

BYD B-Box Premium

Webinar

Afriplus Energy + IBC

November 2023



**BUILD YOUR
DREAMS**

**INNOVATIONS FOR
A BETTER LIFE**

Webinar Contents

- **About BYD**
- **Why choose BYD**
- **BYD battery range**
- **Technical Information**
- **Commissioning**
- **Troubleshooting**
- **Q&A**

Please post any questions you have in the question window, We will answer them either during or at the end of the webinar.

**BUILD YOUR
DREAMS**

**INNOVATIONS FOR
A BETTER LIFE**

ABOUT BYD







ABOUT BYD

Fortune Global 500

1995 **600,000** **\$ 63 Billion**
Established Employee Revenue in 2022





ABOUT BYD

Over 400 cities across 92 countries & regions in 6 continents

40+
Branch Offices

600+k
Employees



NORTH AMERICA

Canada
United States
Mexico

CENTRAL & SOUTH AMERICA

Colombia	Chile	Cuba	Curacao
Ecuador	Panama	Bolivia	Jamaica
Peru	Argentina	Paraguay	Costa Rica
Brazil	Antigua	Bahamas	Dominican
Uruguay	Barbados	Guatemala	Republic

EUROPE

Netherlands	Norway	Portugal
United Kingdom	Denmark	France
Belgium	Germany	Sweden
Spain	Ireland	Finland
	Hungary	Romania

ASIA PACIFIC

Chinese Mainland
Taiwan, China
Hong Kong, China
Macau, China
Japan
South Korea
Philippines
Indonesia
Nepal
India
Thailand
Laos
Sri Lanka
Malaysia
Singapore
Australia
New Zealand
French Polynesia
... ..

MIDDLE EAST & AFRICA

South Africa	Jordan
Kenya	Egypt
Mauritius	Lebanon
Zimbabwe	Tunisia
Qatar	Bahrain

... ..

*As of April, 2023

ABOUT BYD



Electronics



Since 1995



Auto



Since 2003



Renewable Energy



Since 2008



Rail Transit



Since 2016

BYD ELECTRONICS

- Top EMS Provider with One-Stop Service and Solutions
- The only company to provide a full series of structural components (metal, glass, ceramics, plastics, etc.) and complete product design and manufacturing

1/3 Structural parts of the total global Android smartphone market

1/5 Smartphones in the world feature BYD technology





BYD AUTO



Global NO. 1

NEV(BEV+PHEV) Sales in 2022



200,000 (in Sep. 2022)

First Auto Maker with Monthly NEV Sales Reaching

1.86 Million

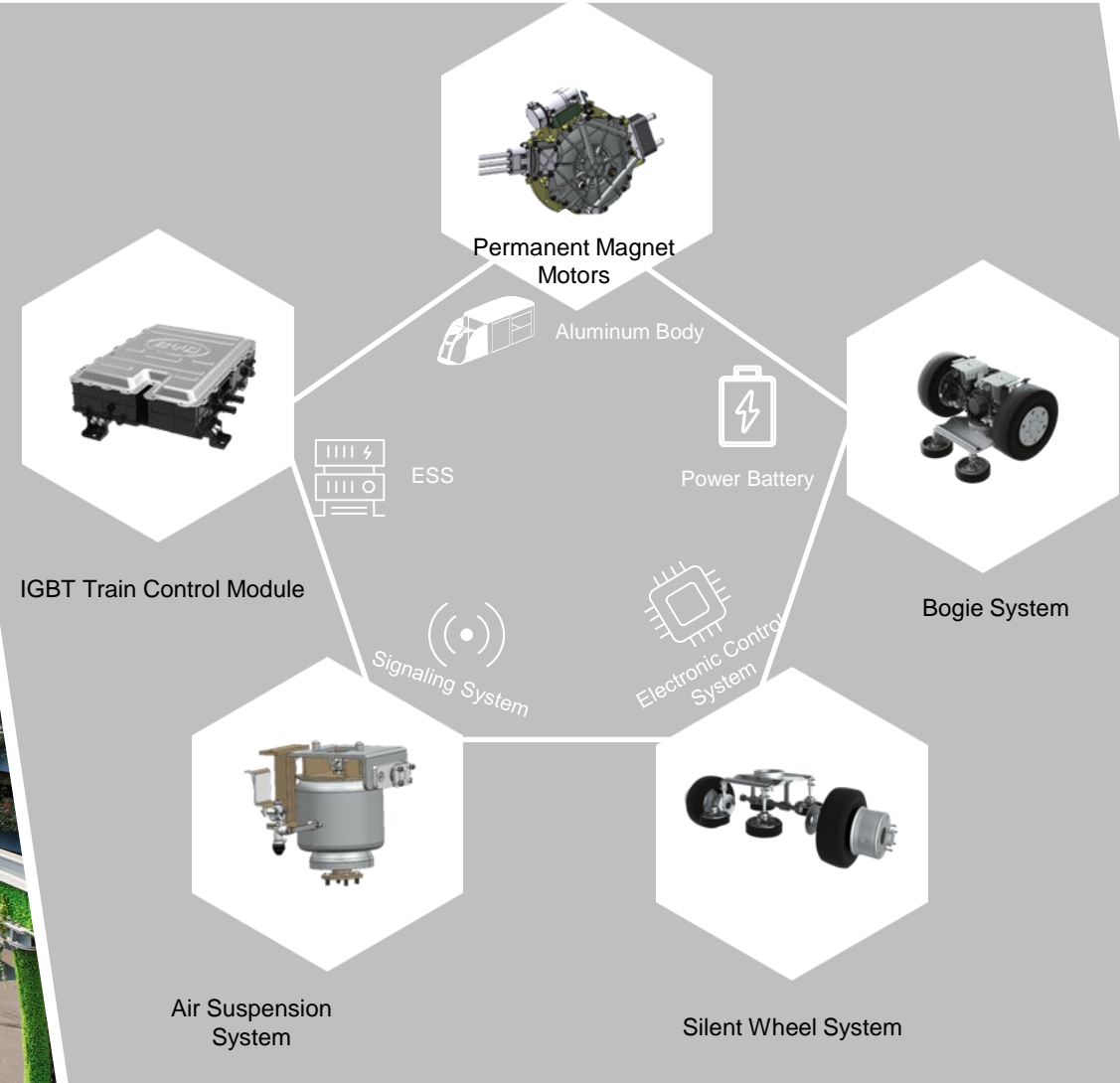
NEV Sales during 2022 with 152.5% YOY Growth Rate



BYD RAIL TRANSIT

With 100% independent IP and a full mastery of the entire industrial chain

BYD provides overall rail transit solutions, from design, vehicle bodies, track beams, communication systems, to intelligent operation and maintenance.



BYD RENEWABLE ENERGY

MOST POPULAR PV MODULE + ENERGY STORAGE SOLUTION

widely acclaimed in more than 30 countries and regions in 6 continents including the United States, Brazil, Germany, Japan, Australia, South Africa and others.

- Effectively reduces electricity costs
- Pioneering **PV + Storage + EPT*** model to greatly increase urban competence and environment

A variety range of energy storage products

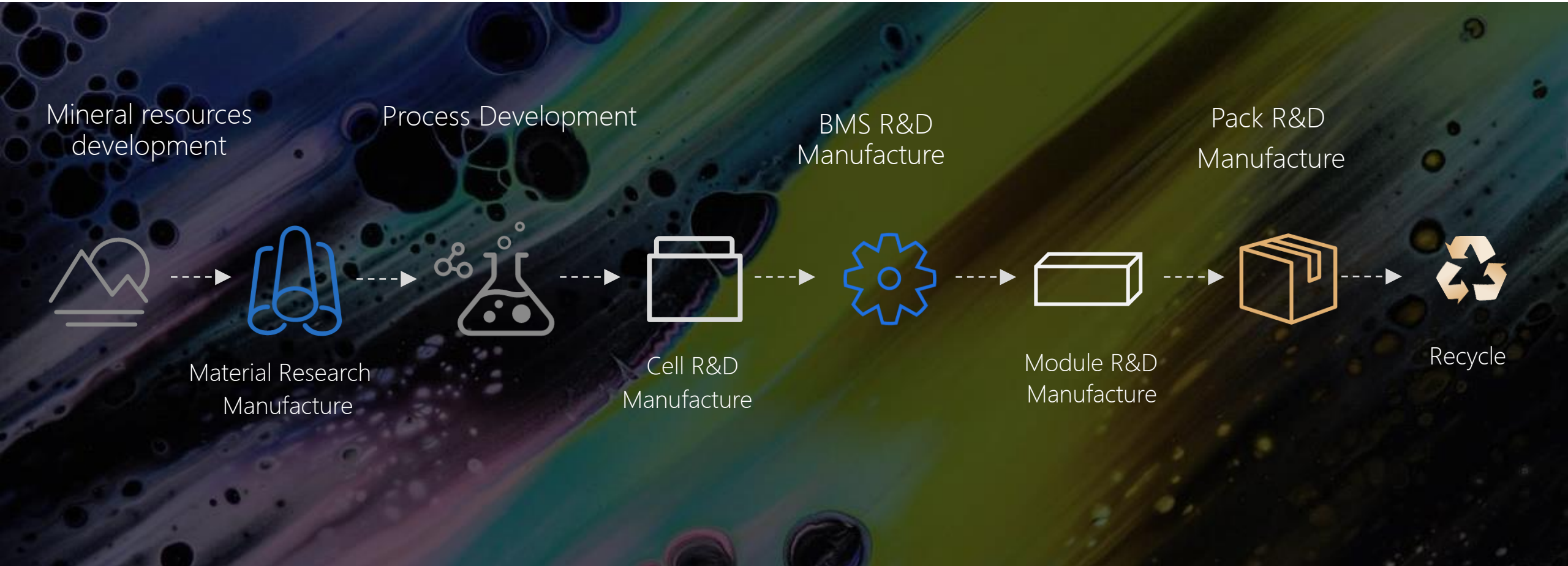


(Electrified Public Transportation)



ABOUT BYD BATTERY

END TO END INDUSTRY CHAIN LAYOUT



Group Recognition



UNITED NATIONS

United Nations
Energy Grant
"POWERING THE
FUTURE WE WANT"
Award
2013



Zayed Future Energy Prize
"LARGE CORPORATION"
Award
" LIFETIME ACHIEVEMENT"
Award
2014 - 2016



Fortune Magazine
"CHANGE THE WORLD"
List
Rank 3rd Worldwide
2019



TIME100
"MOST INFLUENTIAL
COMPANIES" List
" Scaling electric transport"
Category
2021



