

## Setting of 'Zero feed-in' mode for 1PH 3000-ZSS/1PH 6000-ZSS inverters

Setting of 'Zero feed-in' mode for 1PH 3000-ZSS/1PH 6000-ZSS inverters .....	1
1 Table of revisions .....	2
2 Purpose .....	2
3 Required devices and minimum configurations .....	2
3.1 Example of a system with a single inverter .....	2
3.1.1 Connections with single inverter and DDSU666 Meter .....	3
3.1.2 Inverter checks and configuration with a single inverter and DDSU meter .....	6
3.1.3 Functional checks with a single inverter and DDSU666 meter .....	7
3.1.4 Connections with single inverter and ZCS CT sensor .....	8
3.1.5 Inverter checks and configuration with a single inverter and CT sensor .....	10
3.1.6 Functional checks with a single inverter and CT sensor .....	11

## 1 Table of revisions

<i>Rev.</i>	<i>Dated created</i>	<i>Author</i>	<i>Description/modifications</i>
00	07/07/2023	L.A. & L.C.	First issue

## 2 Purpose

This document contains the technical connection and configuration instructions for correctly enabling the "Zero Feed-in" mode for a system comprising 1PH 3000-ZSS/1PH 6000-ZSS inverters.

## 3 Required devices and minimum configurations

### 3.1 Example of a system with a single inverter

The following devices are required in order to correctly configure the "Zero Feed-In" mode where the production plant consists of only one inverter from the 1PH-3000-ZSS/ 1PH-6000-ZSS range:

- a) ZCS 1PH 3000-ZSS/1PH 6000-ZSS inverter.
- b) DDSU666 direct-connect meter supplied by ZCS.
- c) (Alternatively to point b) CT sensor supplied by ZCS.
- d) Connection cables for DDSU666 Meter and, if necessary, an extension for the CT sensor (not supplied by ZCS).

### 3.1.1 Connections with single inverter and DDSU666 Meter

In this case, the DDSU666 meter must be positioned as shown in the logical block diagram below

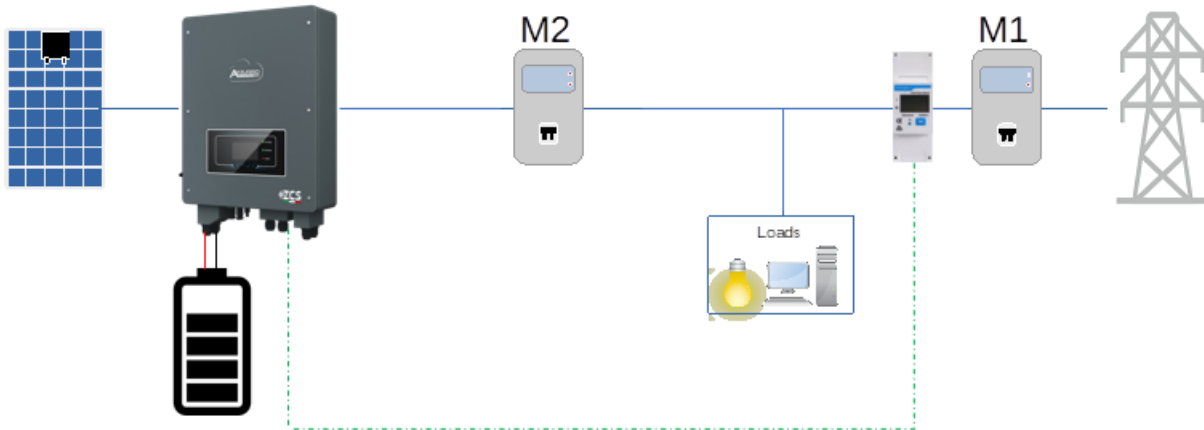



Figure 1 - logical position of the DDSU666 meter

In this case, the meter must be placed close to the import/export meter (M1) in order to measure all incoming and outgoing flows (or in a logically equivalent position).

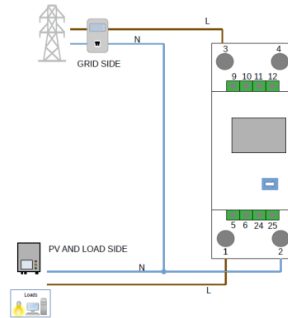
	<p><b>Meter connection in a position other than the one indicated may compromise the proper functioning of the "Zero Feed-In" mode</b></p>
<p><b>Attention</b></p>	

Once the correct positioning of the meter has been established, it can be configured by following these steps

#### Meter connections:

Pin Meter	RS485 port
24	TX+
25	TX-

1. Connect the Meter and inverter via the RS485 port. On the Meter side, connect to PINs 24 and 25 (as shown in the table). The “RS485” connector is used on the inverter side. Use a twisted and shielded CAT5 or CAT6 cable for the connection
2. Connect the Meter in “direct connect” 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.



