

**LFP.6144.G Series 51.2V LifePO4 Battery
Installation Guide for EU & APAC**

Version 1.1

Disclaimers

Important Notice

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This manual provides detailed instructions for the proper installation of the MENRED ESS LFP.6144.G Series Lifepo4 Battery 51.2V. It is important to thoroughly read and follow the instructions to ensure safe and efficient installation. Failure to adhere to these guidelines could result in system malfunction, safety hazards.

The information and instructions contained in this manual are accurate as of the publication date. However, product specifications and configurations may change without notice. The illustrations are for reference purposes only, and the actual components may differ.

By proceeding with the installation, you acknowledge that MENRED ESS is not liable for any damages resulting from improper installation or failure to follow safety procedures.

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Choose and set up the installation location

Follow these requirements when choosing an installation site

General guidelines and requirements

- ✓ The battery may be installed in an indoor location.
- ✓ The battery must be secured to a wall using the supplied mounting bracket and the installation location must be adjacent to a wall.
- ✓ When installed indoors, the battery must not be obstructed by any building structure, room furniture or equipment.
- ✓ The battery shall not be exposed to direct sun or rain.
- ✓ Because the battery has a natural convection, the installation site must be clean, dry and well ventilated.
- ✓ The installation location must allow easy access to the battery for installation and maintenance.
- ✓ The battery shall not be exposed to direct sun or rain.

Restricted locations

Do not install the battery at any of following locations:

- ✓ Residential rooms
- ✓ Wall or ceiling niches
- ✓ Entrance/exit areas or below a staircase/passage
- ✓ Environments with humidity and condensed water level of over 90%
- ✓ Earthquake zones where additional safety measures are required
- ✓ Sites at altitudes of more than 2000 meters above the sea level

- ✓ Sites exposed to direct sunlight or sites where the ambient temperature may exceed the specified maximum temperatures
- ✓ Near flammable materials or gases or explosive environments

Clearance

Observe the following minimum clearance:

- ✓ 20 cm from all sides of the battery module
- ✓ 30 cm from another battery module or any heat source, such as water heater unit, gas-fueled heater, air conditioning unit or any other equipment
- ✓ 100 cm from emergency exits
- ✓ 30 cm from doors
- ✓ 25 cm from windows
- ✓ 20 cm from air vents
- ✓ 20 cm from other devices



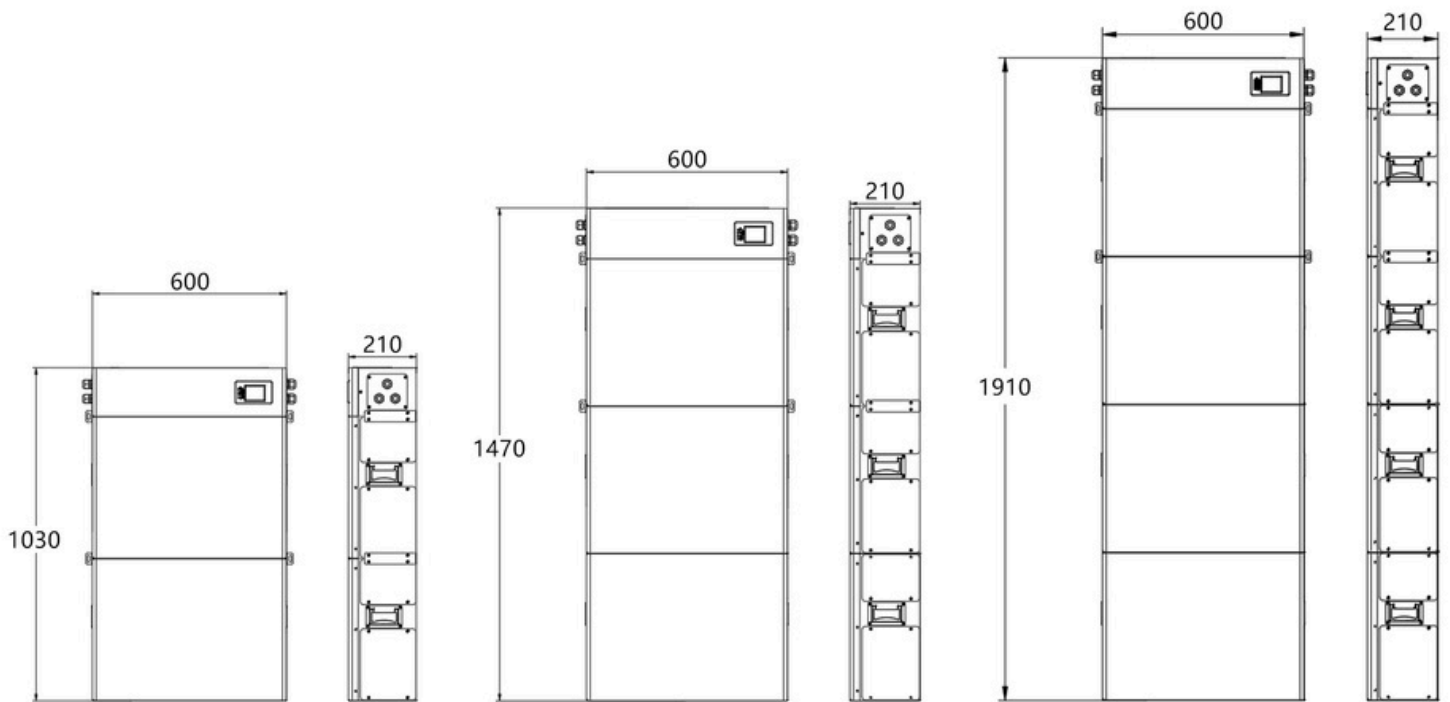
WARNING!

The cable length between the battery cluster and the inverter cannot exceed five meters.

Dimensions

Note the following dimensions:

	Width	Height	Depth
Parallel Control Box	600mm	150mm	210mm
Battery Module	600mm	440mm	210mm



Battery Dimensions

Residential barrier

To prevent the spread of fire, install a non-combustible barrier on the opposite side of the wall or structural surface where the battery is mounted.

If the installation surface is not made of non-combustible material, a non-combustible barrier should be placed between the battery and the wall or structural surface.

If the battery pack is mounted on a wall or within 300mm from a wall that separates the energy storage system from a residential space, ensure that the distance from other structures or objects is increased.

Install the battery

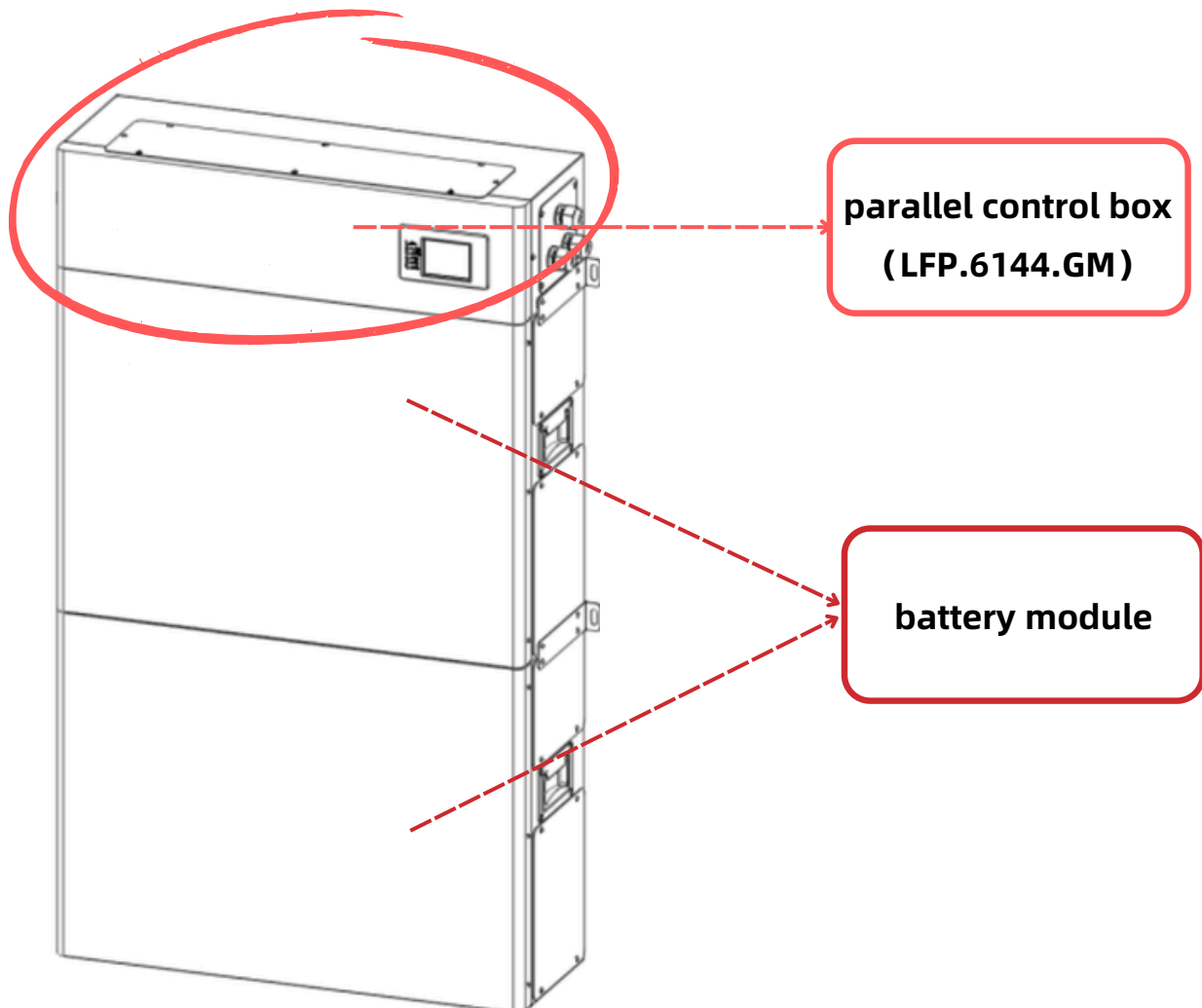


CAUTION!

Before install modules, ensure that the battery power is off on all modules.

Configurations

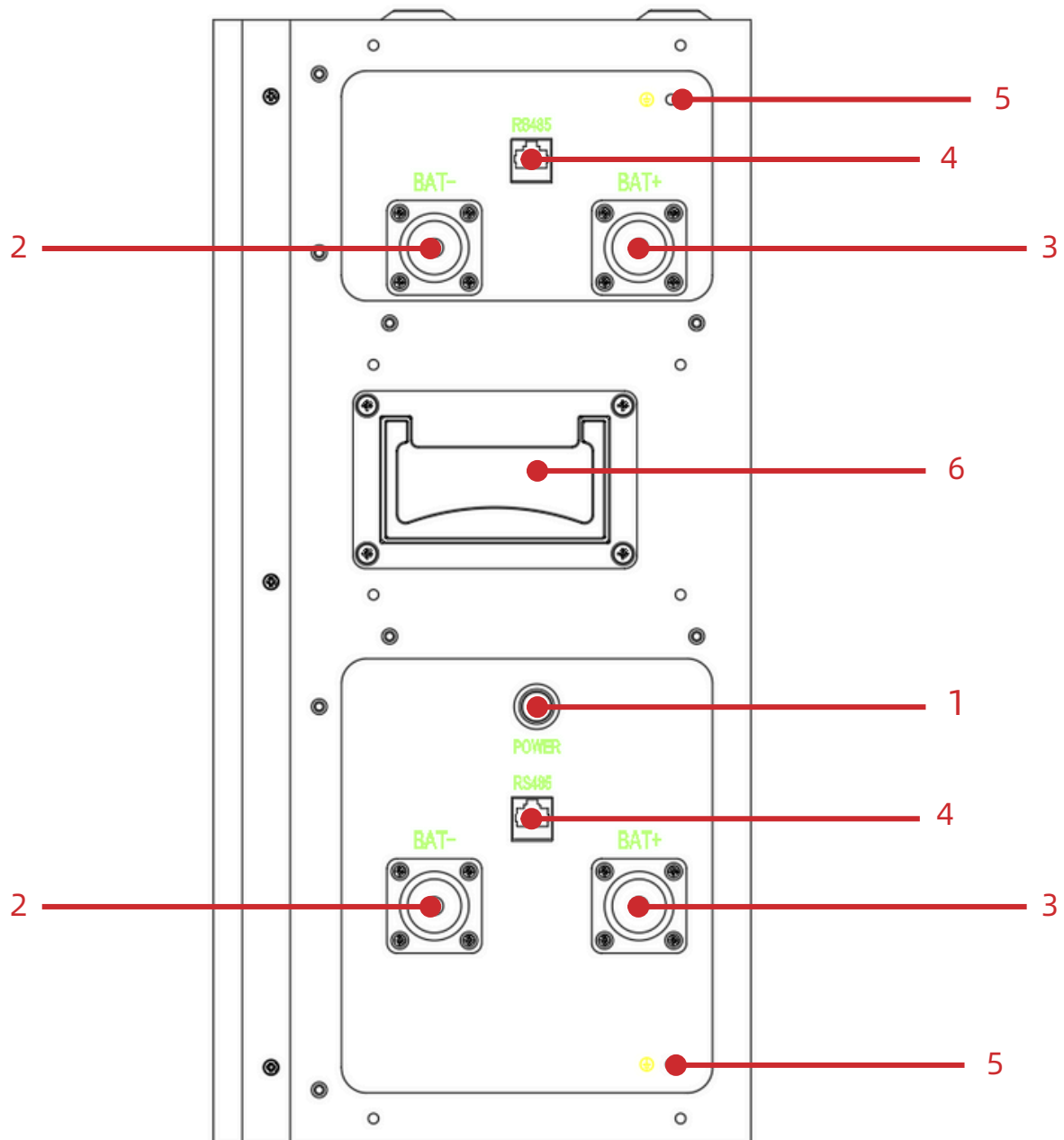
A 'Battery Module' is a single battery unit, while a 'Battery Cluster' is a group of battery modules connected in parallel. Each cluster contains a parallel control box (LFP.6144.GM) and at least two battery modules. Clusters are expandable with additional modules as needed, **supporting up to 8 modules per cluster. Up to 32 battery modules can be connected across a maximum of 4 clusters**, with each cluster requiring one GM control box (i.e., 4 clusters require 4 GMs)



Battery Composition

Single Battery Module Description

The images below provides an overview of the components in a single battery module.



