



SCAN GUIDA VIRTUALE ZM2



QUICK GUIDE 3-6-ZSS-HP HYBRID INVERTER

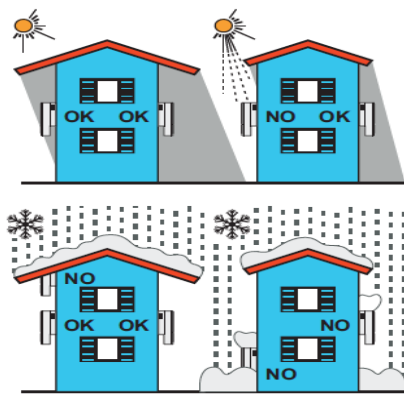
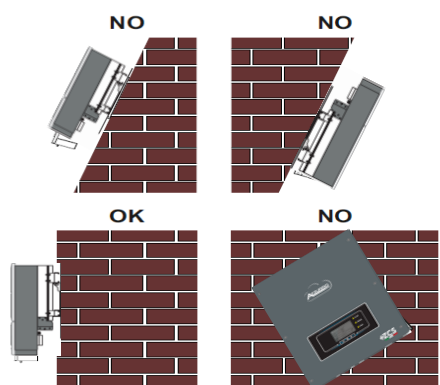
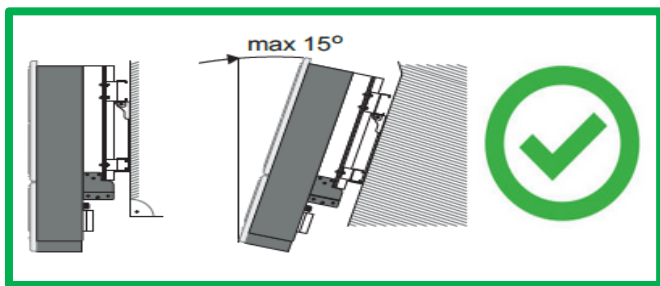
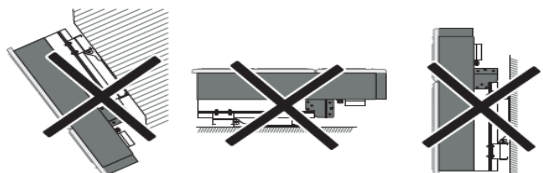
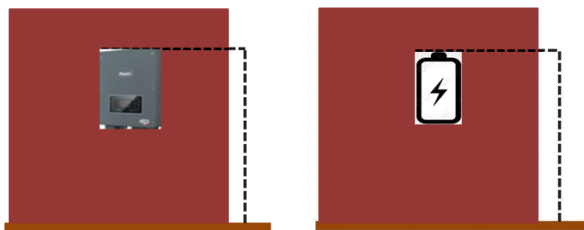
- Always wear protective clothing and/or personal protective equipment
- Always consult the manual
- General notice - Important Safety Instructions

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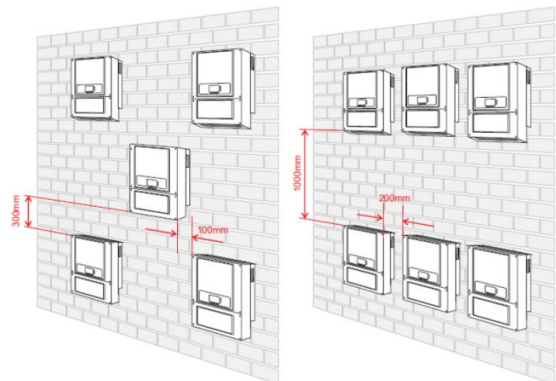
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23. % CHARGE MODE
24. QUICK INFO ON SYSTEM STATUS
25. OPERATING STATUSES IN AUTOMATIC MODE
26. LOGIC INTERFACE (DRMn)

1. INSTALLATION AND DISTANCES

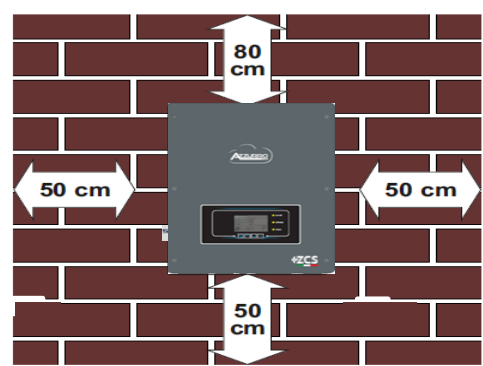
Maximum height from ground permitted: 180 cm



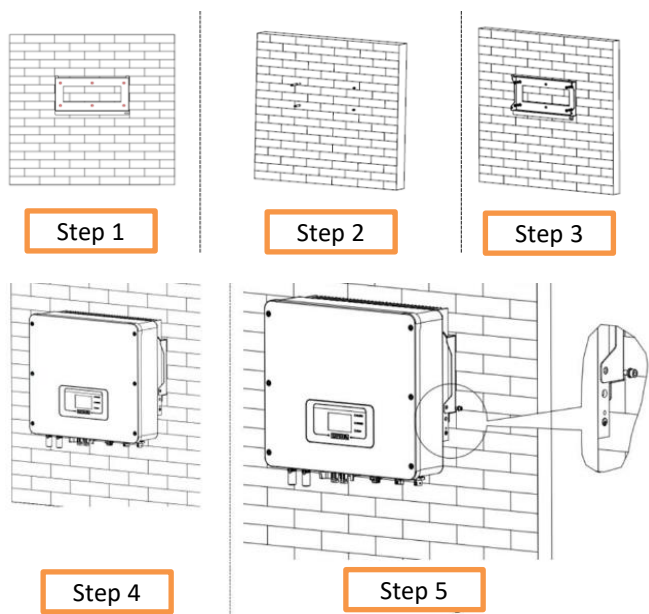
Distances for installation of multiple inverters



Distances for installation of a single inverter



2. WALL INSTALLATION



Step 1: Position the mounting bracket on the wall, mark the fixing points.
Drill holes (10 mm drill bit) in the wall.

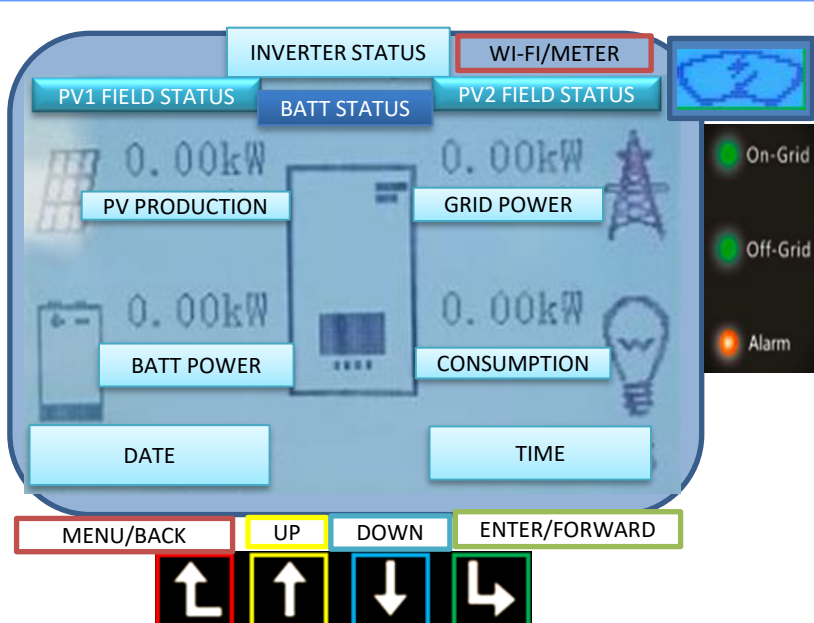
Step 2: Insert the expansion bolts vertically into the hole, making sure that the insertion depth is neither too shallow nor too deep.

Step 3: Fix the mounting bracket to the wall using dowels and flat washers.

Step 4: Position the 1PH HYD3000-HYD6000-ZSS-HP inverter on the mounting bracket.

Step 5: Use the grounding hole of the heat sink to ground the 1PH HYD3000-HYD6000-ZSS-HP inverter.

3. DISPLAY & BUTTONS



Status of the HYD-ES inverter	On-Grid	Off-Grid	Alarm
On-Grid	On		
Standby (On-Grid)	Intermittent		
Off-Grid		On	
Standby (Off-Grid)		Intermittent	
Alarm			On

4. MAIN MENU

From the main menu, press "Menu/Back" to enter the main menu.



1. Language
2. Date and Time
3. Safety parameters
4. Working mode
5. Self-test
6. Config. input Channels
7. EPS Mode
8. Commun. Address. Select.

- | Main menu |
|----------------------|
| 1. Basic settings |
| 2. Advanced settings |
| 3. Event list |
| 4. System Info |
| 5. Software Update |
| 6. Energy statistics |

PWD: 0715

1. Battery parameters
2. Active battery
3. Zero feed-in mode
4. IV Curve Scan
5. Logic interface
6. Factory reset
7. Parallel settings
8. Bluetooth Reset
9. CT Calibration

1. List of current events
2. List of historical events

1. Inverter Info
2. Battery Info
3. Safety parameters

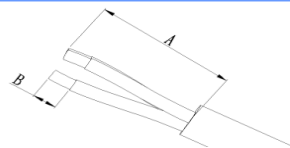
PWD: 0715

Start Update ...

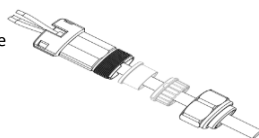
Today	Week	Month	Year	Life Cycle
PV prod.	PV prod.	PV prod.	PV prod.	PV prod.
AutoCon	AutoCon	AutoCon	AutoCon	AutoCon
Export	Export	Export	Export	Export
Consumption	Consumption	Consumption	Consumption	Consumption
AutoCon	AutoCon	AutoCon	AutoCon	AutoCon
Import	Import	Import	Import	Import

5. CONNECTING TO THE GRID

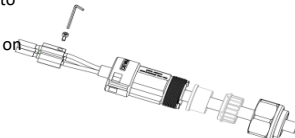
Step 1: Select the appropriate cable type and specifications. A: 30~50 mm; B: 3~5 mm.



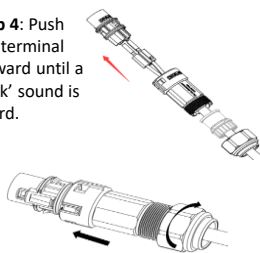
Step 2: Pass the wire through the terminal.



Step 3: According to the mark, lock the wire into the hole on the terminal and tighten it with the Allen key.



Step 4: Push the terminal forward until a 'click' sound is heard.



Step 5: Connect the connected load terminal to the load port of the inverter and push the terminal forward until a 'click' sound is heard and the terminal has been connected.

Component	Description		Recommended cable type	Recommended cable specification
AC LOAD 	Load	L (U)	Multi-core copper cable for outdoor use	Cross-section area of the conductor: 4~6 mm ²
		N (W)		
		PE (O)		
AC GRID 	AC	L (U)	Multi-core copper cable for outdoor use	Cross-section area of the conductor: 5~8 mm ²
		N (W)		
		PE (O)		



Connector insertion

Connector disconnection

GRID

LOAD

Hold the button to unlock

6. PHOTOVOLTAIC CONNECTIONS



Recommended specifications for DC input cables

Cross-sectional area (mm ²)		Outer diameter of cable (mm ²)
Range	Recommended value	
4.0~6.0	4.0	4.5~7.8

Prepare the positive and negative photovoltaic cables.

1. Positive contact
2. Negative contact

crimping tool

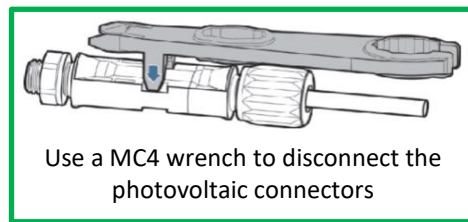
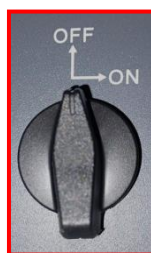
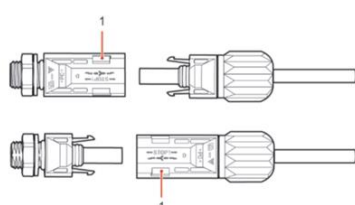
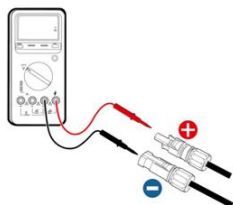
Insert the crimped positive and negative cables into the corresponding photovoltaic connectors.

3. Positive connector
4. Negative connector

MC4 Wrench

Click

Make sure that the DC parameters of the strings are acceptable according to the technical specifications given in the datasheet and in the Azzurro ZCS configurator. In addition, **check that the polarities of the photovoltaic cables are correct.**



Use a MC4 wrench to disconnect the photovoltaic connectors

Before removing the positive and negative PV connectors, make sure that the DC rotary circuit breaker is in the OFF position.

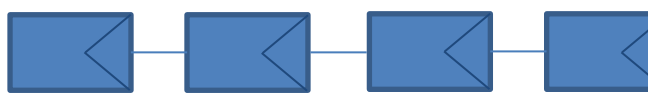
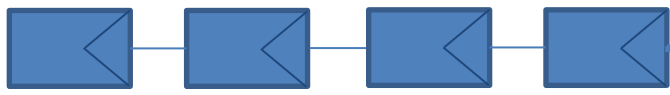


ATTENTION Before connecting/disconnecting the strings to the inverter, check that the DC circuit breaker on the side of the inverter is in the OFF position.

NOTE: Both MPPT inputs of the inverter must **be populated**, even if the system has only one string. Use a "Y" cable or a square to split the string.

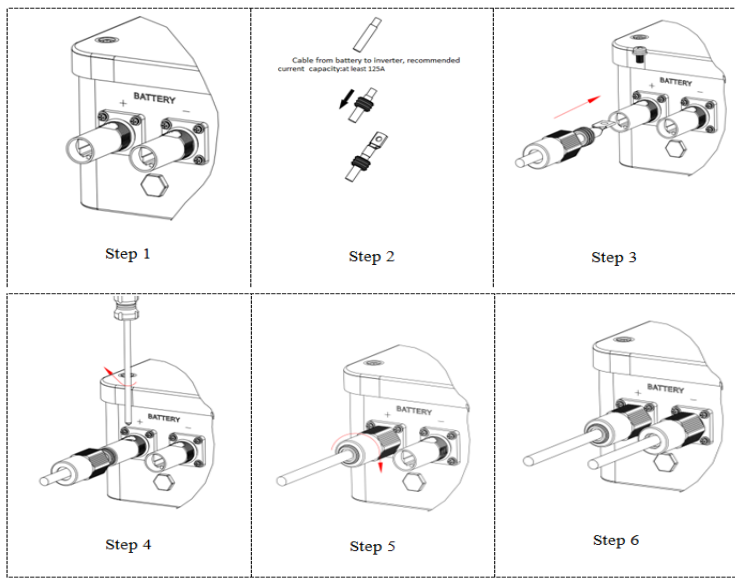
Configure the inverter in **parallel mode**:

Basic settings → **Input channel configuration** → **Parallel**

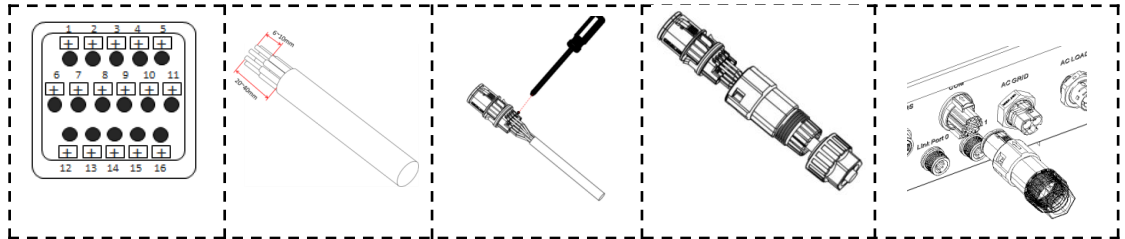


7. BATTERY CONNECTION

Power connections



Communication connections



When switching off the system, **DISCONNECT THE AC VOLTAGE** by opening the switch dedicated for this purpose. **NEVER SWITCH OFF the batteries before disconnecting the AC voltage**, and therefore with the storage system connected to the AC grid.


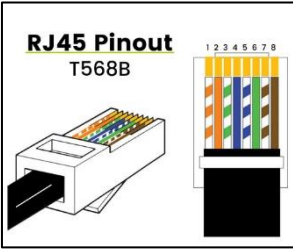


Maximum DoD programmable 80%



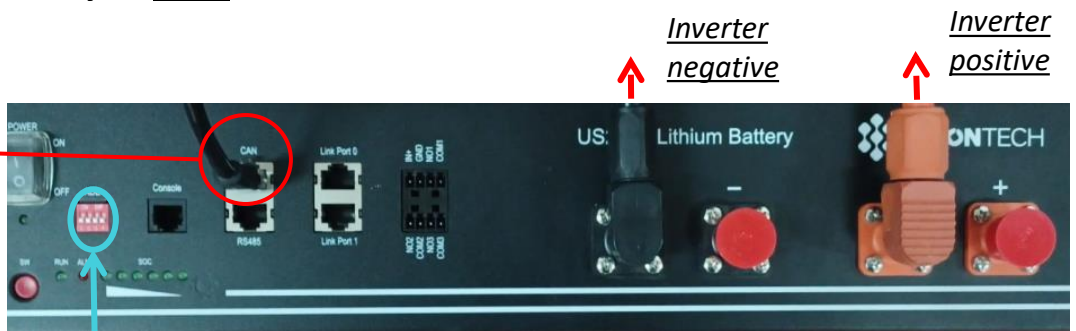
The communication cable is located inside the kit in the inverter box.

Communication cable pinout between Pylontech battery and Inverter, from left to right

<p><u>Inverter</u></p> 	<p>PIN 1: <u>CAN H (blue wire)</u> PIN 2: <u>CAN L (white-blue wire)</u></p>
<p><u>Pylontech</u></p> 	<p>PIN 1: <u>White-Orange</u> PIN 2: <u>Orange</u> PIN 3: <u>White-Green</u> PIN 4: <u>Blue</u> PIN 5: <u>White-Blue</u> PIN 6: <u>Green</u> PIN 7: <u>White-Brown</u> PIN 8: <u>Brown</u></p>

Communication connections between batteries and inverter:

• CAN of Master Battery → COM Port of inverter

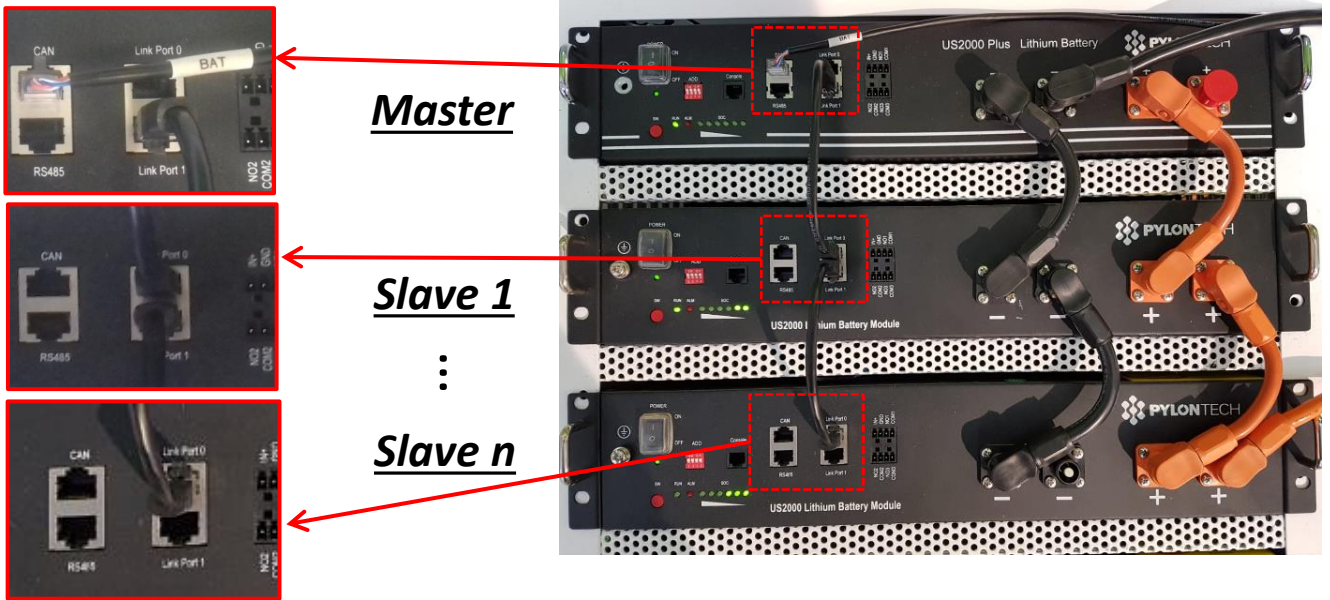


Note: DIP switches must be set as per the factory settings, all in the OFF position (00000)

POWER CONNECTION - In case of a single battery, two power cables (positive and negative) and one communication cable will be connected, as shown above.



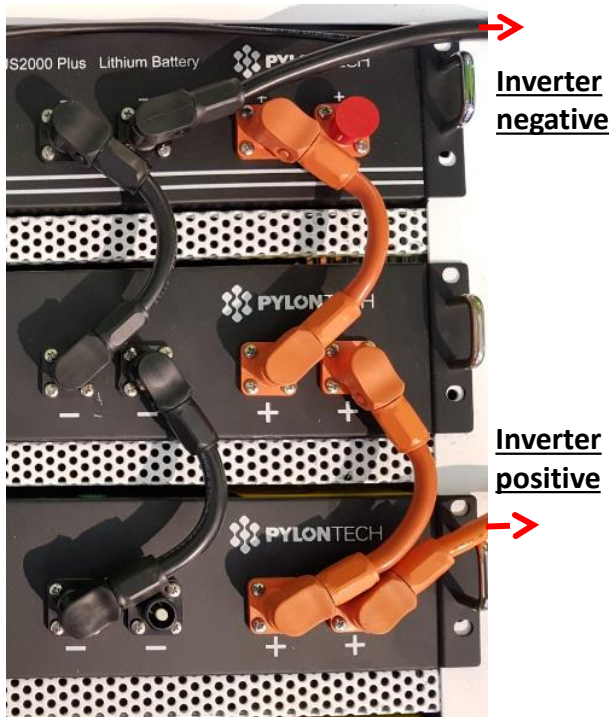
NOTE: For a parallel connection, use the appropriate cables (power and communication) supplied in the kit.



Communication connections between batteries and inverter:

Batteries are connected IN PARALLEL to each other.

- CAN of **Master Battery** → COM Port of **inverter**
- Link port 1 of **master battery** → Link Port 0 of **Slave 1 battery**
- Link port 1 of **Slave 1 battery** → Link Port 0 of **Slave 2 battery**
- ...
- Link Port 1 of **slave N-1 battery** (second last) → Link Port 0 of **slave N battery** (last)



Power connections between batteries and inverter:

Batteries must be connected in a "loop."

- Positive input (+) of **master battery** connected to positive input (+) of **inverter**.
- Positive input (+) of **master battery** connected to positive input (+) of **slave 1 battery**.
- Negative input (-) of **master battery** connected to negative input (-) of **slave 1 battery**.
-
- Positive input (+) of **slave N-1 battery** (second-last) connected to positive input (+) of **slave N battery** (last).
- Negative input (-) of **slave N-1 battery** (second-last) connected to negative input (-) of **slave N battery** (last).
- Negative input (-) of **slave N battery** (second-last) connected to negative input (-) of **inverter**.

Set the battery channels in the inverter.

To set the **battery parameters**:

Advanced settings → 0715 → Battery parameters:

- Type: Pylon; Depth of discharge: 80%.

1.Battery type	Pylon-AH US2000
4.Depth of Discharge	80%
6.Save	

Note: Maximum DoD programmable **80%**



The communication cable is located inside the kit in the inverter box.

