QUICK INSTALLATION GUIDE
HYBRID INVERTER 3-6-ZSS-HP

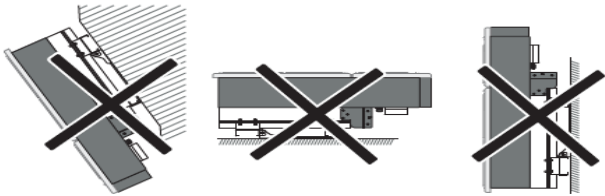# 1. INSTALLATION AND DISTANCES

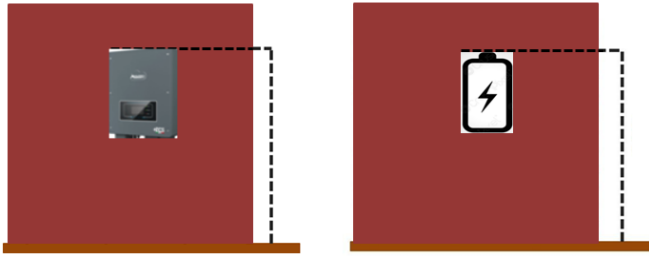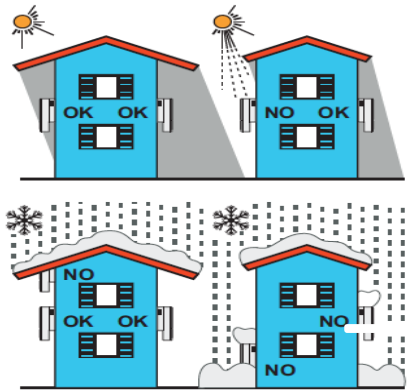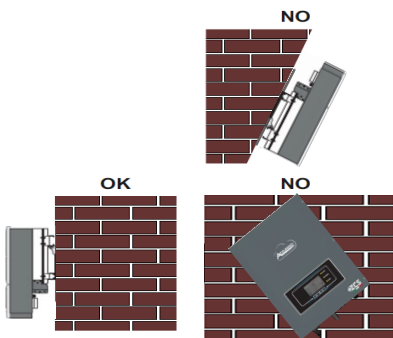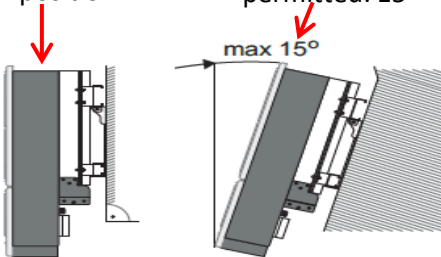| Always wear protective clothing and/or personal protective equipment	Always consult the manual	General notice - Important Safety Instructions

Maximum height from ground permitted: 180 cm

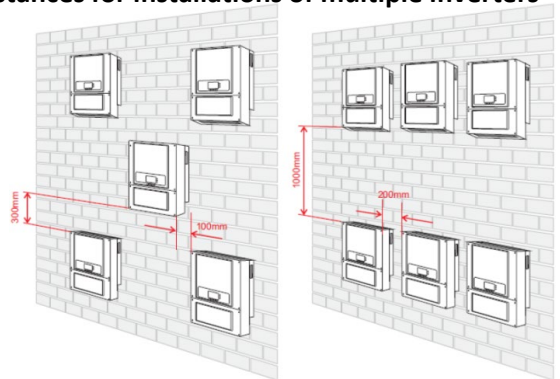Correct installation in vertical position

Maximum inclination permitted: 15°

max 15°

NO

OK   NO

Distances for installations of multiple inverters

Distances for installations of a single inverter

80 cm

20 cm   20 cm

50 cm

OK   OK   NO   OK

NO   NO
OK   OK   NO
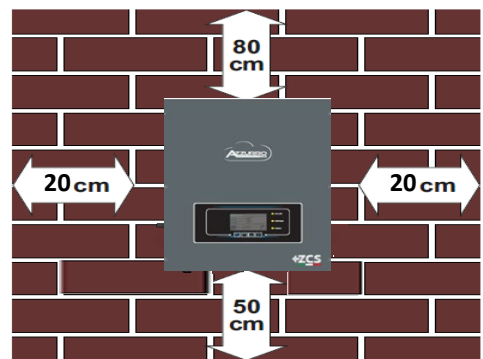
2. WIRING DIAGRAM FOR HYBRID STORAGE INVERTER

Panels

Meter

Batteries

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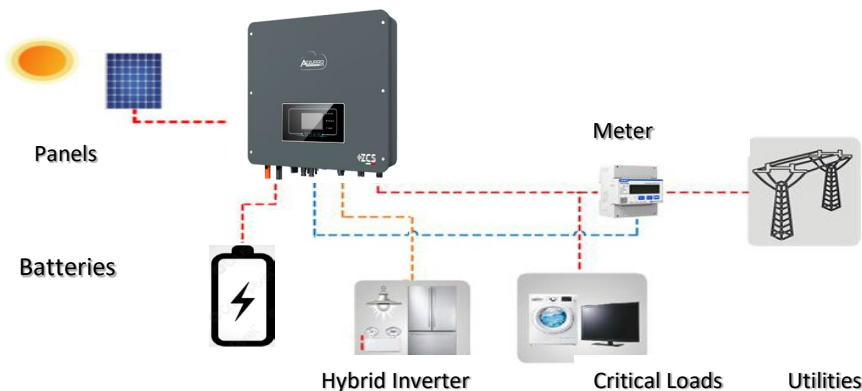
Note: If the hybrid inverter is to be installed under different conditions from those shown in the diagrams above, contact technical support to check whether it is feasible.

2

	1	2	3	4
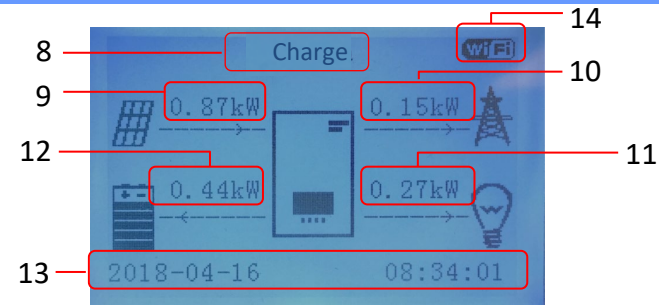
1. Menu/Back	8. System status
2. Up	9. PV production
3. Down	10. Grid power
4. Enter/Forward	11. Home consumption
5. Discharge status	12. Battery power
6. Charge status	13. Date and time
7. Alarm status	14. Wi-Fi signal

Status of the HYD-ES inverter	On Grid Green light	Off-Grid Green light	Alarm Red light
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.
The main menu contains five different sections:

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

1. System settings

1. Language Setting
2. Time
3. Safety Param.
4. Energy Storage Mode
5. Autotest
6. PV input mode
7. EPS Mode
8. Select.Commun.Address

2. Advanced settings   **PWD: 0715**

1. Battery parameters
2. Anti Reflux
3. IV Curve Scan
4. Logic interface
5. Factory Reset
6. Parallel setting
7. Rest Bluetooth
8. CT Calibration
9. Battery Active
10. Set Electricity Meter

3. Event list

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

4. System Info

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

5. SW Update   **PWD: 0715**

Start Update …

6.Energy Statistics

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
Amount	Amount	Amount	Amount	Amount

Press the "↓" key once from the main menu to access the instantaneous 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℃
```

