BYD Battery-Box HVB&HVM+&HVS+

Service Guideline and Checklist

Version 1.0

Valid for HVB 5.9 / 8.9 / 11.8 / 14.8 / 17.8 / 20.7 / 23.7 / 26.7 / 29.6

Valid for HVM+ 8.3 / 11.0 / 13.8 / 16.6 / 19.3 / 22.1

Valid for HVS+ 5.1 / 7.7 / 10.2 / 12.8

Always make sure to use the latest version of this service document, available at: www.bydenergy.com.

Important: The installation and all other kinds of works or measurements in correlation with the Battery-Box 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.bydenergy.com. Subject to technical modifications; no responsibility is accepted for the accuracy of this information.

Attention: High Voltage! Improper handling can cause danger and damage

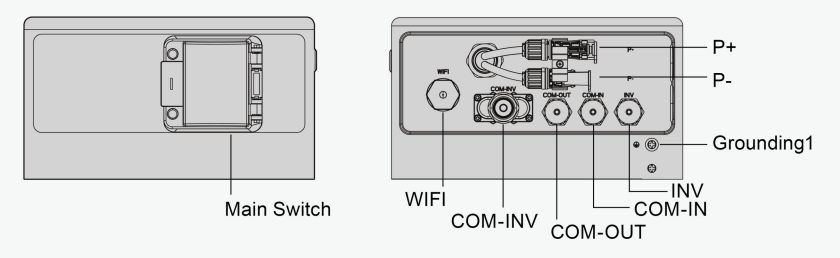
Table of Contents

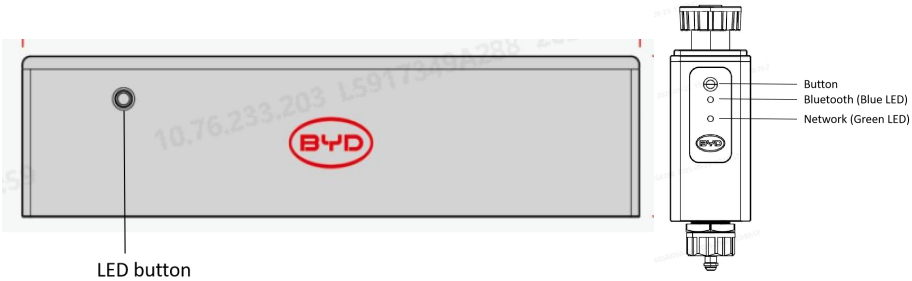
1 GENERAL STEPS

Always make sure to use the latest version of this service document, available at: www.bydenergy.com

Please proceed first with the installation steps by:

No.	Name	Description
1	Configuration	Check if the configuration is correct. Refer to the latest “BYD Battery-Box HVB&HVM+&HVS+ Compatible Inverter List” available at: www.bydenergy.com Make sure the inverter is configured correctly.
2	Only HVS+ or HVM+	Do not mix up HVS+ modules (“I”) with HVM+ modules (“II”).
3	**External Connections**	





Terms	Description
Wi-Fi	Port for smart Wi-Fi/LAN module
COM - INV	Port for data cable in, for inverter connection
COM - OUT	Port for data cable out, for battery parallel connection
COM - IN	Port for data cable in, for battery parallel connection
INV	Port for data cable in, for inverter connection
Grounding	Grounding connection
P+	Connect to positive terminal of inverter
P-	Connect to negative terminal of inverter
Main Switch	Power on
LED button	LED indicator/ Power off/ Black start
Button	The Smart Wi-Fi/LAN module button
Bluetooth	Bluetooth function of the Smart Wi-Fi/LAN module
Network	Network(Wi-Fi/LAN) function of the Smart Wi-Fi/LAN module

4	Latest firmware	Always install / update the latest firmware (also use the latest app version).
5	App configuration	To complete the commissioning, the configuration of the battery via “BYD Energy” app
6	Proper restart	**Note:** It is important that the battery is switched on before the inverter! Else, the BCU might not start and not show any reaction. Defined restart (mind the sequence) **1)** Turn off DC disconnector of the inverter **2)** Turn off AC switch **3)** Switch off the battery (press LED button for 5 seconds and the Main Switch will turn off automatically) **4)** Kostal only: Pull out the PV strings from inverter **5)** wait 1 minute (inverter should be completely off) **6)** Turn on the battery (turn on the Main Switch) → LED should light up again **7)** Kostal only: Connect PV strings back to inverter **8)** Turn on the AC switch * if the battery does not switch off despite pressing the LED button for 5 seconds (the Main Switch will turn off automatically), and lift off the BCU to avoid further discharge and contact the service team.
7	Check the correct operation	The system runs properly if: **-** Inverter displays battery SOC correctly **-** System charges / discharges **Note:** If you can not complete the commissioning, then turn off the Main Switch of the BCU before you leave the site and make sure all the LEDs are off. If this is not possible, remove the BCU. Make sure the system will be set into operation quickly.

