HPS SYSTEM
Installation Guide

Standard Operating Procedures & Best Practices

① Introduction

To ensure the proper and safe installation of the ATESS HPS15000-50000TL hybrid inverter, please follow the steps provided in this guide.

② Tools Required

The following tools are recommended for the installation process:

Torque wrench	Screwdriver	Wire stripper	Hydraulic crimper
Heat dryer	Multimeter	Insulating gloves	Forklift

③ Ports instructions:

Power ports
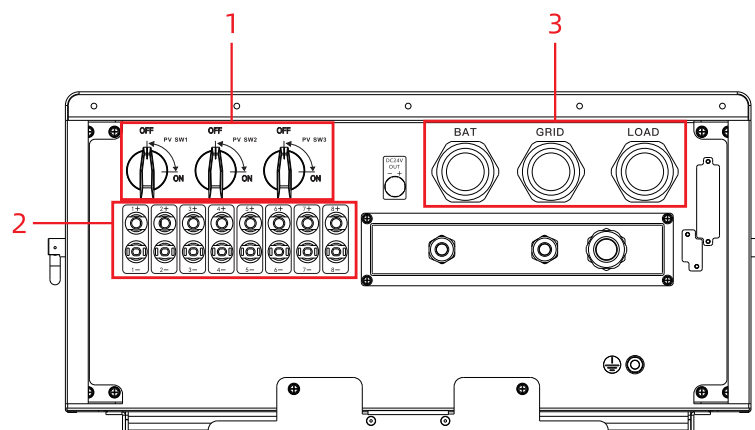
No.	Port			Description
1	SW1	SW2	SW3	PV DC switch
2	INPUT:PV1,PV2	INPUT:PV3,PV4,PV5	INPUT:PV6,PV7,PV8	PV cable gland
3	BAT/LOAD/GRID			Cable gland for BAT/LOAD/GRID
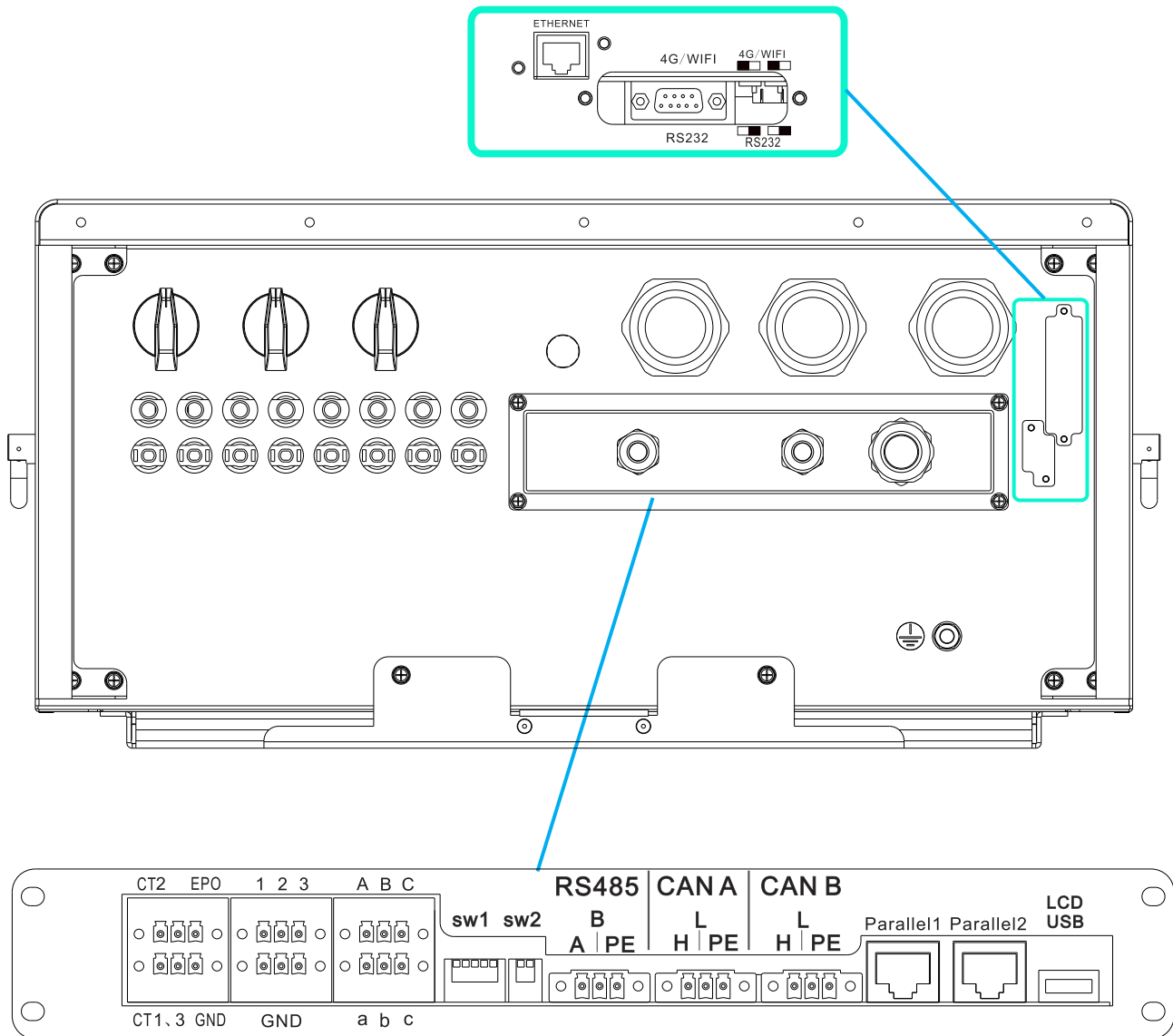
4 Cable required

HPS15000TL/HPS20000TL:

Cable (Cu)	Cable Diameter Requirements (mm²)	Aperture
Model	HPS15000TL/HPS20000TL	
PV +-	Input cable with each at least 4 mm^2	/
BAT +-	Cable with each at least 16 mm^2	M5, 4.8N*m
Grid input A B C	Input cable with each at least 4 mm^2	M4, 2.4N*m
Load output A B C	Input cable with each at least 4 mm^2	M4, 2.4N*m
Communication Wire	0.25mm², shielded Twisted pair is recommended	M2, 0.2N*m
Earth Wire	More than 6 mm².Green and yellow is recommended	M6, 8N*m

HPS30000TL/HPS40000TL/HPS50000TL:

Cable (Cu)	Cable Diameter Requirements (mm²)	Aperture
Model	ATESS HPS30000TL	
PV +-	Input cable with each at least 4 mm²	/
BAT +-	Cable with each at least 25 mm²	M6, 7N*m
Grid input A B C	Input cable with each at least 10 mm²	M6, 7N*m
Load output A B C	Input cable with each at least 10 mm²	M6, 7N*m
Communication Wire	0.25mm², shielded twisted pair is recommended	M2, 0.2N*m
Earth Wire	More than 6 mm².Green and yellow is recommended	M8, 23N*m
N wire	Cable with Load N or Cable with Gird N at least 10mm²	M5, 5N*m

1) The cable diameter must not be smaller than the specified minimum.