Communication cable pinout between Pylontech battery and Inverter, from left to right

Inverter	
	PIN 1: CAN H (blue wire) PIN 2: CAN L (white-blue wire)
Pylontech	
<p>RJ45 Pinout T568B</p>	PIN 1: White-Orange PIN 2: Orange PIN 3: White-Green PIN 4: Blue PIN 5: White-Blue PIN 6: Green PIN 7: White-Brown PIN 8: Brown

Communication connections between batteries and inverter:

• CAN of Master Battery → COM Port of inverter



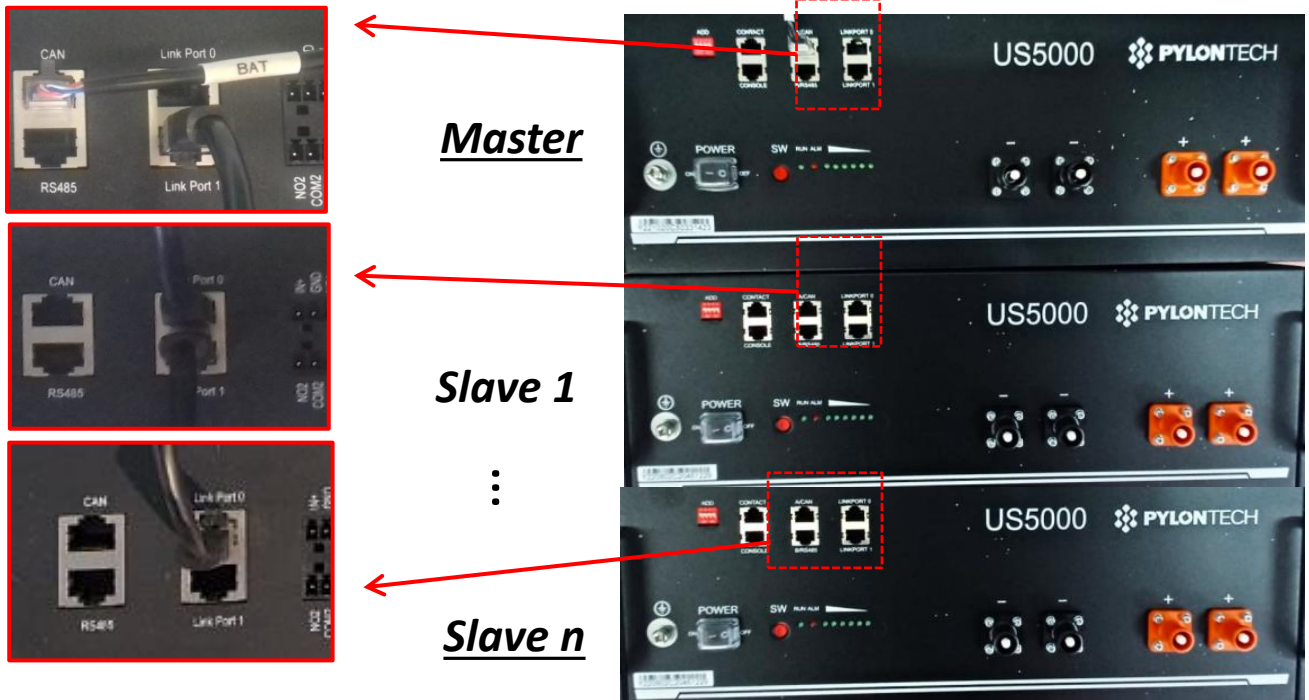
Note: DIP switches must be set as per the factory settings, all in the OFF position (00000)

Inverter negative

Inverter positive

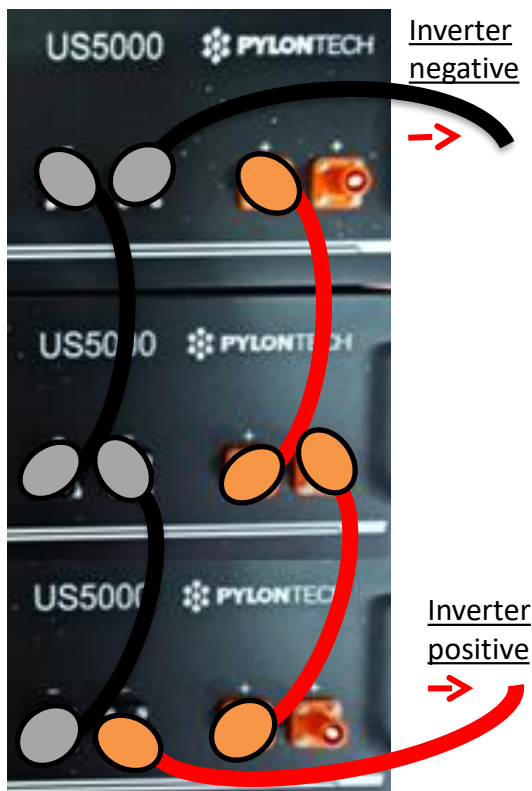
POWER CONNECTION - In case of a single battery, two power cables (positive and negative) and one communication cable will be connected, as shown above.

NOTE: For a parallel connection, use the appropriate cables (power and communication) supplied in the kit.



Communication connections between batteries and inverter:
Batteries are connected IN PARALLEL to each other.

- CAN of **Master Battery** → COM Port of inverter
- Link port 1 of **Slave 1 battery** → Link Port 0 of **Slave 2 battery**
- ...
- Link Port 1 of **slave N-1 battery** (second last) → Link Port 0 of **slave N battery** (last)



Power connections between batteries and inverter:

Batteries must be connected in a "loop."

- Positive input (+) of **master battery** connected to positive input (+) of inverter.
- Positive input (+) of **master battery** connected to positive input (+) of **slave 1 battery**.
- Negative input (-) of **master battery** connected to negative input (-) of **slave 1 battery**.
-
- Positive input (+) of **slave N-1 battery** (second-last) connected to positive input (+) of **slave N battery** (last).
- Negative input (-) of **slave N-1 battery** (second-last) connected to negative input (-) of **slave N battery** (last).
- Negative input (-) of **slave N battery** (second-last) connected to negative input (-) of inverter.

Set the battery channels in the inverter.

To set the **battery parameters**:

Advanced settings → 0715 → Battery parameters:

- Type: Pylon; Depth of discharge: 80%.

1.Battery type	Pylon-AH US5000
4.Depth of Discharge	80%
6.Save	

Maximum DoD programmable 90%



DO NOT CHANGE DIP SWITCH POSITION WITH THE BATTERY ON!!

POWER RUN LOW BATTERY FAULT



The communication cable is located inside the kit in the inverter box.

Communication cable pinout between WeCo battery and Inverter, from left to right	
<p><u>Inverter</u></p>	<p>PIN 1: CAN (White-Orange)</p> <p>PIN 2: CAN (Orange)</p>
<p><u>WeCo</u></p> <p>RJ45 Pinout T568B</p>	<p>PIN 1: White-Orange</p> <p>PIN 2: Orange</p> <p>PIN 3: White-Green</p> <p>PIN 4: Blue</p> <p>PIN 5: White-Blue</p> <p>PIN 6: Green</p> <p>PIN 7: White-Brown</p> <p>PIN 8: Brown</p>

Communication connections between batteries and inverter:

• BMS-CAN of Master Battery → COM Port of inverter



In case of a SINGLE BATTERY:

1. Connect the **BMS-CAN** input
2. Set the **DIP Switches**
3. Make the power connections by connecting the appropriate B+ and B- wires to the corresponding input (as shown in the figure).
4. Connect the ground cable to the battery

In case of **MULTIPLE BATTERIES**, connect the communication cable from the **COM** port of the inverter to the **BMS-CAN** port of the **MASTER** battery, after having defined the correct positioning of the **DIP Switches** (see following pages).

Communication connections between batteries and inverter:

Batteries are connected **IN PARALLEL** to each other.

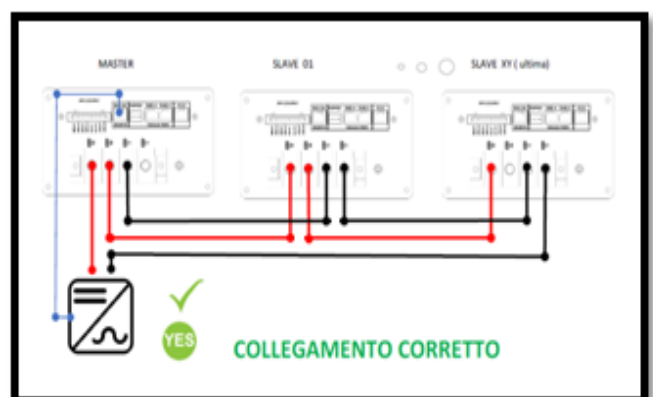
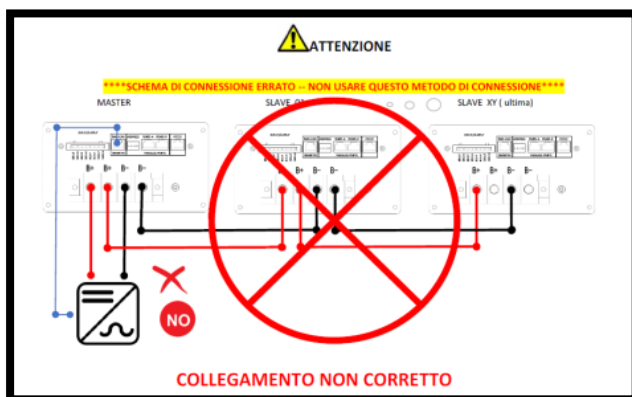
- **BMS-CAN** of **master battery** → **COM** Port of **inverter**
- **RS485-B** of **master battery** → **RS485-A** of **slave 1 battery**
- **RS485-B** of **slave 1 battery** → **RS485-A** of **slave 2 battery**
- ...
- **RS485-B** of **slave N-1 battery** (second last) → **RS485-A** of **slave N battery** (last)

Power connections between batteries and inverter:

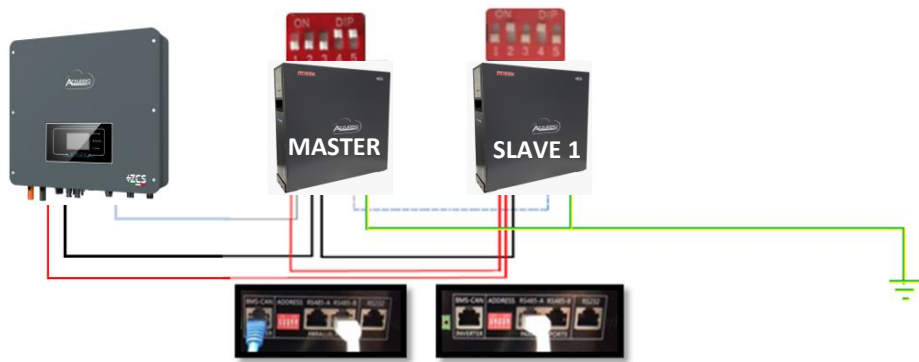
Batteries must be connected in a “loop.”

- Positive input (+) of **master battery** connected to positive input (+) of **inverter**.
- Positive input (+) of **master battery** connected to positive input (+) of **slave 1 battery**.
- Negative input (-) of **master battery** connected to negative input (-) of **slave 1 battery**.
-
- Positive input (+) of **slave N-1 battery** (second-last) connected to positive input (+) of **slave N battery** (last).
- Negative input (-) of **slave N-1 battery** (second-last) connected to negative input (-) of **slave N battery** (last).
- Negative input (-) of **slave N battery** (second-last) connected to negative input (-) of **inverter**.

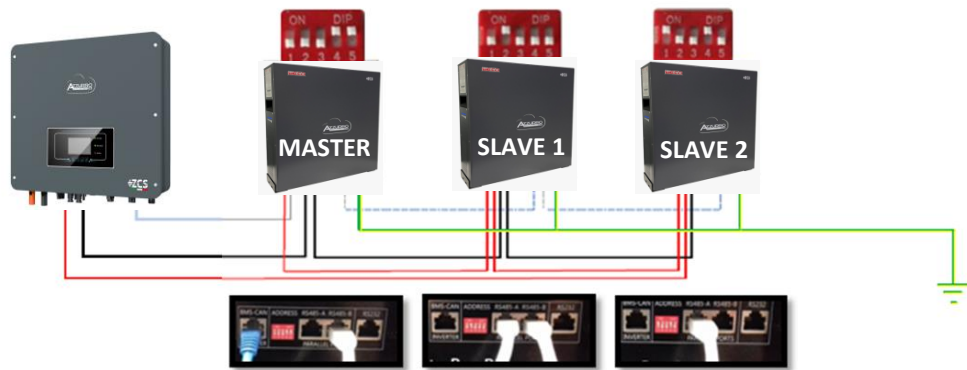
NOTE: When switched on for the first time, the WeCo batteries receive a command from the inverter to start regular operation only when all of them have collectively reached a state of full charge (i.e. a SOC level of 100%).



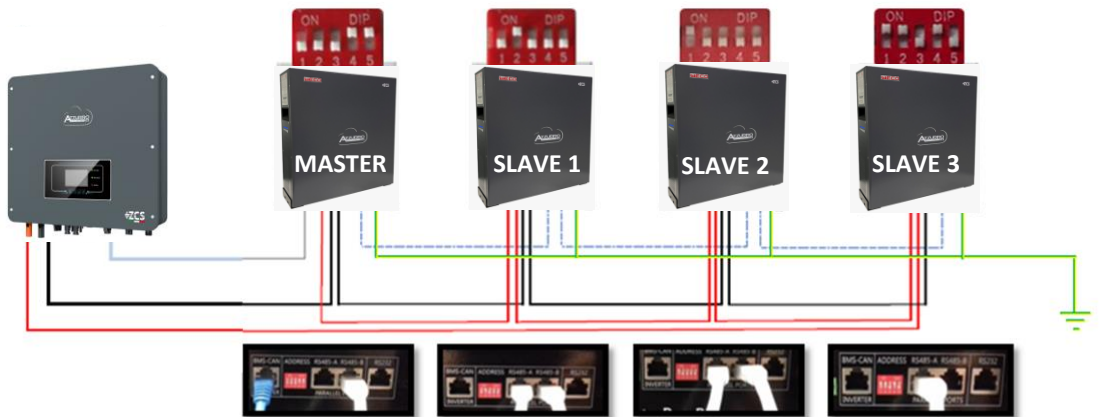
Connecting 2 batteries



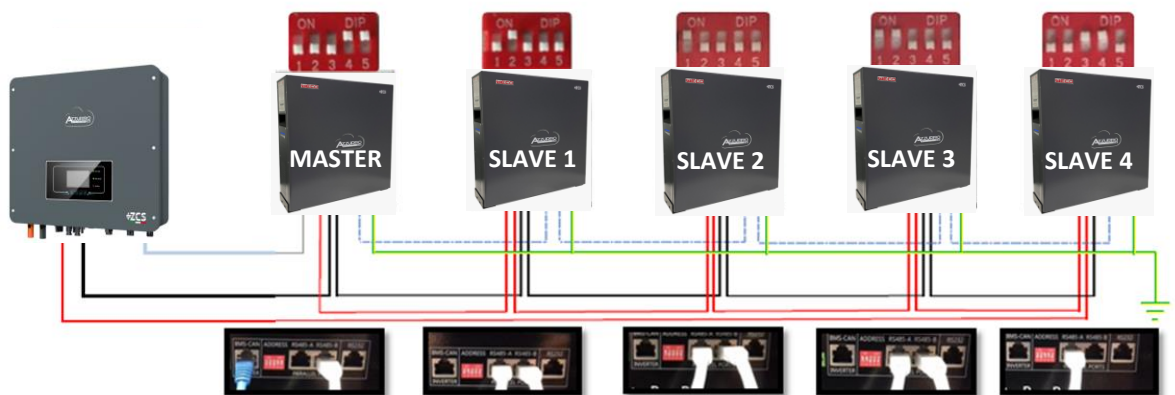
Connecting 3 batteries



Connecting 4 batteries



Connecting 5 batteries



Set the battery channels in the inverter.

To set the **battery parameters**:

Advanced settings → 0715 → Battery parameters:

- Type: WeCo; Depth of discharge: 80%.

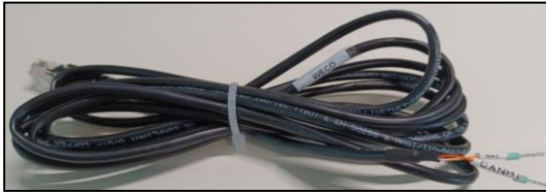
1.Battery type	WeCo
4.Depth of Discharge	80%
6.Save	

Maximum DoD programmable 90%



DO NOT CHANGE DIP SWITCH POSITION WITH THE BATTERY ON!!

POWER RUN LOW BATTERY FAULT

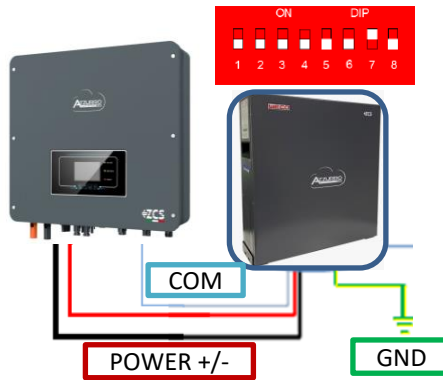


The communication cable is located inside the kit in the inverter box.

Communication cable pinout between WeCo battery and Inverter, from left to right	
<p><u>Inverter</u></p>	<p>PIN 1: <u>CAN (White-Orange)</u></p> <p>PIN 2: <u>CAN (Orange)</u></p>
<p><u>WeCo</u></p> <p>RJ45 Pinout T568B</p>	<p>PIN 1: <u>White-Orange</u></p> <p>PIN 2: <u>Orange</u></p> <p>PIN 3: <u>White-Green</u></p> <p>PIN 4: <u>Blue</u></p> <p>PIN 5: <u>White-Blue</u></p> <p>PIN 6: <u>Green</u></p> <p>PIN 7: <u>White-Brown</u></p> <p>PIN 8: <u>Brown</u></p>

Communication connections between batteries and inverter:

• CAN-A of Master Battery → COM Port of inverter



In case of a SINGLE BATTERY:

1. Connect the CAN-A input
2. Set the DIP Switches

3. The power connections must be made by attaching the appropriate B+ and B- connectors to the corresponding input (as shown in the figure).
4. Connect the ground cable to the battery through the threaded hole

In case of **MULTIPLE BATTERIES**, connect the communication cable from the **COM** port of the inverter to the **CAN-A** port of the **MASTER** battery, after having defined the correct positioning of the **DIP Switches** (see following pages).

Communication connections between batteries and inverter:

Batteries are connected **IN PARALLEL** to each other.

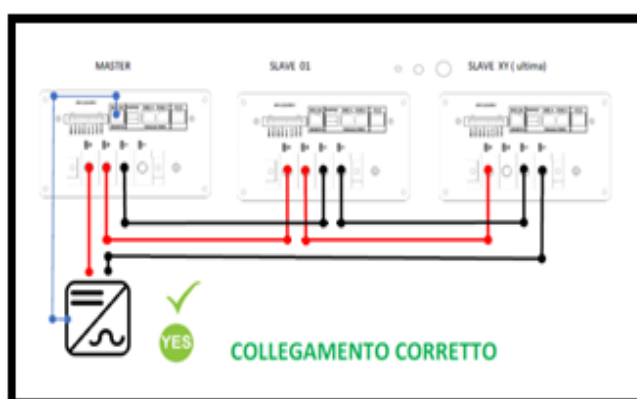
- **CAN-A** of **master battery** → **COM** Port of **inverter**
- **RS485-B** of **master battery** → **RS485-A** of **slave 1 battery**
- **RS485-B** of **slave 1 battery** → **RS485-A** of **slave 2 battery**
- ...
- **RS485-B** of **slave N-1 battery** (second last) → **RS485-A** of **slave N battery** (last)

Power connections between batteries and inverter:

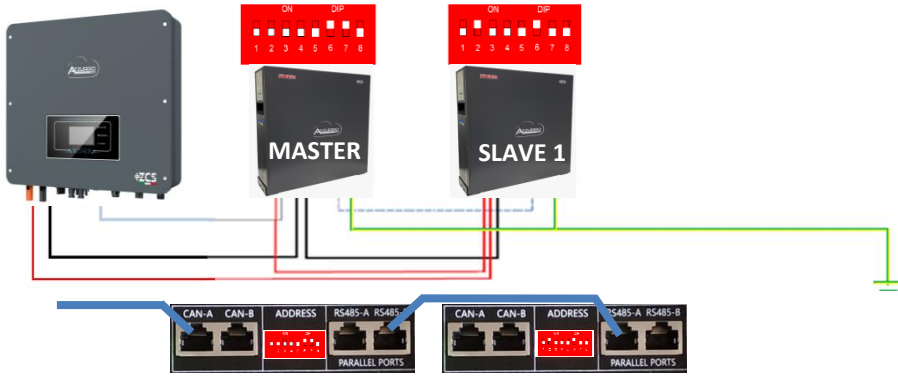
Batteries must be connected in a "loop."

- Positive input (+) of **master battery** connected to positive input (+) of **inverter**.
- Positive input (+) of **master battery** connected to positive input (+) of **slave 1 battery**.
- Negative input (-) of **master battery** connected to negative input (-) of **slave 1 battery**.
-
- Positive input (+) of **slave N-1 battery** (second-last) connected to positive input (+) of **slave N battery** (last).
- Negative input (-) of **slave N-1 battery** (second-last) connected to negative input (-) of **slave N battery** (last).
- Negative input (-) of **slave N battery** (second-last) connected to negative input (-) of **inverter**.

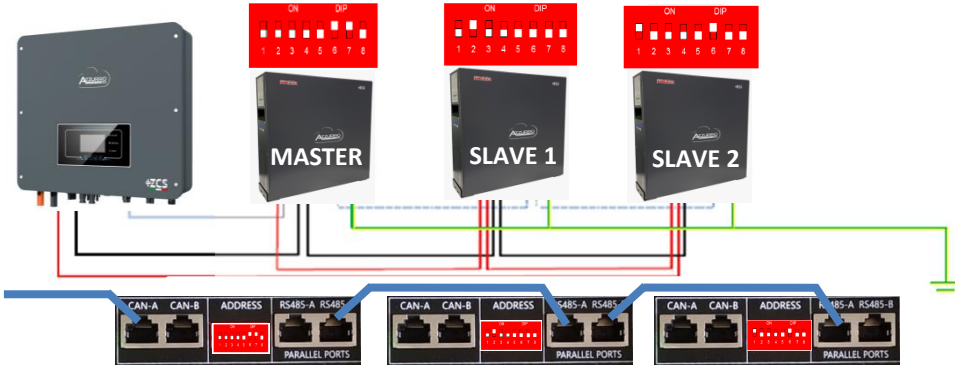
NOTE: When switched on for the first time, the WeCo batteries receive a command from the inverter to start regular operation only when all of them have collectively reached a state of full charge (i.e. a SOC level of 100%).



