



# BYD Battery-Box Premium LVL Service Guideline and Checklist Version 1.0

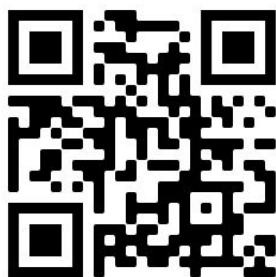
Valid for Premium LVL 15.4



LVL 15.4 (max. 64 per system)



BMU (1 x per system)



Make sure to always use the latest version of this service document,  
available at: [www.bydbatterybox.com](http://www.bydbatterybox.com)

**Important: The installation and all other kinds of works or measurements in combination with the Battery-Box Premium are only allowed by professional and qualified electricians.**

This checklist is a shortened assistance for the Battery-Box and does not replace the original manual, which can be found on [www.bydbatterybox.com](http://www.bydbatterybox.com) / [www.eft-systems.de](http://www.eft-systems.de) / [www.alpspower.com.au](http://www.alpspower.com.au). Subject to technical modifications; no responsibility is accepted for the accuracy of this information. Attention: Improper handling can cause danger and damage.

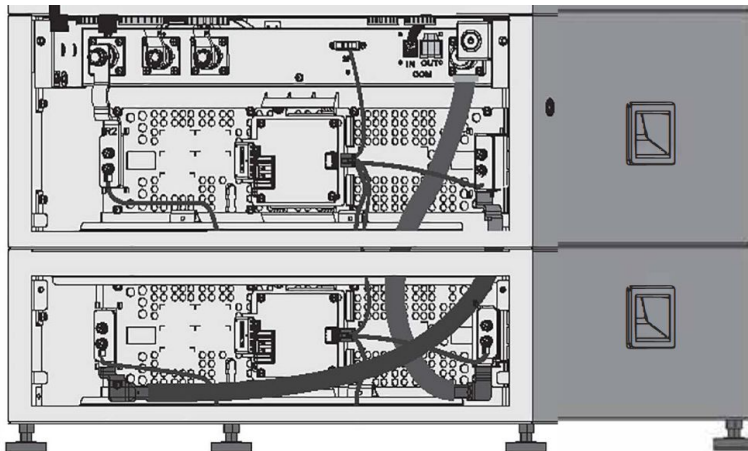
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# 1. GENERAL STEPS

Make sure to always use the latest version of this service document, available at: [www.bydbatterybox.com](http://www.bydbatterybox.com)

Please proceed first with the installation steps by:

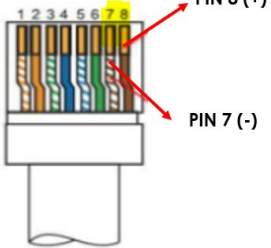
No.	Name	Description
1	Configuration	Check if the configuration is correct. Refer to latest "BYD Battery-Box Premium LVL Minimum Configuration List" (V1.3 or above) available at: <a href="http://www.bydbatterybox.com">www.bydbatterybox.com</a> Make sure the inverter is configured correctly.
2	Correct internal cabling	 <p>Please double check, referring to the manual</p>
3	Correct external cabling	<ol style="list-style-type: none"> <li>Communication to inverter <ol style="list-style-type: none"> <li>Depending on the choice of inverter the cable between the BMU port and the inverter must be specially made. Please check the specifications in the installation manual.</li> <li>Recommended CAT5 or higher;</li> <li>Check the cables and replace them if necessary</li> </ol> </li> <li>Grounding <ol style="list-style-type: none"> <li>Battery-Box connected directly to the ground-bus of the house.</li> <li>The battery must not be earthed via the inverter! Otherwise, communication problems are possible.</li> </ol> </li> <li>Ethernet-Cable for Internet (<b>strongly recommended!</b>)</li> <li>DC-Ports - Make sure that + and - are properly connected.</li> <li>Correct parallel connection cabling if applicable</li> </ol>
4	Switch on procedure	<p>Correct switch on procedure is important for a correct operation!</p> <ol style="list-style-type: none"> <li>Switch on the fuse between Inverter and Battery (if there is any)</li> <li>Switch on the Battery-Box (button on LVL)</li> <li>Activate the inverter</li> </ol>
5	App Configuration Newest Firmware	<p>To complete the commissioning, the configuration of the battery via "Be Connect" App is <b>mandatory!</b> Always install the <b>newest Firmware!</b>  Note: If not stated otherwise, wifi password is BYDB-Box  After app configuration, please perform a proper restart of the system (see step 5)</p>
6	Checking the correct operation	<p>The system runs properly if:</p> <ul style="list-style-type: none"> <li>- Inverter displays battery SOC correctly</li> <li>- System charges / discharges</li> </ul> <p>Note: <b>If you can not complete the commissioning, then turn off the battery before you leave the site and make sure all LEDs are off.</b></p>

