High Voltage Battery System

Battery-Box

HVB 5.9, 8.9, 11.8, 14.8, 17.8, 20.7, 23.7, 26.7, 29.6

HVM+ 8.3, 11.0, 13.8, 16.6, 19.3, 22.1

HVS+ 5.1, 7.7, 10.2, 12.8

Quick Start Guide

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For the latest documents visit: www.bydenergy.com

Disclaimer ▶

1. Target Group

Instructions in this document may only be performed by qualified personnel with the following skills:

- Understand how batteries work and operate.
- Understand the working principle and operation method of the inverter.
- Know and comply with locally applicable connection requirements, standards and directives.
- Understand and follow this document and related system documentation, including all safety instructions.
- Training to handle hazards associated with the installation and operation of electrical equipment and batteries.
- Training on installation and commissioning of electrical equipment.
- For personnel engaged in special scenarios such as working at height or operating special equipment, they must be qualified by the local country or region.

2. Firefighting measures

2.1 Extinguishing media

- DRY POWDER, SAND, CARBON DIOXIDE (CO_2)

2.2 Fire precautions and protective measures

| Flammable properties	Lithium ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperature (>150°C), when damaged or abused (e.g.,mechanical damage or electrical overcharge). Burning cells can ignite other batteries in close proximity.
Explosion data	Extreme mechanical abuse will result in rupture of the batteries. Throw into the fire will result in burning.
Special protective equipment for firefighters	In the event of a fire, wear full protective clothing and self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.
NFPA	Health:0 Flammability:1 Instability:0

Configure the Battery System

Through the APP, you can realize intelligent battery management, including remote data monitoring, firmware upgrade and troubleshooting.

- **Android users:** Search for "BYD Energy" on Google Play or scan Android QR code to download and install.
- **iPhone users:** Search for "BYD Energy" in the App Store or scan iOS QR code to download and install.
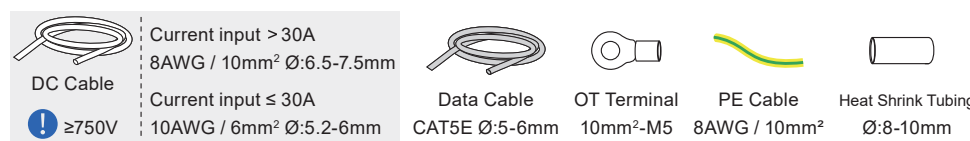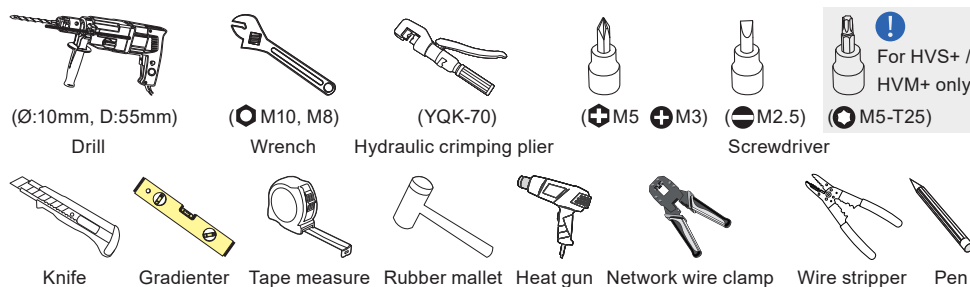
Configuration steps:

Download — Login/Register — Add Device — Bluetooth Connection /Networking — Enjoy
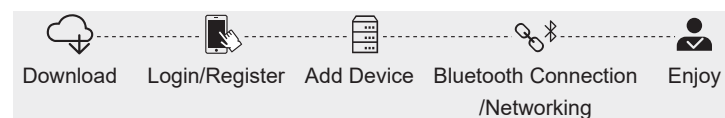
For detailed configuration steps, please refer to the user manual and APP instructions, Website: www.bydenergy.com.

