

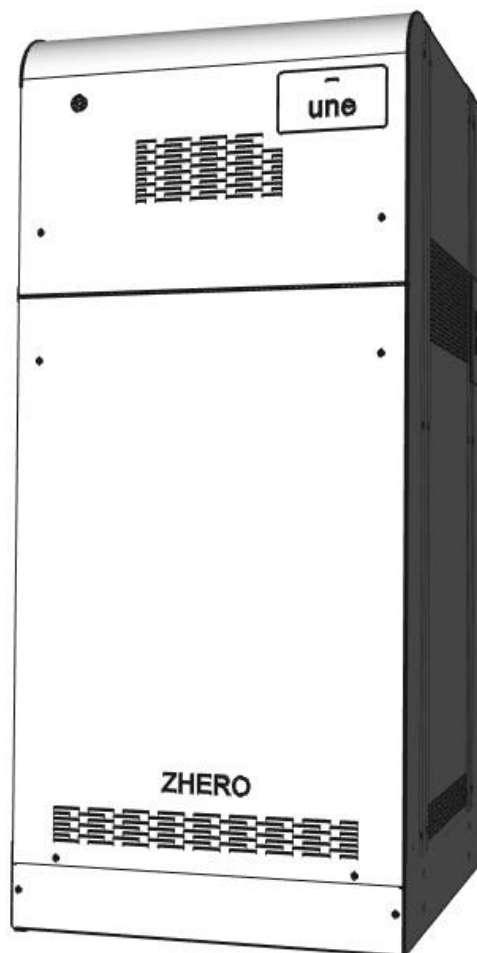


# ZHERO<sup>®</sup>

Engineered by

UNIVERSAL NATURE  ENERGY

## ZHERO QUICK INSTALLATION GUIDE



Carefully follow all the steps indicated in the ZHERO quick installation guide, at the end of the installation fill in the check boxes; the document must be delivered signed to the customer at the end of all the procedures described.

## 1. PLACEMENT OF A ZHERO

- In flat floor;
- in easily accessible places;
- in a position to ensure access to the switches;
- in a position that guarantees the space necessary to carry out maintenance operations;
- in places with air recirculation, no other regulatory compliance is required;
- In floors suitable to support the weight of UNE ZHERO.

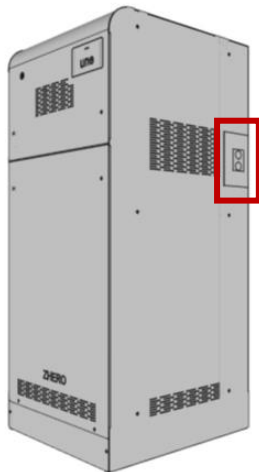
## 2. GENERAL CONNECTION DIAGRAM OF THE MACHINE

**Warning:** refer to the connection diagram to cap. 5.7 of the manual UNE ZHERO, in case of need can be downloaded free of charge from the site: <https://www.unesrl.com> in the section: "DOWNLOAD AREA".

Before proceeding it is necessary to identify the general scheme of the machine according to the type of application and the type of network to which the UNE ZHERO system will be connected.

## 3. CONNECTION BETWEEN A ZHERO AND THE PHOTOVOLTAIC GENERATOR

### INSTALLATION



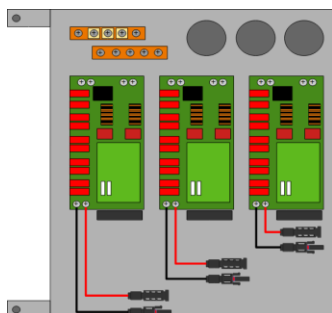
**WARNING:** MPPT Controllers are present only in the systems ZHERO Monofase, Off-grid, Ibrido, the Retrofit system is lacking.

The installation consists in connecting the cables coming from the photovoltaic system to the pre-assembled MC4 of the charge controllers, paying close attention not to reverse the polarity.

To do this, remove the plate by unscrewing the appropriate screws of the plate. Once the plate has been reinstalled and the cables brought inside the system, they can be connected to the regulators via the MC4 photovoltaic connector.

