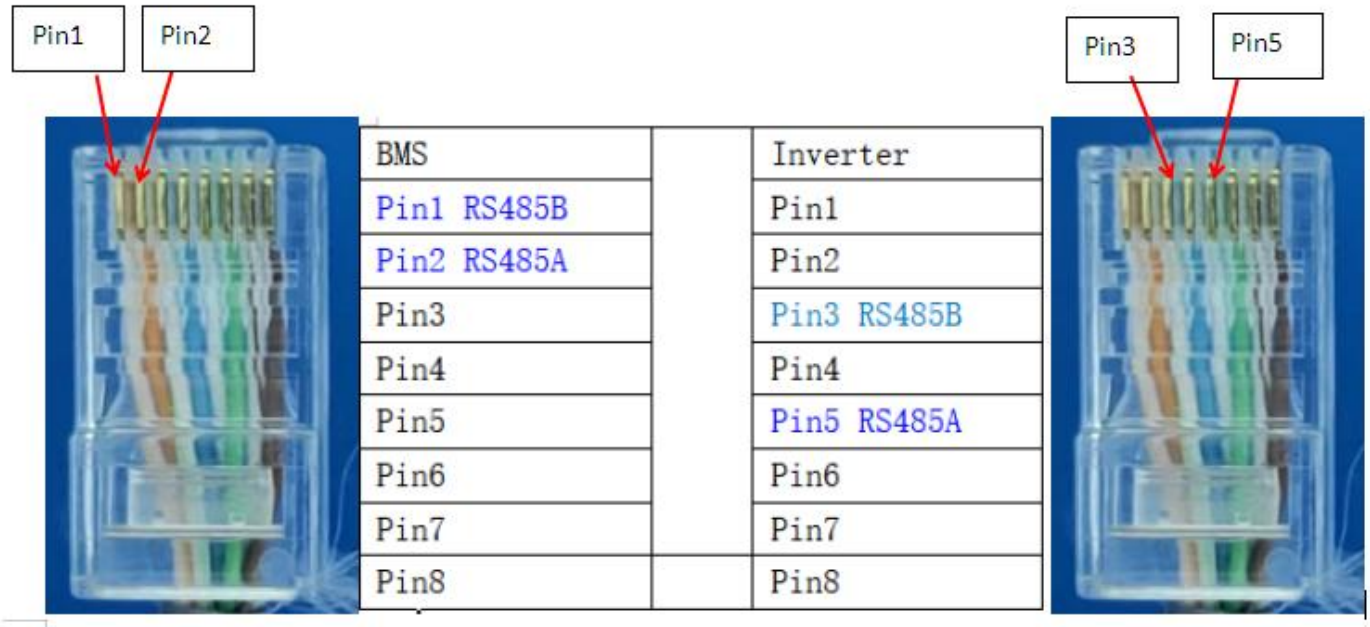
Step 4. Turn on the inverter (**Warning: Turn on the battery first and then the inverte**r)

Step 5. To connect battery BMS, need to set the battery types as “Li-ion” in Program 03. After set“Li-ion”in Program 03, then choose battery brand to “2 Pylon Battery”.

7. Voltronic Inverter RS485 Communication Setting

Dual RJ45 Port(RS485 & CAN):





BMS		Inverter
Pin1 RS485B		Pin1
Pin2 RS485A		Pin2
Pin3		Pin3 RS485B
Pin4		Pin4
Pin5		Pin5 RS485A
Pin6		Pin6
Pin7		Pin7
Pin8		Pin8

Process of installation:

Step 1. Use the RS485 cable to connect inverter and lithium battery .Please choose the RS485 inverter

Step 2. Replace the battery BMS protocol to “VoltronicPower” by BMS tool and host computer.(Please refer to **page 4,point 4.2**)

Step 3. Press the button to start lithium battery , power output ready .