2 ERROR ANALYSIS

2.1 BCU shows no reaction / No LED

LED does not light up, although the system is switched on.

No.	Name	Description
8	Module quantity	Check if the module quantity fulfills the minimum requirement (HVB&HVS+: 2, HVM+: 3 modules) and check the “Compatible Inverter List” for inverter requirements.
9	Voltage measurement	See section 2.10. (Make sure the voltage of the battery tower is higher than Minimum operating voltage, HVB: 40V * modules quantity, HVS+: 80V * modules quantity, HVM+: 40V * modules quantity.)
10	Follow the sequence correctly	**Note:** It is important that the battery is switched on before the inverter! Else, the BCU might not start and not show any reaction (no LED). See following: **1)** Turn off DC disconnector of the inverter **2)** Turn off AC switch **3)** Switch off the battery (press power button for 5 seconds and the Main Switch will turn off automatically) **4)** Kostal only: Pull out the PV strings from inverter **5)** wait 1 minute (inverter should be completely off) **6)** Turn on the battery (turn on the Main Switch) → LED should light up again **7)** Kostal only: Connect PV strings back to inverter **8)** Turn on the AC switch
11	Only LED off?	Under normal circumstances, LED turns off after 12 hours of inactivity. This is NORMAL. To turn it on, press for 1 second the LED button. If commissioning a system, check if battery can be detected through the Smart Wi-Fi/LAN Module.
12	BCU exchange	Only if voltage looks good: Test another BCU, if available

2.2 BCU switch cannot be on / LED remains on

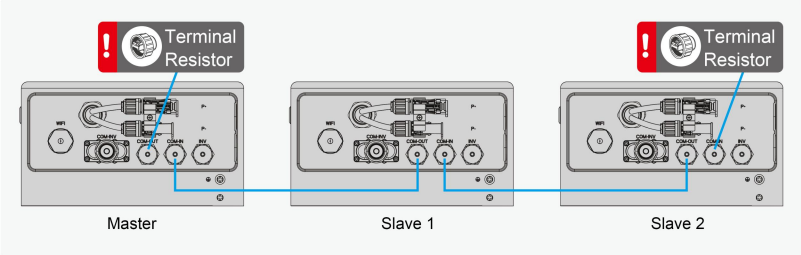
No.	Name	Description
13	Main Switch was off by hand	If the Main Switch was off manually, then it cannot be on again within 10 minutes. (Please refer to the User manual for the correct Main Switch-off procedure.)
14	Constant blue	Try to properly shut down the BCU (press the LED button for more than 5 seconds). If LED goes off: check the installation and restart the system (battery first, then inverter). If the LED remains on (steady blue): Remove the BCU from the tower to avoid a deep discharge. Measure the voltage of the system (see **section 2.10**) and contact your service provider. You can use another BCU, if available.
15	BCU exchange	Only if the voltage looks good: Test another BCU, if available.

2.3 Problem with the firmware update / Smart Wi-Fi/LAN Module / App configuration

No.	Name	Description
16	Correct app and firmware	Make sure the battery system is connected to the Smart Wi-Fi/LAN Module,and the BYD Energy app version is the latest， the battery and the Smart Wi-Fi/LAN Module firmware is the latest (update in the app) . If the app cannot be installed, or if other general problems occur with the app: **-** Try using a different mobile device **-** Uninstall and reinstall the app. If the the Smart Wi-Fi/LAN Module cannot connect to the app, please try to check the problem according to the **section 2.3** If the connection cannot be made after checking, please contact the after-sales service to replace the Smart Wi-Fi/LAN Module.
17	BMS version not updated	Once the app shows that the update is successful, which means the new program has been successfully updated to the master battery system. At this point, the app may still display the old version, which is a normal. When using the system in parallel, the APP will only show the new program version after all systems have been updated. This process may take up to 20 minutes, during which the systems will continue to operate on the old program. If the BMS version is not updated after 20 minutes with stable inverter communication, follow the process below: **1.** Update the firmware through the app again **2.** Restart the system **a.** Switch off the inverter first, then switch off the battery (press LED button for 5 seconds) **b.** Wait for 1 minute **c.** Turn on the battery first, then turn on the inverter **3.** Wait for 20 minutes **4.** Check the BMS firmware version again with app. If the version is still wrong, repeat the update process(preferably with another mobile device).
18	Local Wi-Fi network Cannot be found/connection to local Wi-Fi network is unstable	Power off and restart the Smart Wi-Fi/LAN Module, and reconnect network process after the blue light flashes. If the problem remains: Press and hold the button for more than 10 seconds to restore the factory settings and then reconnect the network. **Note:** **1.** The Smart Wi-Fi/LAN Module only supports 2.4G band Wi-Fi, please check whether it is connected to this band Wi-Fi; **2.** If it find that WPA3 encryption is not supported, upgrade to the latest firmware version. Also it can enter the background management page of the router to check the Wi-Fi password encryption mode, change the encryption mode to WPA2, and press the button for a long time > 10s to restore the Smart Wi-Fi/LAN Module to the factory settings and then connect the network again; or connect Bluetooth, upgrade the firmware to the latest version and then connect Wi-Fi; **3.** Check whether the 8883 and 443 ports are normal; **4.** Verify that DHCP is enabled on the router.
19	No power supply or poor contact	**1.** Check the connection stability of the Smart Wi-Fi/LAN Module, whether