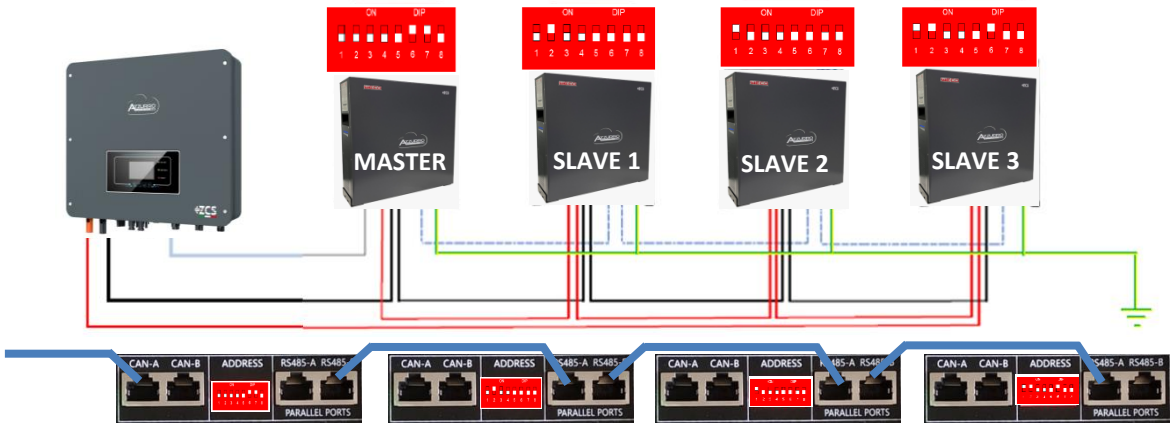
Connecting 2 batteries



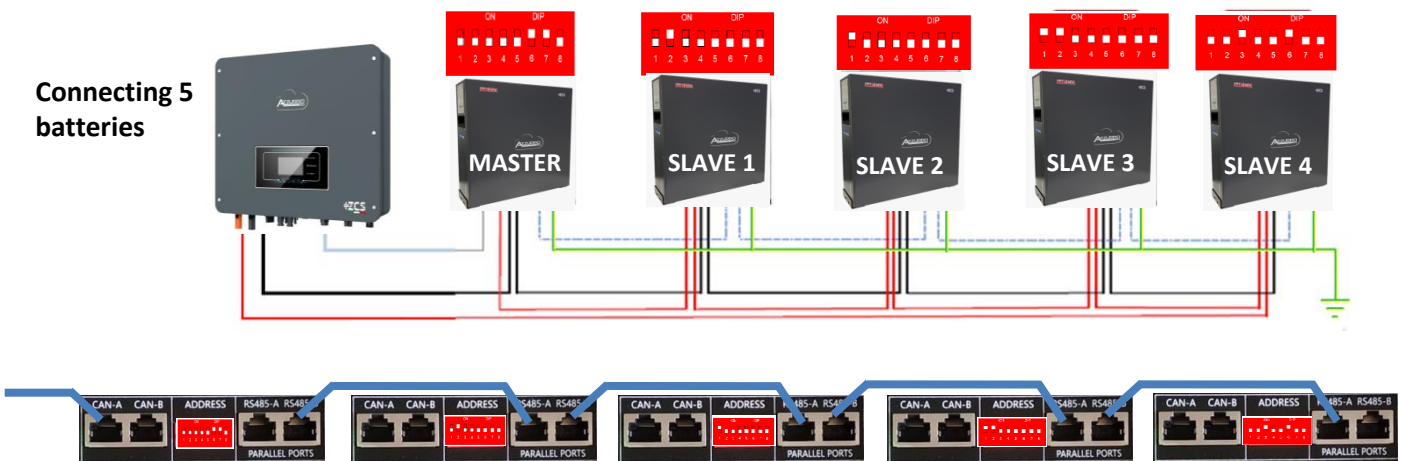
Connecting 3 batteries



Connecting 4 batteries



Connecting 5 batteries



Set the battery channels in the inverter.

To set the **battery parameters**:

Advanced settings → 0715 → Battery parameters:

- Type: WeCo; Depth of discharge: 80%.

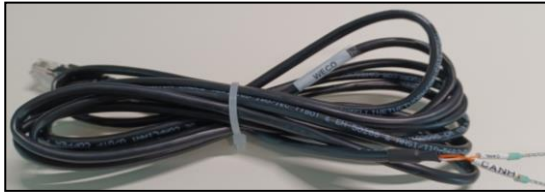
1.Battery type	WeCo
4.Depth of Discharge	80%
6.Save	

Maximum DoD programmable **90%**



DO NOT CHANGE DIP SWITCH POSITION WITH THE BATTERY ON!!

POWER RUN LOW BATTERY FAULT

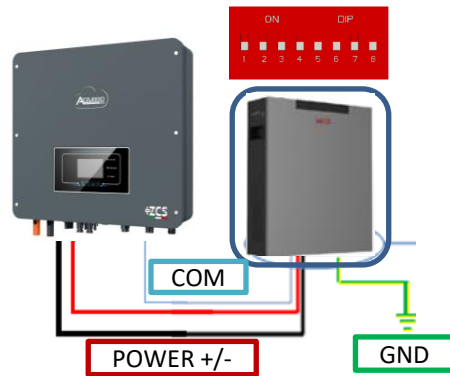


The communication cable is located inside the kit in the inverter box.

Communication cable pinout between WeCo battery and Inverter, from left to right	
<p><u>Inverter</u></p>	<p>PIN 1: CAN (White-Orange)</p> <p>PIN 2: CAN (Orange)</p>
<p><u>WeCo</u></p> <p>RJ45 Pinout T568B</p>	<p>PIN 1: White-Orange</p> <p>PIN 2: Orange</p> <p>PIN 3: White-Green</p> <p>PIN 4: Blue</p> <p>PIN 5: White-Blue</p> <p>PIN 6: Green</p> <p>PIN 7: White-Brown</p> <p>PIN 8: Brown</p>

Communication connections between batteries and inverter:

• CAN-A of Master Battery → COM Port of inverter



In case of a SINGLE BATTERY:

1. Connect the **CAN-A** input
2. Set the DIP Switches
3. The power connections must be made by attaching the appropriate B+ and B- connectors to the corresponding input (as shown in the figure).
4. Connect the ground cable to the battery through the threaded hole

In the event of **MULTIPLE BATTERIES**, connect the communication cable from the **COM** port of the inverter to the **CAN-A** port of the **MASTER** battery, after having defined the correct positioning of the **DIP Switches** (see following pages).

Communication connections between batteries and inverter:

Batteries are connected **IN PARALLEL** to each other.

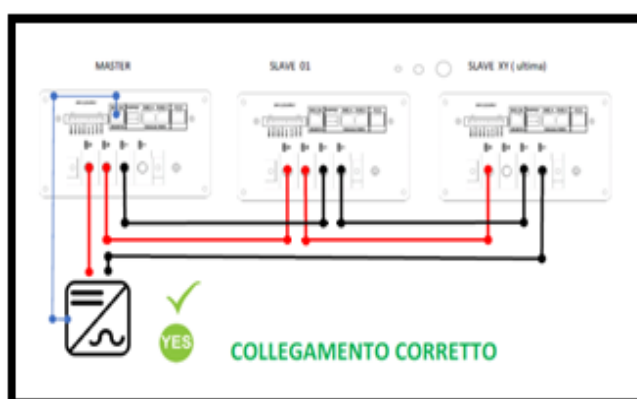
- **CAN-A** of **master battery** → **COM** Port of **inverter**
- **RS485-B** of **master battery** → **RS485-A** of **slave 1 battery**
- **RS485-B** of **slave 1 battery** → **RS485-A** of **slave 2 battery**
- ...
- **RS485-B** of **slave N-1 battery** (second last) → **RS485-A** of **slave N battery** (last)

Power connections between batteries and inverter:

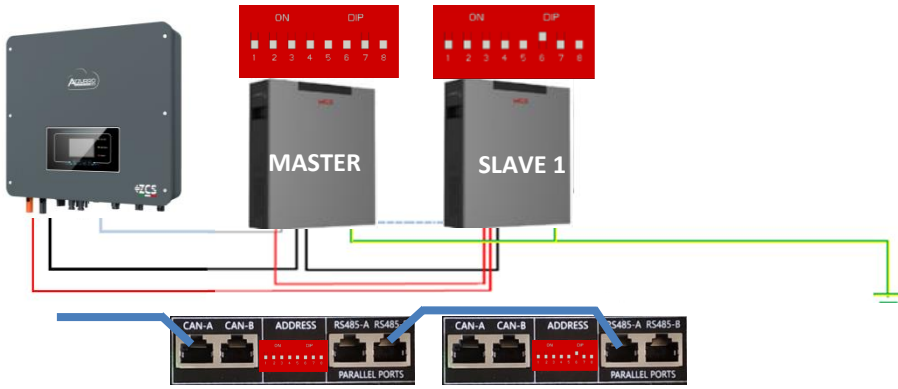
Batteries must be connected in a “loop.”

- Positive input (+) of **master battery** connected to positive input (+) of **inverter**.
- Positive input (+) of **master battery** connected to positive input (+) of **slave 1 battery**.
- Negative input (-) of **master battery** connected to negative input (-) of **slave 1 battery**.
-
- Positive input (+) of **slave N-1 battery** (second-last) connected to positive input (+) of **slave N battery** (last).
- Negative input (-) of **slave N-1 battery** (second-last) connected to negative input (-) of **slave N battery** (last).
- Negative input (-) of **slave N battery** (second-last) connected to negative input (-) of **inverter**.

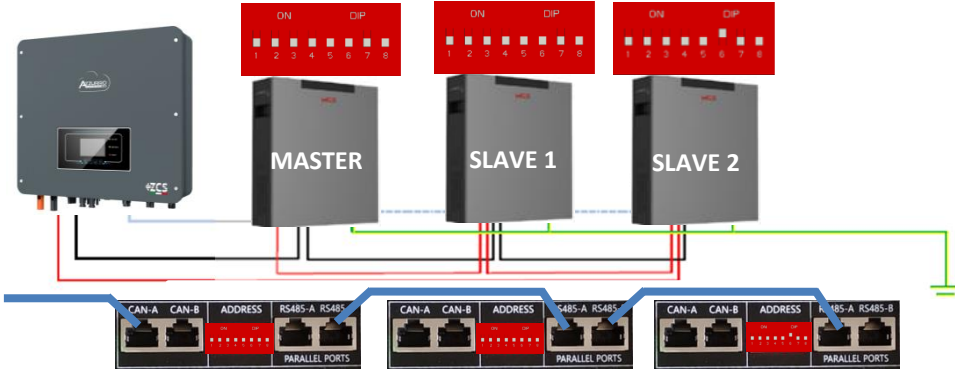
NOTE: When switched on for the first time, the WeCo batteries receive a command from the inverter to start regular operation only when all of them have collectively reached a state of full charge (i.e. a SOC level of 100%).



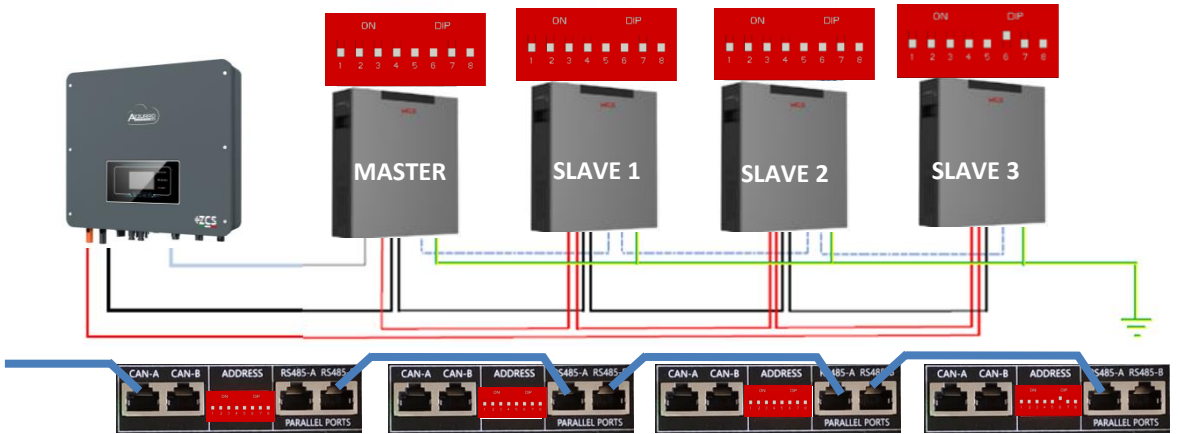
Connecting 2 batteries



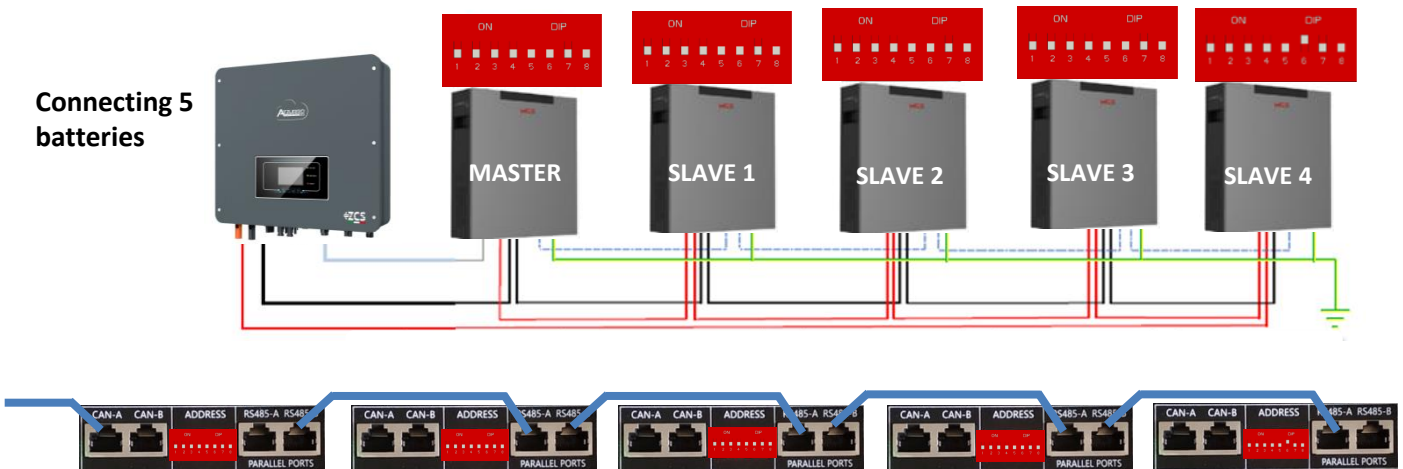
Connecting 3 batteries



Connecting 4 batteries



Connecting 5 batteries



In order to carry out the correct start-up procedure:

1. The batteries must all be switched off (side switch to 0);



2. Inverter DC rotary switch set to OFF;



3. Set all batteries, via the side switch, to 1 without switching them on (do not press the round metal button);



4. Switch on the **master battery ONLY** by pressing the button until the LED lights up;
5. The batteries will automatically switch on in succession (each module will switch on independently and the side switch will flash for 3 seconds; then a steady GREEN light will confirm that each module is switched on);

NOTE: During the commissioning phase, the installer must ensure that the communication between the master battery and the inverter is connected properly. Do not leave the system powered when there is no communication between the master battery and inverter, as prolonged standby of the system could cause an imbalance due to natural self-discharge.

Set the battery channels in the inverter.

To set the **battery parameters**:

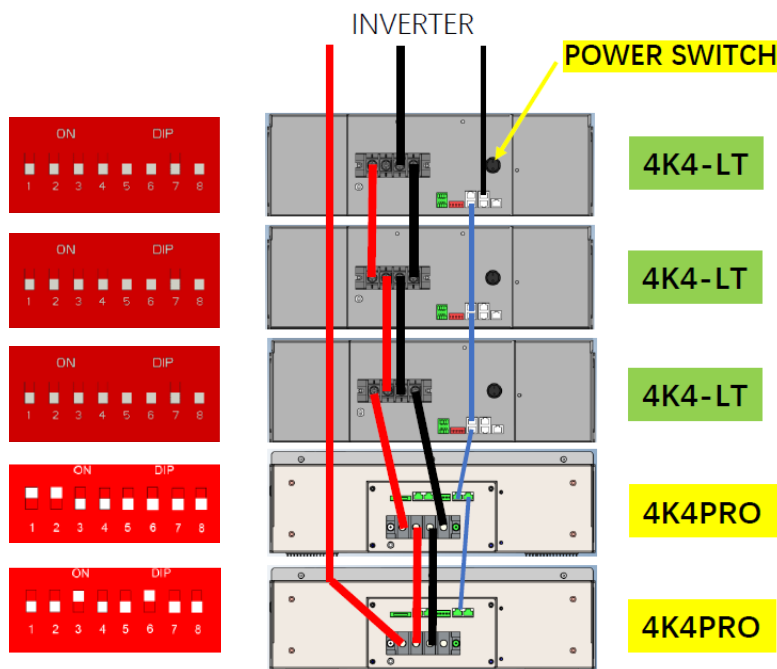
Advanced settings → 0715 → Battery parameters:

- Type: WeCo; Depth of discharge: 80%.

1.Battery type	WeCo
4.Depth of Discharge	80%
6.Save	

For a new system, we do not recommend installing a mixed solution with WeCo 4k4PRO and WeCo 4k4-LT batteries.

When using WeCo 4k4PRO and WeCo 4k4-LT batteries, the **WeCo 4k4-LT batteries must be installed first and then the 4k4PRO batteries** as shown in the figure.



Communication connections between batteries and inverter:

Batteries are connected IN PARALLEL to each other.

- CAN-A of master battery → COM Port of inverter
- RS485-B of master battery → RS485-A of slave 1 battery
- RS485-B of slave 1 battery → RS485-A of slave 2 battery
- ...
- RS485-B of slave N-1 battery (second last) → RS485-A of slave N battery (last)

Power connections between batteries and inverter:

Batteries must be connected in a "loop."

- Positive input (+) of master battery connected to positive input (+) of inverter.
- Positive input (+) of master battery connected to positive input (+) of slave 1 battery.
- Negative input (-) of master battery connected to negative input (-) of slave 1 battery.
-
- Positive input (+) of slave N-1 battery (second-last) connected to positive input (+) of slave N battery (last).
- Negative input (-) of slave N-1 battery (second-last) connected to negative input (-) of slave N battery (last).
- Negative input (-) of slave N battery (second-last) connected to negative input (-) of inverter.

NOTE: When switched on for the first time, the WeCo batteries receive a command from the inverter to start regular operation only when all of them have collectively reached a state of full charge (i.e. a SOC level of 100%).

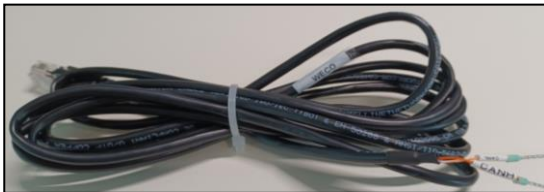
Maximum DoD programmable **90%**



DO NOT CHANGE DIP SWITCH POSITION WITH THE BATTERY ON!!

POWER RUN LOW BATTERY FAULT

ATTENTION! This battery is usually used for three-phase hybrid inverters (HYD 3PH). If used with this inverter the communication and power cables between the batteries must be ordered separately.



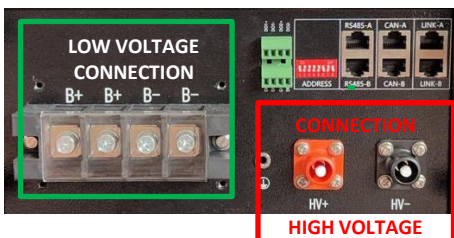
The communication cable is located inside the kit in the inverter box.

Communication cable pinout between WeCo battery and Inverter, from left to right	
<p><u>Inverter</u></p>	<p>PIN 1: CAN (White-Orange) PIN 2: CAN (Orange)</p>
<p><u>WeCo</u></p>	<p>PIN 1: White-Orange PIN 2: Orange PIN 3: White-Green PIN 4: Blue PIN 5: White-Blue PIN 6: Green PIN 7: White-Brown PIN 8: Brown</p>

Caution: When connecting 5k3 batteries to single-phase hybrid inverters (HYD 1PH), **only the LOW VOLTAGE section must be used.** To prevent damage to the batteries and/or inverters, do not use the high voltage section.

Communication connections between batteries and inverter:

• CAN-A of Master Battery → COM Port of inverter



In case of a SINGLE BATTERY:

1. Connect the **CAN-A** input
2. Set DIP Switches
3. Connect the power cables with the appropriate B+ and B- connectors to the corresponding input (as shown in the figure).
4. Connect the ground cable to the battery



In the event of **MULTIPLE BATTERIES**, connect the communication cable from the **COM** port of the inverter to the **CAN-A** port of the **MASTER** battery, after having defined the correct positioning of the **DIP Switches** (see following pages).

Communication connections between batteries and inverter:

Batteries are connected **IN PARALLEL** to each other.

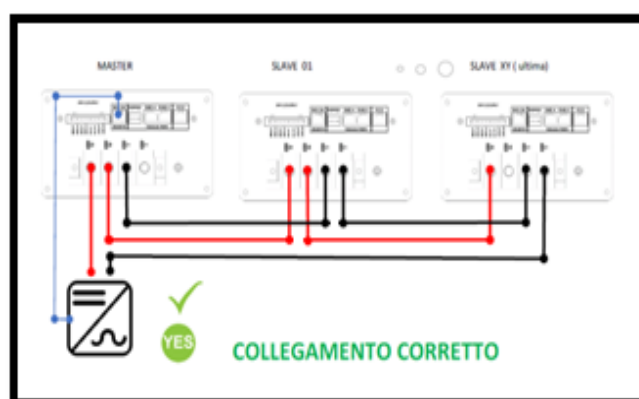
- **CAN-A** of **master battery** → **COM** Port of **inverter**
- **RS485-B** of **master battery** → **RS485-A** of **slave 1 battery**
- **RS485-B** of **slave 1 battery** → **RS485-A** of **slave 2 battery**
- ...
- **RS485-B** of **slave N-1 battery** (second last) → **RS485-A** of **slave N battery** (last)

Power connections between batteries and inverter:

Batteries must be connected in a "loop."

- Positive input (+) of **master battery** connected to positive input (+) of **inverter**.
- Positive input (+) of **master battery** connected to positive input (+) of **slave 1 battery**.
- Negative input (-) of **master battery** connected to negative input (-) of **slave 1 battery**.
-
- Positive input (+) of **slave N-1 battery** (second-last) connected to positive input (+) of **slave N battery** (last).
- Negative input (-) of **slave N-1 battery** (second-last) connected to negative input (-) of **slave N battery** (last).
- Negative input (-) of **slave N battery** (second-last) connected to negative input (-) of **inverter**.

NOTE: When switched on for the first time, the WeCo batteries receive a command from the inverter to start regular operation only when all of them have collectively reached a state of full charge (i.e. a SOC level of 100%).



Set the battery channels in the inverter.

To set the **battery parameters**:

Advanced settings → 0715 → Battery parameters:

- Type: WeCo; Depth of discharge: 80%.

1.Battery type	WeCo
4.Depth of Discharge	80%
6.Save	

Maximum DoD programmable 90%



DO NOT CHANGE DIP SWITCH POSITION WITH THE BATTERY ON!!

POWER RUN LOW BATTERY FAULT

ATTENTION! This battery is usually used for three-phase hybrid inverters (HYD 3PH). If used with this inverter the communication and power cables between the batteries must be ordered separately.



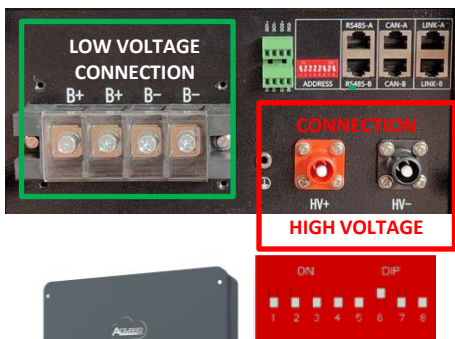
The communication cable is located inside the kit in the inverter box.

Communication cable pinout between WeCo battery and Inverter, from left to right	
<p><u>Inverter</u></p>	<p>PIN 1: CAN (White-Orange)</p> <p>PIN 2: CAN (Orange)</p>
<p><u>WeCo</u></p> <p>RJ45 Pinout T568B</p>	<p>PIN 1: White-Orange</p> <p>PIN 2: Orange</p> <p>PIN 3: White-Green</p> <p>PIN 4: Blue</p> <p>PIN 5: White-Blue</p> <p>PIN 6: Green</p> <p>PIN 7: White-Brown</p> <p>PIN 8: Brown</p>

Attention: When connecting 5k3XP batteries to single-phase hybrid inverters (HYD 1PH), **only the LOW VOLTAGE section must be used.** To prevent damage to the batteries and/or inverters, do not use the high voltage section.

