



Communication HUB

LV-HUB Product Manual



Information Version: 1.0

5PMPA08-00255

This manual introduces LV-Hub from Pylontech. LV-Hub is a communication hub for Lithium-Ion Phosphate Battery storage system. Please read this manual before you install the battery and follow the instruction carefully during the installation process.

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1. Introduction

LV-Hub is the CAN/RS485 communication hub for multiple 48V battery groups in parallel connection.

Applying to models: US2000/ US3000/ Phantom-SA/ US1800/ US2000C/ US3000C/ UP5000/ US5000.

2. LV-Hub-A



No.	Item	Parameter
1	Operating voltage range	48 VDC
2	Communication interface	CAN/RS485
3	System Consumption	2W
4	Dimensions	442 x 190 x 44 mm
5	Protection degree	IP20
6	Weight	3.0 kg
7	Operation Life	15 years
8	Working temperature	-20~60℃
9	Storage temperature	-40~80℃
10	CAN (Maximum 25 groups)	Baud rate: 500K; terminal resistance: 0/120Ω
11	RS485 (Maximum 5 groups)	Baud rate:9600/115200

2.1 Equipment Interface

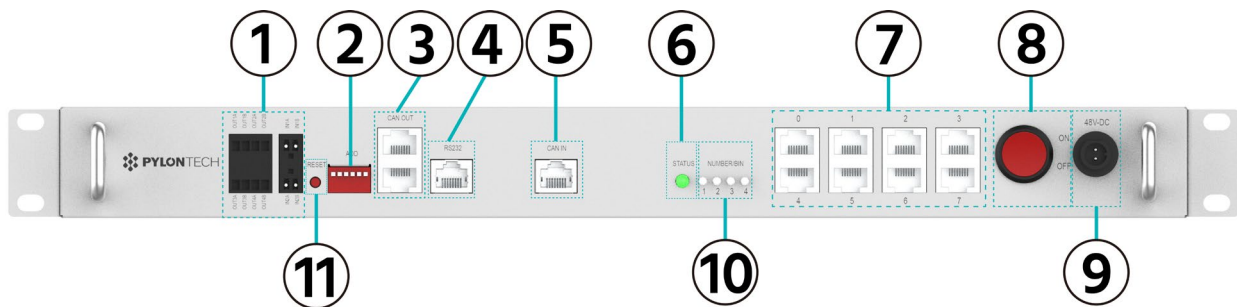
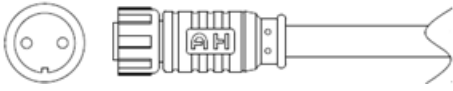
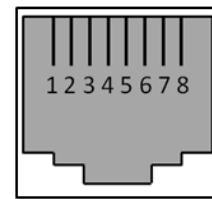


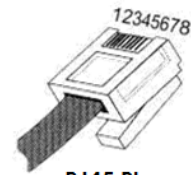
Figure	Description	Function
①	Dry Contact	Function reserved
②	ADD (Dip Switch) (1 – 6)	Up: CAN OUT terminal resistance 120Ω Down: 0Ω
③	CAN OUT (RJ45)	Only upper port is for using
④	RS232 (RJ45)	Debug
⑤	CAN IN	Connects to port 0 (only for CAN communication);
⑥	STATUS LED	Refer to <i>section 2.3</i> .
⑦	RJ45 (0,1, 2, 3, 4, 5, 6, 7)	Refer to <i>section 3.2</i> .
⑧	Switch (ON/OFF)	Controls the LV-HUB ON/OFF.
⑨	48VDC input	Power supply: take 48VDC power from outside (from AC/DC adaptor). 
⑩	NUMBER/BIN 1-4	Shows quantity of batteries linked in group with binary code, referring to <i>section 2.3</i> .
⑪	Reset (Switch Button)	Press for 2 seconds and then system will restart.