FORTUNE
"WORLD' S LARGEST
CORPORATIONS" List
FORTUNE GLOBAL 500
2022



WHY BYD BATTERY-BOX



BYD BATTERY-BOX LINEUP

HVS/HVM



High Voltage S/M
5.1KWh ~ 66.3 kWh

LVS



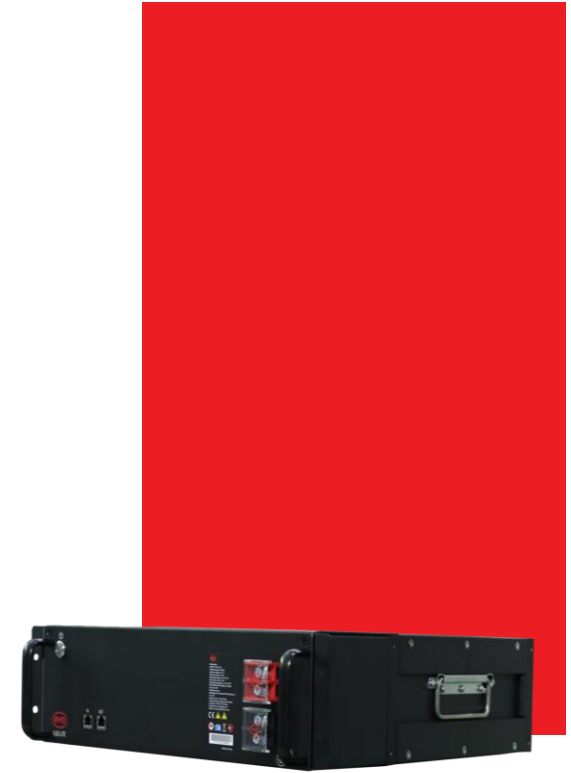
Low Voltage Small
4KWh ~ 256 kWh

LVL



Low Voltage Large
15.4KWh ~ 983 kWh

LV Flex Lite



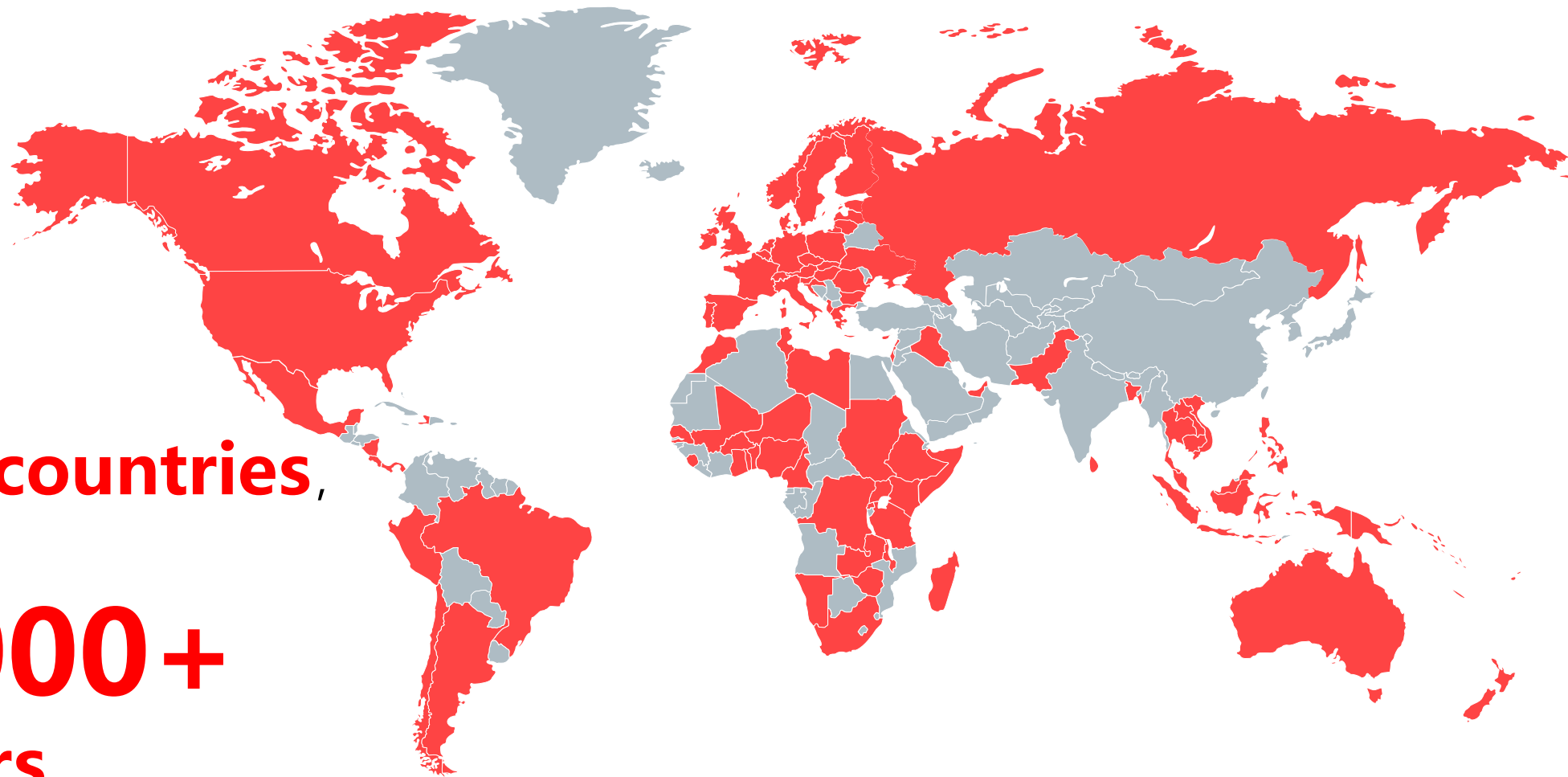
Low Voltage Flex Lite
5KWh ~ 320 kWh

Usable Energy: 4Kwh ~ 983 Kwh



BYD BATTERY-BOX ACHIEVEMENT

100+ countries,
powering
600,000+
customers



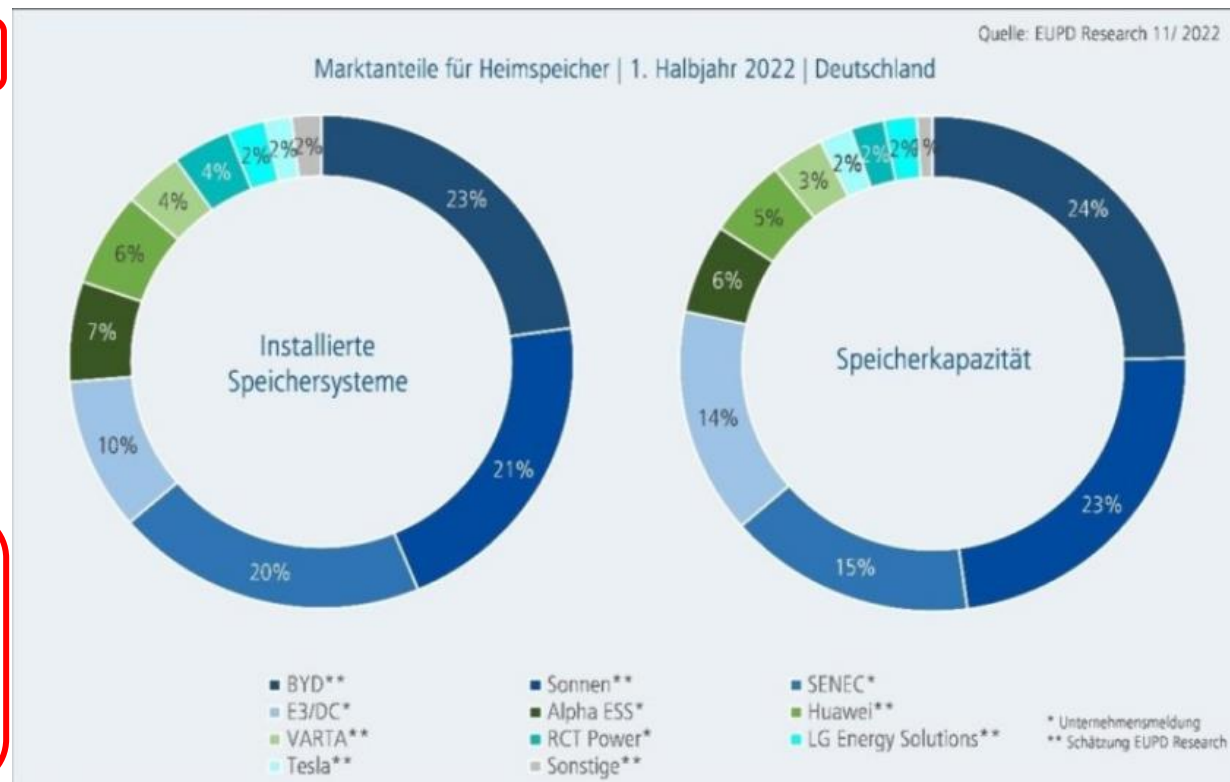
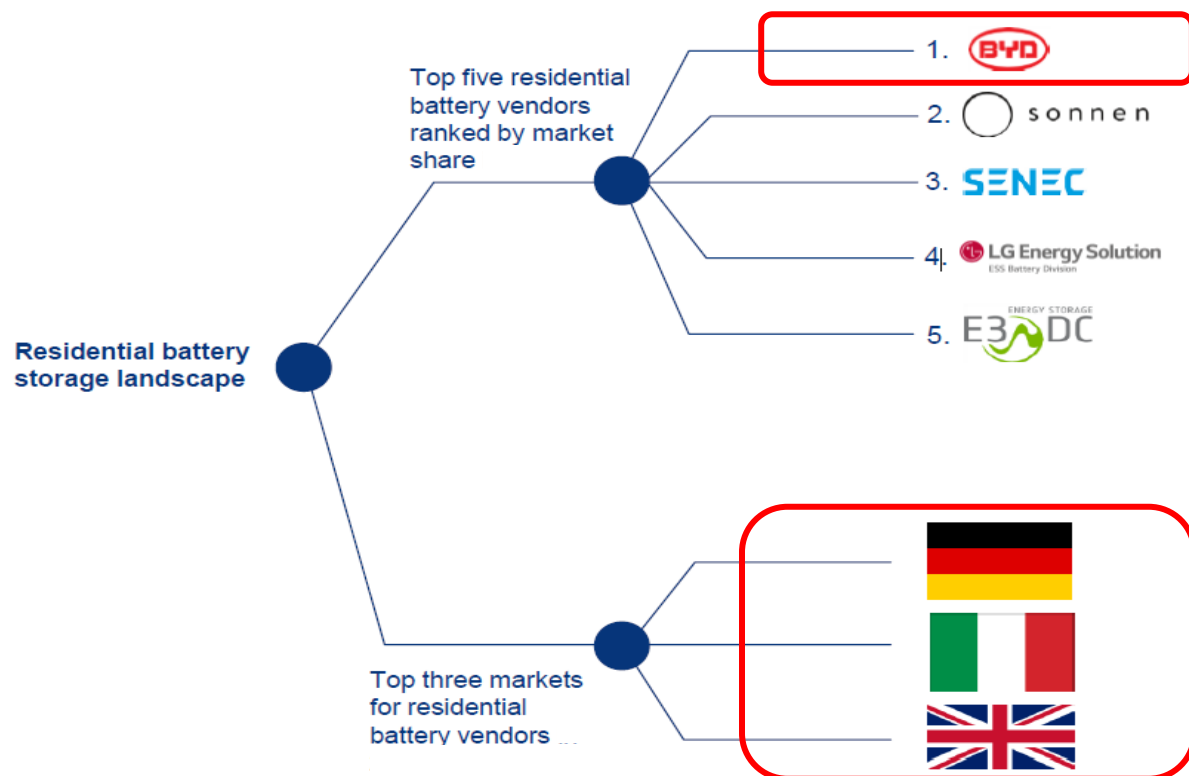
BYD BATTERY-BOX ACHIEVEMENT