Communication connections between batteries and inverter:

• CAN-A of Master Battery → COM Port of inverter



In case of a SINGLE BATTERY:

1. Connect the **CAN-A** input
2. Set DIP Switches
3. Connect the power cables with the appropriate B+ and B- connectors to the corresponding input (as shown in the figure).
4. Connect the ground cable to the battery



In case of **MULTIPLE BATTERIES**, connect the communication cable from the **COM** port of the inverter to the **CAN-A** port of the **MASTER** battery, after having defined the correct positioning of the **DIP Switches** (see following pages).

Communication connections between batteries and inverter:

Batteries are connected **IN PARALLEL** to each other.

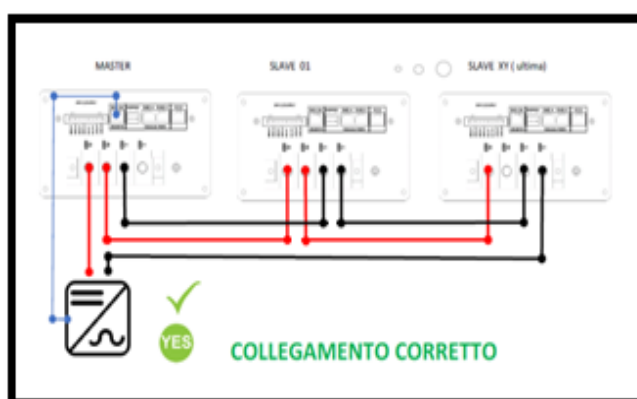
- **CAN-A** of **master battery** → **COM** Port of **inverter**
- **RS485-B** of **master battery** → **RS485-A** of **slave 1 battery**
- **RS485-B** of **slave 1 battery** → **RS485-A** of **slave 2 battery**
- ...
- **RS485-B** of **slave N-1 battery** (second last) → **RS485-A** of **slave N battery** (last)

Power connections between batteries and inverter:

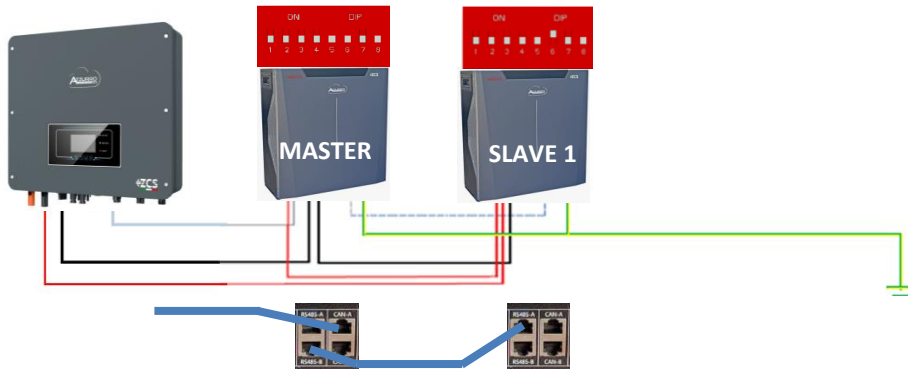
Batteries must be connected in a "loop."

- Positive input (+) of **master battery** connected to positive input (+) of **inverter**.
- Positive input (+) of **master battery** connected to positive input (+) of **slave 1 battery**.
- Negative input (-) of **master battery** connected to negative input (-) of **slave 1 battery**.
-
- Positive input (+) of **slave N-1 battery** (second-last) connected to positive input (+) of **slave N battery** (last).
- Negative input (-) of **slave N-1 battery** (second-last) connected to negative input (-) of **slave N battery** (last).
- Negative input (-) of **slave N battery** (second-last) connected to negative input (-) of **inverter**.

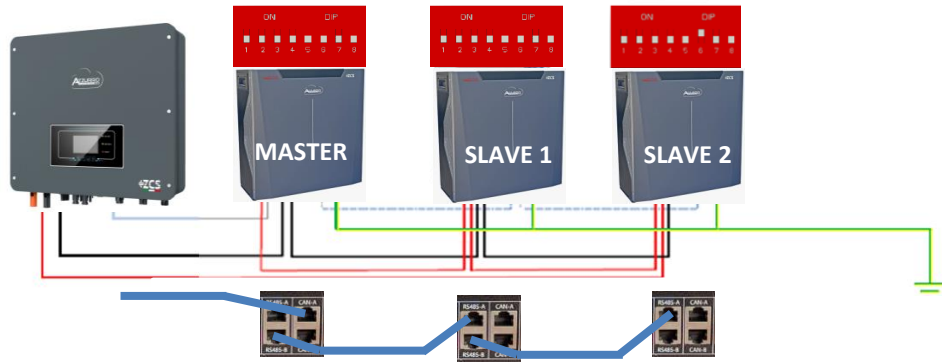
NOTE: When switched on for the first time, the WeCo batteries receive a command from the inverter to start regular operation only when all of them have collectively reached a state of full charge (i.e. a SOC level of 100%).



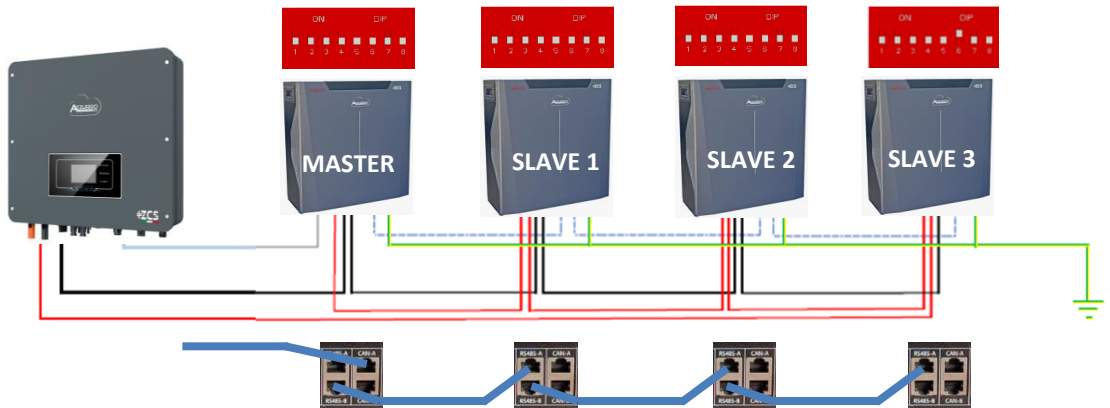
Connecting 2 batteries



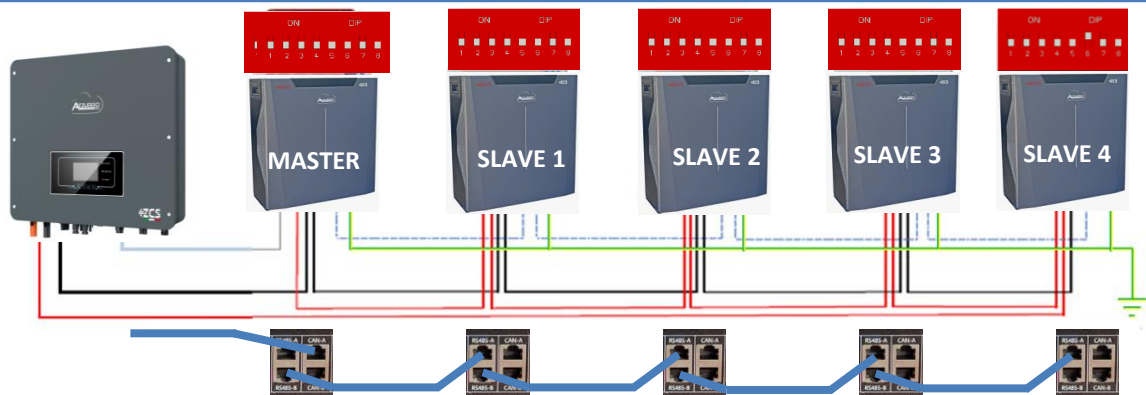
Connecting 3 batteries



Connecting 4 batteries



Connecting 5 batteries



Set the battery channels in the inverter.

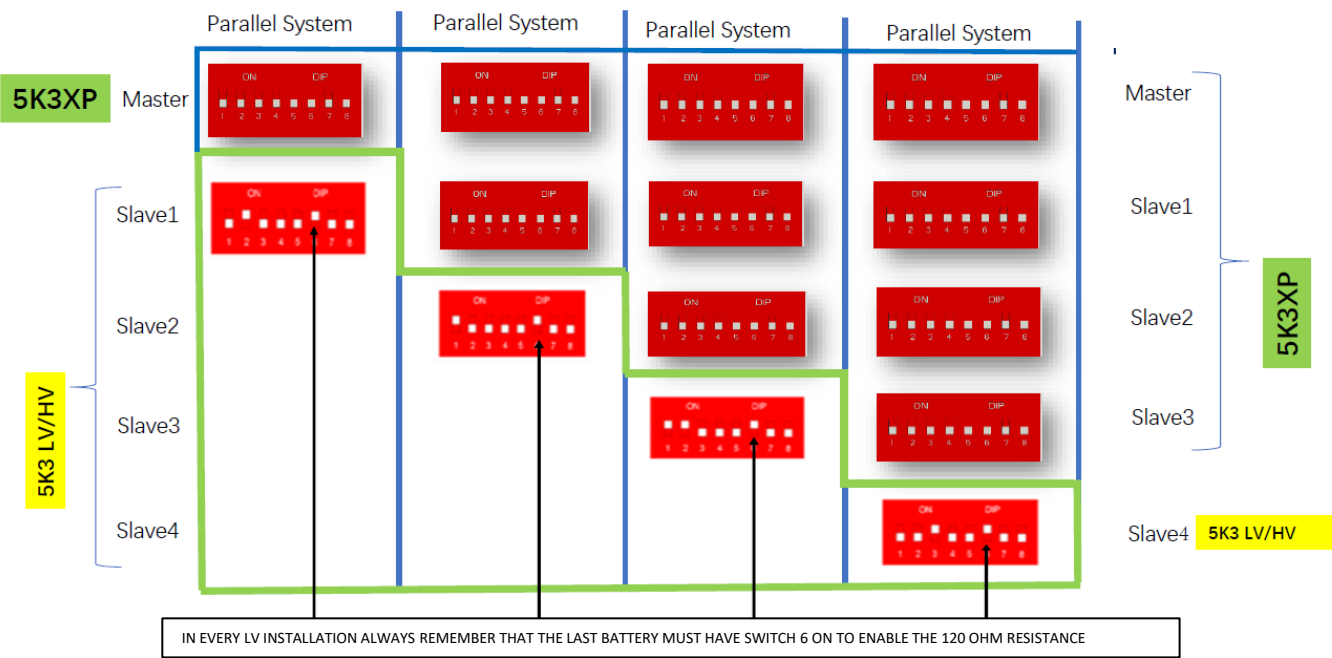
To set the **battery parameters**:

Advanced settings → 0715 → Battery parameters:

- Type: WeCo; Depth of discharge: 80%.

1.Battery type	WeCo
4.Depth of Discharge	80%
6.Save	

9.7 MIXED CONNECTION BETWEEN WECO 5K3 AND WECO 5K3XP BATTERIES

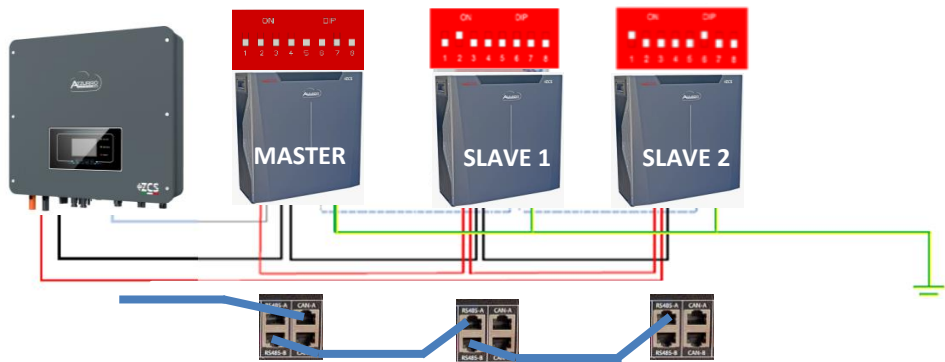


In case of 5K3XP and 5K3 in parallel:

- ✓ Always provide as master the 5K3XP battery (if they are more than one set them as first Slaves);
- ✓ The setting of the DIP switches of the last 5K3 battery must be set as indicated in the example table - Slave 4;
- ✓ The setting of the DIP switches of the last 5K3 battery must be set based on the number of additional Slaves with DIP 6 in ON as indicated in the example table.

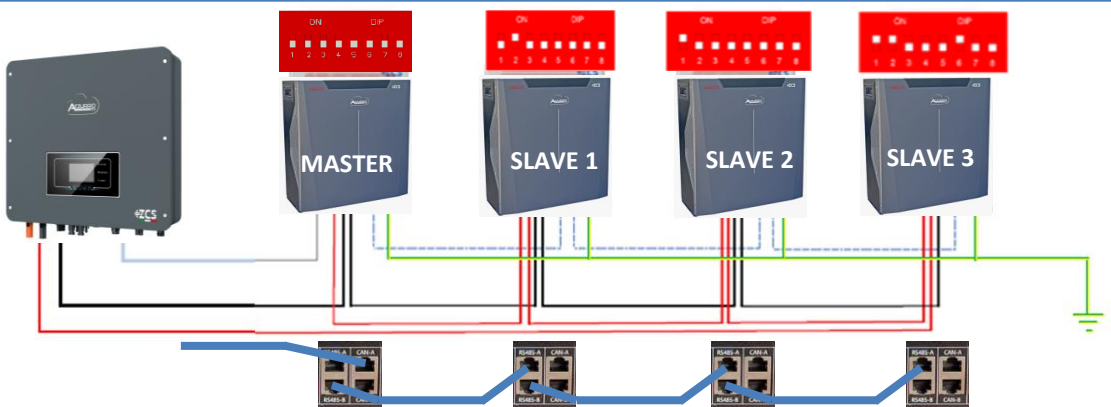
Connecting 3 batteries:

Master 5K3XP
Slave 1 5K3
Slave 2 5K3



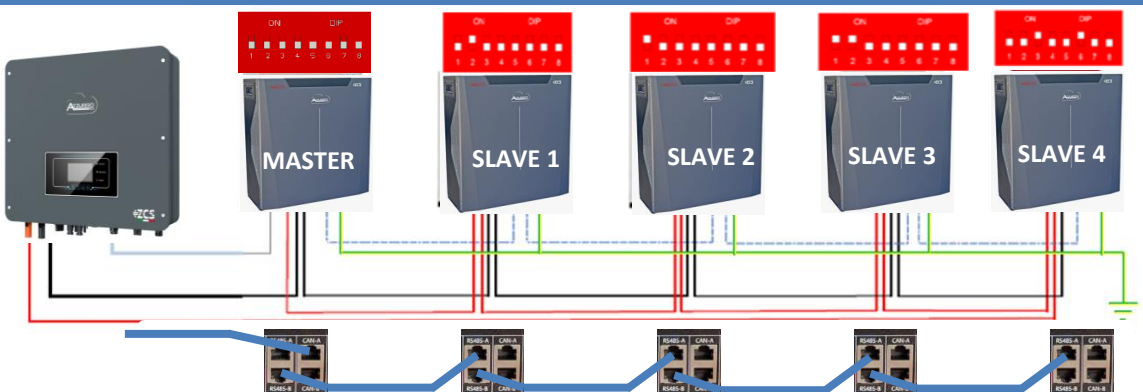
Connecting 4 batteries:

Master 5K3XP
Slave 1 5K3
Slave 2 5K3
Slave 3 5K3



Connecting 5 batteries:

Master 5K3XP
Slave 1 5K3
Slave 2 5K3
Slave 3 5K3
Slave 4 5K3



Maximum DoD programmable 90%



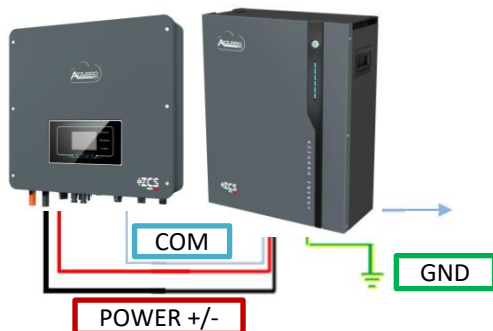
The communication cable is located inside the kit in the inverter box.

Communication cable pinout between Azzurro battery and Inverter, from left to right	
<p><u>Inverter</u></p>	<p>PIN 1: <u>CAN H (blue wire)</u> PIN 2: <u>CAN L (white-blue wire)</u></p>
<p><u>Azzurro</u></p>	<p>PIN 1: <u>White-Orange</u> PIN 2: <u>Orange</u> PIN 3: <u>White-Green</u> PIN 4: <u>Blue</u> PIN 5: <u>White-Blue</u> PIN 6: <u>Green</u> PIN 7: <u>White-Brown</u> PIN 8: <u>Brown</u></p>

Communication connections between batteries and inverter:

•CAN of Master Battery → COM Port of inverter

In case of multiple batteries connected in parallel or when adding new batteries to a system with batteries already installed, *make sure that the difference between the voltages of all the batteries is less than 0.5 Volt*. Each battery must be measured individually, so make sure the batteries are not connected to each other. Contact technical support if the voltage between the batteries is not aligned.



In case of a SINGLE BATTERY:

1. Connect the CAN input
2. Make the power connections by connecting the appropriate B+ and B- connectors to the corresponding input (as shown in the figure).
3. Connect the ground cable to the battery
4. Press the front part of the battery to switch it on.

NOTE: Both AZZURRO 5000 and AZZURRO 5000 PRO batteries can be connected to the same inverter.
 AZZURRO 5000 batteries and AZZURRO 5000 PRO batteries **CANNOT** be connected to **AZZURRO ZSX 5120** batteries.

In case of MULTIPLE BATTERIES, connect the communication cable from the **COM** port of the inverter to the **CAN-A** port of the MASTER battery.

Communication connections between batteries and inverter:

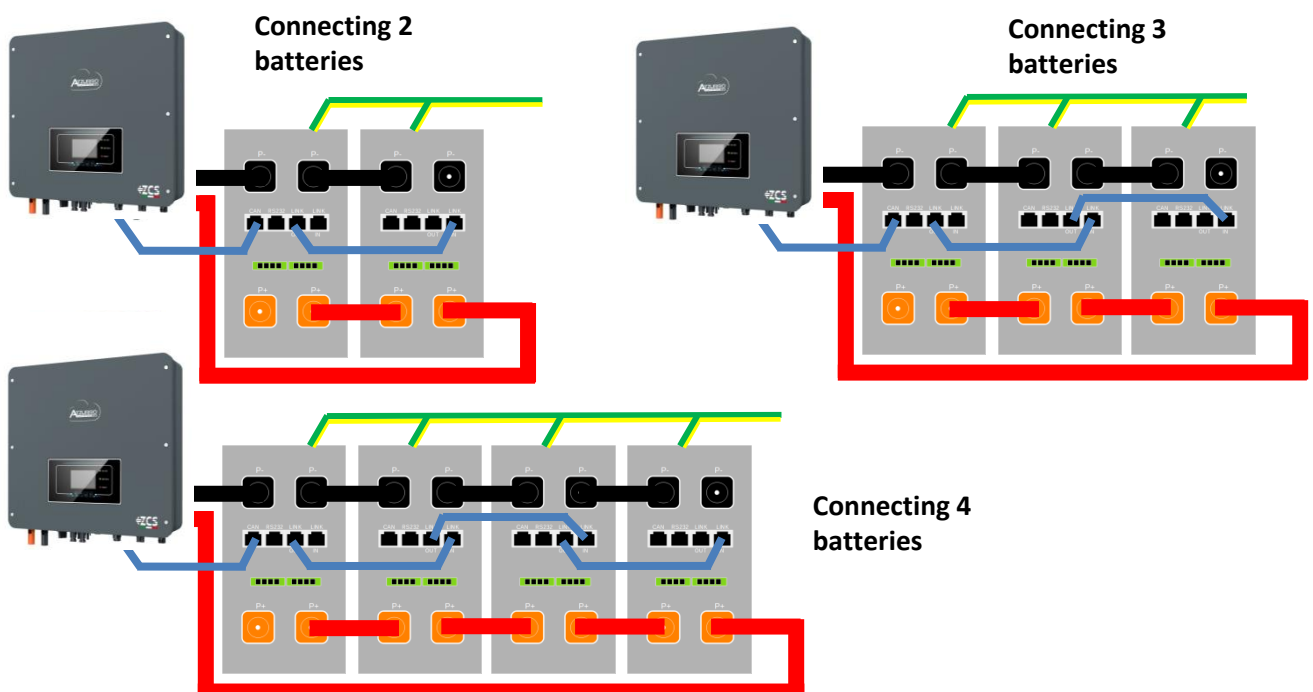
Batteries are connected **IN PARALLEL** to each other.

- CAN-A of master battery → COM Port of inverter
- LINK OUT of master battery → LINK IN of slave 1 battery
- LINK OUT of slave 1 battery → LINK IN of slave 2 battery
- ...
- LINK OUT of slave N-1 battery (second last) → LINK IN of slave N battery (last)

Power connections between batteries and inverter:

Batteries must be connected in a "loop."

- Positive input (+) of **master battery** connected to positive input (+) of **inverter**.
- Positive input (+) of **master battery** connected to positive input (+) of **slave 1 battery**.
- Negative input (-) of **master battery** connected to negative input (-) of **slave 1 battery**.
-
- Positive input (+) of **slave N-1 battery** (second-last) connected to positive input (+) of **slave N battery** (last).
- Negative input (-) of **slave N-1 battery** (second-last) connected to negative input (-) of **slave N battery** (last).
- Negative input (-) of **slave N battery** (second-last) connected to negative input (-) of **inverter**.



Set the battery channels in the inverter.

To set the **battery parameters**:

Advanced settings → 0715 → Battery parameters:

- Type: Azzurro; Depth of discharge: 80%.


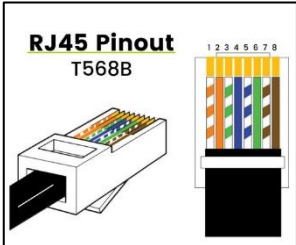
1.Battery type	AZZURRO
4.Depth of Discharge	80%
6.Save	

Maximum DoD programmable 90%



The communication cable is located inside the kit in the inverter box.

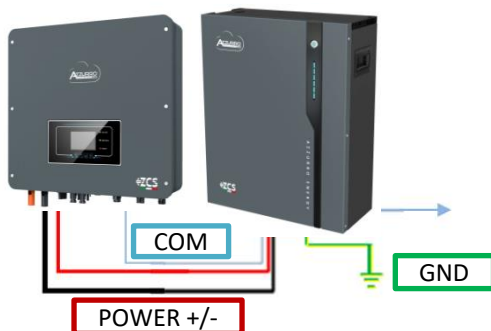
Communication cable pinout between Azzurro battery and Inverter, from left to right

Inverter	
	PIN 1: CAN H (blue wire) PIN 2: CAN L (white-blue wire)
Azzurro	
	PIN 1: White-Orange PIN 2: Orange PIN 3: White-Green PIN 4: Blue PIN 5: White-Blue PIN 6: Green PIN 7: White-Brown PIN 8: Brown

Communication connections between batteries and inverter:

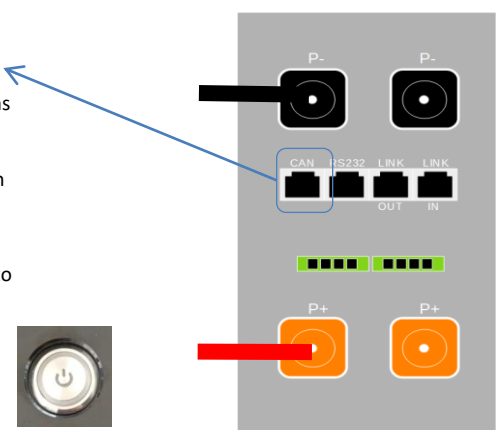
• CAN of Master Battery → COM Port of inverter

In case of multiple batteries connected in parallel or when adding new batteries to a system with batteries already installed, *make sure that the difference between the voltages of all the batteries is less than 0.5 Volt*. Each battery must be measured individually, so make sure the batteries are not connected to each other. Contact technical support if the voltage between the batteries is not aligned.