	after plugging	it is connected correctly and whether the nut is locked; **2.** If it still cannot be solved, contact the after-sales service for replacement;
20	Can’t scan SN code of Product or recognized incorrectly	**1.** Check the connection stability of the Smart Wi-Fi/LAN Module, whether it is connected correctly and whether the nut is locked; **2.** Scan code of the mobile phone again to confirm whether the SN is correct; **3.** Confirm whether the SN code of the Smart Wi-Fi/LAN Module connected to the equipment (battery or inverter) is correct when scanning the code during network distribution, and do not scan SN code of the Smart Wi-Fi/LAN Module; **4.** If the problem cannot be solved by scanning the code, manually input the SN code to add; **5.** If the problem still cannot be solved, contact the after-sales service for replacement.
21	Blue and green lights flash synchronously	Power off and restart the Smart Wi-Fi/LAN Module
22	The status indicator is inconsistent with the app	For Bluetooth: **1.** Check whether the mobile phone is authorized to locate and find the permission of nearby devices; **2.** Check the stability of the Smart Wi-Fi/LAN Module connection, whether it is connected correctly, and whether the nut is locked; For Wi-Fi: **3.** Check whether the mobile phone Wi-Fi is turned on; **4.** Manually refresh the Wi-Fi list.
23	Disconnect after Bluetooth connection	**1.** The Bluetooth connection should be as close as possible to the device and avoid obstacles, such as walls; **2.** Refresh and reconnect again; **3.** If the problem still cannot be solved, contact the after-sales service for replacement.
24	Unable to connect to Wi-Fi	**1.** Whether the input password is incorrect; **2.** The 5GHz band is not supported, confirm whether the connected Wi-Fi signal is 2.4GHz or 5GHz band; **3.** SSID only supports Latin encoding. If you want to provide compatibility, please upgrade to the latest version.
25	Upgrade failed	**1.** Check the Bluetooth or Wi-Fi signal; **2.** Upgrade again after failure; **3.** The interval between two upgrades is more than one minute.
26	Bluetooth or Wi-Fi disconnects after successful upgrade	**1.** Bluetooth disconnection: Bluetooth will not automatically reconnect, and the Smart Wi-Fi/LAN Module will reset after upgrading, so it requires manual reconnection; **2.** Wi-Fi disconnection: wait for automatic reconnection.
27	When connecting the network cable, it fails to establish the connection.	**1.** Check if the router is enabled for DHCP; **2.** Verify if the network cable is functioning properly; **3.** Confirm that the Smart Wi-Fi/LAN Module is connected to the device and is communicating normally (the broadcast Bluetooth name should match the SN of the connected device).

2.4 Battery <> inverter communication / No charging or discharging

No.	Name	Description
28	Configuration	Check if the configuration is correct. Refer to the latest “BYD Battery-Box HVB&HVM+&HVS+ Compatible Inverter List” (V1.0 or above) available at: www.bydenergy.com Make sure the inverter is configured correctly.
29	App configuration and firmware	Please check if the app configuration has successfully done and the firmware is the most recent one. If there are problems, please refer to **section 2.3.**
30	Check terminal resistor	It no required for only one tower is installed.If two or three towers are connected in parallel, the “OUT” port of the master tower and the "IN" port of the last slave tower should be plugged into a terminal resistor. 
31	Communication connection	Does the inverter properly detect the battery? Check if the inverter detects the battery parameters (e.g., SOC, battery temperature) correctly. If not, check the cabling: **-** Confirm the PIN / cable configuration for the specific inverter model **-** Replace the communication cable (min. Cat.5; better to use Cat.7) **-** For Fronius : check the enable signal (necessary for battery activation)
32	Grounding	Connect Battery-Box directly to the ground bus of the house (do not connect it over the inverter casing or other devices). Proper grounding of the battery is essential for trouble-free and secure data transmission.
33	Battery relay closed? / output voltage available?	Once communication has been established between battery and inverter, the BCU is supposed to close the relay. Only then there will be output voltage. Therefore please check if output voltage is present. You can check this either by BYD Energy app /section 2.8 or by checking if the inverter correctly shows the battery voltage.
34	Restart the system	Defined restart (mind the sequence) **1)** Turn off DC disconnector of the inverter **2)** Turn off AC switch **3)** Turn off the battery (press LED button for 5 seconds) **4)** Kostal only: Pull out the PV strings from inverter **5)** wait 1 minutes **6)** Turn on the battery (turn on the Main Switch) **7)** Kostal only: Connect PV strings back to inverter **8)** Turn on the AC switch **9)** Turn on the DC disconnector on the inverter *** Note:** if the battery does not switch off despite pressing the LED button for 5 seconds, lift off the BCU to avoid further discharge, and contact the service team.