BYD Leads the Market in Germany, Italy, Britain & Europe

Europe behind-the-meter energy storage market outlook

BYD leads the European residential battery segment

Solar-plus-storage packages are offered by most solar developers in Europe



BYD BATTERY-BOX ACHIEVEMENT

End User Top 1 Choice

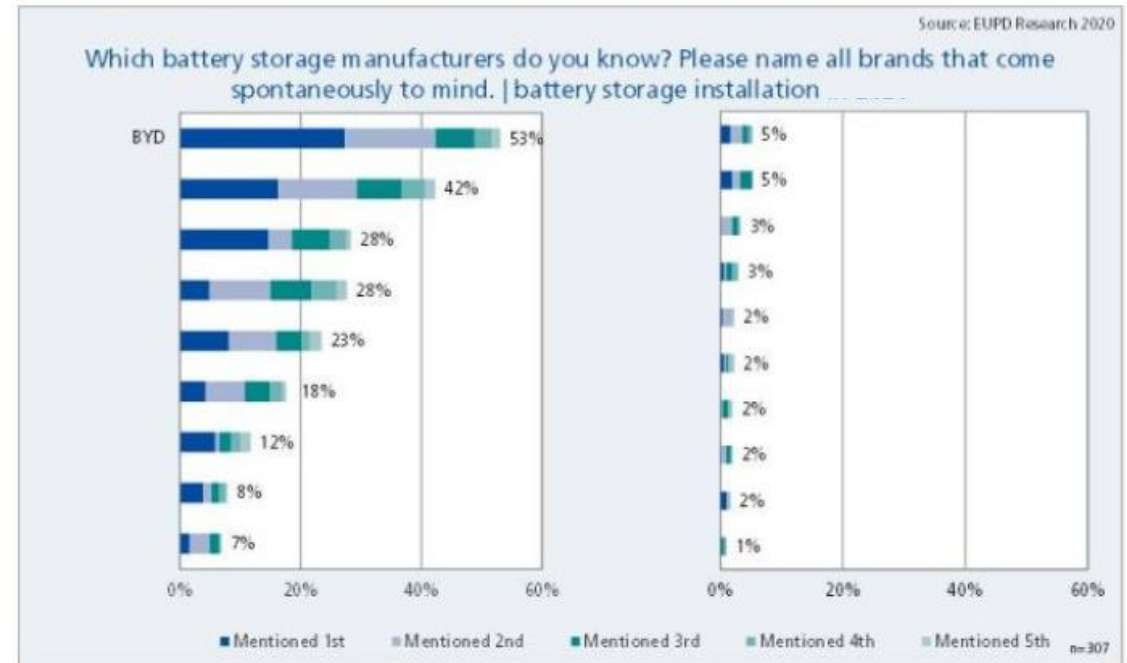
TOP 1 Brand Awareness

From EUPD Research, BYD is the most well known battery storage manufacturer among the battery systems owners

Source: EUPD Research

Battery storage – Unaided brand awareness (2/2)

BYD is the most well known battery storage manufacturer among the owners of battery storage systems installed

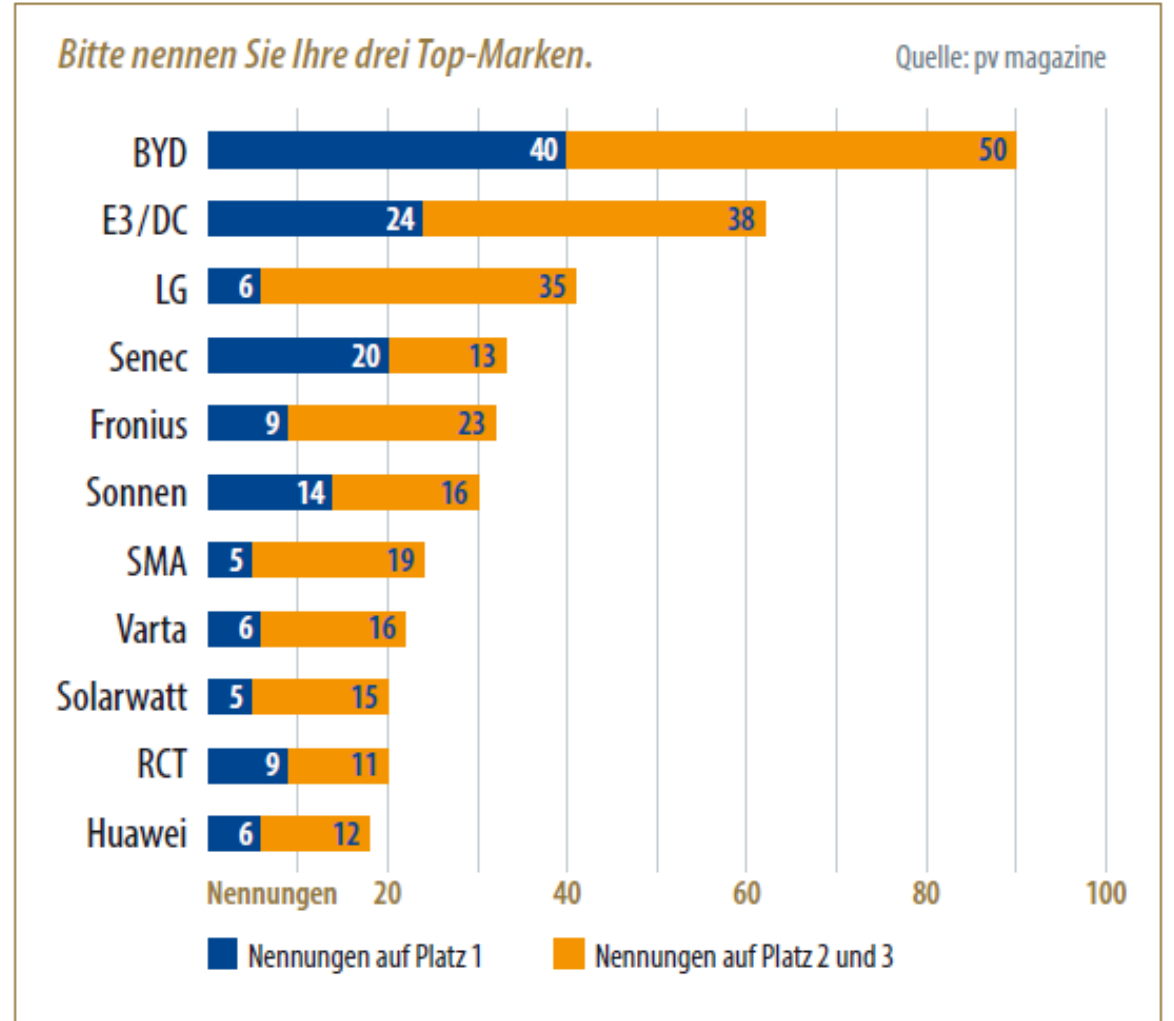


BYD BATTERY-BOX ACHIEVEMENT

Installer Favorite ESS Brand in Germany

TOP Choice
From Installer Partners

Source: PV magazine



Grafik 4: Nach den Gründen gefragt, rangieren „Kompatibilität mit verschiedenen Wechselrichtern“ und „gutes Gesamtkonzept“ vorn.



BYD BATTERY-BOX ACHIEVEMENT




BYD BATTERY-BOX ACHIEVEMENT

Energy Storage Inspection HTW BERLIN

6 Years at Top Rank



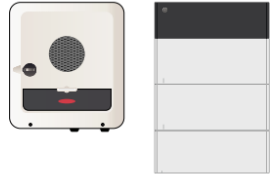
B5 ENERGY STORAGE
Inspection 2023



KOSTAL PLENTICORE plus 10 and BYD Battery-Box Premium HVS 12.8

Battery connection	DC
Battery capacity	12.3 kWh
Discharge power	6.4 kW
PV output power	9.9 kW
Efficiency class	A

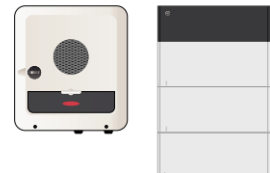
C1 ENERGY STORAGE
Inspection 2023



Fronius Primo GEN24 6.0 Plus and BYD Battery-Box Premium HVS 7.7

Battery connection	DC
Battery capacity	7.4 kWh
Discharge power	5.8 kW
PV output power	6.1 kW
Efficiency class	A


C2 ENERGY STORAGE
Inspection 2023



Fronius Symo GEN24 10.0 Plus and BYD Battery-Box Premium HVS 10.2

Battery connection	DC
Battery capacity	9.9 kWh
Discharge power	8.9 kW
PV output power	10.2 kW
Efficiency class	A

E1 ENERGY STORAGE
Inspection 2023



KACO blueplanet 10.0 TL3 and BYD Battery-Box Premium HVS 10.2

Battery connection	DC
Battery capacity	9.7 kWh
Discharge power	10.0 kW
PV output power	10.1 kW
Efficiency class	A