2) It is recommended to distinguish port polarity using different cable colors:

● DC side: Red is positive: Black is negative

● AC side: Yellow is U phase, green is V phase, red is W Phase

3) The communication cable is recommended to use the twisted shielded pair cable.

4) Power Cable Requirements for Parallel Systems: The length deviation of both DC and AC power cables from the combiner point to each HPS unit shall not exceed l meter.
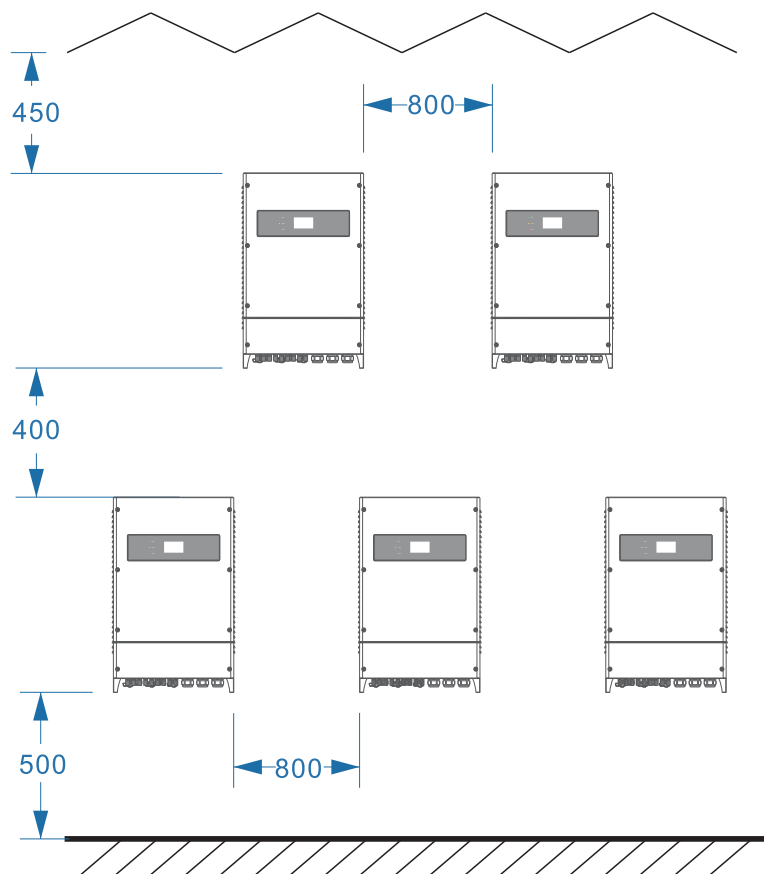
⑤ Space & environment required

1) Although HPS is with IP54 protection level, it is not recommended to install it under direct sun or direct rain/snow to ensure long term performance, below installation environment for reference:
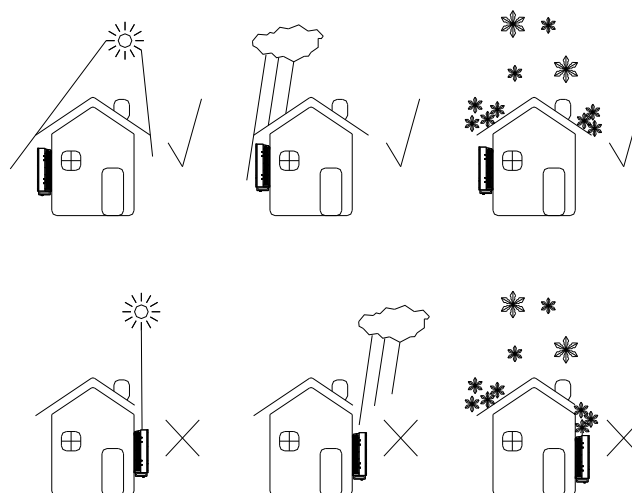
2) To avoid inverter life span decrease, it is recommended to install shading shield on top of inverter, distance between inverter and top shield please refer to below figure:

unit:mm
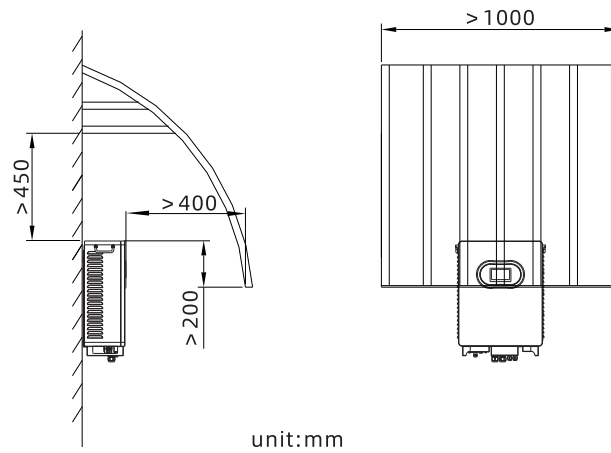
3) When installing HPS, reasonable distance should be kept for maintenance and ventilation, please refer to below figure:

4) Installation gap

HPS15000TL/20000TL:

4-Ø12

491

270

11
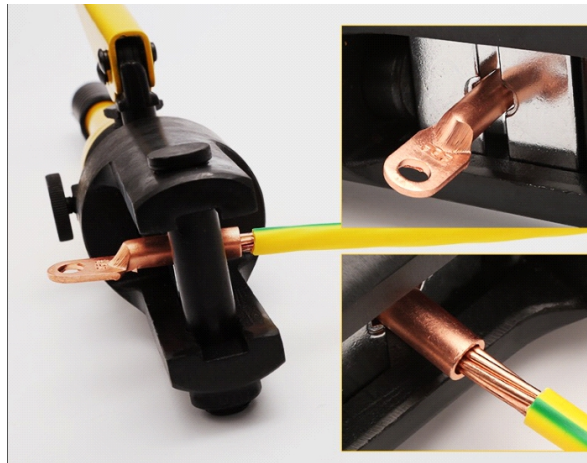
HPS30000TL/HPS40000TL/HPS50000TL:

400

797

4-Ø12

300
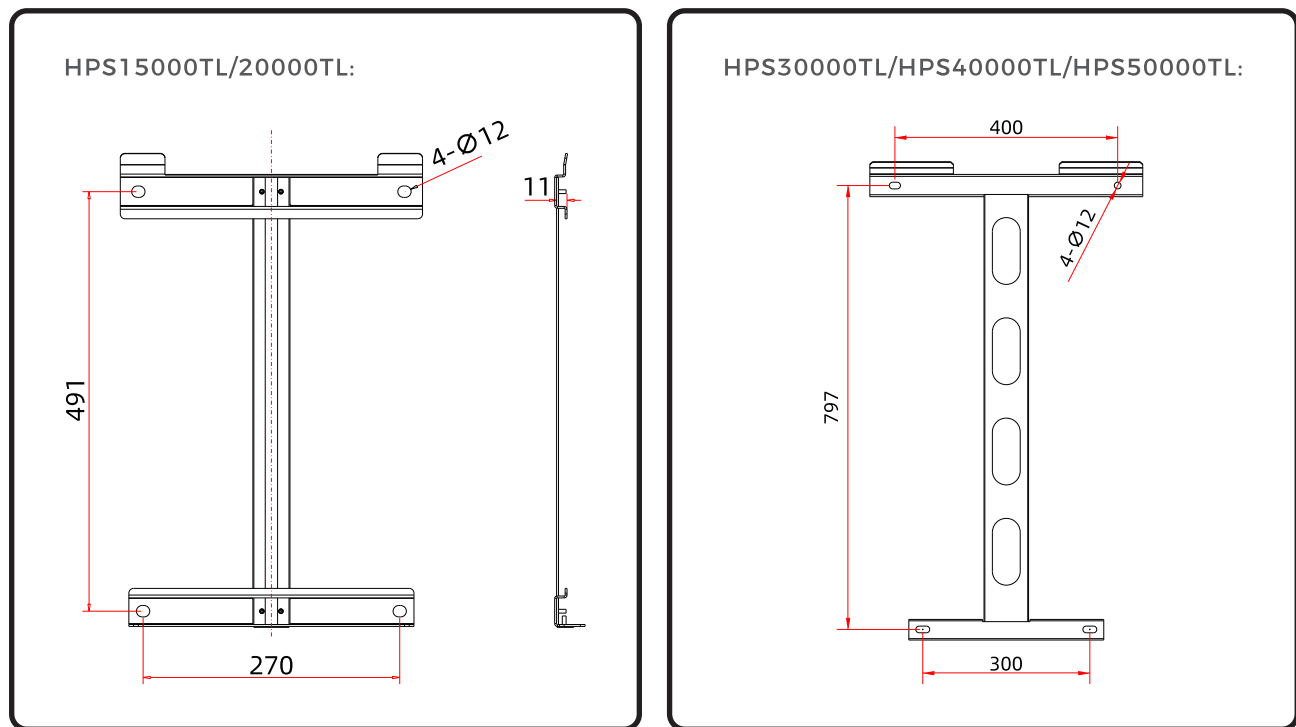
Steps:

A: Please drill the hole according to the hole mask.

B: Please install the expansion bolt as shown.

C: Please install the wall hanger as shown in the picture.

A

B

C
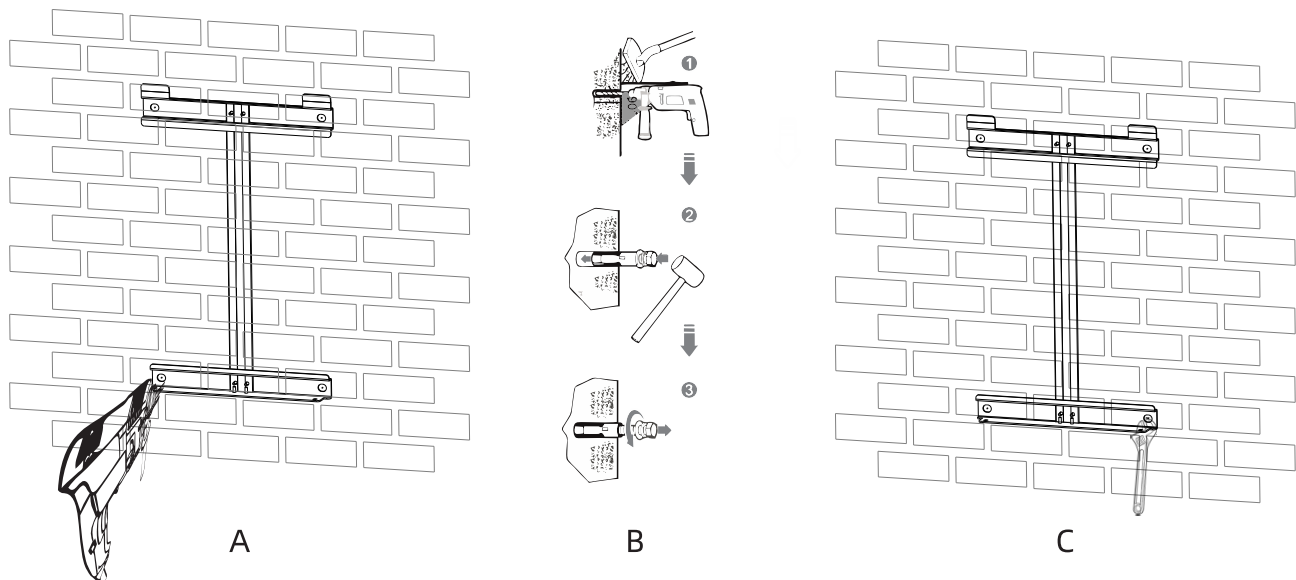
6 Cable Terminal Guidelines

All cables must be terminated with properly crimped copper lugs or terminals.

1. Strip off the insulation skin at the end of the cable.

2. Crimp the wiring copper lug.
a. Put the stripped copper core into the crimping hole of the copper lug.
b. Use the terminal pressing machine to press the copper lug tightly. The number of crimping shall be more than two.

3. Install the shrink fit sleeve.
a. Select the heat shrinkable sleeve which is more consistent with the cable size, length is about 5cm.
b. Slide the heat shrink sleeve over the copper lug to completely cover the crimped area.
c. Use a heat blower to tighten the heat shrink sleeve.

7 Connection Diagram & Description

Refer to the diagram below for proper connection of AC/DC and communication wiring.

Noted:

A. The Battery, LOAD and GRID ports of HPS do not have circuit breakers. Therefore, circuit breakers need to be connected externally for each of them.