```
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℃
```

Press the "↑" key once from the main menu to access the instantaneous information on the DC side of the inverter.

Charge

Charge
3.50kw   0.00kw
2.02kw   1.47kw
2016-11-29   10:07:13
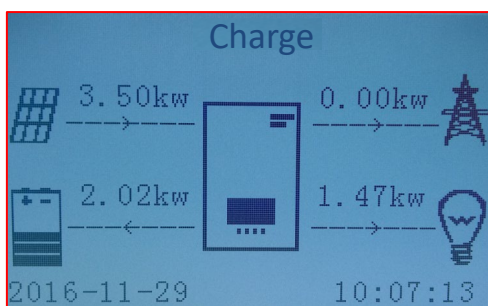
When the power produced from the photovoltaic system is greater than the power required by the loads, the Inverter inverter will charge the battery with the excess energy.

Charge
3.50kw   0.38kw
2.40kw   0.71kw
2016-11-29   10:06:13
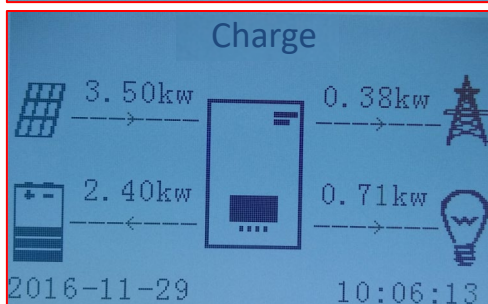
When the battery is fully charged, or when the charging power is limited (to preserve the integrity of the battery), the excess energy will be exported to the grid.

Discharge

Discharge
3.50kw   0.00kw
0.54kw   4.04kw
2016-11-29   10:11:08
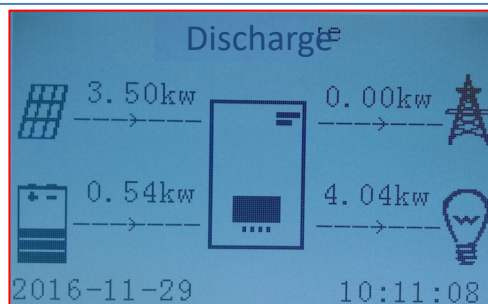
When the power of the photovoltaic system is less than the power required by the loads, the system will use the energy stored in the battery to supply the domestic utilities.

Discharge
3.49kw   1.21kw
1.78kw   6.49kw
2016-11-29   10:12:11
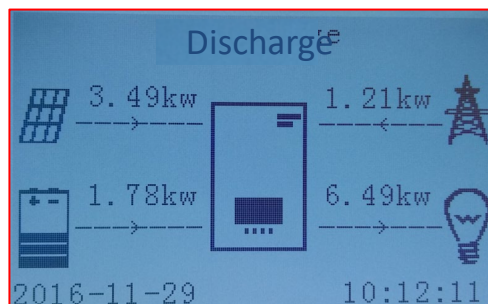
When the sum of the power produced by the photovoltaic system and supplied by the battery is less than that required by the loads, the extra energy will be taken from the grid.

Standby

Standby
3.51kw   0.03kw
0.00kw   3.47kw
2016-11-29   10:10:02
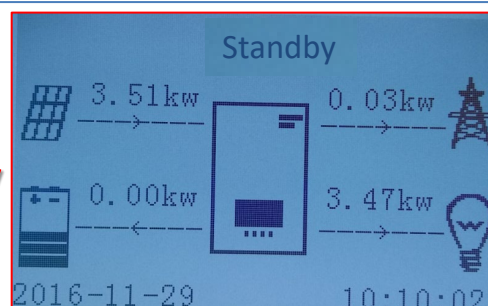
The Inverter will remain in Standby until:
• the difference between the PV production and the power required by the loads is less than 100W
• the battery is fully charged and the PV production is higher than the consumption (with tolerance of 100W)
• the battery is flat and the PV production is lower than the consumption (with tolerance of 100W)
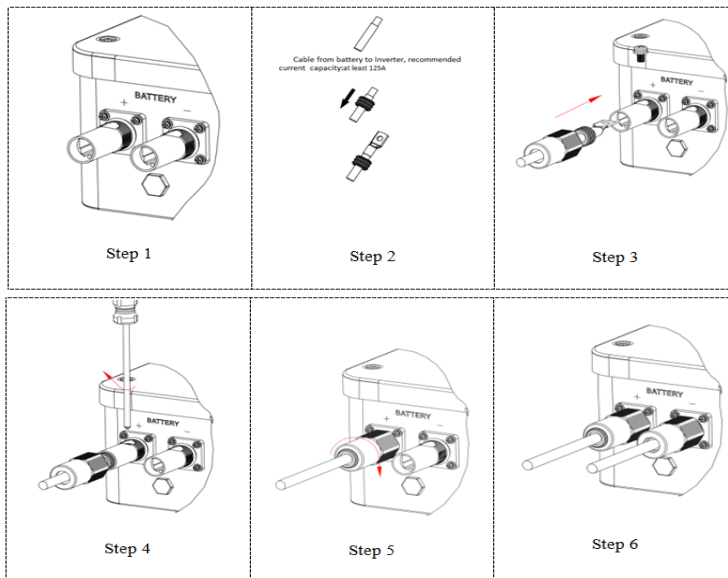
7. BATTERY CONNECTION

Power Connections

Step 1   Step 2   Step 3

Step 4   Step 5   Step 6

Communication connections
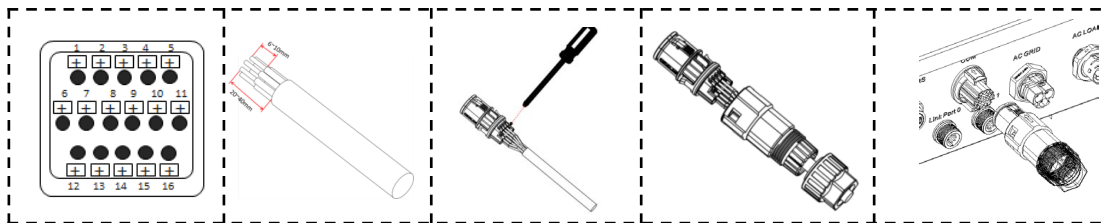
8.1 SINGLE PYLONTECH BATTERY

Note: Maximum DoD Programmable 80%

Inverter PIN	Battery communication	Note
1	CAN H (blue wire)	Communication between battery BMS and Inverter
2	CAN L white/blue wire)	
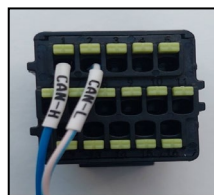
Inverter COM connector

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

In case of a single battery, two power cables (positive and negative) and a communication cable shall be connected. This connection is shown in the figures below:
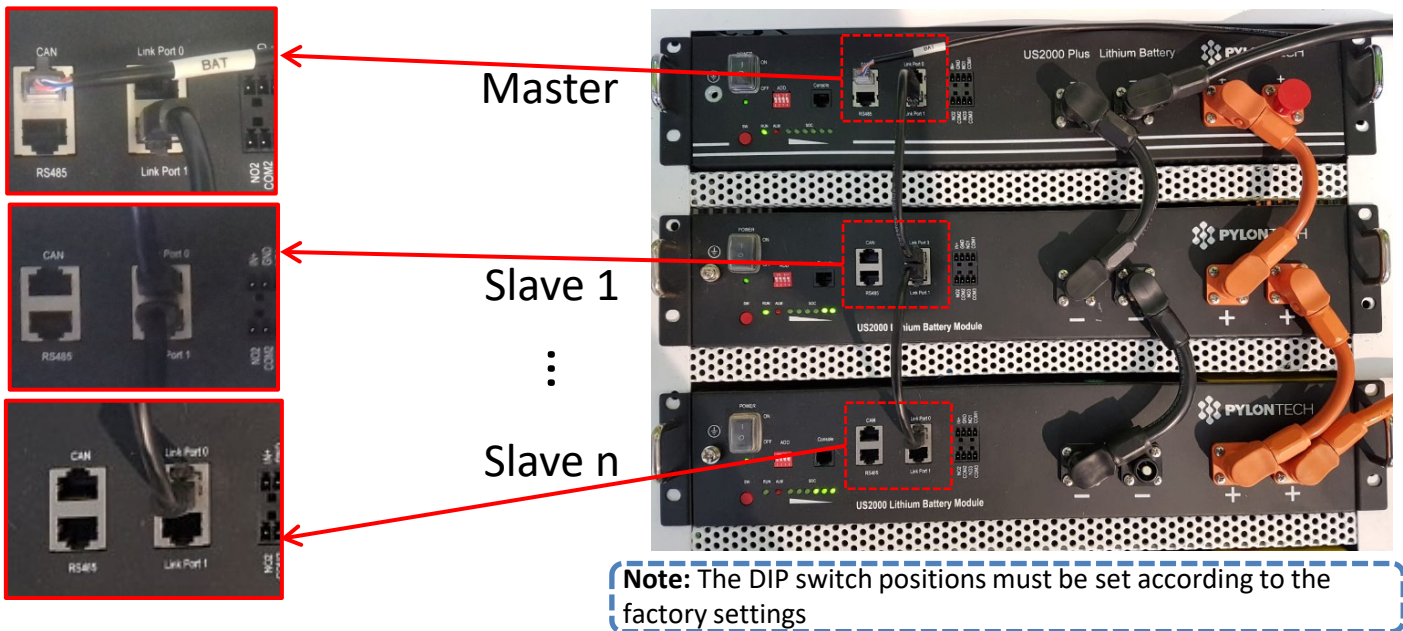
The communication cable shall be connected to the battery's CAN port

Note: The DIP switch positions must be set according to the factory settings

Note: To connect multiple batteries in parallel, use the appropriate cables (power and connection) contained in the kit.

Master

Slave 1

⋮

Slave n

Note: The DIP switch positions must be set according to the factory settings

When connecting multiple batteries in parallel, connect the communication cable between the inverter's CAN port and the CAN port of one of the batteries. This battery will be referred to as the MASTER.

A communication cable will go from the link port 1 of the MASTER battery to the Link port 0 of the second battery called SLAVE 1.

In case of additional batteries, the communication cable will be connected as indicated above for the connection of the MASTER battery to SLAVE 1.

The last battery will only have the port 0 link connected.

The batteries must be connected in a "loop" as shown in the side photo, and explained below:
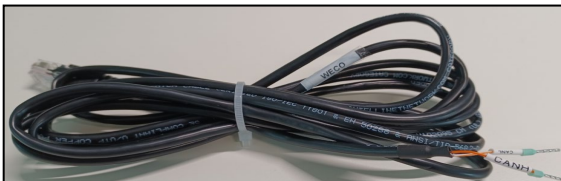
Positive and Negative power cables shall be connected one to the first battery (**MASTER)** and the other to the last battery (**SLAVE N**).
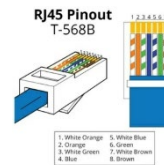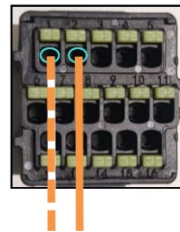
Inverter negative

Inverter positive
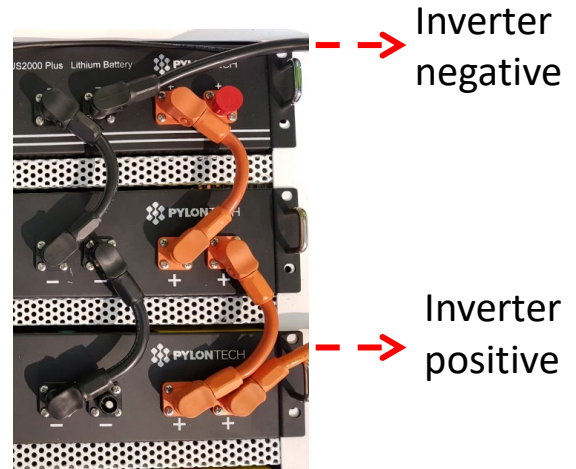
8.3 SINGLE 4K4 WECO BATTERY

Note: Maximum DoD programmable 90%

Inverter COM connector

Inverter PIN	Battery communication	Note
1	CAN (blue wire)	Communication between battery BMS and Inverter
2	CAN (white -blue wire)	

RJ45 Pinout
T-568B

1. White Orange 5. White Blue
2. Orange 6. Green
3. White Green 7. White Brown
4. Blue 8. Brown
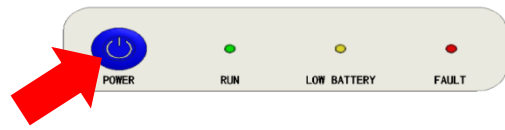
Note: The communication cable between battery and inverter is inside the inverter box

Note: Turn off the batteries each time the position of the DIP switches changes.
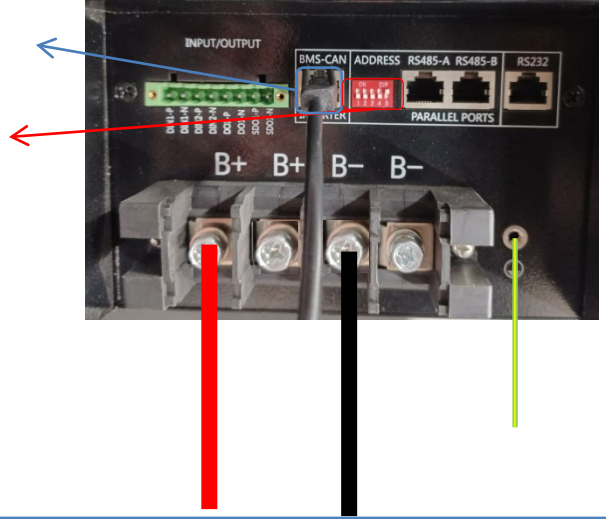
In case of multiple batteries connected in parallel or when adding new batteries to a system with batteries already installed and working, make sure that the difference between the voltages of all the batteries is less than 1.5 Volt. Each battery must be measured individually, therefore make sure the batteries are not connected to each other. (If the value is higher than 1.5 Volt, contact Technical Support)

To access the battery connection, remove the cover by unscrewing the crosshead screws.
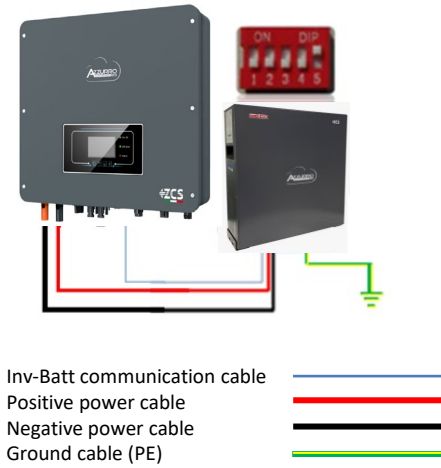
In case of SINGle BATTERY:
1. Connect the **BMS-CAN**

2. Set the DIP switch as in the pictures.

3. Connect the power cable to the terminal B+ and B- (as shown in the picture)

4. Connect the PE wire to the battery .

Inv-Batt communication cable
Positive power cable
Negative power cable
Ground cable (PE)

8.4 4K4 WECO BATTERIES IN PARALLEL

In the event of MULTIPLE BATTERIES, connect the communication cable from the CAN port of the inverter to the CAN-BMS port of the MASTER battery after correctly setting the DIP Switches:
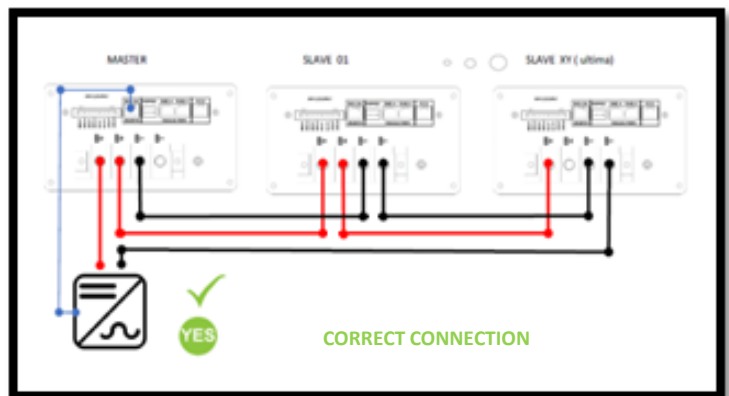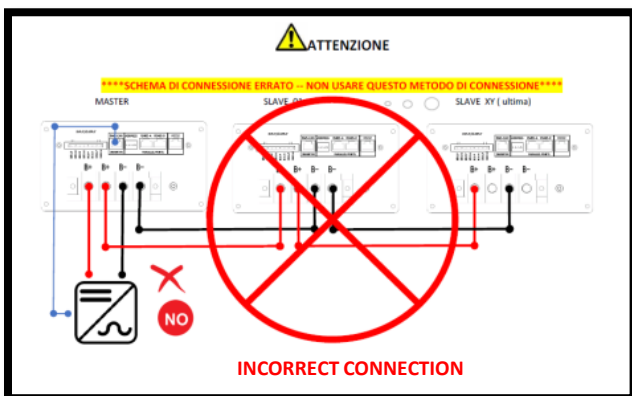
The **RS485-B port of the** MASTER battery must be connected to the **RS485-A** port of the Slave 1 battery using the cable provided inside the battery box . **(NOTE: the RS485-A port of the Master battery will remain not connected).**
In case of additional batteries, the communication cable will be connected between the **RS485-B** port of the previus battery to the RS485-A port of the following battery.
The last battery will only have the **RS485-A** port connected.
As for the power connections, all the batteries must be connected in parallel using the power cables supplied, making sure that the cable does not exceed a length of 2.5 m.