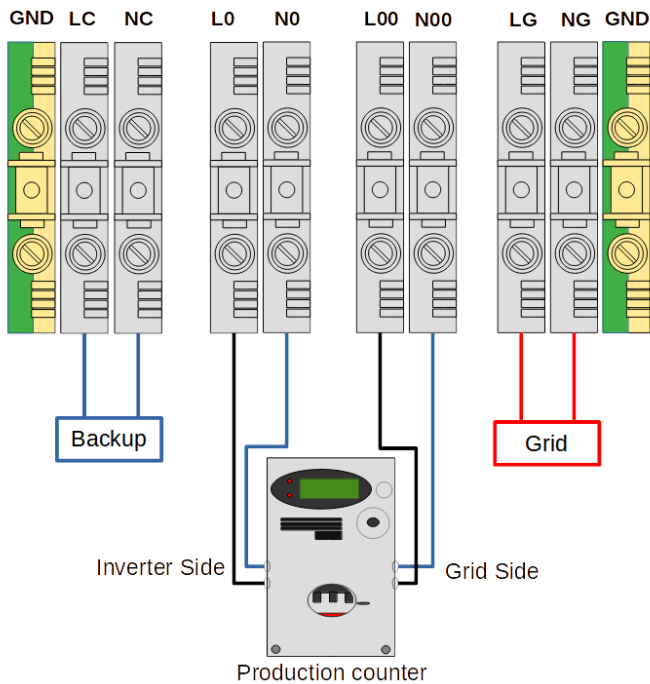
According to the type of regulator installed, check that the string voltage is between 100 - 180 V or 200 - 600 V or 120 - 308V.

**ATTENTION:** It is necessary to install a PV unloader (SPD), external to the machine, with Up index **Up 2.5 kV**.



#### 4. AC CONNECTION - A ZERO TO MAINS DISTRIBUTOR/GENERATOR and "BACKUP"

### INSTALLATION



#### Connection of the distributor / genset network entering the system (not production meter):

- **LG:** 230VAC DISTRIBUTOR / GENERATOR phase;
- **NG:** Neutral DISTRIBUTOR / GENERATOR 230VAC;
- **Yellow / Green terminal:** earth connection.

#### Connection of the "backup" line (optional):

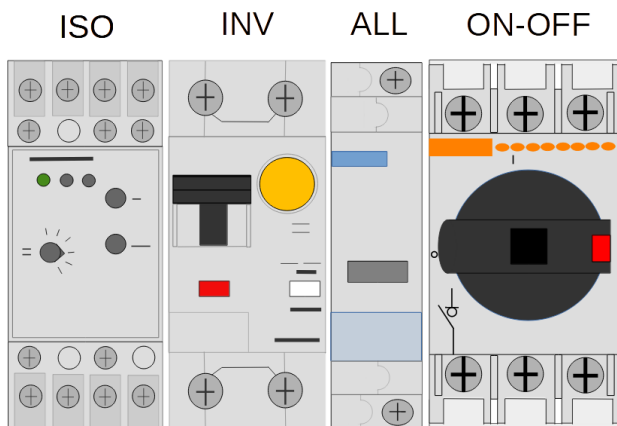
- **LC:** 230VAC Backup Phase;
- **NC:** Neutral Backup 230VAC;
- **Yellow / Green terminal:** earth connection.

#### Connection of the production counter:

- **L0:** input phase to the production counter on the inverter side;
- **NO:** neutral on inverter side counter input;
- **L00:** Output phase from the grid side production meter;
- **NOO:** Neutral in output from the grid side production meter.

**In case of Off-grid application, a jumper must simply be made between L00 and L0 and between NOO and NO.**

### LEGEND



**ISOL:** Insulation control.

**INV:** Differential magnetothermic output from the inverter, it does not cause the interruption of the user but the blocking of the supply from the battery + photovoltaic source.

**ALL:** Alarm button allows you to reset a system alarm that is visible form by the lighting of the red alarm lamp.

**ON-OFF:** Disconnecter allows you to turn the system on or off.



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## 5. CONNECTION OF THE METER AND UTILITIES (MANDATORY ON-GRID)