Step 4. Turn on the inverter **(Warning: Turn on the battery first and then the inverter).**

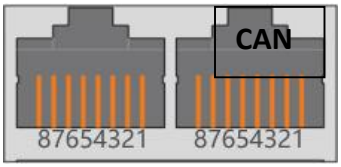
Step 5. To connect battery BMS, need to set the battery type:LIb-protocol. After selected,Maximum charging

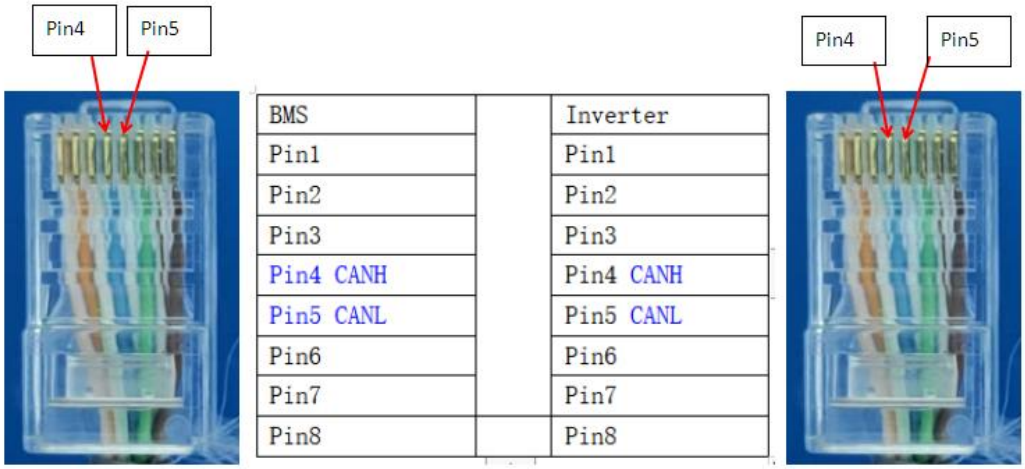
current, Bulk charging voltage (C.V voltage), Floating charging voltage and Low DC cut off voltage setting

will be automatically set up, no need for further setting.

8. DEYE Inverter CAN Communication Setting (Compatible Sunsynk,Default protocol)

Dual RJ45 Port(RS485 & CAN):





BMS		Inverter
Pin1		Pin1
Pin2		Pin2
Pin3		Pin3
Pin4 CANH		Pin4 CANH
Pin5 CANL		Pin5 CANL
Pin6		Pin6
Pin7		Pin7
Pin8		Pin8

Process of installation:

Step 1. Use the CAN cable to connect inverter and lithium battery .

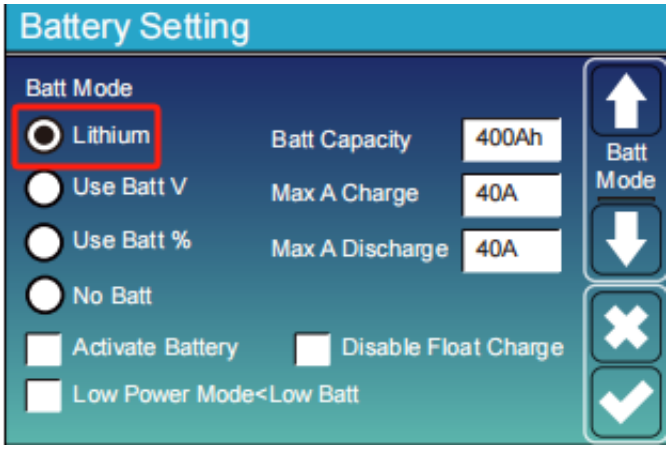
Step 2. Press the button to start lithium battery , power output ready . Replace the battery BMS protocol to “DEYE” by BMS tool and host computer.(Please refer to **page 4,point 4.2**)

Step 3. Turn on the inverter **(Warning: Turn on the battery first and then the inverter).**

Step 4. Be sure to select inverter work model type as “Lithium Model: 00” on the inverter screen. As below picture.

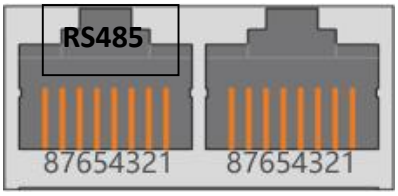
If communication between the inverter and battery is successful, the inverter screen will show the battery system real-time status.