## 2. ERROR ANALYSIS

Please refer to the general steps before proceeding, see chapter 1.

### 2.1 BMU shows no reaction / No LED

LEDs of BMU do not light up, although the battery is ON.

No.	Name	Description
7	Check correct cable port	Make sure that the correct data cable port has been used at the BMU ("BMS" port. Do not mix with "inverter" or "Ethernet" port).
8	Unplug Comm Cable	Sometimes might be necessary to unplug the communication cable and plug it back again when the batteries are switched on.
9	Replace Comm Cable	Try a completely new communication cable between battery and BMU.
10	Voltage measurement on pin 7&8	Measure the voltage of PIN 7 & 8 while the other side of the cable is connected to the IN port of the Battery-Box and while the Battery-Box is powered on. Voltage should be around 50V. If yes: try another BMU (if available). If no: check another cable or try another LVL if multiple batteries are installed in the system..
		
11	Only LED faulty?	In some rare cases, the LED of the BMU is faulty. To check that: check if there is a wifi access point of the Battery-Box and check if there are internal LEDs inside the BMU. If so, only the external LED is inactive and a commissioning could still work.
12	Voltage measurement	Check voltage of battery. See <b>Section 2.5</b>
13	BMU exchange	Only if voltage between pin 7&8 are okay, correct comm port is used, voltage seems correct and the cable between the Battery and the BMU was exchanged: Test another BMU, if available.

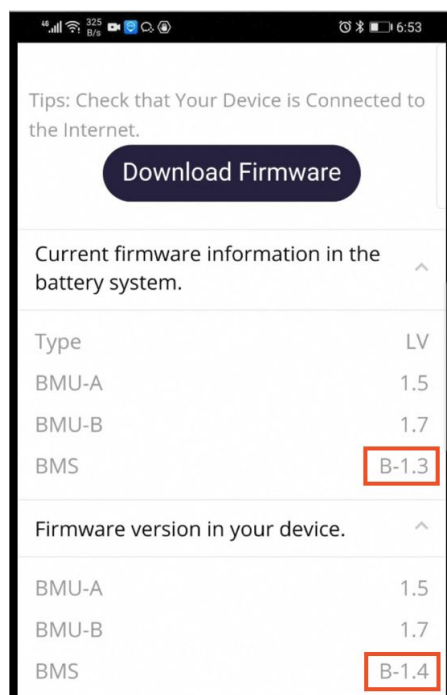
## 2.2 Communication problem with Inverter

No.	Name	Description
14	Configuration	Check if the configuration is correct. Refer to latest "BYD Battery-Box Premium LVL Minimum Configuration List" (V1.3 or above) available at: <a href="http://www.bydbatterybox.com">www.bydbatterybox.com</a> Make sure the inverter is configured and working correctly.
15	Communication cable	- Confirm PIN / Cable Configuration for the specific inverter model - Replace the communication cable (min. CAT5!)
16	Check terminal resistor	Make sure that the terminal resistor is connected to the OUT port of the last battery (the battery with the highest address).
17	<b>App Configuration and Firmware</b>	Please check if the App configuration was successful and the Firmware is the most recent one. If there are problems, please refer to <b>Section 2.3</b>
18	Restart the entire system	1. Switch off the Inverter 2. Switch off the battery (Press button on BMU for 5 seconds until all batteries switch off) 3. Wait for 2 Minutes 4. Turn on the Battery (button on any battery) and then 5. Turn on inverter second