WHY BYD BATTERY-BOX

HIGH SAFETY



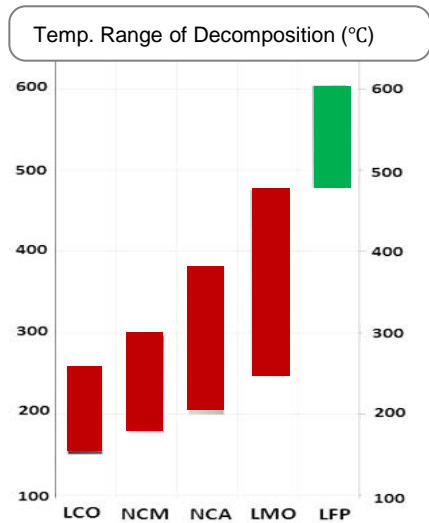
HIGH RELIABILITY



HIGH FLEXIBILITY



HIGH USABILITY

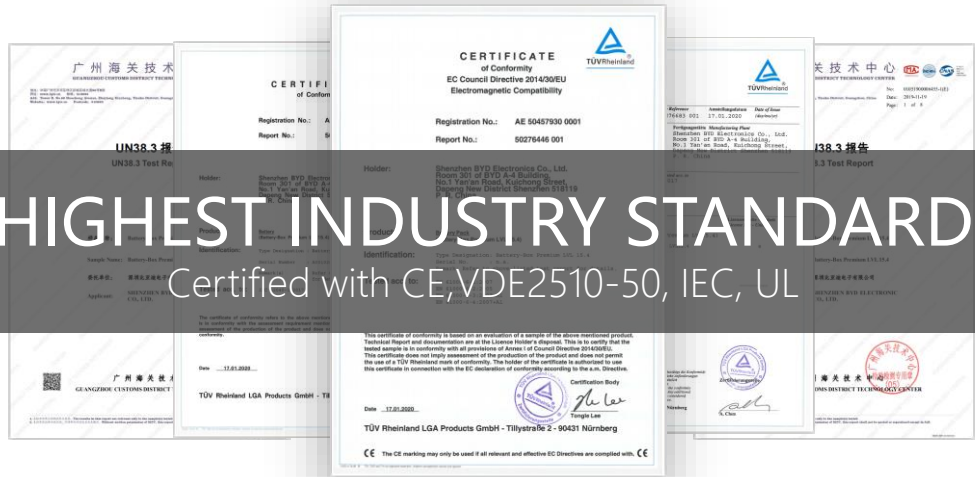


600,000+
Installation Experience





HIGH SAFETY



HIGHEST INDUSTRY STANDARD

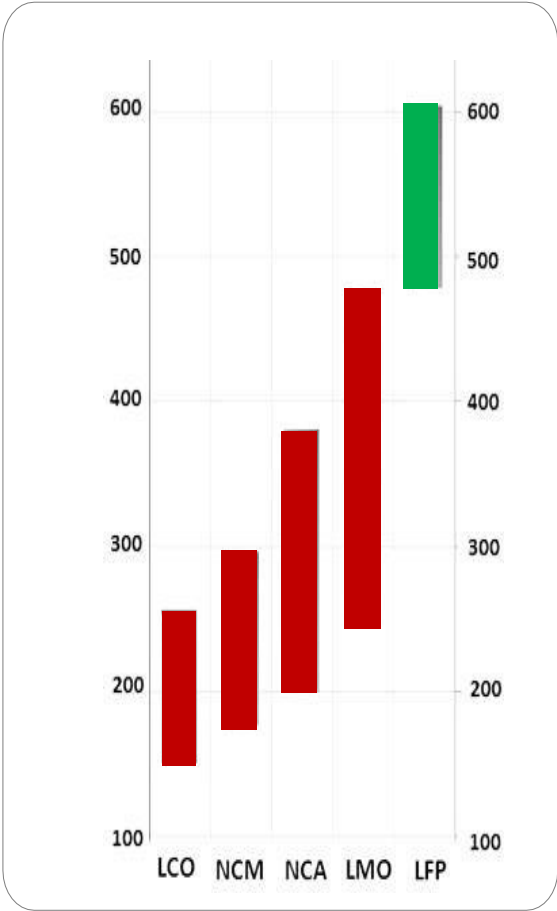
Certified with CE, VDE2510-50, IEC, UL



SAFEST BATTERY CHEMISTRY LFP-LITHIUM IRON PHOSPHATE

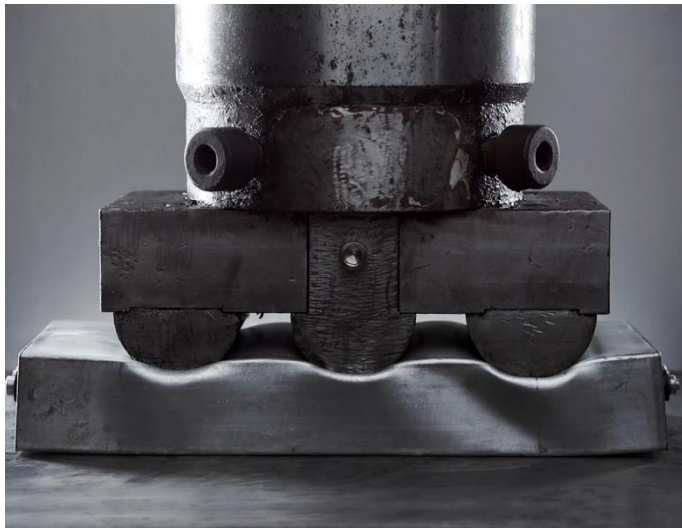
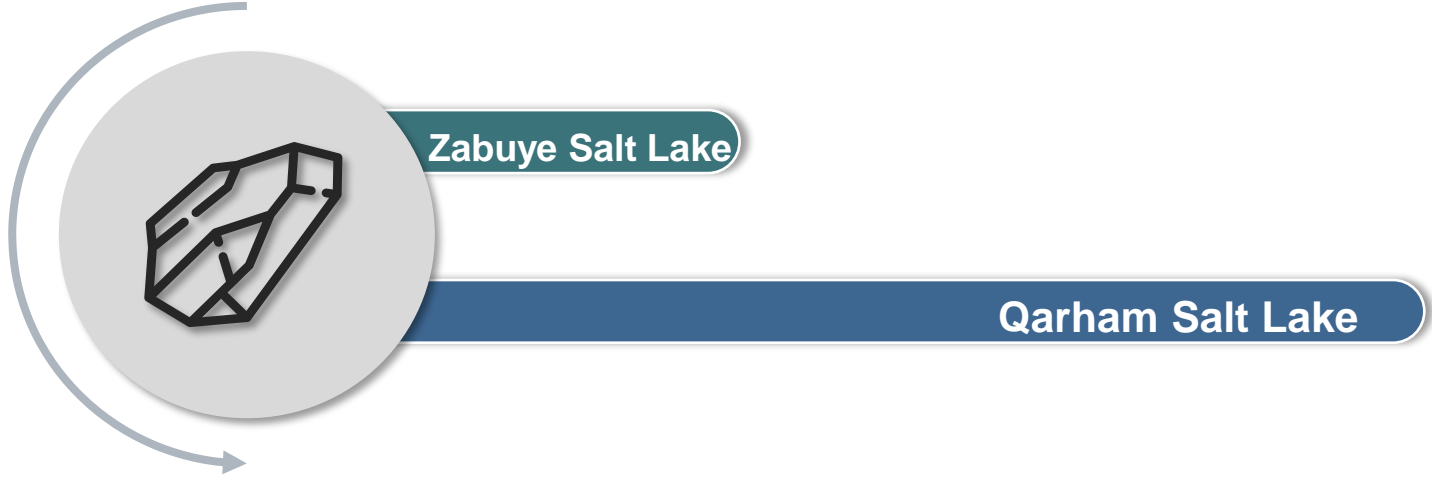
Cobalt Free

LFP performs the highest safety behavior



Temp. Range of Decomposition (°C)

