BYD BATTERY-BOX FAMILY

BYD premium battery range available in SA

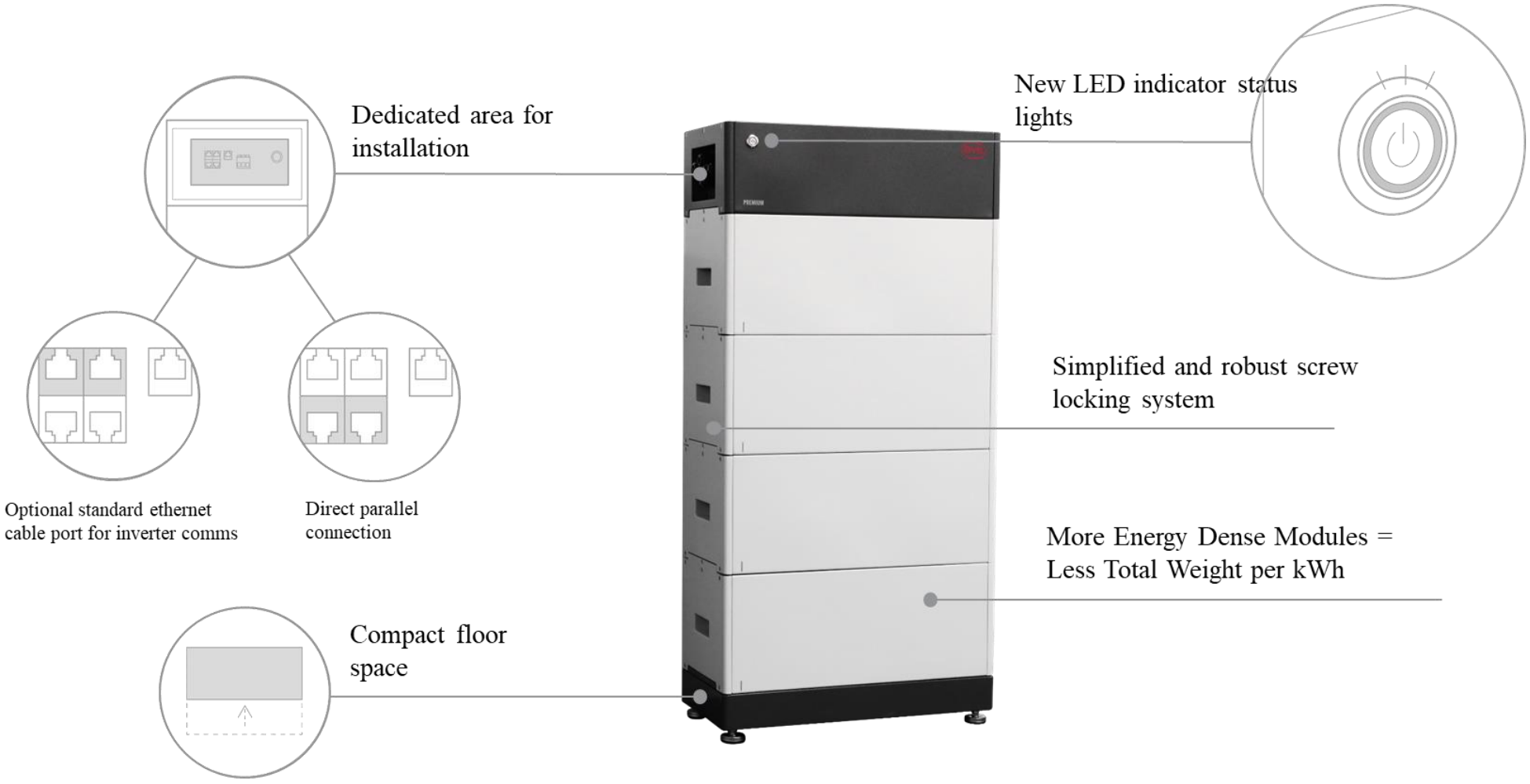
HVS / HVM

LVS

LVL

Flex Lite

BYD premium battery range: Tower design Improvements



Battery Box

HV SERIES

HVM

HVS 5.1 | HVS 7.7 | HVS 10.2 | HVS 12.8

3 x HVS 12.8
38.4Kwh

HVS

- **Min. 2 x module, Max. 5 x modules per tower**
- **Max. 38.4kWh (15 modules) in parallel**

Difference between the Low Voltage and High High Voltage series

	LVS 4	LVS 8	LVS 12	LVS 16
Battery Module	LVS (4 kWh, 51.2 V, 45 kg)			
Number of Modules	1	2	3	4
Usable Energy	4 kWh	8 kWh	12 kWh	16 kWh
Max Cont. Output Current	65 A	130 A	195 A	250 A
Nominal Voltage	51.2 VDC	51.2 VDC	51.2 VDC	51.2 VDC

	HVS 5.1	HVS 7.7	HVS 10.2	HVS 12.8
Battery Module	HVS (2.56 kWh, 102.4 V, 38 kg)			
Number of Modules	2	3	4	5
Usable Energy	5.12 kWh	7.68 kWh	10.24 kWh	12.8 kWh
Max Cont. Output Current	25 A	25 A	25 A	25 A
Nominal Voltage	204 VDC	307 VDC	409 VDC	512 VDC

Battery Box

HV SERIES

HVS

HVM

- **Min. 3 x module, Max. 8 x modules per tower**
- **Max. 66.2kWh (24 modules) in parallel**

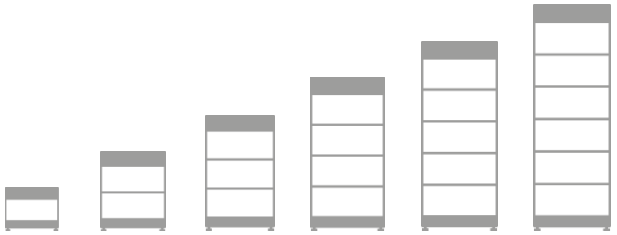
Some inverters compatible with the BYD HV SERIES

GOODWE
your solar engine

SMA

LV SERIES

LVL

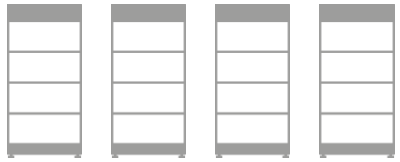


LVS 4.0 | LVS 8.0 | LVS 12.0 | LVS 16.0 | LVS 20.0 | LVS 24.0

➢ **Min. 1 x module, Max. 6 x modules per tower**

LVS

LV Flex Lite



16 x LVS 16.0

➢ **Max. 4 modules per tower when parallel;**

➢ **Max. 256kWh (64 modules) in parallel**

LVS datasheet extracts

	LVS 4	LVS 8	LVS 12	LVS 16	LVS 20	LVS 24
Battery Module	LVS (4 kWh, 51.2 V, 42 kg)					
Number of Modules	1	2	3	4	5	6
Usable Energy [1]	4 kWh	8 kWh	12 kWh	16 kWh	20 kWh	24 kWh
Max Cont. Output Current [2]	65 A (0.83 C)	130 A (0.83 C)	195 A (0.83 C)	250 A (0.83 C)	250 A	250 A
Peak Output Current [2]	90 A, 5 s	180 A, 5 s	270 A, 5 s	360 A, 5 s	360 A, 5 s	360 A, 5 s
Dimensions (H/W/D)	457 mm 640 mm 298 mm	690 mm 640 mm 298 mm	923 mm 640 mm 298 mm	1156 mm 640 mm 298 mm	1389 mm 640 mm 298 mm	1622 mm 640 mm 298 mm
Weight	52 kg	94 kg	136 kg	178 kg	220 kg	262 kg
Scalability	Max. 64 Modules in Parallel (256 kWh) (only 4 modules per tower when towers are in parallel)					
Requires PDU and external BMU	One PDU per tower and One BMU per Battery Bank					

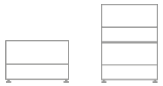
[1] DC Usable Energy, Test conditions: 100% DOD, 0.2C charge & discharge at + 25 . System usable Energy may vary with different inverter brands
[2] Charge/discharge derating will occur between -10 °C and +5 °C

LV SERIES

LV Flex Lite

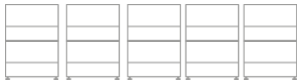
LVS

LVL



LVL
15.4

2 x LVL
15.4



64 x LVL 15.4
983Kwh

- **Max. 983kWh (64 modules) in parallel**

LVL datasheet extracts

	LVL 15.4
Number of modules	2
Usable Energy [1]	15.36 kW
Max Cont. Output Current [2]	250 A (0.83 C)
Nominal Voltage	51.2 VDC
Dimensions (H/W/D)	500 mm 650 mm 575 mm
Weight	164 kg
Scalability	Max. 64 in Parallel (986 kWh)
Requires external BMU	YES (one per battery bank)

[1] DC Usable Energy, Test conditions: 100% DOD, 0.2C charge & discharge at + 25 . System usable Energy may vary with different inverter brands
[2] Charge/discharge derating will occur between -10 °C and +5 °C

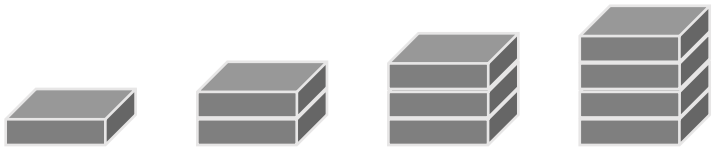
Battery Box

LV SERIES

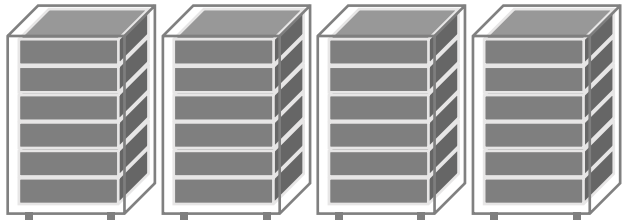
LVS

LVL

LV Flex Lite



LV Flex Lite 5.0 | LV Flex Lite 10.0 | LV Flex Lite 15.0 | LV Flex Lite 20.0



- **Max. 320kWh (64 modules) in parallel**

BYD Flex Lite Specifications

Specification

Usable Energy	**5.0 kWh**
Max Cont. Output Current	70A (3.58kW) 0.7C
Peak Output Current	105 A, 5 s
Dimensions (H/W/D)	132*482*521mm
Weight	47KG
Nominal Voltage	51.2 V
Operating Voltage	43.2-57.6 V
Operating Temperature	-10 °C to +50°C
Battery Cell Technology	Lithium Iron Phosphate (cobalt-free)
Communication	CAN
Enclosure Protection Rating	IP20
Round-trip Efficiency	≥95%
Scalability	**Max. 64 in Parallel (320kWh)**
Certification	IEC62619 / CE / CEC / UN38.3/EN62040
Applications	ON Grid / ON Grid + Backup / OFF Grid