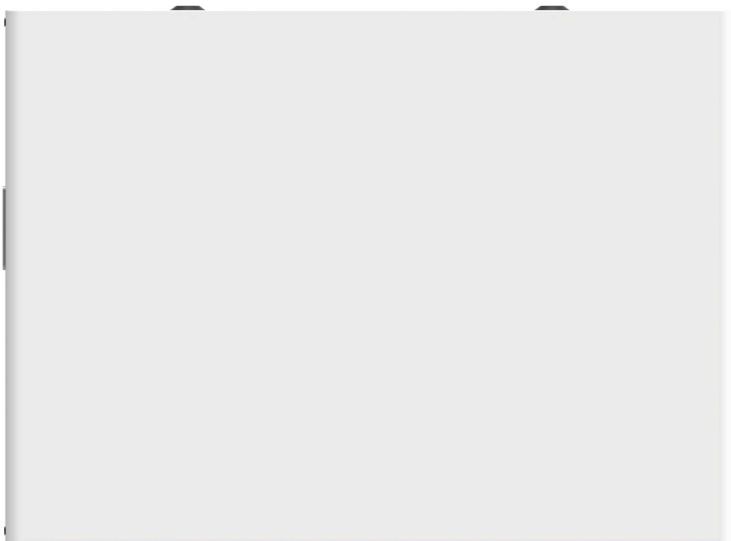
Single Battery Module

1	Power Button	5	Grounding Terminal
2	DC Bat - Connector	6	Battery Handle
3	DC Bat + Connector		
4	RS485 Communication Socket		