## 2.3 Problem with the Firmware Update / App Configuration

The Battery Management consists of two components: the BMU and the BMS. The Firmware Update from the App will update the BMU, which will then update the BMS. **The BMS update can take up to 30 Minutes until the firmware is updated on the BMS.**

No.	Name	Description
19	Correct App and Firmware	<p>Make sure to have the latest App Version (&gt;1.4.1) and Battery Firmware (download inside the App) on your mobile device before connecting the app with the battery WiFi.</p> <p>If the App cannot be installed, or other general Problems occur with the App:</p> <ul style="list-style-type: none"> <li>- try with a different mobile device</li> <li>- For Android: min Android version requirement is 4.4.</li> </ul>
20	App reports: "Data connection busy" / "Data connection failure."	Battery-Box is busy (e.g the battery could be updating the firmware). Please wait 10 minutes and try again.
21	Close and restart the App	If the App does not react anymore after some minutes loading during the update process, close (close the program completely) and restart the App.
22	BMS Version not updated	<p>The App will only update the BMU. The BMU will update the BMS, which <b>can take up to 30 minutes</b>.</p> <p>If the BMS Version is not updated after 30min with stable inverter communication, follow the below Process:</p> <ol style="list-style-type: none"> <li>1. Update Firmware through the App again</li> <li>2. Restart the system <ol style="list-style-type: none"> <li>a. Switch off the Inverter first, then switch off the battery second (Press LED for 5 seconds)</li> <li>b. Wait for 2 Minutes</li> <li>c. Turn on the Battery first, then turn on the inverter second</li> </ol> </li> <li>3. Wait for 30 Minutes</li> <li>4. Check BMS Firmware Version again with App. If Version is still wrong, do the update process again (if possible with another mobile device).</li> </ol>



## 2.4 BMU/BMS LED event code (EC)

A constant white LED refers to standby mode. White blinking means charge or discharge.

When the battery is initiating, the LED will flash white and blue with an interval time of 0.5 seconds (normal during startup).

When the LED flashes blue with an interval time of 1 second it indicates an event code. We start to count when the white LED begins to flash, then we count how many times white and blue LED flashes. (also refer to the manual!)

Example: 1xwhite, 6xblue → EC 106 / 1xwhite, 11xblue → EC 111 / 3xwhite, 3xblue → EC 303

Most Errors come from a faulty communication line, incorrect app configuration or missing restart after app-configuration.