LV FLEX LITE

Highly Flexible for Installations

Standing Horizontally

Standing Vertically

Customer DIY Cabinet Rack-mounted

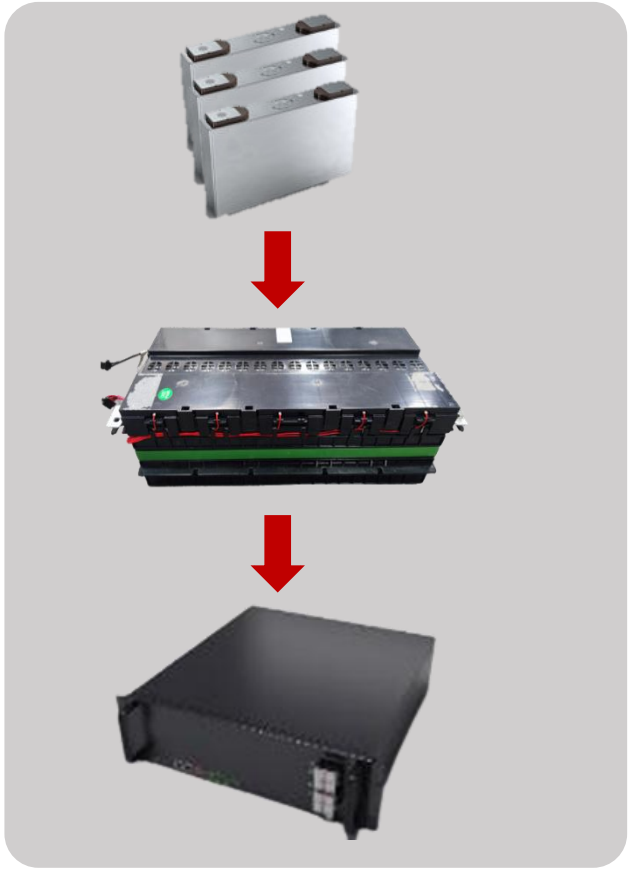
Commercial

Residential

More…

BYD Precision C2P (Cell-to-pack) Design

Doubled Capacity, Smaller Volume, Longer Lifespan



VS

Battery-Box Pro 2.5

Battery-Box Flex Lite 5.0

Some of the COMPATIBLE INVERTERS for LVS and LVL and Flex Lite

victron energy BLUE POWER

SMA SOLAR TECHNOLOGY

Deye 德業®

SUN SYNK®

STUDER

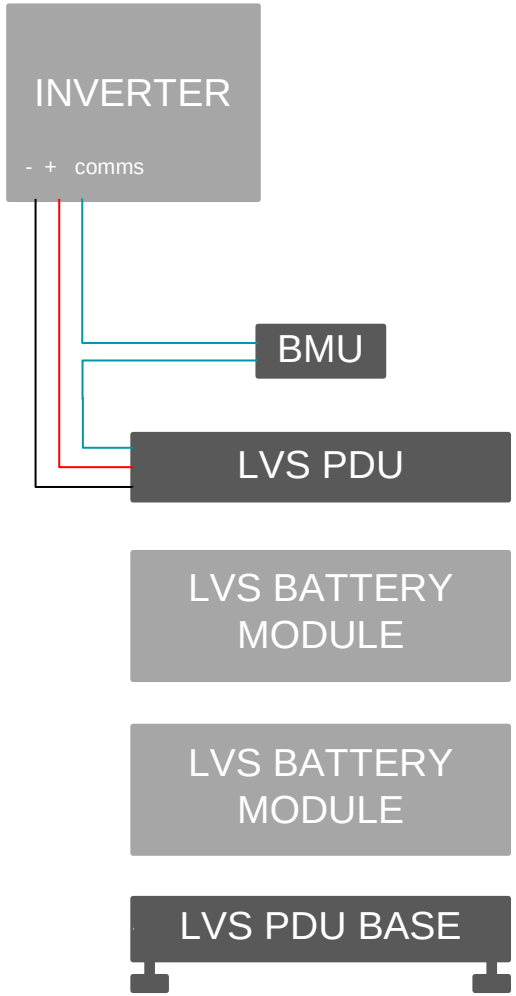
selectronic

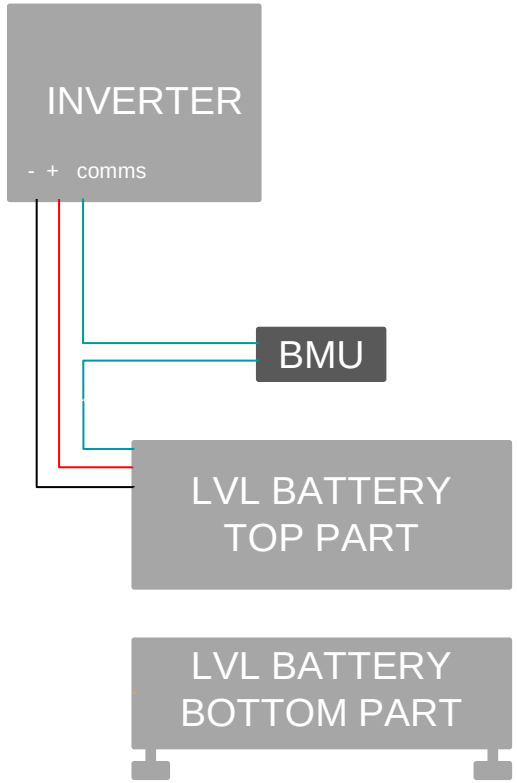
phocos

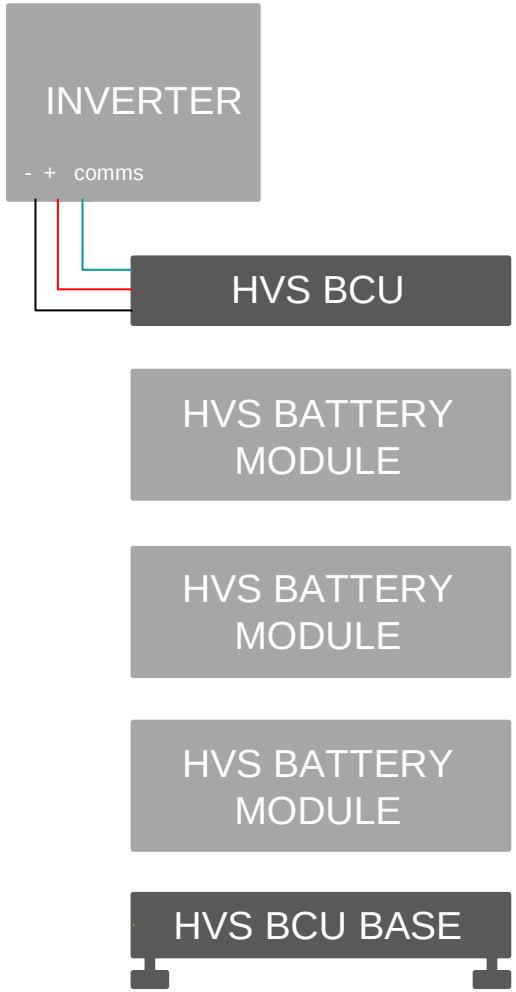
More compatible inverters are listed on the bydbatterybox.com/downloads website

solis inverters

BYD premium battery range available in SA : Components







Battery Box

BYD BATTERY-BOX LV FLEX LITE

- Perfect Battery for Bespoke Projects and Integrated Systems.
- Scalable from 5 kWh to 320 kWh via Max 64 parallels.
- Capable of High-Powered Emergency-Backup and On/Off-Grid Function.

F L E X L I T E

FLEXIBLE

- **Flexible for Installations**
  Horizontal or vertical, rack-mounted and customer DIY cabinet
- **Flexible for More Scenarios**
  Lithium Iron Phosphate battery cell adjusts to wider operating temperature
- **Flexible for Your Need**
  Off-grid/on-grid and residential or commercial operation

LARGE

X2

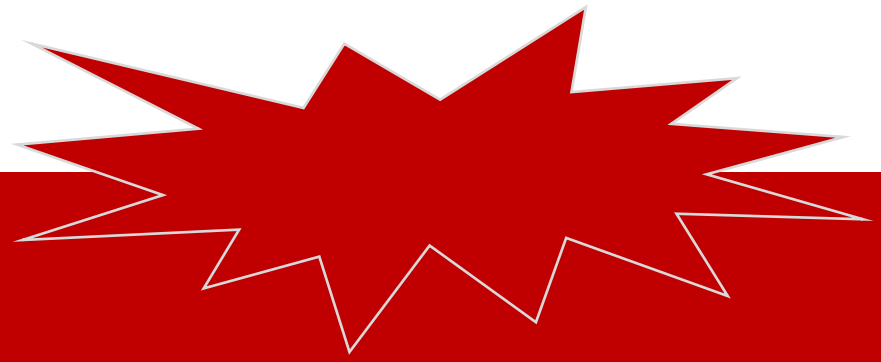
- **Doubled Capacity**
  Smaller size and doubled usable energy
  *Compared with the Battery-Box Pro 2.5

X64

- **Maximum Capacity (320KWh)**
  Connect up to 64 modules in parallel on one BMU to reach capacities from 5 ~ 320 kWh

EXTRAORDINARY

- **C2P Technology**
  Cell-to-pack design provides higher capacity, smaller volume, and longer lifespan
- **Highest Industry Standard**
  IEC62619 / CE / CEC / UN38.3 / IEC62040 certification



FD-LV.5.0 IS Coming

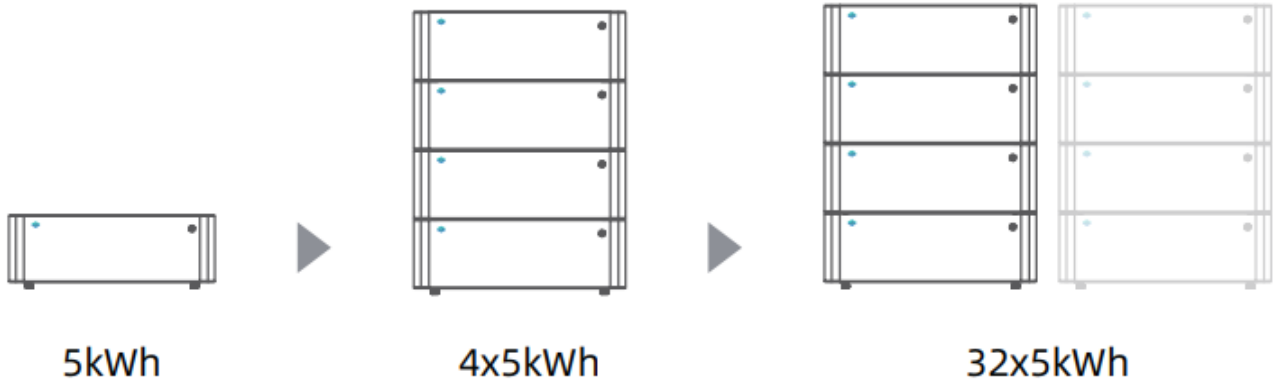
FD-LV5.0

2023


FinDreams Battery
FinDreams Battery
FinDreams Battery
FinDreams Battery

FD-LV5.0

Compact | **Affordable** | Scalable

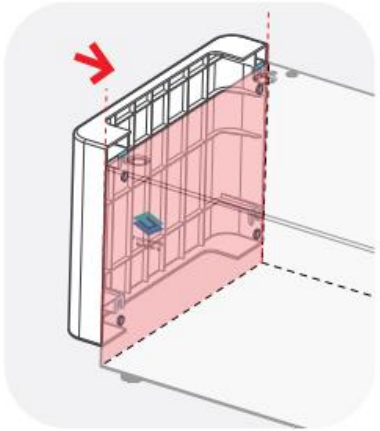


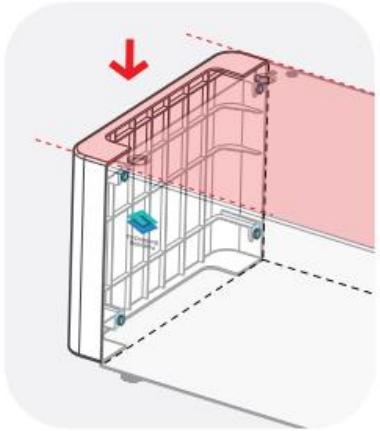
FD-LV5.0

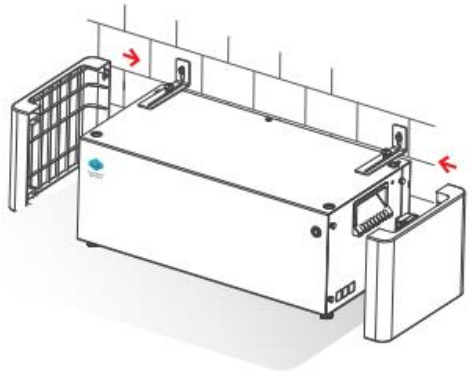
Technical Data

Usable Energy [1]	5kWh
Max. Charge and Discharge Current [2]	70A
Peak Charge and Discharge Current	200A, 10s
Dimension (H/W/D)	195mm x 595mm x 255mm
Weight	42±2kg
Nominal Voltage	51.2V
Operating Voltage	40 ~ 57.6V
Charge Cut-Off Voltage	57.6V
Discharge Cut-Off Voltage	40V
Scalability	Max. 32 in Parallel (160kWh)
Installation Mode	Floor installation
Communication	CAN / RS485
Round-trip Efficiency	≥95%
Applications	On Grid / On Grid + Backup / Off Grid
Operating Temperature	Charge 0~50℃ & Discharge -20~50℃
Protection Class	IP20
Storage Humidity	5%~95%
Altitude	< 4000m
Certification	CE / IEC62619 / UN38.3
Compatible Inverter	Solis/ Deye / Victron/ Megarevo

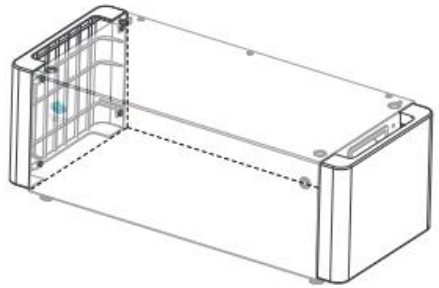
FD-LV5.0



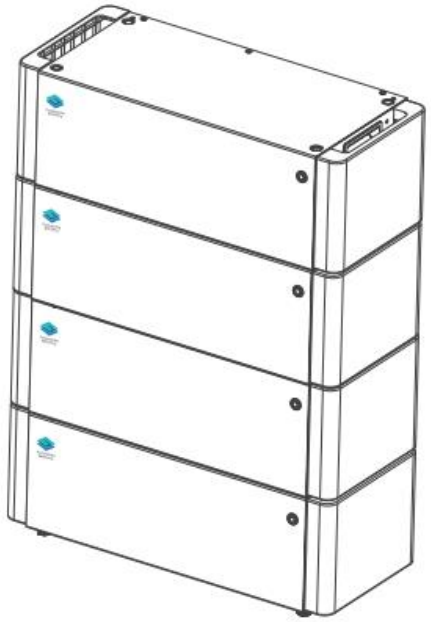




Battery Module



Tower(1~4 modules)