In case of a **SINGLE BATTERY**:

1. Connect the **CAN** input
2. Make the power connections by connecting the appropriate P+ and P- connectors to the corresponding input (as shown in the figure).
3. Connect the ground cable to the battery
4. Press the front part of the battery to switch it on.



NOTE: Both AZZURRO 5000 and AZZURRO 5000 PRO batteries can be connected to the same inverter.
 AZZURRO 5000 batteries and AZZURRO 5000 PRO batteries **CANNOT** be connected to **AZZURRO ZSX 5120** batteries.

In case of MULTIPLE BATTERIES, connect the communication cable from the **COM** port of the inverter to the **CAN-A** port of the MASTER battery.

Communication connections between batteries and inverter:

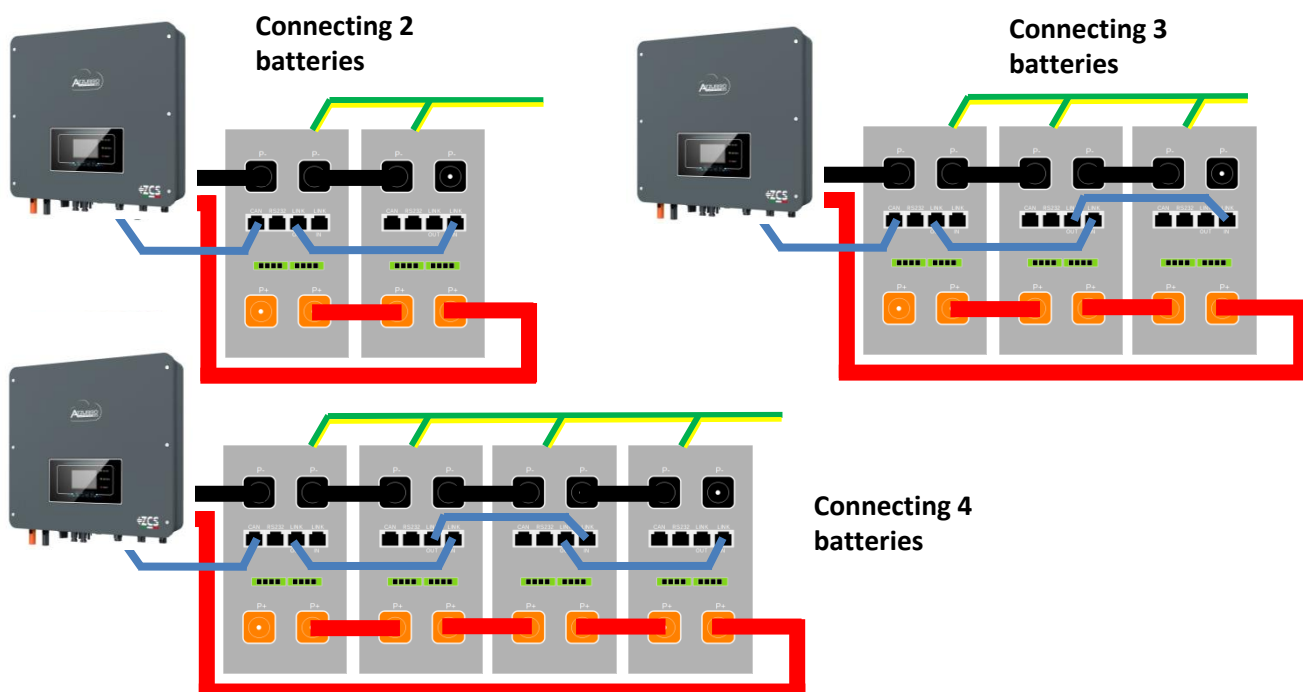
Batteries are connected **IN PARALLEL** to each other.

- CAN-A of master battery → COM Port of inverter
- LINK OUT of master battery → LINK IN of slave 1 battery
- LINK OUT of slave 1 battery → LINK IN of slave 2 battery
- ...
- LINK OUT of slave N-1 battery (second last) → LINK IN of slave N battery (last)

Power connections between batteries and inverter:

Batteries must be connected in a "loop."

- Positive input (+) of **master battery** connected to positive input (+) of **inverter**.
- Positive input (+) of **master battery** connected to positive input (+) of **slave 1 battery**.
- Negative input (-) of **master battery** connected to negative input (-) of **slave 1 battery**.
-
- Positive input (+) of **slave N-1 battery** (second-last) connected to positive input (+) of **slave N battery** (last).
- Negative input (-) of **slave N-1 battery** (second-last) connected to negative input (-) of **slave N battery** (last).
- Negative input (-) of **slave N battery** (second-last) connected to negative input (-) of **inverter**.



Set the battery channels in the inverter.

To set the **battery parameters**:

Advanced settings → 0715 → Battery parameters:

- Type: Azzurro; Depth of discharge: 80%.


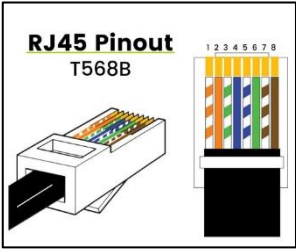
1.Battery type	AZZURRO
4.Depth of Discharge	80%
6.Save	

Maximum DoD programmable 90%



The communication cable is located inside the kit in the inverter box.

Communication cable pinout between Azzurro battery and Inverter, from left to right

Inverter	
	PIN 1: CAN H (blue wire) PIN 2: CAN L (white-blue wire)
Azzurro	
	PIN 1: White-Orange PIN 2: Orange PIN 3: White-Green PIN 4: Blue PIN 5: White-Blue PIN 6: Green PIN 7: White-Brown PIN 8: Brown

Communication connections between batteries and inverter:

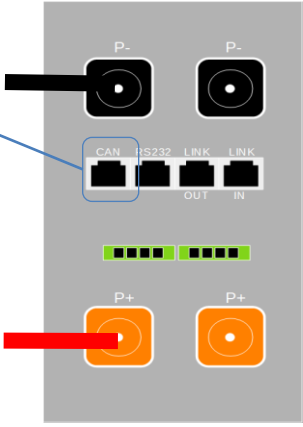
•CAN of Master Battery → COM Port of inverter

In case of multiple batteries connected in parallel or when adding new batteries to a system with batteries already installed, *make sure that the difference between the voltages of all the batteries is less than 0.5 Volt*. Each battery must be measured individually, so make sure the batteries are not connected to each other. Contact technical support if the voltage between the batteries is not aligned.



In case of a **SINGLE BATTERY**:

1. Connect the **CAN** input
2. Make the power connections by connecting the appropriate P+ and P- connectors to the corresponding input (as shown in the figure).
3. Connect the ground cable to the battery
4. Switch on the battery by flipping the switch on 1 and pressing the battery's button.



NOTE: Both AZZURRO 5000 and AZZURRO 5000 PRO batteries can be connected to the same inverter.
 AZZURRO 5000 batteries and AZZURRO 5000 PRO batteries **CANNOT** be connected to **AZZURRO ZSX 5120** batteries.

In case of MULTIPLE BATTERIES, connect the communication cable from the **COM** port of the inverter to the **CAN-A** port of the MASTER battery.

Communication connections between batteries and inverter:

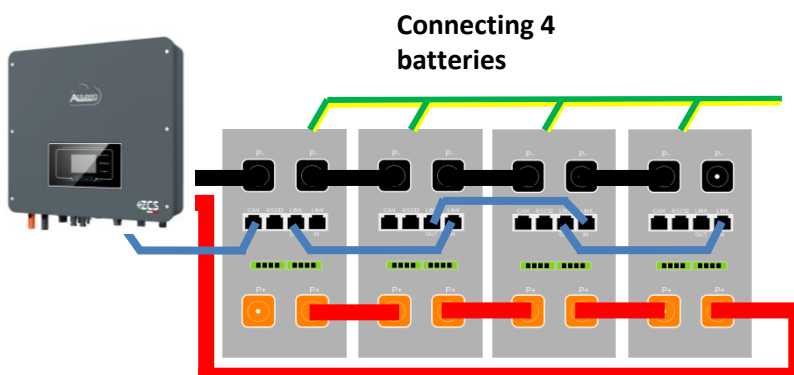
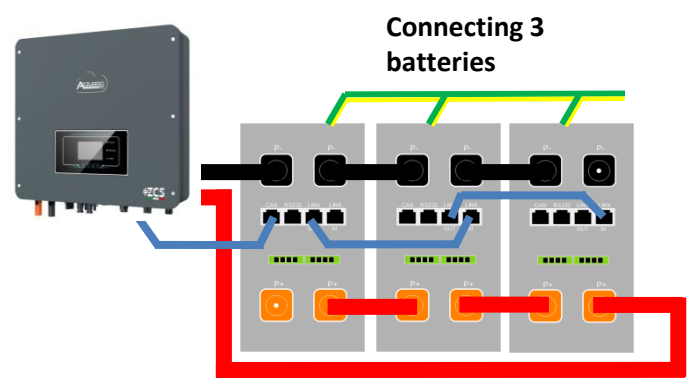
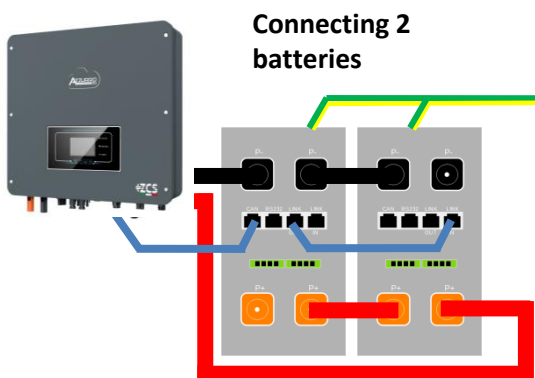
Batteries are connected **IN PARALLEL** to each other.

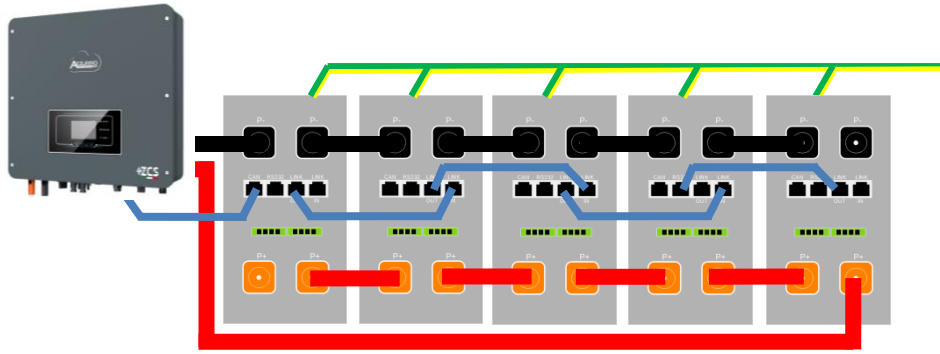
- CAN-A of master battery → COM Port of inverter
- LINK OUT of master battery → LINK IN of slave 1 battery
- LINK OUT of slave 1 battery → LINK IN of slave 2 battery
- ...
- LINK OUT of slave N-1 battery (second last) → LINK IN of slave N battery (last)

Power connections between batteries and inverter:

Batteries must be connected in a "loop."

- Positive input (+) of **master battery** connected to positive input (+) of **inverter**.
- Positive input (+) of **master battery** connected to positive input (+) of **slave 1 battery**.
- Negative input (-) of **master battery** connected to negative input (-) of **slave 1 battery**.
-
- Positive input (+) of **slave N-1 battery** (second-last) connected to positive input (+) of **slave N battery** (last).
- Negative input (-) of **slave N-1 battery** (second-last) connected to negative input (-) of **slave N battery** (last).
- Negative input (-) of **slave N battery** (second-last) connected to negative input (-) of **inverter**.





10.3.3 AZZURRO ZSX 5120 BATTERY SETTINGS ON INVERTER

Set the battery channels in the inverter.

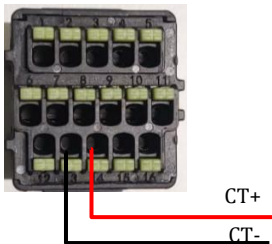
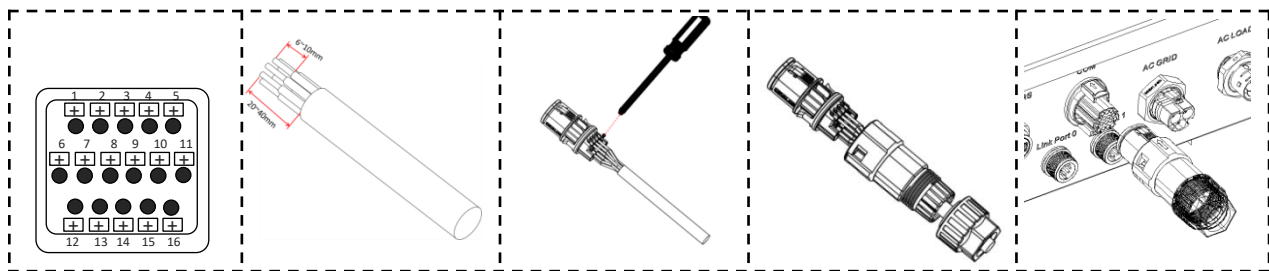
To set the **battery parameters**:

Advanced settings → 0715 → Battery parameters:

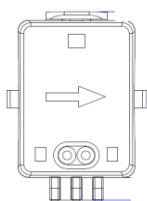
- Type: Azzurro; Depth of discharge: 80%.

1.Battery type	AZZURRO
4.Depth of Discharge	80%
6.Save	

11.1 MEASUREMENT OF EXCHANGE VIA CURRENT SENSOR



P1 → P2 Grid



PIN	Definition
13	CT- (black/yellow)
14	CT+ (red)



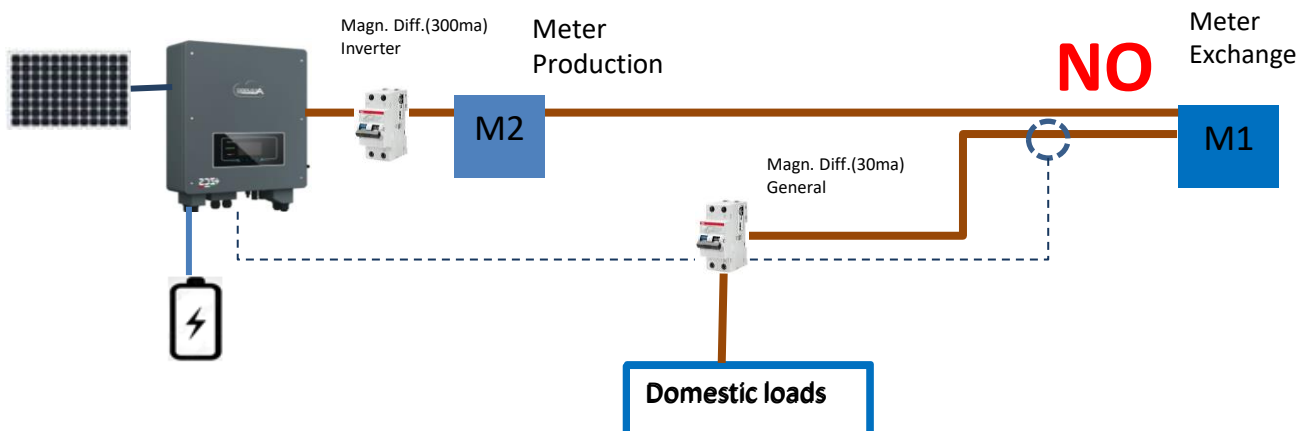
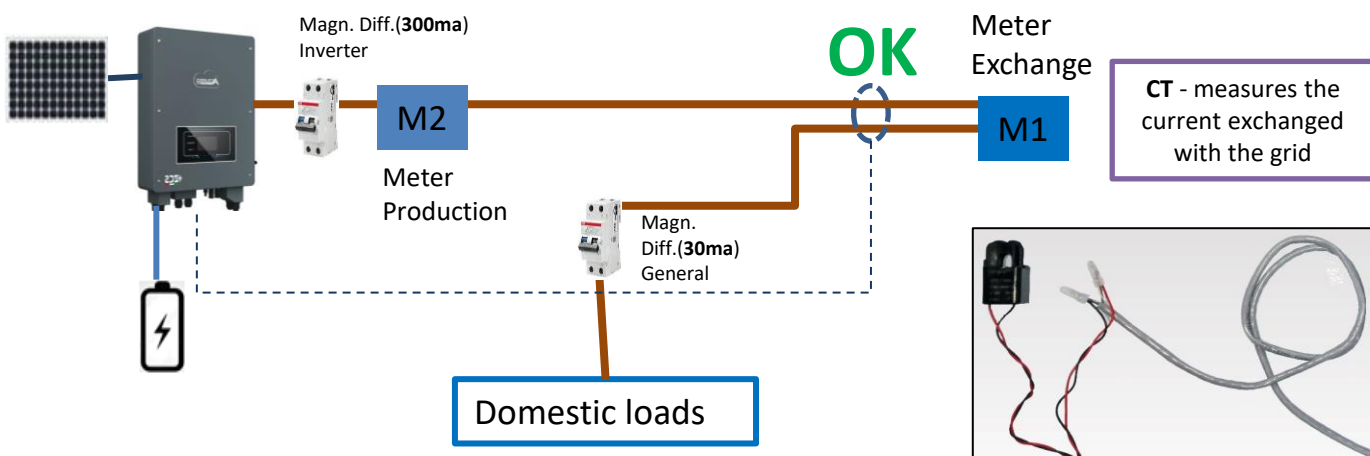
Use for distances of less than 50 metres between the inverter and CT

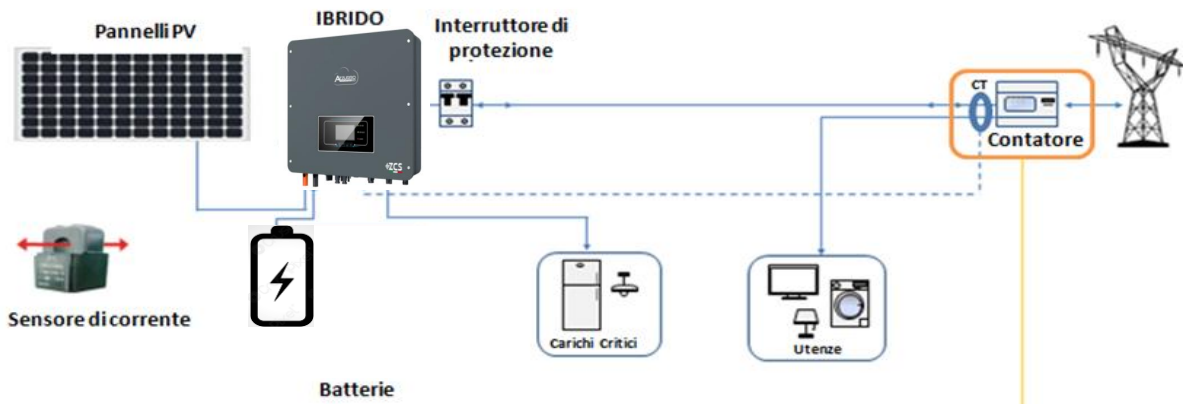
Connect negative and positive in the sensor respectively to inputs 13 and 14 of the COM connector

POSITIONING OF CT SENSOR:

- ✓ Positioned at the output of the import/export meter so that all incoming and outgoing power flows can be read, it must include all phase cables entering or leaving the meter.
- ✓ The direction of the CT is independent of the installation, and is recognised by the system during the first start-up.

Use an 8-pin, category 6 **STP** cable as an **EXTENSION CABLE**; use all the coloured pins (blue-orange-green-brown) to extend the positive cable of the CT and all the white/coloured pins (white/blue-white/orange-white/green/brown) to extend the negative cable of the CT. The shield must be grounded on one of the two sides.





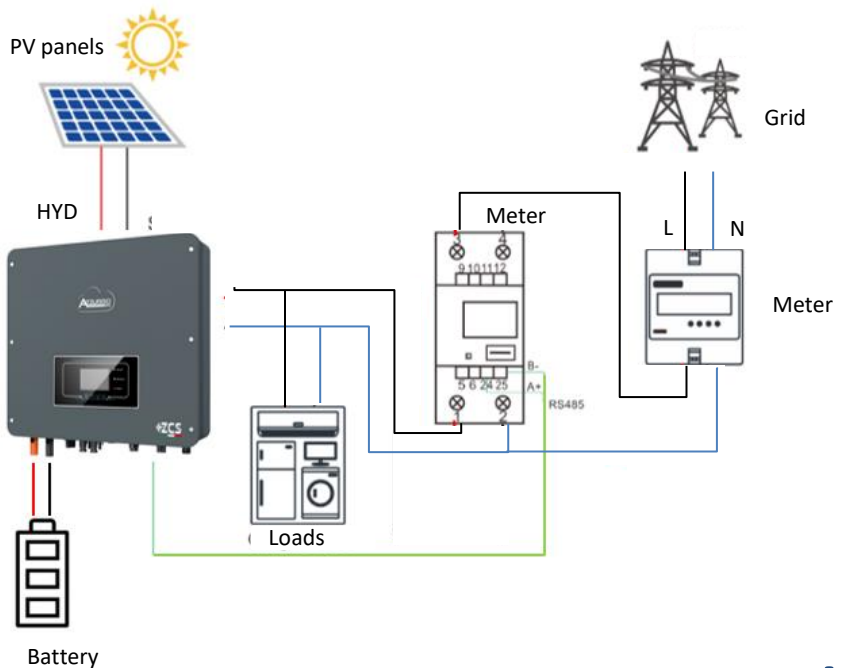
The sensor must include all phase cables entering or leaving the meter.



11.2 MEASUREMENT OF EXCHANGE VIA METER DDSU



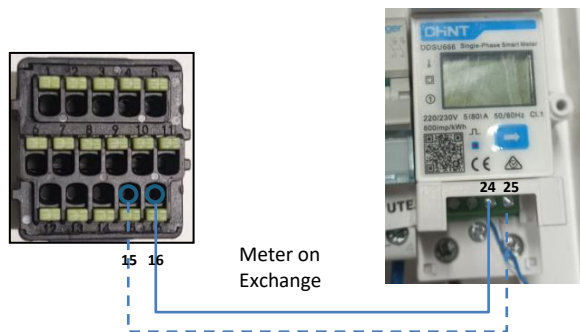
PIN INVERTER	PIN METER	Note
16	→ 24	Communication of the Exchange Meter
15	→ 25	



Meter DDSU connections

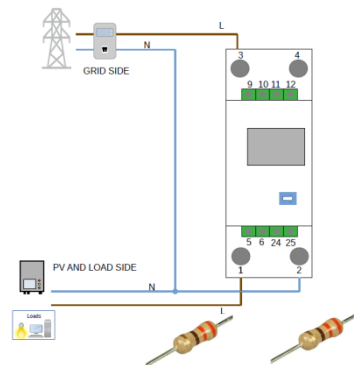
1. Connect Meter and inverter via the RS485 serial port.
On the Meter side, this port is identified by **PINs 24 and 25**.

On the inverter side, use the connection port identified as “COM” by connecting **PINs 16 and 15**.



2. Connect the Meter in “direct connection” mode, specifically:

- ✓ Connect PIN 2 of the Meter to the neutral cable (N);
- ✓ Connect PIN 3 respectively to the Exchange meter direction phase;
- ✓ Connect PIN 1 to the photovoltaic system and loads direction phase.



NOTE: For **distances** between the meter and hybrid inverter of **more than 100 metres**, it is recommended to connect two 120 Ohm resistors along the 485 daisy chain: the first to the inverter (between PIN 15 and 16 of the inverter COM), the second directly to the meter (PINs 24 and 25).