B. The N cable also need to connect.

Single HPS with GRID :
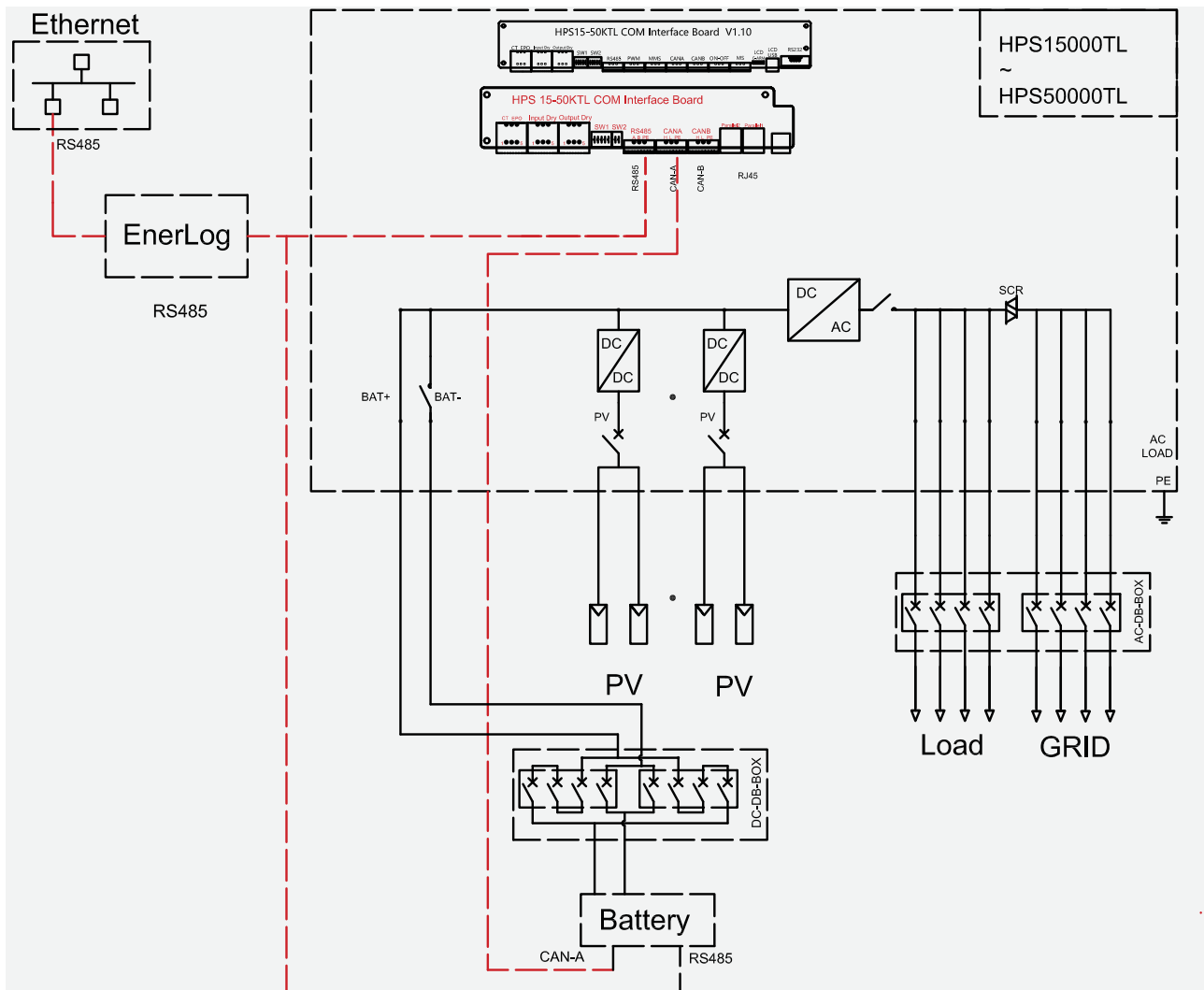
DC side: need distinguish the positive and the negative polarity

A. Connect the battery to the "DC-DB-BOX", then connect to "Battery" of HPS.

B. Connect the PV combiner to the "PV INPUT" of HPS.

AC side: need distinguish the phase sequence

A. Connect the Grid cable to the "AC-DB-BOX", then connect to "GRID" of HPS, including N cable.

B. Connect the Load cable to the "AC-DB-BOX", then connect to the "LOAD" of HPS, including N cable.

BMS-CAN communication: need distinguish the "H" and "L" port

Connect the BMS to the "CANA" of HPS

RS485 communication: need distinguish the "H" and "L" port

Connect the ENERLOG to the "RS485" of HPS

7 **Connection Diagram & Description**

Single HPS with GEN:

DC side: need distinguish the positive and the negative polarity

A. Connect the battery to the "DC-DB-BOX", then connect to "Battery" of HPS.

B. Connect the PV combiner to the "PV INPUT" of HPS.

AC side: need distinguish the phase sequence

A. Connect the Grid cable to the "AC-DB-BOX", then connect to "GRID" of HPS, including N cable.

B. Connect the Load cable to the "AC-DB-BOX", then connect to the "LOAD" of HPS, including N cable.

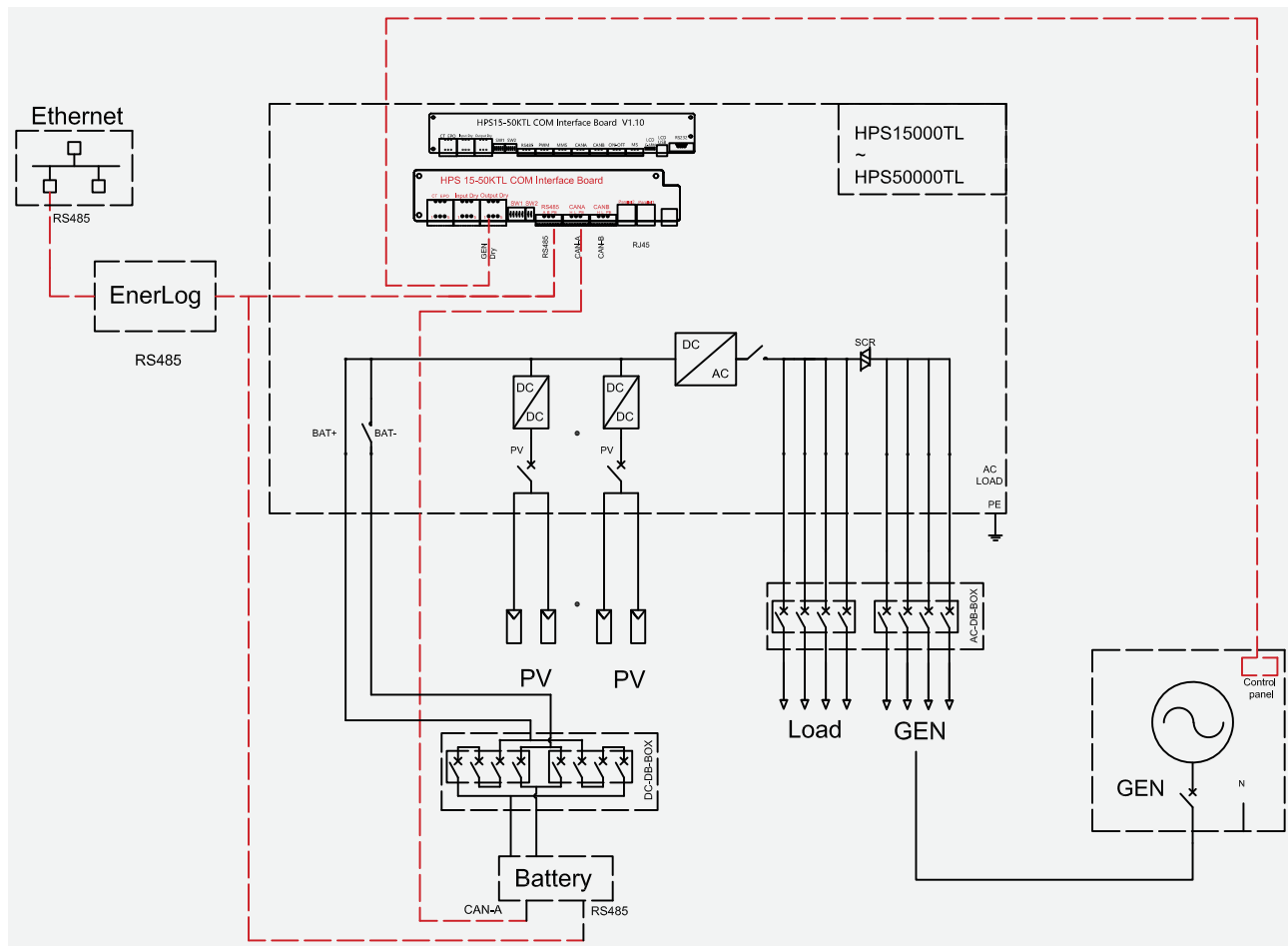**BMS-CAN communication: need distinguish the "H" and "L" port**