BYD BATTERY STRENGTH





HIGH RELIABILITY

600,000+

Installation Experience

20+ Years

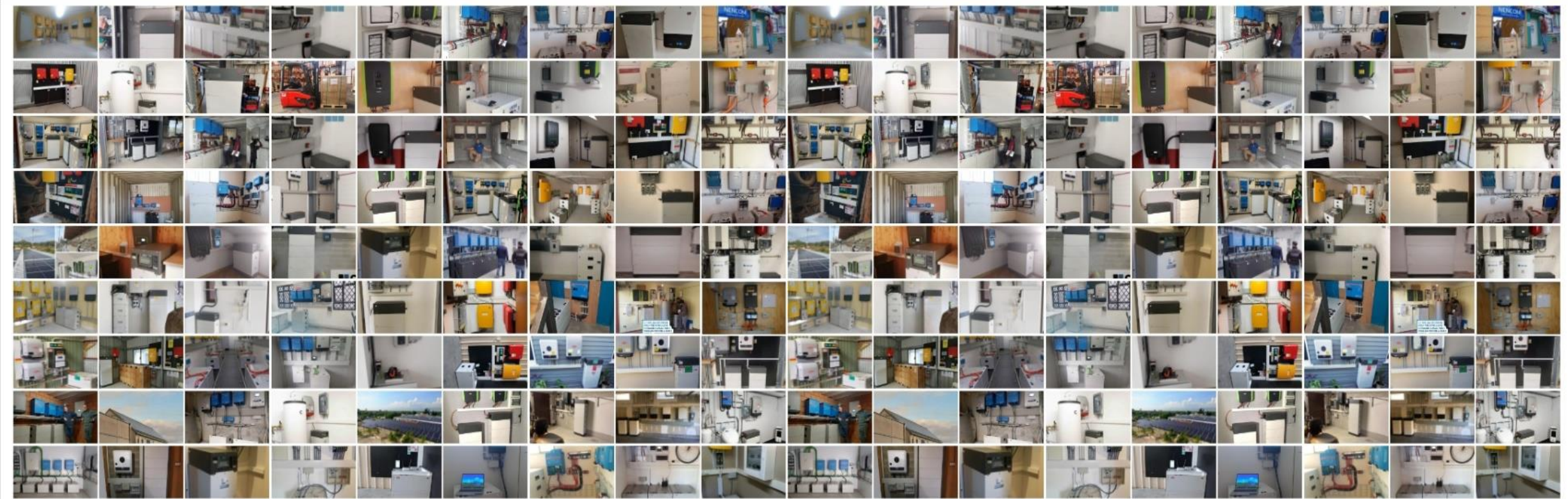
Tracking Record

100+

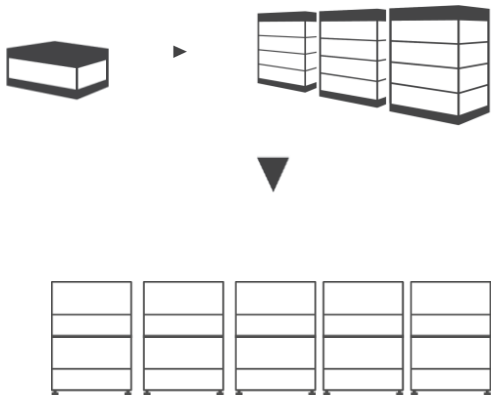
Countries with Footprints

0

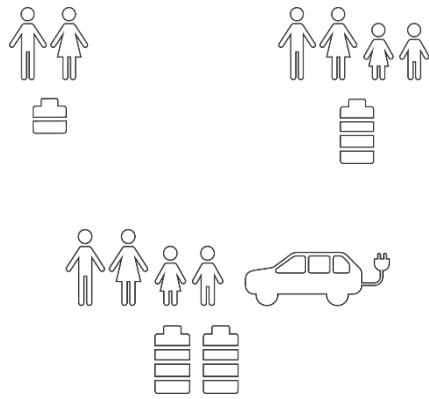
Fire Accident



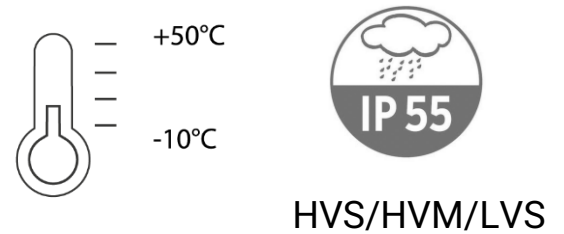
HIGH FLEXIBILITY



Flexible from 4 to 983kWh



Extend at Any Time



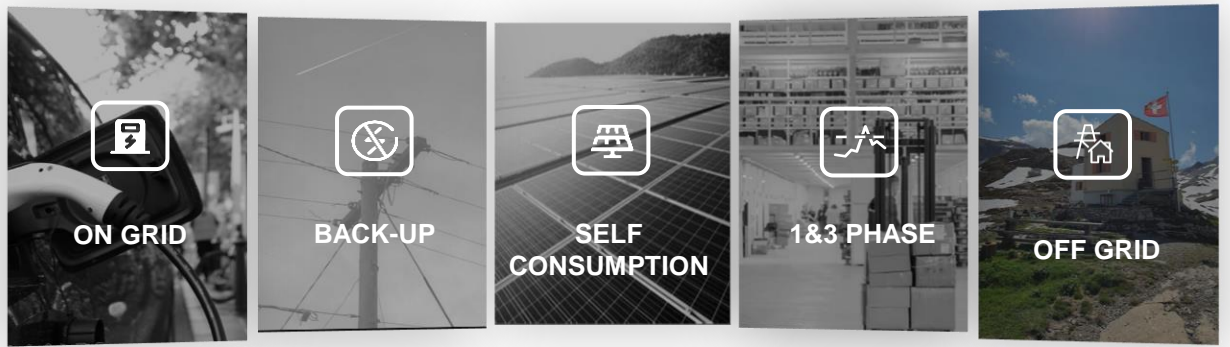
Flexible in the Location

HIGH USABILITY

GLOBAL HIGH COMPATIBILITY WITH INVERTERS

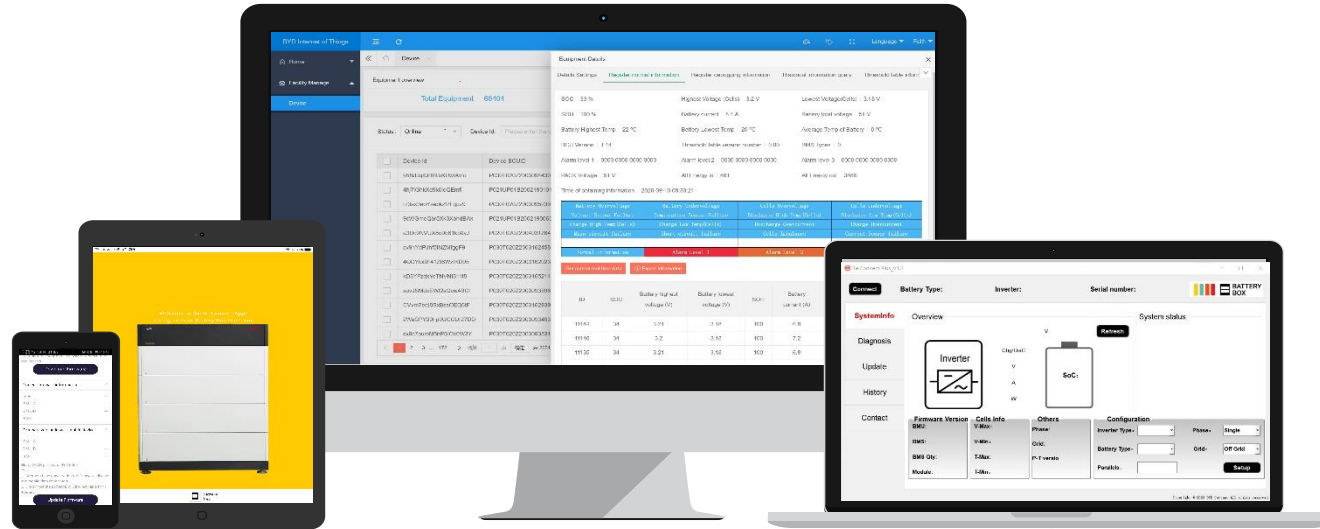


WIDE RANGE APPLICATIONS



- On Grid Self Consumption,
- On Grid + Back Up,
- Off Grid, Micro Grid.
- 1&3 Phase... etc.

Service Tool—Be Connect Plus



Mobile App(BC) Be Connect

For Android / Apple systems; cell phones and pad also available.



Remote monitoring system(BCM) Be Connect Monitoring

Remote monitoring and statistical analysis

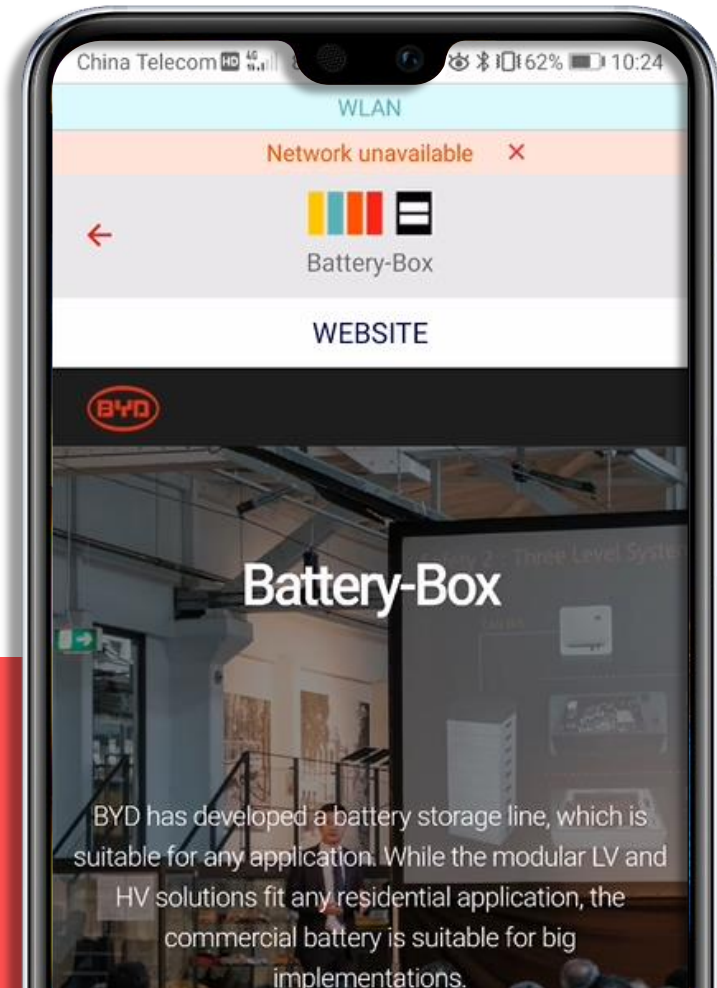


PC Offline Application(BCP) Be Connect Plus

Mainly serves offline systems with more functions.



Service Tool—Be Connect 2.0



New App Be Connect 2.0

Be Connect 2.0

Battery-Box New Mobile App with easier user interface, real time data displaying, event recording and more smart functions.





BYD BATTERY-BOX FAMILY



BYD premium battery range available in SA



HVS / HVM



LVS



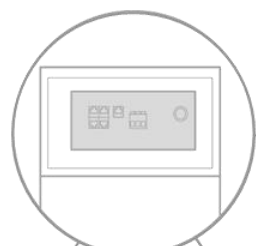
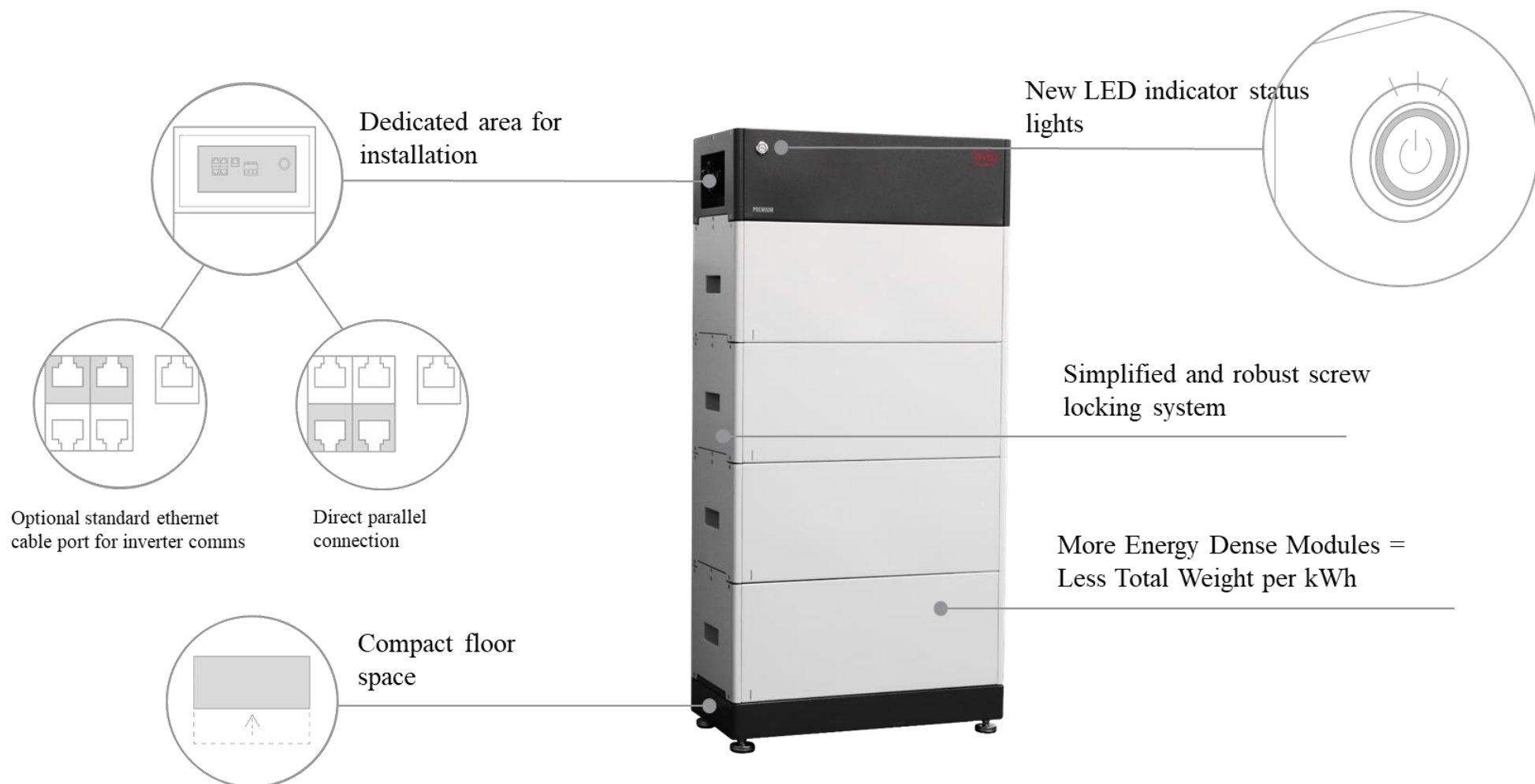
LVL