2.5 SOC and charging logic

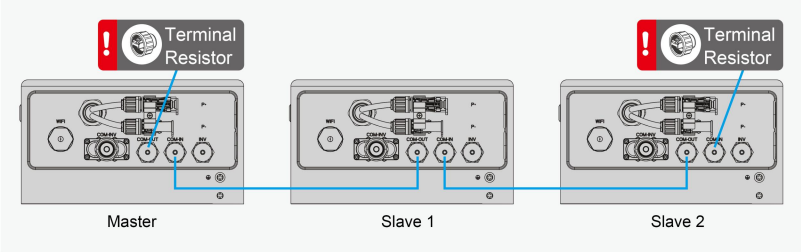
No.	Name	Description
35	SOC at commissioning	New HVB/HVM+/HVS+ modules are delivered with a 25%-30% SOC, while a new BCU might show a different SOC at the beginning (mostly 25%-30%). The latter one should be understood as a placeholder value, since a new BCU cannot measure the SOC of modules. As soon as the system starts to run (charging/discharging) the SOC detection will be gradually corrected. The SOC calibration is completed at the latest after a full cycle.
36	SOC jumps	The SOC of an LFP battery cannot be measured; it is a calculated value. In general, the state of charge (SOC) of a battery is calculated using the voltage, but other factors such as temperature, current flow and charging behavior also play a role. The calculation of the SOC is generally more precise when the battery regularly undergoes full cycles. Every now and then an SOC correction / calibration may occur. If there are other questions, please contact the service team.

2.6 Unexpected shutdown

The system has been successfully commissioned in the past and has run for some time. Later on an unexpected shutdown occurred.

No.	Name	Description
37	Inverter communication	If there communication between battery system and inverter is interrupted, the system will wait for the inverter to re-established. After 23.5 hours,the system will enter the error, at same time the LED indicator light will enter constant blue and the system will be switch off automatically after 30 minutes. Therefore, check which one shut down first (battery or inverter) and check if inverter is properly detecting battery (e.g,. showing correct SOC or temperature). If communication problem remains, refer to **section 2.4**.
38	Battery logs / History data	Sporadic alarms are hard to detect as they only occur sometimes. Therefore, it is very important to download and provide all the historic battery log files in order to identify the root cause. See **section 2.8** for details.
39	Inverter warning ＆monitoring	An unexpected shutdown can be caused by overall system settings. Therefore, it is necessary to evaluate inverter data as well. - Which error message are shown in inverter (portal?) - Please provide access to the inverter portal (add info@eft-systems.de and include the name of the system in the portal)

2.7 Module extension / Parallel connection

No.	Name	Description
40	Extension	**Note:** It is important that all modules of a battery tower have a similar SOC (tolerance: 5%). Within 5 days before extension, it is recommended to fully charge the existing battery system to 100% SOC to calculate accurately the SOC of the battery system itself at least once. New modules have about 25%-30% SOC. Therefore, advice that the SOC of the original system is between 25% and 30% before adding a new module. If the 25%-30% SOC rule is not followed, temporary capacity loss and SOC jumps might occur. It may take several days or even a month to equalize the power between modules to solve the problem of temporary capacity loss and SOC jumps,which depends on the actual charging and discharging conditions.
41	Parallel connection	Only one type of battery module can be used in the same tower! Different towers should be the same battery module! When two or three battery systems work in parallel, terminal resistors must be installed: plug the terminal resistor into the “OUT” port of the master module and the “IN” port of the last slave module. Two (2) or more BCU require two (2) terminal resistors. The length of the power cables from each tower to the combiner box should be the same. It is recommended that the power cable length between battery towers and the inverter should be less than 3 meters. 