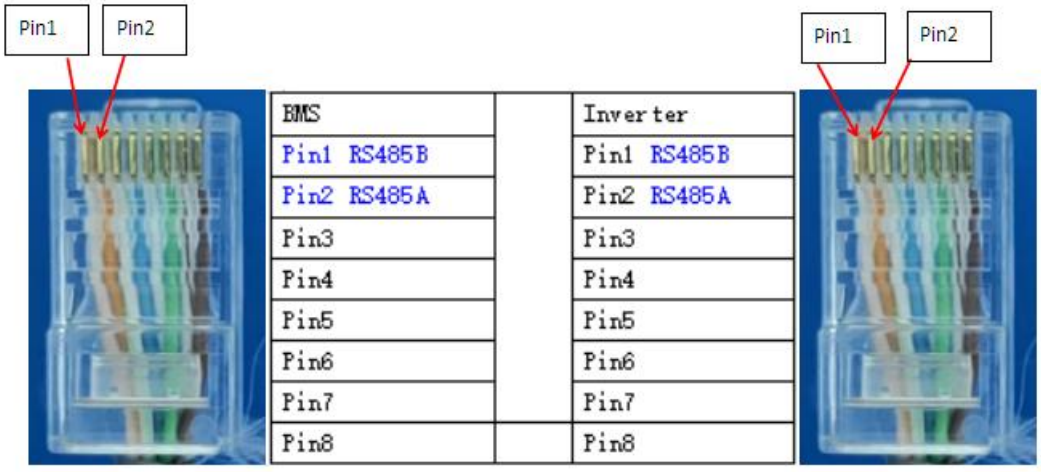
PS:



9. Growatt Inverter RS485 Communication Setting (Default protocol)

Dual RJ45 Port(RS485 & CAN):





BMS		Inverter
Pin1 RS485B		Pin1 RS485B
Pin2 RS485A		Pin2 RS485A
Pin3		Pin3
Pin4		Pin4
Pin5		Pin5
Pin6		Pin6
Pin7		Pin7
Pin8		Pin8

Process of installation:

Step 1. Use the RS485 cable to connect inverter and lithium battery .

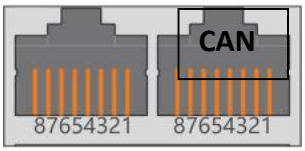
Step 2. Replace the battery BMS protocol to “GROWATT” by BMS tool and host computer.(Please refer to **page 4,point 4.2**)

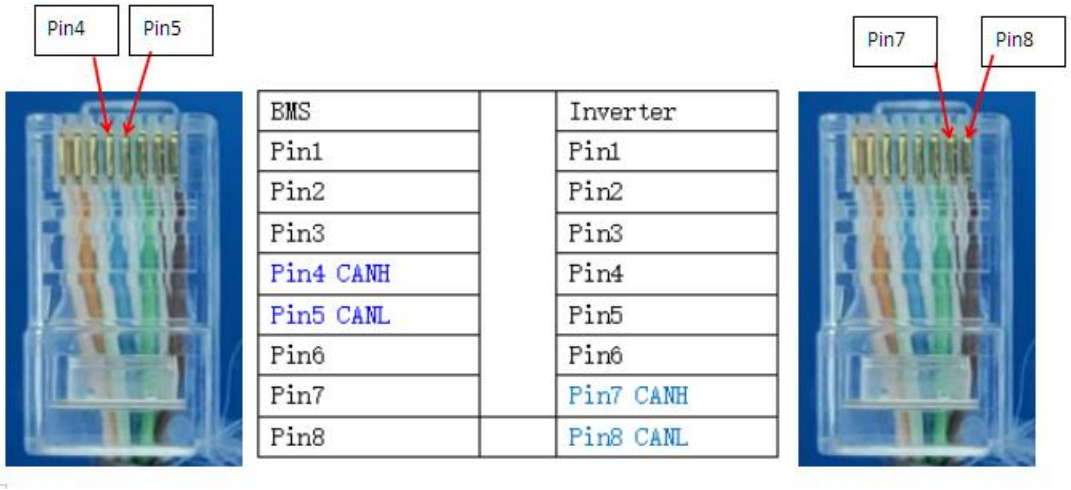
Step 3. Turn on the switch of battery , power output ready .

Step 4. Turn on the inverter (**Warning: Turn on the battery first and then the inverte**r);

Step 5. Set the program 05 as “LI” on the LCD. After set “LI” in Program 05, it will switch to Program 36 to choose communication protocol，choose RS485 communication protocol L01~L50.