The **"NEGATIVE"** power cable coming out from the inverter must be connected to the **MASTER** battery on the **NEGATIVE** terminal, while the **"POSITIVE"** cable must be connected to the last **SLAVE N** battery on the **POSITIVE** terminal.
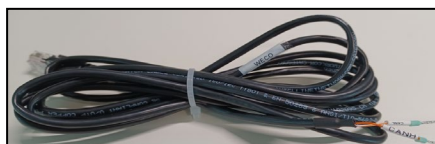
⚠ ATTENZIONE

****SCHEMA DI CONNESSIONE ERRATO -- NON USARE QUESTO METODO DI CONNESSIONE****

INCORRECT CONNECTION

CORRECT CONNECTION

Connecting 2 batteries

Connecting 3 batteries

Connecting 4 batteries

Connecting 5 batteries

Note: Maximum DoD programmable 90%

Note: The communication cables are in the kit that is contained in the WeCo battery box

Note: Turn off the batteries each time the position of the DIP switches is changed. presente nella scatola dell'inverter.

In case of multiple batteries connected in parallel or when adding new batteries to a system with batteries already installed and operating, make sure that the difference between the voltages of all the batteries is less than 1.5 volts. Each battery must be measured individually, therefore make sure the batteries are not connected to each other. (If the value is higher than 1.5 volts, contact Technical Support).

Inverter COM connector
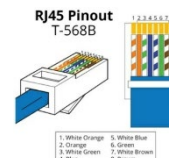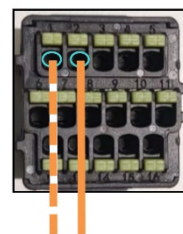
RJ45 Pinout T-568B

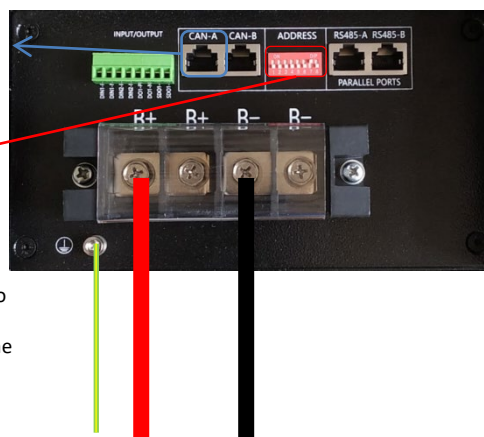| PIN Inverter	Comunicazione batteria	Note
1	CAN (white – orange wire)	Communication between battery BMS and Inverter
2	CAN (orange wire)	
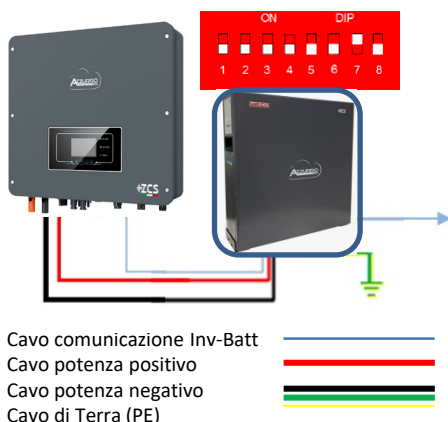
In caso di SINGOLA BATTERIA:
1. Connettere l'ingresso **CAN-A**

2. Impostare i DIP Switch come in figura

3. Le connessioni di potenza dovranno avvenire agganciando gli appositi connettori B+ e B- nell'ingresso corrispettivo (come da figura)

4. Collegare il cavo di terra alla batteria tramite il foro filettato

Cavo comunicazione Inv-Batt
Cavo potenza positivo
Cavo potenza negativo
Cavo di Terra (PE)

In the event of UNDERLINE MULTIPLE BATTERIES, connect the communication cable from the CAN port of the inverter to the CAN-BMS port of the MASTER battery after correctly setting the DIP Switches:
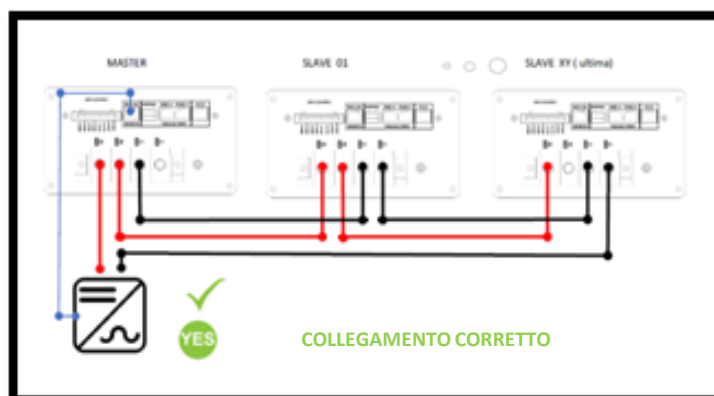

The **RS485-B port of the** MASTER battery must be connected to the **RS485-A** port of the Slave 1 battery using the cable provided inside the battery box . **(NOTE: the RS485-A port ofthe Master battery will remain not connected).**
In case of additional batteries, the communication cable will be connected between the **RS485-B** port of the previous battery to the RS485-A port of the following battery.
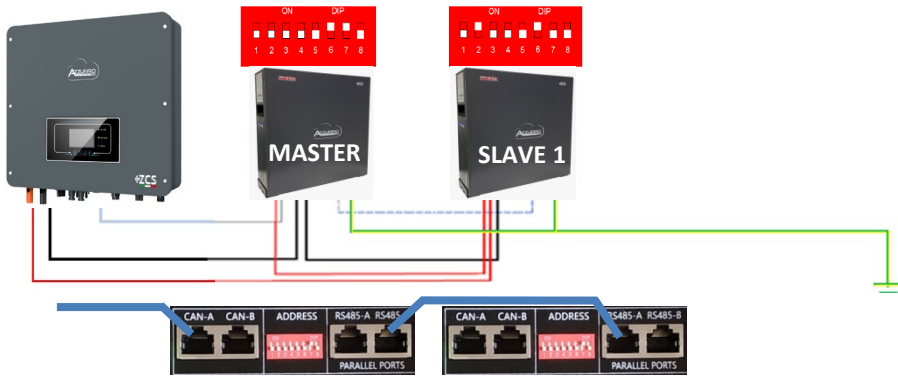The last battery will only have the **RS485-A** port connected.
As for the power connections, all the batteries must be connected in parallel using the power cables supplied, making sure that the cable does not exceed a length of 2.5 m.
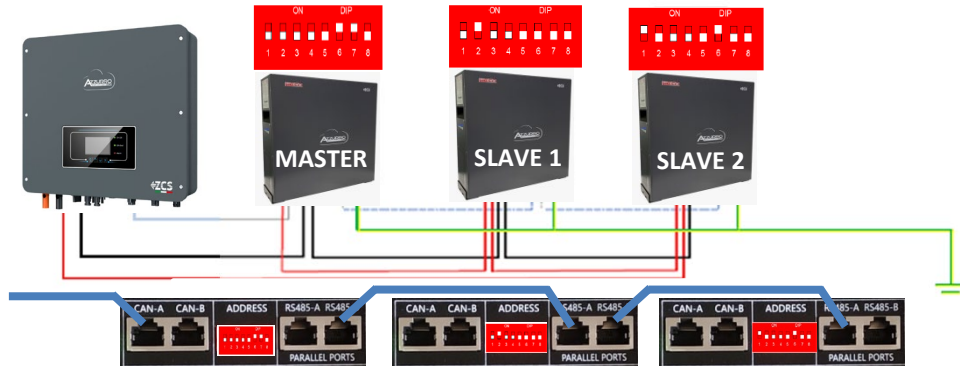The **"NEGATIVE"** power cable coming out from the inverter must be connected to the **MASTER** battery on the **NEGATIVE** terminal, while the **"POSITIVE"** cable must be connected to the last **SLAVE N** battery on the **POSITIVE** terminal.
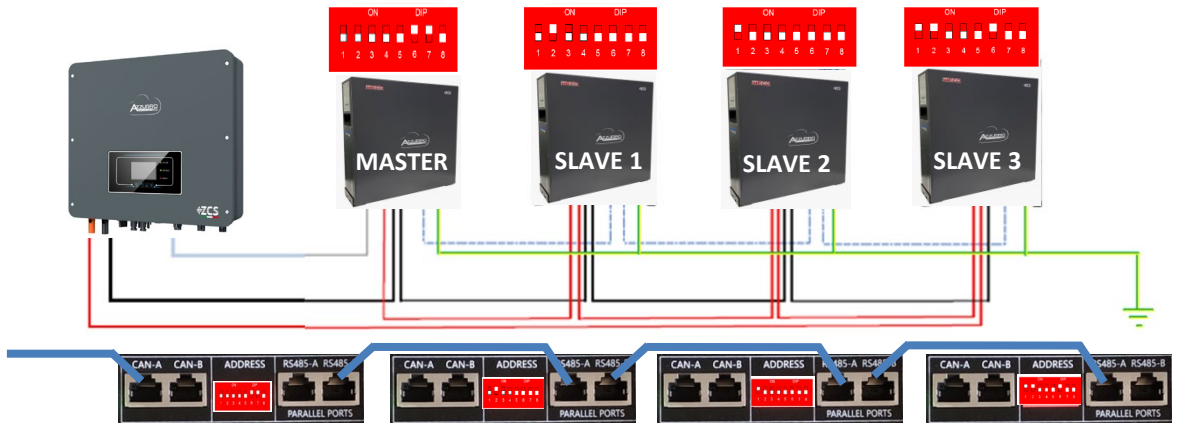

****SCHEMA DI CONNESSIONE ERRATO -- NON USARE QUESTO METODO DI CONNESSIONE****

COLLEGAMENTO NON CORRETTO

COLLEGAMENTO CORRETTO

Connecting 2 batteries

MASTER · SLAVE 1

Connecting 3 batteries

MASTER · SLAVE 1 · SLAVE 2

Connecting 4 batteries

MASTER · SLAVE 1 · SLAVE 2 · SLAVE 3

Connecting 5 batteries

MASTER · SLAVE 1 · SLAVE 2 · SLAVE 3 · SLAVE 4

8.7 SINGLE 5k3 WECO BATTERY

Inverter COM connector

RJ45 Pinout
T-568B

Note: Maximum DoD programmable 90%

Note: The communication and power cables must be ordered separately

Note: Turn off the batteries each time of the DIP switches is position changed.

In case of multiple batteries connected in parallel or when adding new batteries to a system with batteries already installed and operating, make sure that the difference between the voltages of all the batteries is less than 1.5 volts. Each battery must be measured individually, therefore make sure the batteries are not connected to each other. (If the value is higher than 1.5 volts, contact Technical Support). To access the battery connection, remove the cover of the LV section located on the left hand side by unscrewing the crosshead screws. See the figure to identify the LV section

PIN Inverter	Comunicazione batteria	Note
1	CAN (white – orange wire)	Communication between battery BMS and Inverter
2	CAN (orange wire)	

Low voltage connector (LV)

High voltage connectors (HV)

Attention: When connecting 5k3 batteries to single-phase Inverter inverters, only the low voltage section must be used. To prevent damage to the batteries or inverter, do not use the high voltage section.

In case of a SINGLE BATTERY:
1. Connect the **CAN-A** input
2. Set the DIP switches as shown in the figure

3. Connect the power cables 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

Inv-Batt communication cable
Positive power cable
Negative power cable
Ground cable (PE)
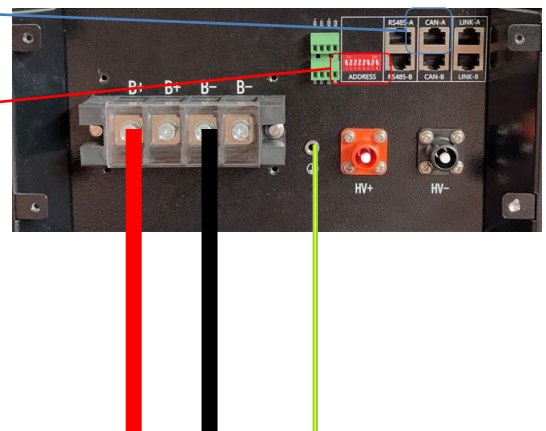
8.8 WECO 5k3 BATTERIES IN PARALLEL

In case of MULTIPLE BATTERIES, connect the communication cable from the CAN port of the inverter to the CAN- A port of the MASTER battery after defining the correct positioning of the DIP switches:

The **RS485-B port of the** MASTER battery must be connected to the **RS485-A** port of the Slave 1 battery using the cable provided inside the battery box . **(NOTE: the RS485-A port of the Master battery will remain not connected).**

In case of additional batteries, the communication cable will be connected between the **RS485-B** port of the previous battery to the RS485-A port of the following battery. The last battery will only have the **RS485-A** port connected.As for the power connections, all the batteries must be connected in parallel using the power cables supplied, making sure that the cable does not exceed a length of 2.5 m.

The **"NEGATIVE"** power cable coming out from the inverter must be connected to the **MASTER** battery on the **NEGATIVE** terminal, while the **"POSITIVE"** cable must be connected to the last **SLAVE N** battery on the **POSITIVE** terminal.

⚠️ATTENZIONE