2.2 Definition of RJ45 Port Pin

No.	CAN OUT	RS485	RS232 Pin
1	---	---	---
2	GND	---	---
3	---	---	TX
4	CANH	---	---
5	CANL	---	---
6	---	GND	RX
7	---	RS485A	---
8	---	RS485B	GND



RJ45 Port



RJ45 Plug

2.3 LED Indicators Instructions

Status				●	Only the HUB is turned ON, it lights once.
				●	No battery connected or at least one group is off line. When battery group is reduced it will alarm (in red), but when battery group is added in it will no alarm.
1	2	3	4		Green flash; Quantity of connected battery groups.
●					1 group
	●				2 groups
●	●				3 groups
		●			4 groups
●		●			5 groups
	●	●			6 groups
●	●	●			7 groups

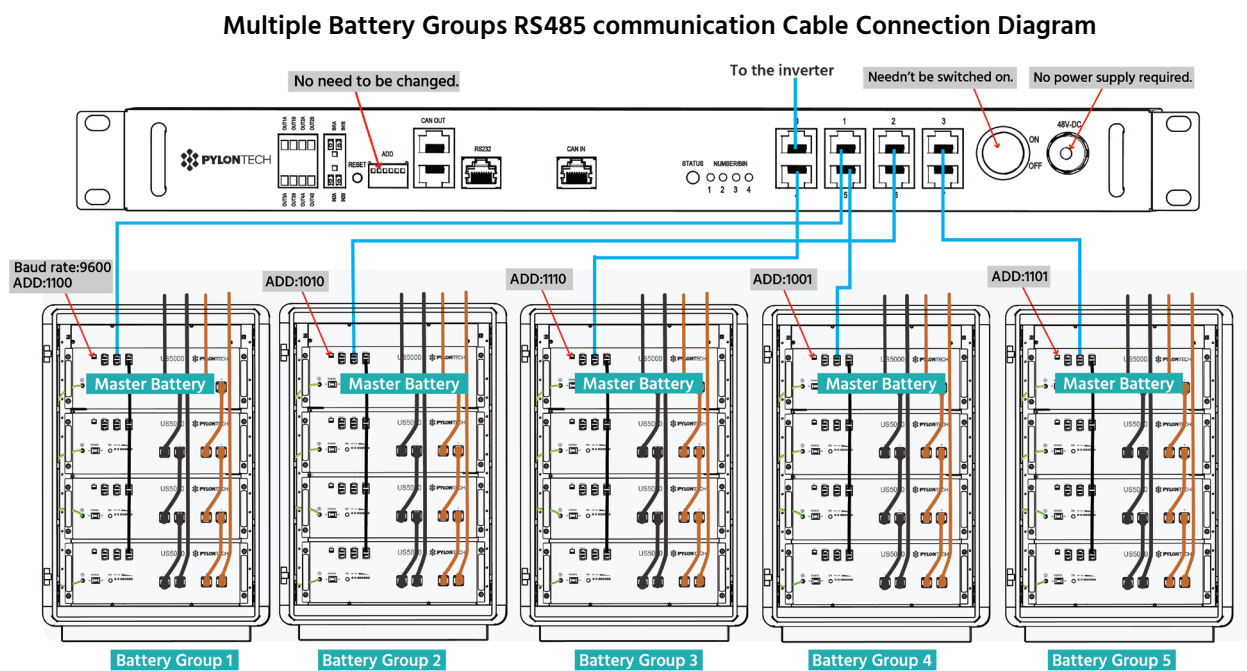
3. Operation

3.1 Protocol

- **CAN:** CAN-Bus-protocol-Pylon-low-voltage-V1.2-20180408 or above.
- **RS485:** RS485-protocol-Pylon-low-voltage-V3.1-20180408 or above.