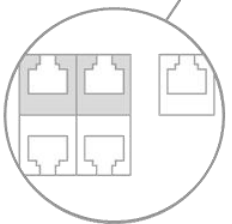
Flex Lite



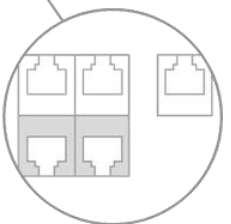
BYD premium battery range: Tower design Improvements



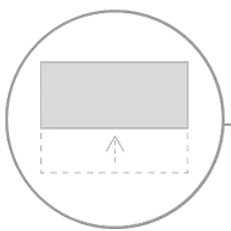
Dedicated area for installation



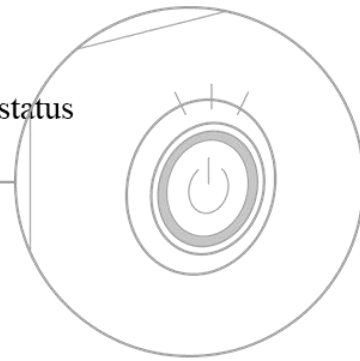
Optional standard ethernet cable port for inverter comms



Direct parallel connection



Compact floor space



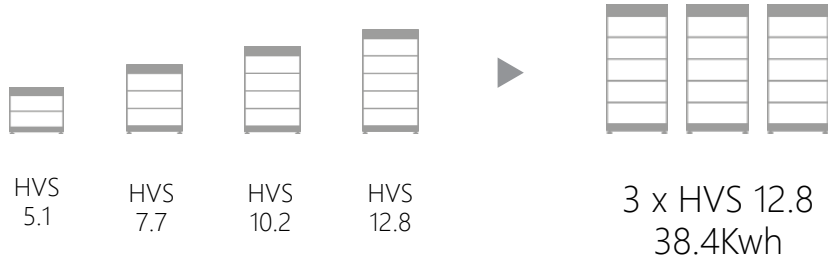
New LED indicator status lights

Simplified and robust screw locking system

More Energy Dense Modules = Less Total Weight per kWh

HV SERIES

HVM



HVS



➤ **Min. 2 x module, Max. 5 x modules per tower**

➤ **Max. 38.4kWh (15 modules) in parallel**



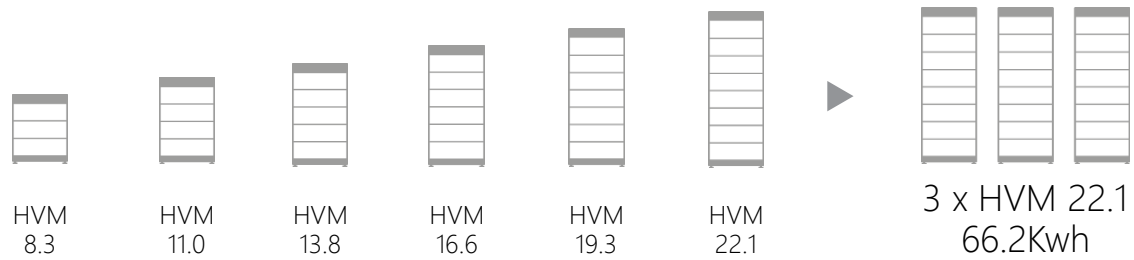
Difference between the Low Voltage and High High Voltage series

	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

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





LV SERIES

LVL



LVS



LV Flex Lite



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



16 x LVS 16.0

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

➤ **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	690 mm	923 mm	1156 mm	1389 mm	1622 mm
	640 mm	640 mm	640 mm	640 mm	640 mm	640 mm
	298 mm	298 mm	298 mm	298 mm	298 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

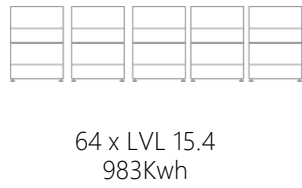
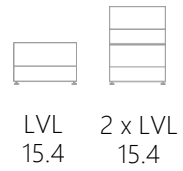
LV Flex Lite



LVL



LVS



➤ **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



LV SERIES

LVS



LVL



LV Flex Lite



LV Flex Lite
5.0



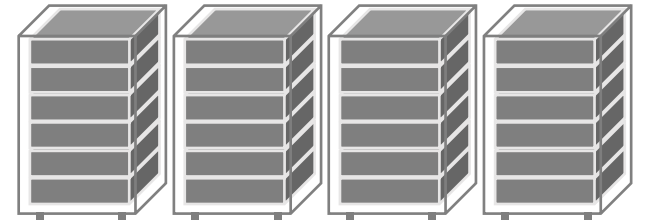
LV Flex Lite
10.0



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

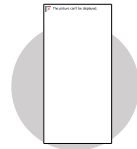
Standing
Horizontally



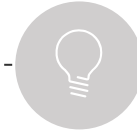
Standing
Vertically



Customer DIY
Cabinet
Rack-
mounted



Commercial



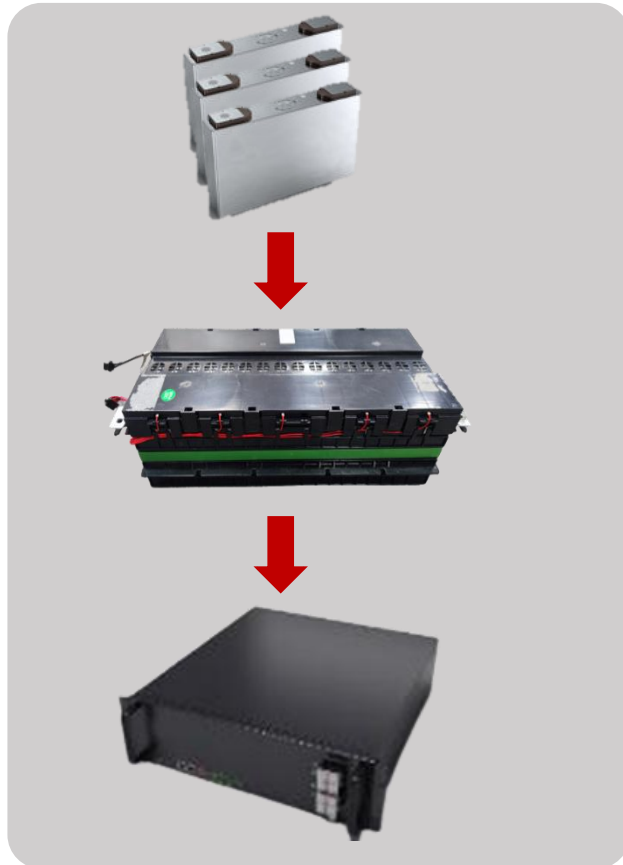
Residential



More...

BYD Precision C2P (Cell-to-pack) Design

Doubled Capacity, Smaller Volume, Longer Lifespan



Battery-Box Pro 2.5

VS



Battery-Box Flex Lite 5.0

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

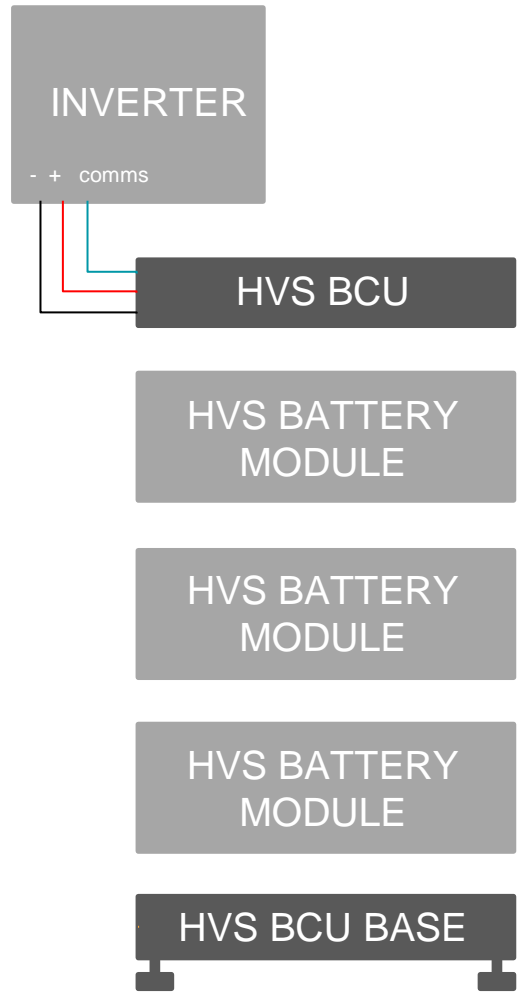
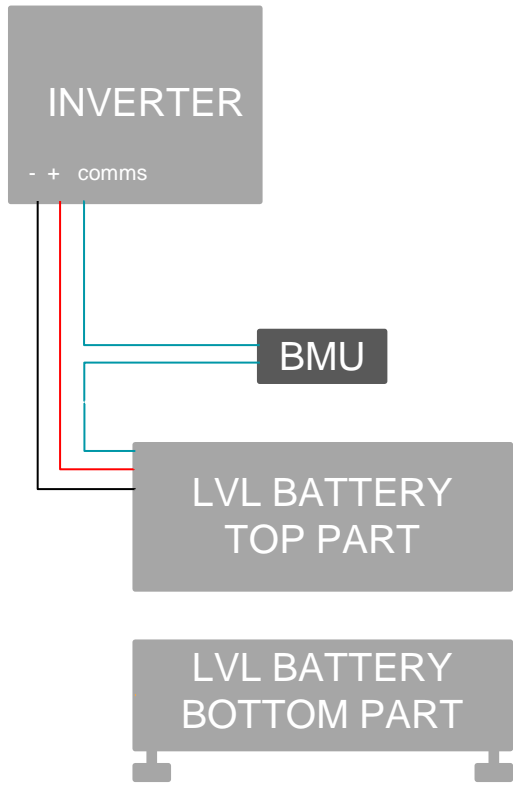
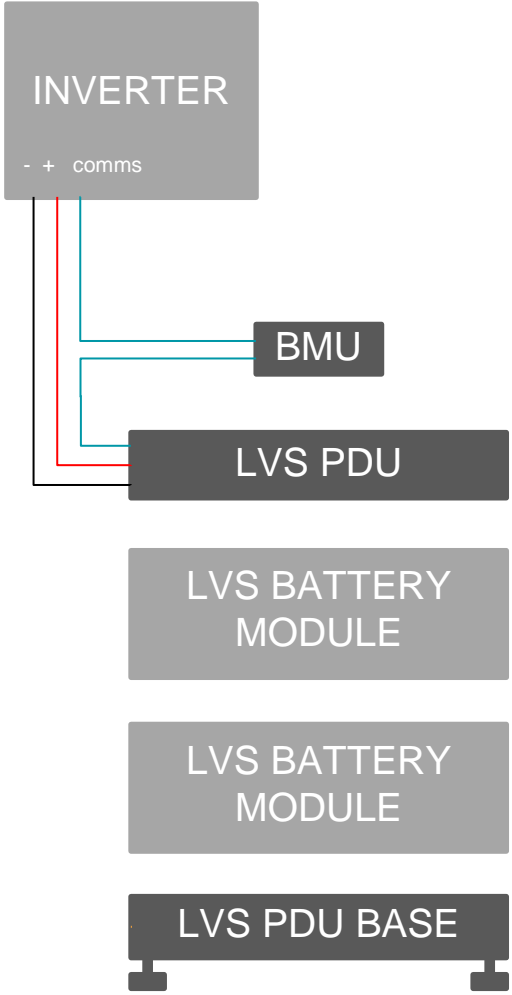