Connect the BMS to the "CANA" of HPS.

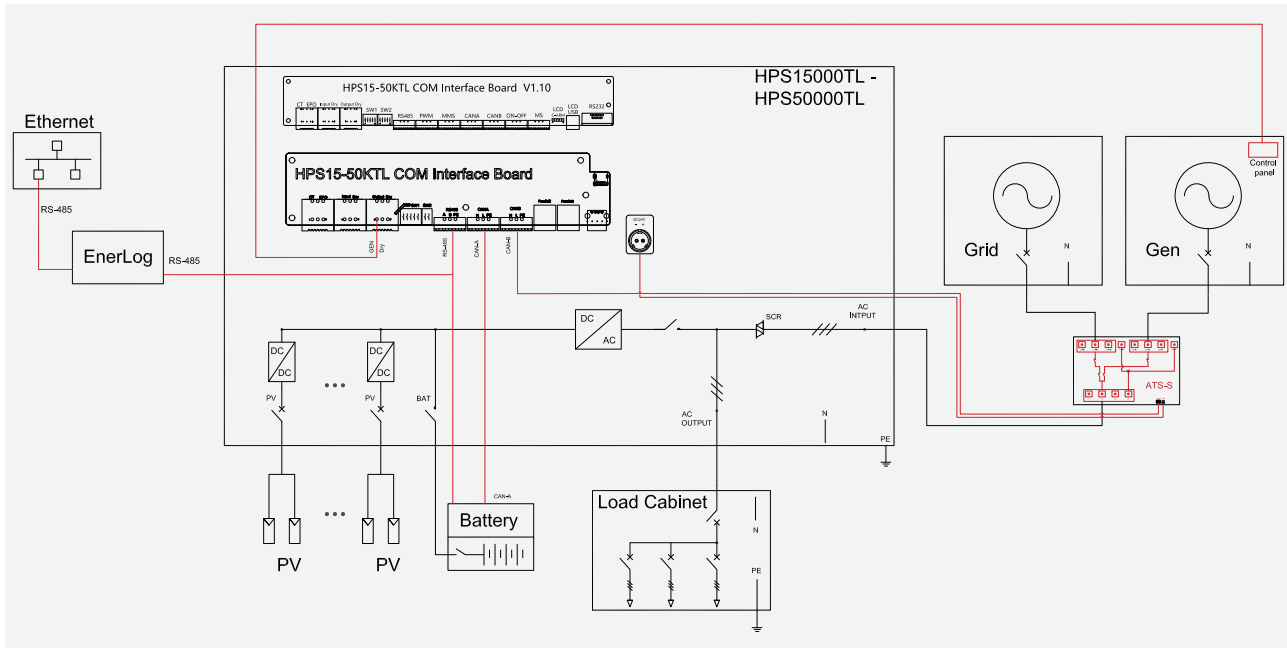**RS485 communication: need distinguish the "H" and "L" port**

Connect the ENERLOG to the "RS485" of HPS.

GEN Dry single cable:

Connect the signal cable from control panel of GEN to the "A-a" port of the "OUTPUT Dry" of the HPS.

7 Connection Diagram & Description

Single HPS with ATS:

DC side: need distinguish the positive and the negative polarity

A. Connect the battery to the "Battery" of HPS.

B. Connect the PV combiner to the "PV INPUT" of HPS.

AC side: need distinguish the phase sequence

A. Connect the GRID to the "GRID" of the ATS.

B. Connect the GEN to the "GEN" of the ATS.

C. Connect the "AC OUTPUT" of the ATS to the "GRID" of HPS.

D. Connect the Load cable to the "LOAD" of HPS.

ATS power supply:

Connect the "24V" port of the HPS to the "CN2" port of the ATS.

BMS-CAN communication: need distinguish the "H" and "L" port

Connect the BMS to the "CANA" of HPS.

ATS-CAN communication: need distinguish the "H" and "L" port

Connect the "CN2" of the ATS to the "CANB" of HPS.