10. VICTRON Inverter CAN Communication Setting

Dual RJ45 Port(RS485 & CAN): 



BMS		Inverter
Pin1		Pin1
Pin2		Pin2
Pin3		Pin3
Pin4 CANH		Pin4
Pin5 CANL		Pin5
Pin6		Pin6
Pin7		Pin7 CANH
Pin8		Pin8 CANL

Process of installation:

Step 1. Use the CAN cable to connect inverter and lithium battery .

Step 2. Press the button to start lithium battery , power output ready . Replace the battery BMS protocol to “VICTRON” by BMS tool and host computer.(Please refer to **page 4,point 4.2**)

Step 3. Turn on the inverter **(Warning: Turn on the battery first and then the inverter).**

Step 4. The inverter setting refer to the user manual of Victron, this setting is available in the Settings -> DVCC menu on the GX device.

11. How to connect BLE

11.1 How to download APP

Method 1: Scan the QR code to enter the download

CHY POWER(iOS)

CHY POWER(Android)

Method 2: A: Apple users enter the App Store and search for 'CHY POWER';

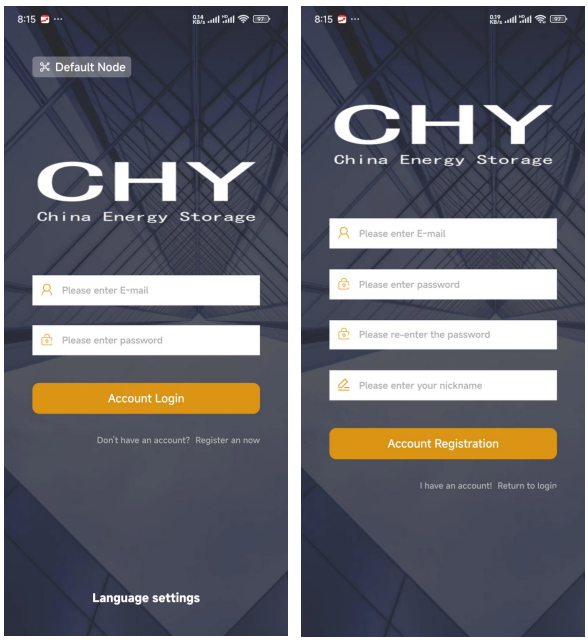
B: Android users, scan the QR code above directly