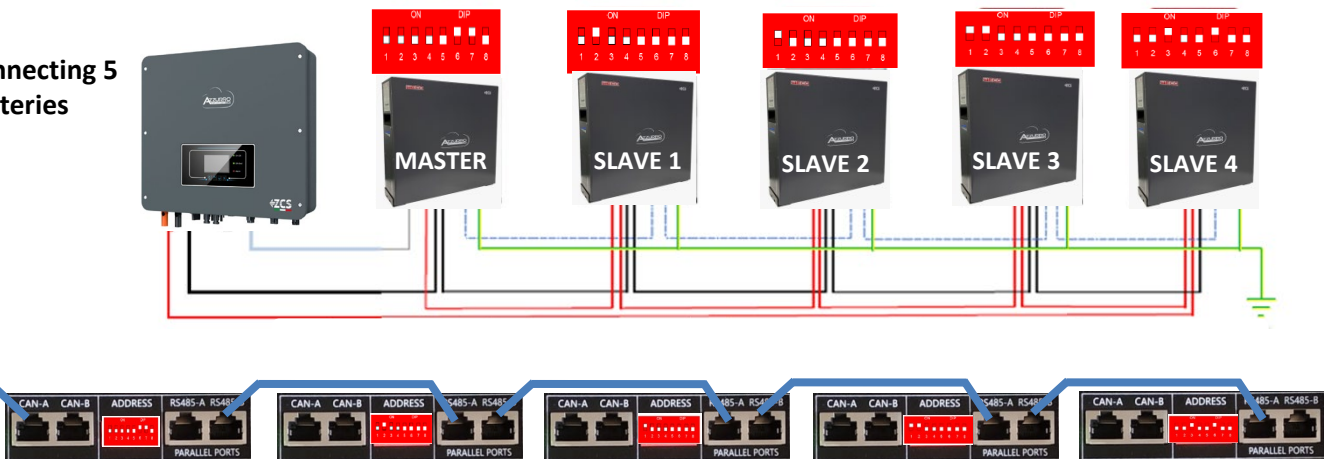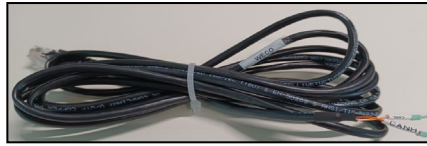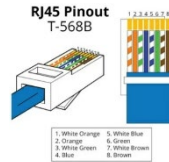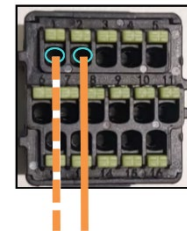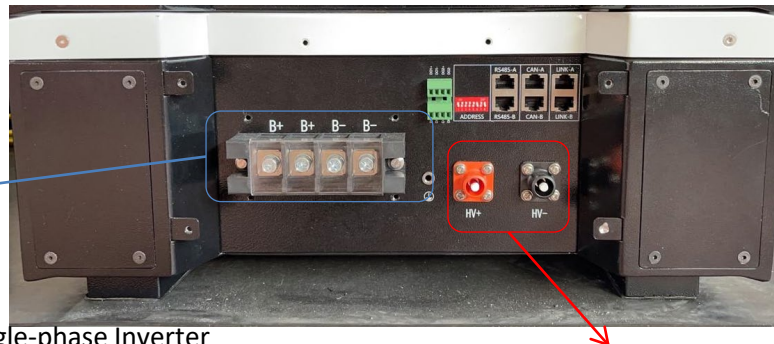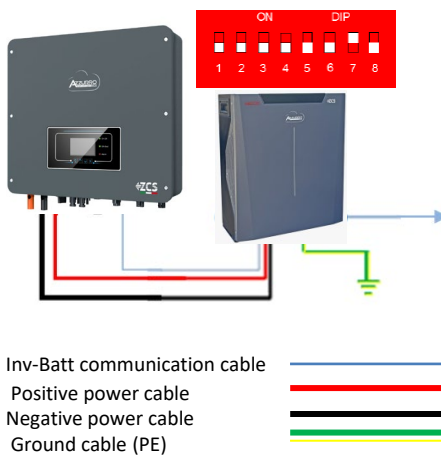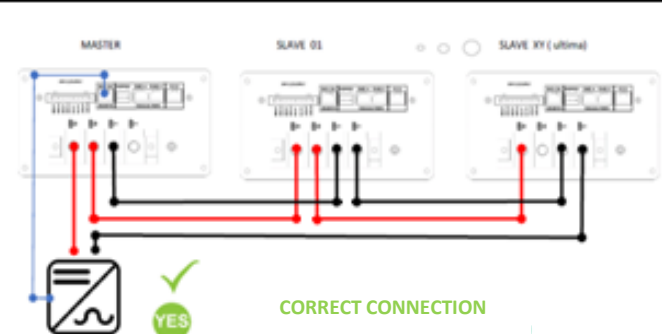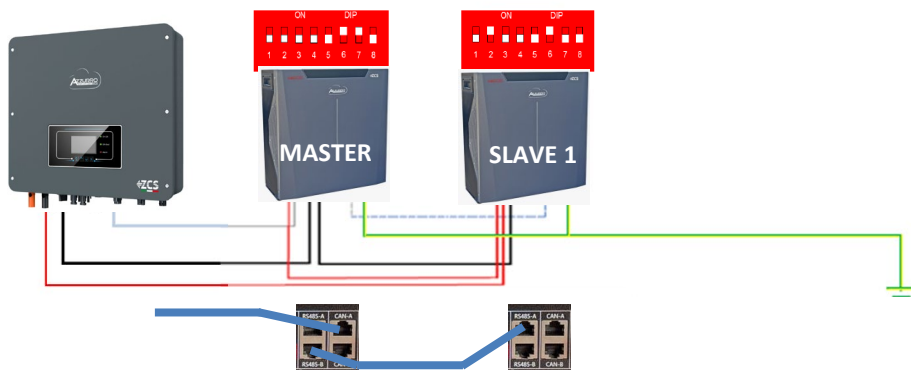****SCHEMA DI CONNESSIONE ERRATO -- NON USARE QUESTO METODO DI CONNESSIONE****

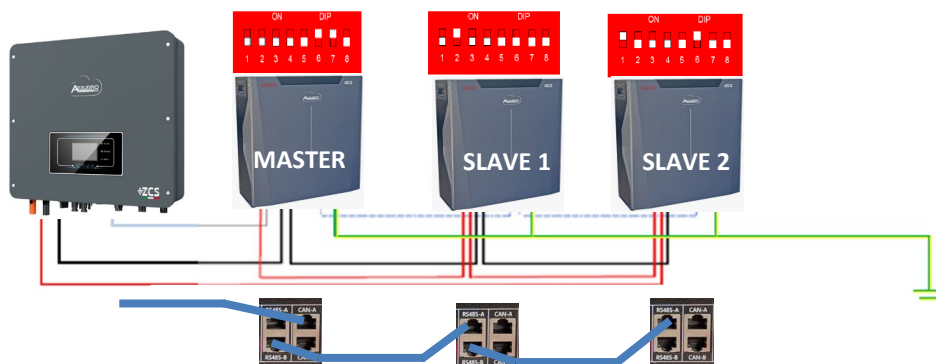MASTER   SLAVE 01   SLAVE XY (ultima)

❌ NO

INCORRECT CONNECTION

MASTER   SLAVE 01   SLAVE XY (ultima)

✅ YES

CORRECT CONNECTION

Connecting 2 batteries

MASTER   SLAVE 1

RS485-A CAN-A / RS485-B CAN-B

Connecting 3 batteries

MASTER   SLAVE 1   SLAVE 2

RS485-A CAN-A / RS485-B CAN-B

Connecting 4 batteries

MASTER   SLAVE 1   SLAVE 2   SLAVE 3

RS485-A CAN-A / RS485-B CAN-B

Connecting 5 batteries

MASTER   SLAVE 1   SLAVE 2   SLAVE 3   SLAVE 4

RS485-A CAN-A / RS485-B CAN-B

12

8.9 SINGLE 5k3XP WECO BATTERY

Inverter COM connector

Note: Maximum DoD programmable 90%

Note: The communication and power cables must be ordered separately

Note: Turn off the batteries each time of the DIP switches is position changed.

In case of multiple batteries connected in parallel or when adding new batteries to a system with batteries already installed and operating, make sure that the difference between the voltages of all the batteries is less than 1.5 volts. Each battery must be measured individually, therefore make sure the batteries are not connected to each other. (If the value is higher than 1.5 volts, contact Technical Support). To access the battery connection, remove the cover of the LV section located on the left hand side by unscrewing the crosshead screws. See the figure to identify the LV section

PIN Inverter	Comunicazione batteria	Note
1	CAN (white – orange wire)	Communication between battery BMS and Inverter
2	CAN (orange wire)	

Low voltage connector (LV)

Attention: When connecting 5k3xp batteries to single-phase Inverter inverters, only the low voltage section must be used. To prevent damage to the batteries or inverter, do not use the high voltage section.

High voltage connectors (HV)

In case of a SINGLE BATTERY:
1. Connect the **CAN-A** input
2. Set the DIP switches as shown in the figure

3. Connect the power cables 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

Inv-Batt communication cable
Positive power cable
Negative power cable
Ground cable (PE)

8.10 WECO 5K3XP BATTERIES IN PARALLEL

In case of MULTIPLE BATTERIES, connect the communication cable from the CAN port of the inverter to the CAN- A port of the MASTER battery after defining the correct positioning of the DIP switches:

The **RS485-B port of the** MASTER battery must be connected to the **RS485-A** port of the Slave 1 battery using the cable provided inside the battery box . **(NOTE: the RS485-A port of the Master battery will remain not connected).**

In case of additional batteries, the communication cable will be connected between the **RS485-B** port of the previous battery to the RS485-A port of the following battery. The last battery will only have the **RS485-A** port connected.As for the power connections, all the batteries must be connected in parallel using the power cables supplied, making sure that the cable does not exceed a length of 2.5 m.

The **"NEGATIVE"** power cable coming out from the inverter must be connected to the **MASTER** battery on the **NEGATIVE** terminal, while the **"POSITIVE"** cable must be connected to the last **SLAVE N** battery on the **POSITIVE** terminal.

⚠️ATTENZIONE

****SCHEMA DI CONNESSIONE ERRATO -- NON USARE QUESTO METODO DI CONNESSIONE****

MASTER   SLAVE 01   SLAVE XY (ultima)
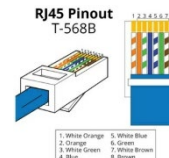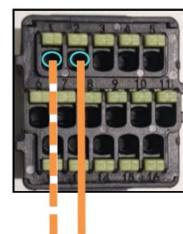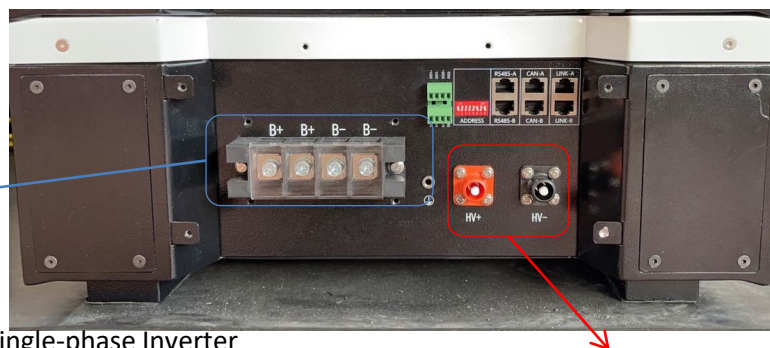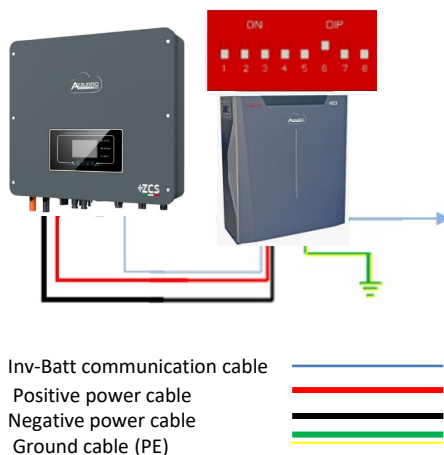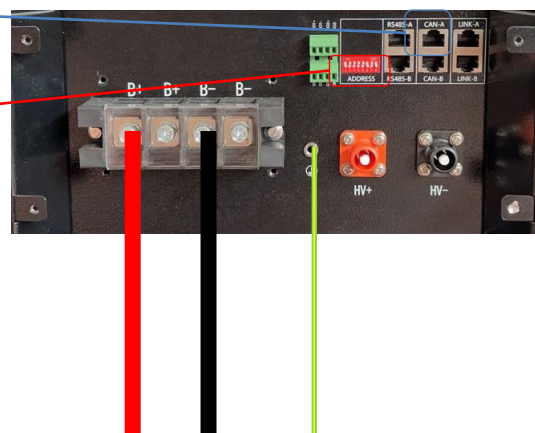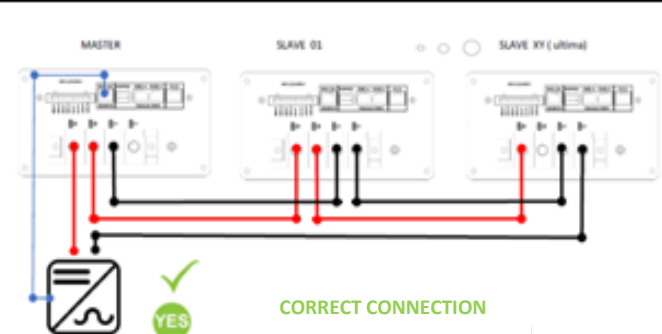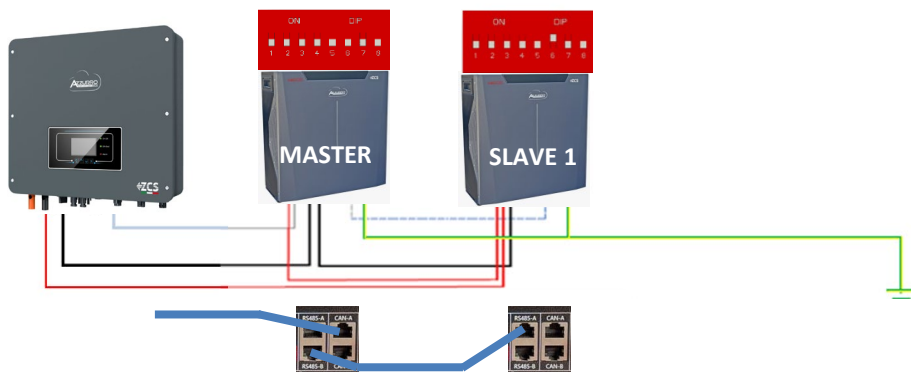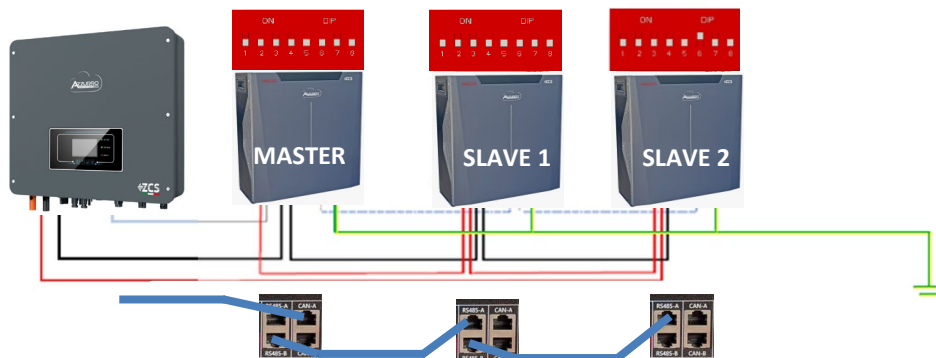
❌ NO

INCORRECT CONNECTION

MASTER   SLAVE 01   SLAVE XY (ultima)

✓ YES

CORRECT CONNECTION

Connecting 2 batteries

MASTER   SLAVE 1

Connecting 3 batteries

MASTER   SLAVE 1   SLAVE 2

Connecting 4 batteries

MASTER   SLAVE 1   SLAVE 2   SLAVE 3

Connecting 5 batteries

MASTER   SLAVE 1   SLAVE 2   SLAVE 3   SLAVE 4

14

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;**
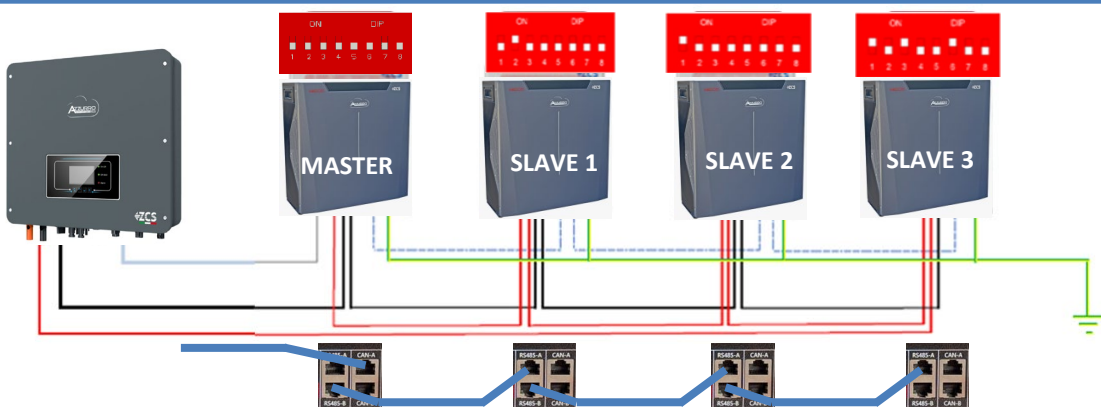✓ **The DIP switches of the 5K3 batteries must be set according to the Slave number as shown in the table above (example DIP switch: Master 5K3XP - 00000000, Slave 1 5K3XP - 00000000, Slave 2 5K3 - 10000000 and Slave 3 5K3 - 10100100).**

Connecting 3 batteries:
Master 5K3XP
Slave 1 5K3
Slave 2 5K3
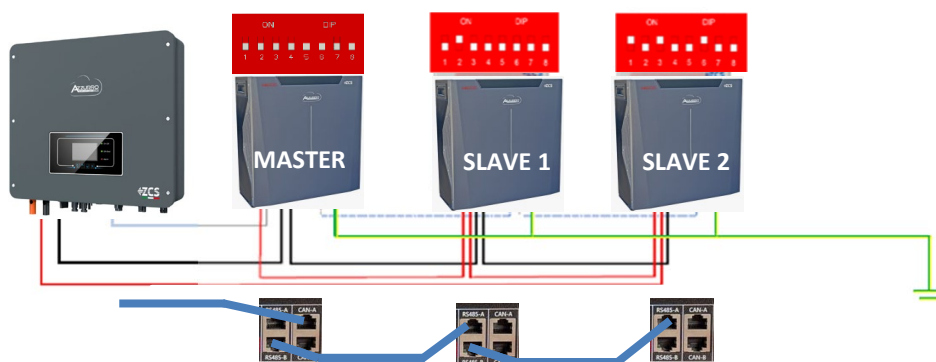
Connecting 4 batteries:
Master 5K3XP
Slave 1 5K3
Slave 2 5K3
Slave 3 5K3

Connecting 5 batteries:
Master 5K3XP
Slave 1 5K3
Slave 2 5K3
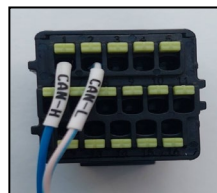**Slave 3 5K3**
Slave 4 5K3
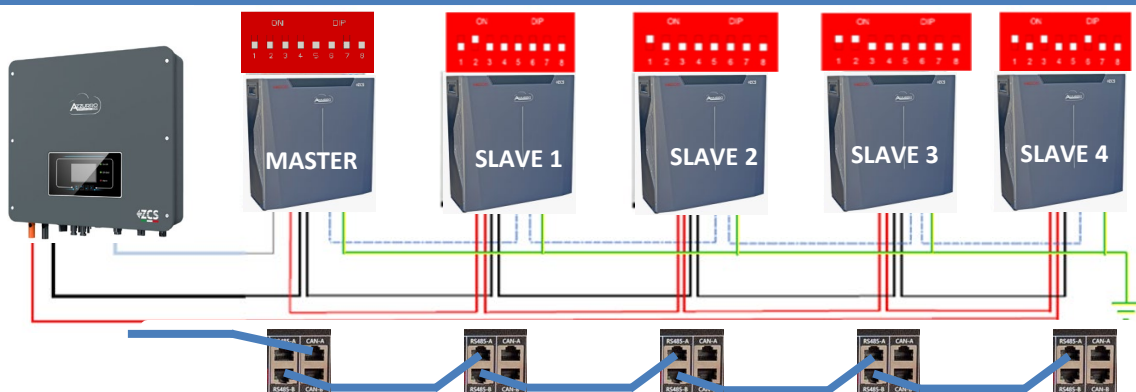
8.12 SINGLE AZZURRO 5000 BATTERY

Note: Maximum DoD programmable 90%

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

In case of multiple batteries connected in parallel or when adding new batteries to a system with batteries already installed and working, make sure that the difference between the voltages of all the batteries is less than 1.5 Volt. Each battery must be measured individually, so make sure the batteries are not connected to each other. (If the value is higher than 1.5 Volt, contact Technical Support)

Inverter PIN	Battery communication	Note
1	CAN H (blue wire)	Communication between battery BMS and Inverter
2	CAN L white/blue wire)	

Inverter COM connector

Inv-Batt communication cable ⎯⎯⎯⎯⎯
Positive power cable ⎯⎯⎯⎯⎯
Negative power cable ⎯⎯⎯⎯⎯
Ground cable (PE) ⎯⎯⎯⎯⎯
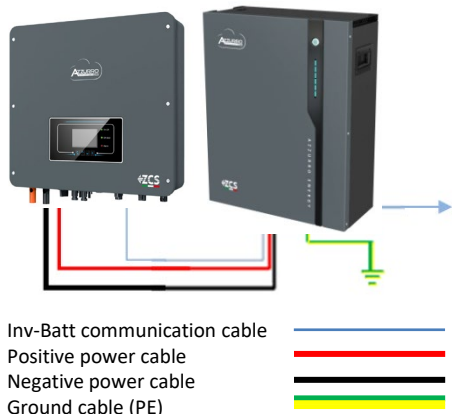
In case of a SINGLE BATTERY:

1. Connect the **CAN** input

2. The power connections must be made by attaching the appropriate P+ and P- connectors to the corresponding input (as shown in the figure).

3. Connect the ground cable to the battery through the threaded hole indicated by the ground symbol.

4. Press the button on the front of the battery to switch it on.
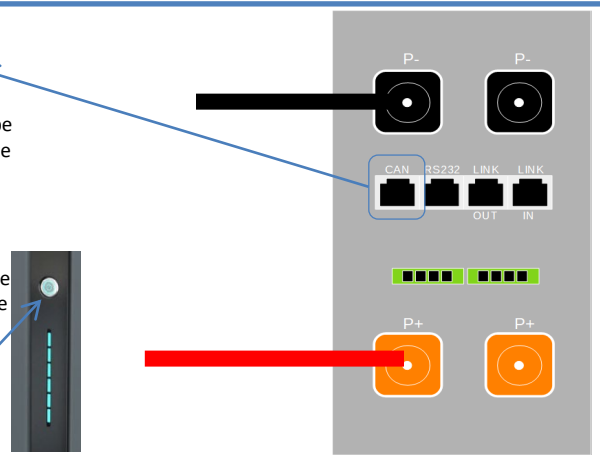
8.13 AZZURRO 5000 BATTERIES IN PARALLEL