11.3 METER DDSU SETTING ON EXCHANGE AND INVERTER

1. Press the button to check that the Meter address is set to **001**.
In addition to what is described above, the display shows the values of:

- ✓ Current;
- ✓ Voltage;
- ✓ Power factor;
- ✓ Power.



Address



Current



Power



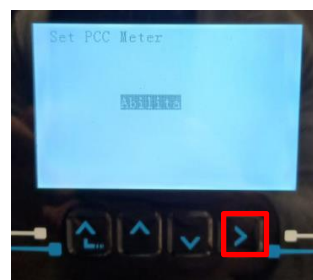
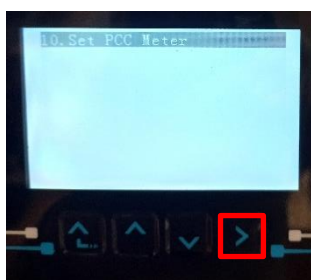
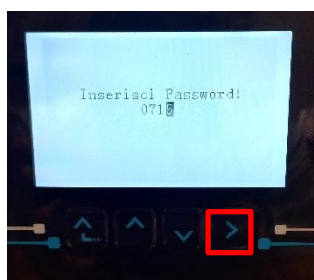
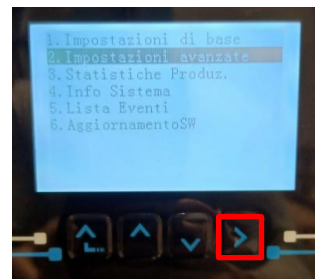
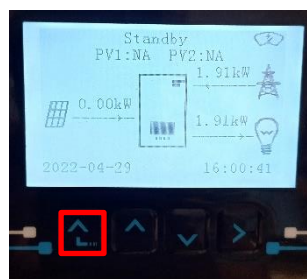
Voltage

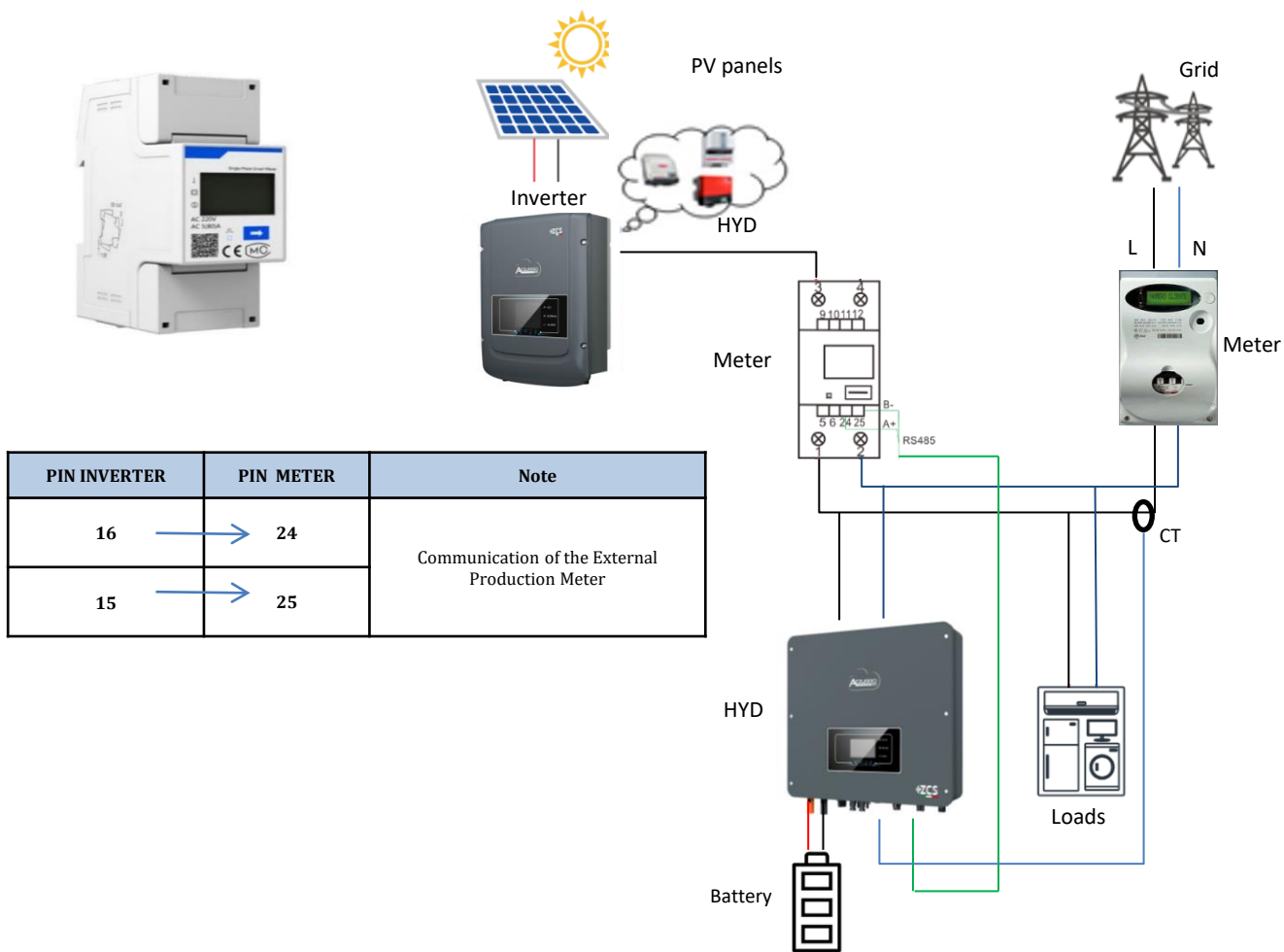


Power Factor

2. To configure the Meter reading on the inverter, access the inverter display (as shown in the figure):

1. First button on the left of the inverter;
2. Advanced settings;
3. Enter password “0715”;
4. 10. Set PCC Meter;
5. Enable;
6. Ok.



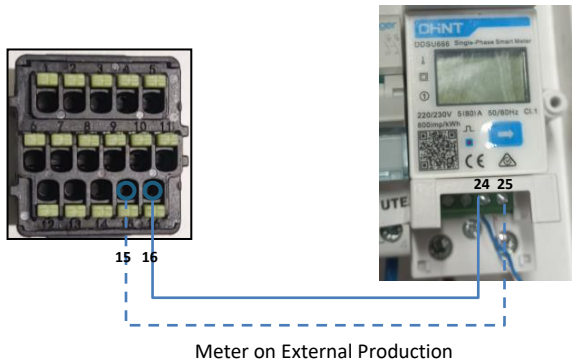


Meter DDSU connections

1. Connect Meter and inverter via the RS485 serial port.

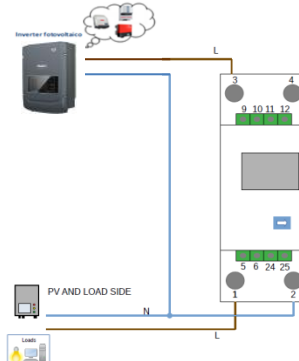
On the Meter side, this port is identified by **PINs 24 and 25**.

On the inverter side, use the COM port by connecting **PINs 16 and 15**




2. Connect the Meter in “direct connection” mode, specifically:

- ✓ Connect PIN 2 of the Meter to the neutral cable (N);
- ✓ Connect PIN 3 respectively to the external production direction phase;
- ✓ Connect PIN 1 to the new photovoltaic system and loads direction phase.



NOTE: For **distances** between the Meter and hybrid inverter **greater than 100 meters**, it is recommended to connect two 120 Ohm resistors along the 485 daisy chain: the first to the inverter (between PINs 15 and 16 of the Ohm inverter COM), and the second directly to the Meter (PINs 24 and 25).

11.5 METER DDSU SETTING ON EXTERNAL PRODUCTION

1.1 Press the button  to check that the Meter address is set to **002**.

In addition to what is described above, the display shows the values of:

- ✓ Current;
- ✓ Voltage;
- ✓ Power factor;
- ✓ Power.



Address



Current



Power




Voltage



Power Factor


1.2 Production meter address setting:

Press and hold for 5 sec  to enter settings menu



The protocol type and the modbus address will alternate

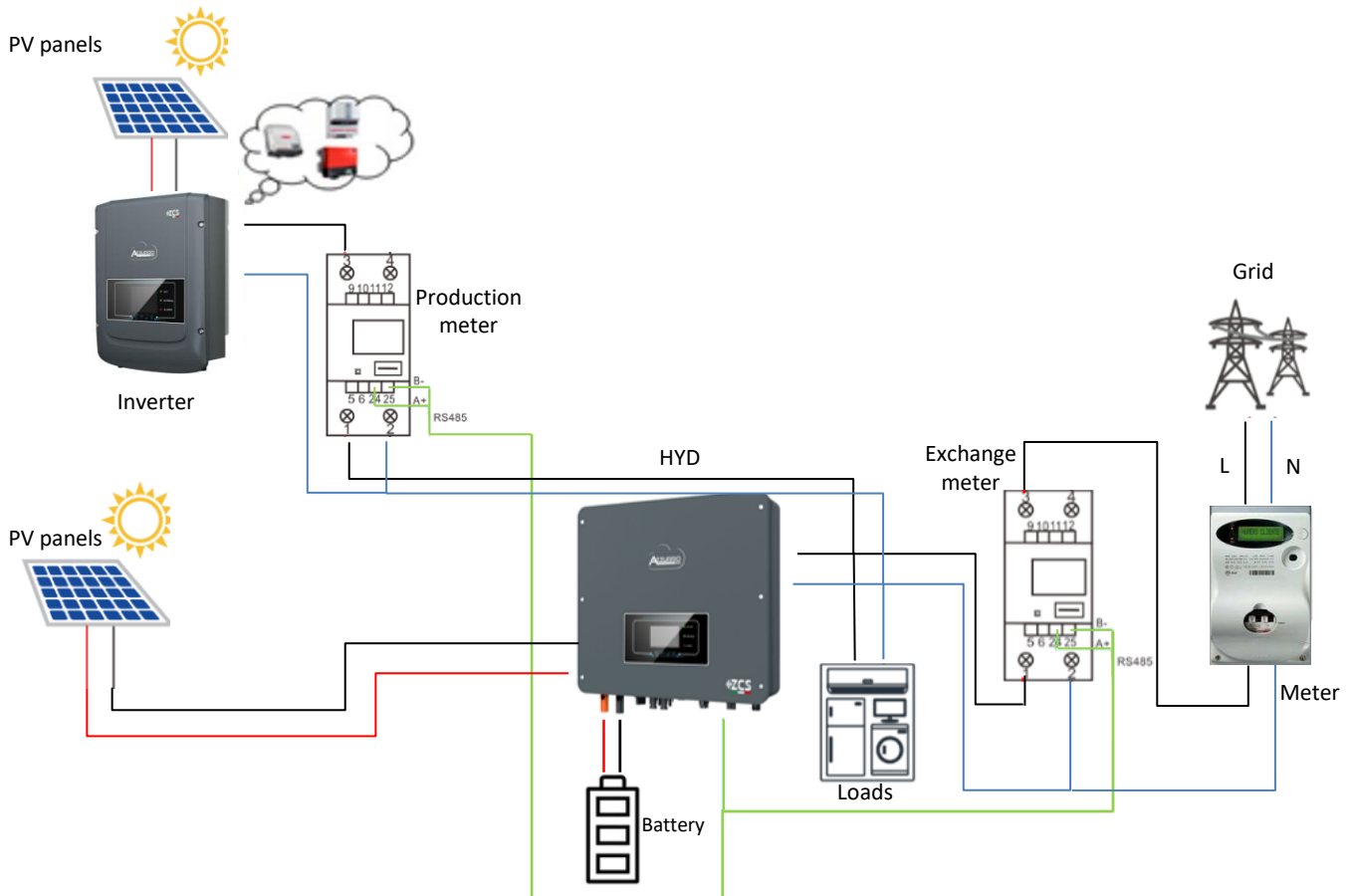


As soon as the screen with the modbus address number appears, press the arrow  to increase the number



2. No configurations are required on the inverter for the external production meter setting.


11.6 EXCHANGE METER DDSU AND PRODUCTION METER CONFIGURATION



11.7 CHECKING CORRECT READING OF METER DDSU

In order to verify the correct reading of the **meter on exchange**, make sure that the hybrid inverter and any other PV production sources are switched off.

Switch on loads greater than 1 kW.

Stand in front of the meter and use the  keys to scroll through the items, making sure that:

Power P is:

- Greater than 1 kW.
- In line with home consumption.
- The sign in front of each negative value (-).

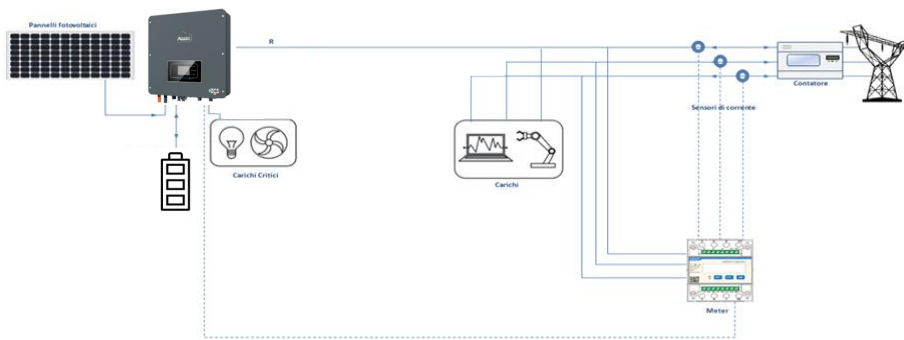


In the case of a **meter for reading the production of existing photovoltaic systems**, repeat the previous steps:

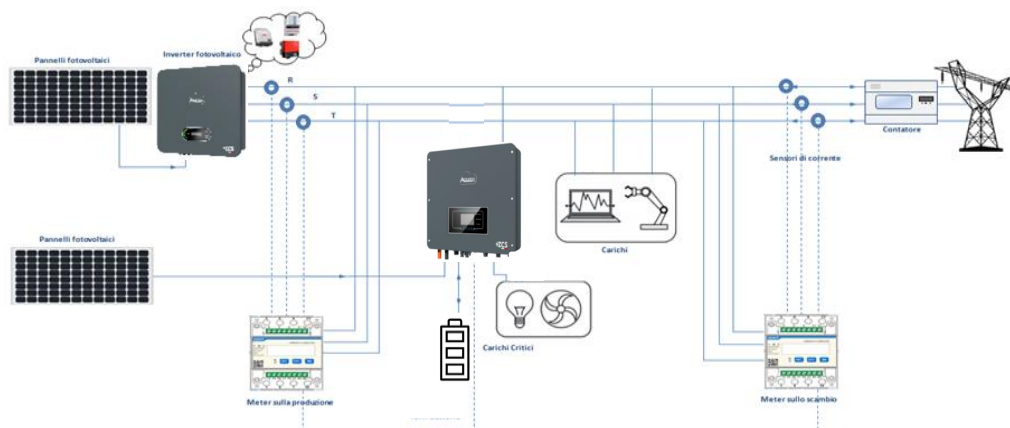
1. This time the sign of the powers must be positive for P.
2. Switch on the Hybrid Inverter, leaving the DC-side PV switch in the OFF position, check that the total external PV power value (Pt) is in line with the value shown on the inverter's display.

11.8 METER DTSU READING

Single-line diagram of hybrid inverter with meter reading mode on exchange only

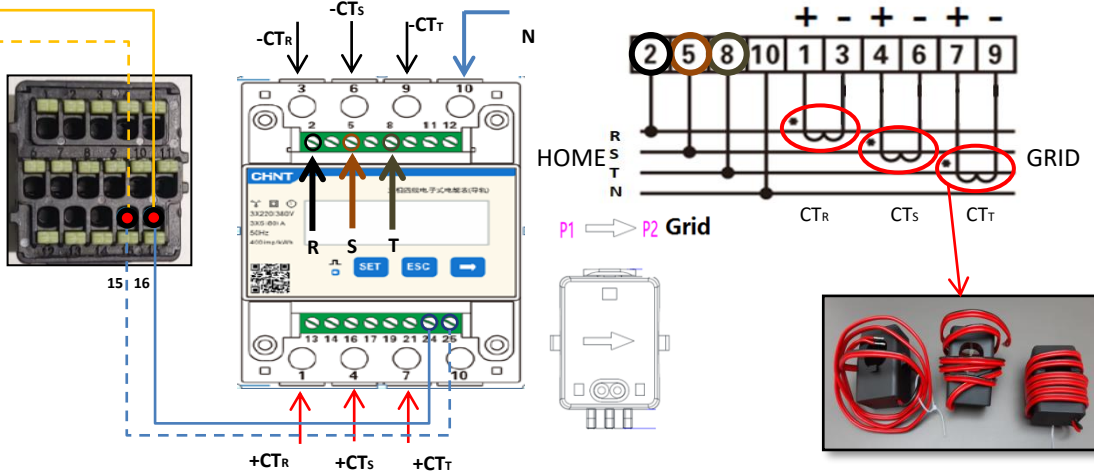


Single-line diagram of hybrid inverter with meter reading mode on exchange and external production



Meter DTSU connections – with COM port

Meter on production



1. Connect Meter and inverter via the RS485 serial port. On the Meter side, this port is identified by **PINS 24 and 25**. On the inverter side, use the connection port identified as "COM" by connecting **PINS 15 and 16**.

2. Connect PIN 10 of the Meter to the neutral wire (N), connect PINS 2, 5 and 8 to phases R, S and T respectively. CT connections, the terminals of the sensor positioned on **phase R** must be connected to **PIN 1 (red wire)** and **PIN 3 (black wire)**. The terminals of the sensor positioned on **phase S** must be connected to **PIN 4 (red wire)** and **PIN 6 (black wire)**. The terminals of the sensor positioned on **phase T** must be connected to **PIN 7 (red wire)** and **PIN 9 (black wire)**. Position the sensors, paying attention to the direction on the sensor itself (arrow pointing towards the grid). **ATTENTION:** hook the CT sensors to the phases only after connecting them to the Meter.



NOTE: For **distances** between the meter and hybrid inverter of **more than 100 metres**, it is recommended to connect two 120 OhM resistors along the 485 daisy chain: the first to the inverter (between PIN 5 and PIN 6 of the inverter COM), the second directly to the meter (PIN 24 and PIN 25).



PIN INVERTER	PIN METER	Note
16	24	Meter Communication
15	25	

METER DTSU SETTING ON EXCHANGE AND INVERTER

1. Check by pressing the button that the Meter address is set to 001. In addition to what is described above, the following values can be viewed from the display:
 - ✓ Current;
 - ✓ Voltage;
 - ✓ Power factor;
 - ✓ Power.
2. To configure the Meter reading on the inverter, access the inverter display (as in the figures):
 1. First key on the left of the inverter;
 2. Advanced settings;
 3. Enter password «0715»;
 4. 10.Set PCC Meter;
 5. Confirm;
 6. Ok.

11.9 METER DTSU SETTING

To configure the device in read mode on the exchange, enter the settings menu as shown below:

- Press **SET** and the word **CODE** will appear
- Press **SET** again
- Enter the number "701":
 1. From the first screen where the number "600" will appear, press the "→" key once to write the number "601".
 2. Press **SET** twice to move the cursor left, highlighting "601";
 3. Press the "→" key once more to write the number "701"

Note: In case of error, press "ESC" and then "SET" again to reset the required code.



- Confirm by pressing **SET** and to enter the settings menu.
- Enter the following menus and set the parameters indicated:

1. **CT:**
 - a. Press **SET** to enter the menu
 - b. Write "40":
 - a. From the first screen where the number "1" appears, press the "→" key repeatedly until the number "10" is written.
 - b. Press **SET** once to move the cursor left, highlighting "10"
 - c. Press the "→" key repeatedly until the number "40" is written.
 - d. Press "ESC" to confirm and "→" to scroll to the next setting.



Note: In case of CT sensors other than those supplied, enter the correct transformation ratio.

Note: In case of error, press "SET" until the thousand digit is highlighted and then press "→" until only the number "1" is displayed; at this point, repeat the above procedure.

2. **ADDRESS:**
 - a. Press **SET** to enter the menu:
 - b. Leave "01" for Meter on exchange
 - c. Write "02" (by pressing "→" once from screen "01"). With address 02, the inverter assigns the data sent by the meter as production power. A maximum of 3 meters can be set for the production (Addresses 02, 03 and 04)



Meter on Exchange



Meter on Production

- d. Press "ESC" to confirm.

11.10 CHECKING THE CORRECT READING OF THE METER DTSU

In order to verify the correct reading of the **meter on exchange**, make sure that the hybrid inverter and any other PV production sources are switched off. Switch on loads greater than 1 kW for each of the three phases of the system. Stand in front of the meter and use the "→" keys to scroll through the items, and "ESC" to go back, checking that:

1. The Power Factor values for each phase Fa, Fb and Fc (phase shift between voltage and current) are between 0.8-1.0. If the value is lower, move the sensor to one of the other two phases until the value is between 0.8-1.0.



2. The Pa, Pb and Pc Powers are:
 - Greater than 1 kW.
 - In line with the home consumption.
 - The sign in front of each value is negative (-).
 In the case of a positive sign, reverse the direction of the toroidal winding in question.

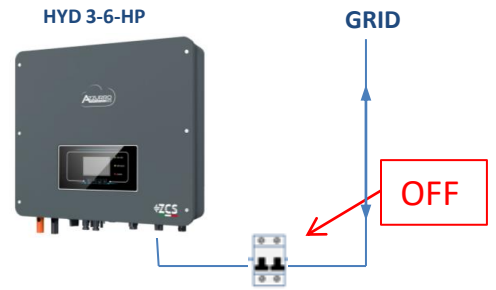


In the case of a **meter for reading the production of existing photovoltaic systems**, repeat the previous steps :

1. Check the Power Factor as described in the previous case.
2. This time the sign of the powers must be positive for Pa, Pb, and Pc
3. Switch on the Hybrid Inverter, check that the total PV power value (Pt) is in line with the value shown on the inverter's display.

12. INITIAL SET UP PROCEDURE

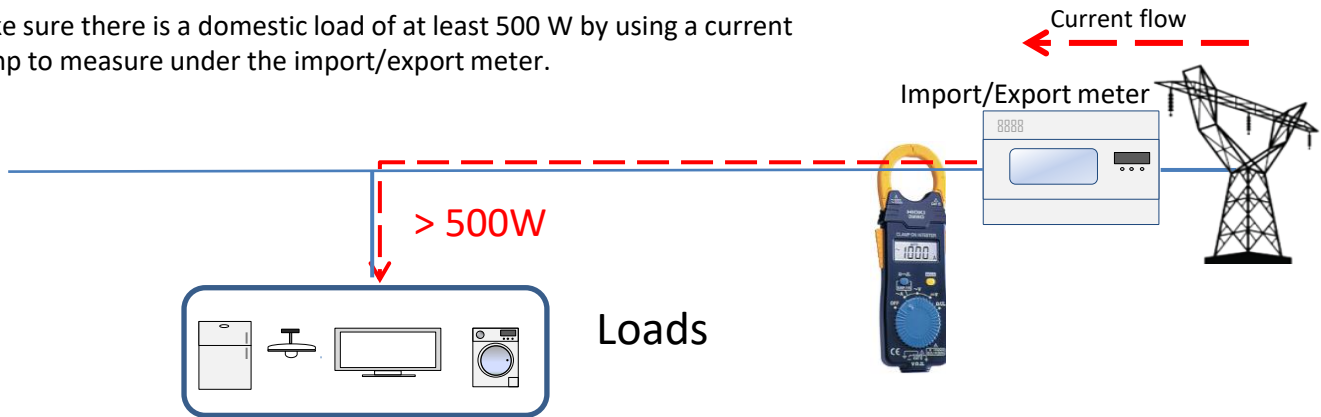
Make sure that the AC switch of the inverter is open and that no voltage is present on the inverter's terminal block.



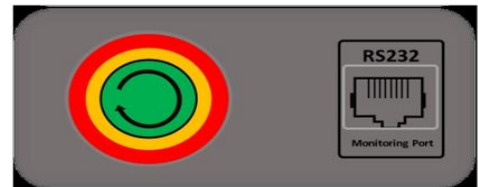
Check that the DC circuit breaker of the inverter is in the OFF position.



