

Thank you for purchasing RS485 card/box. This manual contains instructions and warnings that should be followed during the installation, operating and storage of the card. Please keep this manual for further reference.

### Applicable models:

- Hybrid inverter 3KW, 4KW, 5KW and 5.5KW
- 3-phase hybrid inverter 10KW

Before installation, please make sure this RS-485 card/box is compatible to your existing inverter.

## 1. Product Introduction

If the inverter is built in intelligent slot, it can work with RS485 card by simply inserting the RS485 card. RS485 external box can provide communication slot for the inverter without intelligent slot. No matter it's RS485 card or RS485 box, it provides communication between inverter and lithium battery.

Here are the detailed functions:

- Via the communication between the inverter and lithium battery, it's able to re-configure the charging voltage, charging current, battery discharge cut-off voltage and max. discharge current, according to the lithium battery parameters.
- Have unit start or stop charging according to the status of lithium battery.
- Have unit start or stop discharging according to status of lithium battery.

### Special Precautions

- If this card/box must be stored prior to installation; storage must be in a dry place
- The admissible storage temperature range is from -10°C to +70°C.

## 2. Unpacking and Overview

### 2-1. Package Contents

Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package:

#### RS485 Card Package Items:



RS485 card



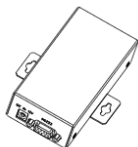
RJ45 cable



Manual

**Note:** This supplied RJ45 cable is custom-made.

#### RS485 Box Package Items:



RS485 box



RJ45 cable



RS232 cable

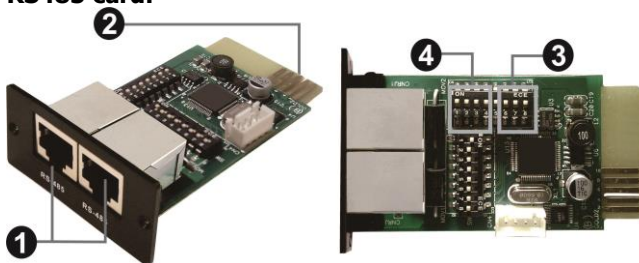


Manual

**Note:** This supplied RJ45 cable is custom-made.

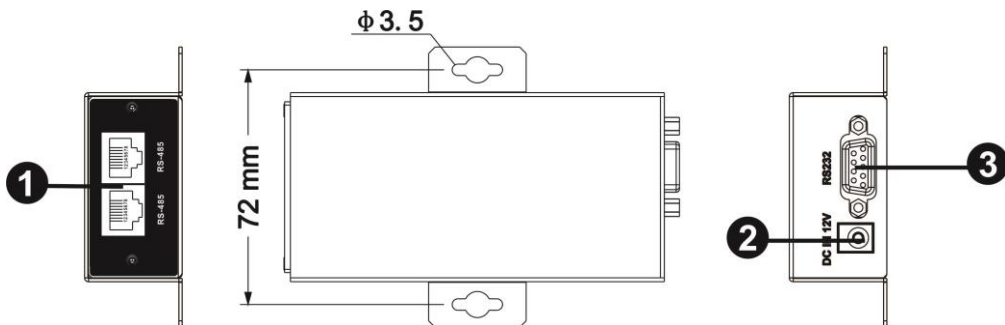
### 2-2. Product Overview

#### RS485 card:



- ① RS-485 port
- ② Golden finger(RS-232 port)
- ③ Resistance switch
- ④ Communication switch

## RS485 box:



❶ RS-485 communication port

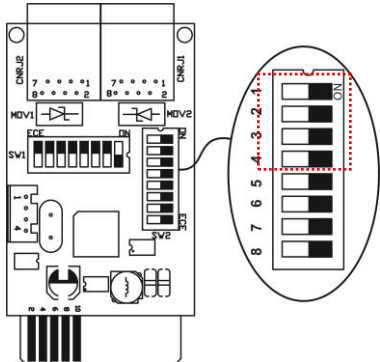
❷ 12V DC input: 12V DC/1A power source for communication card

\* It's necessary to have 12VDC power source. Please purchase an AC/DC adapter separately.