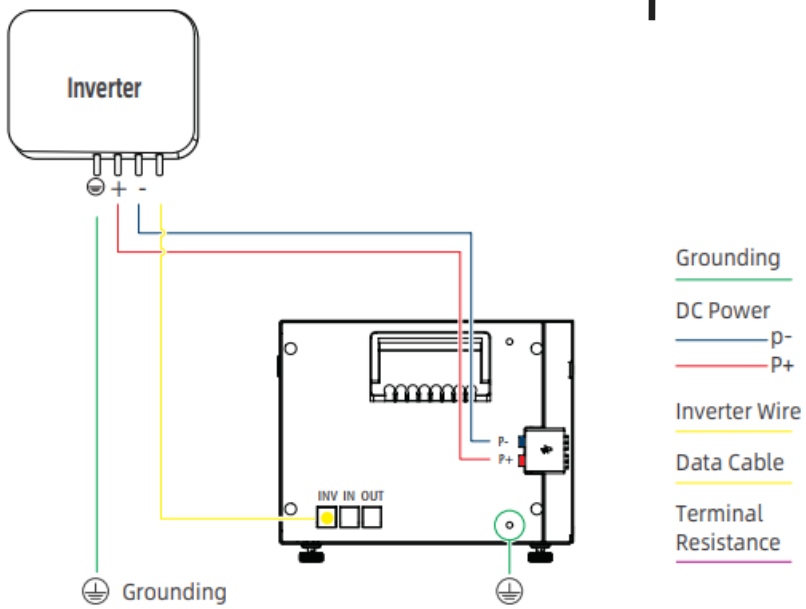


Floor Installation

Space-Saving

FD-LV5.0

Connection



Grounding

DC Power

p-

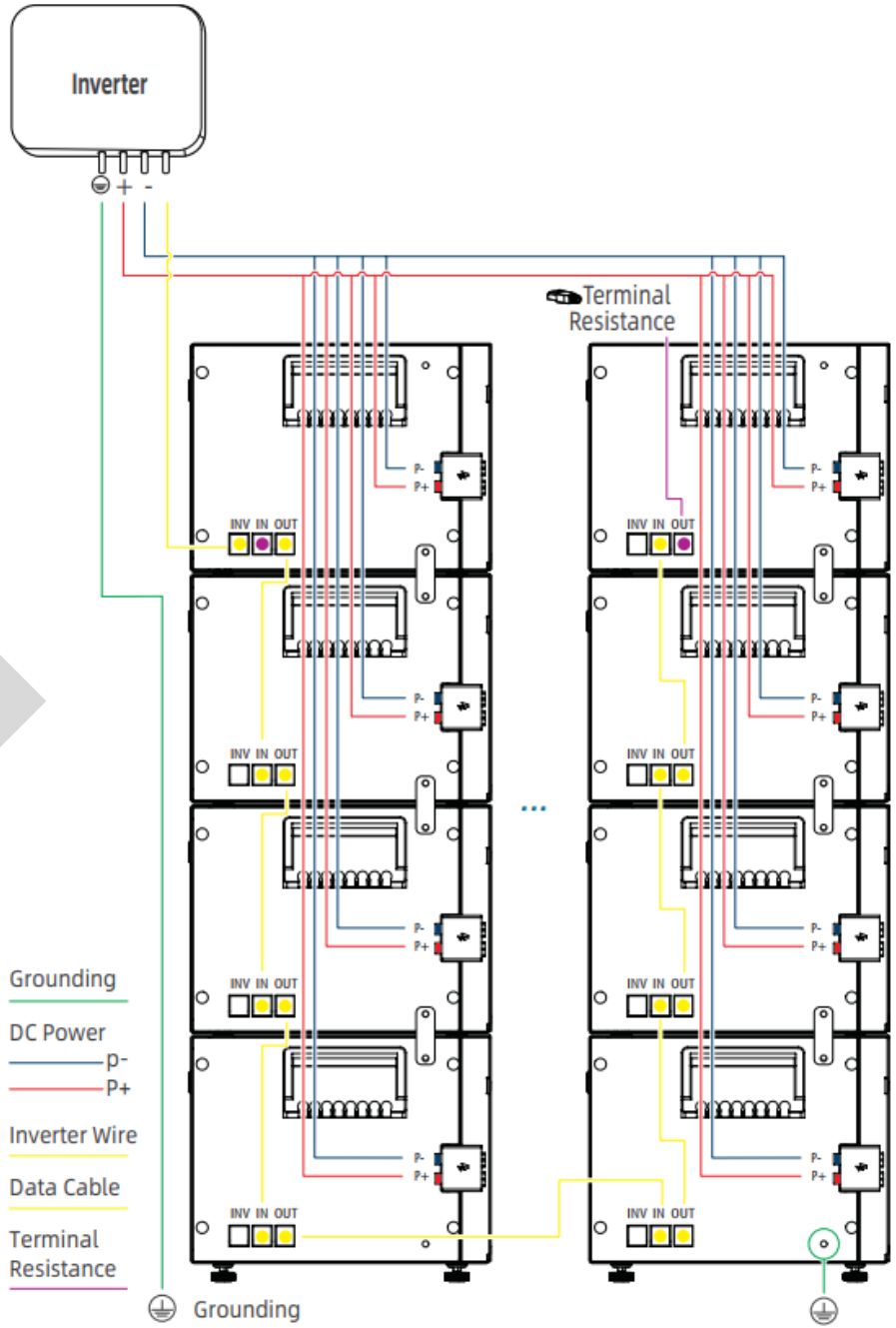
P+

Inverter Wire

Data Cable

Terminal Resistance

Extension



Grounding

DC Power

p-

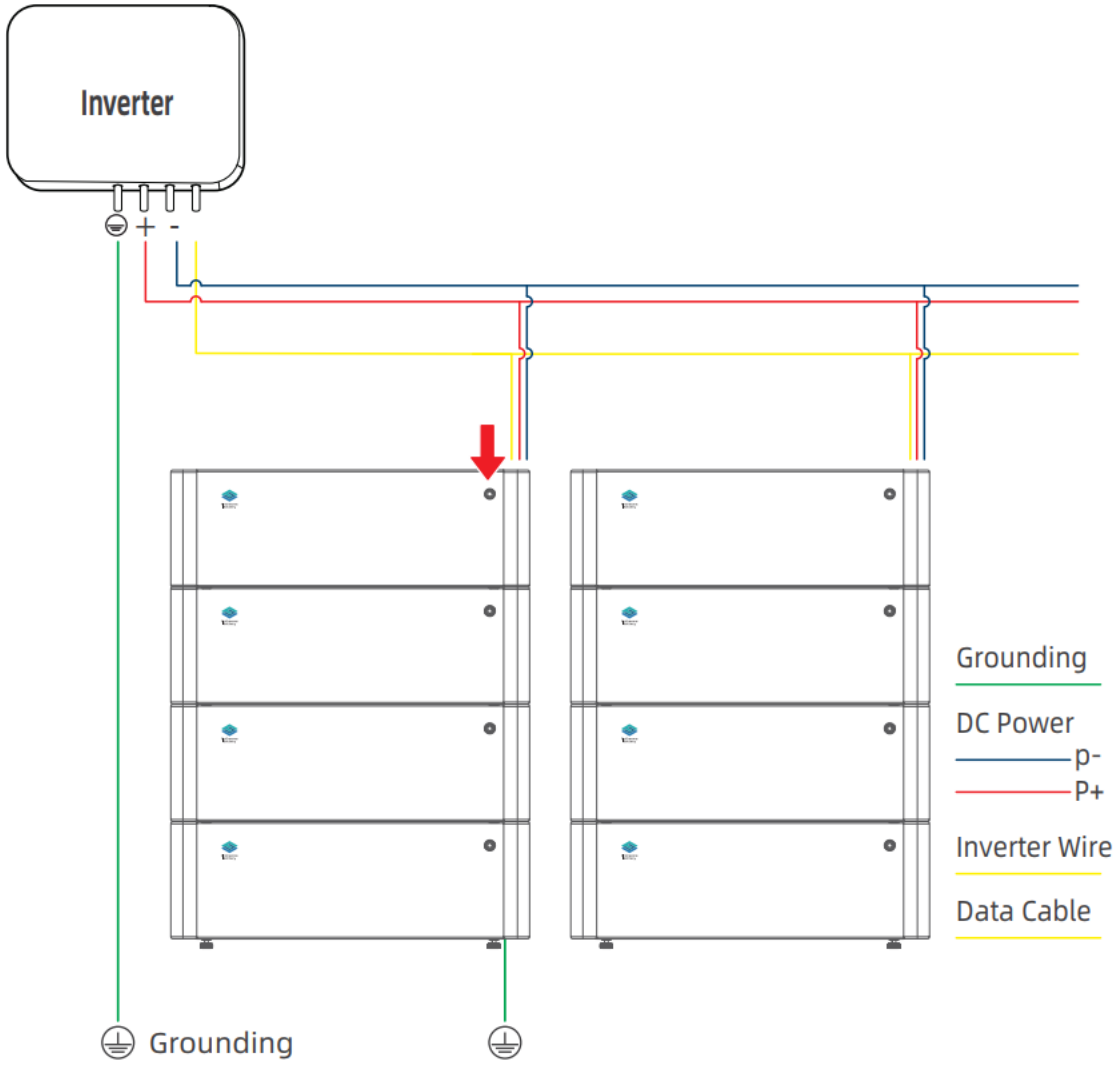
P+

Inverter Wire

Data Cable

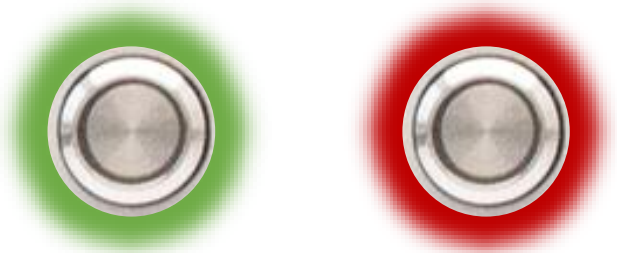
Terminal Resistance

FD-LV5.0



Configuration Automatically

LED Signal Code



FD-LV5.0

Switch On

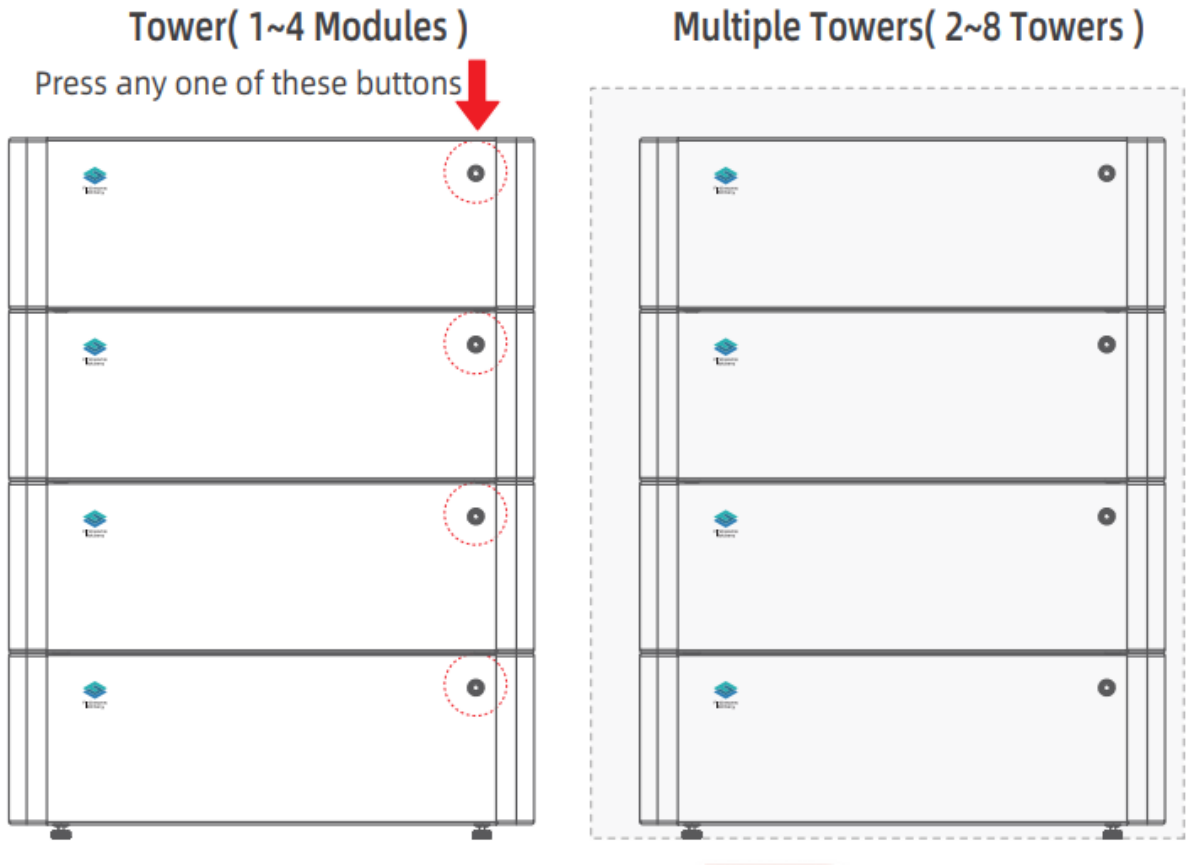
Switch

↓

Battery

↓

Inverter



Switch Off

Inverter

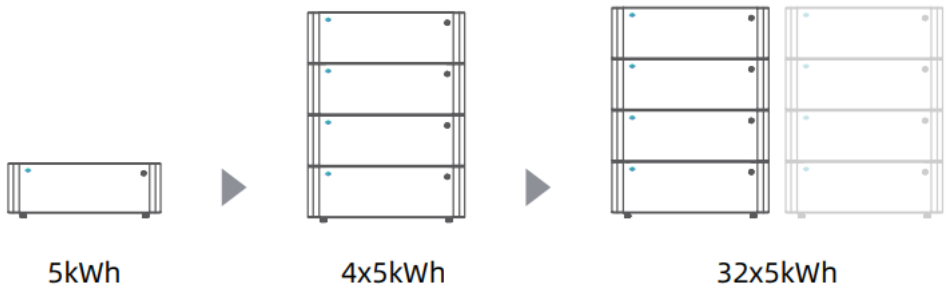
↓

Battery

↓

Switch

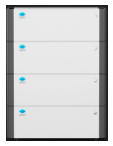
FD-LV 5.0

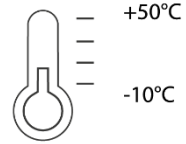


More FD Series will be availble soon

More inverters are under test

BYD+FD SERIES

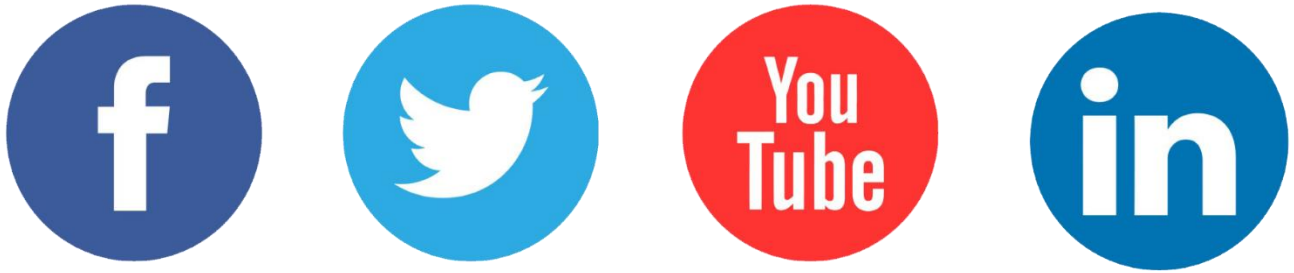
BYD	**HVS** (204-512V)		HVS 5.1	7.7	10.2	HVS 12.8				3 x HVS 12.8 = 38.4kWh	IP55 Outdoors
	HVM (153-409V)		HVM 8.3	11.0	13.8	16.6	19.3	HVM 22.1		3 x HVM 22.1 = 66.2kWh	
	LVS (51.2V)		LVS 4.0	8.0	12.0	16.0	20.0	LVS 24.0		16 x LVS 16.0 = 256kWh	
	LVL (51.2V)		LVL 15.4							64 x LVL 15.4 = 983 kWh	IP20 Indoors
	LV Flex Lite (51.2V)		LV Flex Lite 5.0							64 x LV Flex Lite 5.0= 320 kWh	
FD	**FD-LV5** (51.2V)		FD-LV 5.0	10.0	15.0	FD-LV 20.0				8x FD-LV 20.0= 160 KWh	



-10℃-50℃

-20℃-50℃

Social Media



https://www.linkedin.com/company/byd-battery-box

https://twitter.com/BYD_BatteryBox

https://www.facebook.com/BatteryBoxBYD

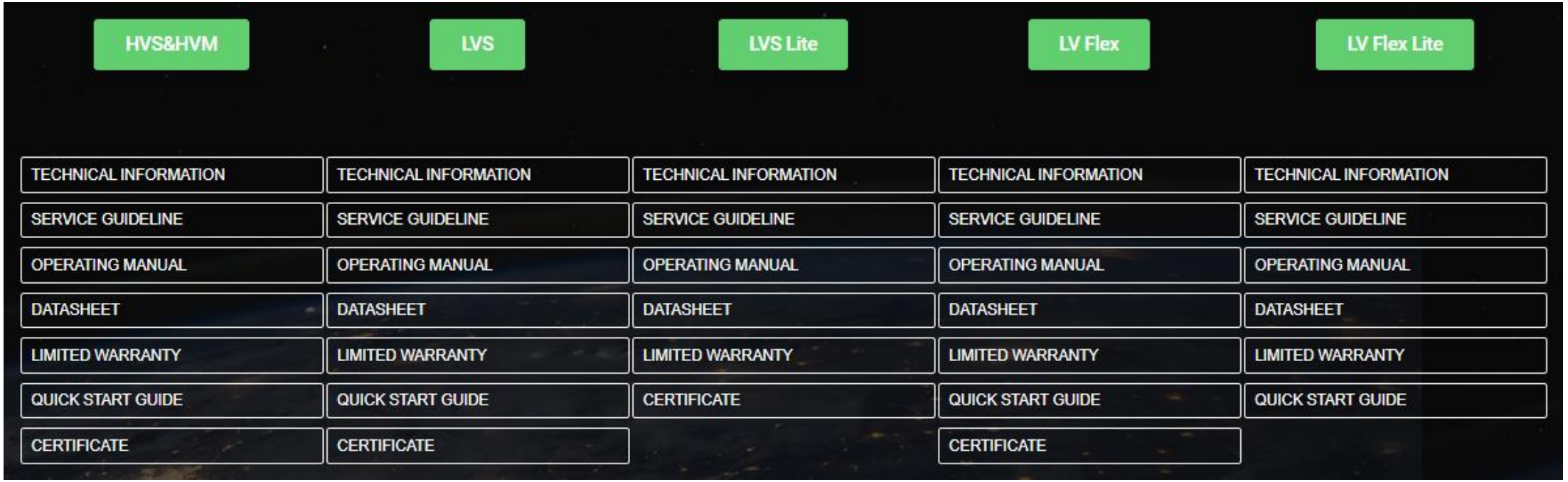
Installation Video: https://www.youtube.com/watch?v=sLJKRbH3f90

https://www.facebook.com/afriplusenergy

Manuals and resources

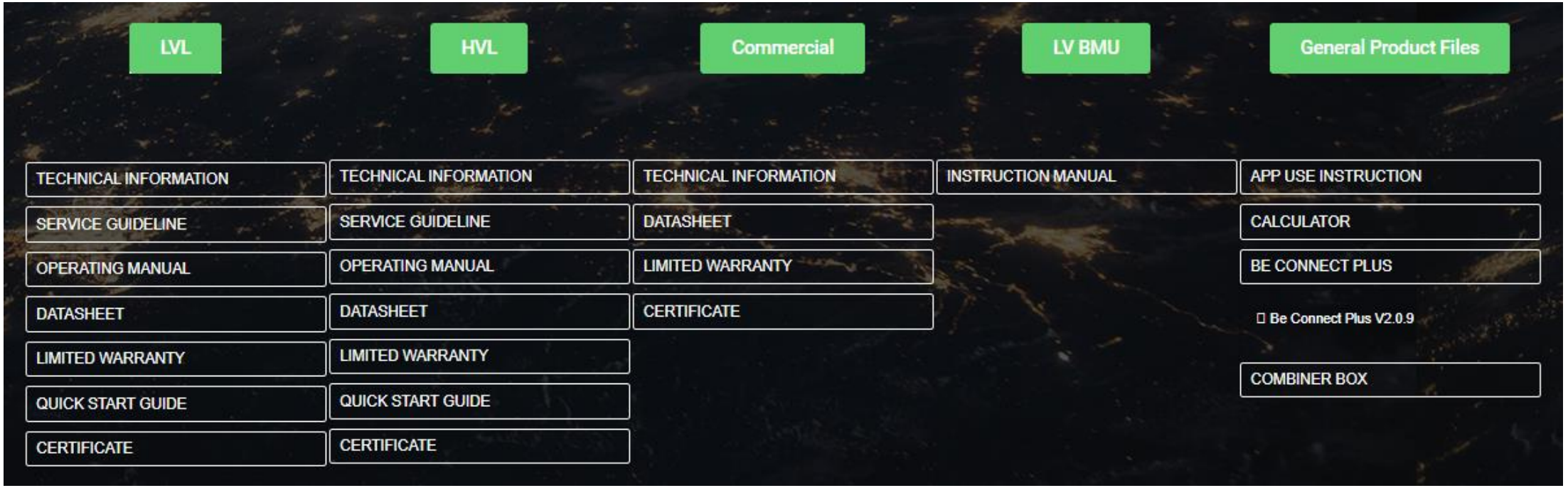
Manuals and resources

Please see https://bydbatterybox.com/downloads



Manuals and resources

Please see https://bydbatterybox.com/downloads



Minimum battery bank sizing

Minimum battery bank sizing

The purpose of minimum battery sizing is to ensure that the battery bank does not enter an "overcurrent" state. There are 2 main causes of battery overcurrent