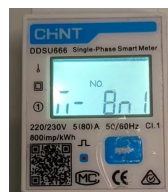
NOTE: For distances between the Meter and inverter greater than 100 meters, it is recommended to connect two 120 Ohm resistors along the 485 daisy chain: the first to the inverter (between RS485+ and RS485- of the inverter) and the second directly to the Meter (PINs 24 and 25).



### Meter setting:

Press the button to check that the Meter address is set to **001** and that the protocol is set to **8n1**. In addition to what is described above, the display shows the following values:

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



Protocol



**ZUCCHETTI**  
Centro Sistemi



Indirizzo



Corrente



Potenza



Tensione




Power factor




### 3.1.2 Inverter checks and configuration with a single inverter and DDSU meter

Once the connections have been made and the meter and inverter have been switched on, it is necessary to configure the presence of the meter from the inverter display.

 <b>Attention</b>	<p>Always update the inverter to the latest FW version found at <a href="http://www.zcsazzurro.com">www.zcsazzurro.com</a></p>
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Follow the steps below:


- Press and hold the first key on the left of the inverter until you enter the menu.
- Press the last key on the right to enter "advanced settings"
- Enter the password 0715 to enter the menu
- Use the arrows to scroll to the item "0 Feed-In"
- Enter the password 0715 to enter the menu. To change the number, press the second and third key. Press the fourth key (enter) to confirm the number.
- Select the item "PCC Meter." Press and hold the fourth key (enter) to confirm
- Scroll down to the item "Set 0 Feed-In"
- Enter the password 0715 to enter the menu again
- Select the item "Enable." Press and hold the fourth key (enter) to confirm
- Set the power to 0.0kW for zero feed-in

 <b>Note</b>	<p>The set power value can also differ from 0kW, in which case the inverter will adjust itself so that the power fed into the grid never exceeds the set value.</p>
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Switch off the inverter and meter

### 3.1.3 Functional checks with a single inverter and DDSU666 meter



After restarting the meter and inverter, the functionality check can be carried out. The following procedure allows an accurate check of the functioning of the set mode.

To check the correct reading of the meter on exchange, ensure the inverter is switched off. Switch on loads greater than 1 kW. Stand in front of the meter and, using the  button to scroll through the items, check that P is:

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



The inverter can now be switched on.

 <b>Note</b>	<p>If the phase has no active load connected and the "Zero Feed-in" mode is set to 0kW, the inverter will not produce any power. This is to avoid feeding current into the grid on that phase</p>
 <b>Note</b>	<p>If the "Zero Feed-In" mode is set to a value equal to 0kW, the output of the inverter might be slightly lower than the total load. This would always result in a slight withdrawal from the grid. This condition is perfectly normal and technically correct</p>

### 3.1.4 Connections with single inverter and ZCS CT sensor

In this case, the CT must be positioned as shown in the following logical block diagrams.

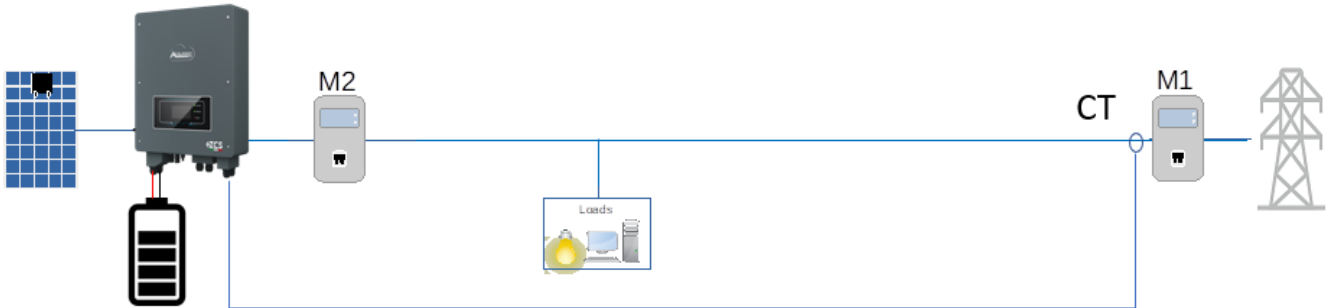


Figure 2 - logical position of the CT in the case of a single phase exiting the M1 meter