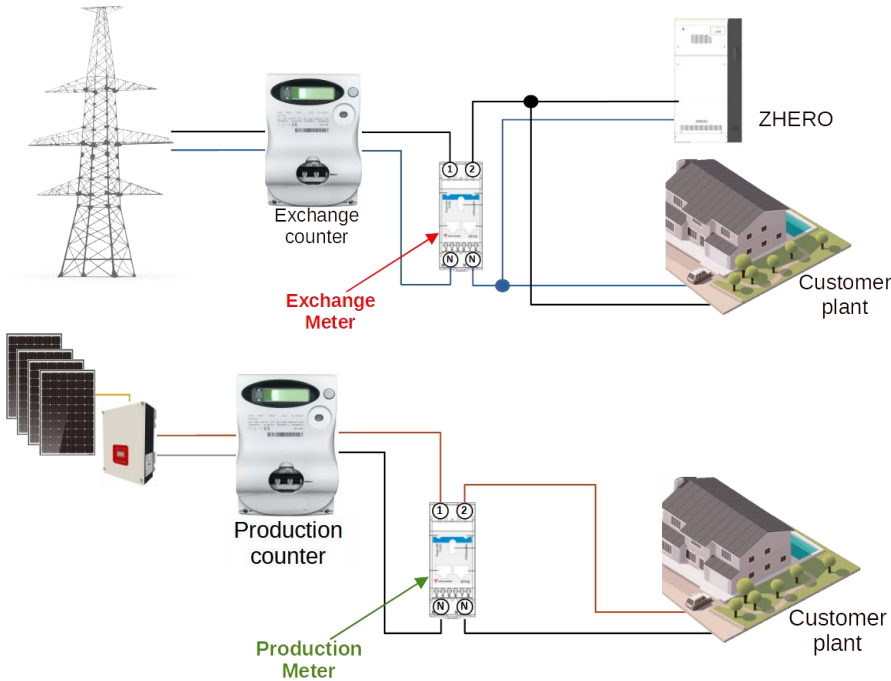
The connection cable of the Meter to the system must not exceed 50m in length.

**ATTENTION:** check the maximum current supported by your meter;

**ATTENTION:** in case of installations with more than one ZHERO, each ZHERO system must have its own meters;

**ATTENTION:** use twisted cables, do not use Cross cables;

**ATTENTION:** The connection order of the communication is irrelevant but be careful not to reverse the meters in the installation.

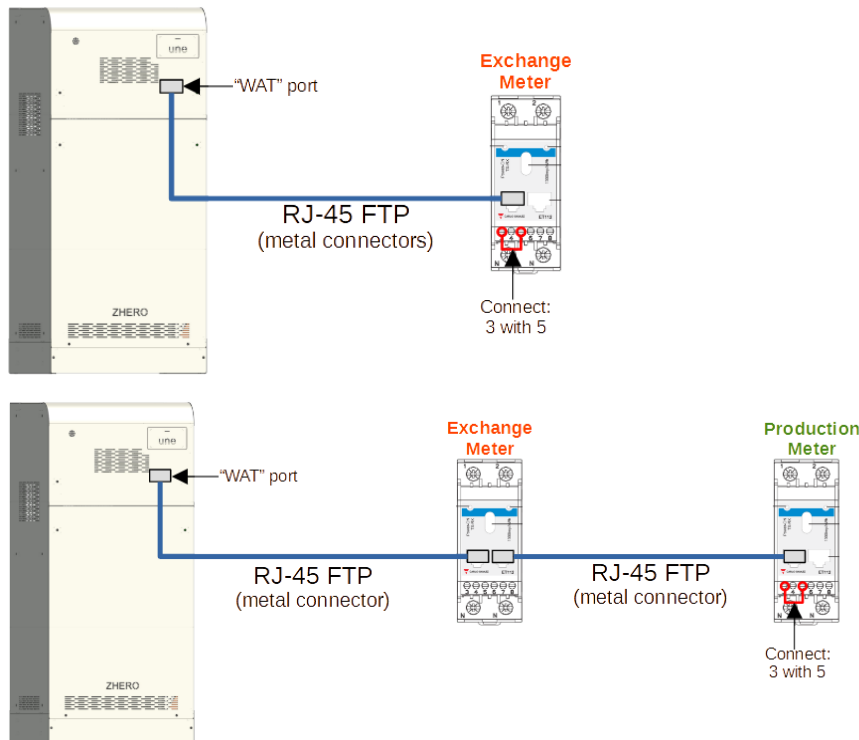


### Connection of AC to the Meter (ZHERO Monofase, Retrofit, Ibrido)

- From the exchange counter, connect Phase and Neutral to terminals 1 and N below it;
- Connect the direct line to ZHERO in the corresponding terminals 2 and N below;
- Connect the customer plant from the Meter then downstream of the corresponding terminals 2 and N.

### Connection of the Production Meter (ZHERO Retrofit and Ibrido)

- Connect on 1 and corresponding N the production counter;
- Connect the customer plant on 2 and corresponding N.