❸ RS-232 communication port

## 3. Configuration

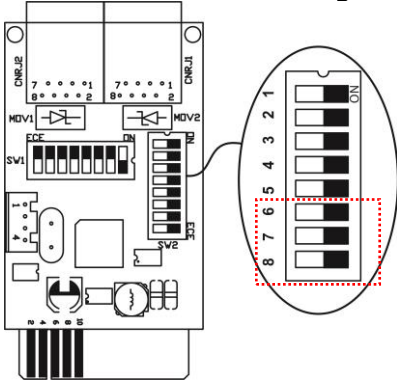
### 3-1. Communication Format Configuration



Function	Bit Setting	Meaning
Baud rate	# 2 # 1	
	OFF OFF	2400bps
	OFF ON	4800bps
	ON OFF	9600bps*(Default)
	ON ON	19200bps
Parity check	# 4 # 3	
	OFF OFF	Even parity
	ON OFF	Odd parity
	OFF ON	No parity check 1 stop bit (Default)
	ON ON	No parity check 2 stop bits

**\*It's request to use 9600bps baud rate and no parity check1 stop bit if communicating with BMS. The Bit setting for # 1 is OFF, # 2 is ON, # 3 is ON, # 4 is OFF.**

### 3-2. RS485 resistance configuration

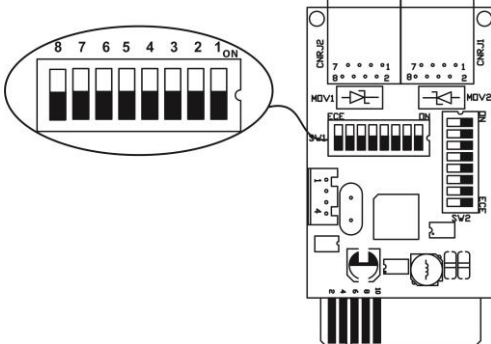


There are three bits to configure the RS485 resistance. Use the bit #6, #7 and #8 of SW2 to set RS485 Resistance. From top to bottom, it's 1 to 8 as shown left. When the switch is pushed down, the bit is set to "OFF". Otherwise, the bit is set as "ON".

Function	Bit #	Setting	Meaning
Push up resistance	# 6	ON	Enable (Default)
		OFF	Disable
Push down resistance	# 7	ON	Enable (Default)
		OFF	Disable
Terminate resistance	# 8	ON	Enable (Default)
		OFF	Disable

### 3-3. SW1 Reset

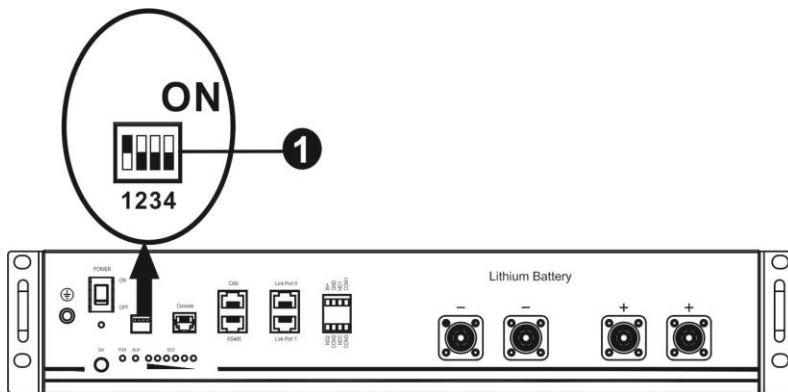
All of dip switches in SW1 should be switched to "OFF" status.



Bit #	Setting	Meaning
# 1	OFF	Disable(Default)
# 2	OFF	Disable(Default)
# 3	OFF	Disable(Default)
# 4	OFF	Disable(Default)
# 5	OFF	Disable(Default)
# 6	OFF	Disable(Default)
# 7	OFF	Disable(Default)
# 8	OFF	Disable(Default)

## 3-4. Lithium battery communication configuration

1. ADD Switch: There are 4 ADD switches are to define different baud rate and battery group address. If switch position is turned to bottom for "OFF" position, it means "0". If switch position is turned to upper for "ON" position, it means "1".



- Dip 1 is "ON" to represent the baud rate 9600.
- Dip 2, 3 and 4 are to set up battery group address.

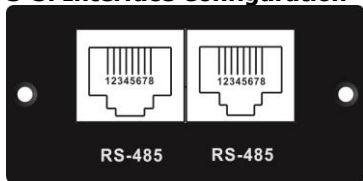
Dip switch 2, 3 and 4 on master battery (first battery) are to set up or change the group address.