3.2 Cables Connection for US2000/US3000 under RS485 or CANBUS.

3.2.1 Cables Connection for RS485

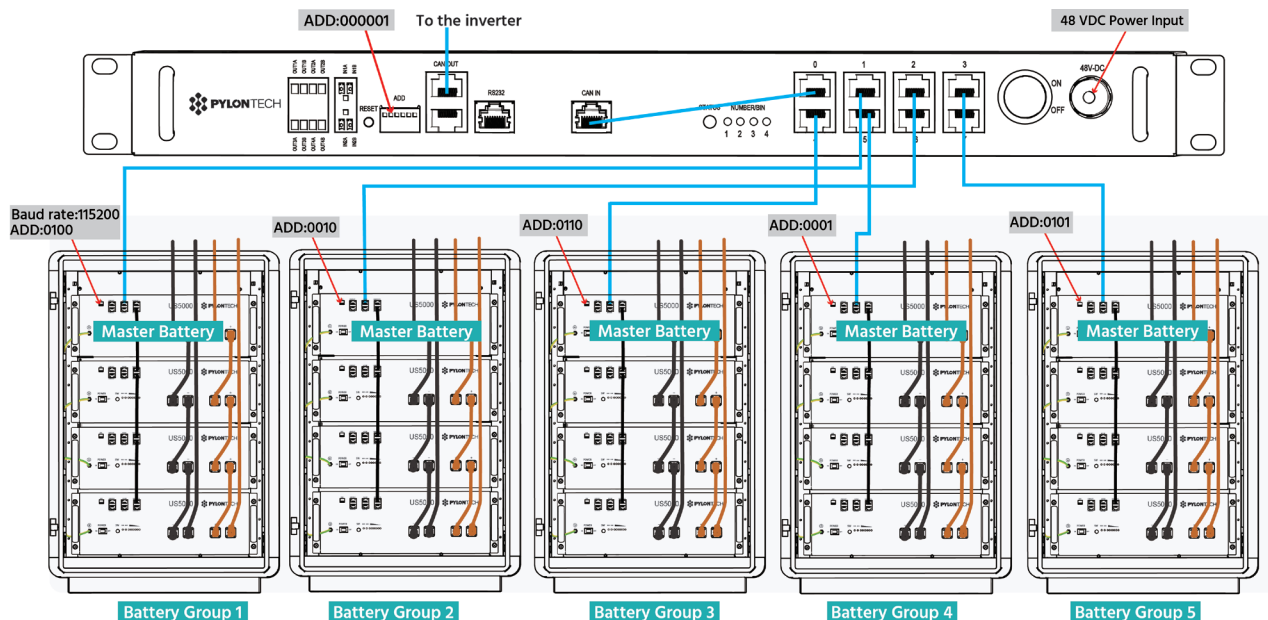


NOTE:

- ❶ Each battery group can configure maximum 8 pcs US2000, US2000B or US3000.
- ❷ LV-Hub-A configures maximum 5 battery groups.
- ❸ RS485 communication needn't additional cable or power. Just a hub is enough.
- ❹ When each battery group's current is >120A, this battery group must configure 2 pairs external power cables like the diagram above.
- ❺ For the details of ADD Switch settings, refer to the product manual of the battery.

3.2.2 Cables Connection for CAN (Single Hub)

Multiple Battery Groups CAN communication Cable Connection Diagram



NOTE:

- ① Each battery group can configure maximum 8 pcs US2000, US2000B or US3000.
- ② LV-Hub-A configures maximum 5 battery groups.
- ③ When each battery group's current is >120A, this battery group must configure 2 pairs external power cables like the diagram above.
- ④ For the details of ADD Switch settings, refer to the battery operation manual.
- ⑤ When using with SMA SUNNY ISLAND, the ADD on HUB (or master HUB if there are multiple HUBs) must be 000011(for B14V0105 presenting on product label) or 000101 (for B14V0106 presenting on product label).

3.3 Cables Connection for US2000C/US3000C/UP5000/US5000 under CANBUS

Refer to the battery operation manual for the specific cable connection method.

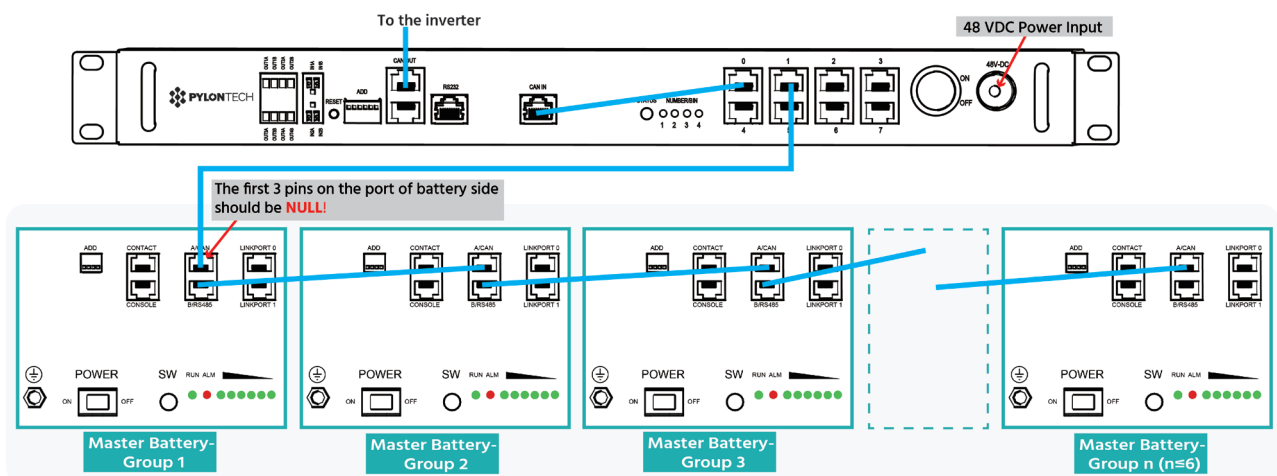
Connect power cable first:

- 1) Each pair of cables withstands maximum 100A constant current. Connect enough pairs of cables based on calculation of system current.
- 2) Suitable protection breaker between battery system and inverter is required.
- 3) Connect power cable of LV-HUB.
- 4) Make sure all dip switches are **X0XX**, then turn ON batteries.
- 5) After all batteries running and buzzer of master battery in Group 1 rings 3 times, it means all groups are online.
- 6) Change the dip switch of master battery in Group 1 to **X1XX**. Then connect communication cable between LV-HUB and master battery in group 1.
- 7) Turn ON LV-HUB.

NOTE:

- The communication cables below shall be 8 pin direct-pin cable:
 - a. Between battery modules.
 - b. Between LV-HUB Port 0 to LV-HUB CAN IN.
- The communication cables below shall have first 3 pin NULL or use W10SCAN30RJ1 cable inside external cable kits:
 - a. Between Group 1 Master Battery A/CAN to LV-HUB Port 1.

Multiple Battery Groups CAN communication Cable Connection Diagram



NOTE:

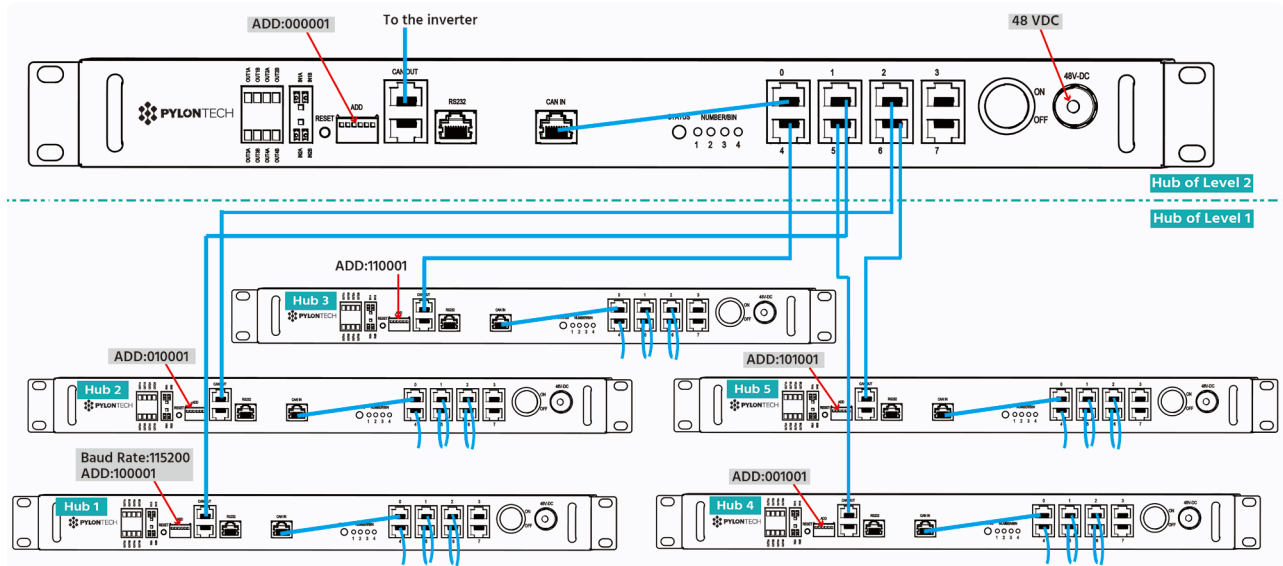
- ❶ Each Communication Hub connects maximum 6 battery groups.
- ❷ Each battery group can configure maximum 16 pcs US2000C/US3000C.