2.8 Read battery information

User guide for BYD ENERGY CLOUD | Online

BYD ENERGY CLOUD is an online device monitoring website.you can:

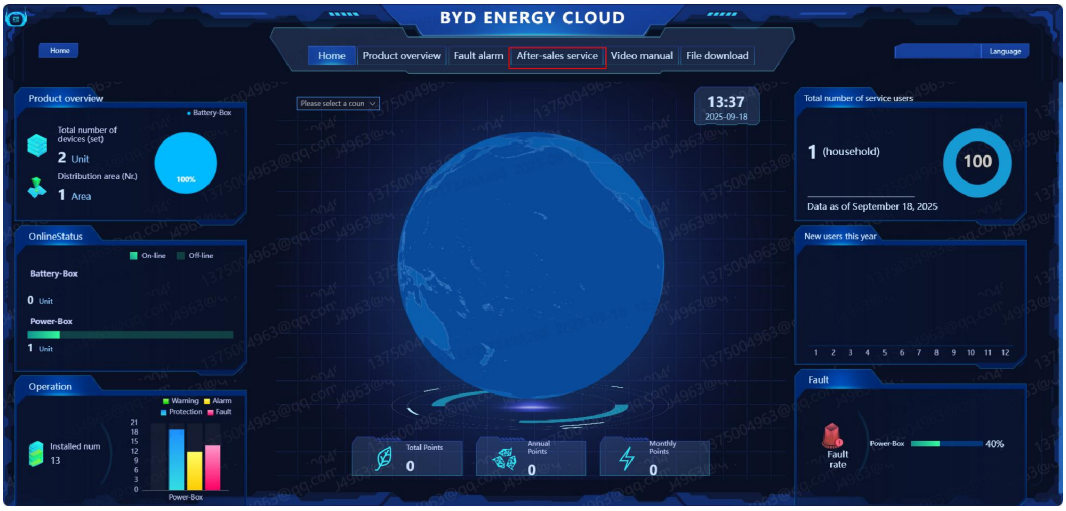
- Read battery information
- Get battery Fault alarm
- Export / download battery logs

from https://energyhousehold.westeurope.cloudapp.azure.com/#/login on the Internet

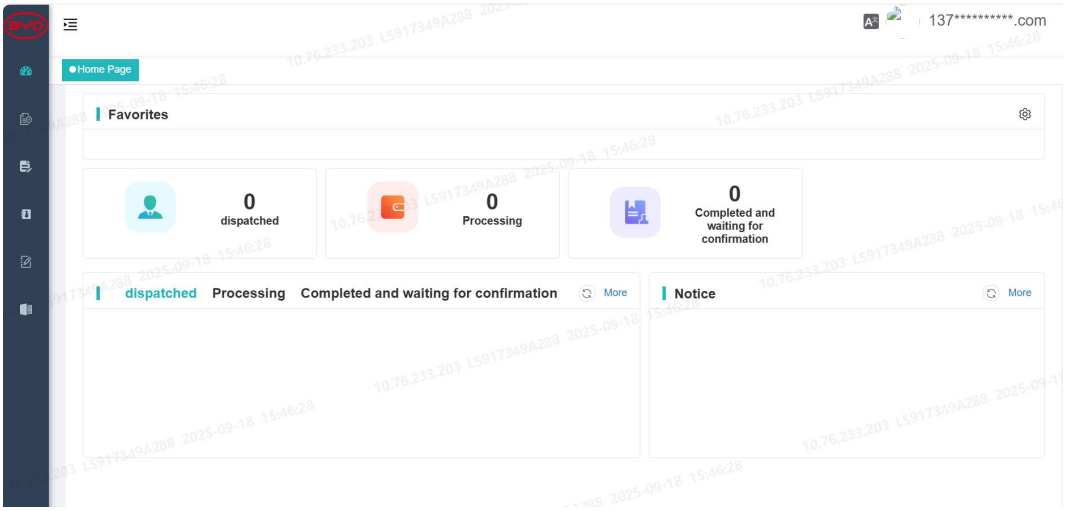
Log in as Installer to website, using the BYD energy App's account and password.

Note:

1. You need to have a computer and the network is working.
2. Only when the battery system is connected to the Smart Wi-Fi/LAN Module, the information can be queried in the website by using the consent data cloud function.
3. Only the Installer's and service provider's account can log in the website.
4. Mostly, you also can inter the BYD energy app and click at the alarm interface to get the battery system fault information.



If the battery system fails and it is determined that the corresponding equipment needs to be replaced, you can create a new ticket to through the after-sales service system on this website.



2.9 Fault event code (EC)

A steady white LED indicates standby mode, while a blinking white LED means charging or discharging.

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

When the LED is constant blue and not white LED, it indicates a fault in the BCU. Different fault codes represent different fault information, see the table below.

Most errors are caused by faulty communication. Please go through section 2.3&2.4 in detail.