**NOTE:** "1" is upper position and "0" is bottom position.

Dip 1	Dip 2	Dip 3	Dip 4	Group address
1: RS485 baud rate=9600	0	0	0	Single group only. It's necessary to set up master battery with this setting and slave batteries are unrestricted.
Restart to take effect	1	0	0	Two-group condition. It's necessary to set up master battery on the first group with this setting and slave batteries are unrestricted.
	0	1	0	Two-group condition. It's necessary to set up master battery on the second group with this setting and slave batteries are unrestricted.

**NOTE:** The maximum groups of lithium battery is 2 and for maximum number for each group, please check with battery manufacturer.

## 3-5. Interface Configuration



RS-485 pin configuration on BMS RS485 Card/Box:

Pin	Function
1	
2	
3	
4	RS-485 - B
5	RS-485 - A
6	
7	
8	GND

RS-485 pin configuration on Lithium battery:

Pin	Function
1	RS-485 - B
2	RS-485 - A
3	GND
4	
5	
6	GND
7	RS-485 - A
8	RS-485 - B

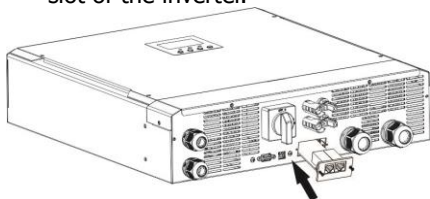
## 4. Installation and Operation

After configuration, please install this card/box with inverter and Lithium battery by following below steps.

### RS485 card

Follow below steps to install and use this RS485 card:

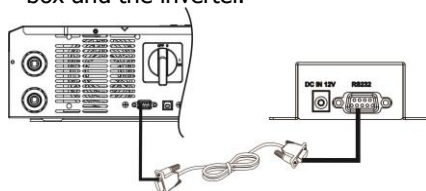
- (1) Insert this RS485 card into intelligent slot of the inverter.



### RS485 box

Follow below steps to install and use this RS485 box.


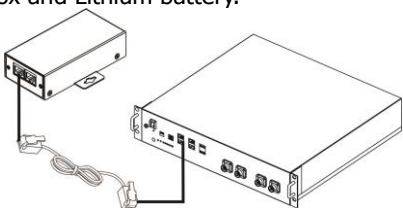
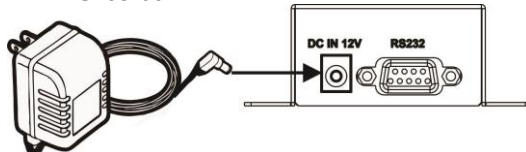

- (1) Use supplied RS232 cable to connect RS485 box and the inverter.




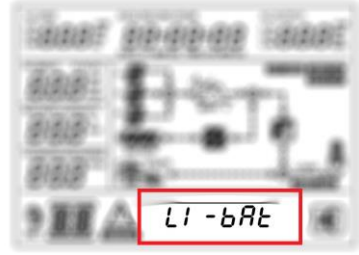
# BMS RS-485 Card/Box Quick Guide

## Applicable for hybrid inverter 3KW-10KW

V.1.2

<p>(2) Use supplied RJ45 cable to connect RS485 card and Lithium battery.</p> 	<p>(2) Use supplied RJ45 cable to connect RS485 box and Lithium battery.</p> 
<p>(3) Switch on Lithium battery.</p>	<p>(4) Please purchase an AC/DC adapter separately to supply DC input (12VDC) to RS485 box.</p>  <p>Adapter plug dimension: OD=5.5mm ID=2.5mm</p> 
<p>(4) Turn on the inverter.</p>	<p>(5) Switch on Lithium battery. (6) Turn on the inverter.</p>

After all wires are connected well and the communication between the inverter and battery is successful, it will show different successful icon on the LCD screen. Please check below table.




Inverter model	5.5KW	3KW/4KW/5KW/10KW
LCD screen	 <p>Frame of battery icon will flash</p>	 <p>"Li-bAt" icon will light on.</p>

**Active Function**

This function is to activate lithium battery automatically while commissioning. After battery wiring and commissioning is successfully, if battery is not detected and active function is enabled in bundled software, the inverter will automatically activate battery if the inverter is powered on.

**5. Code Reference (Only for 3KW/4KW/5KW/10KW models)**

Related information code will be displayed on LCD screen. Please check inverter LCD screen for the operation.

Code	Description
	Informs inverter to stop discharging battery.
	Informs inverter to stop charging battery.
	Informs inverter to charge battery.