- ③ The CAN IN connects to port 0 on the Hub.
- ④ The A/CAN of the master battery in Group 1 connects to port 1~7 on the Hub freely.
- ⑤ The B/RS485 of the master battery in Group 1 connects to A/CAN of the next group. The B/RS485 of the master battery in last group is **Empty**.

NOTE: When using US2000C/US3000C/UP5000/US5000, the multiple group connection under RS485 communication **DO NOT** require a LV-HUB. Refer to the operation manual of corresponding battery model for the wiring diagram.

3.4 Cables Connection for Multiple Hubs under CANBUS.

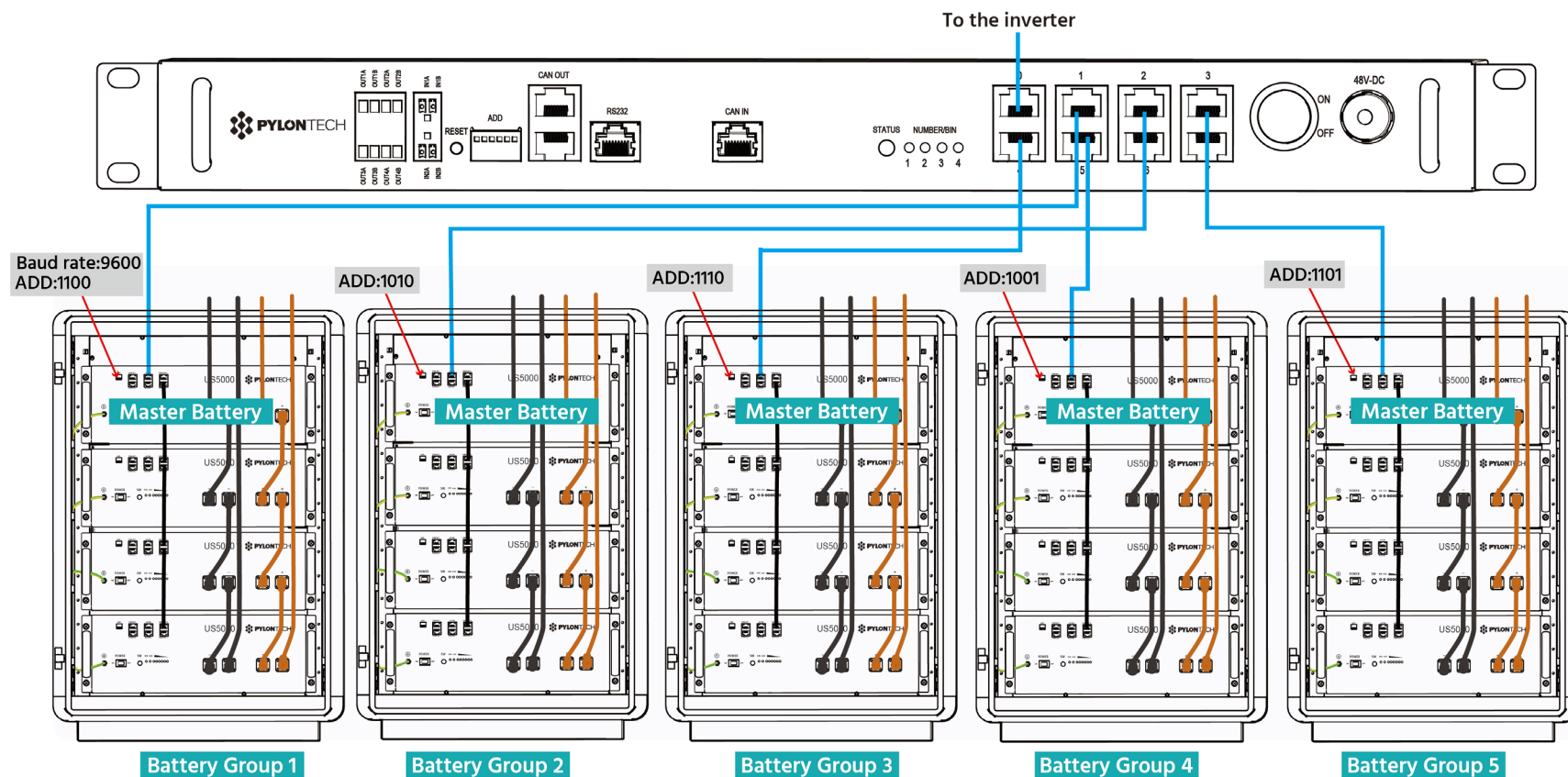
Multiple Hubs CAN communication Cable Connection Diagram