Fault event code (EC)	Measure
EC106	Current sensor failure - Make sure that the latest firmware is installed and that the battery has been properly restarted. If the problem remains: - Test another BCU if available.
EC108	Precharging failure - Check DC cable connection to the battery, inverter and combiner box (if there is any). - Restart system according to the manual. (Note: To properly shut down you need to press the LED button for 5 seconds. Make sure to start the battery before starting the inverter.) If the problem remains: - Test another BCU, if available.
EC109	Software version mismatch - Check the BMS firmware version with app. If the version is wrong, Update the firmware through the app.(see **section 2.3**) If the problem remains: - Test another BCU, if available.
EC112	PCS communication fault Check inverter communication (see **section 2.4**)
EC113	Parallel communication fault Check whether the parallel communication line is correctly connected as required, and check whether the terminal resistor is correctly installed. (see **section 2.7**)
EC114	EE read/write fault
EC115	ADC sampling fault
EC116	AFE communication fault
EC124	Insulation failure
EC125	Charge circuit failure
EC126	Discharge circuit failure
EC127	Tripping device fault
EC128	Main relay fault
EC133	External watchdog fault
EC324	Charging overcurrent alarm
EC325	Discharging overcurrent alarm

<table>
<tr><td>EC114</td><td>EE read/write fault</td><td rowspan="10">Test another BCU, if available.</td></tr>
<tr><td>EC115</td><td>ADC sampling fault</td></tr>
<tr><td>EC116</td><td>AFE communication fault</td></tr>
<tr><td>EC124</td><td>Insulation failure</td></tr>
<tr><td>EC125</td><td>Charge circuit failure</td></tr>
<tr><td>EC126</td><td>Discharge circuit failure</td></tr>
<tr><td>EC127</td><td>Tripping device fault</td></tr>
<tr><td>EC128</td><td>Main relay fault</td></tr>
<tr><td>EC133</td><td>External watchdog fault</td></tr>
<tr><td>EC324</td><td>Charging overcurrent alarm</td><td rowspan="2">Automatic recovery is no longer allowed, manual recovery by maintenance personnel</td></tr>
<tr><td>EC325</td><td>Discharging overcurrent alarm</td></tr>
</table>

When the white LED flashes N times at on for 0.5 seconds and off for 0.5 seconds and the blue LED constant, it indicates a fault in Module.

Please start to count when the white LED begins to flash, and then record how many times white LED flashes. Flashing N times, represents the Nth battery module failure, counting from top to bottom (also refer to the User manual for details).

Different fault codes represent different fault information, see the table below.

LED event code (EC)	Measure
EC100 EC203 EC303 EC403 EC503 EC603 EC703 EC803 EC903 EC1003	Module “N” loss - Make sure the app configuration has been completed correctly (especially the module type and quantity). - EC 100 to EC 1003 means that a module is not recognized. The first number (= number of white LED flashes) indicates which battery module is probably affected. Example: EC 100 = the first battery module from the top /EC 203 = the second battery module from the top / EC 403 = the fourth battery module from the top. - Remove the affected module and check whether the event code disappears. - Rearrange the modules in the tower. **Note:** A module with communication problems often works without restrictions at the lowest module position, since no communication with the base is necessary.
EC103	Voltage sampling disconnection - Make sure the terminal resistor is plugged in the correct position. Refer to the Manual. - Remove the topmost module and check whether the event code disappears. **Note:** A module with communication problems often works without restrictions at the lowest module position, since no communication with the base is necessary. Check the cell voltage of all the modules with multimeter (see **section 2.10**). If a module has an abnormal cell voltage, remove it and then reconfigure the system. If the problem disappears: - Exchange the module. If the problem remains: - Test another BCU, if available.
EC104	Temperature sampling disconnection - Log in BYD ENERGY CLOUD and get battery Fault alarm to identify the abnormal module. Alternatively, follow “Module exclusion method” (see **section 2.11**).
EC105	Cell voltage sensor failure - Check DC cable connection to the battery, inverter and combiner box (if there is any). - Restart system properly (see step 7, section 1) If the problem remains: - Test another BCU, if available.
EC107	Cell undervoltage - Check whether the cell voltage of each module is normal, and exchange the module if the cell voltage is abnormal. - Follow section 2.10 (Voltage measurement and undervoltage instruction)
EC120	Abnormal temperature rise - Check the BYD Energy app to identify the abnormal module. Alternatively, follow “Module exclusion method” (see **section 2.11**).
EC121	Cell overvoltage - Check whether the cell voltage of each module is normal, and exchange the module if the cell voltage is abnormal. - Follow section 2.10 (Voltage measurement and undervoltage instruction)
EC122	Large cell voltage difference - Check the BYD Energy app to identify the abnormal module. Alternatively, follow “Module exclusion method” (see **section 2.11**).

EC134	Inter-group MOSFET fault Make sure that the latest firmware is installed and that the battery has been properly restarted. If the problem remains: it is probably caused by a module. Follow the “Module exclusion method” (see **section 2.11**).	
EC310	Cell overvoltage alarm	Automatic recovery is no longer allowed, manual recovery by maintenance personnel
EC311	Cell undervoltage alarm	
EC314	Charging high temperature alarm	
EC315	Charging low temperature alarm	
EC316	Discharging high temperature alarm	
EC317	Discharging low temperature alarm	
EC319	Excessive voltage difference alarm	

2.10 Voltage measurement and undervoltage

ATTENTION: High voltage!