### 485 Meter-ZHERO communication connection (ZHERO Monofase)

- Connect RJ-45 cable to the left input RJ-45 on the device as per image;
- Connect the other end of the cable to the RJ-45 port on the "WAT" panel of ZHERO;
- Make a jumper between the screw 3 and 5.

### 485 Meter-ZHERO communication connection (ZHERO Retrofit and Ibrido)

- Connect RJ-45 cable to the left input RJ 45 on the device as per image;
- Connect Rj-45 cable to the right input of the exchange meter and the other end to the left input of the production meter;
- Connect the other end of the cable to the RJ-45 port on the "WAT" panel of ZHERO;
- Make a jumper between clamp 3 and 5 of the last meter of the series.



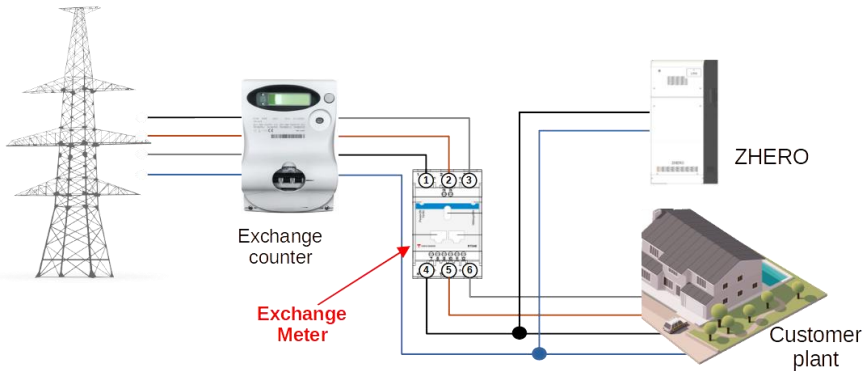
The connection cable of the Meter to the system must not exceed 50m in length.

**ATTENTION:** check the maximum current supported by your meter.

**ATTENTION:** in case of installations with more than one ZHERO, each ZHERO system must have its own meters.

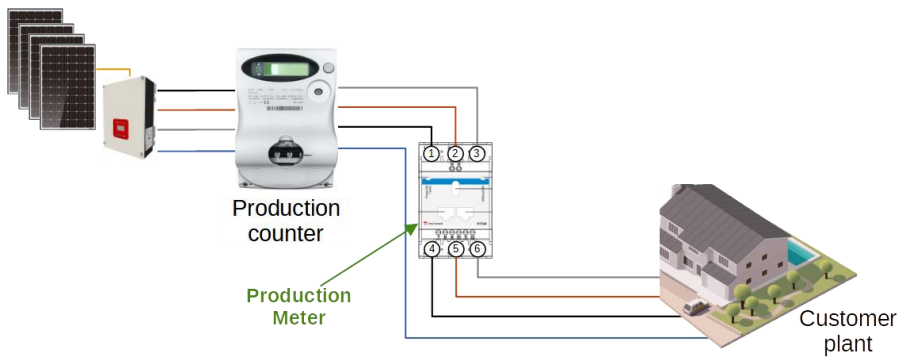
**ATTENTION:** use twisted cables; do not use Cross cables.

**ATTENTION:** The connection order of the communication is irrelevant but be careful not to reverse the meters in the installation.



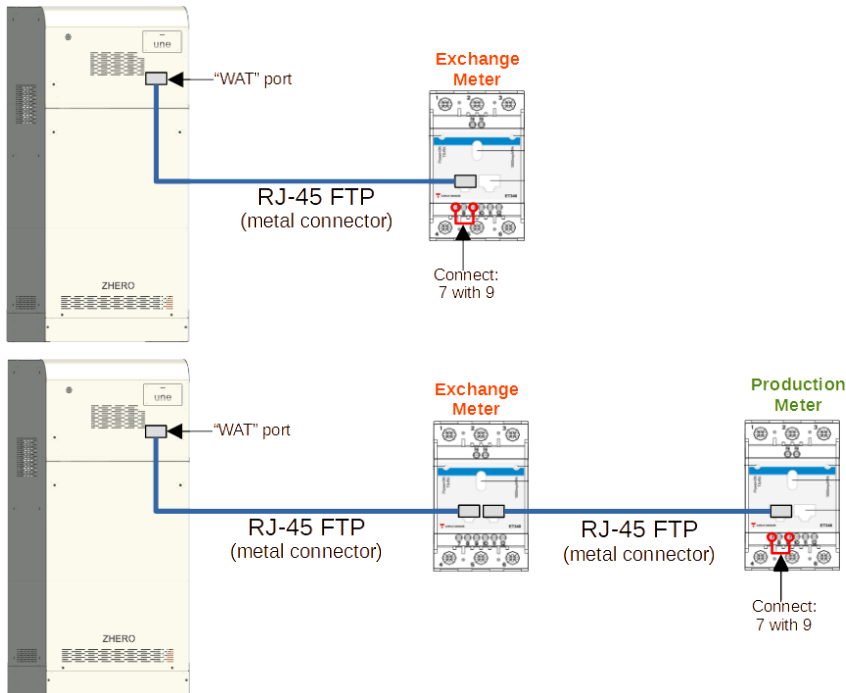
#### Connection of AC to the Meter (ZHERO Monofase, Retrofit, Ibrido)