Please go in detail through: **Section 2.2 & 2.3**

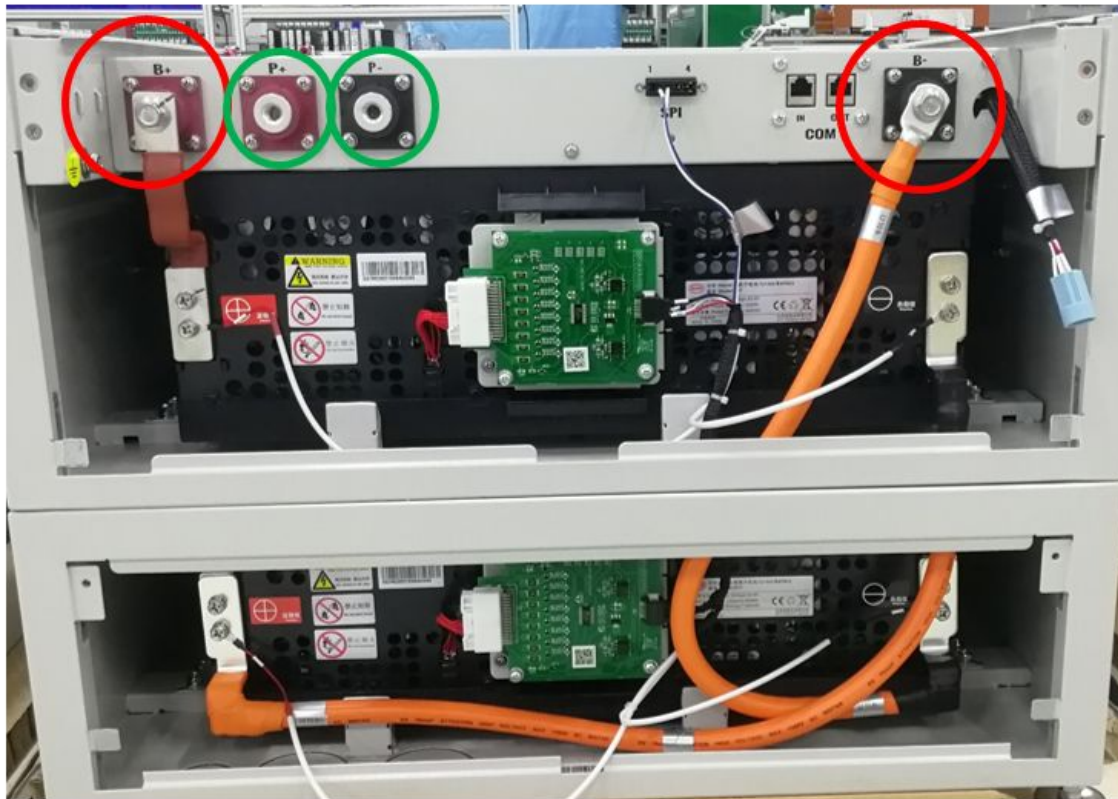
**Note: if the system is not correctly configured with the app, the event code (EC) might be misleading.**

Event Code (EC) BMU	Event Code (EC) BMS	Measure
EC 101 EC 102	EC 111	<ul style="list-style-type: none"> <li>- Make sure app-configuration has been completed correctly (especially module quantity!).</li> <li>- check terminal resistor</li> <li>- replace communication cable between Battery and BMU</li> </ul>
EC 105	all	<ul style="list-style-type: none"> <li>- Restart system according to manual. (note: to properly shut down you need to press the button on BMU for 5 seconds. Make sure to start the battery before starting the inverter!)</li> <li>- if multiple LVL batteries are in the system, try the batteries one by one with the BMU to identify if the system works</li> </ul> <p>If problem remains: replace BMU, if available</p>
EC 106	all	<ul style="list-style-type: none"> <li>- Make sure the inverter is on, configured and working correctly.</li> <li>- Check <b>section 2.2</b></li> </ul>
EC 103	EC 108	<ul style="list-style-type: none"> <li>- Check DC cabling and make sure that the Minimum Configuration is met.</li> <li>- Check the voltage of the batteries according to <b>section 2.5</b></li> <li>- Restart system properly (see <b>Step 18</b>, section 2.2; especially make sure that fuse between battery and inverter is closed, if there is a fuse)</li> <li>- Disconnect the battery system from the inverter and restart the battery system alone (battery isolated), to evaluate if the error is being caused externally (i.e. short circuit in inverter or mppt). If the Event Code remains, the error might be in the battery. If the Event Code has changed, there might be an error in the inverter side.</li> </ul>
EC 104	EC 101 EC 102 EC 103 EC 104 EC 105 EC 106 EC 107 EC 109 EC 110	<p>If the problem remains &amp; if there are multiple batteries connected in parallel:</p> <ul style="list-style-type: none"> <li>- Disconnect the battery with event code EC101 - 108 from the remaining system (disconnect communication and power cable P-).</li> <li>- Commission the remaining system and check if it runs properly</li> <li>- If it does, provide the SN and voltage of the isolated battery (see checklist on last page)</li> </ul>
	EC 103	<p>For EC 104 on the BMU and EC 103 on the LVL BMS LED, check whether the LED lights on the two BIC (electric component directly on the two battery modules inside the LVL - see <b>section 3.3</b>) are on. If yes, try to exchange the upper BIC with the lower one.</p>

## 2.5 Voltage measurement

Open the front door and measure the tower voltage between B+/B- (red circle) and between P+/P- (green circle) on the BMS as shown below.