Side View

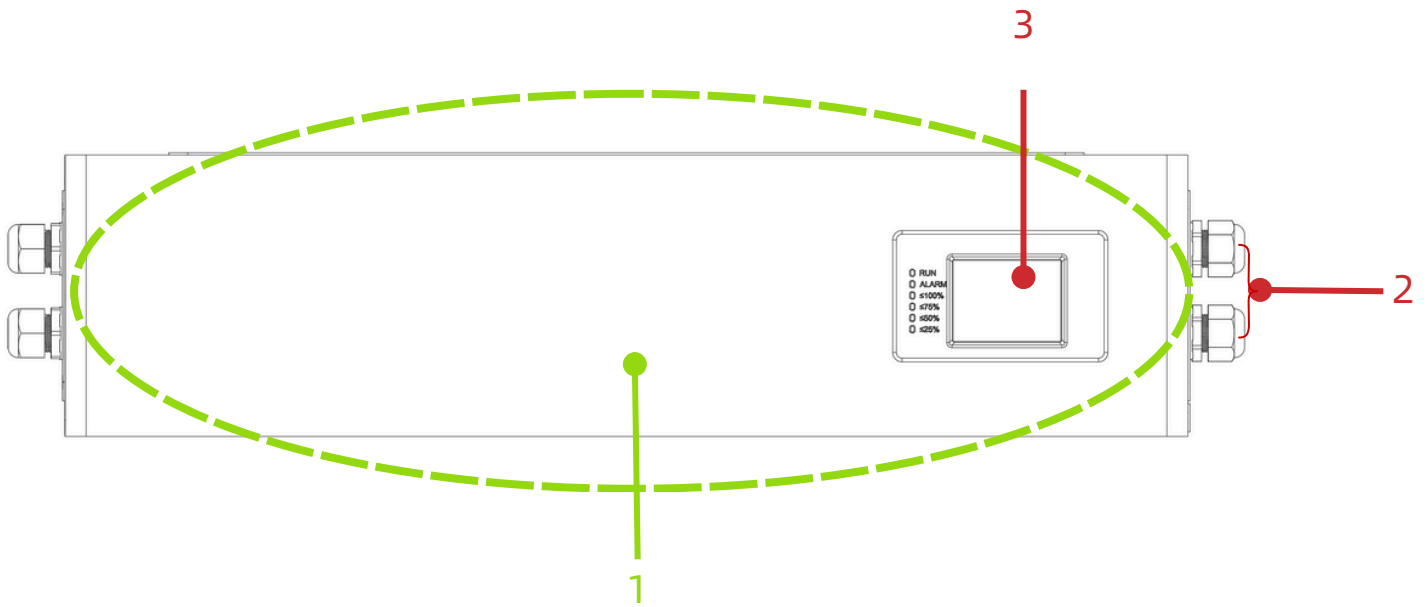


Front View

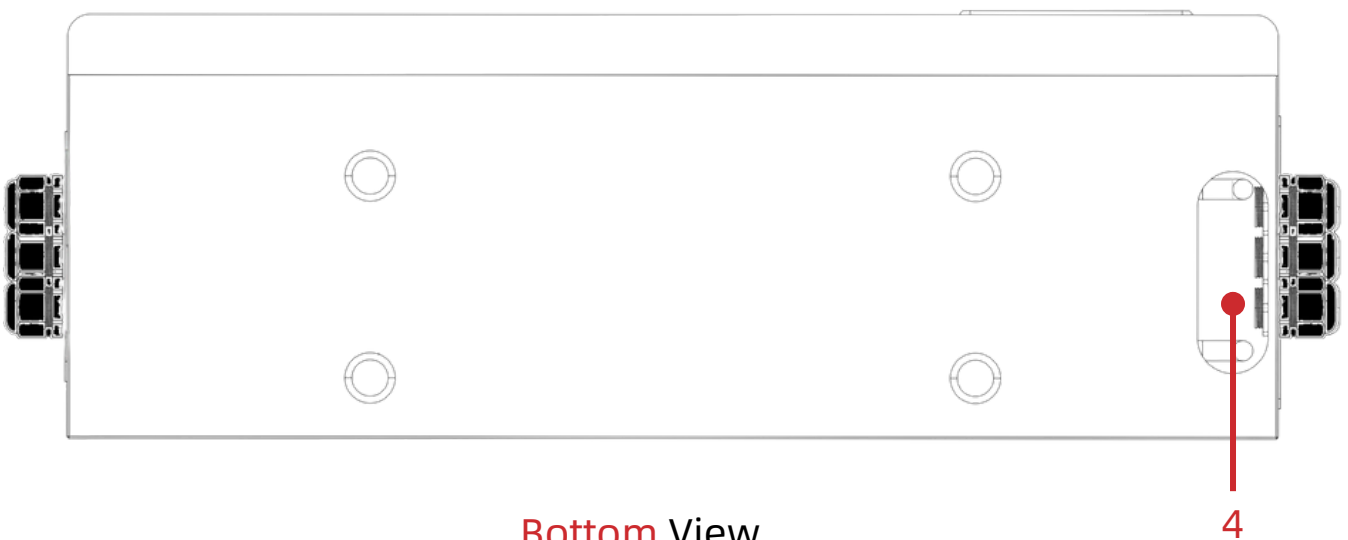


Single Battery Module(LFP.6144.G) - Physical Overview

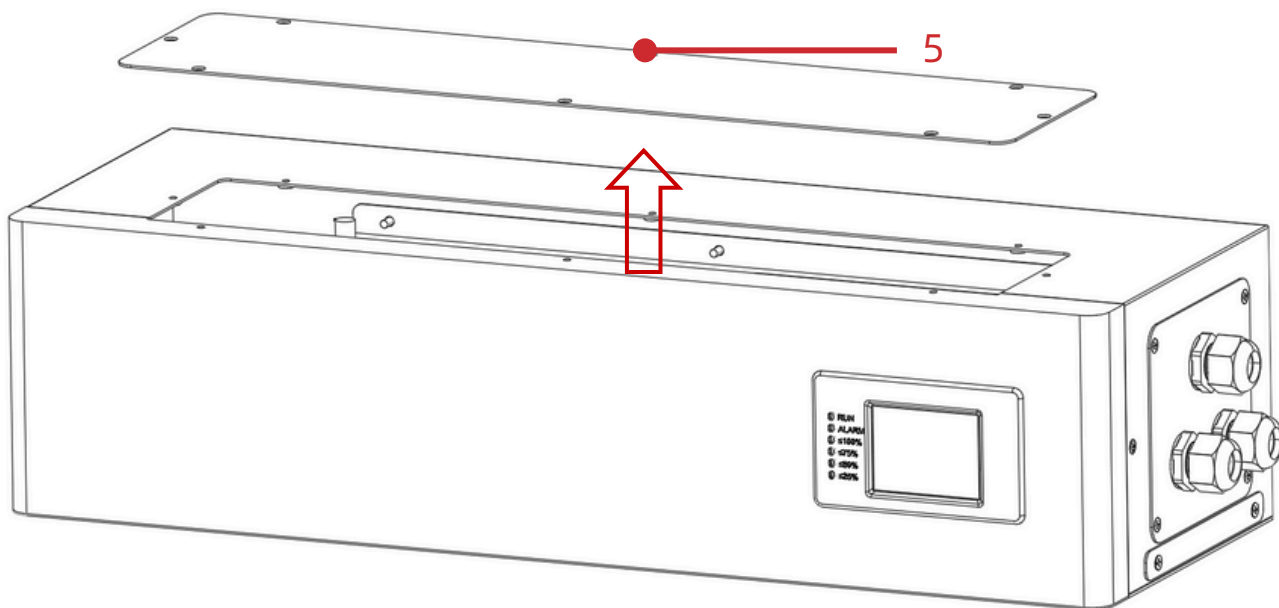
Parallel Control Box Description



Front View

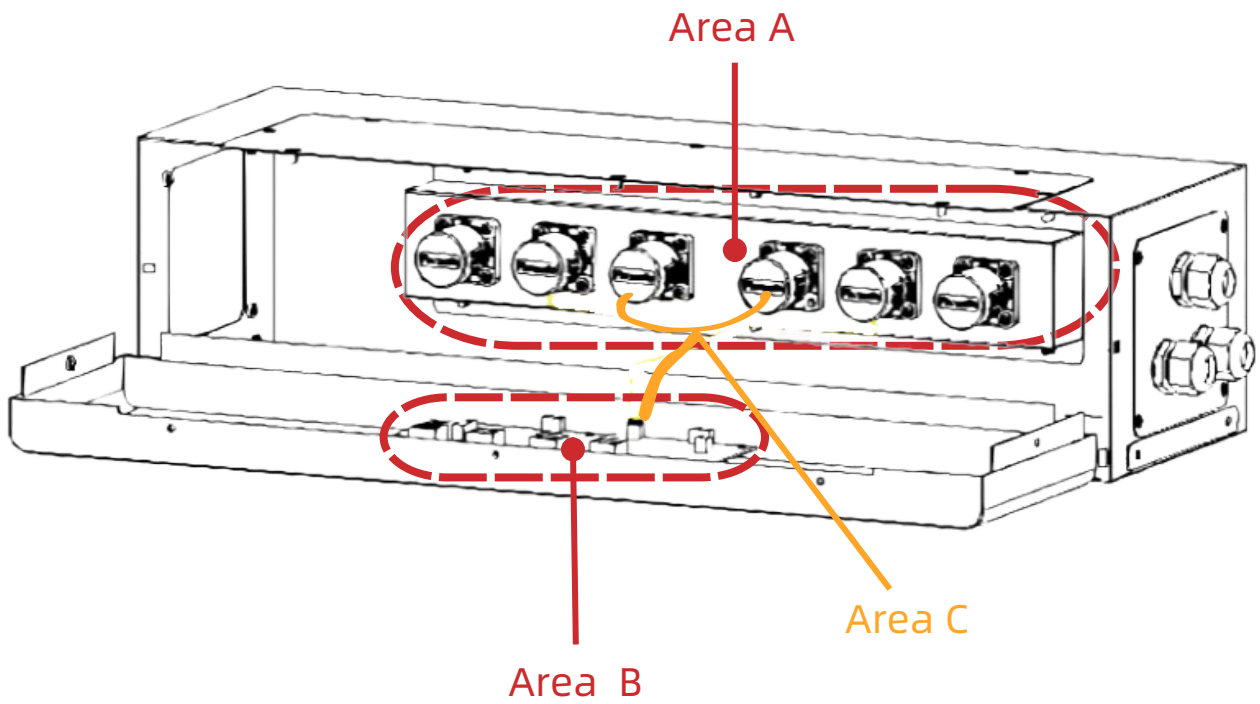


Bottom View

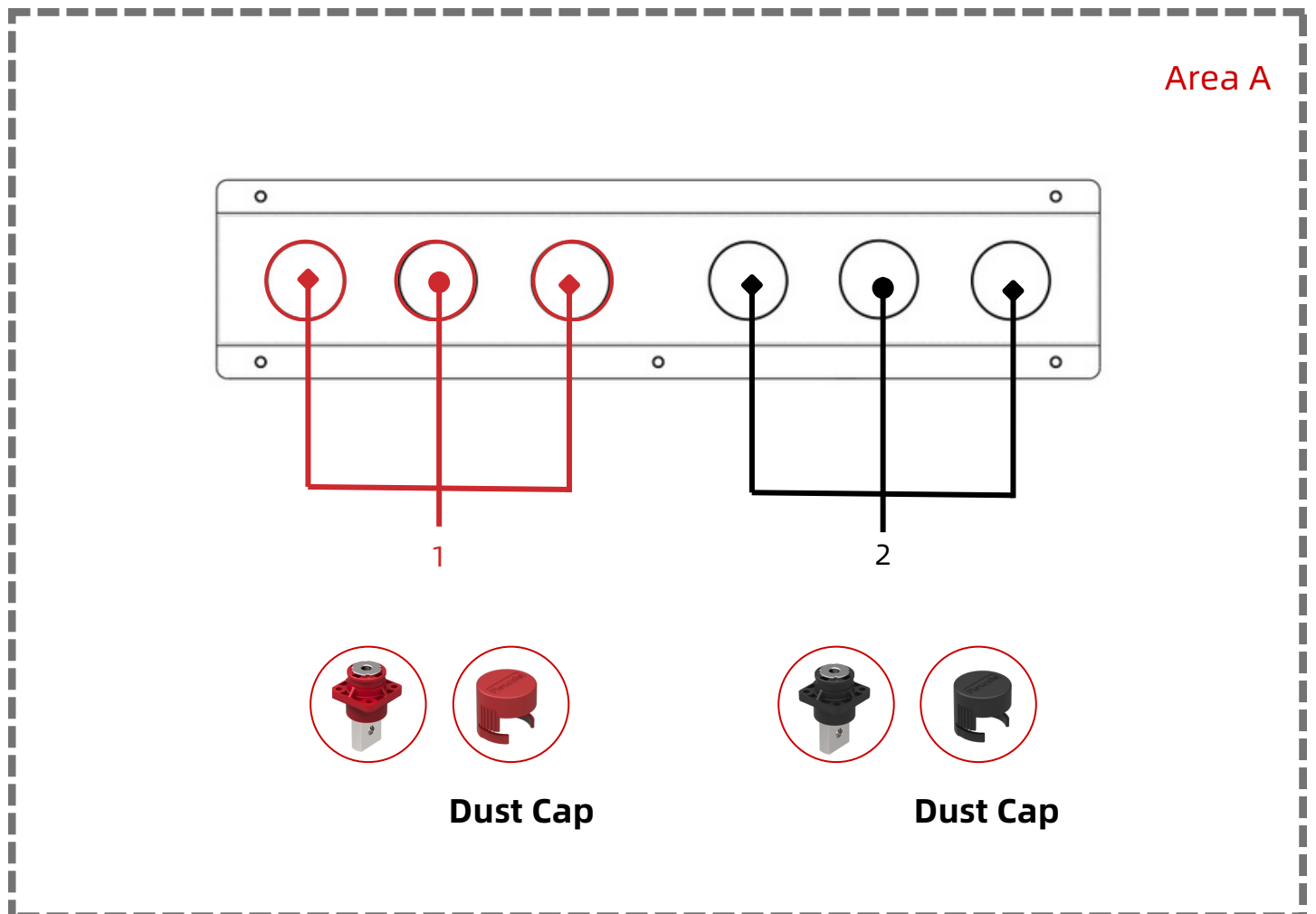


Side View

1	Front Cover (which can be unscrewed with a power drill)