Cause 1, large electrical loads on the output of the inverters

- **High constant loads**
- **Electrical motors with high inrush currents (e.g water pumps especially with no VSDs)**
- **Capacitive loads with high inrush currents**
- **Can be managed**

Cause 2, high quantities of power flowing from the inverter to the grid at the moment of grid failure / Load shedding

- **Generally dependent on the size of the inverter, and the stiffness of the grid**
- **Occurs in the window between the grid failing and the inverter disconnecting from the grid.**
- **Difficult to manage**

Minimum battery bank sizing

BATTERY-BOX LV FLEX LITE MINIMUM CONFIGURATION LIST – V1.1

Compatible Inverter (1- / 3-phase)		Minimum Configuration for Single Phase			Minimum Configuration for Three Phase		
		On Grid	On Grid with Full Backup Power	Off Grid Inrush Use	On Grid	On Grid with Full Backup Power	Off Grid Inrush Use
SMA	SI 4.4M	≥1	≥2	≥2	≥4	≥6	≥6
	SI 6.0H	≥2	≥3	≥3	≥5	≥9	≥9
	SI 8.0H	≥2	≥4	≥4	≥6	≥12	≥12
	Battery firmware: BMU ≥ V1.22, BMS ≥ V1.13; Inverter firmware ≥ V1.3.1.R.						
Victron	MultiPlus 48/500/6	≥1	≥1	≥1	≥1	≥1	≥1
	MultiPlus 48/800/9	≥1	≥1	≥1	≥1	≥1	≥1
	MultiPlus 48/1200/13	≥1	≥1	≥1	≥1	≥2	≥2
	MultiPlus 48/1600/20	≥1	≥1	≥1	≥1	≥2	≥2
	MultiPlus 48/2000/25	≥1	≥1	≥1	≥1	≥3	≥3
	MultiPlus 48/2000/25-50 120V	≥1	≥1	≥1	≥1	≥3	≥3
	Multiplus 48/3000/35	≥1	≥2	≥2	≥1	≥4	≥4
	Multiplus 48/5000/70	≥1	≥3	≥3	≥2	≥6	≥6
	Multiplus II (GX) 48/3000/35-32	≥1	≥2	≥2	≥1	≥4	≥4
	Multiplus II (GX) 48/5000/70-50	≥1	≥2	≥2	≥2	≥6	≥6
	Multiplus II 120V 48/3000/35-50	≥1	≥2	≥2	≥1	≥4	≥4
	Multiplus II 48/8000/110-100	≥1	≥4	≥4	≥3	≥10	≥10
	Multiplus II 48/10000/140-100	≥1	≥4	≥4	≥3	≥12	≥12
	Quattro 48/3000/35-50/50 120V	≥1	≥2	≥2	≥1	≥4	≥4
	Quattro 48/5000/75-100/100 120V	≥1	≥3	≥3	≥2	≥6	≥6
	Quattro 48/10000/140- 100/100 120V	≥1	≥5	≥5	≥3	≥13	≥13
	Quattro 48/5000/70-100/100	≥1	≥3	≥3	≥2	≥7	≥7
	Quattro 48/8000/110-100/100	≥1	≥4	≥4	≥2	≥10	≥10
	Quattro 48/10000/140- 100/100	≥1	≥5	≥5	≥3	≥13	≥13
	Quattro 48/15000/200- 100/100	≥2	≥6	≥6	≥4	≥16	≥16