In the event of UNDERLINE MULTIPLE BATTERIES, connect the communication cable from the CAN port of the inverter to the CAN port of the MASTER battery. The MASTER battery must be connected to the communication cable found inside the battery box starting from the **LINK OUT** port and arriving at the **LINK IN** communication port of the Slave 1 battery. **(Attention: do not connect the LINK IN port to the Master battery).**

In case of additional batteries, the communication cable will be connected as indicated above for the connection of the MASTER battery to SLAVE 1. The last battery will only have the **LINK IN** port connected.

As for the power connections, all the batteries must be connected in parallel using the power cables supplied, making sure that the cable does not exceed a length of 2.5 m.

Batteries power connection shall be done as shown in the below picture and described below:

Positive and Negative power cables shall be connected one to the first battery (**MASTER)** and the other to the last battery (**SLAVE N**).

Connecting 2 batteries

Connecting 3 batteries

Connecting 4 batteries

P1 ⟹ P2 **Grid**

PIN	definition
13	CT-
14	CT+

CT+
CT-

⚠ only for distances between Inverter and CT below 50m ⚠

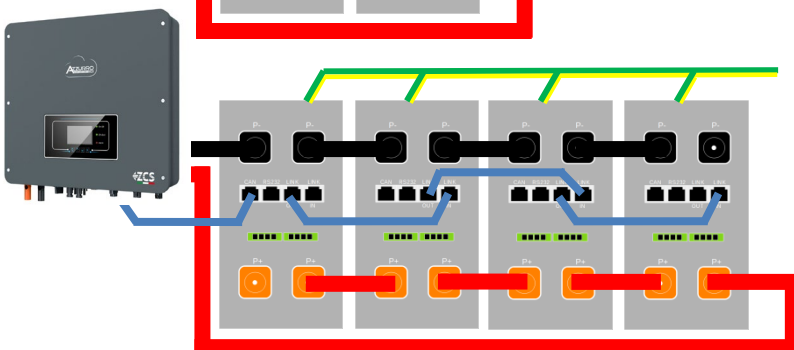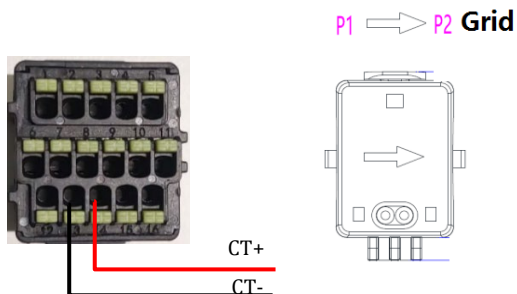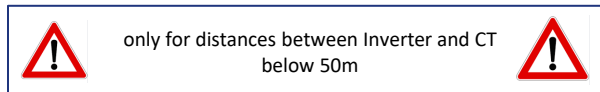Connect the sensor negative wire in input 13 of the COM connector
Connect the sensor positive wire in input 14 of the COM connector

Correct placment of the current sensor:
• **The CT** measure the current exchange with the grid, shall be placed at the utility power meter and include all the phase cable coming out from the meter.

✓The direction of the CT is not important since the system recognize it at the first power on.

For the extention cable is recomended to use a STP cable cat 6 (8 wires) connecting 4 wire to the positive CT terminal and 4 wire to the negative, or a 2x0,5 mm² shielded cable, is recomended to use flexible wire.

PV Panels **Inverter** **Breaker** **Exchange meter**

Battery

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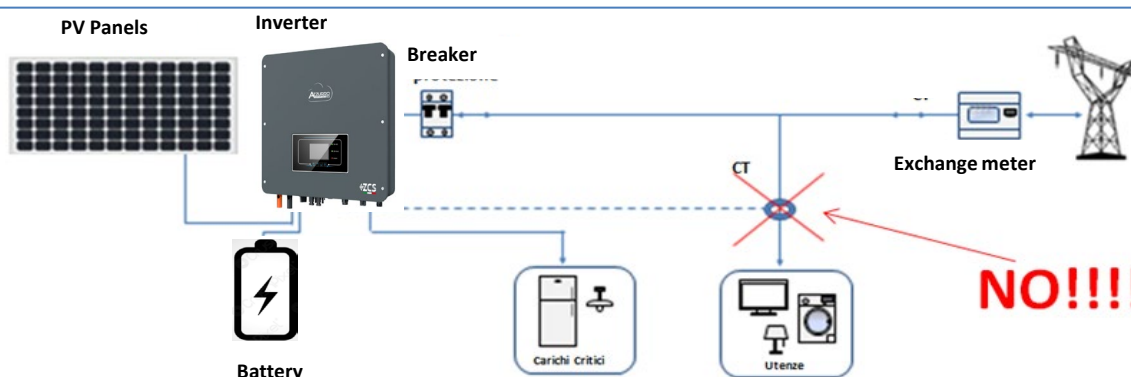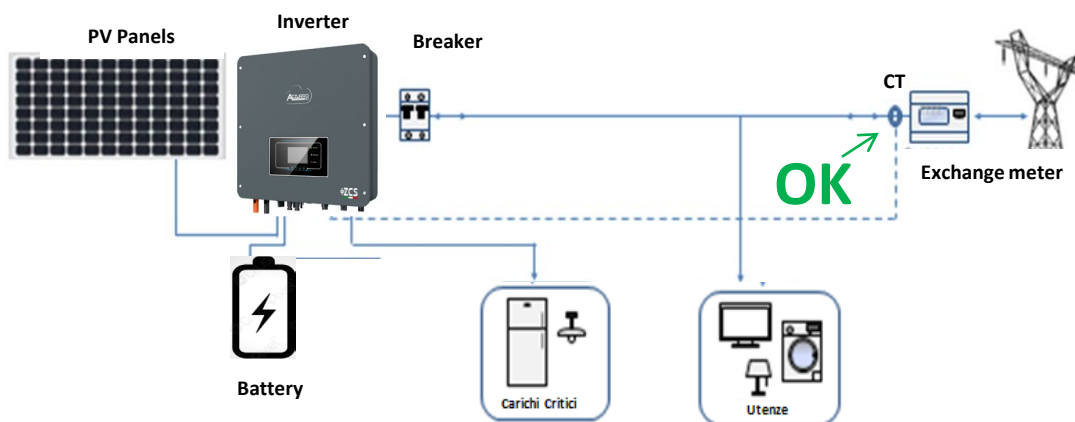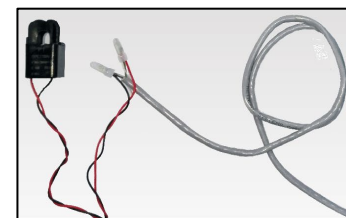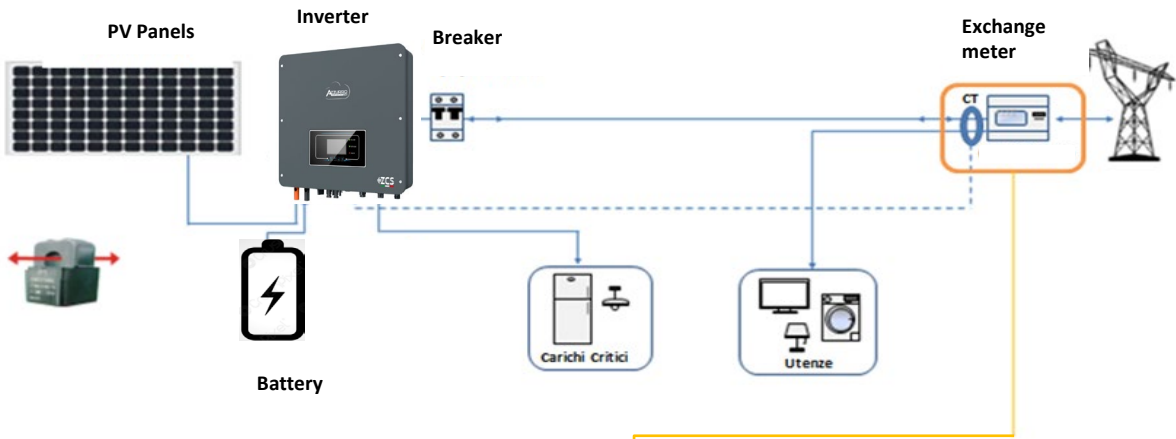
The sensor must include all phase cables entering or leaving the meter.

OK   OK   NO

CTa   CTa   CTa

L N   L N   L N

9.2 MEASUREMENT OF THE EXCHANGE POWER THROUGH METER

INVERTER PIN	METER PIN	Nota
16	24	Exchange meter communication
15	25	

PV Panels

Grid

HYD

Meter

L N

Exchange meter

RS485

Load

Battery
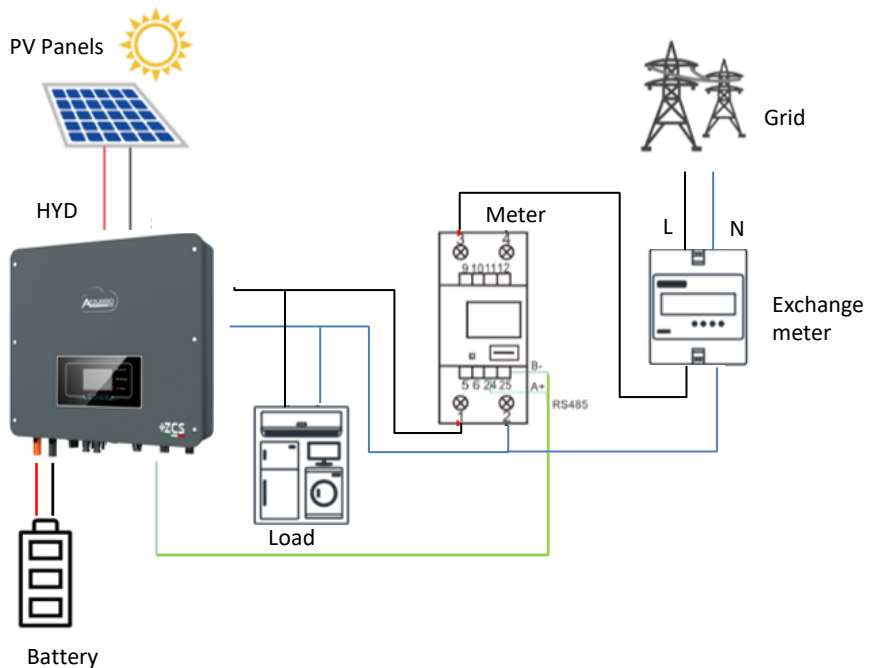
Meter Connection

1. Connect Meter and inverter trough the RS485 port.On the Meter this port is identified by **PIN 24 e 25.**

Connect Meter and inverter trough the RS485 port.On the Meter this port is identified by **PIN 24 e 25.**

15 16

Meter for exchange

24 25

---
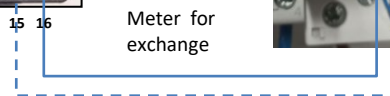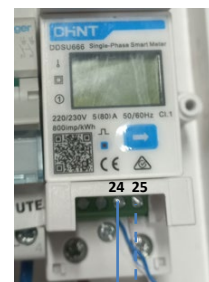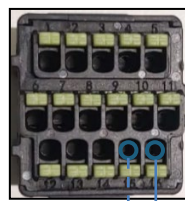
2. Connect the Meter as shown in the picture:
- ✓ Connect Neutral cable (N) to Meter's PIN 2;
- ✓ Connect phase cable (exchange meter side) to Meter's PIN 3
- ✓ Connect phase cable (Solar inverter and loads side) to Meter's PIN 1

GRID SIDE

PV AND LOAD SIDE

Loads
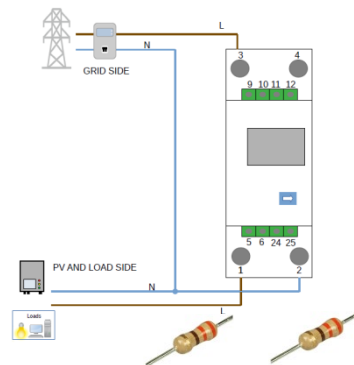
⚠ NOTE: for distances between Inverter and Meter above 100 m is recomended to connect in the 485 daysy chain 2 120 Ohm resistors, one between PIN 15 and PIN 16 in the inverter COM port and between PIN 24 and PIN 25 on the meter. ⚠

9.3 SETTING METER FOR EXTERNAL PRODUCTION

1. Verify, using the push button
That the Meter is **001**.
In the Meter display are visible also:
- ✓ Current;
- ✓ Voltage;
- ✓ Power Factor ;
- ✓ Power.

Indirizzo   Corrente   Potenza   Tensione   Power factor

2. In order to configure the meter reading on the inverter is required to access the display (see picture):
1. Press the first push button on the inverter;
2. Access the advanced setting on the menu;
3. Enter the PWD «0715»;
4. Access submenu 10. Set PCC Meter;
5. Select Enable;
6. Press Ok.

PV Panels

Inverter

HYD

Rete

Meter for external prioduction

RS485

Exchange Meter

L   N

CT

HYD

Loads

Battery
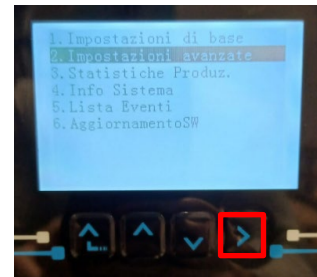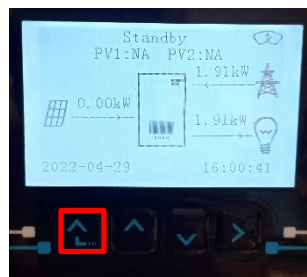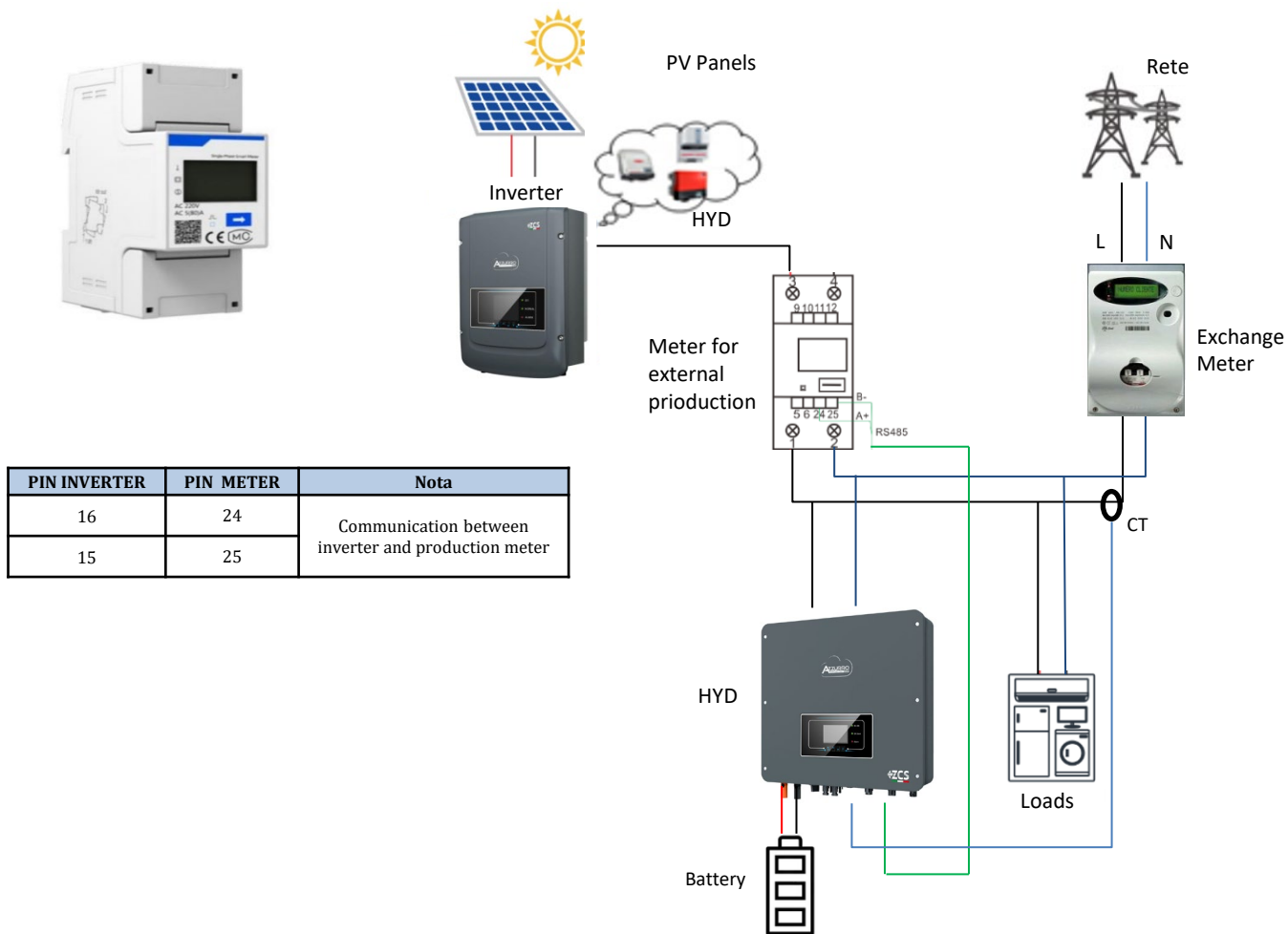
| PIN INVERTER	PIN METER	Nota
16	24	Communication between inverter and production meter
15	25	

Connessioni Meter

1. Connect Meter and inverter trough the RS485 port.On the Meter this port is identified by **PIN 24 e 25.**

On the inverter this port is identified by **PIN 16 e 15** on the COM conector
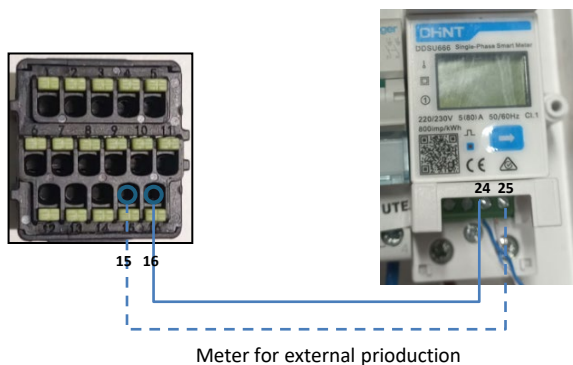
15 16

24 25

Meter for external prioduction

Connect the Meter as shown in the picture:

- ✓ Connect Neutral cable (N) to Meter's PIN 2;
- ✓ Connect phase cable (external inverter side) to Meter's PIN 3
- ✓ Connect phase cable (loads side) to Meter's PIN 1
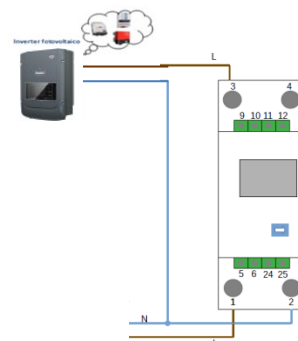
NOTA: Per **distanze** fra Meter e inverter Ibrido **superiori a 100 metri** è consigliato connettere lungo la daisy chain 485 due resistenze da 120 Ohm, la prima all'inverter (fra i PIN 15 e 16 della COM inverter), la seconda direttamente al Meter (PIN 24 e 25).

1. Verify, using the push button
That the Meter is **002**.
In the Meter display are visible also:
- ✓ Current;
- ✓ Voltage;
- ✓ Power Factor ;
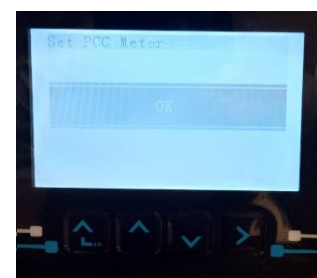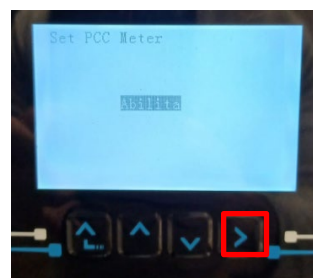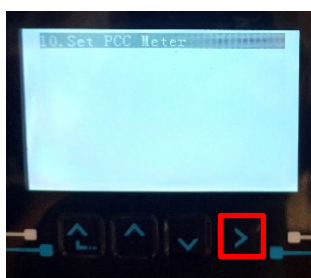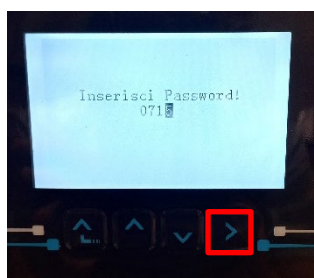- ✓ Power.

| Indirizzo | Corrente | Potenza | Tensione | Power factor |

1.2 Address setting on the production Meter:

Press for 5 seconds	The display will alternativly show the protocoll and the modbus address.		Once the screen with the modbuss address appears press the arrow to increase the digit.	
In order to enter setting menu				

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

9.6 METERS CONFIGURATION

PV Panels

Inverter

External Pruduction Meter

RS485

PV Panels

HYD

Batteria

Carichi

Meter for exchange

RS485

Grid

L   N

M
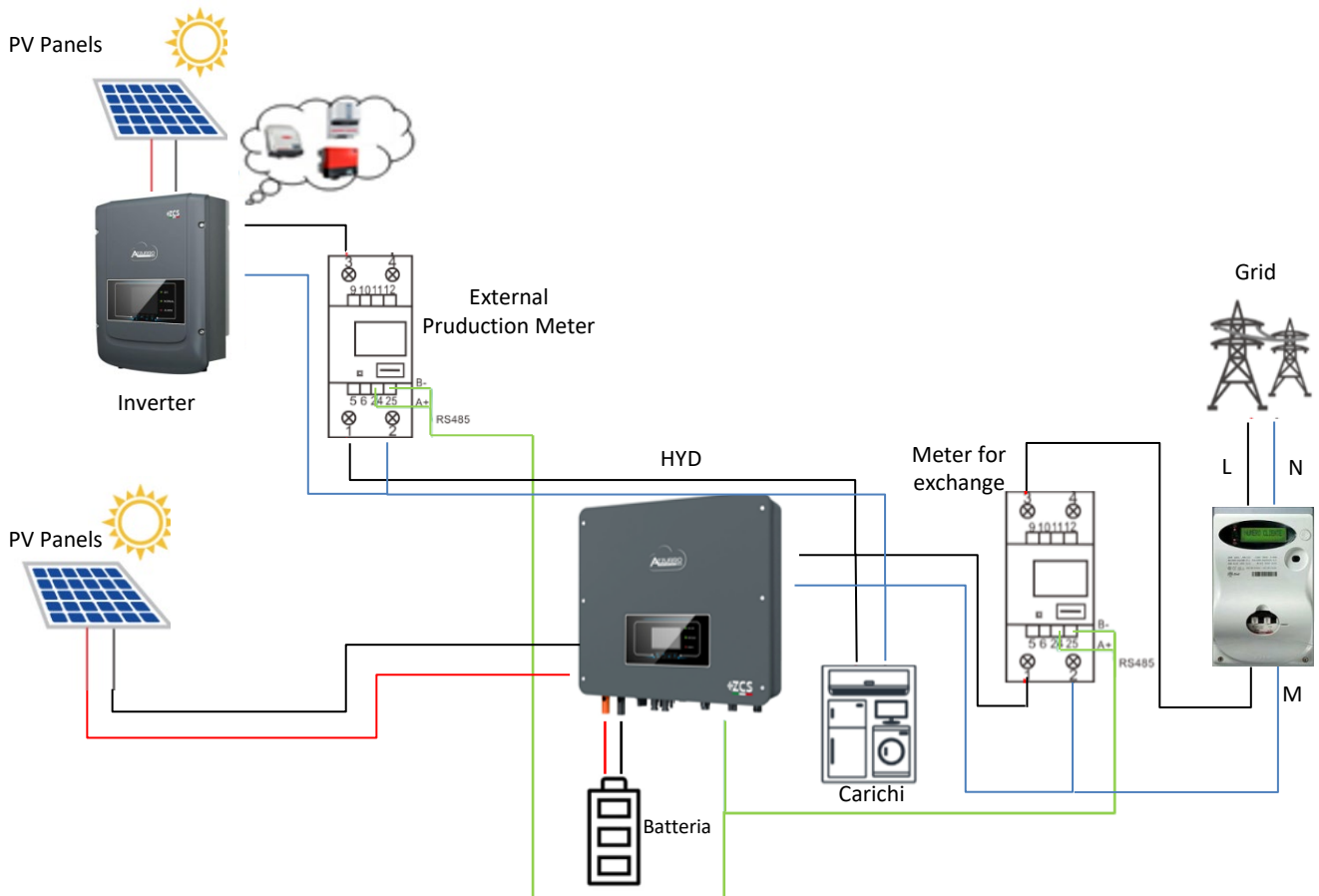
In order to verify the correct reading on the exchange meter in required to turn off the PV production, turn on some loads and using the arrow ➡️ verify that the Power is consistent with the expected power consumption and the value is Negative (-).