2	Cable Gland
3	Smart Display Panel
4	Cable Entry
5	Wiring Cover (which can be unscrewed with a power drill)

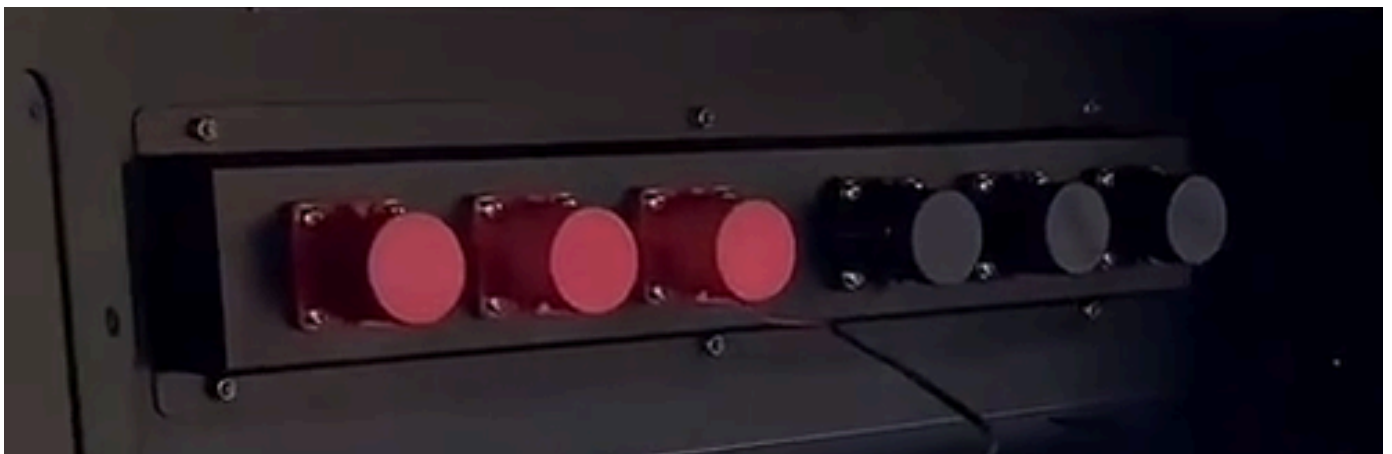


Opened Parallel Control Box

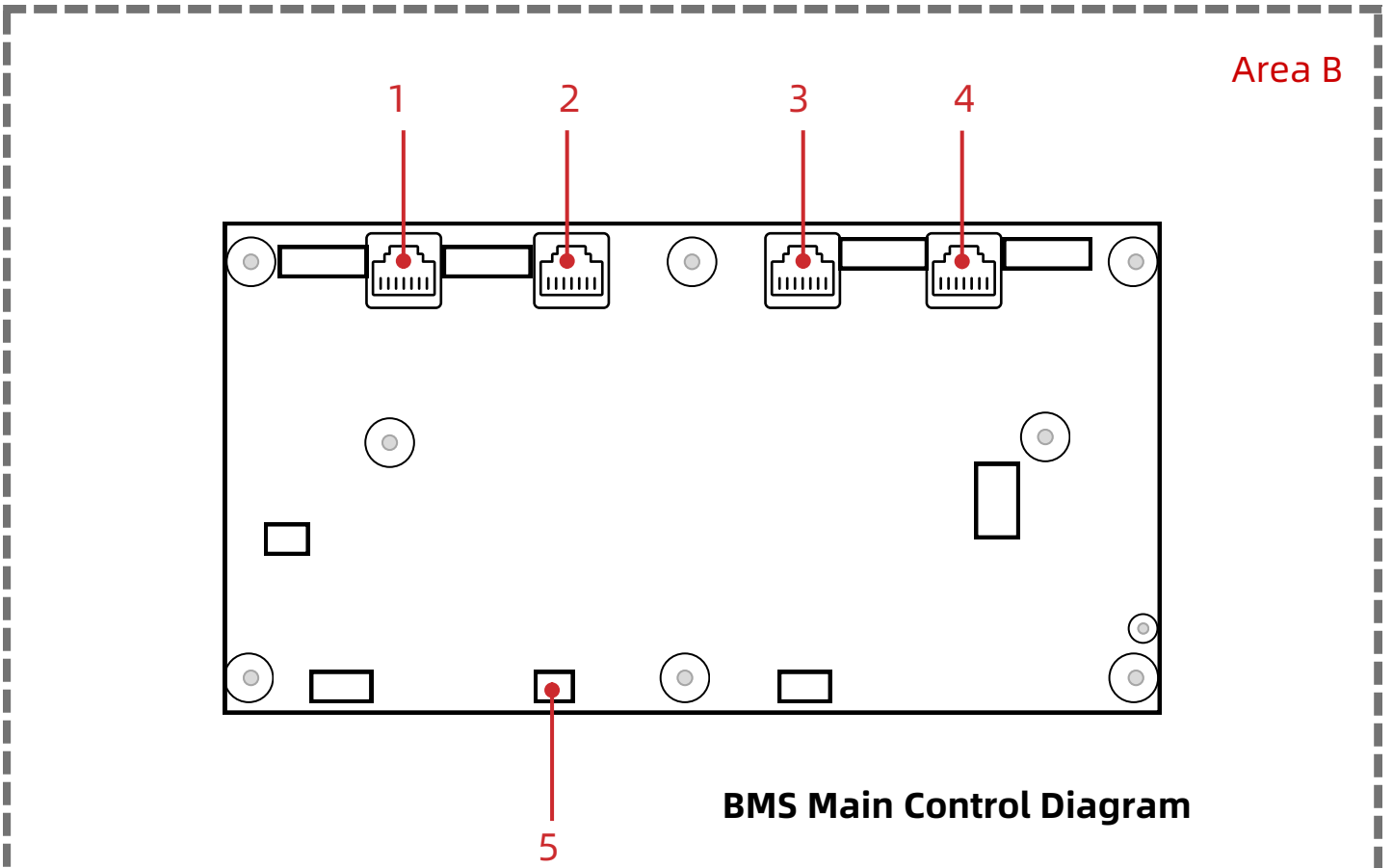


Area A

1	DC Bat + Connectors & Dust Cap
2	DC Bat - Connectors & Dust Cap



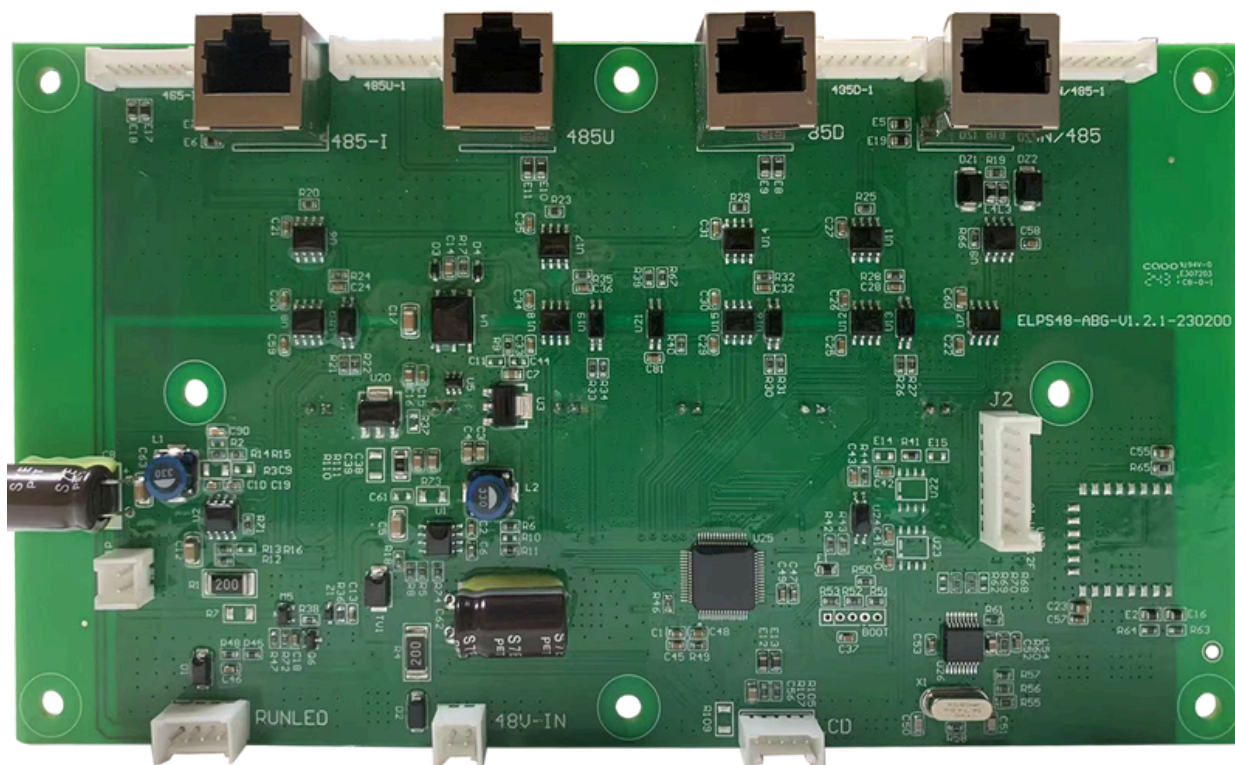
Internal of Opened Parallel Control Box - Physical Overview