Minimum battery bank sizing

An example of minimum functionality vs full functionality (right colomb) (from Victron and BYD)

Battery Modules Required - Premium LVS 4.0

Phases	Single Phase	Three Phase	Single Phase	Three Phase
Inverter/Charger	On-Grid	On-Grid	Off-grid	Off-grid \ with inrush
Multiplus & Multiplus II & MP-II GX 48/3000/35	1	2	1	4 \ 6
Multiplus & Multiplus II & MP-II GX 48/5000/70	1	2	2	6 \ 8
Inverter RS & Multi RS 48/6000	1	-	3	-
Quattro 48/5000/70-100/100	1	2	2	6 \ 8
Quattro 48/8000/110-100/100	1	2	4	8 \ 12
Quattro 48/10000/140- 100/100	1	4	5	12 \ 16
Quattro 48/15000/200- 100/100	1	4	7*	16 \ 24
EasySolar & EasySolar-II 48/3000/35-50 MPPT150/70	1	2	1	4 \ 4
EasySolar 48/5000/70-100 MPPT150/100	1	2	2	8 \ 8

Minimum battery bank sizing

Battery Modules Required - Premium LV Flex 5.0

Phases	Single Phase	Three Phase	Single Phase	Three Phase
Inverter/Charger	On-Grid	On-Grid	Off-grid	Off-grid
Multiplus 48/500 & 48/800	1	1	1	1
Multiplus 48/1200 & 48/1600	1	2	1	2
Multiplus 48/2000	1	2	1	3
Multiplus & Multiplus II & MP-II GX 48/3000/35	1	3	2	4
Multiplus & Multiplus II & MP-II GX 48/5000/70	2	5	3	6
Inverter RS & Multi RS 48/6000	2	-	3	-
Quattro 48/5000/70-100/100	2	5	3	6
Quattro 48/8000/110-100/100	3	8	4	10
Quattro 48/10000/140- 100/100	4	10	5	13
Quattro 48/15000/200- 100/100	5	14	6	16
EasySolar & EasySolar-II 48/3000/35-50 MPPT150/70	1	3	2	4
EasySolar 48/5000/70-100 MPPT150/100	2	5	2	6

BYD installation

Installation tips

Clothing

- **It is advisable to wear antistatic shoes and non static clothes**
- **It is advisable to wear non slip shoes, Ideally Safety Boots**
- **It is advised not to wear any metal objects / watches / bracelets / necklaces / Zips / Rings**
- **Always wear the appropriate PPE**

General

- **Please refer to the quick install guide, or the used manual for instructions on how to install your battery**
- **Always have a clear working area, you don’t want to trip while carrying a battery**
- **Always make sure the Battery Bank is off / dead when installing**
- **Please keep the Cardboard box the battery was delivered in until the system is running**
- **When crimping lugs / ferrules to wires, always pull on the lug to ensure there is a good connection, also check that there is no insulation interfering with the connection**

Installation tips

General

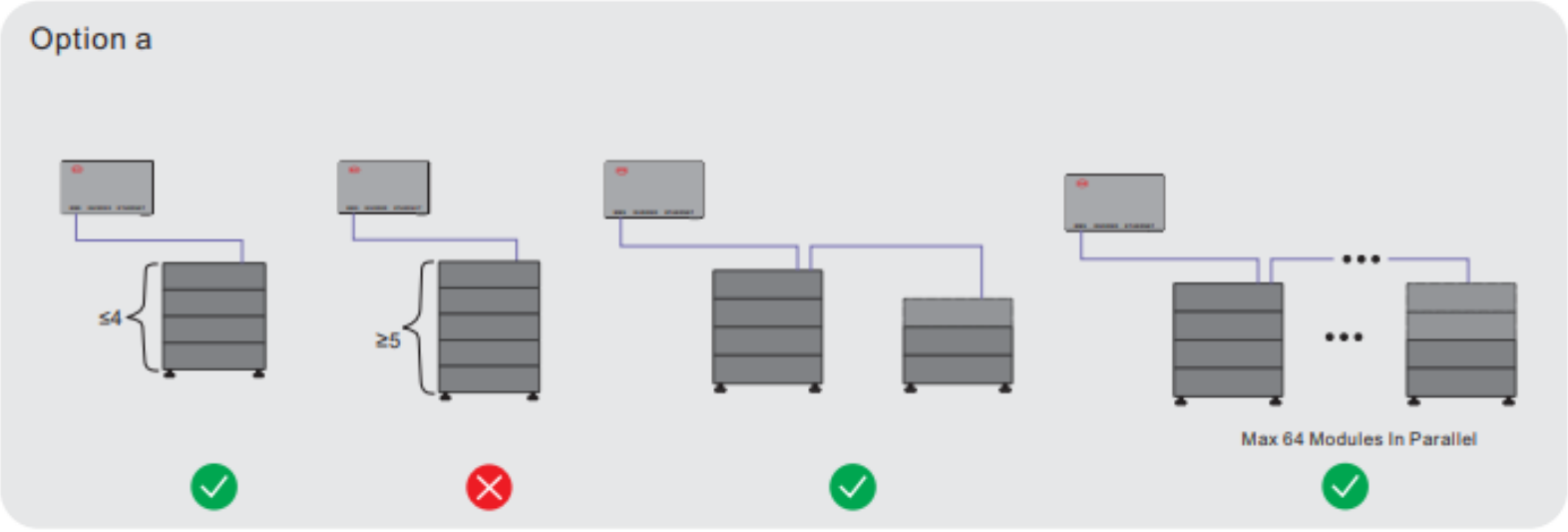
- **Upon opening the battery, please ensure the battery is in good condition (physically), please look for mechanical and water damage. If there is any, please take lots of photos of the battery and the box and note the serial number and report the issue with your supplier**
- **Upon Opening the battery, please ensure all the parts that are required are present**
- **Always lift the batteries in a safe manner (especially the LVL)**
- **DO NOT short circuit the battery bank. Lithium batteries have a very low internal resistance and can deliver >10kA or even >100KA, depending on the system**
- **Please use an official “Victron type A CANBUS” cable for Victron systems**
- **Every BYD LVL, LVS and Flex lite battery bank needs 1 x BMU**
- **Please ensure the Battery and BMU have a good Earth Connection**
- **It is recommended to connect the BYD battery (BMU or BCU) to the internet**

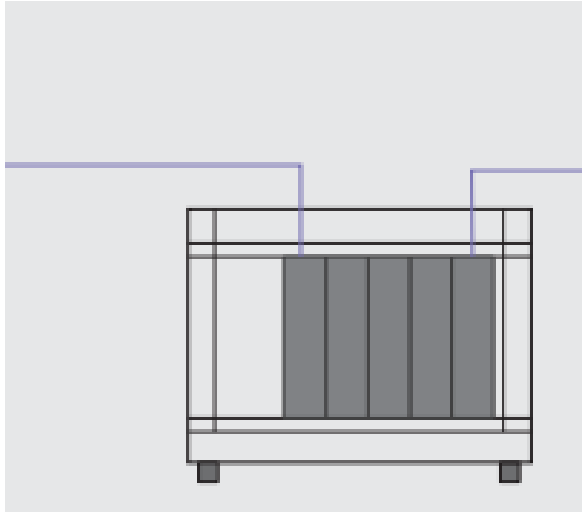
Installation tips Flex Lite

Freestanding Flex Lite

The max tower height is 4 Flex Lite, the number of batteries in a tower do not have to match other towers.

The battery can be installed Vertically

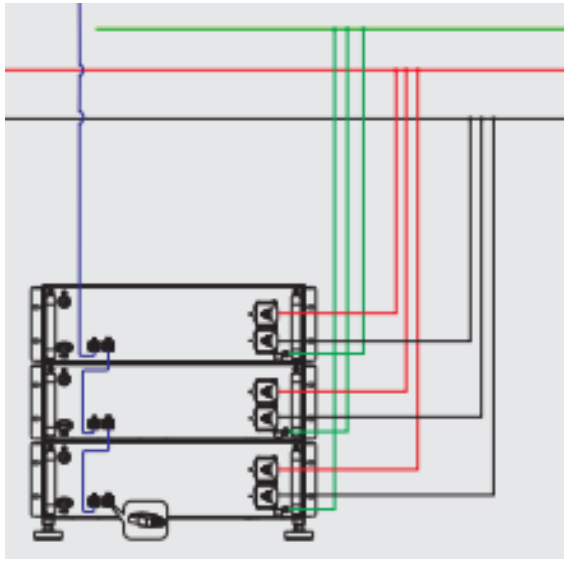




Installation tips Flex Lite

Battery Connections

- **For most battery banks, busbars are recommended**
- **The wires between the Flex Lite and the busbar can be between 16 to 25mmsqr. Please ensure the fuse between the battery bank and the inverter is closed before turning on the battery bank**
- **Lack of a good earth connection can interfere with the comms between the BMU and the batteries**
- **Daisy Chaining the power connections (e.g pylontech) is NOT ADVISED (due to the high currents that the batteries can provide)**



Installation tips - Cabinets vs Freestanding

***A Freestanding tower of Flex Lite requires on set of feet**

Installation tips – Cabinet Specs

BYD Flex lite cabinet Specs

- **H** 800
- **W** 600
- **D** 600
- **Weight** 35kg
- **Capacity** 4 Flex lite modules
- **All wires between the internal Busbar and the Flex lite modules are prewired**

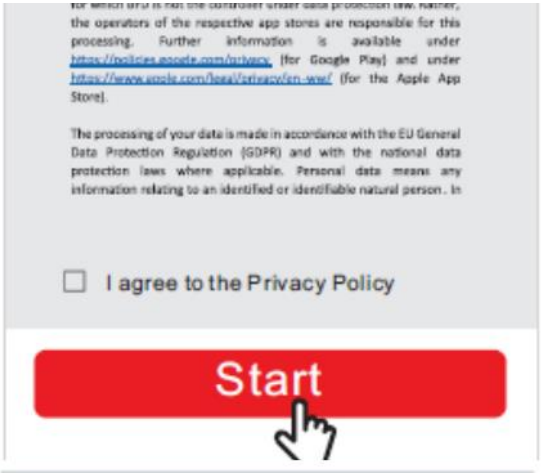
Commissioning - BYD

Commissioning – BYD turn on procedure

- **Please ensure all the fuses between the battery and inverter are closed before turning on the battery (please DO NOT close fuses between the battery and the inverter after the battery has been turned on)**
- **Please ensure the AC supply to the inverter is off, the Inverter is off, and the Solar is off before turning on the battery bank. The battery will not turn on if there is voltage on the DC bus**
- **To turn on the battery bank, press the button on the 1st battery (battery connected to the BMU) for 5 seconds**
- **To turn off the battery bank, press the button on the BMU for 5 seconds**
- **The BYD battery bank will not give voltage out until it is configured correctly**
- **Please ensure the BMU and batteries have a good earth connection**
- **If the BYD battery wifi is off, please hold the BMU button for 2-2.5 seconds (not longer or the batteries will turn off) and wait 15-30 seconds**

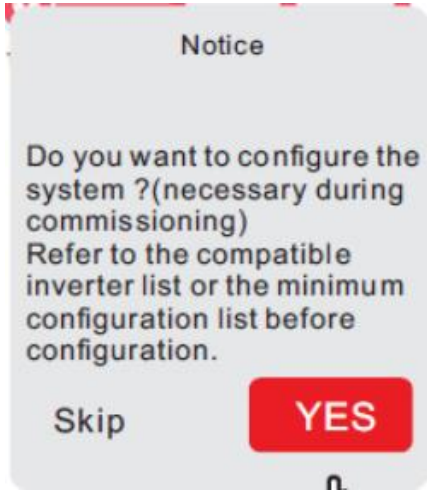
Commissioning – BYD (Android or Apple)

1. **Download “Be Connect” from Google Play or App Store. The battery system generally works best with the latest version firmware to operate. So please make sure you either have downloaded the latest firmware in your device (cell phone, Ipad, etc.), or your device could access the Internet during configuration**
2. **Tick the box in front of “I agree to the Privacy Policy”, and then press the “Start” button.**
3. **The app will check the firmware and download if needed if Internet is available. If there is no Internet available, you can press “Skip” to skip the firmware check. It is highly recommended to download the latest firmware**
4. **After the firmware downloaded, press the button “Check WIFI Settings” to connect the battery WIFI, which begins with “BYD-” , and the full name could be found at the BMU labels. The password is “BYDB-Box”**