Android

iOS
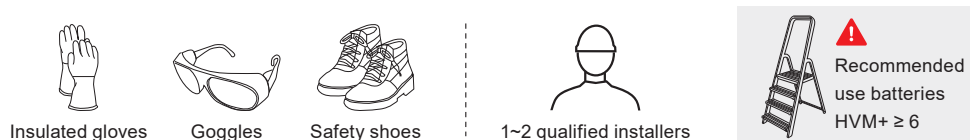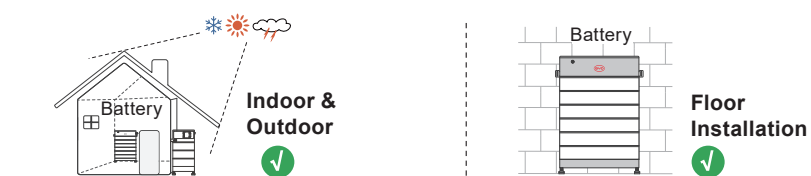
Requirements for Installation
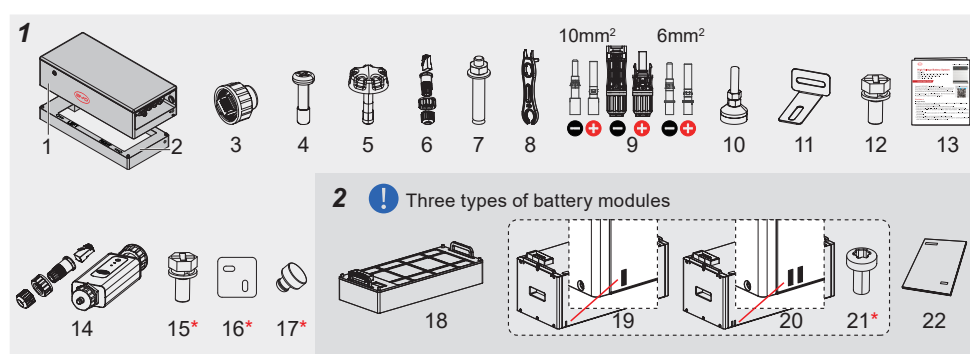
1. Tools & Additional Accessories (not included in the scope of delivery)

(Ø:10mm, D:55mm) Drill | (M10, M8) Wrench | (YQK-70) Hydraulic crimping plier | (M5, M3) / (M2.5) / (M5-T25) Screwdriver | For HVS+ / HVM+ only

Knife | Gradienter | Tape measure | Rubber mallet | Heat gun | Network wire clamp | Wire stripper | Pen

DC Cable ≥750V	Current input >30A 8AWG / 10mm² Ø:6.5-7.5mm	Data Cable CAT5E Ø:5-6mm	OT Terminal 10mm²-M5	PE Cable 8AWG / 10mm²	Heat Shrink Tubing Ø:8-10mm
	Current input ≤30A 10AWG / 6mm² Ø:5.2-6mm				

2. Safety Gear & Required Personnel

Insulated gloves | Goggles | Safety shoes | 1~2 qualified installers | ⚠ Recommended use batteries HVM+ ≥ 6

3. Installation Scene & Installation Mode

Indoor & Outdoor ✓

Floor Installation ✓

Scope of Delivery

1

1 2 3 4 5 6 7 8 9 (10mm² 6mm²) 10 11 12 13

14 15* 16* 17*   18 19 20 21* 22

2 ! Three types of battery modules

1 BCU and Base Package	3. Terminal resistor x 1	9. Power cable connector x 2	15*. Screw M5*16 x 2
	4. Screw M4*14 x 2	10. Adjustable foot x 4	16*. Hanger2 x 2
	5. Knob screw x 2	11. Hanger1 x 2	17*. Rubber plug x 2
	6. Communication terminal x 2	12. Screw M5*16 x 2	
1. BCU x 1	7. Expansion screw M8 x 2	13. QSG x 1	*(for HVS+ / HVM+ only)
2. Base x 1	8. Connector special tool x 1	14. Smart WiFi/ LAN Module x 1	
2 Battery Module Package	18. HVB Module x 1	20. HVM+ Module x 1	22. Attached document x 2
	19. HVS+ Module x 1	21*. Screw M5*10 x 2	