BMS Main Control Diagram

1	Intra-Cluster Battery Communication Socket
2	Host Communication Socket (Connection to Upper-Level Device for Parameter Configuration and Data Monitoring)
3	Battery Parallel Socket (Battery Cluster Parallel Connection, Connect to Next Cluster)
4	a. External communication, connects to the inverter b. When battery clusters are paralleled, connects to the previous cluster
5	Power Input Socket

Area B



BMS Main Control - Physical Overview

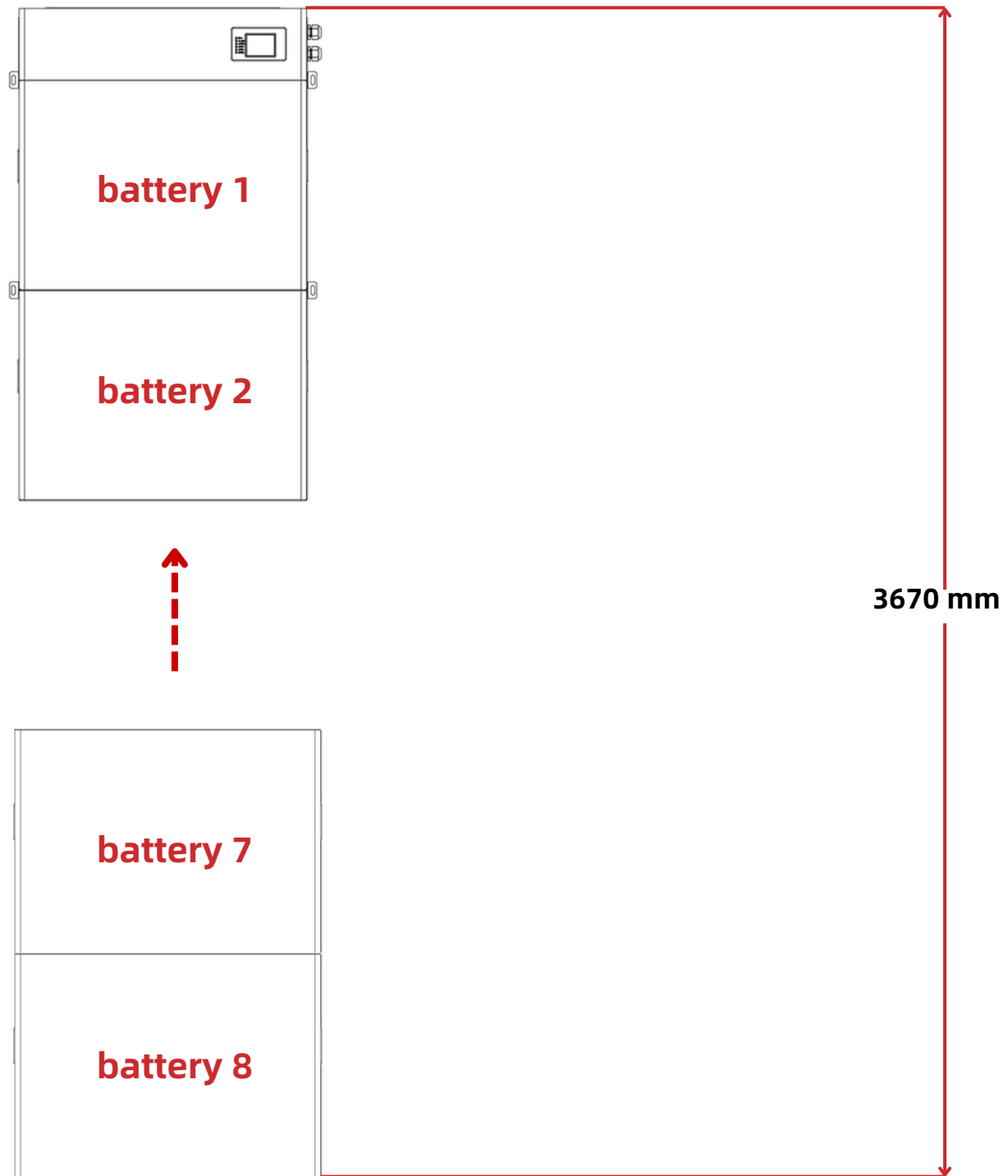
Area C

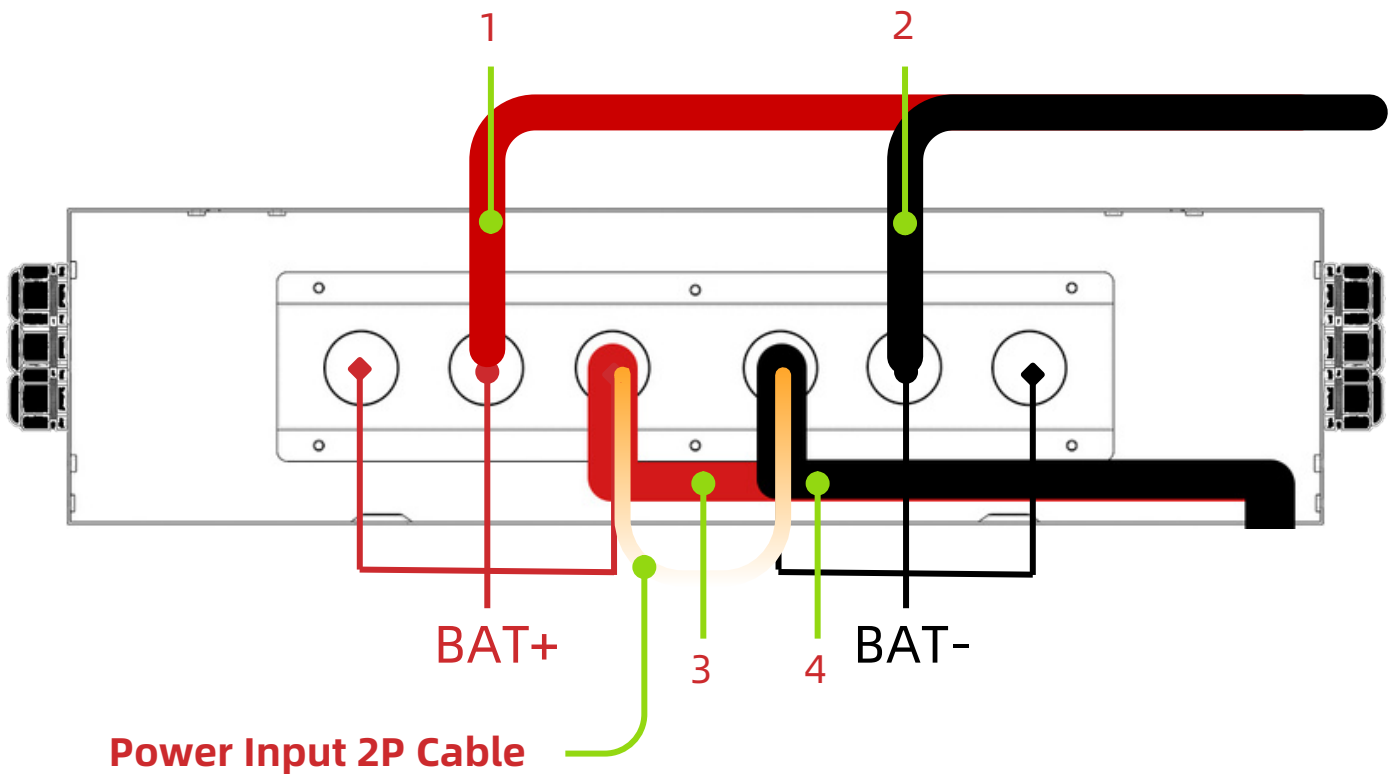


The 2P Cables are pre-connected to the Power Input Socket at the factory

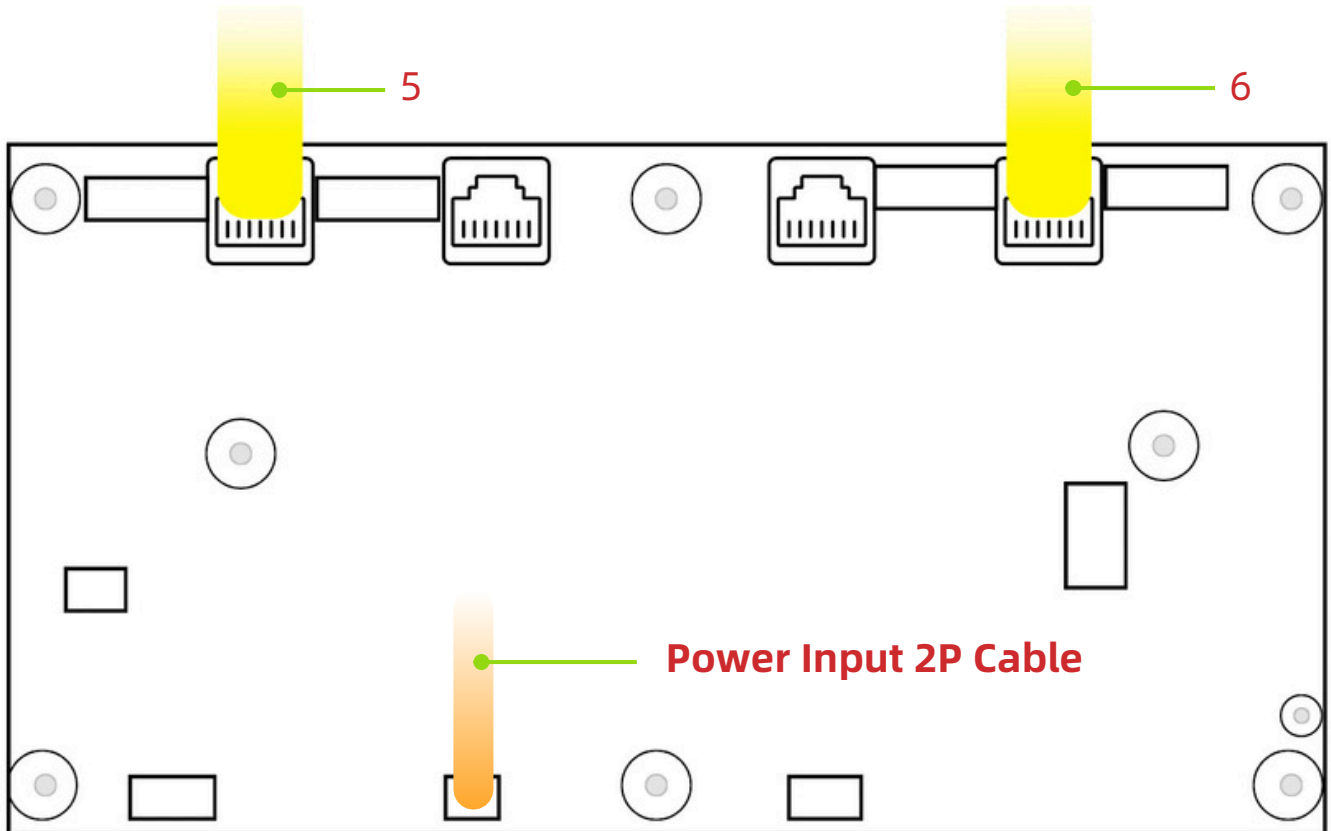
Single-Column Battery Stack within One Cluster

The images below provides an overview of the single vertical stack of battery modules arranged within one cluster.