NOTE:

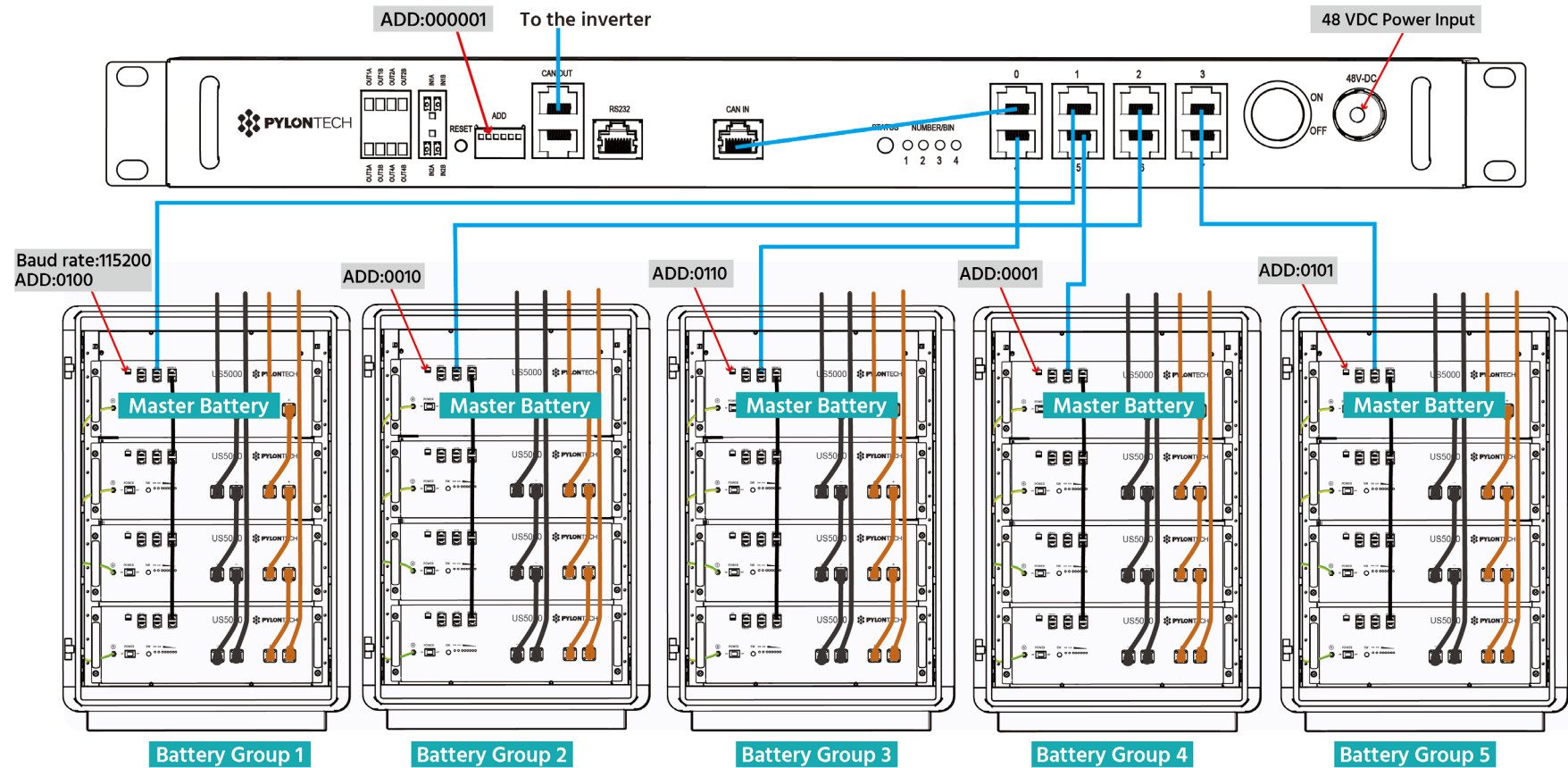
- ❶ Maximum 5 Communication Hubs in level 1.
- ❷ Battery bank can configure maximum 200 pcs US2000 or US3000.
- ❸ In above diagram, all communication cables connected in between shall be 8 pin direct-pin cable.