Make sure there is a domestic load of at least 500 W by using a current clamp to measure under the import/export meter.



Turn on the batteries:



To turn on the **Pylontech** batteries: bring the switch on the front of **all the batteries** to the ON position.

Press the red SW button of **a single** battery for one second, the internal contactor will close automatically.

In case of **WeCo** or **Azzurro** batteries, set the switch to 1 (if present) press the POWER button of each battery for 1 second, the RUN LED will turn on and the internal contact will close automatically.

Turn ON the AC circuit breaker located between the inverter and AC grid.



To supply DC voltage to the hybrid inverter, turn the circuit breaker to the ON position

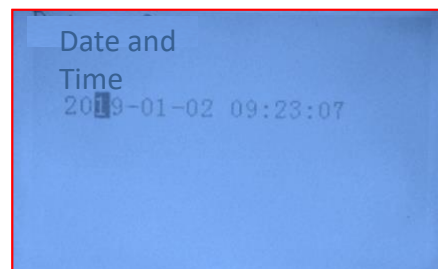
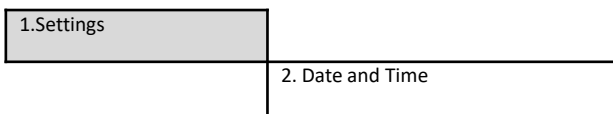
13. FIRST CONFIGURATION

IMPORTANT: Use a PC and USB in case of update requests and correct country code settings.

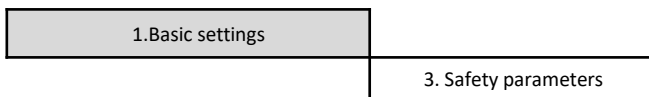


Parameter	Note
1. Language option	The default setting is English.
*2. Setting and confirming system time	If the inverter is connected to the host computer as the App of the collector or for mobile devices, the time should have been calibrated to local time.
**3. Importing safety parameters	Find the safety parameters file (named after the corresponding country of security) on the website, download it onto the USB flash drive and import it.
***4. Setting battery parameters	Default values can be displayed depending on the input channel configuration.
5. Configuration is complete	

*2. Importing and confirming the time

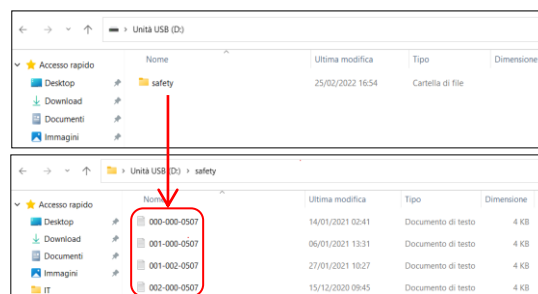


*3. Importing safety parameters (country code)



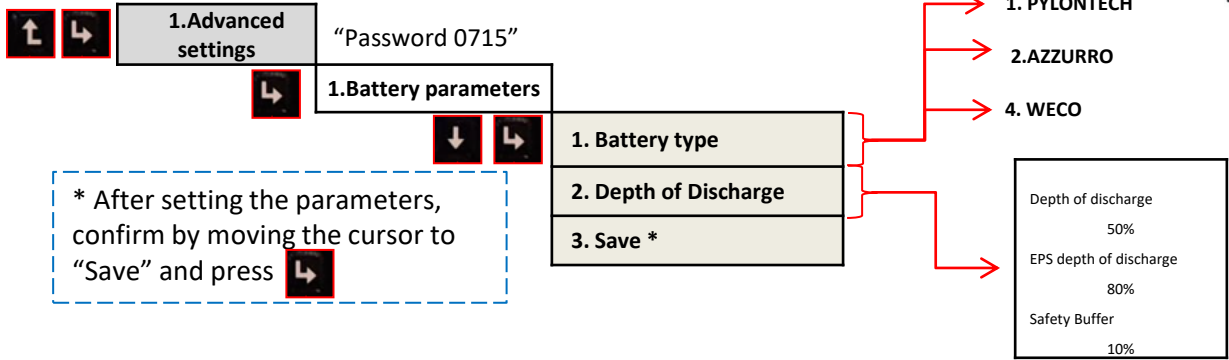
To set the correct country, upload the unzipped folder called "safety" onto the USB drive. This folder can be downloaded from the website <https://www.zcsazzurro.com/it/documentazione/azzurro-hybrid-storage-inverter-single-phase-ep5kw>

Code	Region	Code	Region
000		000	
001		001	
002		002	
003		003	
004		004	
005		005	
006		006	
007		007	
008		008	
009		009	
010		010	
011		011	
012		012	
013		013	
014		014	
015		015	
16-17			



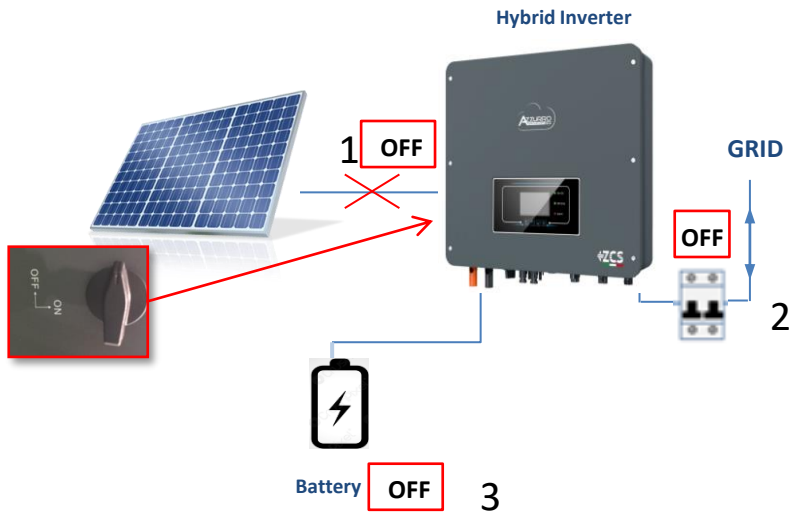
NOTE: By default, the inverters are set to the CEI-021 country code for the internal interface, if a different country code is required, please contact technical support.

***4. Importing battery parameters

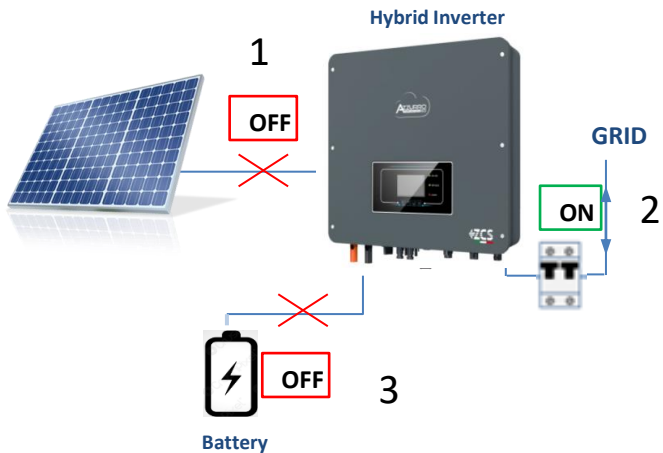


14. CHECKING FOR CORRECT OPERATION

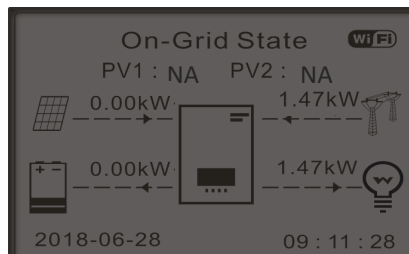
1) Turn the PV circuit breaker to the OFF position and disconnect the inverter from the grid



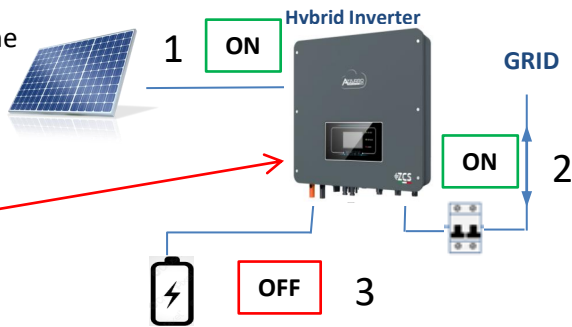
2) Restore AC voltage by raising the dedicated switch:



3) Check that the power value taken from the grid display is approximately equal to the power consumption shown on the meter, or obtained by using a current clamp to measure under the import/export meter.

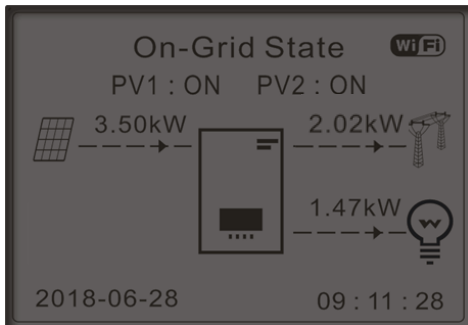


4) Switch on the photovoltaic system by turning the DC circuit breaker to the ON position



Once the photovoltaic system has been activated, check that:

The consumption value 1.47kW remains constant as the photovoltaic power increases. 3.50kW

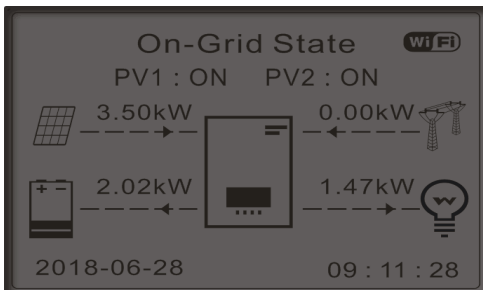
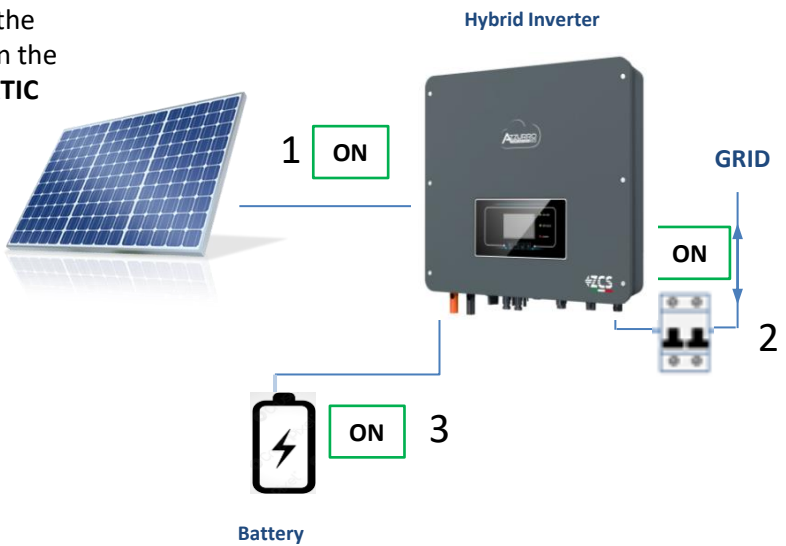


* Check that the power of the loads in use does not change:

- Heat pump or pump → Load variable over time
- Light or hairdryer → Load constant over time

5) Switch on the battery(ies) checking that the system is operating in the mode described in the section **OPERATING STATUSES IN AUTOMATIC MODE:**

- PV > Load → battery charging
- PV < Load Battery discharging
- PV = Load Battery on stand-by



NOTE: WeCo and Azzurro batteries will charge to 100% when first started



Note: If the conditions described above are not met:

- Check that the current sensor is positioned correctly and then proceed with restarting the system.



15.1 CHECKING OF INVERTER SETTINGS

To check whether the parameters set are correct, enter the display menu under “Inverter Info” and check the data, especially those highlighted:

Inverter Info (1)	
Serial number:	ZM2ES060MBG265
Hardware version:	V001
Software version:	Press enter to view!
Safety firmware version:	V02000

➤ Serial number of the machine

➤ Hardware version

➤ Software version installed

➤ Service Code Version

Inverter Info (4)	
IV Curve Scan :	Disabled
Logic interface:	Disabled

➤ Information on MPPT scan mode

➤ Information on DRMS0 mode (enable only for Australia)

Inverter Info (2)	
Country:	001-000
Power level:	6 kW

➤ Country code for the standard

➤ Max inverter power

Inverter Info (5)	
Power Factor :	1.00
Zero grid feed-in mode :	Disabled
Insulation resistance:	7000KOhm

➤ Power factor value

➤ Information on maximum grid in-feed mode

➤ Measured value of the insulation resistance

Inverter Info (3)	
PV Input Mode :	Independent
Working mode :	Automatic mode
RS485 address :	01
EPS :	Disabled

➤ Photovoltaic input mode (Independent / Parallel)

➤ Information on operating mode (must be automatic)

➤ Communication address (value must be different from 00)

➤ Information on EPS mode

15.2 CHECKING OF BATTERY SETTINGS

To CHECK whether the parameters set are correct, enter the display menu under “Battery Info” and check the data, especially those highlighted



Pylontech



WeCo 4K4 / 4K4LT / 4K4PRO



WeCo 5K3 / 5K3XP



Azzurro ZSX5000 / 5000 PRO / 5120

Battery-Info (1)	
Battery type:	Pylon
Battery capacity:	50 Ah
Depth of Discharge	80% (EPS) 80%
Max charge curr. (A)	BMS: 25.00A SET : 65.00A

Battery-Info (1)	
Battery type:	WeCoHeSU V0.3.54
Battery capacity:	86 Ah
Depth of Discharge	80% (EPS) 90%
Max charge curr. (A)	BMS: 65.00A SET : 65.00A

Battery-Info (1)	
Battery type:	WECO628
Battery capacity:	100 Ah
Depth of Discharge	80% (EPS) 90%
Max charge curr. (A)	BMS: 65.00A SET : 65.00A

Battery-Info (1)	
Battery type:	AZZURRO LVZSX5000
Battery capacity:	100 Ah
Depth of Discharge	80% (EPS) 90%
Max charge curr. (A)	BMS: 50.00A SET : 65.00A

➤ Battery model set

➤ Total battery capacity in Ah

➤ Battery discharge percentage

➤ Maximum charge current in A

Battery-Info (2)	
Overvoltage threshold:	54.0V
Max. charge threshold:	53.2V
Max. discharge curr.:	BMS: 25.00A SET : 65.00A
Min. discharge voltage:	47.0V

Battery-Info (2)	
Overvoltage threshold:	59.3V
Max. charge threshold:	58.4V
Max. discharge curr.:	BMS: 65.00A SET : 65.00A
Min. discharge voltage:	48.0V

Battery-Info (2)	
Overvoltage threshold:	59.3V
Max. charge threshold:	58.4V
Max. discharge curr.:	BMS: 65.00A SET : 65.00A
Min. discharge voltage:	48.0V

Battery-Info (2)	
Overvoltage threshold:	59.3V
Max. charge threshold:	58.4V
Max. discharge curr.:	BMS: 50.00A SET : 65.00A
Min. discharge voltage:	48.0V

➤ Max voltage value (protection)

➤ Max voltage value (charge)

➤ Maximum discharge current in A

➤ Min voltage value (discharge)

Battery-Info (3)	
EPS Safety Buffer:	20%

Battery-Info (3)	
EPS Safety Buffer:	20%

Battery-Info (3)	
EPS Safety Buffer:	20%

Battery-Info (3)	
EPS Safety Buffer:	20%

➤ EPS safety value

***Note:** if there is more than one battery, the sum of the total capacities will be shown on the display

16. ZERO FEED-IN MODE

2. Advanced settings **Enter 0715**

2. Anti-reflux (Limit. -feed-in)

The “Anti Reflux Control” mode can be enabled to limit the maximum power exported to the grid. The set reflux power corresponds to the desired maximum export power to the grid.

1. Anti-reflux control

→

Active

Inactive

2. Reflux power

→

***KW

17. LOGIC INTERFACE (DRMS0)

2. Advanced settings



Attention: this function must be disabled!!!!



4. Logic interface

→

Active

no

→

Inactive ✓

OK

18.1 EPS MODE (OFF GRID)

In the event of a power failure, or operation in OFF-Grid mode, if the EPS function is enabled, the HYD-ES inverter will operate in Emergency Power Supply (EPS) mode using the PV power and energy stored in the battery to supply power to the critical load via the LOAD connection port.

18.2 EPS MODE (OFF GRID) - WIRING PROCEDURE AND INSTALLATION TYPES

Identify critical or priority domestic loads: it is advisable to identify the domestic loads strictly necessary during power outages, such as lights, refrigerators or freezers, emergency sockets.



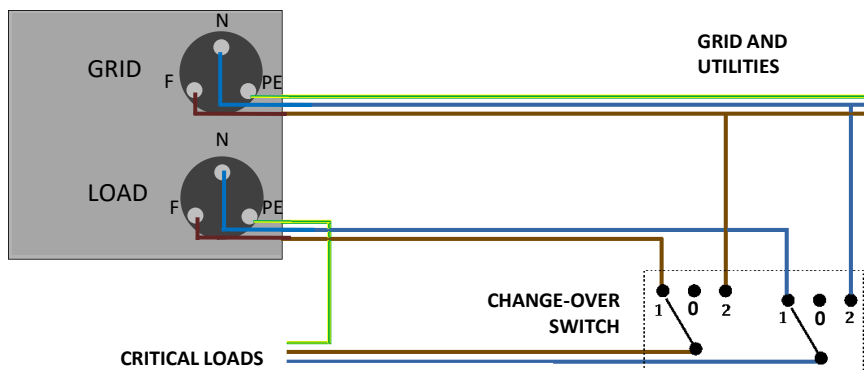
- High power loads (such as ovens, washing machines, heat pumps) may not be supported by the inverter in EPS mode, given the maximum power that can be delivered under these conditions.
- Loads with high inrush currents (such as pumps, compressors or in general devices driven by electric motors) may not be supported by the inverter in EPS mode, as the inrush current, even if only for a very short period, is considerably higher than that supplied by the inverter.
- Inductive loads (such as induction plates) may not be supported by the inverter in EPS mode, due to the waveform of these devices.

Connect the phase, neutral and ground wires to the LOAD output located on the right side of the bottom of the inverter.

NOTE: the LOAD output must only be used for connecting the critical load.

CHANGE-OVER SWITCH

In case of maintenance of components of the photovoltaic system or in case of an inverter that cannot be used, it is recommended to install a change-over switch so that the loads normally connected to the inverter's load line can be powered directly by the grid.



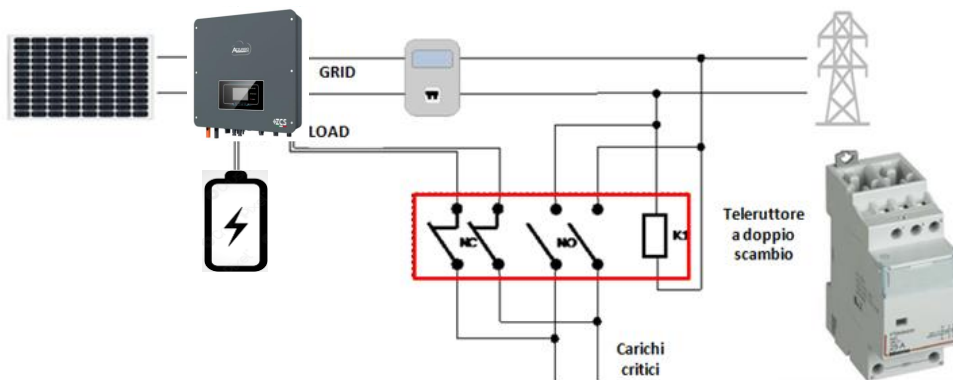
Position 1 → Priority loads connected and powered by the inverter's LOAD line

Position 0 → Priority loads not powered by the inverter or by the grid

Position 2 → Priority loads connected and powered by the grid

DOUBLE SWITCH CONTACTOR

For subsidised systems, a double switch contactor can be installed. This device will ensure that the critical loads are normally powered by the grid. They will be powered by the EPS LOAD line of the inverter only in the event of a power failure, thanks to the change-over of the contactors.



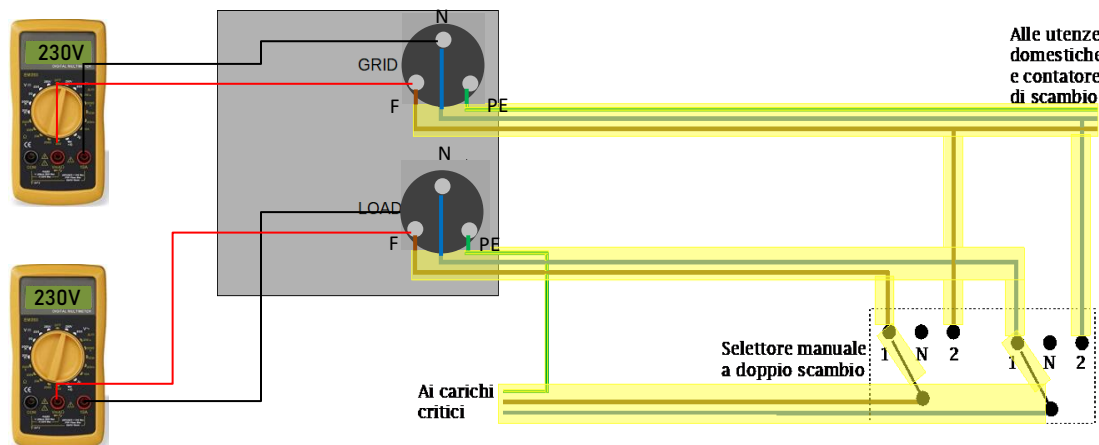
NOTE: For the conditions described above, in the event of a power failure, the part of the system powered by the inverter's LOAD port behaves like an IT system.

Note: If the hybrid inverter is to be installed under different conditions from those shown in the diagrams above, contact technical support to check whether it is feasible.

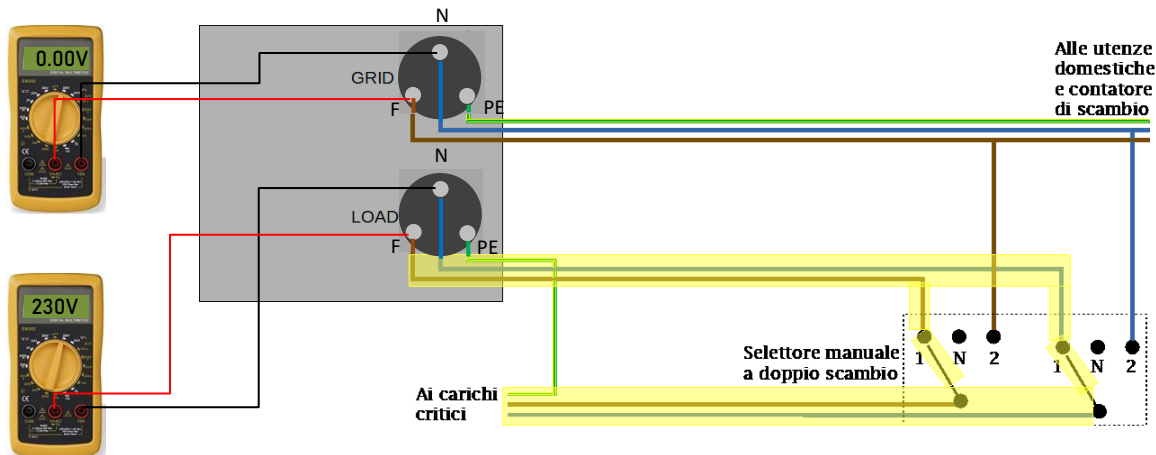
18.3 EPS MODE (OFF GRID) - OPERATION

If the alternating voltage supplied by the mains is present (normal operating condition), both the standard loads of the system and the priority or critical loads are supplied by the mains without the need to use a double switch-over contactor. This operation is shown in the figure below.

It should also be noted that the LOAD output is always energised, even when the mains voltage is present.