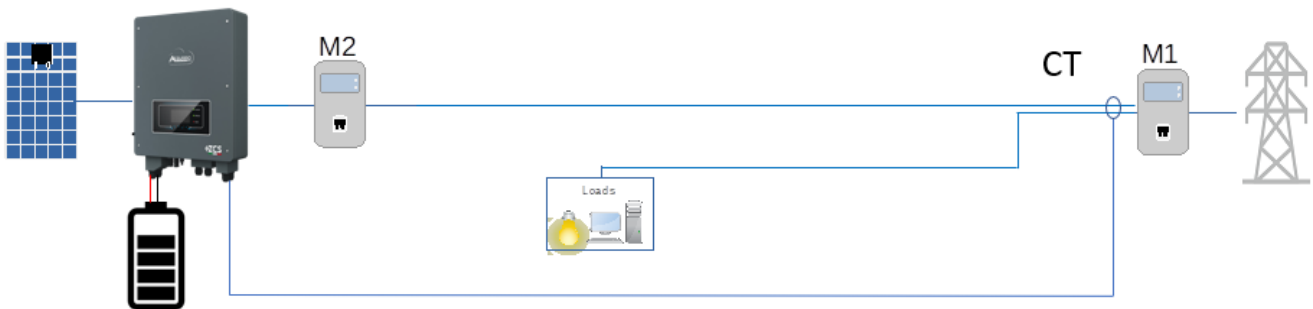


Figure 3 - logical position of the CT in the case of two phases exiting the M1 meter

The CT sensor must be placed close to the import/export meter (M1) in order to measure all incoming and outgoing flows (or in a logically equivalent position), with the sensor arrow pointing towards the M1 meter.

	<p><b>Connecting the CT sensor in a position other than the one indicated may compromise the proper functioning of the "Zero Feed-In" mode</b></p>
<p>Attention</p>	



Once the correct positioning of the CT sensor has been established, it can be configured by following these steps.

### Connections of CT sensors:


CT sensor	CT Port
Red cable	CT+
Black/yellow cable	CT-

3. Connect the CT sensor and inverter via the CT port. Connect the sensor cables to the CT port of the inverter, as shown in the table. The “CT” connector is used on the inverter side. If the connection needs to be extended, use a twisted and shielded CAT5 or CAT6 cable and connect the shield to the ground only on one side.

**NOTE:** For distances greater than 50 meters between the CT sensor and inverter, it is necessary to use the DDSU666 meter (see previous chapter).


### 3.1.5 Inverter checks and configuration with a single inverter and CT sensor

Once the connections have been made and the inverter has been switched, it is necessary to configure the presence of the CT sensor from the inverter display.

	<p><b>Always update the inverter to the latest FW version found at</b>  <a href="http://www.zcsazzurro.com">www.zcsazzurro.com</a></p>
Attention	

Follow the steps below:

- Press and hold the first key on the left of the inverter until you enter the menu.
- Press the last key on the right to enter "advanced settings"
- Enter the password 0001 to enter the menu
- Use the arrows to scroll to the item "0 Feed-In"
- Enter the password 0715 to enter the menu. To change the number, press the second and third key. Press the fourth key (enter) to confirm the number.
- Scroll down to the item "Set 0 Feed-In"
- Enter the password 0715 to enter the menu again
- Select the item "Enable." Press and hold the fourth key (enter) to confirm
- Set the power to 0.0kW for zero feed-in

	<p><b>The set power value can also differ from 0kW, in which case the inverter will adjust itself so that the power fed into the grid never exceeds the set value.</b></p>
Note	

Switch off the inverter and meter

### 3.1.6 Functional checks with a single inverter and CT sensor

After restarting the inverter, the functionality check can be carried out. The following procedure allows an accurate check of the functioning of the set mode.


To check that the inverter is reading correctly, it is necessary to switch on loads greater than 1kW. Stand in front of the inverter and check that the power is:


1. Greater than 1 kW;
2. In line with home consumption.

Then switch off the loads and check that the power is:

1. At 0 kW;
2. In line with current home consumption, which should read 0.

If the above conditions are met, the inverter is functioning correctly in the 0 feed-in mode.

	<p><b>If the phase has no active load connected and the "Zero Feed-in" mode is set to 0kW, the inverter will not produce any power. This is to avoid feeding current into the grid on that phase</b></p>
<b>Note</b>	

	<p><b>If the "Zero Feed-In" mode is set at a feed-in value of 0kW, the output of the inverter could be slightly less than the total load. This would always result in a slight withdrawal from the grid. This condition is perfectly normal and technically correct</b></p>
<b>Note</b>	