- From the distributor counter, connect the three steps on 1 - 2 - 3, the neutral is not connected;
- Connect the direct line to ZHERO in terminals 4 or 5 or 6 depending on the stage chosen;
- Connect the outputs from the Meter from terminals 4 - 5 - 6;
- Neutral and GND are not connected to the Meter.



#### Connection of the Production Meter (ZHERO Retrofit and Ibrido)

- Connect the phases on 1 - 2 - 3 corresponding to the production counter;
- Connect the customer plant on the terminals 4 - 5 - 6 below corresponding.
- Neutral must not pass through the meter.



#### 485 Meter-ZHERO communication connection (ZHERO Monofase)

- Connect RJ-45 cable to the left input RJ-45 on the device as per image;
- Connect the other end of the cable to the RJ-45 port on the "WAT" panel of ZHERO;
- Make a jumper between the clamp 7 and 9 if three-phase.

#### 485 Meter-ZHERO communication connection (ZHERO Retrofit and Ibrido)

- Connect RJ-45 cable to the left input RJ-45 on the device as per image;
- Connect RJ-45 cable to the right input of the exchange meter and the other end to the left input of the production meter.
- Connect the other end of the cable to the RJ-45 port on the "WAT" panel of ZHERO;
- Make a jumper between the clamp 7 and 9 of the last meter of the series.



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## 6. INTERNET CONNECTION

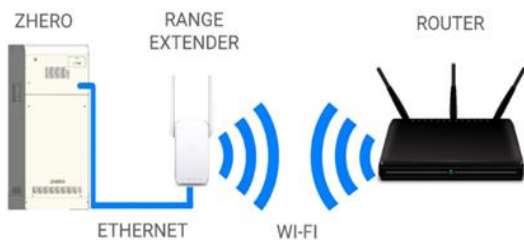
### Through Router



Perform the following operations on the router:

- Set the router in DHCP;
- TCP and UDP ports opening: 9090 related to the IP address associated with the ZHERO by the router (in DHCP);
- Add the URL "HTTPS: \\ portal.zherosystem.com" to the navigation exclusions.

### Through range-extender



Before connecting, check that the cable connection is working.

The ethernet cable outgoing from the ZHERO system must be brought directly to the router or to a network switch connected to it as shown in the figures.

## 7. ZHERO ASSOCIATION WITH WEBSERVER

- The installer will have to request, if not already registered with his own account, his registration directly to UNE email: **assistenza@unesrl.com** that will provide him with a username and password; by accessing the portal: **https://portal.zherosystem.com** you can enter the code "WEB Activation: xxxxxx" which is located under the front cover, above the main fan and start monitoring the system.
- The end customer will have instead to register independently on the site: **https://portal.zherosystem.com** and the association by entering the same code "WEB Activation: xxxxxx".