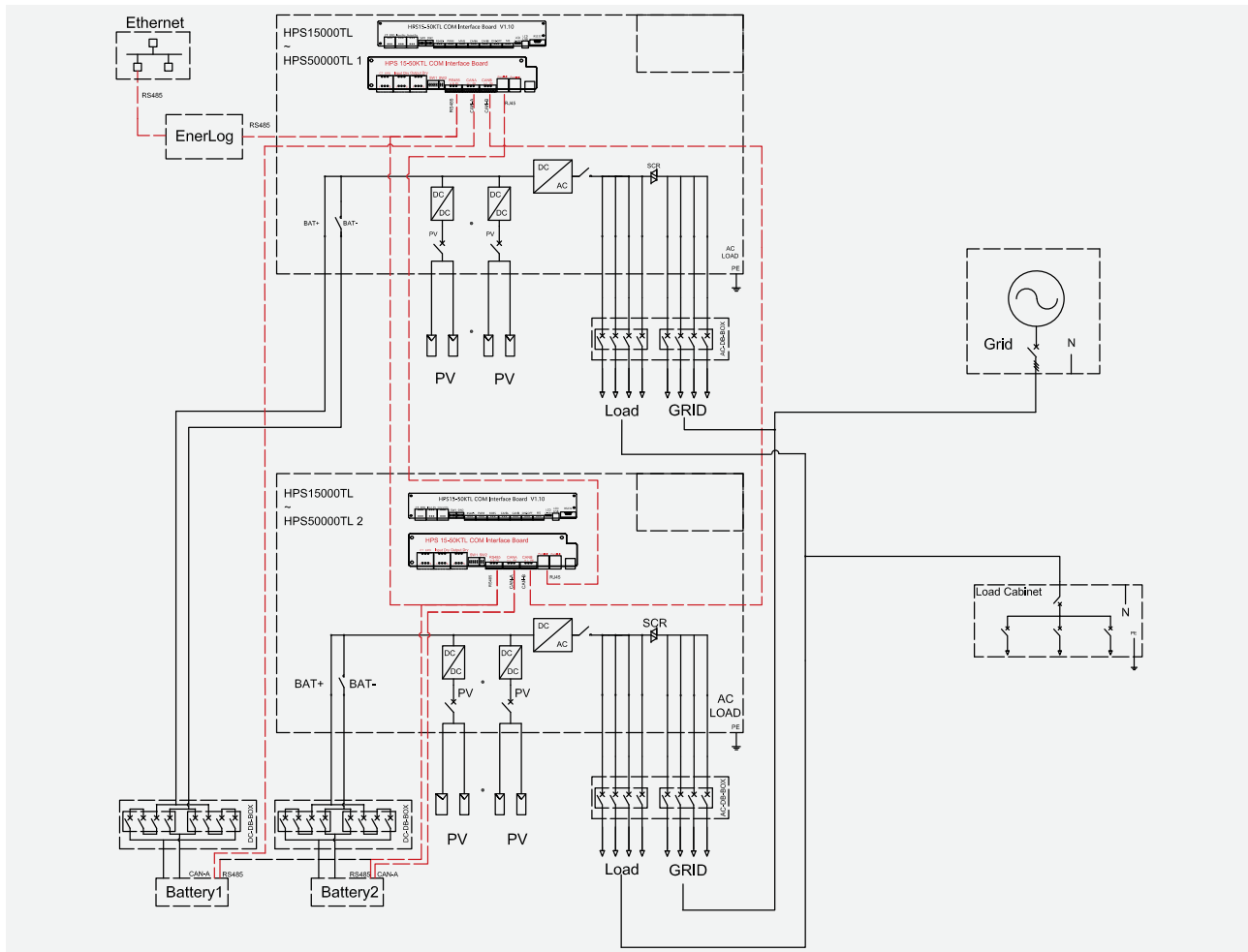**RS485 communication: need distinguish the "H" and "L" port**

Connect the ENERLOG to the "RS485" of HPS.

GEN Dry single cable:

Connect the signal cable from control panel of GEN to the "A-a" port of the "OUTPUT Dry" of the HPS.

7 Connection Diagram & Description

Parallel HPS with GRID: not share batteries

DC side: need distinguish the positive and the negative polarity
A. Connect the battery1 to the "DC-DB-BOX1", then connect to "Battery" of HPS1.
B. Connect the battery2 to the "DC-DB-BOX2", then connect to "Battery" of HPS2.
C. Connect the PV1 to the "PV INPUT" of HPS1.
D. Connect the PV2 to the "PV INPUT" of HPS2.

AC side: need distinguish the phase sequence
A. Connect the Grid cable to the "AC-DB-BOX", then connect to "GRID" of HPS1.
B. Connect the Grid cable to the "AC-DB-BOX", then connect to "GRID" of HPS2.
C. Connect the Load cable from load cabinet to the "AC-DB-BOX", then connect to the "LOAD" of HPS1.
D. Connect the Load cable from load cabinet to the "AC-DB-BOX", then connect to the "LOAD" of HPS2.

BMS-CAN communication: need distinguish the "H" and "L" port
Connect the BMS1 to the "CANA" of HPS1.
Connect the BMS2 to the "CANA" of HPS2.

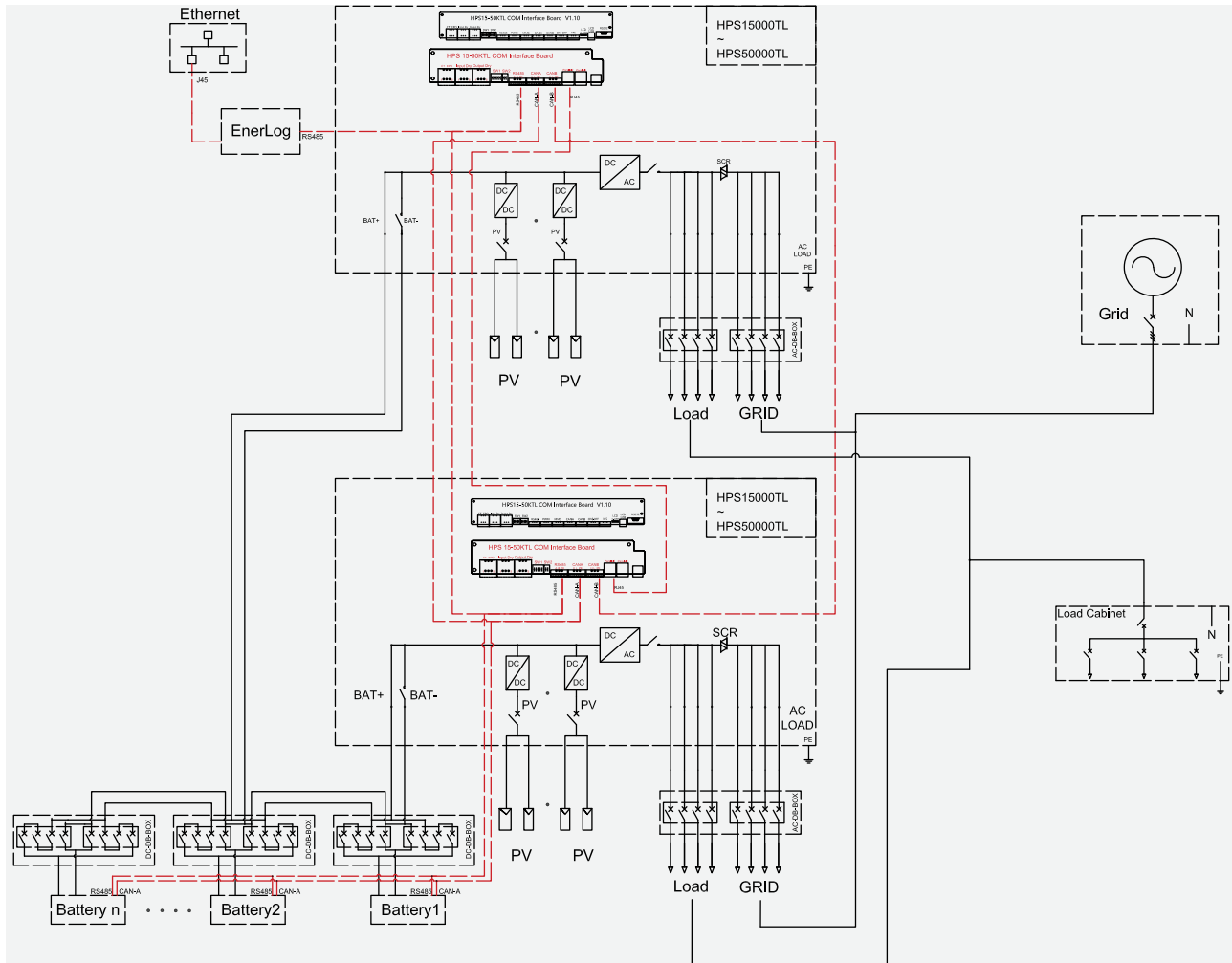**Parallel communication: need distinguish the "H" and "L" port**
Connect the "CANB" of HPS1 to "CANB" of HPS2.
Connect the "RJ45" of HPS1 to "RJ45" of HPS2.