Multiple Battery Groups RS485 Communication Cable Connection



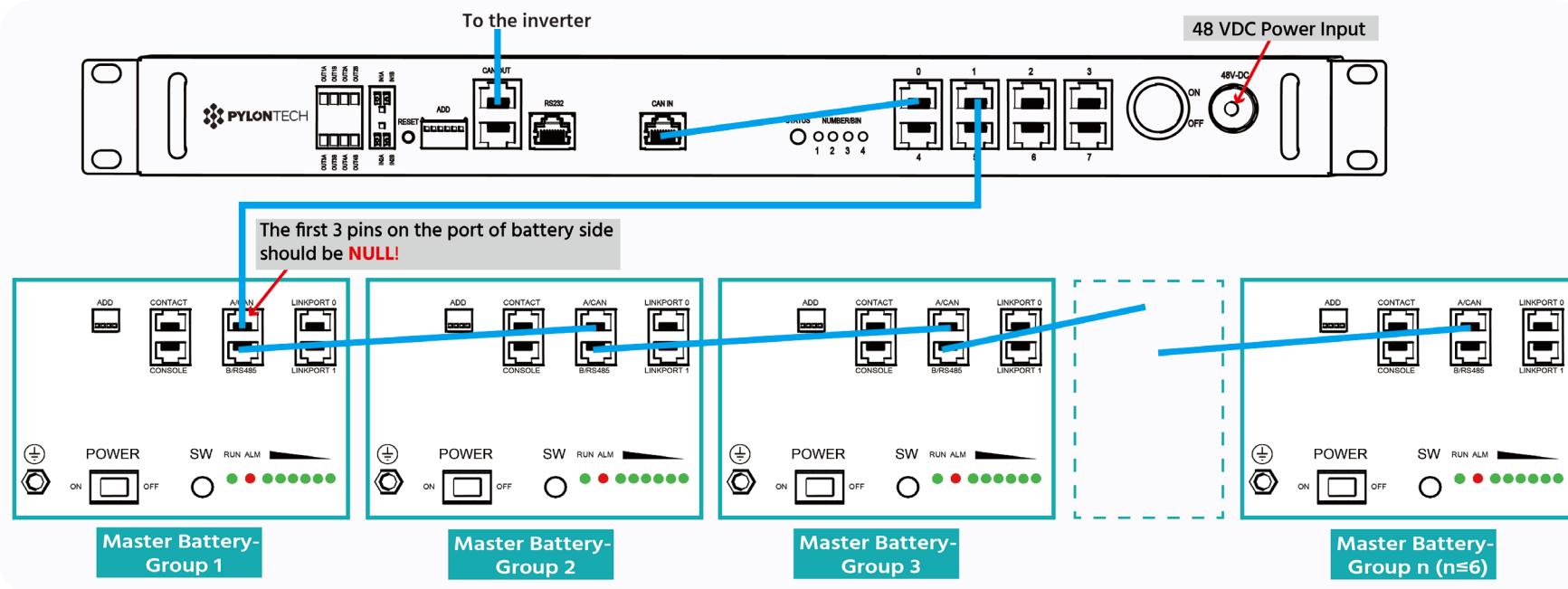
NOTE: 1) Each Communication Hub connects maximum 5 battery groups.
2) Each battery group can configure maximum 8 pcs US2000 or US3000.