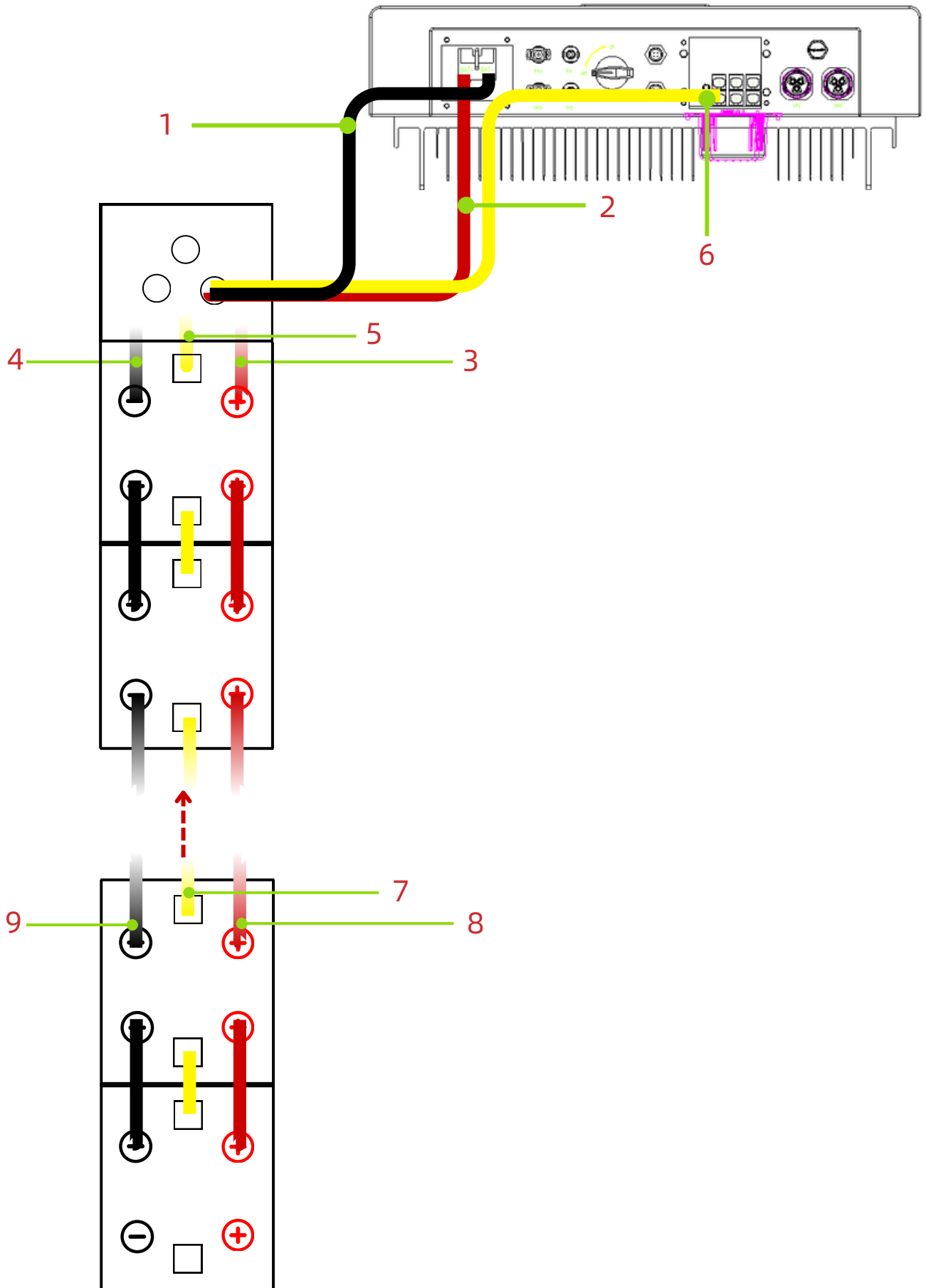




Internal Wiring Diagram of Control Box



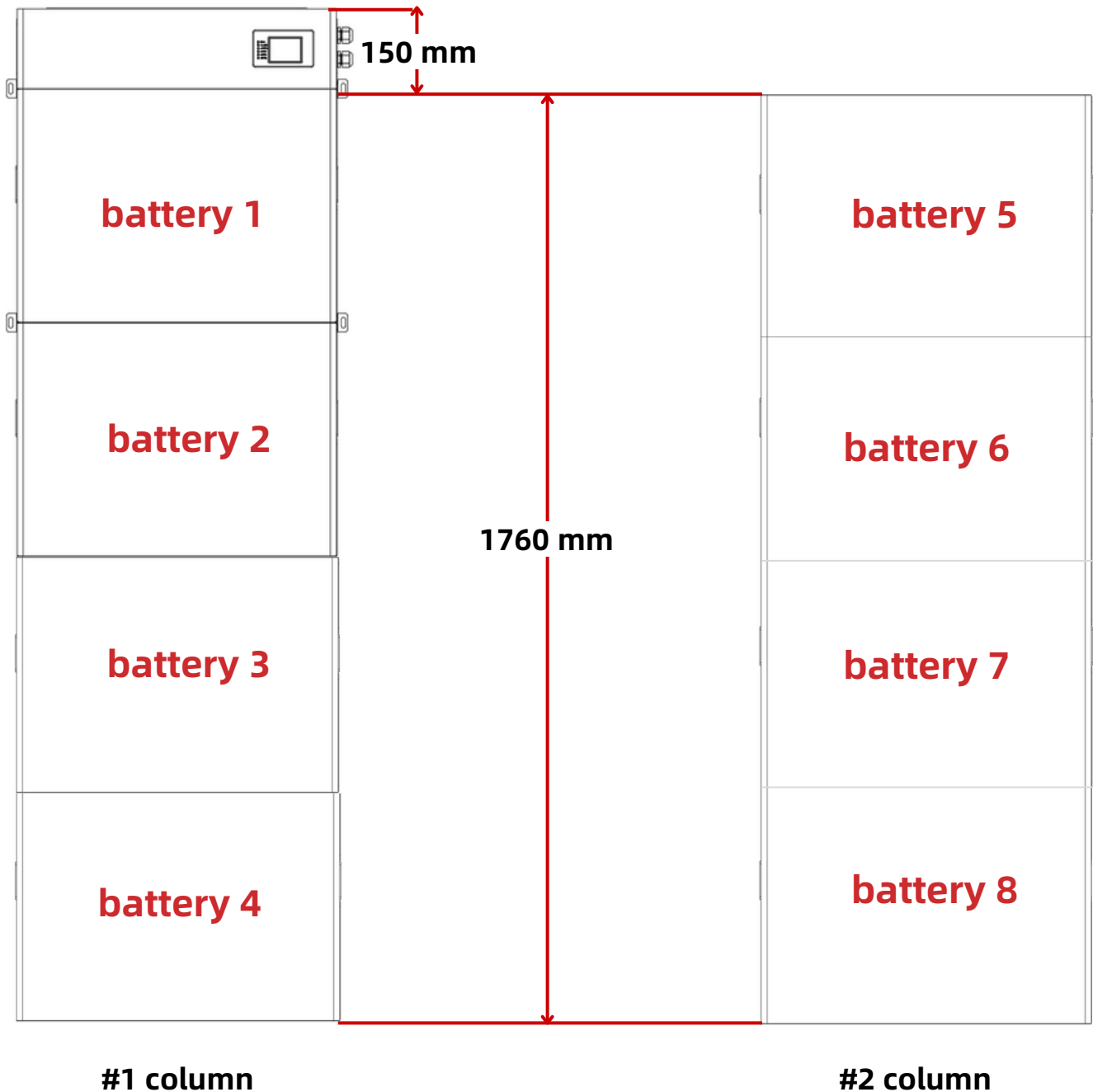
BMS Main Control Wiring Diagram

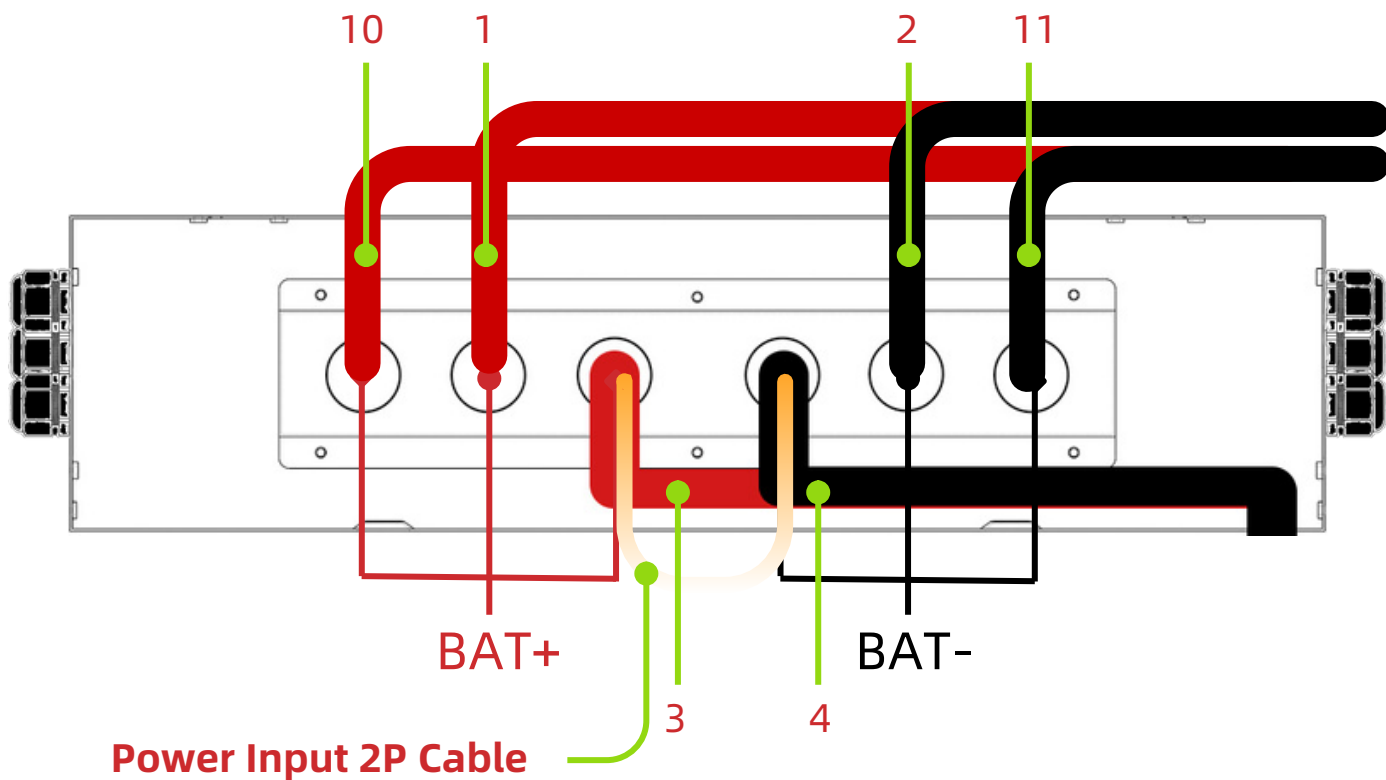


1	80cm DC Bat+ Cable (Control box - Inverter)
2	80cm DC Bat- Cable (Control box - Inverter)
3	48cm DC Bat+ Cable (Control box - Battery)
4	48cm DC Bat- Cable (Control Box - Battery)
5	50cm Communication Cable (Control Box - Battery)
6	Communication Cable(Control box - Inverter)
7	30cm Communication Cable(Battery - Battery)
8	18cm DC Bat+ Cable(Battery - Battery)
9	18cm DC Bat- Cable(Battery - Battery)

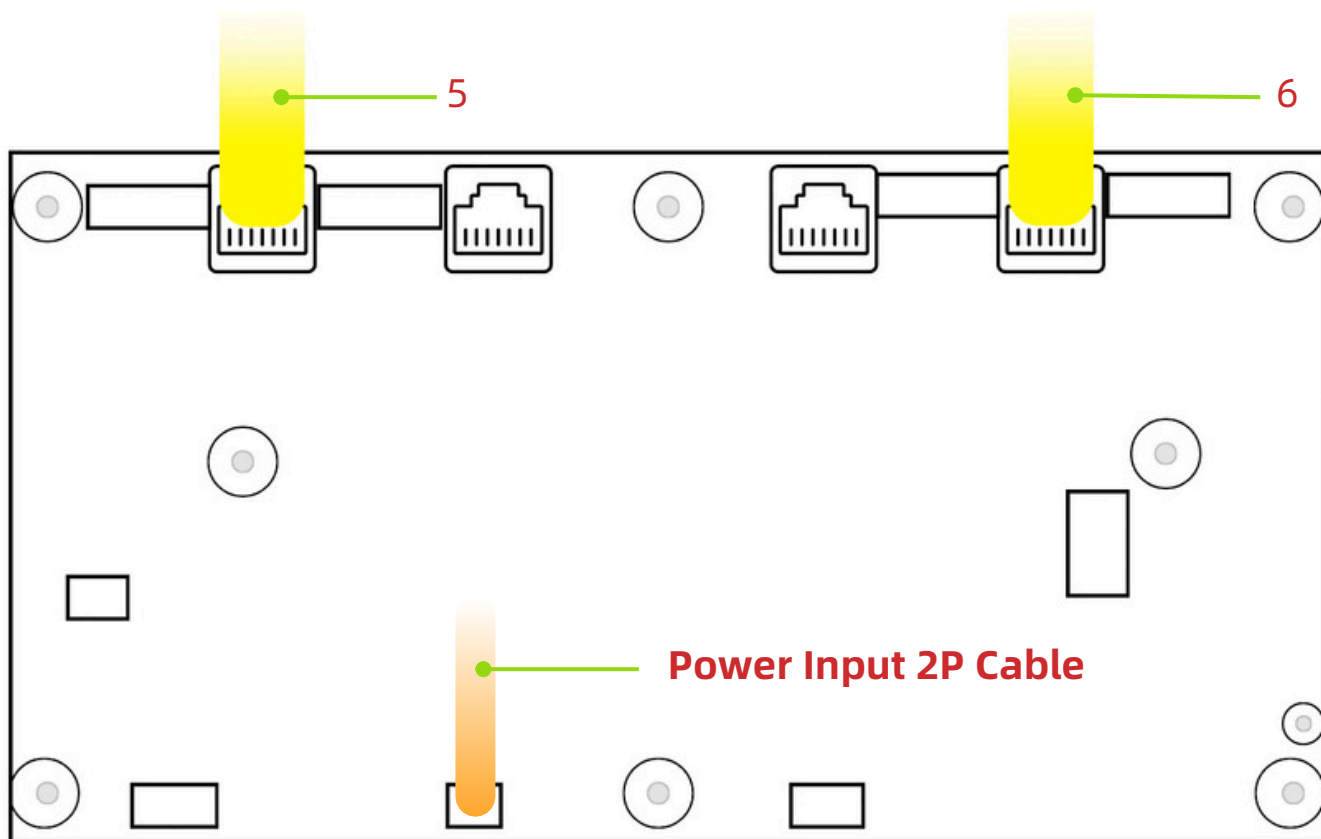
Dual-Column Battery Stack within One Cluster

The images below provide an overview of the dual vertical stacks of battery modules arranged within one cluster.