Battery System Overview

1. Structure Dimension Drawing

unit:mm

BCU 610 157

HVB Module 106

Base 110~130

HVS+ Module 240

HVM+ Module 240

282
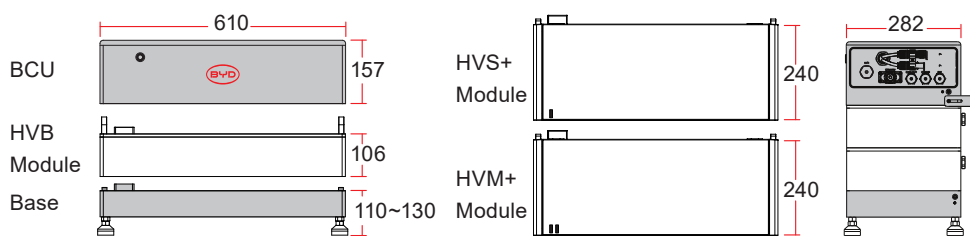
2. Functional Area Overview

Main Switch | WIFI | COM-INV | COM-IN | COM-OUT | INV | P+ | P- | Grounding1
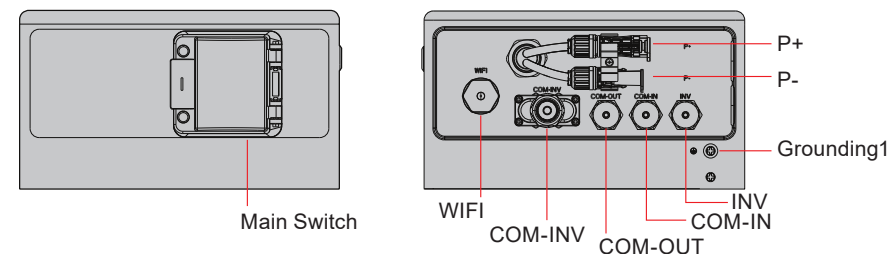
3. Battery System Description

Main Switch | Power(LED Button) | BCU | Operating Panel | Grounding1 | Hanger1 | Battery Module | Grounding2 | Base | Adjustable Foot

Indoor | Outdoor

Hanger2 | Hanger1 | Rubber plug | Screw M5*10

HVS+ ▮ / HVM+ ▮▮

Floor Installation

① Base | Accessories | BCU | Module

②

③ WALL 35~65mm ← LEFT RIGHT →

④ Adjustable Foot | WALL

⑤ HVB | HVS+ HVM+▮▮ | M5 ⟲ 4-5Nm | Positioning column | Rubber plug

⑥ HVS+ HVM+▮▮ | HVB

⑦ Ø:10mm D:55mm | HVB | Prevent dust from falling | HVS+ HVM+▮▮

⑧

⑨ M8 ⟲ | M5 ⟲ 4-5Nm | HVB

M8 ⟲ | M5 ⟲ 4-5Nm | HVS+ HVM+▮▮

Electrical Connection

1. Connecting the PE

8AWG / 10mm²
L:10-15mm

M5 ✛ ⟳ 3-4Nm

Heat Shrink Tubing

2. Connection Diagram

! Do not crimp the unused pins when making the communication cable between the battery and the inverter.