Multiple Battery Groups CAN Commuication Cable Connection



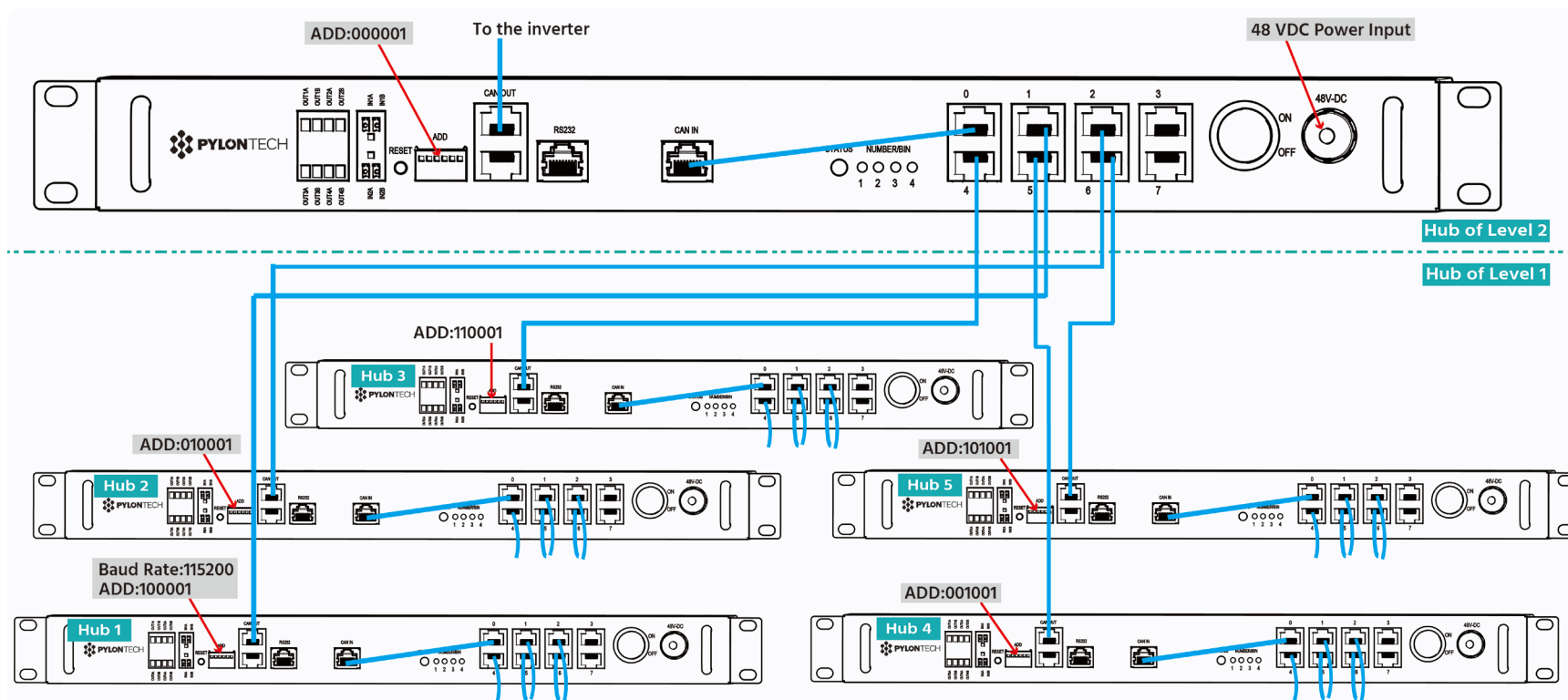
- NOTE:** 1) Each Communication Hub connects maximum 5 battery groups.
2) Each battery group can configure maximum 8 pcs US2000 or US3000.

Multiple Battery Groups CAN Communication Cable Connection



- NOTE:**
- 1) Each communication hub connects maximum 6 battery groups.
 - 2) Each battery group can configure maximum 16 pcs US2000C/ US3000C.
 - 3) The CAN IN connects to port 0.
 - 4) The A/CAN connects to port 1~7 freely.
 - 5) The B connects to A of next group; the B/RS485 of last group master battery is EMPTY.

Multiple Hubs CAN Commuication Cable Connection



- NOTE:** 1) Maximum 5 hubs in Level 1.
2) Battery bank can configure maximum 200 pcs US2000 or US3000.



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