RS485 communication: need distinguish the "H" and "L" port
Connect the ENERLOG to the "RS485" of HPS1,HPS2, Battery2, Battery1.

7 Connection Diagram & Description

Parallel HPS with GRID: share batteries

DC side: need distinguish the positive and the negative polarity

A. Connect the battery n,...battery2, battery1 to the "DC-DB-BOX" respectively.
B. Connect the "Total battery output" to "Battery" of HPS1.
C. Connect the "Total battery output" to "Battery" of HPS2.
D. Connect the PV1 to the "PV INPUT" of HPS1.
E. Connect the PV2 to the "PV INPUT" of HPS2.

AC side: need distinguish the phase sequence

A. Connect the Grid cable to the "AC-DB-BOX", then connect to "GRID" of HPS1.
B. Connect the Grid cable to the "AC-DB-BOX", then connect to "GRID" of HPS2, including N cable.
C. Connect the Load cable from load cabinet to the "AC-DB-BOX", then connect to the "LOAD" of HPS1, including N cable.
D. Connect the Load cable from load cabinet to the "AC-DB-BOX", then connect to the "LOAD" of HPS2, including N cable.

BMS-CAN communication: need distinguish the "H" and "L" port
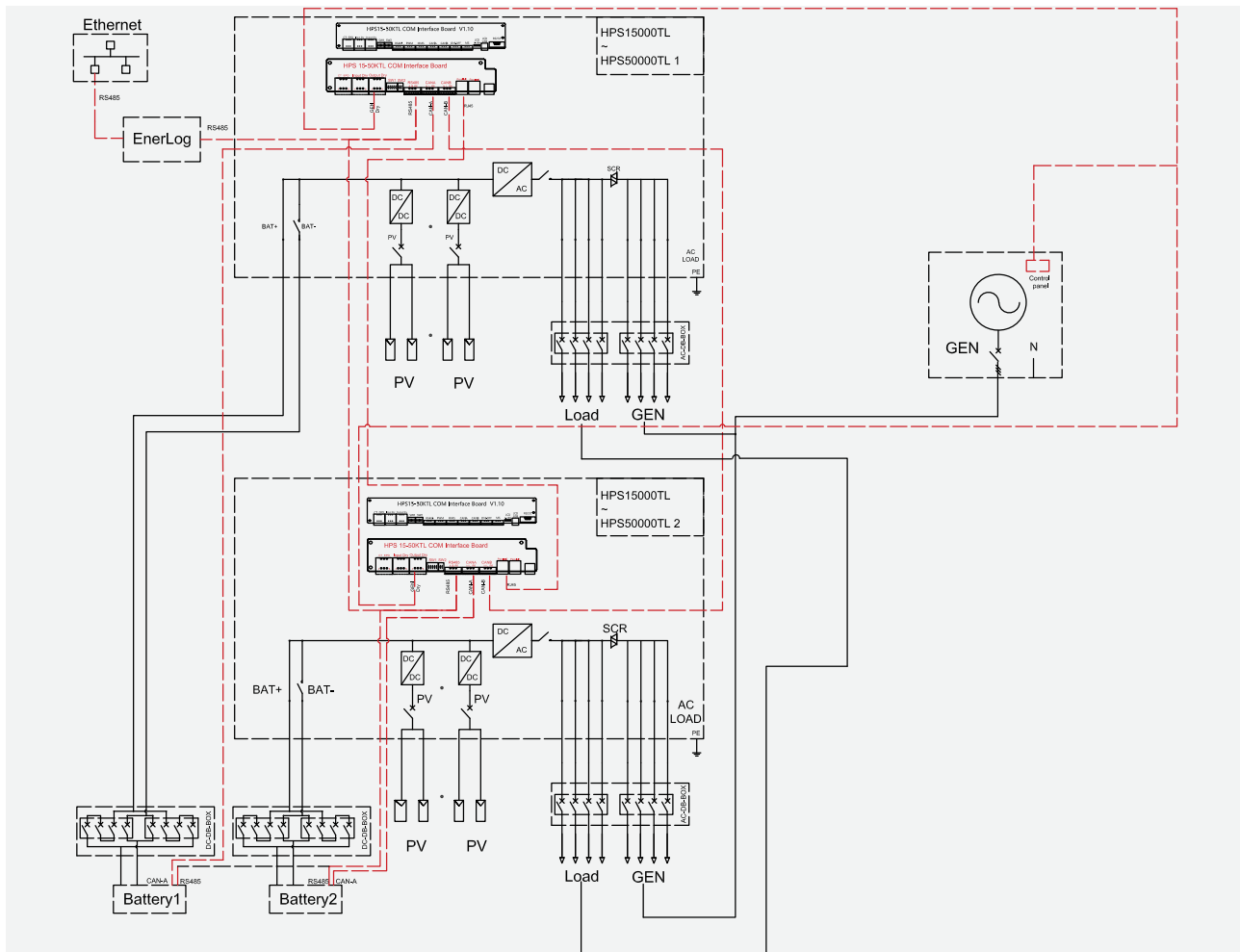
Connect the BMS n to...the BMS2 to the BMS1 to the "CANA" of HPS2 to the "CANA" of HPS1.

RS485 communication: need distinguish the "H" and "L" port

Connect the ENERLOG to the "RS485" of HPS1,HPS2, Battery2, Battery1.