You can see the max. and min. cell voltage in the BYD Energy app. You can also get the detailed module and cell voltage with the section2.8 or measure it manually according to the description below:

Measurement of Tower Voltage

Remove the BCU and measure the tower voltage on the topmost module as shown below. Note: The nominal voltage should be the module quantity times 100V (for HVS+) or the module quantity times 50V (for HVB&HVM+).

		
3 HVB modules	**3 HVS+ modules**	**3 HVM+ modules**

If the measured voltage deviates significantly from the nominal value, please check the electrical voltage at the individual modules, as shown in the following section.

Measurement of Individual Module Voltage

Positive	Negative	Measurement:
		

Undervoltage

A module in which one of the 32 (HVS+) / 16 (HVB&HVM+) cells has a voltage of <1.5 V is considered to be in undervoltage (check with [section 2.8] / BYD Energy app if possible).

A HVS+ module with >90 V and a HVB&HVM+ module with >45 V should be fine, and you can continue to check other items according to this service guideline. Always make sure the firmware is the latest. If the module voltage is <90V (HVS+) / <45V (HVB&HVM+) but the single cell voltage is >1.5V, the battery needs to be charged quickly.

- If only one module is undervoltage: Remove that one and try to start the system without it (if the remaining modules still comply with the minimum quantity requirement). Otherwise, avoid further discharge (e.g., remove the BCU).
- If more than one module is undervoltage: Contact the service team as stated below and make sure to avoid any further discharge of the battery (e.g remove BCU from the system)

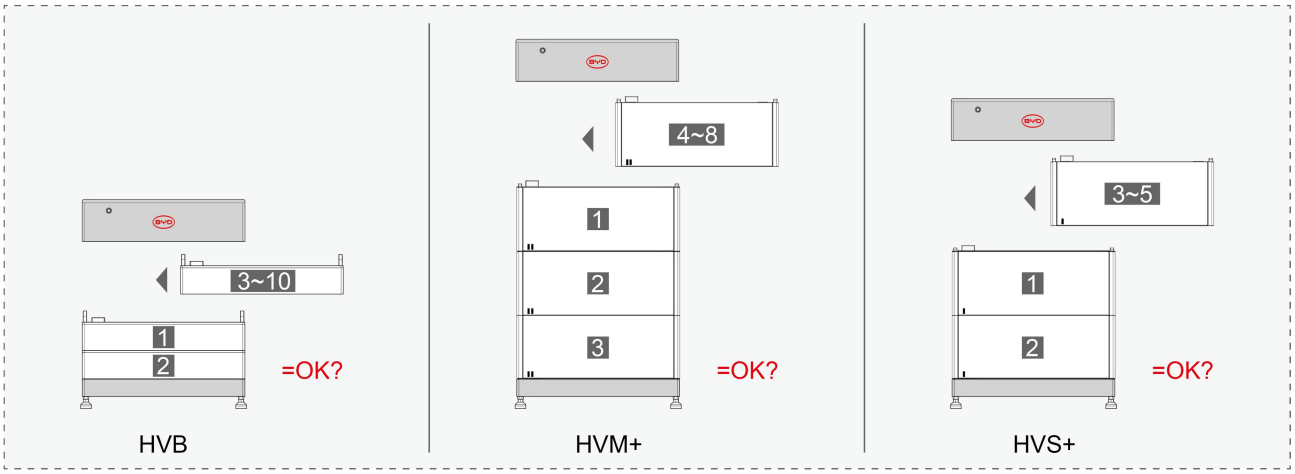
When contacting the service team, make sure to fill out the service checklist completely and provide the following information:

- Serial Numbers (of the BCU and all affected modules)
- Tower voltage and individual module voltages of all modules (related to serial number)
- What was the status of the system switch on the BCU when the undervoltage (UV) happened? (tripped or not)
- If possible: Logs from the battery according to the **section 2.8** and app screenshots showing the cell voltages
- Initial firmware version of the battery when the undervoltage happened (BMS)
- Inform if the BCU could shut down normally by pressing the LED button. (Note: if you have updated the firmware version after undervoltage, write down whether the battery could be switched off manually before the firmware update.)
- Detailed description of how and why the system reached undervoltage if known. Include the information of when the system was installed and commissioned and in which circumstance and when the undervoltage happened. If the battery was never running before: Why did it never work before, and what was the battery's status when the battery was left (on / off / LED)
- Inverter model, serial number and inverter logs
- Access to the inverter portal (add info@eft-systems.de and provide the name of the system in the portal)

2.11 Identifying a faulty module / Module exclusion method

1. Install the Battery-Box system complying with the minimum quantity requirement (HVB＆HVS+: 2 modules, HVM+: 3 modules).

2. If not okay: The faulty module is probably one of the modules in the tower. View the fault module number through the app or , take one of the spare modules and exchange the fault module with the spare module, then check the battery status. If battery status turns to “OK”, the faulty module is the one that was exchanged.