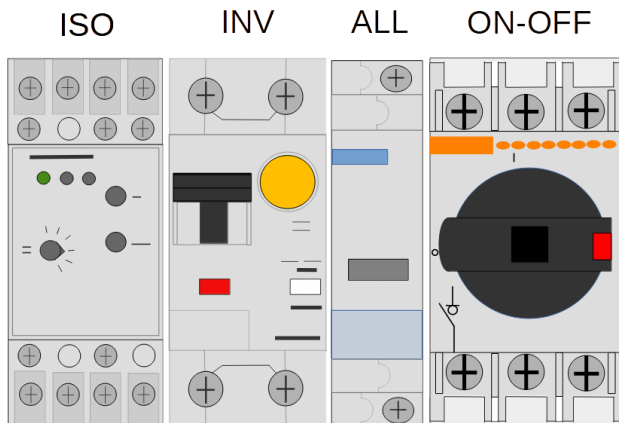
## 8. CHECK CONNECTIONS

- Check mains voltage (230V) on terminals LG – NG;
- Verify that the production and exchange counters are enabled;
- Check the Meters power cables are connected correctly, and the RJ-45 communication cables connected;
- Check that the terminator of the 485 of the meters is exclusively on the last meter of the series;
- Check the connection from the Internet cable to the "ETH" port;
- Check the tightening of the screws of any backup line from LC - NC;
- Verify that the photovoltaic system is enabled on entry to the system;
- Check that the external grid inverter is enabled (if present).



## 9. CONFIGURATION OF THE MAIN PANEL FOR THE FIRST STARTING

### SWITCH PANEL



### OPERATIONS

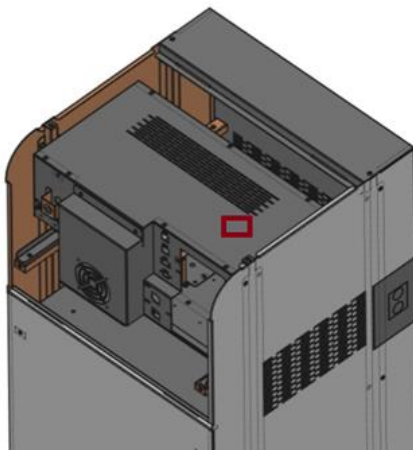
- Enable the "INV" circuit breaker;
- Enable all users downstream and upstream of the system (external to the system);
- Set the "ON-OFF" switch to **ON**.

### CHECKS

- Verify that the System Main Light remains green. It is advisable, after about a week, to remotely check that all devices are communicating, and that the system is perfectly in line with what is expected. (Photovoltaic production, battery charging and discharging, etc).
- Verify that the system turns on and begins to warm up the battery (this can take several minutes).

**IF THE MAIN LIGHT OF THE SYSTEM REMAINS RED, YOU WILL FIND THE POSSIBLE SOLUTIONS IN CHAPTER 10 OF UNE ZHERO MANUAL.**

## 10. OPERATION CHECK



### MONITORING SOFTWARE

To verify the correct functioning of ZHERO use the software

#### ZHERO Installer Tool

with **windows 10 or higher, UPDATED.**

The USB type B port for ZHERO monitoring is located in the upper left part, under the main panel.

The **ZHERO Installer Tool** software and the relative instruction manual with the legend of each alarm "**Manual - UneSrlCommunication**" can be downloaded from the site <https://www.unesrl.com> in the "**DOWNLOAD AREA**".

Always check that you have the latest version.

For monitoring use a **USB cable type A-Type B** of length **not exceeding 1 meter with ferrites applied to both ends** of the cable as shown in the figure.

It is recommended to keep the PC connected to the power outlet.



## 11. SUPPORT

- **System installation:** UNE is not responsible for the correct installation of the photovoltaic system and the Zhero system; any requests for assistance must be received in writing by entering all the system data and a detailed description of the anomalies, to the email address: [assistenza@unesrl.com](mailto:assistenza@unesrl.com).
- **System start:** after starting the system, in case of persistent anomaly highlighted by the main red light, carry out the checks described in chapter 10, and if the problem persists, send an email to: [assistenza@unesrl.com](mailto:assistenza@unesrl.com).
- **AUTOTEST:** no network interface autotest shall be performed, it's provided with the system; if absent request it directly to [info@unesrl.com](mailto:info@unesrl.com).
- **Manuals and documentation:** the ZHERO manual include all complete instructions for installation, use and maintenance of the same and can be downloaded from the website: <https://www.unesrl.com> in the section: "DOWNLOAD AREA".
- **Internet connection:** if the system is not online for more than 48 consecutive hours, before opening a technical assistance ticket, follow all the steps indicated in manual chap. 8.6.
- **Request for detailed technical information on the ZHERO system:** they must be sent to the following address: [tecnico@unesrl.com](mailto:tecnico@unesrl.com). Telephone consultations are not carried out.

**Thank you for choosing UNE srl products and for having carefully followed all the steps necessary for correct installation.**

**Apply installer label with telephone number for customer assistance**

Date:

Place:

Stamp and signature of the operator:

**Document to be kept by the customer**



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