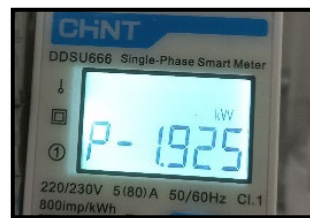
If a Production meter is present in order to verify the correct reading is required to read the power in thedisplay using the Arrow and verify that the value is the same as read in the external solar inverter display and the Value is Positive (+).

10. GRID CONNECTION

Step 1: Select the appropriate cable.
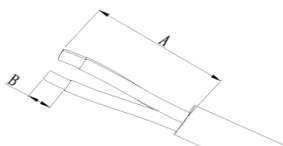
Step 2 2: Pass the wire trough the terminal
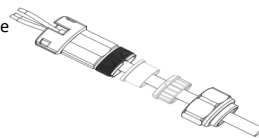
Step 3: secure the wire t the terminal using a Allen wrench.
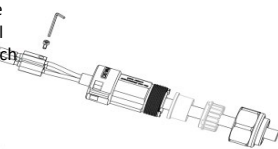
Fase 4: Pusch the terminal forward in the housing untlil "click"
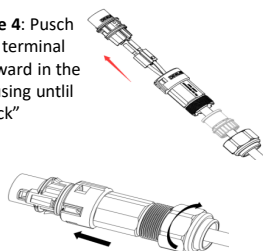
Component		Description	Recomended cable	Recomendec cable spec
AC LOAD	Load	L (U)	Copper cable for outdoor application	Size 4~6 mm²
		N (W)		
		PE (O)		
AC GRID	AC	L (U)	Copper cable for outdoor application	Size : 5~8 mm²
		N (W)		
		PE (O)		
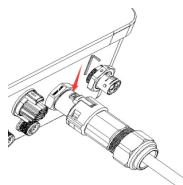
GRID

Connecton insertion
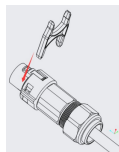
Connector disconnection

Lock / Un lock

Click!

Hold the button to unlock

LOAD
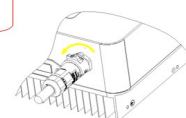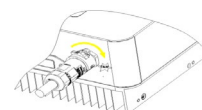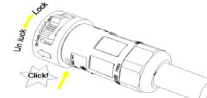
Recommended specifications for DC input cables

Cross-sectional area (mm²)		Outer diameter of cable (mm²)
Range	Recommended value	
4.0~6.0	4.0	4.5~7.8

Procedure:

1) Prepare the positive and negative PV cables.

1. Positive contact
2. Negative contact

8-10 mm

8-10 mm

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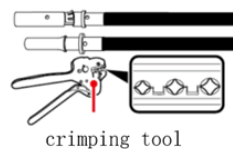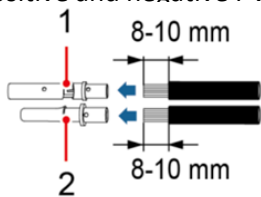
Insert the crimped positive and negative cables into the corresponding photovoltaic connectors.

3. Positive connector
4. Negative connector

Click

MC4 Wrench
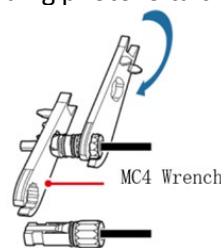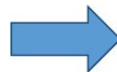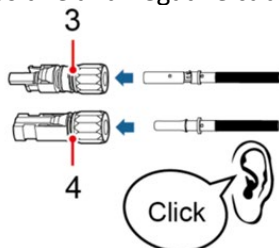
Make sure that all the DC string parameters are acceptable to the inverter in accordance with the technical specifications given in the datasheet and in the Azzurro ZCS configurator.

In addition, check that the polarities of the photovoltaic cables are correct. Insert the positive and negative connectors of the HYD-ES inverter until you hear a "click."
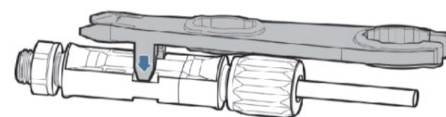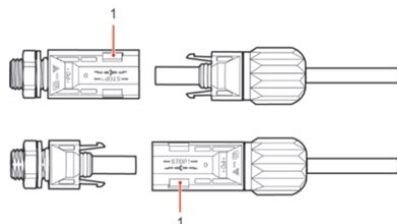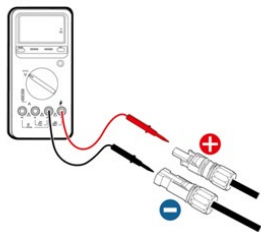
Use a MC4 wrench to disconnect the photovoltaic connectors

PRUDENZA!

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

NOTE: 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 should be populated, even if the system only has one string.

Use a "Y" cable or a square to split the string.

Configure the inverter in parallel MPPT mode directly from the display.

HYD 3-6-HP   **GRID**

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

OFF

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

Current flow
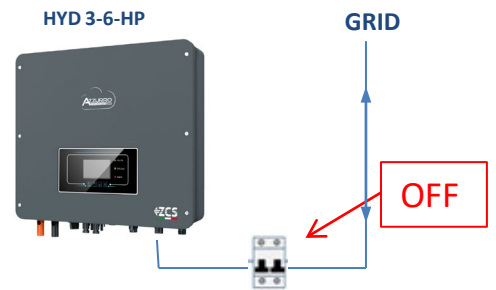
Make sure there is a domestic load of at least 200 W by using a current clamp to measure under the import/export meter.

Import/Export meter

> 200W

Loads
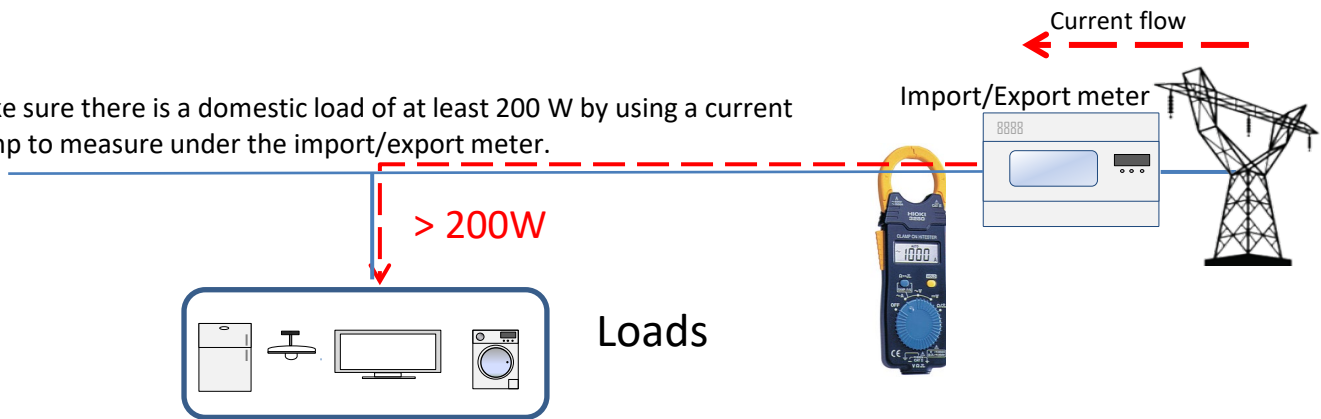
Turn on the batteries:

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.
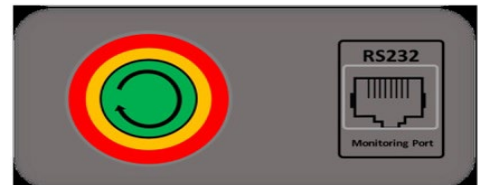
In case of **WeCo** or **Azzurro** batteries, press the POWER button of each battery for 1 second, the RUN LED will turn on and the internal contactor will close automatically.

RS232

RETE

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

ON

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

24

IMPORTANT: Always have a PC and USB memory in order to set the correct country standard and perform firmware upgrade

Parameter	Nota
1. Language OSD	The default language is English
2. Date and time setting	
*3. Safety parameters setting	The safety parameters need to be downloaded from the Azzurro webpage and upload in the inverter using a USB memory.
*4Battery paramenters setting	
5. Configuration completed	

*2. Time and date setting

1 setting

2. Date and time

To write data and hour

- back
- Decrementa numero
- Incrementa numero
- Avanza o conferma

Date and hour

2019-01-02 09:23:07
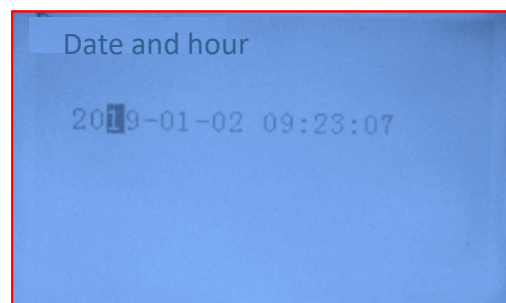
*3. Safety parameters setting (country code)

1.Basic setting

3.Safety parameters

1. 001-000-CEI-021 Internal
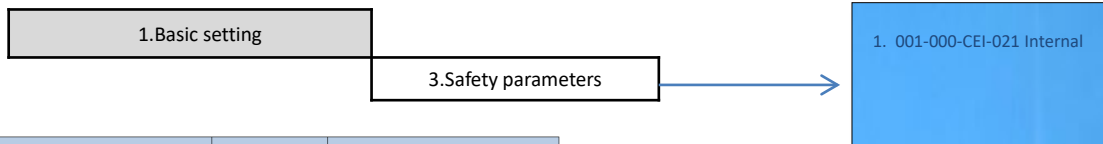
Codice		Paese	Codice		Paese
	00	Germania VDE4105	11	/	Francia
00	01	Germania BDEW	12	/	Polonia
	02	Germania VDE0126	13	/	EU EN50438
	00	Italia CEI-021 Interno	14	/	IEC EN61727
01	01	Italia CEI-016 Italia	15	/	Corea
	02	Italia CEI-021 eterno	16	/	Svezia
	03	Italia CEI0-21 In Areti	17	/	Europa generale
02	/	Australia	18	/	Cipro
03	/	SpainRD1699	19	/	India
04	/	Turchia	20	/	Filippine
05	00	Danimarca	21	/	Nuova Zelanda
	01	Danimarca TR322	22	/	Brasile
06	00	Grecia continentale		00	Slovacchia VSD
	01	Isola della Grecia	23	01	Slovacchia SSE
07	/	Paesi Bassi		02	Slovacchia ZSD
08	/	Belgio	24	/	Irlanda EN50438
09	00	Regno Unito G59/G99	25	/	Tailandia PEA
	01	Regno Unito G83/G98	26	/	Sudafrica
10	/	Cina			

In order to set the country is required to insert on a USB memory the safety folder (unzipped) available at :
https://www.zcsazzurro.com/it/documentazione/azzurro-hybrid-storage-inverter-single-phase-ep5kw
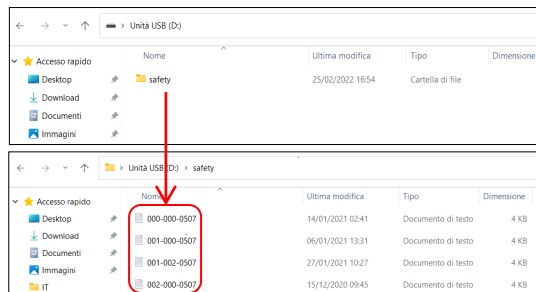
*4. Battery parameters setting

1.Advanced setting

"Password 0001"

1.Battery paramenters

1. Battery Type
2. Depth of discharge
3. Save*

* After setting the parameter make sure to press save (point 3)

1.PYLON (PYLONTECH)

2.AZZURRIO

4.GENERAL LITHIUM (WECO)

Depth of discharge
50%
Depth of dischargeEPS
80%
Safety Buffer
10%

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

Hyd HP

1 **OFF**

Grid

OFF

2

Battery **OFF** 3

---
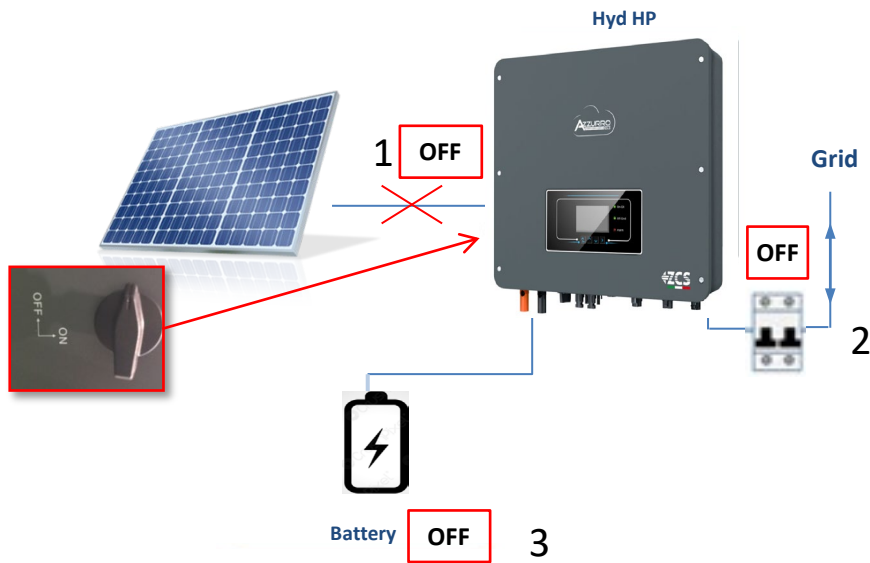
2) Restore AC voltage by flicking the dedicated switch upwards:

Hyd HP

1

OFF

Grid

ON 2

OFF 3

Battery

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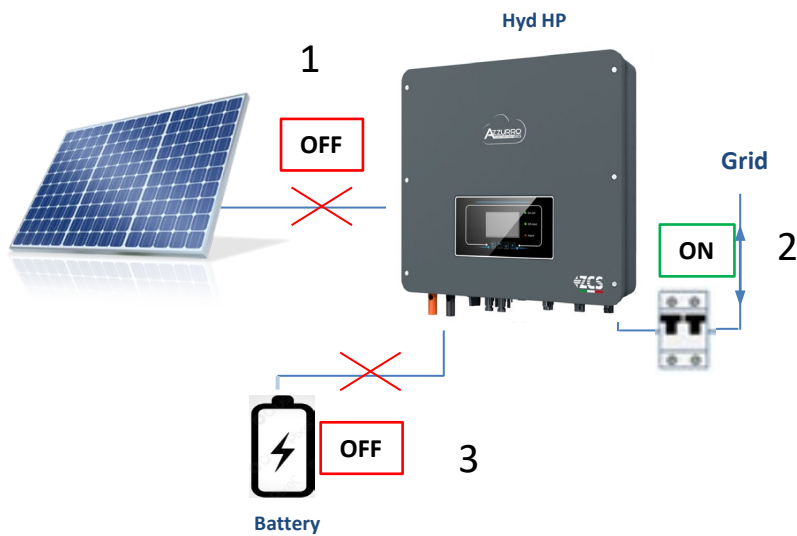
3) Check that the power value taken from the grid display is approximately equal to the power consumption shown on the meter, or to the value obtained by using a current meter to measure under the import/export meter.