In the event of a **blackout**, the alternating voltage supplied by the grid will be lost; this condition will cause the internal contacts of the hybrid inverter to switch over which, once the set activation time has expired, will continue to supply an alternating voltage of 230V to the LOAD output, supplying power only to the critical loads according to the availability of the batteries and PV system.



NOTE: with this configuration, the system becomes an IT system during a blackout.

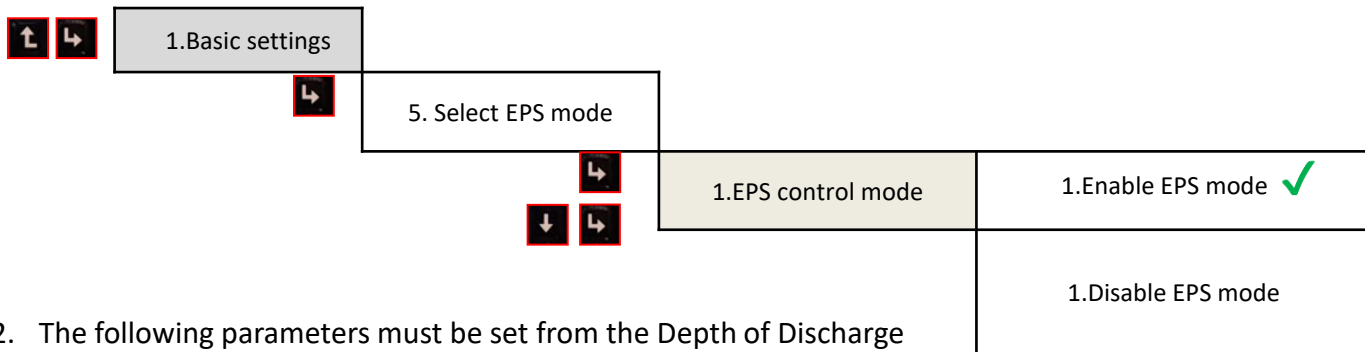
Note: During operation in EPS mode, if the batteries are sufficiently charged, the system will be able to deliver a maximum alternating current equal to:

- System with one Pylontech battery: 5 A (1,100 W)
- System with one Azzurro battery: 11 A in DC (2,500 W)
- System with one or more WECO batteries: 21 A in DC (5,000 W)

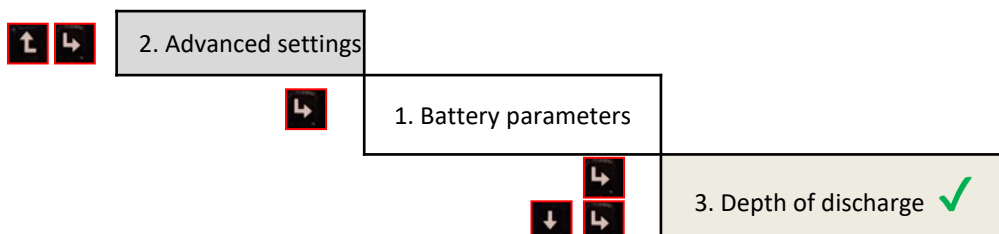
18.4 EPS MODE (OFF GRID) - MENU ENABLING

To enable the EPS (OFF-GRID) mode:

1. The EPS mode must be enabled from the display.

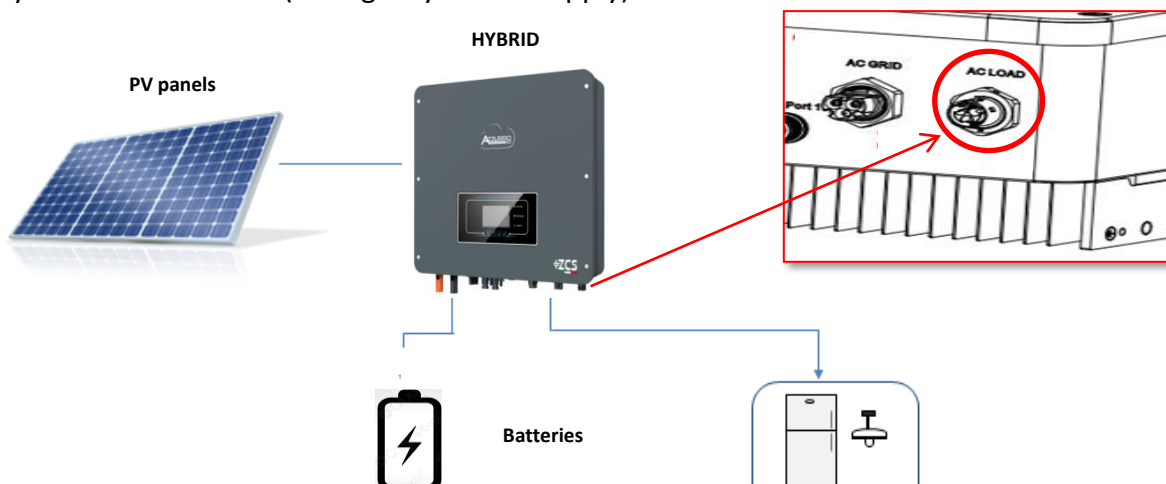


2. The following parameters must be set from the Depth of Discharge menu.



19.1 OFF GRID MODE ONLY

By switching on the HYD-HP inverter when there is no grid, it will be able to supply the energy coming from the PV system and stored in the batteries to the pre-defined critical loads. To do this, it is necessary to activate the EPS (Emergency Power Supply) mode.

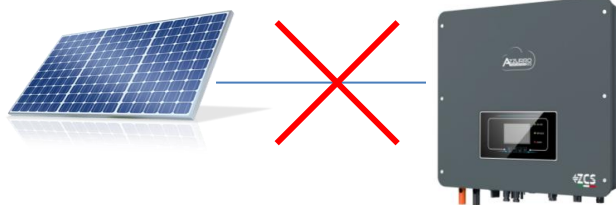


Uscita EPS (Emergency Power Supply)	1PH HYD 3000	1PH HYD 3600	1PH HYD 4000	1PH HYD 4600	1PH HYD 5000	1PH HYD 6000
Massima potenza erogata in EPS***	3000VA (3600VA per 60s)	3680VA (4400VA per 60s)	4000VA (4800VA per 60s)	4600VA (5520VA per 60s)	5000VA (6000VA per 60s)	
Tensione e frequenza uscita EPS	Monofase 230V 50Hz/60Hz					
Corrente erogabile in EPS	13.6A	16A	18.2A	20.9A	22.7A	
Distorsione armonica totale	< 3%					
Switch time	< 10ms					

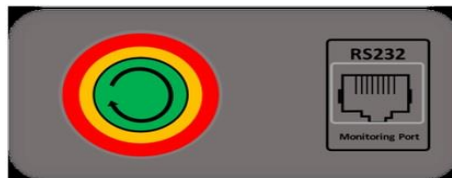
*** Power output in EPS mode depends on the type of batteries and the status of the system (e.g. no. of batteries, residual capacity, temperature)

19.2 OFF GRID MODE ONLY - START UP

- 1) Check that the DC circuit breaker of the inverter is in the OFF position.



- 2) Turn on the batteries:

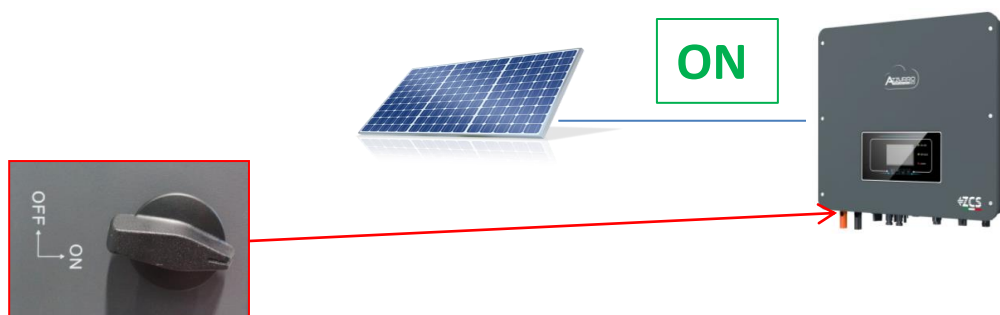


To turn on the **Pylontech** batteries: bring the switch on the front of **all the batteries** to the ON position.

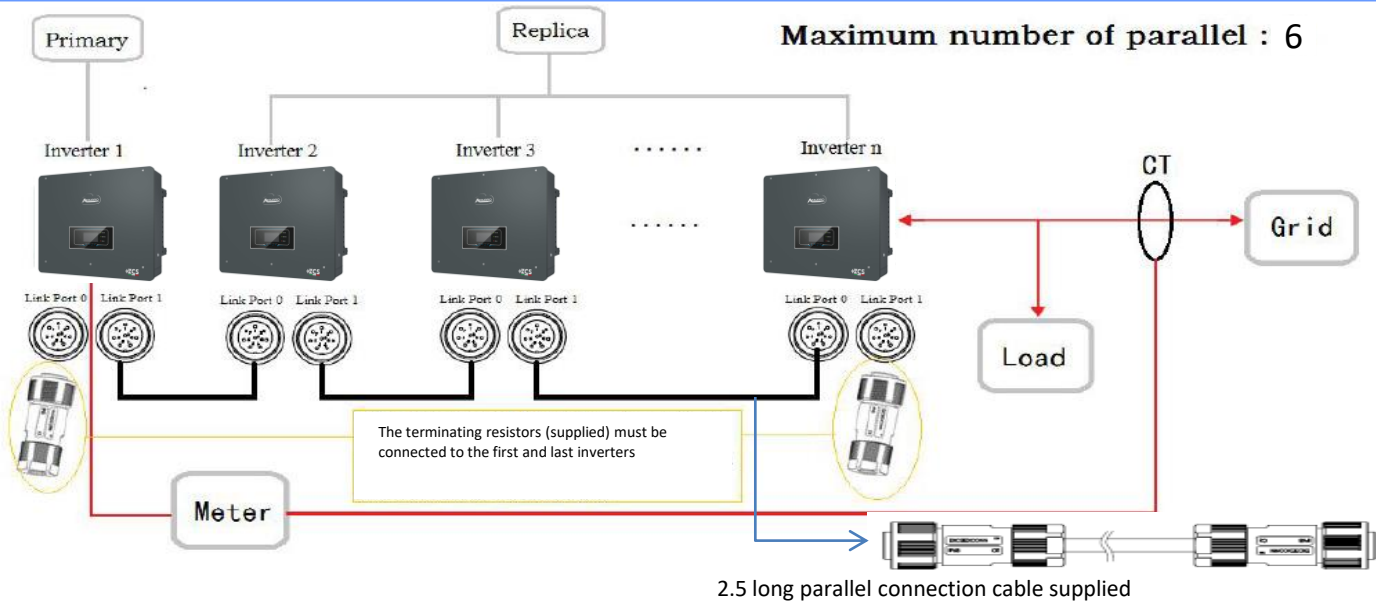
Press the red SW button of **a single** battery for one second, the internal contactor will close automatically.

In case of **WeCo** and **Azzurro** batteries, set the switch to 1 (if present) press the POWER button of each battery for 1 second, the RUN LED will turn on and the internal contact will close automatically.

- 3) Switch on the photovoltaic system by turning the switch to the ON position.



20.1 PARALLEL INVERTER MODE - CONFIGURATION



1. The inverters must be interconnected using the cable supplied, making sure to populate the inputs as follows:

- Link port 0 of Master inverter → connected to terminating resistor (8-pin terminal)
- Link port 1 of Master Inverter → Link port 0 of Slave 1 Inverter
- Link port 1 of Slave 1 Inverter → Link port 0 of Slave 2 Inverter
- Link port 1 of Slave 2 Inverter → Link port 0 of Slave 3 Inverter
- ...
- Link port 1 of Slave n-1 Inverter → Link port 0 of Slave n Inverter
- Link port 1 of Slave n inverter → connected to terminating resistor (8-pin terminal)

Note: The terminating resistors are supplied as standard

NOTE: the inverter parallel cable supplied is 3 meters long and cannot be extended.

2. If the inverters connected are of the same size, the LOAD outputs can be connected in parallel in order to supply power to the same group of priority loads. To do this, a parallel switchboard must be used. It is necessary to ensure that the connections between each inverter and the parallel switchboard have:

- the same length
- the same cross-section
- the lowest possible impedance.

It is advisable to install suitable protection on each connection line between the inverter and the switchboard.

3. The total load connected to the LOAD outputs must be less than the total sum of the power outputs of the inverters in EPS mode.

4. The meters must be connected to the Master Inverter (Primary)

20.2 PARALLEL INVERTER MODE - SETTINGS

⬆️ ⬇️
2. Advanced settings

⬇️ ⬆️
6.Parallel settings

PWD 0715

OK

Enable	Enable	Enable	Enable
Primary	Replica	Replica	Replica
00	01	02	03
ok	ok	ok	ok

Master

Link Port 0 Link Port 1

Slave 1

Link Port 0 Link Port 1

Slave 2

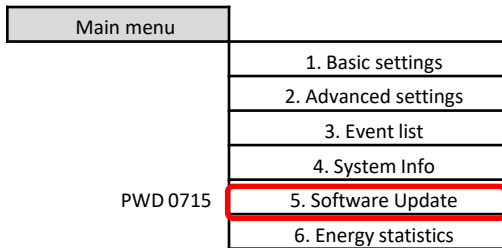
Link Port 0 Link Port 1

Slave n

Link Port 0 Link Port 1

1.Parallel Control	Enable / disable
2.Parallel Master-Slave	Primary / Replica
3.Parallel Address	00 (Primary) 01 (replica 1) ... 0n (Replica n)
4.Save	ok

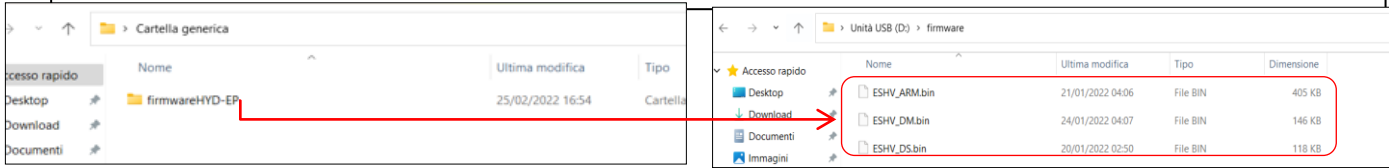
21. FIRMWARE UPDATE



PWD 0715

To update the firmware, upload the unzipped folder called "firmwareHYD-EP" to the USB drive. This folder can be downloaded from the website <https://www.zcsazzurro.com/it/documentazione/azzurro-hybrid-storage-inverter-single-phase-ep5kw>

The folder contains the files for the update in .bin or .hex format



22. SELF-TEST



Before running the self-test make sure the correct country code has been set!!!



1. Basic settings

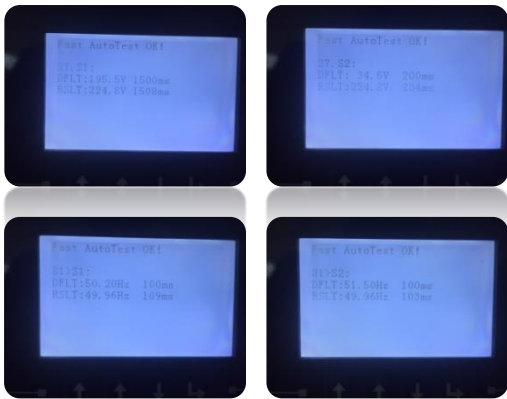


5. Self-test

1. Fast self-test

2. STD Self-test

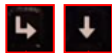
Note: the STD self-test is the same as the Fast self-test except that the waiting times are longer (about 12 minutes for the fast self-test compared to 45 minutes for the STD self-test).



23. % CHARGE MODE

To balance misaligned batteries it may be necessary to force a charge from the grid to fully charge the batteries

2. Mode % Charge



Rules. 0:	Enable		
From	To	SOC	Charge
02h00m	04h00m	100%	01000 W
Effective date		Maximum charging percentage	
Jan 01	-	Dec 31	
Select weekday			
Mon. Tue. Wed. Thu			
Fri. Sat. Sun.			

Legend:



Back



Change setting



Advance


Select Enabled to activate the charging function

Charging power

Maximum charging percentage


Once the preferred settings have been made, scroll to the initial item and press

24. QUICK INFO ON SYSTEM STATUS

Press  from the main menu to access the instant information on the battery and AC grid.

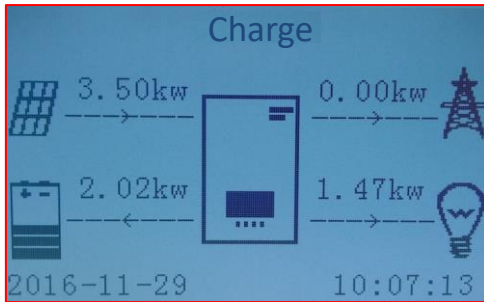
```
Vgrid:..... 230.2V
Igrid:..... 7.85A
Frequency:..... 50.01Hz
Bat Voltage:..... 48.2V
Bat CurCHRG:..... 0.00A
Bat CurDisC:..... 39.86A
Bat Capacity:..... 52%
Bat Cycles:..... 0000T
Bat Temp:..... 25°C
```

```
PV1 Voltage ..... 517.3V
PV1 Current ..... 0.00A
PV1 Power ..... 0W
PV2 Voltage ..... 7.1V
PV2 Current ..... 0.01A
PV2 Power ..... 0W
Inverter Temp. .... 21°C
```

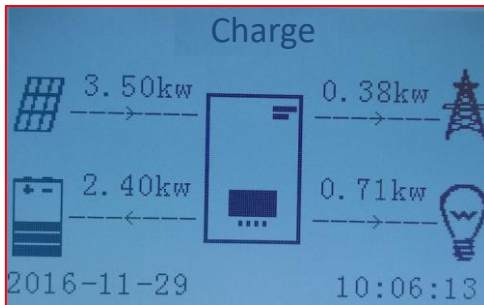
Press  from the main menu to access the instant information on the DC-side of the inverter.

25. OPERATING STATUSES IN AUTOMATIC MODE

Charge

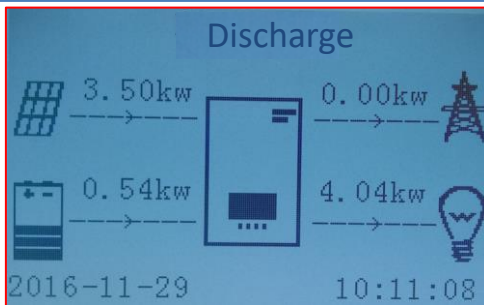


When the power produced by the photovoltaic system is greater than the energy required by the loads, the inverter will charge the battery with the excess energy.

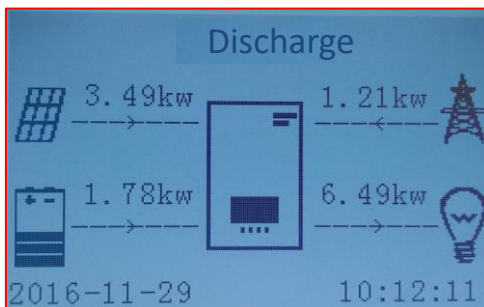


When the battery is fully charged, or when the charging power is limited (to preserve the integrity of the battery), the excess energy will be exported to the grid.

Discharge

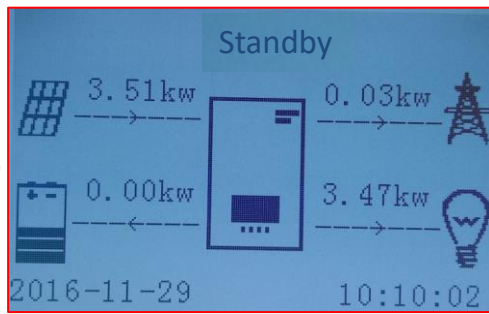


When the power of the photovoltaic system is once again less than the power required by the loads, the system will use the energy stored in the battery to power the domestic utilities.



When the sum of the power produced by the photovoltaic system and supplied by the battery is less than that required by the loads, the missing energy will be taken from the grid.

Standby



- The inverter will remain in Standby until:
- the difference between the photovoltaic production and the power required by the loads is less than 100W
 - the battery is fully charged and the photovoltaic production is higher than the consumption (with tolerance of 100W)
 - the battery is flat and the photovoltaic production is lower than the consumption (with tolerance of 100W)

The logic interface pin definitions and circuit connections are as follows:
Logic interface pin are defined according to different standard requirements

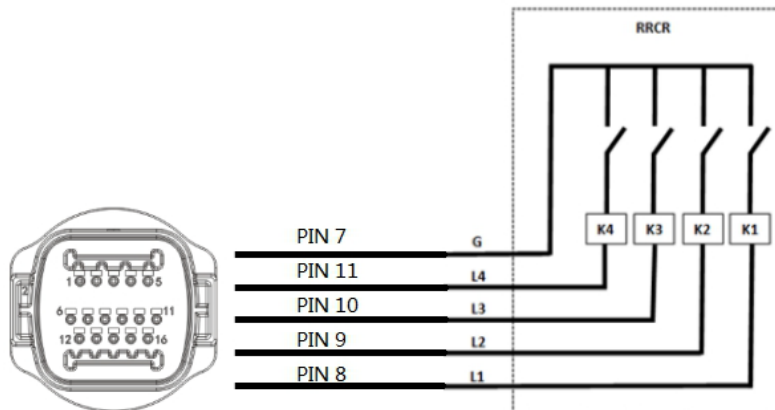
a) Logic interface for AS/NZS 4777.2:2015, also known as inverter demand response modes (DRMs).
The inverter will detect and initiate a response to all supported demand response commands within 2s.
The inverter will continue to respond while the mode remains asserted.

Below the **function description of the DRMs terminal.**

Pin NO.	Function
7	GND-S
8	DRM1/5
9	DRM2/6
10	DRM3/7
11	DRM4/8
12	DRM0

b) Logic interface for VDE-AR-N 4105:2018-11, is in order to control and/or limit the inverter's output power.

The inverter can be connected to a **RRCR (Radio Ripple Control Receiver)** in order to dynamically limit the output power of all the inverters in the installation.



Here below the **function description of the terminal.**

Pin NO.	Pin name	Description	Function
7	G	GND	Relays common node
8	L1	Relay contact 1 input	K1 – Relay 1 output
9	L2	Relay contact 2 input	K2 – Relay 2 output
10	L3	Relay contact 3 input	K3 – Relay 3 output
11	L4	Relay contact 4 input	K4 – Relay 4 output

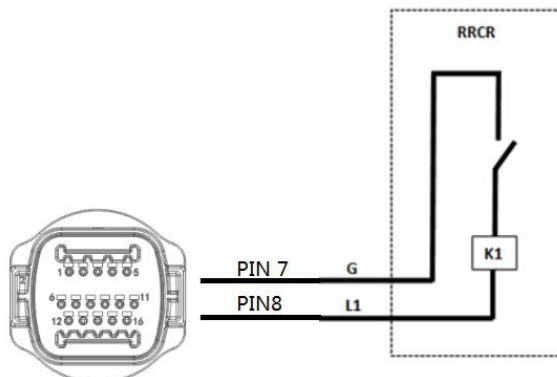
The inverter is preconfigured to the following RRCR power levels.

Relay status: close is 1, open is 0.

L1	L2	L3	L4	Active Power	Cos(ϕ)
1	0	0	0	0%	1
0	1	0	0	30%	1
0	0	1	0	60%	1
0	0	0	1	100%	1

c) Logic interface for EN50549-1:2019, is in order to cease active power output within five seconds following an instruction being received at the input interface.

Here below the Inverter – RRCR Connection.



Here below the function description of the terminal.

Relay status: close is 1, open is 0.

Pin NO.	Pin name	Description	Connected to (RRCR)
7	G	Relay contact 1 input	K1 – Relay 1 output
8	L1	GND	K1 – Relay 1 output

The inverter is preconfigured to the following RRCR power levels.

L1	Active Power	Power drop rate	Cos(ϕ)
1	0%	< 5 seconds	1
0	100%	/	1