7 Connection Diagram & Description

Parallel HPS with GEN: not share batteries

DC side: need distinguish the positive and the negative polarity

A. Connect the battery1 to the "DC-DB-BOX1", then connect to "Battery" of HPS1.

B. Connect the battery2 to the "DC-DB-BOX2", then connect to "Battery" of HPS2.

C. Connect the PV1 to the "PV INPUT" of HPS1.

D. Connect the PV2 to the "PV INPUT" of HPS2.

AC side: need distinguish the phase sequence

A. Connect the GEN cable to the "AC-DB-BOX", then connect to "GEN" of HPS1.

B. Connect the GEN cable to the "AC-DB-BOX", then connect to "GEN" of HPS2.

C. Connect the Load cable from load cabinet to the "AC-DB-BOX", then connect to the "LOAD" of HPS1.

D. Connect the Load cable from load cabinet to the "AC-DB-BOX", then connect to the "LOAD" of HPS2.

BMS-CAN communication: need distinguish the "H" and "L" port

Connect the BMS1 to the "CANA" of HPS1.

Connect the BMS2 to the "CANA" of HPS2.

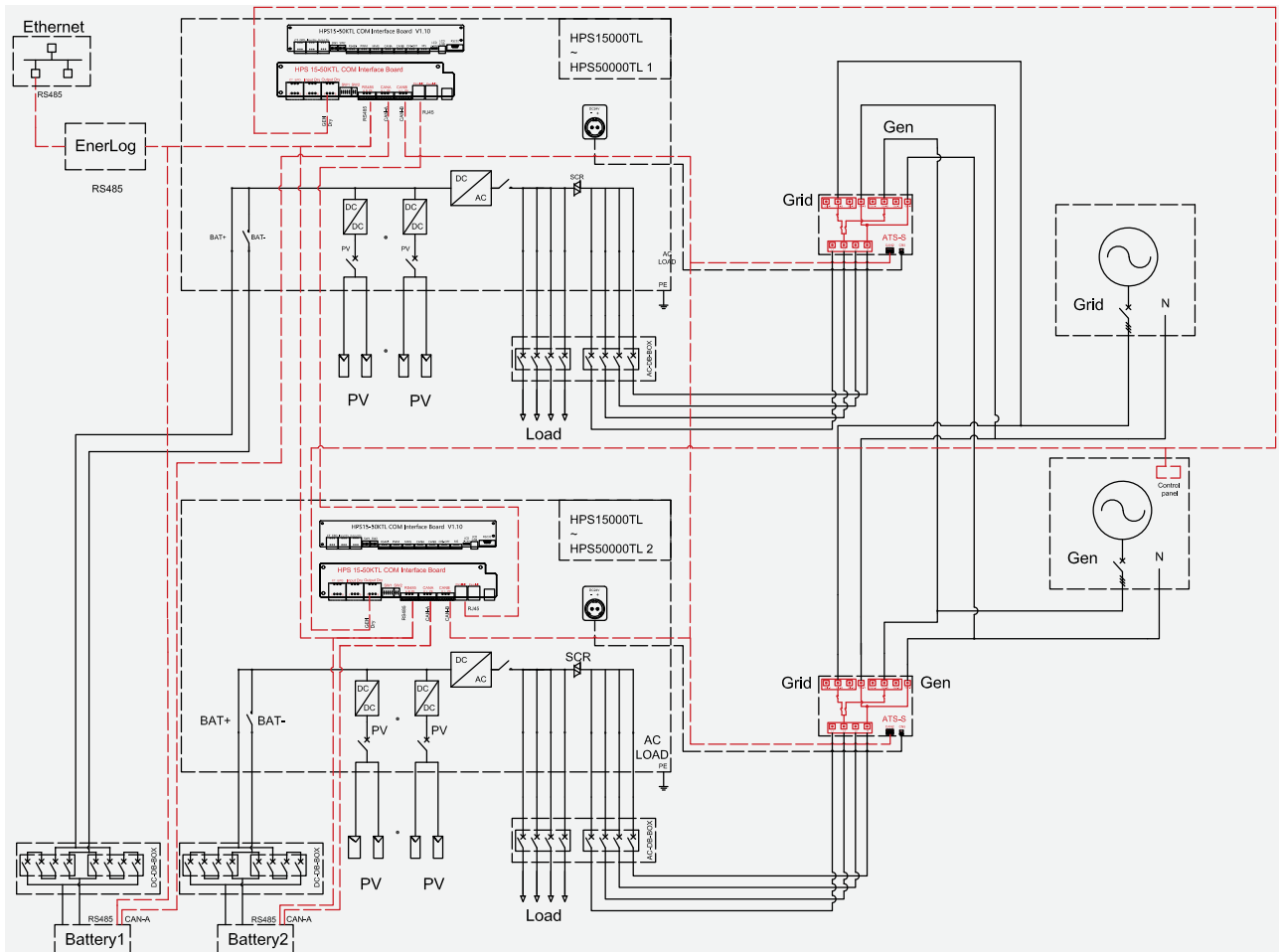**RS485 communication: need distinguish the "H" and "L" port**

Connect the ENERLOG to the "RS485" of HPS1,HPS2, Battery2, Battery1.

GEN Dry single cable:

Connect the signal cable from control panel of GEN to the "A-a" port of the "OUTPUT Dry" of the HPS1 and HPS2.

7 Connection Diagram & Description

Parallel HPS with ATS: not share batteries

DC side: need distinguish the positive and the negative polarity

A. Connect the battery1 to the "DC-DB-BOX1", then connect to "Battery" of HPS1.

B. Connect the battery2 to the "DC-DB-BOX2", then connect to "Battery" of HPS2.

C. Connect the PV1 to the "PV INPUT" of HPS1.

D. Connect the PV2 to the "PV INPUT" of HPS2.

AC side: need distinguish the phase sequence

A. Connect the GRID to the "GRID" of the ATS1 and ATS2 respectively.

B. Connect the GEN to the "GEN" of the ATS1 and ATS2 respectively.

C. Connect the "AC OUTPUT" of the ATS1 to the "GRID" of HPS1.

D. Connect the "AC OUTPUT" of the ATS2 to the "GRID" of HPS2.

E. Connect the Load cable from the Load cabinet to the "LOAD" of HPS1 and HPS2.

ATS power supply:

Connect the "24V" port of the HPS1 to the "CN2" port of the ATS1.

Connect the "24V" port of the HPS2 to the "CN2" port of the ATS2.

BMS-CAN communication: need distinguish the "H" and "L" port

Connect the BMS1 to the "CANA" of HPS1.

Connect the BMS2 to the "CANA" of HPS2.

Parallel communication: need distinguish the "H" and "L" port
Connect the "CANB" of HPS1 to "CANB" of HPS2.
Connect the "RJ45" of HPS1 to "RJ45" of HPS2.

ATS-CAN communication: need distinguish the "H" and "L" port
Connect the "CN2" of the ATS1 to the "CANB" of HPS1.
Connect the "CN2" of the ATS2 to the "CANB" of HPS2.

RS485 communication: need distinguish the "H" and "L" port
Connect the ENERLOG to the "RS485" of HPS1,HPS2, Battery2, Battery1.

GEN Dry single cable:
Connect the signal cable from control panel of GEN to the "A-a" port of the "OUTPUT Dry" of the HPS1 and

HPS2.