More compatible inverters are listed on the bydbatterybox.com/downloads website





BYD premium battery range available in SA : Components





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



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



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

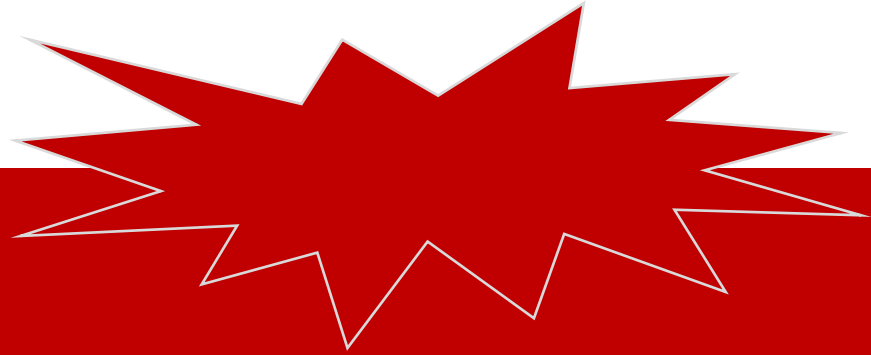
EXTRAORDINARY



- **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



FD-LV5.0

Compact

Affordable

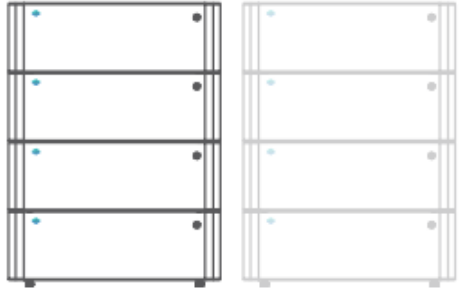
Scalable



5kWh



4x5kWh



32x5kWh

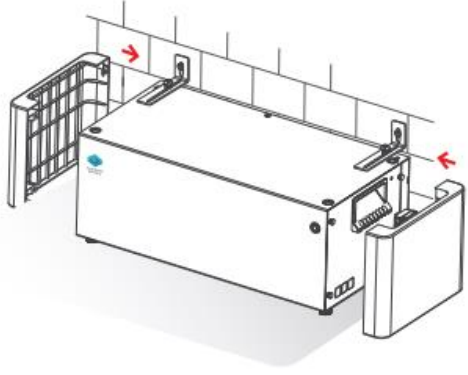
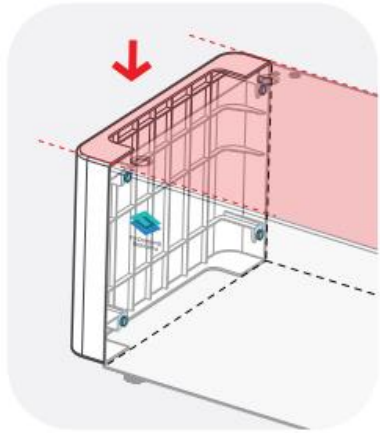
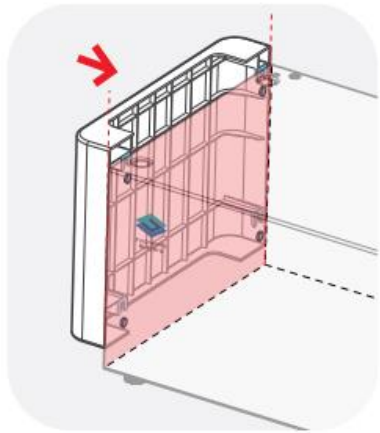
FD-LV5.0



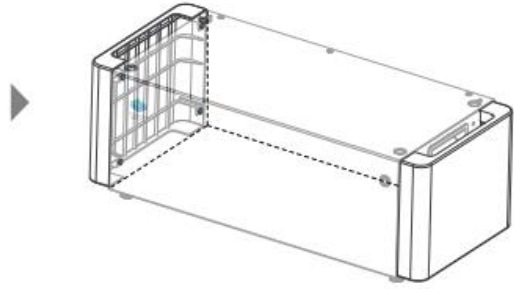
Technical Data

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°C & Discharge -20~50°C
Protection Class	IP20
Storage Humidity	5%~95%
Altitude	< 4000m
Certification	CE / IEC62619 / UN38.3
Compatible Inverter	Solis/ Deye / Victron/ Megarevo

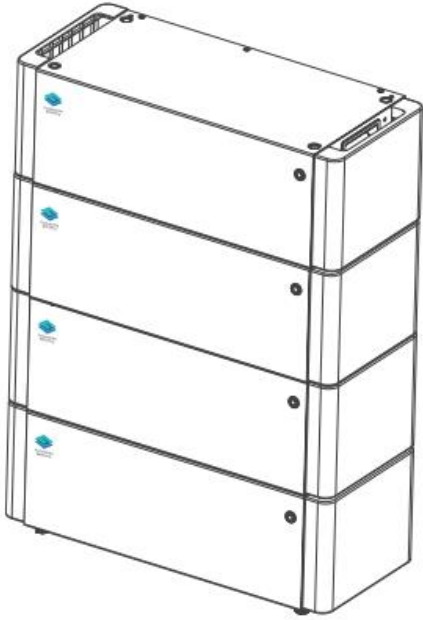
FD-LV5.0



Battery Module



Tower(1~4 modules)