Attention: Make sure to not create a short circuit!





## 3. SERVICE TASKS

Please go through the general steps beforehand, see chapter 1.

### 3.1 BMU Replacement

**Have you detected a faulty BMU?:**

After replacing the BMU, please do not forget to re-do the configuration and firmware-update in the app.

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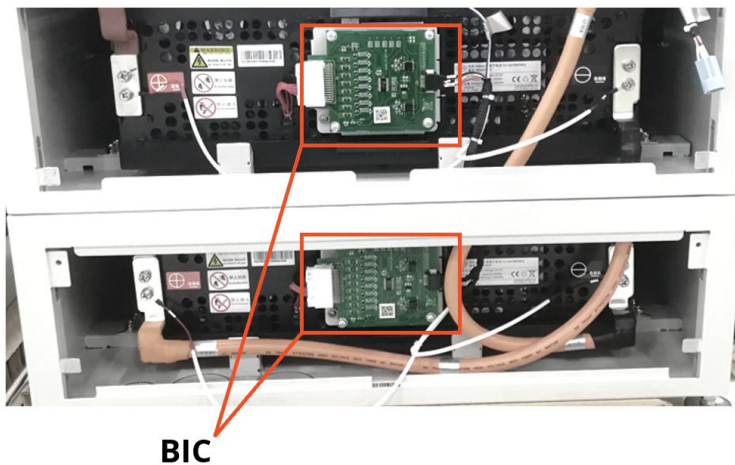
### 3.2 BMS Replacement

Refer to Manual "*BMS Drawer Replacement Guide*"

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### 3.3 BIC Replacement

Refer to Manual "*BIC Board Replacement Guide*"



# BYD Battery-Box Premium LVL Service Checklist - V1.0 EN



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## 1. GENERAL STEPS

Please carefully check **all** 6 „General Steps“ from page 3 of the Service Guideline and confirm this in the boxes below

- |                              |                                    |
|------------------------------|------------------------------------|
| 1.1 Configuration            | 1.4 Switch on procedure            |
| 1.2 Correct internal cabling | 1.5 App Configuration + Update     |
| 1.3 Correct external cabling | 1.6 Checking the correct operation |

## 2. ERROR RELATED ANALYSIS

Please mark the **error related** Analysis from Chapter 2 (page 4-8) of the Service Guideline that you checked, and collect all the information related to those Sections

- |                                                          |                                 |
|----------------------------------------------------------|---------------------------------|
| 2.1 BMU shows no reaction / No LED                       | 2.4 BMU/BMS LED event code (EC) |
| 2.2 Communication problem with Inverter                  | 2.5 Voltage measurement         |
| 2.3 Problem with the Firmware Update / App Configuration |                                 |

## 3. SERVICE INFORMATION

Please fill all available information in below table. Some information like the Serial Number of the BMU is mandatory to receive service.

### • Service Ticket Number or System ID:

### • Installer / Delivery Address / Contact:

Company	ZIP / City
Contact Person	Phone
Street / Nr.	Email

### • System Information

Battery Configuration (X x LVL)	BMU Firmware
BMU Serial Number	BMS Firmware
BMU Connected to Internet	Yes No Inverter Firmware
Inverter Brand + Model	Inverter Portal Name
Inverter Serial Number	(State the system name. Provide access)
Commissioning Date	

### • Service Information

BMU EventCode (EC)	Inverter Error Code
BMS EventCode(s) and related LVL Serial Number(s)	
Was the battery charging / discharging before (was the system working normally before?)	Yes No
Take pictures of open communication port in the Battery and Inverter clearly showing connection cables	

Description of the Problem

Please provide any additional information that is necessary or could help in the analysis of the service case (e.g. serial number of a wrong module, video of a special behaviour; pictures; app screenshots; module voltages... )

By contacting us you confirm, that a qualified person has done the necessary control and collected all available information above.

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