```
On-Grid State       WiFi
   PV1 : NA     PV2 : NA
    0.00kW          1.47kW
    ----→-          -←----
    0.00kW          1.47kW
    -----←--        ----→--
2018-06-28           09 : 11 : 28
```

2) Turn on the PV switch

PV Panels

HYD - HP

1 | ON |

GRID

| ON | 2

Battery | OFF | 3

On-Grid State (WiFi)
PV1 : ON   PV2 : ON
3.50kW   2.02kW
----→   ----→
              1.47kW
              ----→
2018-06-28   09 : 11 : 28
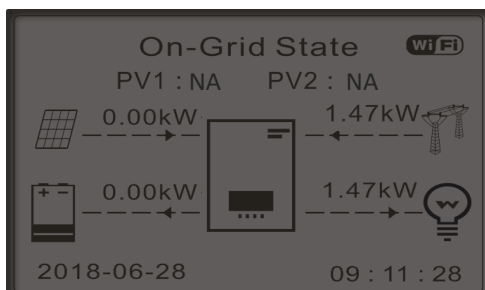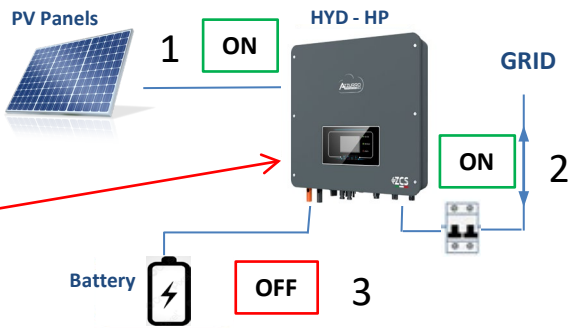
Once the PV production start verify that:

the comsumption value   1.47kW ----→   does not change *.

3.50kW
----→
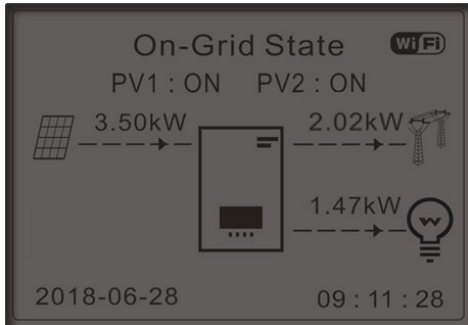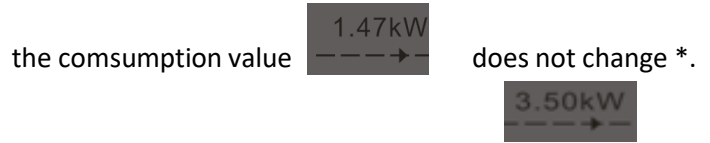
* Check that the power of the loads in use does not change:
 • Heat pump or pump → Load variable over time
 • Light or Hairdryer → Load constant over time

---

2) Turn on the batteries and verify that the system will work as described on the paragraph **SELF-USE WORKING MODE:**
•PV>Load →Battery is charging
•PV<Load Battery is discharging
•PV=Load Battery is in stanby

PV Panels

HYD - HP

1 | ON |

GRID

| ON |

2

| ON | 3

Battery

On-Grid State (WiFi)
PV1 : ON   PV2 : ON
3.50kW   0.00kW
----→   ←----
2.02kW   1.47kW
←----   ----→
2018-06-28   09 : 11 : 28
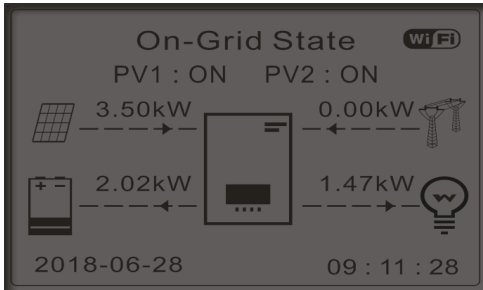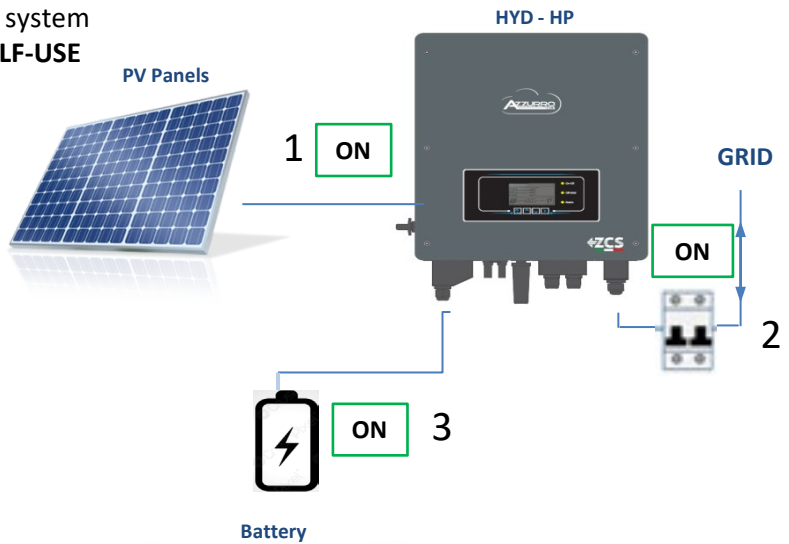
Note: When using WeCo or Azzurro batteries at the first power on the Battery will charge from the grid until ridge 100%

Nota: If the above condition are not verified check the correct position and setting of the power Meter.

To check if the Inverter's parameters are set correctly, enter the display menu under "Inverter Info" and check the data, especially those highlighted:

Info Inverter (1)

Serial number:
ZM2ES060MBG265 ➢ *Serial number of the machine*

Hardware Version :
V001 ➢ *Hardware version*

Software Version :
Press enter to view! ➢ *Software version*

Safety firmware version:
V02000 ➢ *Firmware versione installed*

Info Inverter (2)

Country:
001-000 ➢ *Country code for legislation*

Power level:
6kW ➢ *Max inverter power*

Info Inverter (3)

PV input mode:
Indipendente ➢ *Photovoltaic input mode (Independent / Parallel)*

Work mode
Automatic mode ➢ *Information on operating mode (must be self-use)*

RS485 address :
01 ➢ *Communication address (value must be different from 00)*

EPS :
Disabled

Info Inverter (4)

IV Curve Scan:
Disabled ➢ *Information on MPPT scan mode*

Logic interface:
Disabled ➢ *Information on DRMs0 mode (to enabled only for Australia)*

Info Inverter (5)

Power factor:
1.00 ➢ *Power factor value*

Anti reflux:
Disabled ➢ *Information on maximum grid in-feed mode*

Resistance insulation :
7000KOhm ➢ *Measured value of the insulation resistance*

15.2 CHECKING BATTERY'S SETTING

To check if the battery's parameters are correctly , enter the display menu under "Battery Info" and check the data, especially those highlighted

Pylontech	**Weco 4K4 / 4K4PRO**	**Weco 5K3**	**Azzurro ZSX5000**	
Batterie-Info (1)	**Batterie-Info (1)**	**Batterie-Info (1)**	**Batterie-Info (1)**	
Battery type: Pylon	Battery type: WeCoHeSU V0. 3. 54	Battery type: WECO628	Battery type: AZZURRO LVZSX5000	➢ *Battery model set*
Battery capacity: 50 Ah	Battery capacity: 86 Ah	Battery capacity: 100 Ah	Battery capacity: 100 Ah	➢ *Total battery capacity in Ah*
Depth of Discharge: 80 % (EPS) 80 %	Depth of Discharge: 80 % (EPS) 90 %	Depth of Discharge: 80 % (EPS) 90 %	Depth of Discharge: 80 % (EPS) 90 %	➢ *Battery discharge percentage*
Curr. Max charge current (A) : BMS : 25.00A SET : 65.00A	Curr. Max charge current (A) : BMS : 65.00A SET : 65.00A	Curr. Max charge current (A) : BMS : 65.00A SET : 65.00A	Curr. Max charge current (A) : BMS : 50.00A SET : 65.00A	➢ *Maximum charge current in A*
Batterie-Info (2)	**Batterie-Info (2)**	**Batterie-Info (2)**	**Batterie-Info (2)**	
Overvoltage threshold: 54.0 V	Overvoltage threshold: 59.3 V	Overvoltage threshold: 59.3 V	Overvoltage threshold: 59.3 V	➢ *Max voltage value (protection)*
Max. charge threshold (V): 53.2 V	Max. charge threshold (V): 58.4 V	Max. charge threshold (V): 58.4 V	Max. charge threshold (V): 58.4 V	➢ *Max voltage value (charge)*
Max. discharge current (A): BMS : 25.00 A SET : 65.00 A	Max. discharge current (A): BMS : 65.00A SET : 65.00A	Max. discharge current (A): BMS : 65.00A SET : 65.00 A	Max. discharge current (A): BMS :50.00A SET : 65.00 A	➢ *Maximum discharge current in A*
Min. discharge voltage: 47.0 V	Min. discharge voltage: 48.0 V	Min. discharge voltage: 48.0 V	Min. discharge voltage: 48.0 V	➢ *Min voltage value (discharge)*
Batterie-Info (3)	**Batterie-Info (3)**	**Batterie-Info (3)**	**Batterie-Info (3)**	
EPS Safety Buffer: 20 %	EPS Safety Buffer: 20 %	EPS Safety Buffer: 20 %	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 IMMISSION MODE

2. Advanced setting	**Enter 0001**		
	2. Anti-reflux		

User can enable the " anti-reflux control " in order to limit the power that can be exported to the grid. The setted value for Reflux power is the max power that can be exported to the Grid.

1. Anti- reflux control	→	enable
		disable
2. Reflux Power	→	***KW

17. LOGIC INTERFACE(DRMS0)

⚠ Warning : this function need to be disabled!!!! ⚠

2. Advanced Setting			
	4. Logic Interface	→	enable	no
		→	Disable✓	OK

18.1 EPS MODE (OFF GRID)

In the event of a power failure or operation in OFF-Grid mode, if the EPS function shall be 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 the critical or priority domestic loads: it is recommended to identify the domestic loads strictly necessary during power outages.

⚠

• 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.

• 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 bottom right side of the inverter. NOTE: the LOAD output must only be used for connecting the critical load.
The procedure for connecting the power cables to the LOAD output is the same as that for connecting the cables to the GRID output:

CHANGE-OVER SWITCH

Is recommended to install a change-over switch in order to be able to disconnect the load from power during maintenance operation or to connect the load to the grid in case of inverter failure.

GRID

LOAD

CRITILCAL LOADS

CHANGE-OVER SWITCH
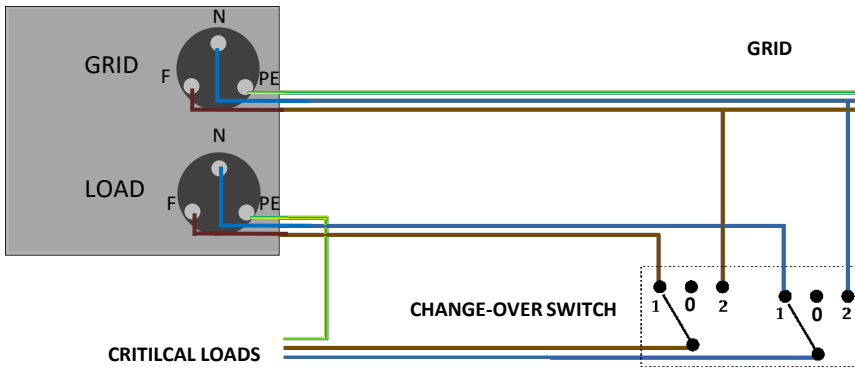
GRID

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

In some circumstances, 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

GRID
LOAD
Teleruttore a doppio scambio
Carichi critici
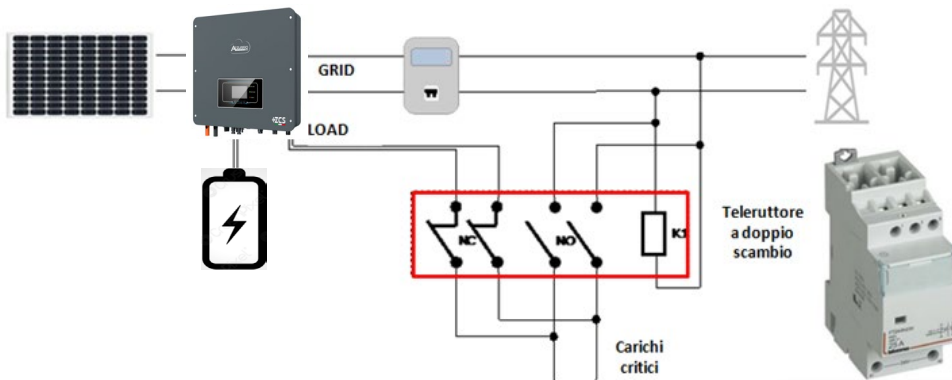