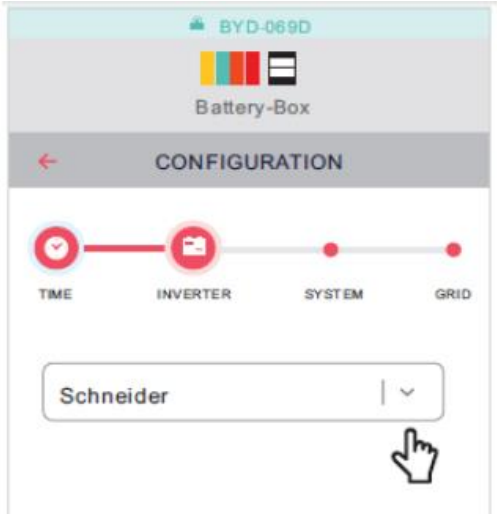


Commissioning – BYD (Android or Apple)

5. **Choose “Yes” to configure the battery system. And then press the “Next”**

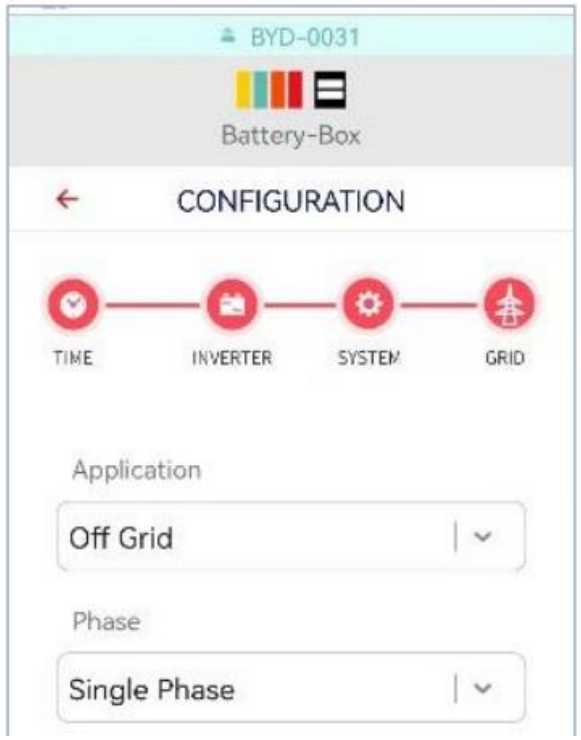


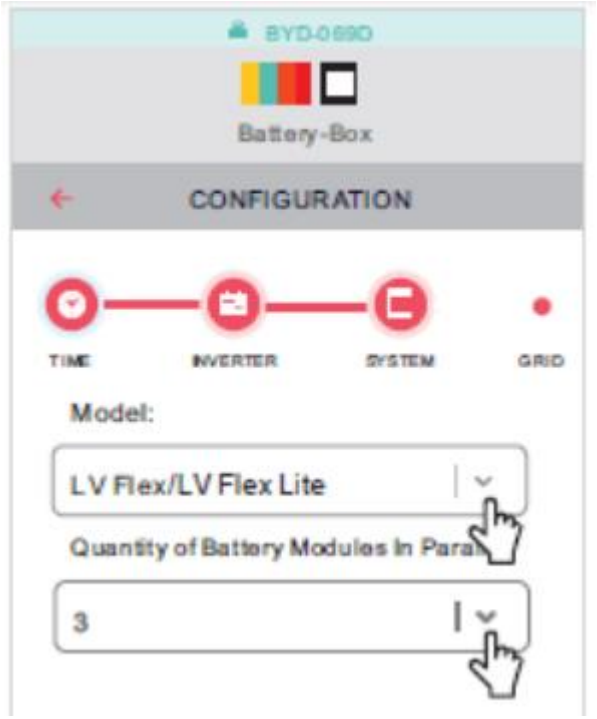
6. **Choose the inverter brand that the battery system is operated together**



Commissioning – BYD (Android or Apple)

7. **Choose the model of BYD battery and then choose the number of battery modules installed (This step is critical for a functioning battery bank) (please refer to installation manual for HVS / HVM) When expanding HVS / HVM battery banks please make sure the existing modules are the same voltage as the new modules. If this is not an option, please make sure the existing HVS / HVM battery bank is at 30% SOC**





8. **Choose the Application and Phase options according to the actual application**

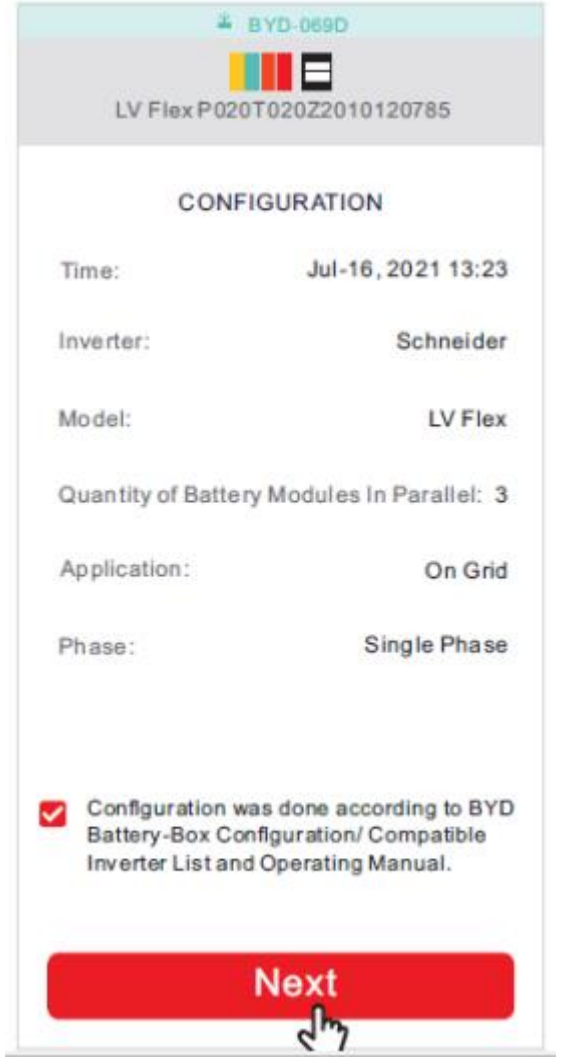
Commissioning – BYD (Android or Apple)

9. **Check the summary of the configuration information, tick the sentence, and press the button “Next”**

Please remove and charge voltage limits on the inverter system to ensure the batteries can balance properly (On Victron systems, setting the Charge Voltage limit in DVCC on the GX will help with Victron “high Voltage warnings” but it interferes with the cell balancing

Please note that the SOC of the battery may not be accurate before a full charge or discharge after the configuration. If expanding a battery bank, or installing a new bank, please charge the bank to 100% for 2hrs after installation

Please keep the Battery on for 15 - 20 minutes while the firmware updates. The Batteries may require to be turned off and back on after commissioning and updating firmware



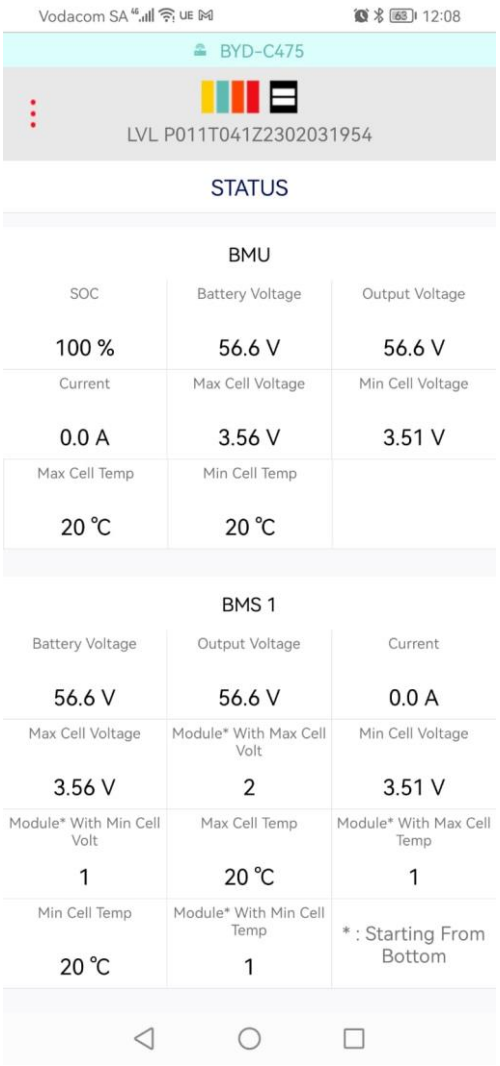
Commissioning – BYD (Android or Apple)

10. Summery page

After the commissioning pages, there will be a summery page. You will be able to see the battery bank SOC, battery bank output voltage, min and max cell voltage for the battery bank, min and max cell temp for the battery bank

You can also see, for each battery module, the battery module voltage, the min and max battery module cell voltage, and the min and max battery module cell temperature

At the top of the page, you can also see any errors the battery bank currently has



Troubleshooting

Contact Details

Afriplus Energy are the official service partners for BYD in the Southern Africa Region

Whatsapp and Cellphone –	**Ivan +27 71 671 2950 (tech support)**
Whatsapp and Cellphone –	**Khan +27 83 375 5486**
Email	**ivan@afriplusenergy.co.za (tech support)**
Email	**support@afriplusenergy.co.za (tech support)**
Email	**khan@afriplusenergy.co.za**

Troubleshooting – Check list

Please note, these are abbreviated steps, for the full guide please see the service guideline

- Safely turn inverter AC input off, inverter off, solar off, and BYD batteries off
- check all the earth connections from the battery, (please use the earth connection points on the battery) from the batteries to the main earth for loose / bad connections
- check BMU and batteries are connected to the same earth with a multimeter, check battery earth connects to main earth with multimeter
- check the comms cables are secure, wiggle comms cables genty at the comm ports to check if the comms port is damaged (Flex lite only)
- check all power cables are secure and crimped properly, and connect to the correct connections
- check all fuses between the battery and the inverters are closed BEFORE turning on the batteries, please DO NOT close fuses between the battery and the inverter after the battery has been turned on

Troubleshooting – Check list

Please note, these are abbreviated steps, for the full guide please see the service guideline

- check comms cable between the BMU and the inverter system is correct
- ensure the BMU has the latest firmware
- wait 20 minutes after commissioning to allow the firmware to load onto the BMU and batteries
- turn BYD batteries off (hold button on the BMU for 5 seconds) then wait 10 seconds and turn BYD batteries on (hold button on the battery with comms connection to BMU for 5 seconds)
- wait 5 minutes
- ensure the inverter is configured correctly
- on a Victron system, under DVCC, disable the manual "Charge Voltage Limit"

Troubleshooting – steps to test one battery in isolation

Please note, these are abbreviated steps, for the full guide please see the service guideline

1. **Turn on 1 x battery that is disconnected from all other connection (power, comms, earth, termination resistor)**
    - **1.1 Does the battery turn on (sigh of life), if no contact service**
2. **Turn on a battery + BMU that is disconnected from all other connectors and recommission BMU**
    - **2.1 Does the BMU light come on, if no, change cable between BMU and Battery**
    - **2.2 Does the BMU light come on, if no, check ports (BMS on BMU, IN on battery)**
    - **2.3 Does the BMU light come on, if no, replace BMU**
    - **2.4 Does the BMU light come on, if no, change battery, if still no, contact service**
3. **Upload firmware to the BMU, recommission BMU for 1 x battery. Leave for 30 min, restart battery bank**
    - **3.1 Does Battery firmware version show on app, if no, change cable between BMU and Battery**
    - **3.2 If no Battery firmware shows contact service**

Troubleshooting – Battery error codes

4. **Error Codes on the battery. The battery will flash blue if there is an issue, the number of blue flashes will be the error code. the error code 1X where X is the number of blue flashes, one blue flash is 101. The BMU and the Battery have their own error codes**

LED light on battery

Blue LED is flashing once	DC cable connection incorrect
Blue LED is flashing two times	MOS faulty
Blue LED is flashing three times	BIC (battery information collector) communication failed
Blue LED is flashing four times	Battery sensor faulty
Blue LED is flashing five times	Volt sensor faulty
Blue LED is flashing six times	Current sensor faulty
Blue LED is flashing seven times	Battery faulty
Blue LED is flashing eight times	Precharge failed
Blue LED is flashing nine times	BIC balance failed
Blue LED is flashing ten times	Temperature sensor on battery control unit faulty
Blue LED is flashing eleven times	BMS and BMU communication failure

Troubleshooting – Battery error codes

1 x Blue Flash (EC 101) **Short circuit / DC reverse connection**.