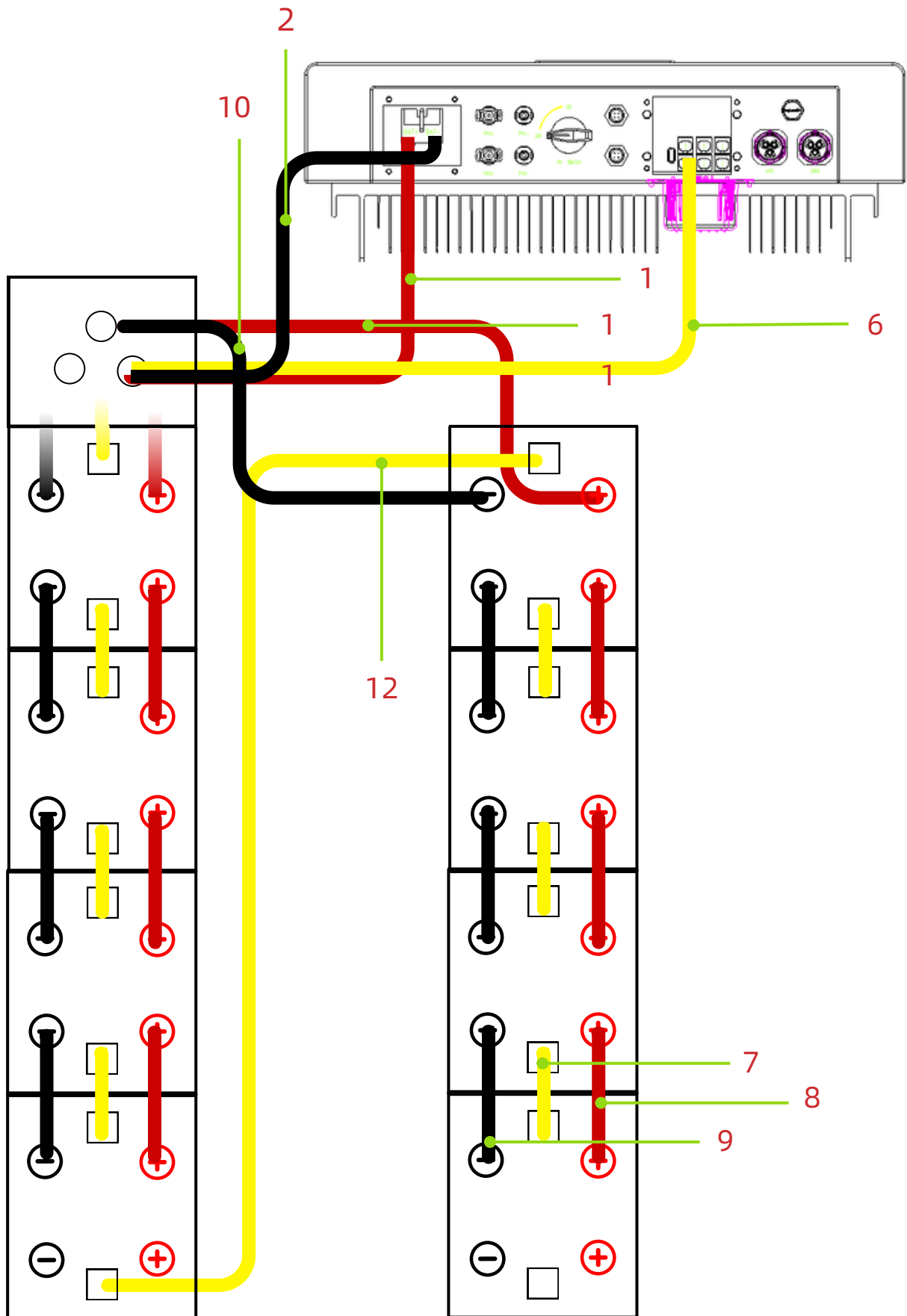




Internal Wiring Diagram of Control Box



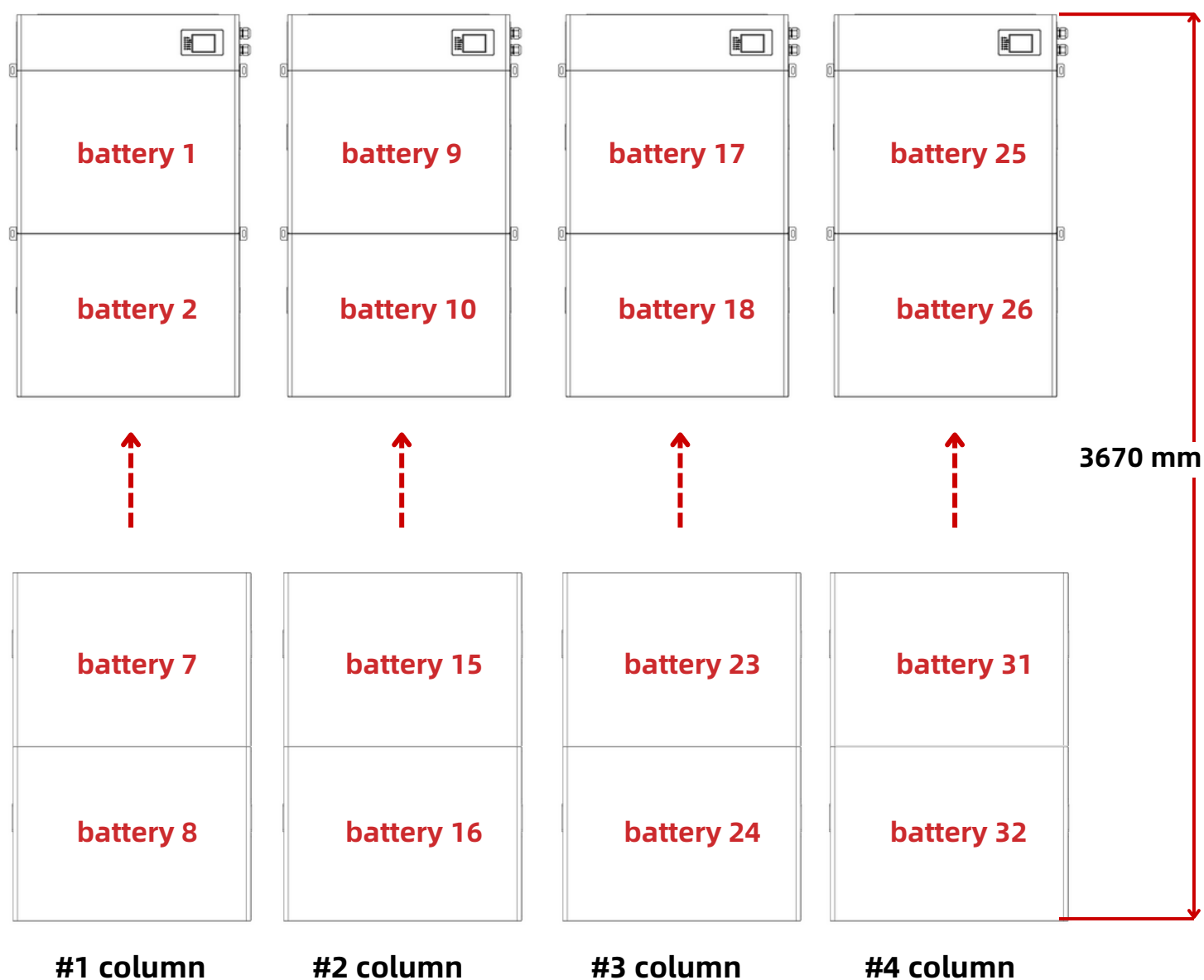
BMS Main Control Wiring Diagram

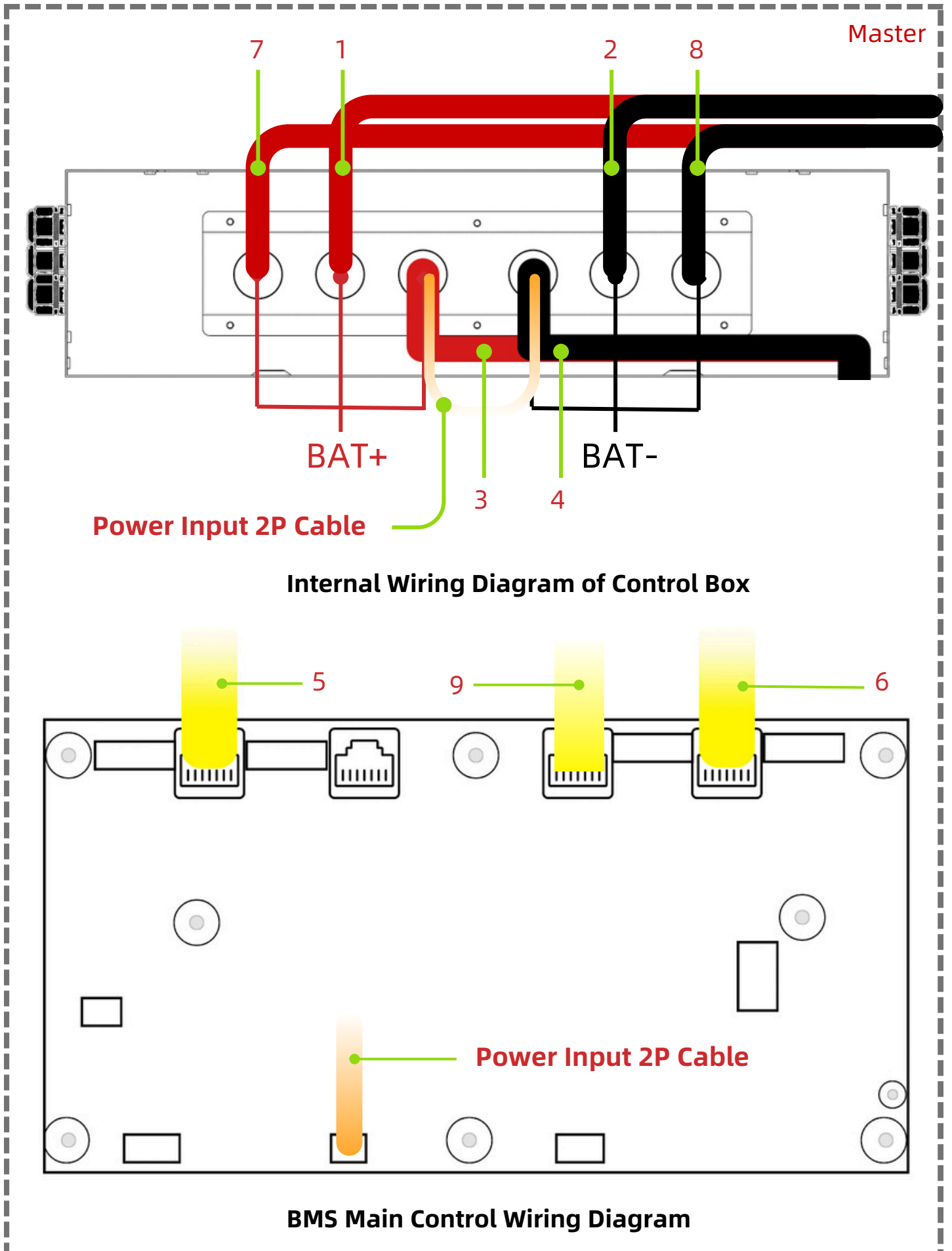


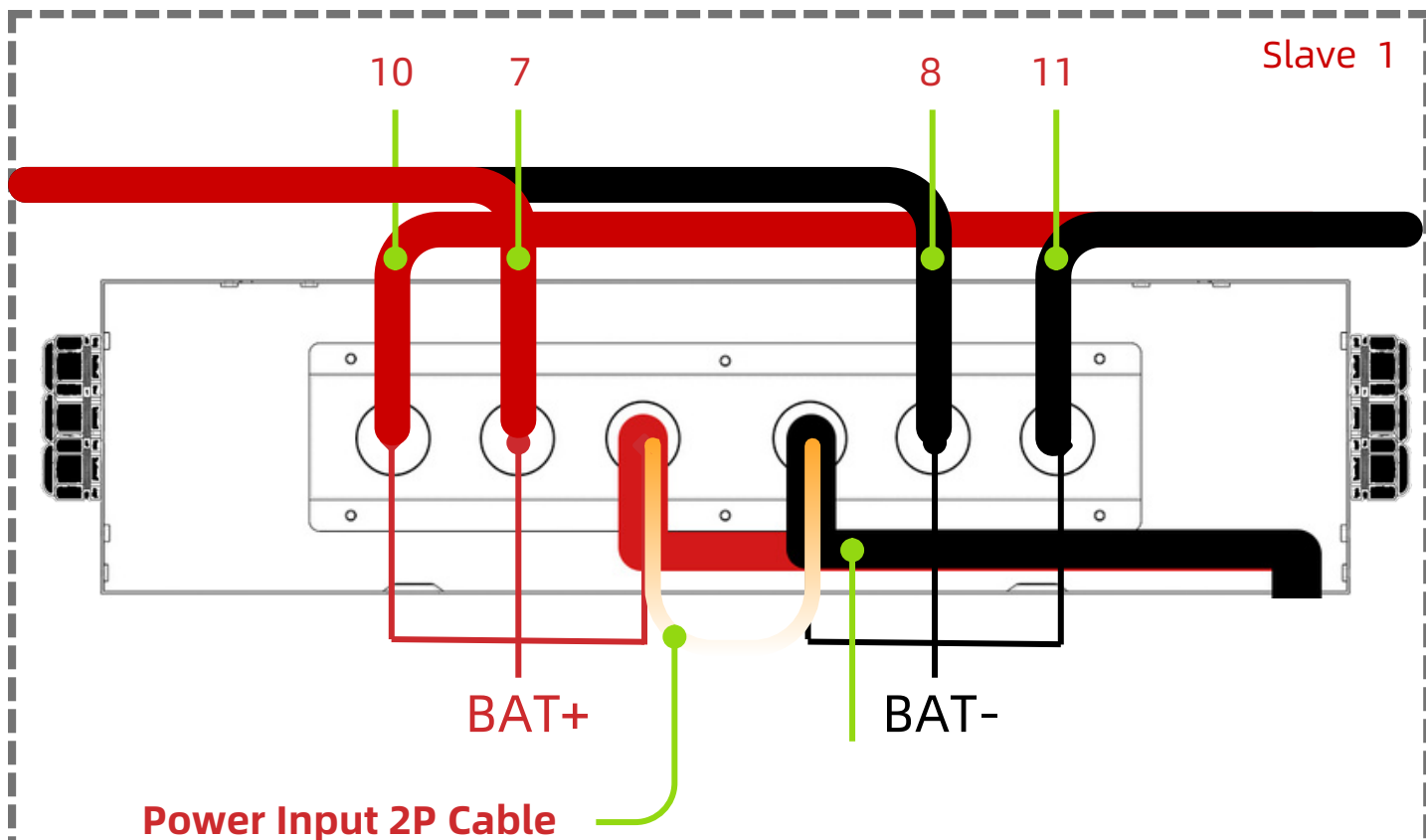
1	80cm DC Bat+ Cable (Control box - Inverter)
2	80cm DC Bat- Cable (Control box - Inverter)
3	48cm DC Bat+ Cable (Control box - Battery)
4	48cm DC Bat- Cable (Control Box - Battery)
5	50cm Communication Cable (Control Box - Battery)
6	Communication Cable(Control box - Inverter)
7	30cm Communication Cable(Battery - Battery)
8	18cm DC Bat+ Cable(Battery - Battery)
9	18cm DC Bat- Cable(Battery - Battery)
10	DC Bat- Cable(Battery 5 - Control Box)
11	DC Bat+ Cable(Battery 5 - Control Box)
12	Communication Cable(Battery 4 - Battery 5)

Multi-Column Battery Stack Across Multiple Clusters

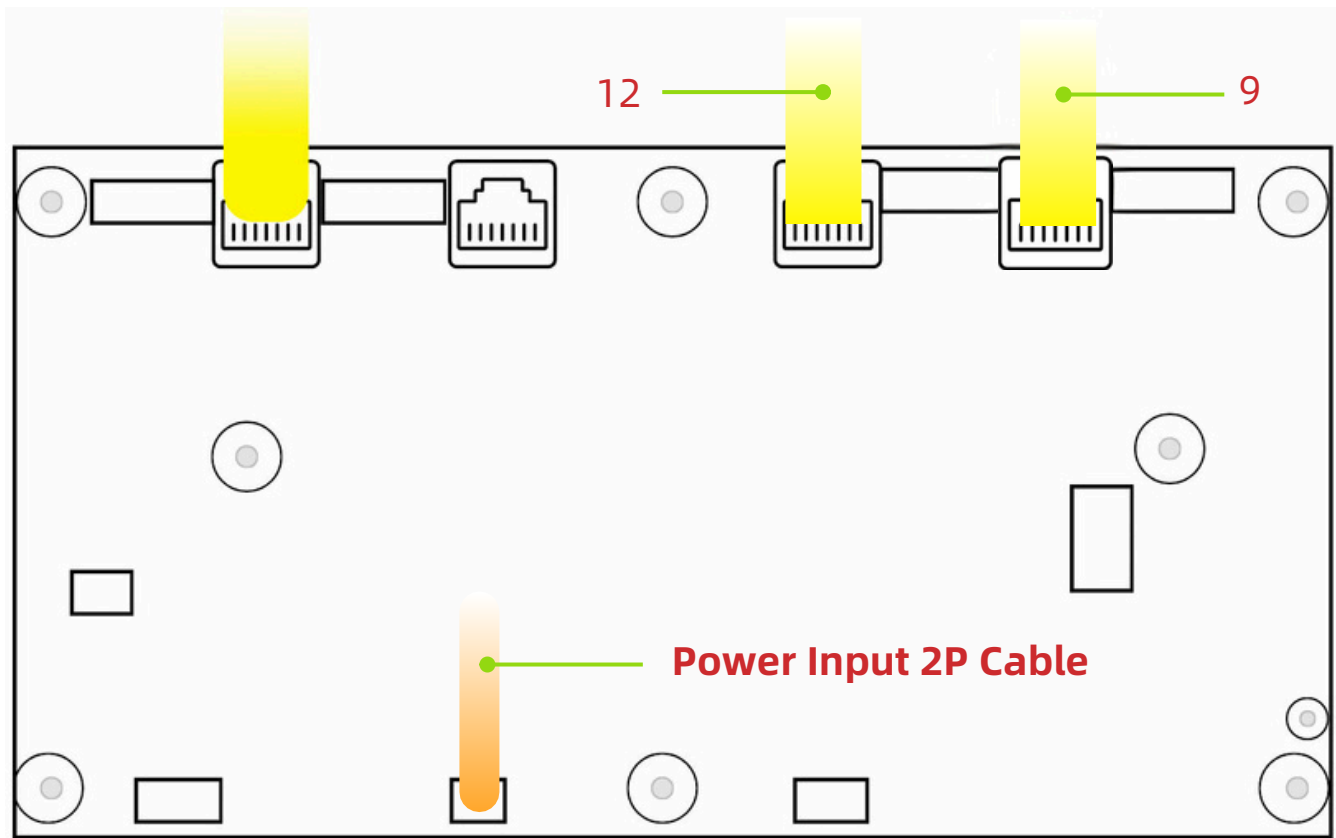
The images below provide an overview of the four vertical stacks of battery modules, each cluster containing one GM control box and eight battery modules.