COM-INV
12345678

1	RS485A
2	RS485B
3	PCS_EN-
4	PCS_EN+
5	NC
6	IGND
7	CAN_L
8	CAN_H

INV
12345678

1	RS485A
2	RS485B
3	IGND
4	CAN_H
5	CAN_L
6	NC
7	PCS_EN+
8	PCS_EN-
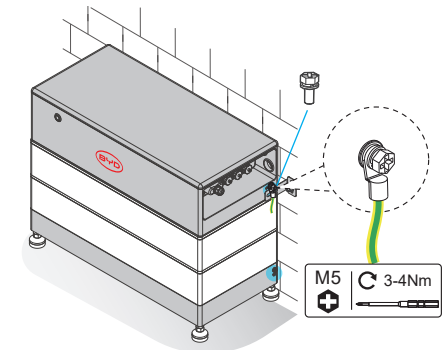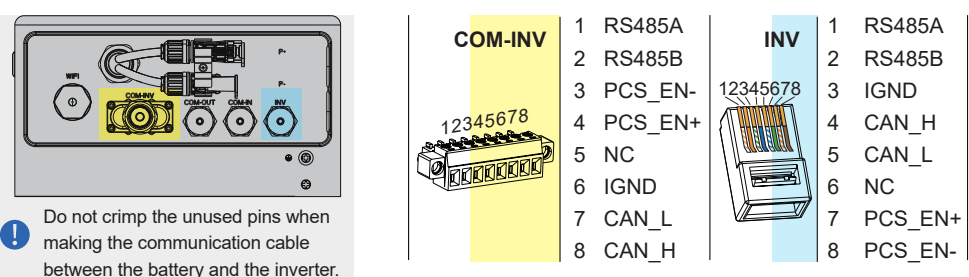
3. Connecting the Inverter cable, Smart Wifi/LAN Module*1 and Data cable*2

A

Inverter cable——RJ45

A or B

B

M2.5 ⊖ ⟳
M3 ✛ ⟳
M3 ⟳ 1.2Nm

Inverter cable——8-Pin terminal

C WiFi

Smart Wifi/LAN Module*1

C or D

D Ethernet

"Click"
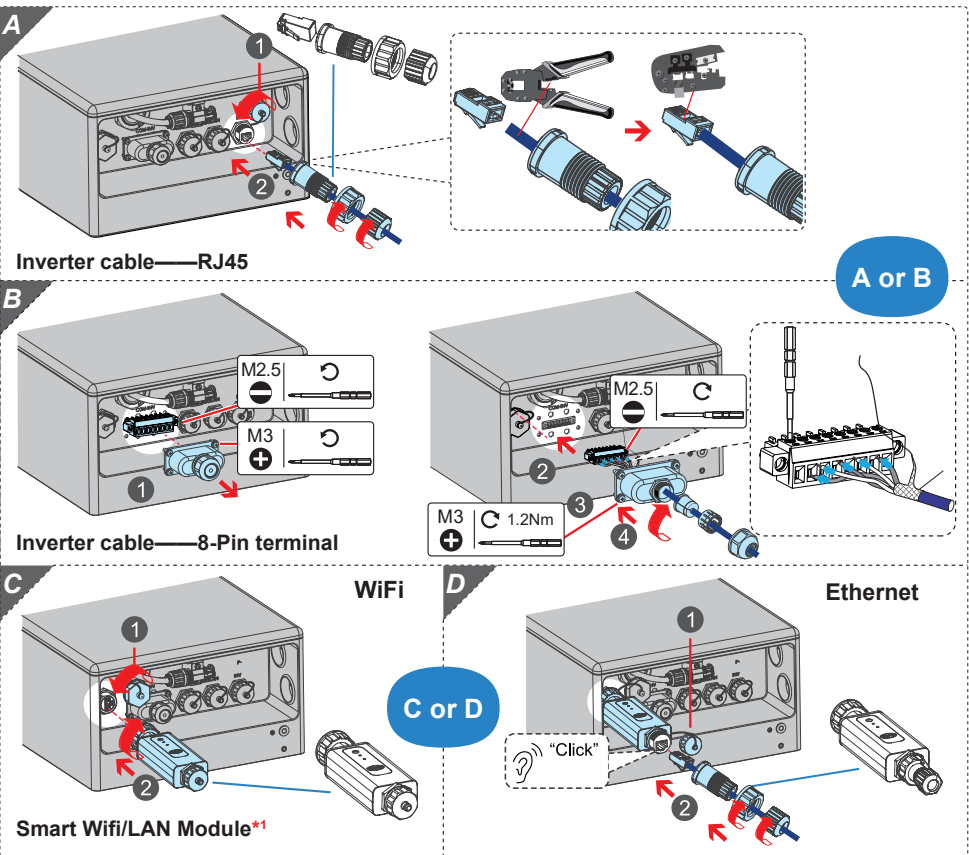
*1 The battery system doesn't have a wireless communication function. Through the USB, the battery system supports the expansion of connection with the Smart WiFi/LAN Module to implement the wireless function, and the Smart WiFi/ LAN Module had obtained individual cyber security certification in accordance with EN 18031 series.