3 SERVICE TASKS

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

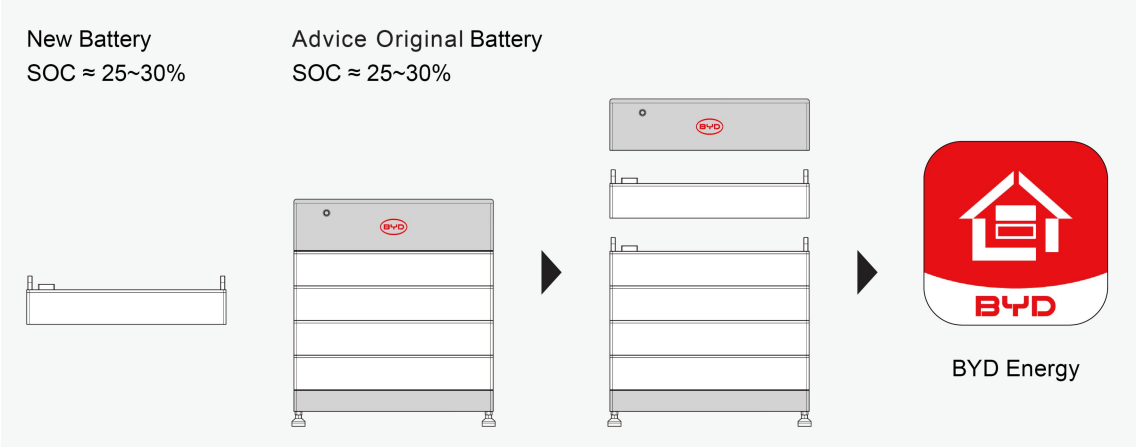
3.1 BCU replacement

Have you detected a faulty BCU?
After replacing the BCU, please remember to redo the configuration and firmware-update with the app.

3.2 Module replacement

Have you detected a faulty module?
In the meantime, you can continue to use the battery system with the remaining modules and a correspondingly reduced capacity (taking into account the minimum number of modules).

Please note:
It is important that all modules of a battery tower have a similar state of charge (SOC) with a tolerance of 5%.
New modules have about 25%-30% SOC. If the remaining modules have not yet been put into operation (not charged / discharged), the new module can be easily added.
Otherwise, it is basically a module extension. In this case, please add the new module to the system only when the SOC of the system is between 25% and 30% (see extension process in the Operating Manual).



BYD Battery-Box HVB&HVM+&HVS+ Service Checklist - V1.0 EN

Important: The installation and all other kinds of works or measurements in combination with the BYD Battery-Box are only allowed by professional and qualified electricians. Improper handling can cause danger and damage. This document does not replace the official BYD manuals and documents. No responsibility is accepted for the accuracy of the information.

1 GENERAL STEPS

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

- ☐ 1.1 Configuration
- ☐ 1.2 Only HVM+ or HVS+
- ☐ 1.3 External Connections
- ☐ 1.4 Latest Firmware
- ☐ 1.5 App Configuration
- ☐ 1.6 Proper Restart
- ☐ 1.7 Correct Operation

2 ERROR RELATED ANALYSIS

Please mark the error related Analysis from Chapter 2 of the Service Guideline that you checked, and collect all the information related to those Sections

- ☐ 2.1 BCU shows no reaction / No LED
- ☐ 2.2 BCU switch cannot be flipped up / LED remains on
- ☐ 2.3 Problem with the Firmware Update / Smart Wi-Fi/LAN Module / App Configuration
- ☐ 2.4 Battery <> Inverter communication / no charging or discharging
- ☐ 2.5 SOC & charging logic
- ☐ 2.6 Unexpected shutdown
- ☐ 2.7 Module Extension / Parallel connection
- ☐ 2.8 Read Battery Information
- ☐ 2.9 Fault event code (EC)
- ☐ 2.10 Voltage measurement and undervoltage
- ☐ 2.11 Identifying a faulty module / Module exclusion method

3 SERVICE INFORMATION

Please fill all available information in below table. Some information like the Serial Number of the BCU 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(eg., HVS+ 5.1/ 2xHVM11.0/ 3xHVB11.8)		BCU Firmware	
BCU Serial Number		Smart Wi-Fi/LAN Module Firmware	
BCU Connected to Internet	YES ☐ OK ☐	Inverter Firmware	
Inverter Brand + Model		System Name on Inverter Portal (Provide access for:	
Inverter Serial Number		info@eft-systems.de)	
Commissioning Date			

- **Service Information**

BCU Event Code (EC)		Inverter Error Code	

Was the battery charging / discharging before (was the system working normally before?) YES ☐ NO ☐

Take pictures of open communication port in the BCU and Inverter clearly showing connection cables ☐

Get Data of the Battery-Box with the BYD ENERGY CLOUD (see chapter 2.8) ☐

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.

Service Contact:

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