8 x Blue Flash (EC 108) **Precharge failure**

isolate the batteries from the battery bank, check for shorts on DC bus. if the problem persists, take on one battery and completely isolate it (DC cables, earth, comms) connect the BMU and recommission. if a battery gives this error code when completely isolated from all DC cables, as a single battery, please contact support

2 x Blue Flash (EC 102) **MOS Faulty**

3 x Blue Flash (EC 103) **BIC module Faulty**

4 x Blue Flash (EC 104) **Battery sensor Faulty**

5 x Blue Flash (EC 105) **Volt Sensor Faulty**

6 x Blue Flash (EC 106) **Current Sensor Faulty**

7 x Blue Flash (EC 107) **Battery Faulty**

9 x Blue Flash (EC 109) **BIC balance fail**

10 x Blue Flash (EC 110) **Temperature sensor on battery control unit faulty**

if a battery gives these error codes (2-7 blue flashes, 9-10 Blue flashes) when completely isolated from all DC / comms / earth cables (connect the BMU). Please replace the cable between the BMU and the Battery, and replace the BMU as a single battery, please contact support

11 x Blue Flash (EC 111) **BMS and BMU communication failure**

test battery in isolation, get logs with BCP. if a battery gives these error codes after replacing the cable between the BMU and the Battery, and replacing the BMU, as a single battery, please contact support

Troubleshooting – BMU error codes

5. **Error Codes on the BMU. The BMU will flash blue if there is an issue, the number of blue flashes will be the error code. the error code 1X where X is the number of blue flashes, one blue flash is 101. The BMU and the Battery have their own error codes**

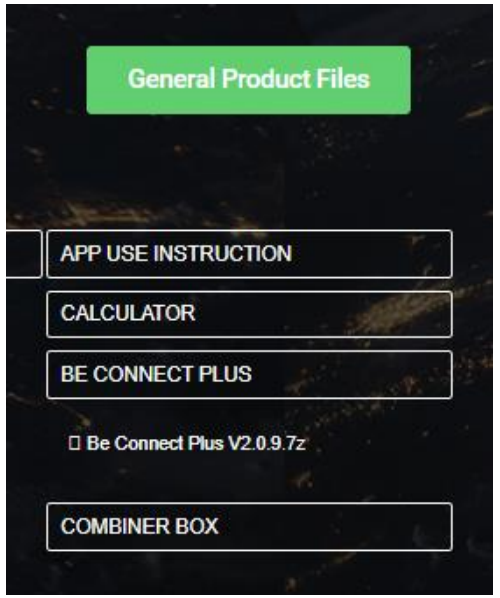
LED light on BMU

Blue LED is flashing one time.	System initiating failed
Blue LED is flashing two times.	Address distribution failed
Blue LED is flashing three times.	Precharge failed
Blue LED is flashing for four times.	BMS failure
Blue LED is flashing five times.	BMS and BMU communication failed
Blue LED is flashing six times.	Communication with an inverter failed
Blue LED is flashing seven times.	Configuration not correct

Troubleshooting – BMU error codes

1 x Blue Flash	**System initialization failed**.
	isolate the batteries from the battery bank, check for shorts on DC bus. if the problem persists, take on one battery and completely isolate it (DC cables, earth, comms) connect the BMU and recommission. if a battery gives this error code when completely isolated from all DC cables, as a single battery, please download logs with BCP, please contact support
2 x Blue Flash	**Address distribution failed**
	most probably the incorrect number of modules were selected when commissioning the BMU, or there is a communications error between the batteries, or some batteries are not communicating with the BMU
3 x Blue Flash	**Precharge failed (see battery error 8 blue flashes EC 108)**
4 x Blue Flash	**BMS failure (See battery error codes EC 102 – EC 113)**
	test battery in isolation, get logs with BCP, contact service if no improvement
5 x Blue Flash	**BMS and BMU communication failed**
	test battery in isolation, get logs with BCP. if a battery gives these error codes after replacing the cable between the BMU and the Battery, and replacing the BMU, as a single battery, please contact support
6 x Blue Flash	**Communication with an inverter failed**
	check cable between BMU and inverter / GX device is connected with the correct side connected on the battery and the inverter / GX. It could be a faulty cable, faulty CANBUS on the inverter / GX, or a faulty BMU
7 x Blue Flash	**Configuration not correct**
	most probably the wrong battery type selected

Troubleshooting - Be Connect Plus



Please download Be Connect Plus at https://bydbatterybox.com/downloads general product files

1) Be Connect Download and Extract

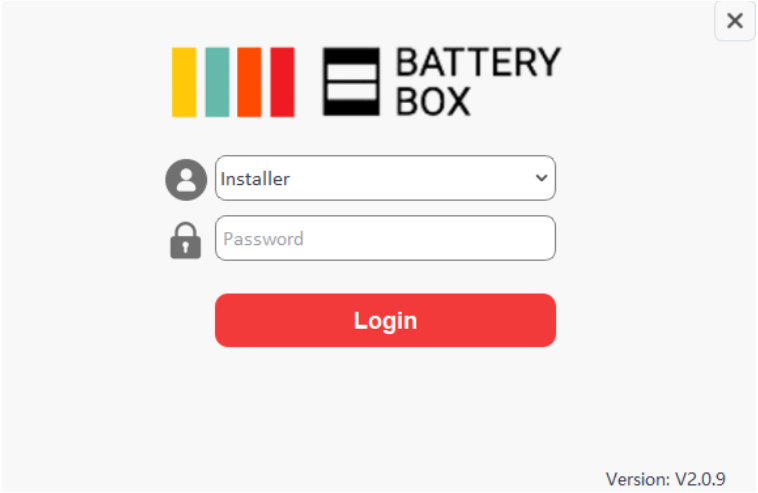
1.1) Download the “Be Connect Plus” Zip file from the server, and unzip the file

1.2) Unzip the downloaded file

1.3) run the “Be Connect Plus” executable, and log into the program,

Account : Installer

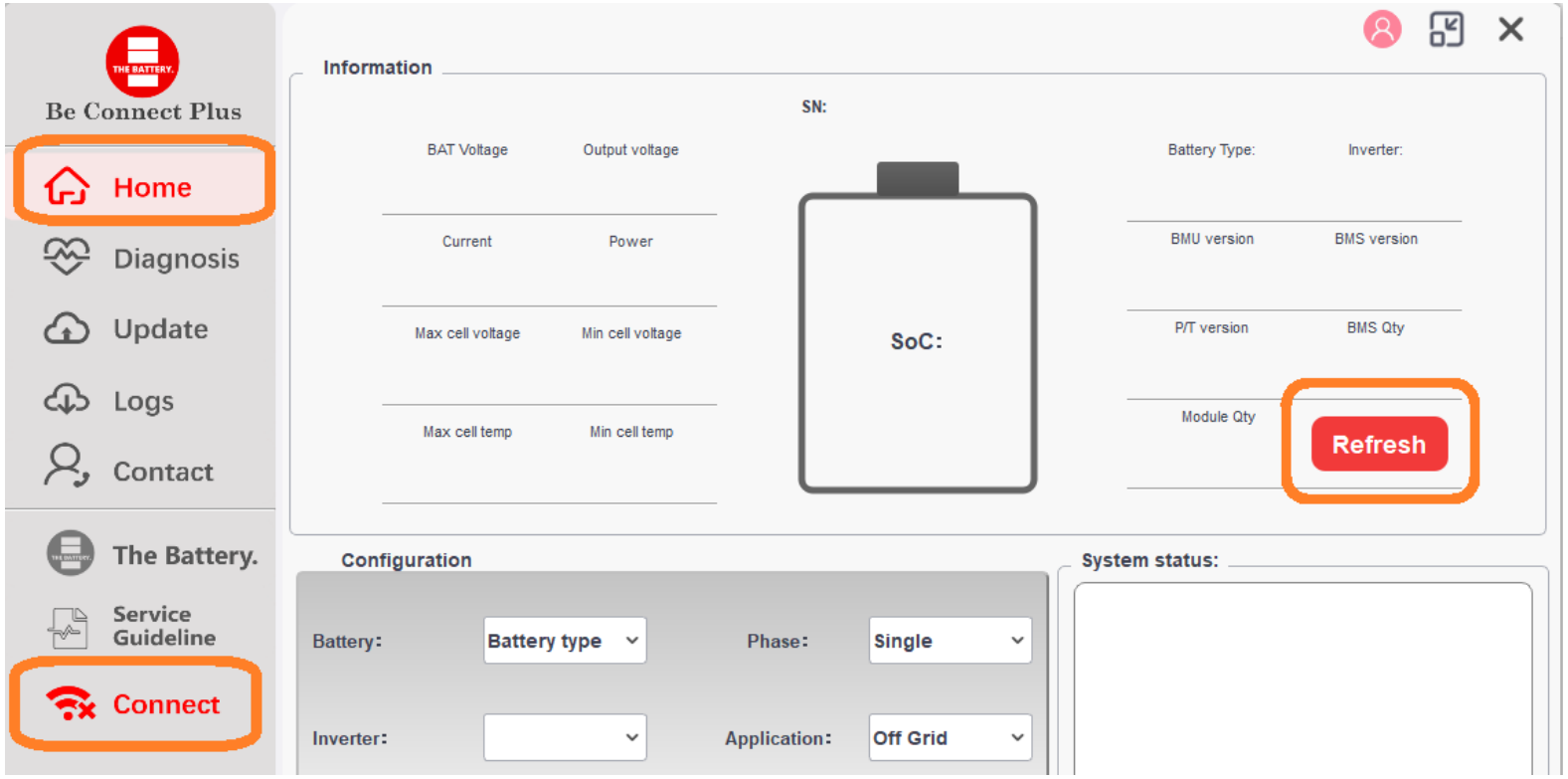
Password : BYDB-Box



Troubleshooting - Be Connect Plus

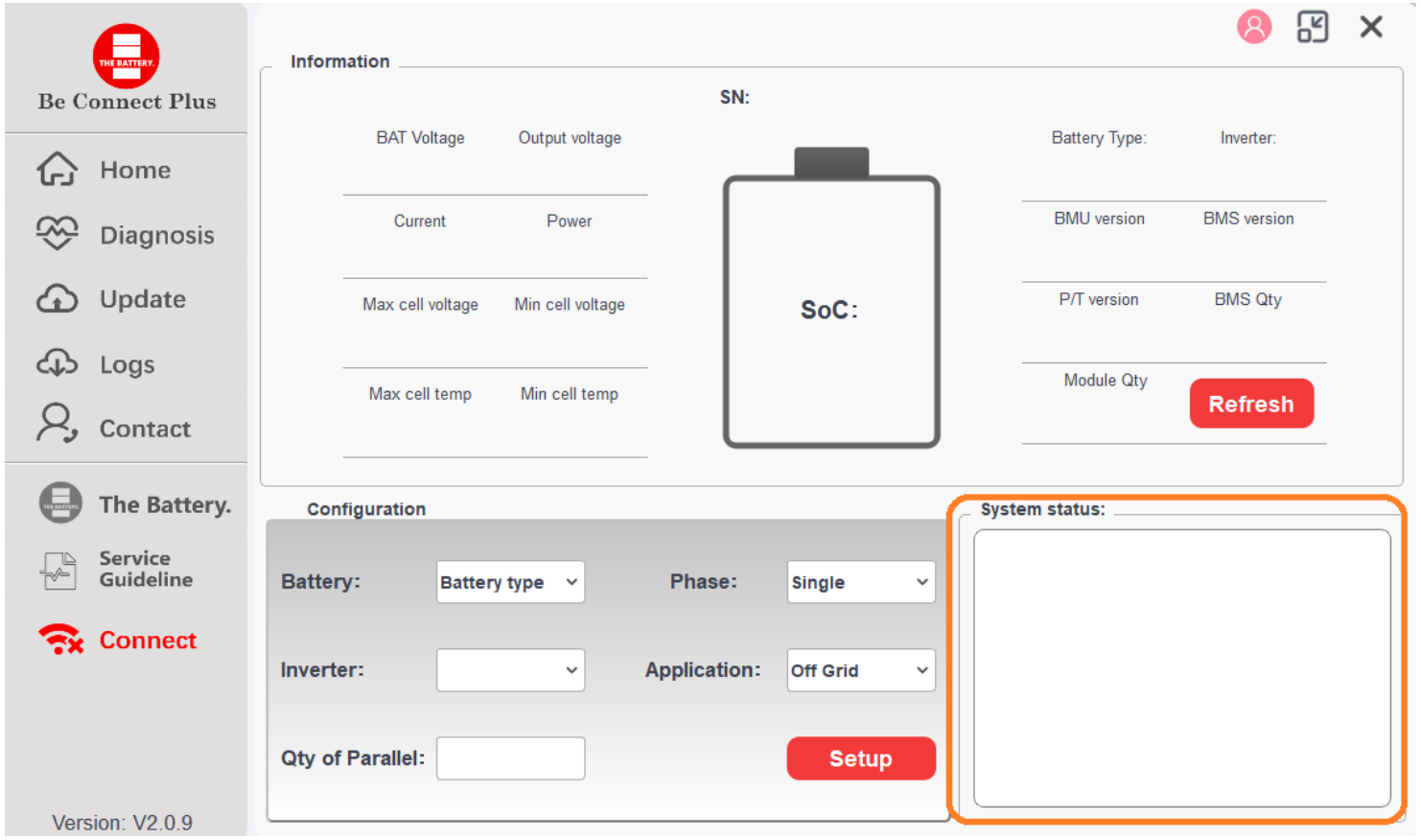
1.3) Connect your laptop to the wifi which begins with “BYD-” and the full name could be found at the BMU labels. The password is “BYDB-Box”