Data cable*2

*2 Data Cable & terminal resistor are used for parallel connection.
*2 Connect terminal resistor, plug the terminal resistor into the "IN" port of the master module and the "OUT" port of the last slave module.

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4. DC Connection

10mm² 6mm²

10AWG / 6mm² L: 10-12mm
8AWG / 10mm² L: 11-13mm

YQK-70

A

The burrs need to be trimmed. After trimming, they should not be higher than the right flange, and there should be no broken edges or wire core leakage.

B

If there is any skew after pressing, it should not be higher than the right flange. And the crimping location should be no damage or cracking.

C

Viewing Hole

When crimping 10 mm² terminals, the crimping pliers die must not completely cover the viewing hole.

D

Thin-walled side

Elastic piece

1. Any elastic piece of the terminal must be aligned with the thin-walled side of the plastic case opening before insertion.
2. After inserting, please try pulling it out to check if the terminal and the plastic case are securely connected.

M3 ✛ ⟳

M3 ⟳ 1.2Nm

E or F

"Click"

Systems Connection

Inverter

Grounding | DC Cable | Inverter Cable
—— P+ | Data Cable
—— P-

! Terminal Resistor

Max. 3 towers in parallel

Inverter

! Terminal Resistor

COM- INV

INV
PE
PE

HVB: 2≤N≤10
HVS+: 2≤N≤5
HVM+: 3≤N≤8

Tower A   Tower B   Tower C
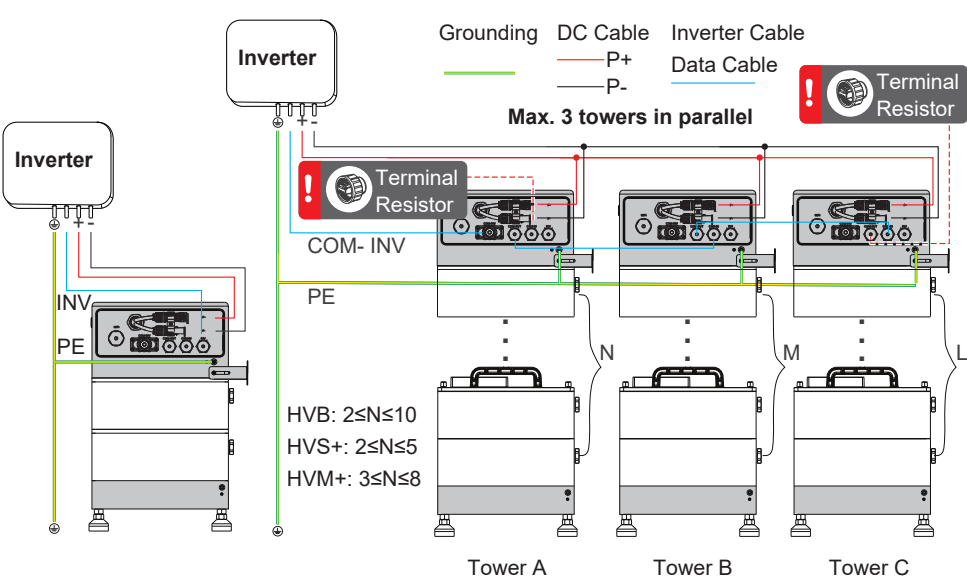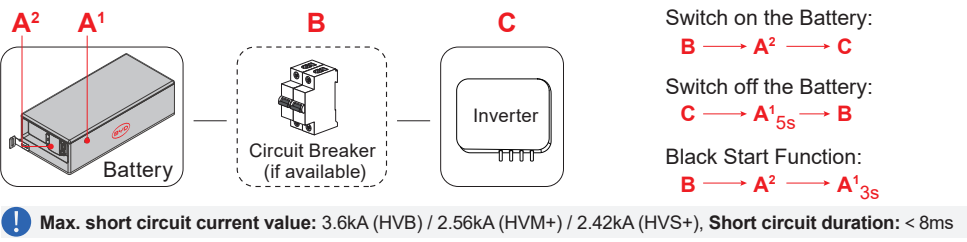
⚠ Only one type of battery module can be used in the same tower!