NOTE: For the conditions described above, in the event of a power failure, the part of the system powered by the inverter's LOAD port behaves like an IT system

Note: If the hybrid inverter is 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 AC voltage supplied by the grid is present (normal operating condition), both the standard loads of the system and the priority or critical loads are supplied by the grid as shown in the figure below.

the LOAD output is always energised, even when the mains voltage is present.

230V

GRID

LOAD

230V

Ai carichi critici

Alle utenze domestiche e contatore di scambio

Selettore manuale a doppio scambio

30
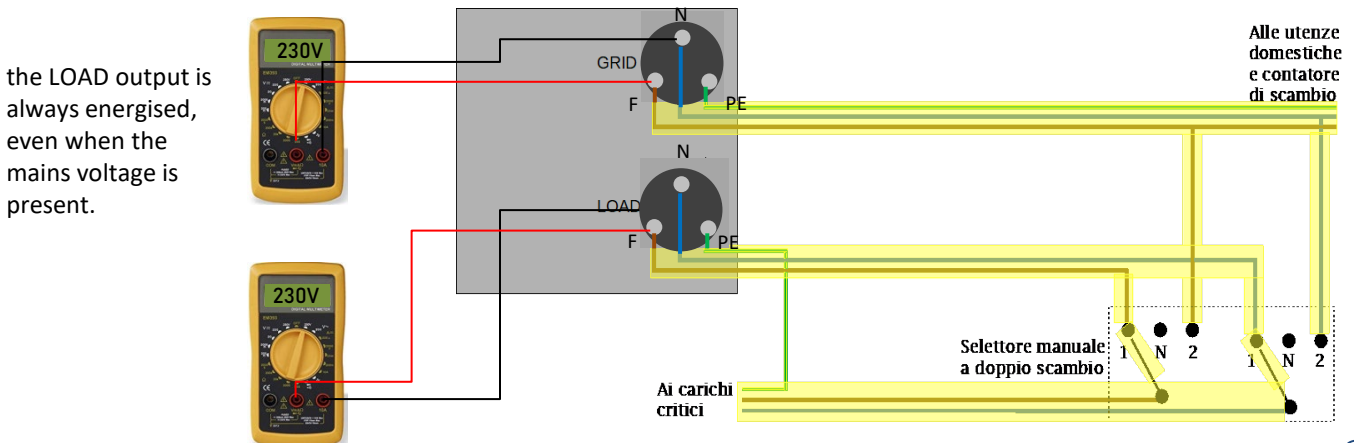
In case of a power outage the inverter will activate the internal switch and supply a 230 VAC to the output Load assuming that the battery are sufficient charged.

GRID
N
F
PE

LOAD
N
F
PE

0.00V

230V

Alle utenze
domestiche
e contatore
di scambio

Selettore manuale
a doppio scambio
1 N 2   1 N 2

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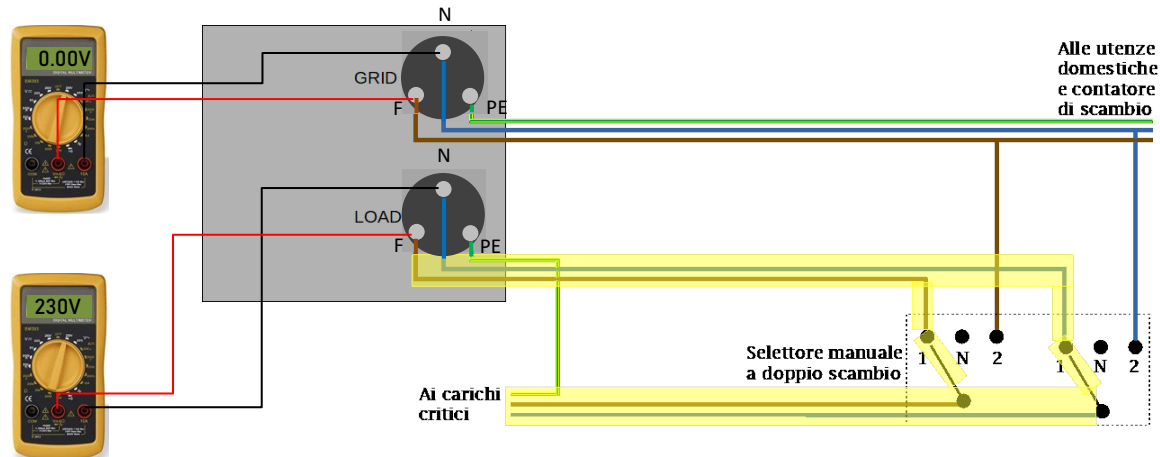
NOTE: with this configuration, the system becomes an IT system during a blackout.

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 two Pylontech batteries: 10 A (2,200 W)*
• *System with three or more Pylontech batteries: 13 A (3,000 W)*
• *System with one or more WECO batteries: 13 A (3,000 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.

System settings

5. Select EPS mode

1. EPS Mode

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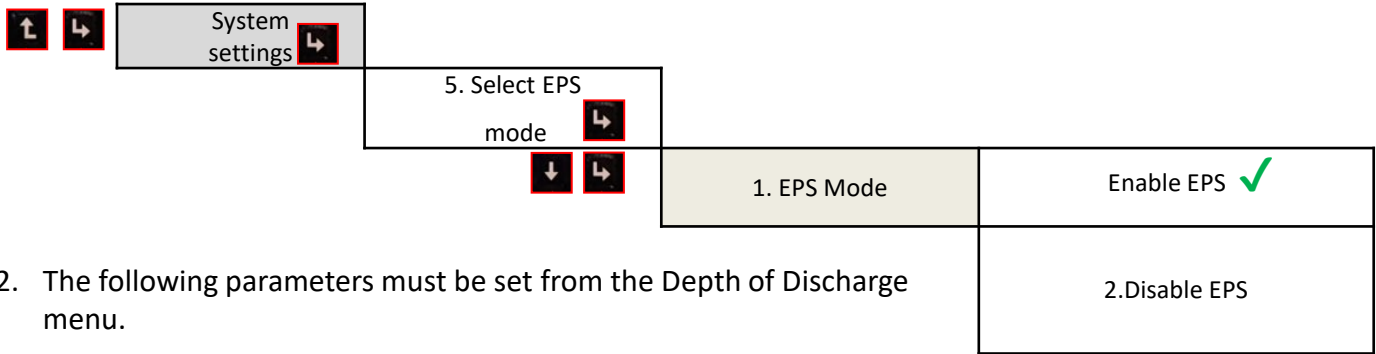
2. The following parameters must be set from the Depth of Discharge menu.

2.Disable EPS

2. Advanced Setting

1. Battery parameters

3. Discharge depth ✔

The Inverter HYD-ES can be used in Stand Alone system .The energy provided by the Solar panel can be stored in the batteries and provided to the load connected to the AC load Inverter. EPS function need to be enabled (Emergency Power Supply).

IBRIDO

PV Panels

BAtteries

Critical Load

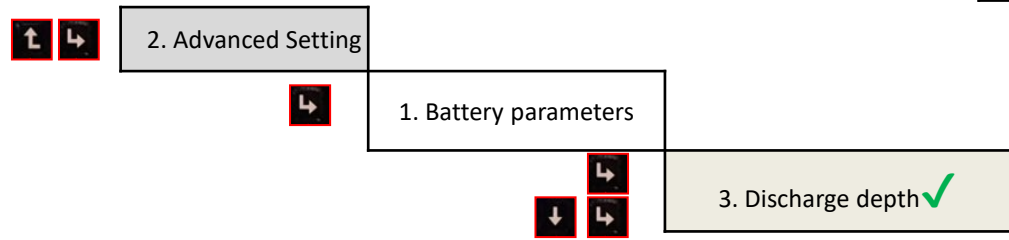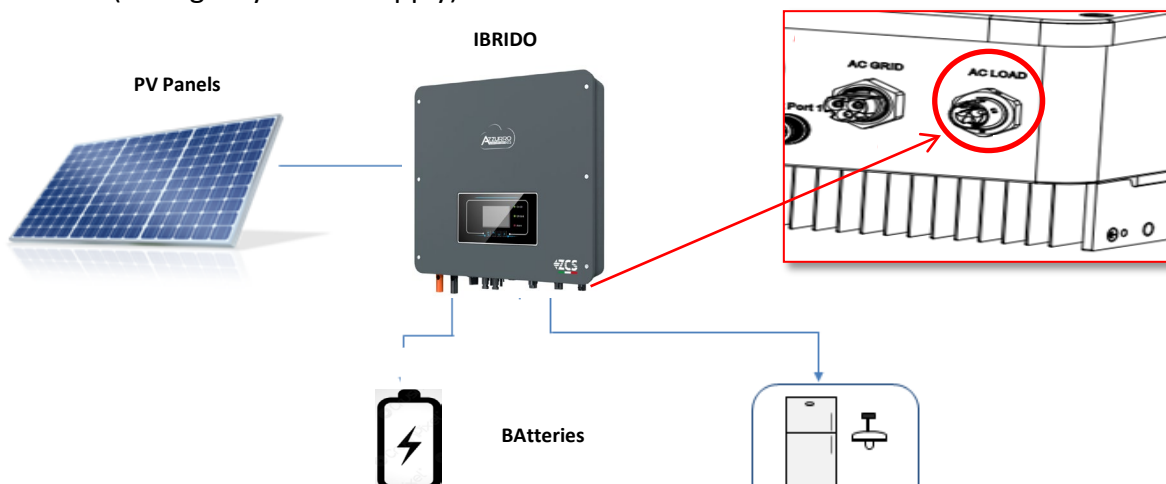| Uscita EPS (Emergency Power Supply)	1PH HYD 3000	1PH HYD 3600	1PH HYD 4000	1PH HYD 4600	1PH HYD 5000	1PH HYD 6000
Massima potenza erogata in EPS***	3000VA (3600VA per 60s)	3680VA (4400VA per 60s)	4000VA (4800VA per 60s)	4600VA (5520VA per 60s)	5000VA (6000VA per 60s)	
Tensione e frequenza uscita EPS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

*** The max power that can be provided depend on the battery number and Models and also enviromentl condition

1) Verifyck that the DC circuit breaker of the inverter is in the OFF position.
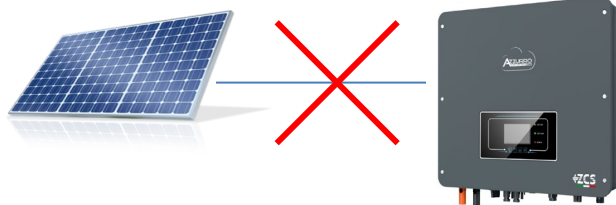
2) Turn on the batteries:
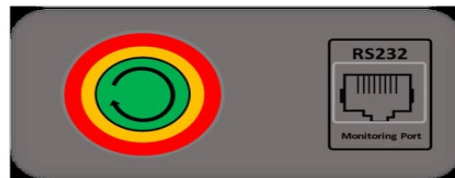
 To turn on the **Pylontech** batteries: set the switch on the front of **all the batteries** to the ON position.

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

 In case of **WeCo** batteries, press the POWER button of each battery for 1 second, the RUN LED will turn on and the internal contactor will close automatically.

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

ON

Maximum number of parallel : 6

Al primo ed all'ultimo inverter devono essere connesse le resistenze di terminazione (fornite in dotazione)

Cavo connessione parallelo fornito in dotazione di lunghezza 2,5m

1.The inverters need to be connected using the cable provided in the inverter box as described below:
  •**Link port 0 Master** inverter→ connected to the termination resistor (8 pin)
  •**Link port 1 Master** inverter → **Link port 0 Slave 1 inverter**
  •**Link port 1 Slave** 1 Inverter → **Link port 0 Slave 2** Inverter
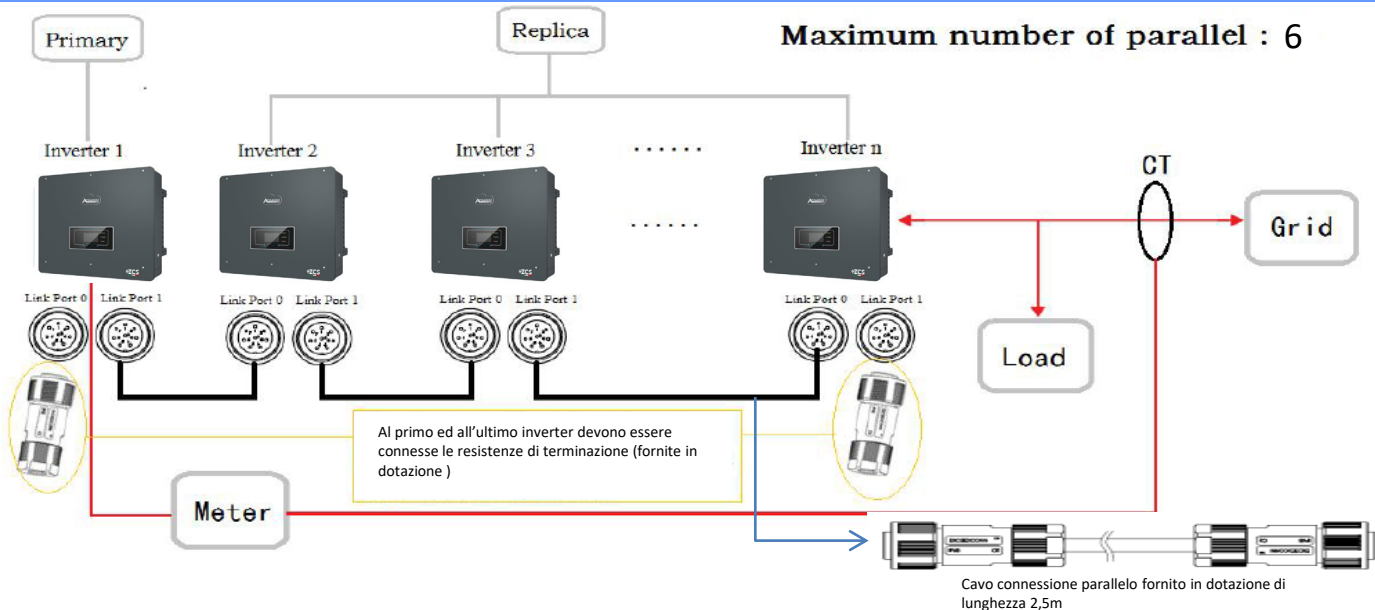 •**Link port 1 Slave** 2 Inverter→ **Link port 0 Slave 3** Inverter
  •...
  •**Link port 1 Slave n-1** Inverter→ **Link port 0 Slave n** InverterInverter
  •**Link port 1 Slave n** Inverter → connected to the termination resistor (8 pin)
  Note: The termination resistors are provided in the inverter box
  NOTE: The connection cable is provided with the inverter, is 3 meters long and cannot be extended.

2.If the inverter are all the same size is possible to parallel the LOAD output. When doing that is required to make sure that the connection to the parallel box of each inverter have:
  • Low impedance
  •Same lenght
  •Same section size .

3.Total load connected shall be less than the maximum available from the Inverter
4.Meters shall be connected to the Master inverter (Primary)

20.2 PARALLEL INVERTERS MODE- SETTING

2. Impostazioni avanzate

Psw 0001

6.Impostazioni parallelo

OK

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

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

Master   Slave 1   Slave 2   Slave n

Link Port 0 Link Port 1

21. FIRMWARE UPDATE

Main menu	
	1setting
	2. Advanced setting
	3. Event list
	4. System info
Psw 0715	5. Software upgrade
	6. Energy statistics
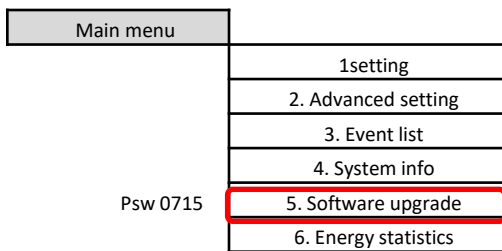
In order to upgrade the firmware download in a USB memory the firmware from the link
https://www.zcsazzurro.com/it/documentazione/azzurro-hybrid-storage-inverter-single-phase-ep5kw
Make sure to decompress the file and leave it in a folder named «firmwareHYD-EP».
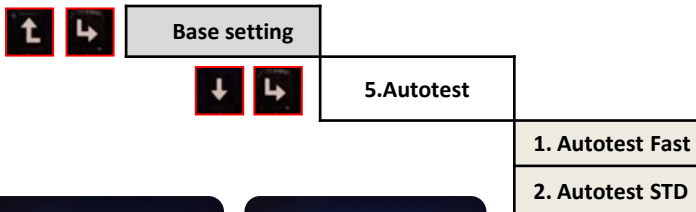
Cartella generica			
Nome	Ultima modifica	Tipo	
firmwareHYD-EP	25/02/2022 16:54	Cartella	

Unità USB (D:) › firmware			
Nome	Ultima modifica	Tipo	Dimensione
ESHV_ARM.bin	21/01/2022 04:06	File BIN	405 KB
ESHV_DM.bin	24/01/2022 04:07	File BIN	146 KB
ESHV_DS.bin	20/01/2022 02:50	File BIN	118 KB
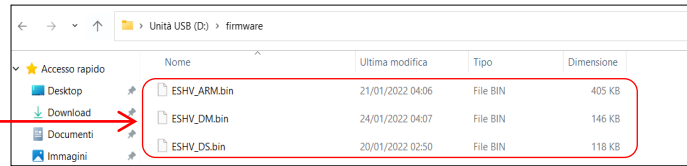
22. AUTOTEST

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

Base setting	
	5.Autotest
	1. Autotest Fast
	2. Autotest STD

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).
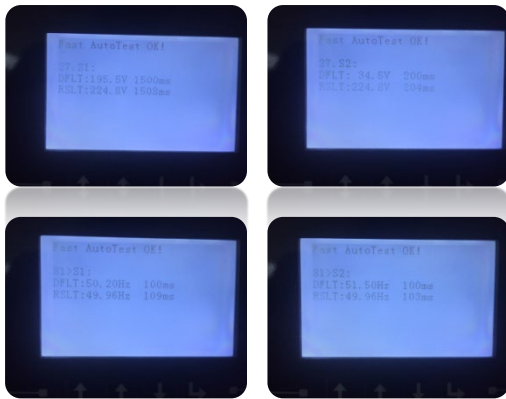
23. TIME OF USE MODE

If the batteries have a different % of charge is is required to charge them all at the same lavel. In order to do that is possible to use the Time of use working mode.

back   Change setting   enter

2. Time of use

Rules. 0:	enable		
Da	A	SOC	Carica
02h00m - 04h00m		100%	01000W
Effective data			
Gen. 01	-	Dic. 31	
Weekday select			
Lun. Mar. Mer. Gio. Ven. Sab. Dom.			

Select enable to activate the rule

Time of start and stop

Charging power

Max % of charge

Date of rule

Days of the week when the rule is active

Once the setting is completed press To go back

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