11.2 How to use the APP

11.21 Login and Registration Page

A: Enter account and password to log in

B: Register a new account page



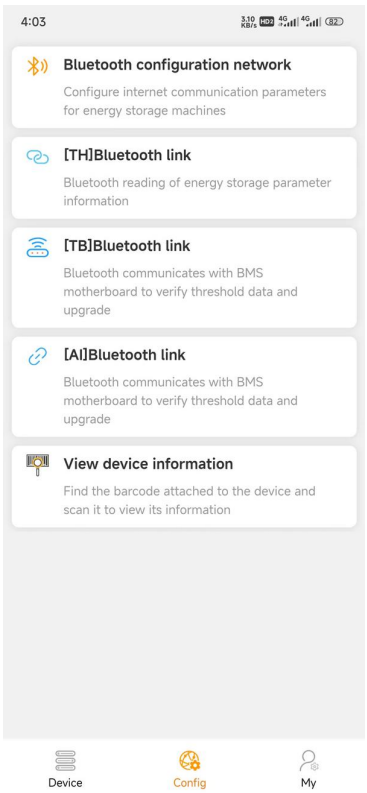
11.3 Bluetooth connection mode

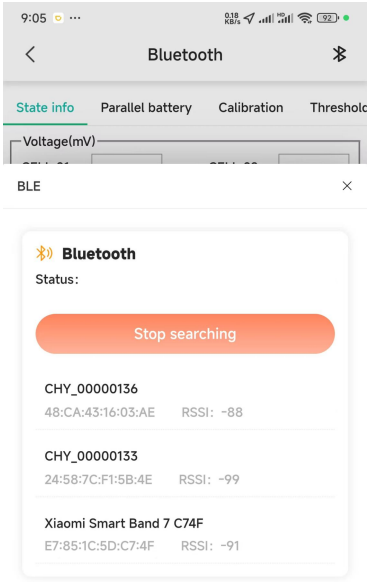
A: Click the [AI] Blue Link button

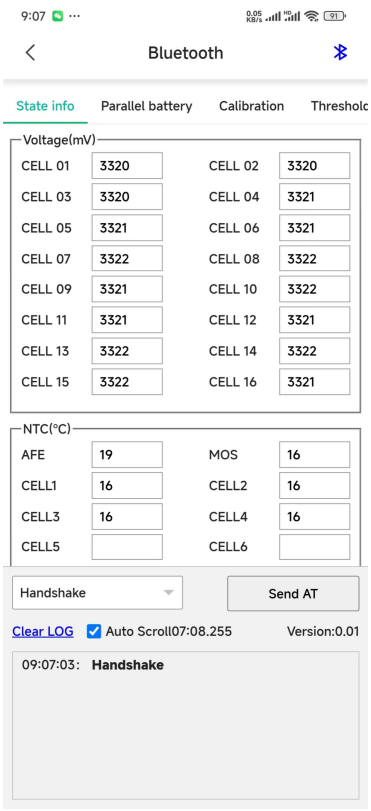
B: Requires GPS and Bluetooth permissions

C: Search and select the corresponding Bluetooth name, then click on connect

D: The display interface is similar to the WI-FI display interface



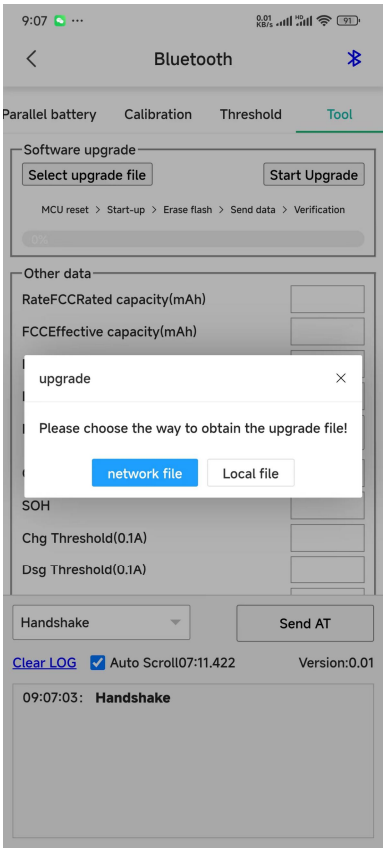


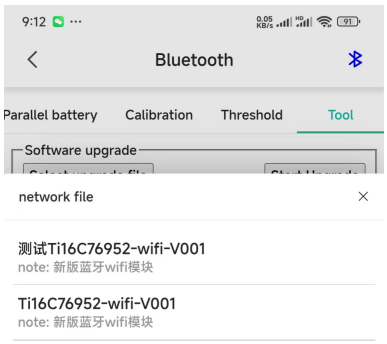


E: Bluetooth connection supports online upgrade of BMS

Network file: Load network upgrade program

Local file: Load the local upgrade program for the phone


9:07
Bluetooth
Parallel battery
Calibration
Threshold
Tool
Software upgrade
Select upgrade file
Start Upgrade
MCU reset > Start-up > Erase flash > Send data > Verification
Other data
RateFCCRated capacity(mAh)
FCCEffective capacity(mAh)
upgrade
Please choose the way to obtain the upgrade file!
network file
Local file
SOH
Chg Threshold(0.1A)
Dsg Threshold(0.1A)
Handshake
Send AT
Clear LOG
Auto Scroll07:11.422
Version:0.01
09:07:03: Handshake


9:12
Bluetooth
Parallel battery
Calibration
Threshold
Tool
Software upgrade
network file
测试Ti16C76952-wifi-V001
note: 新版蓝牙wifi模块
Ti16C76952-wifi-V001
note: 新版蓝牙wifi模块


9:13
Bluetooth
Parallel battery
Calibration
Threshold
Tool
Software upgrade
Select upgrade file
Start Upgrade
MCU reset > Start-up > Erase flash > Send data > Verification
Other data
RateFCCRated capacity(mAh)
FCCEffective capacity(mAh)
Full calibration voltage(mV)
Full calibration voltage delay(S)
BMS type
三元锂
选择操作
相机
媒体
文件
文件管理
选择PDF
本地音乐
本地视频
相册
音乐
录音机
取消