Number of Module:
N = M = L ✓
N ≠ M or N ≠ L or M ≠ L ✗

Product Model:
A = B = C ✓
A ≠ B or A ≠ C or B ≠ C ✗

Operation

A² A¹

B

C

Battery — Circuit Breaker (if available) — Inverter

Switch on the Battery:
B → A² → C

Switch off the Battery:
C → A¹₅ₛ → B

Black Start Function:
B → A² → A¹₃ₛ

! **Max. short circuit current value:** 3.6kA (HVB) / 2.56kA (HVM+) / 2.42kA (HVS+), **Short circuit duration:** < 8ms

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LED Signals

Indicator	Status		Description
Flashing white and blue alternatively	White○ ON/OFF 0.5s	Blue● ON/OFF	The battery system is initiating
Flashing white slowly	White○ ON/OFF 2s	Blue● ON/OFF	The battery system is charging
White light flashing	White○ ON/OFF 1s	Blue● ON/OFF	The battery system is discharging
Constant white	White○ ON/OFF	Blue● ON/OFF	Idle (the battery system is neither charging nor discharging).
Constant blue	White○ ON/OFF	Blue● ON/OFF	BCU failure
Blue light flashes a certain number of times	White○ ON/OFF 2.5s N 0.5s	Blue● ON/OFF	Counting from top to bottom, flashing N times, represents the Nth battery module failure, N represents 1-10 battery modules

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Connection Options with Inverters

Connection with Fronius

HVB
12345678

HVB Fronius	
1	M0+
2	M0-
7	V+
8	GND

Verto Plus 15.0-33.3kW

HVB
12345678

HVB Fronius	
1	M0+
2	M0-
3	GND
4	V+

Verto Plus15.0-33.3kW

HVS+
HVM+
12345678

HVS+ HVM+ Fronius	
1	M0+
2	M0-
7	V+
8	GND

Symo Gen24 Plus
Primo Gen24 Plus

HVS+
HVM+
12345678

HVS+ HVM+ Fronius	
1	M0+
2	M0-
3	GND
4	V+

Symo Gen24 Plus
Primo Gen24 Plus

Connection with Kostal

HVB
HVS+
HVM+
12345678

HVB HVS+ HVM+ Kostal	
1	5
2	4
7	1
8	6

PLENTICORE plus G2
PLENTICORE BI xx/26 G2
PLENTICORE G3
PLENTICORE MP G3

123456

HVB
HVS+
HVM+
12345678

HVB HVS+ HVM+ Kostal	
1	5
2	4
3	6
4	1

PLENTICORE plus G2
PLENTICORE BI xx/26 G2
PLENTICORE G3
PLENTICORE MP G3

123456

Connection with Kaco

HVB
HVS+
HVM+
12345678

HVB HVS+ HVM+ Kaco	
4	4
5	5

Blueplanet hybrid 6.0-12.0 NH3 M2
Blueplanet hybrid 8.0-12.0 NH3 M3

HVB
HVS+
HVM+
12345678

HVB HVS+ HVM+ Kaco	
7	7
8	4

Blueplanet hybrid 6.0-12.0 NH3 M2
Blueplanet hybrid 8.0-12.0 NH3 M3