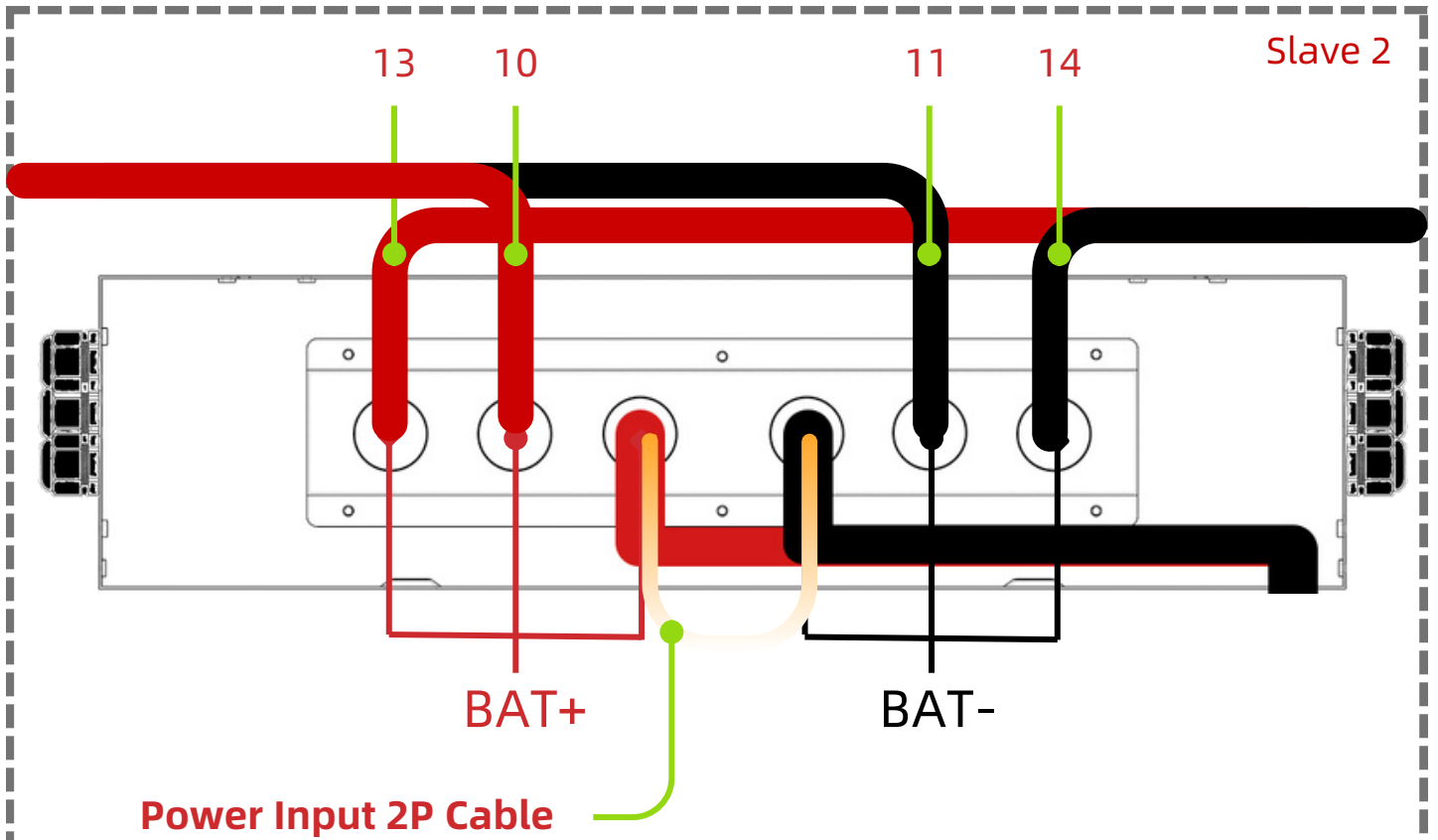




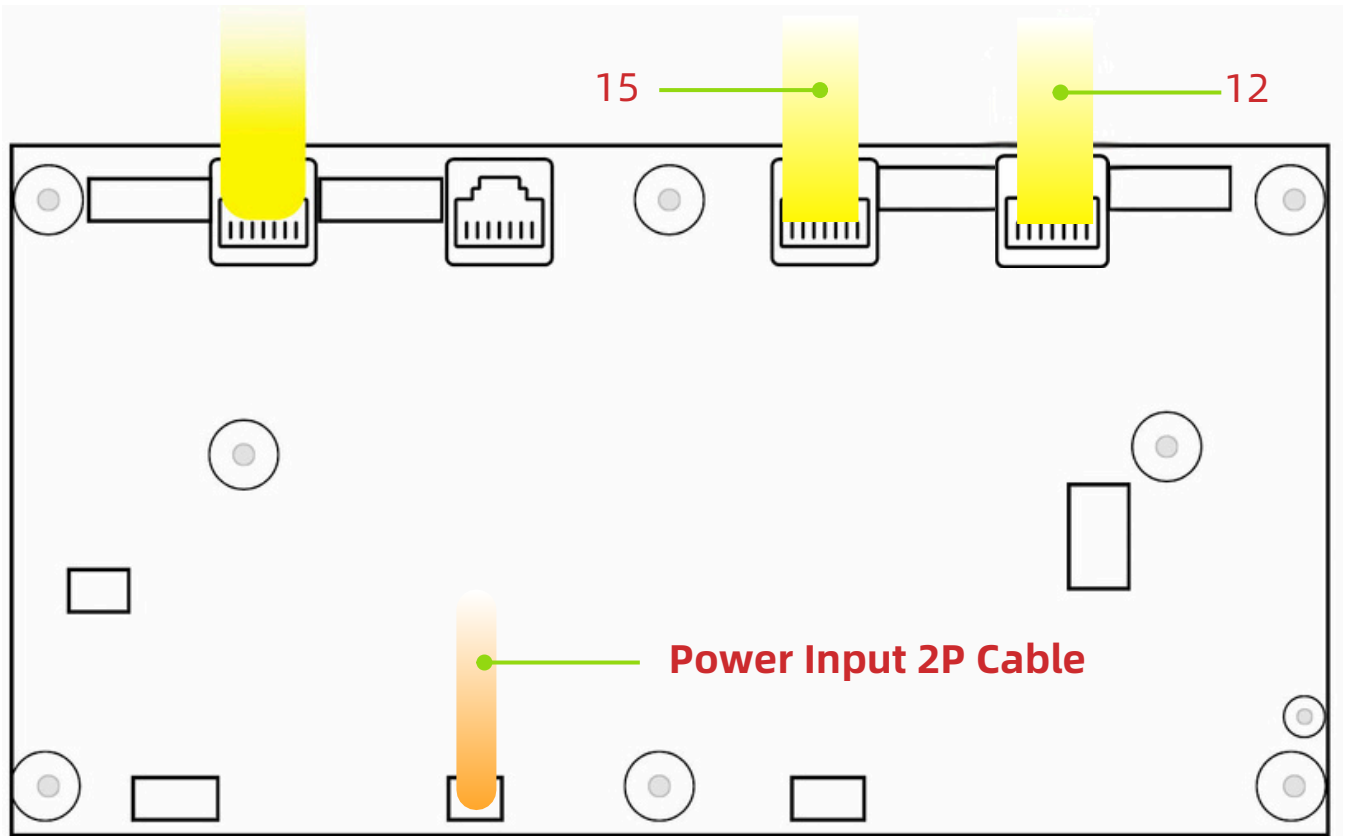
Internal Wiring Diagram of Control Box



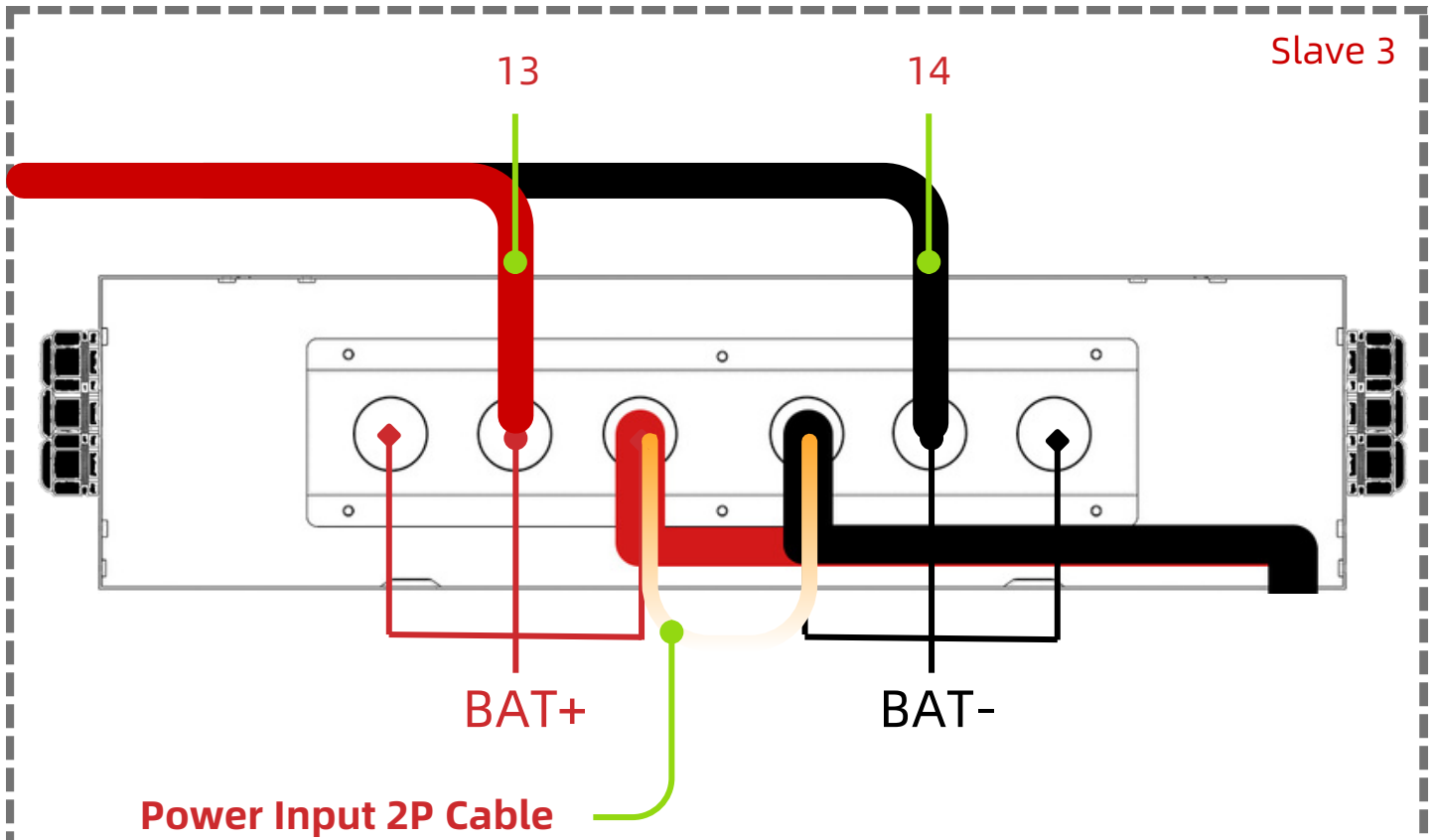
BMS Main Control Wiring Diagram



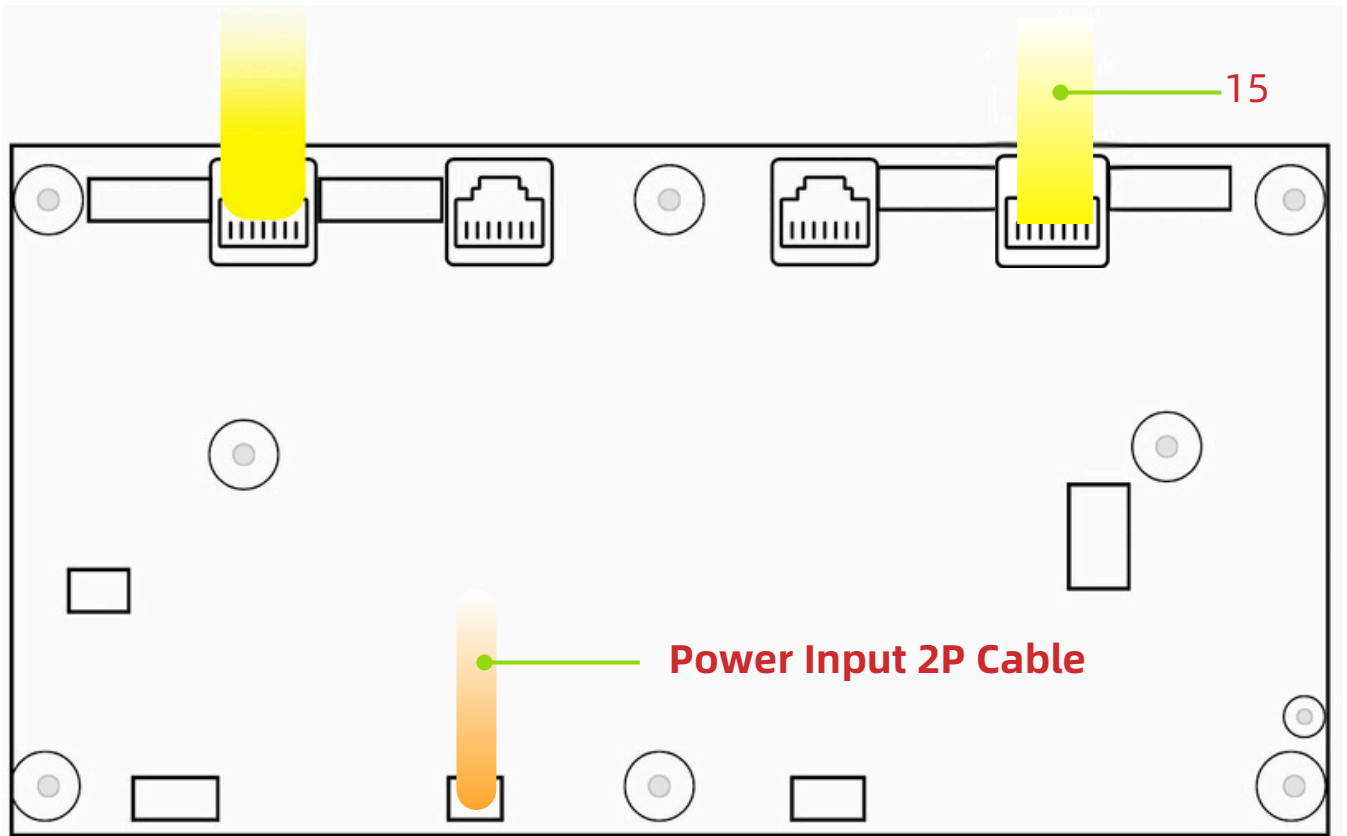
Internal Wiring Diagram of Control Box



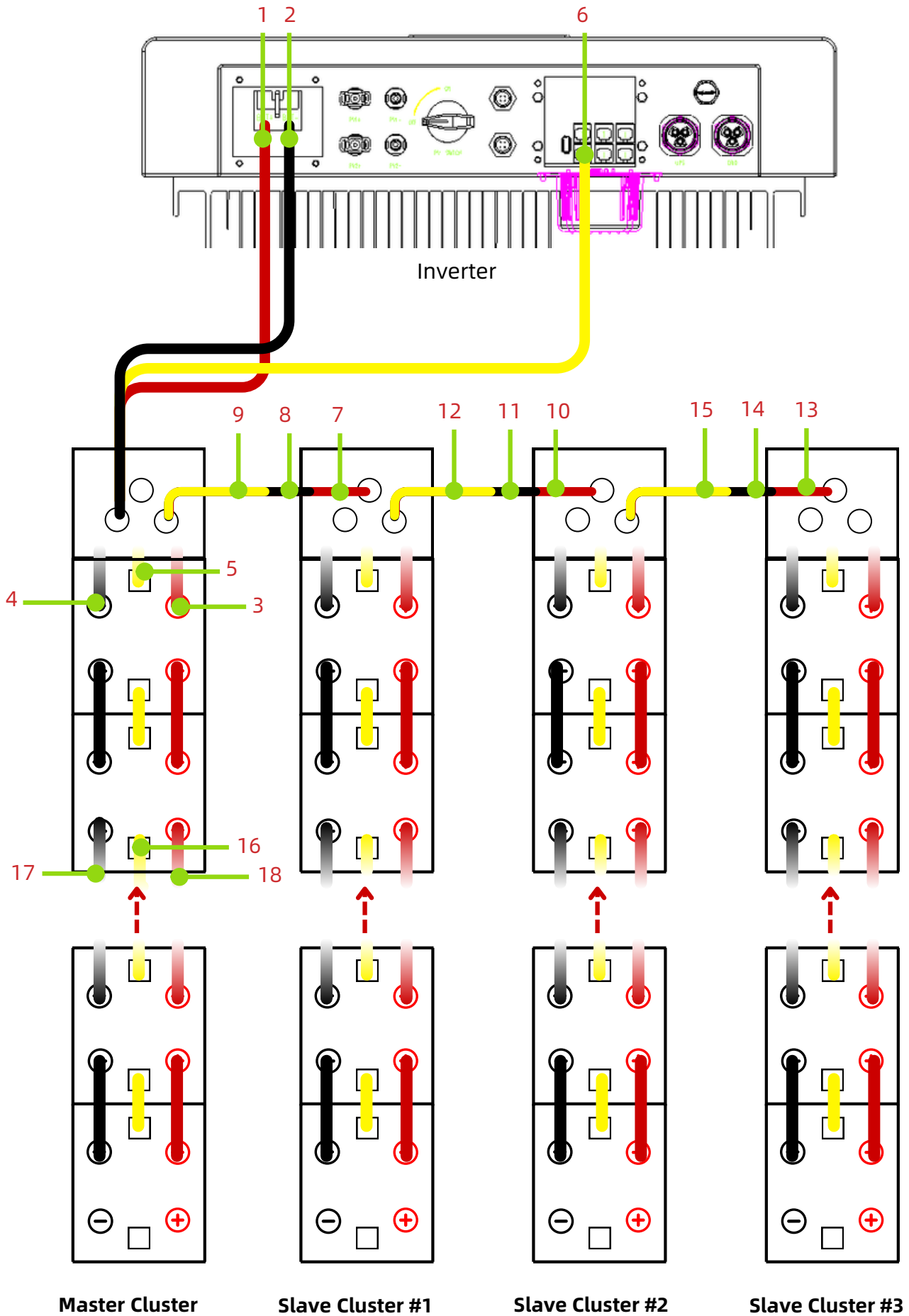
BMS Main Control Wiring Diagram



Internal Wiring Diagram of Control Box



BMS Main Control Wiring Diagram



1	80cm DC Bat+ Cable (Master Control box - Inverter)
2	80cm DC Bat- Cable(Master Control box - Inverter)
3	48cm DC Bat+ Cable(Master Control box - Battery)
4	48cm DC Bat- Cable(Master Control Box - Battery)
5	50cm Communication Cable(Master Control Box - Battery)
6	Communication Cable(Master Control box - Inverter)
7	DC Bat+ Cable(Master Control Box - #1 Slave Control Box)
8	DC Bat- Cable(Master Control Box - #1 Slave Control Box)
9	Communication Cable(Master Control box - #1 Slave Control Box)
10	DC Bat+ Cable(#1 Slave Control Box - #2 Slave Control Box)
11	DC Bat- Cable(#1 Slave Control Box - #2 Slave Control Box)
12	Communication Cable(#1 Slave Control Box - #2 Slave Control Box)

13	DC Bat+ Cable(#2 Slave Control Box - #3 Slave Control Box)
14	DC Bat- Cable(#2 Slave Control Box - #3 Slave Control Box)
15	Communication Cable(#2 Slave Control Box - #3 Slave Control Box)
16	30cm Communication Cable(Battery - Battery)
17	18cm DC Bat- Cable(Battery - Battery)
18	18cm DC Bat+ Cable(Battery - Battery)

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