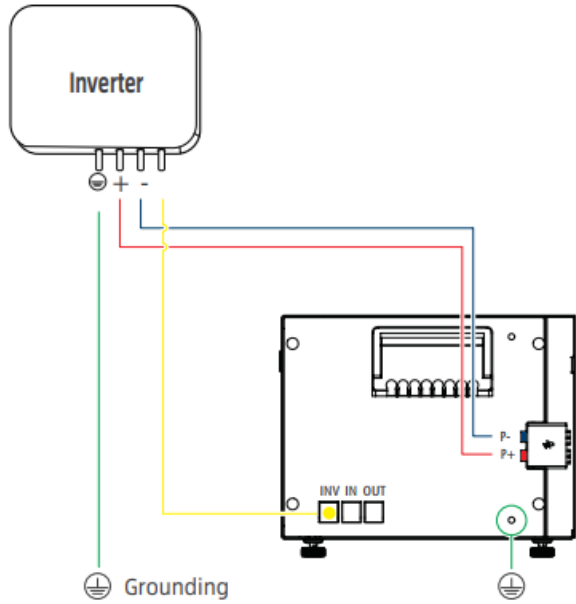
Floor Installation



Space-Saving

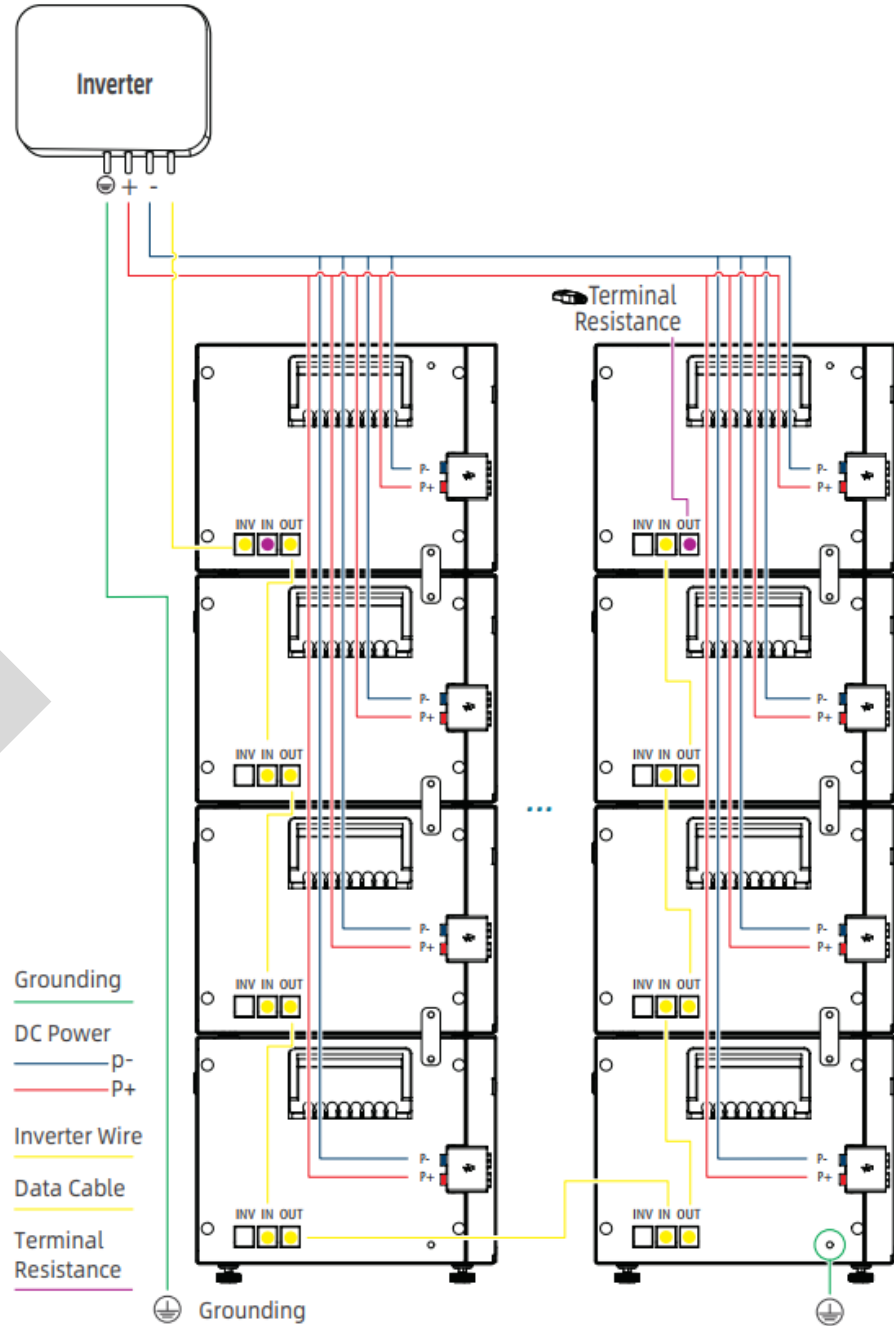
FD-LV5.0

Connection



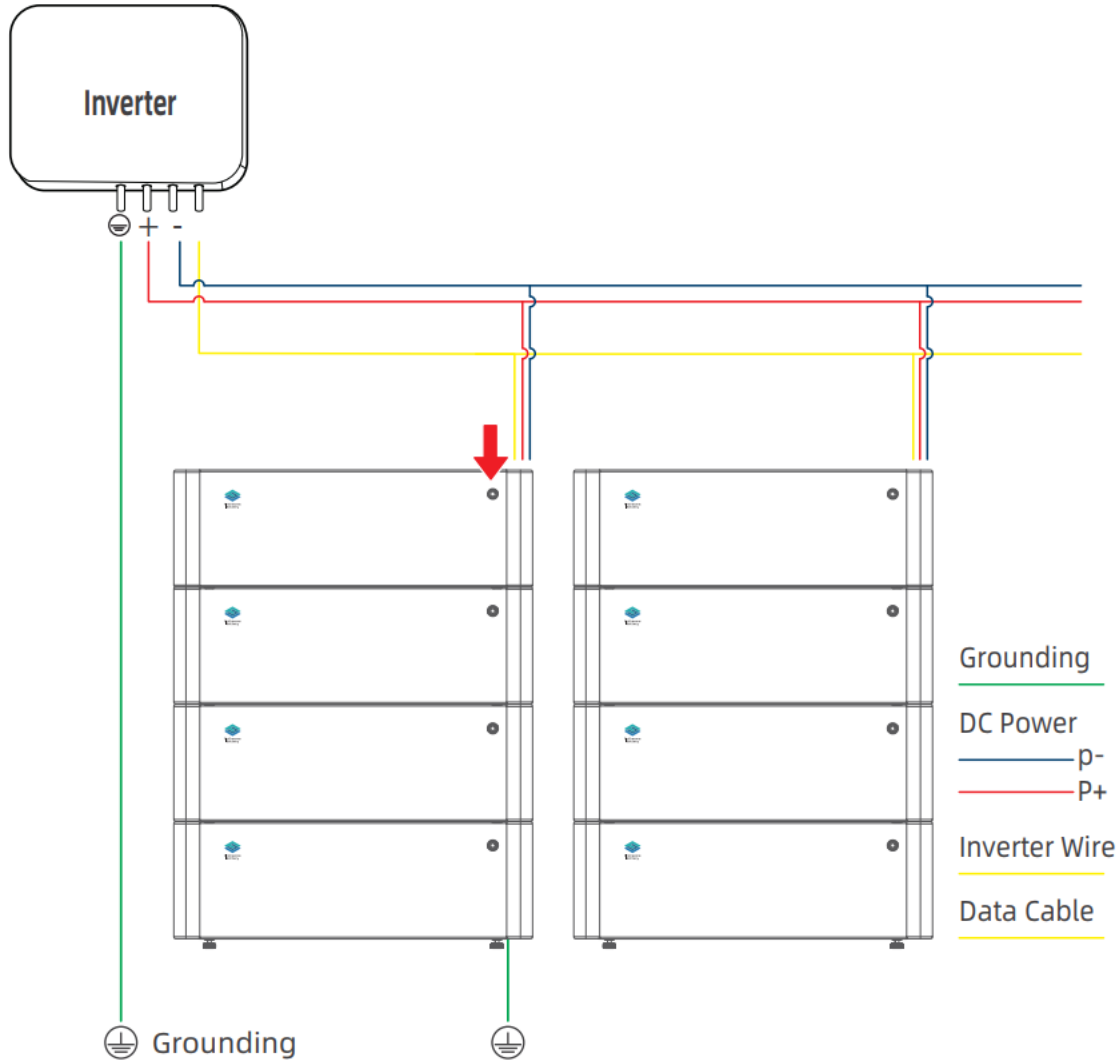
- Grounding
- DC Power
 - P-
 - P+
- Inverter Wire
- Data Cable
- Terminal Resistance

Extension



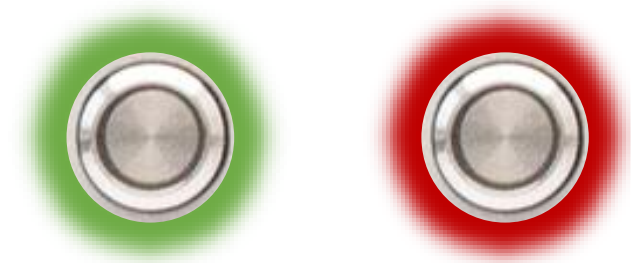
- Grounding
- DC Power
 - P-
 - P+
- Inverter Wire
- Data Cable
- Terminal Resistance

FD-LV5.0



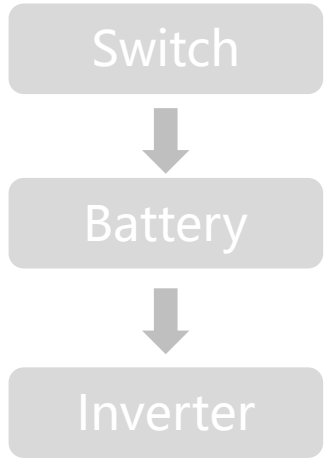
Configuration Automatically

LED Signal Code

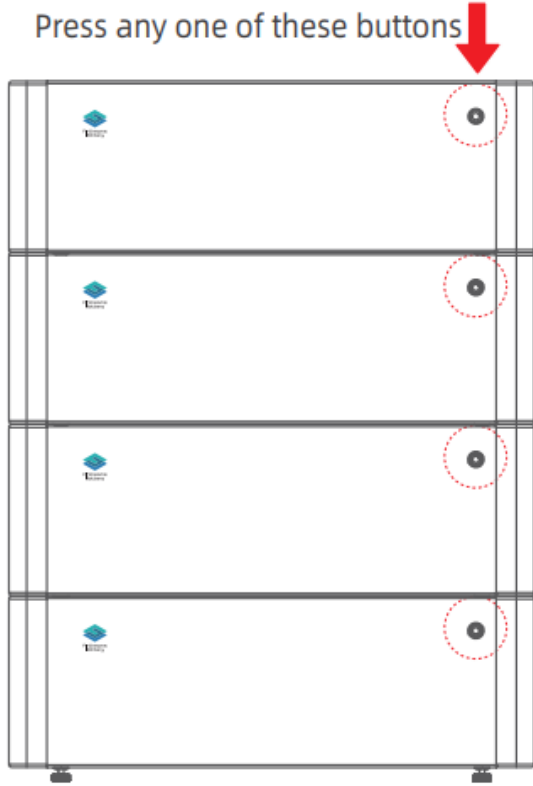


FD-LV5.0

Switch On



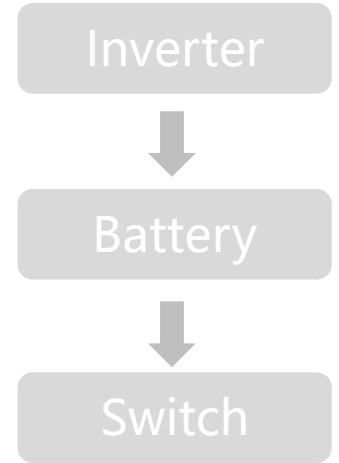
Tower(1~4 Modules)
Press any one of these buttons



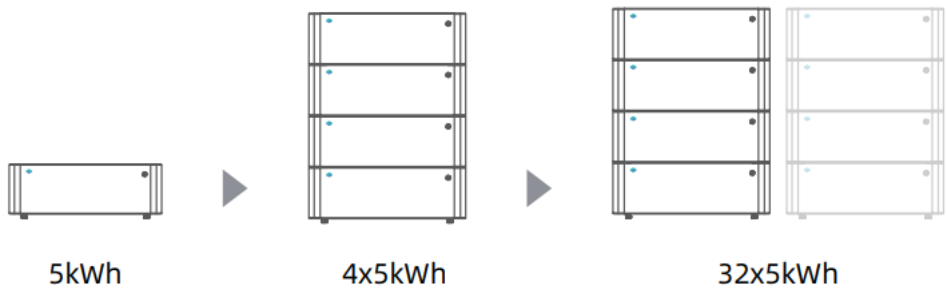
Multiple Towers(2~8 Towers)



Switch Off



FD-LV 5.0















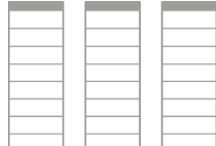











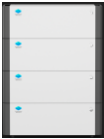





More FD Series will be available soon



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  	+50°C -10°C
	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		
	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	IP20 Indoors  -10°C-50°C -20°C-50°C	

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>

HVS&HVM	LVS	LVS Lite	LV Flex	LV Flex Lite
TECHNICAL INFORMATION	TECHNICAL INFORMATION	TECHNICAL INFORMATION	TECHNICAL INFORMATION	TECHNICAL INFORMATION
SERVICE GUIDELINE	SERVICE GUIDELINE	SERVICE GUIDELINE	SERVICE GUIDELINE	SERVICE GUIDELINE
OPERATING MANUAL	OPERATING MANUAL	OPERATING MANUAL	OPERATING MANUAL	OPERATING MANUAL
DATASHEET	DATASHEET	DATASHEET	DATASHEET	DATASHEET
LIMITED WARRANTY	LIMITED WARRANTY	LIMITED WARRANTY	LIMITED WARRANTY	LIMITED WARRANTY
QUICK START GUIDE	QUICK START GUIDE	CERTIFICATE	QUICK START GUIDE	QUICK START GUIDE
CERTIFICATE	CERTIFICATE		CERTIFICATE	

Manuals and resources

Please see <https://bydbatterybox.com/downloads>

LVL	HVL	Commercial	LV BMU	General Product Files
TECHNICAL INFORMATION	TECHNICAL INFORMATION	TECHNICAL INFORMATION	INSTRUCTION MANUAL	APP USE INSTRUCTION
SERVICE GUIDELINE	SERVICE GUIDELINE	DATASHEET		CALCULATOR
OPERATING MANUAL	OPERATING MANUAL	LIMITED WARRANTY		BE CONNECT PLUS
DATASHEET	DATASHEET	CERTIFICATE		Be Connect Plus V2.0.9
LIMITED WARRANTY	LIMITED WARRANTY			COMBINER BOX
QUICK START GUIDE	QUICK START GUIDE			
CERTIFICATE	CERTIFICATE			