1.4) Connect and refresh - On the home tab, click “Connect”, then click “Refresh”



Troubleshooting - Be Connect Plus

1.5) Battery system status – the battery system status can be found in the bottom right corner. If it is abnormal, please take a screenshot and send it to your BYD service partner



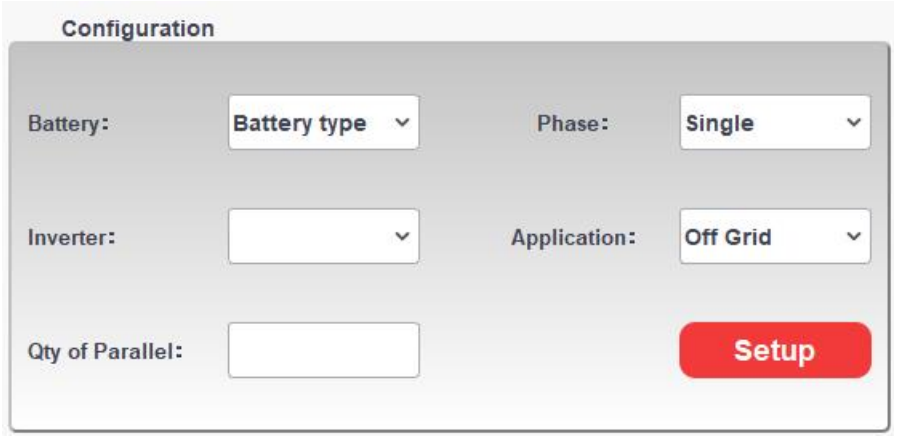
Troubleshooting - Be Connect Plus

It is possible to configure the BYD battery bank through Be Connect Plus

2) Configuration

2.1) In the section “SystemInfo” you can do the configuration (Inveter type, Phase, Module Quantity, Grid), then click on “Setup” to save it. The configuration is done.

Note: To refresh, close tool and then reopen it again. Then you can check if the settings have been saved correctly.

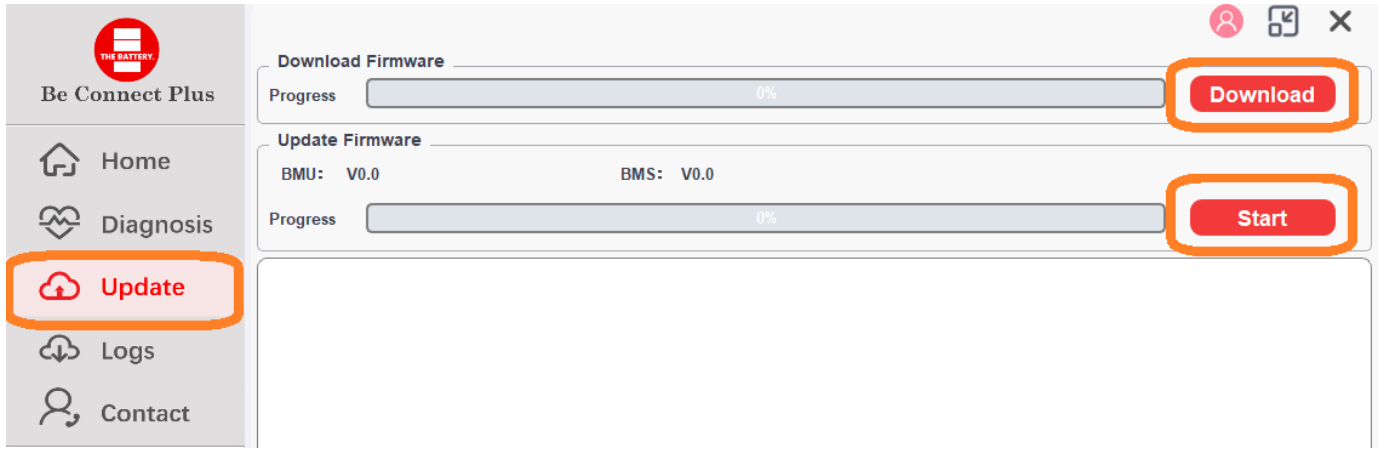


Troubleshooting - Be Connect Plus

It is possible to update the Firmware on the BYD battery bank through Be Connect Plus (optional)

3.1) Update Tab - connect to your data wifi / connection. Click on “Download” to download the latest FW. BCP will then check if there are newer versions on the server and download it then locally on your laptop. *Note: Internet connection necessary for this step.*

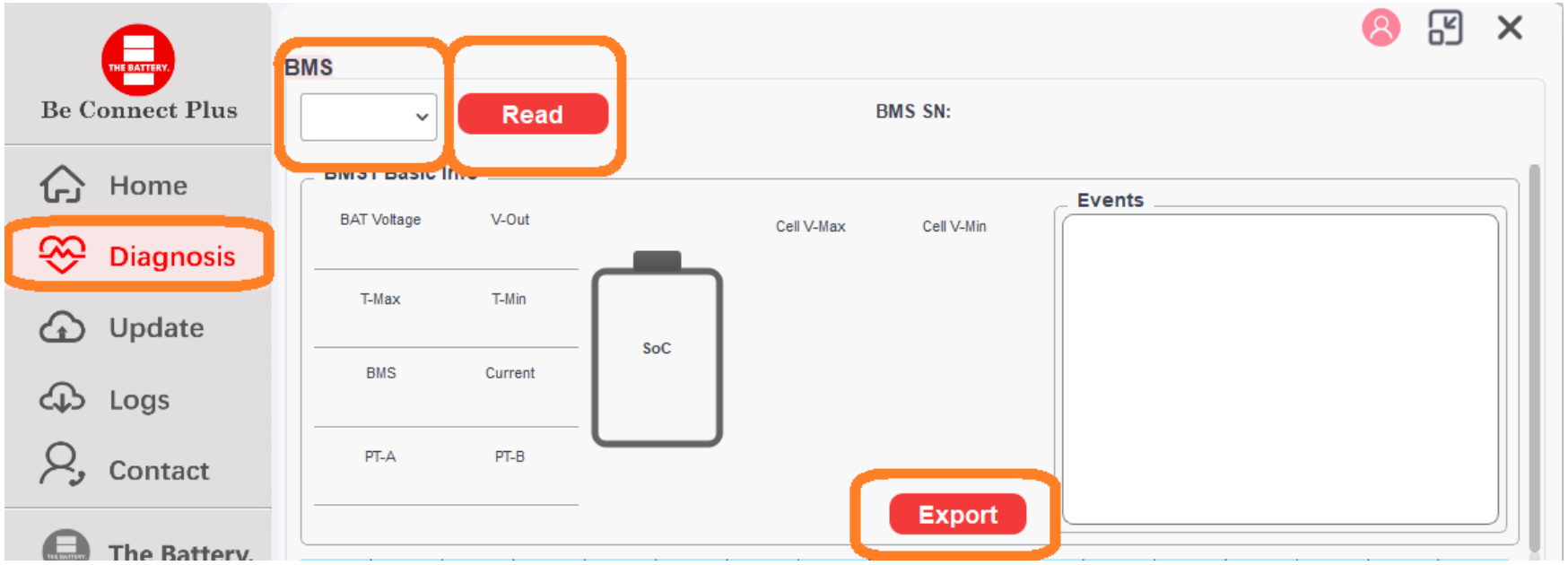
3.2) connect to your battery wifi, on the home page click connect and refresh (steps 1.3 and 1.4)- Click on “Start” to upload the firmware to the laptop to the BMU. Please wait 15-20 minutes for the BMU to send the firmware to the battery modules



Troubleshooting - Be Connect Plus

4) Cell voltages - connect to your battery wifi, on the home page click connect and refresh (steps 1.3 and 1.4) Generally speaking, you will only need do read the cell voltages if there is an issue. Please see the “service guideline” online at https://bydbatterybox.com/downloads for more info

4.1) The cell voltages can be read and saved on the “Diagnosis” tab, select the battery, click “Read” then click “Export”



Troubleshooting - Be Connect Plus

5) Logs- connect to your battery wifi, on the home page click connect and refresh (steps 1.3 and 5.1) Generally speaking, you will only need do read the logs if there is an issue. Please see the "service guideline" online at https://bydbatterybox.com/downloads for more info

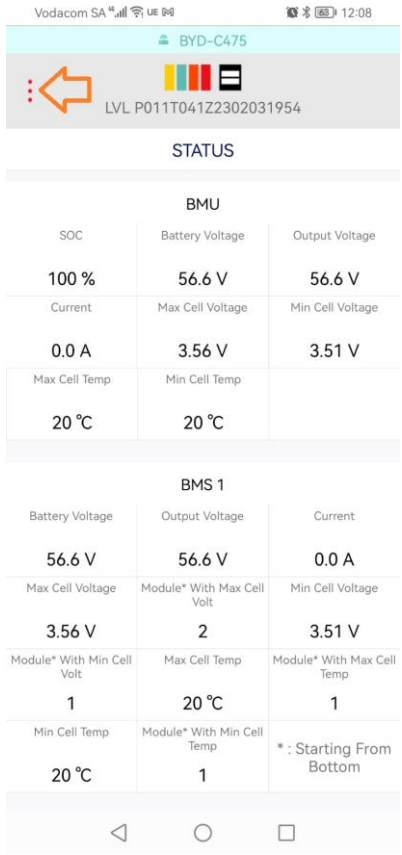
5.2) The logs can be read and saved on the "Logs" tab, select the battery, select "BMU" for the BMU logs and "BMS-X" for the logs of battery number X, battery number 1 is connected to the BMU, select the desired number of logs (500 – 1000 is generally a good quantity), click "Read" then click "Export" to save the log file. Please repeat for each BMU and Battery

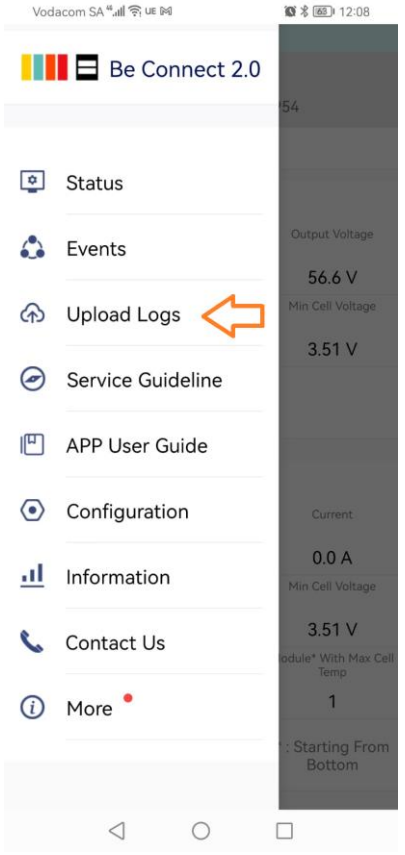
Troubleshooting - Be Connect cellphone logs

6) Getting logs off a BYD battery system with the cellphone app

It is generally better to get the logs off the BYD batteries with the windows laptop app “Be Connect Plus” however, if that is not an option, the logs can be retrieved via the cell phone app “Be Connect”

On the summery page of the Be Connect page (see Commissioning – BYD (Android or Apple) section 10) click on the 3 dots on the top left, then click on the “Upload Logs” this will upload the logs from the BMU up onto the BYD server. Please record the BMU or BCU serial number, then please send the BMU or BCU serial number to support@afriplusenergy.co.za and ivanbh@afriplusenergy.co.za with a request for the logs on the BYD battery system that is having issues





Troubleshooting – BYD remote monitoring

7) BYD remote monitoring – the ability for installers to remotely download BYD logs from BYD battery banks is currently being rolled out. Training will be offered to interpret the logs so the installer can see the reason the batteries tripped / had errors, and can do their own troubleshooting. BYD remote battery monitoring and logs for the installers will be available soon

Current issues

Current issues

Sunsynk issues

- **The current issue is that there is a minor firmware issue that gets pushed through to the Sunsynk, and the inverter either does not send a CANBUS signal back to the battery or it sends the signal at the wrong baud rate. The BYD battery does not receive a signal from the inverter and turns off after 15 minutes. A firmware update, factory reset and reprogram fixes the issue**

Victron MPPT– BYD issues

- **The current issue is that there is a delay in the Victron MPPT power control. It is a very rare issue. If you have a BYD battery that trips during the day, on a system with solar, please share the site with me on VRM (ivanbh@afriplusenergy.co.za) A BYD firmware update will be publicly available after the first week of November 2023 to resolve the issue**

Feedback

Feedback

If you would like to give feedback on this presentation, please go to
https://forms.gle/WcR17FMdi4td2vhYA

If you fill in the form, you will be able to receive notifications of firmware updates, firmware bug fixes, upcoming training, etc

THANKS