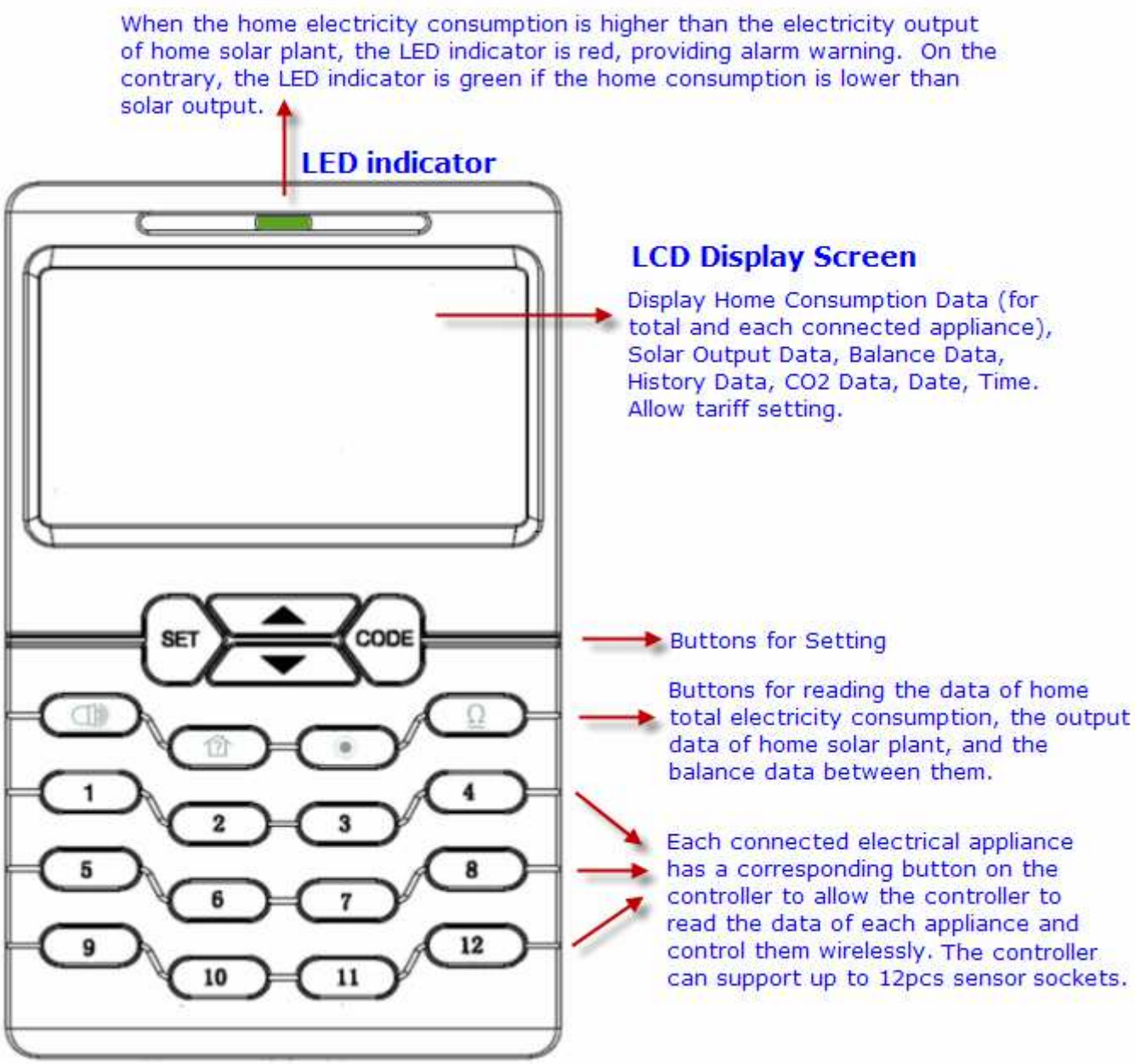
MCEE Solar

Electricity Energy Management System

With Home Solar Plant Monitoring Function



1. Basic Introduction

The wireless electricity monitoring and control system MCEE SOLAR with Home Solar Plant monitoring function is consisted by below parts:

1) 1pc controller with power adapter
2) 2pcs transmitters with sensor clamp
3) A number of sensor plug sockets (not included)

4) 1pc RJ45-USB data cable to provide computer link

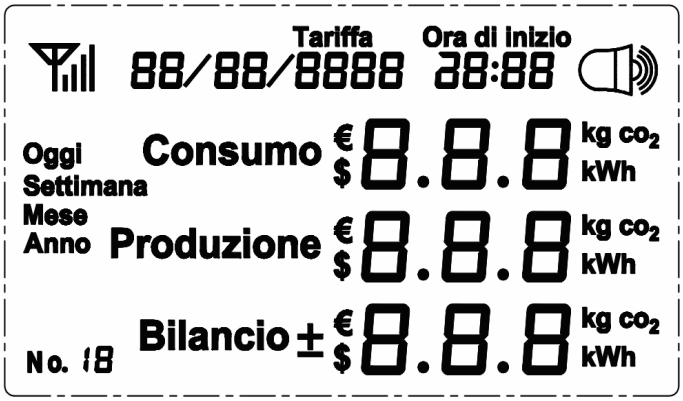
- The controller receives data from the transmitters and sensor plug sockets, displays the real time and history information on its LCD screen and sends powering on/off instruction to the sensor plug sockets.
- 1pc of transmitter will be used to monitor the electricity output of the solar home plant, the other transmitter will be used to monitor the electricity consumption of the whole home.
- The sensor plug sockets detect the electricity consumption of connected electrical appliances. The sockets detect the energy consumption data and send it to the controller. The sockets can be controlled remotely and wirelessly by the controller to switch on/off the connected electrical appliances. One system can support up to 12pcs sensor sockets.
- The RJ45-USB data cable (available with software) serves to provide connection between the controller and the computer so that the user can view the real time data, the history data from the computer or remotely switch on/off electrical appliances.

2. System Installation

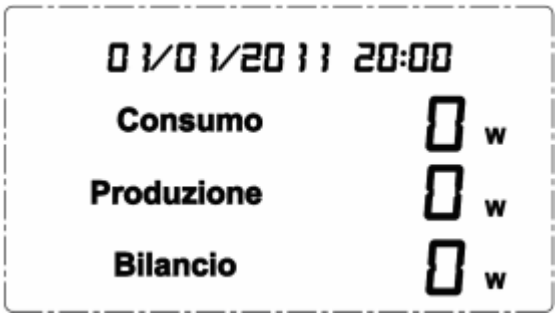
Step 1: Attach the Controller Unit to a power supply socket.

Locate a place where has a power supply socket nearby and where is convenient for viewing and operating the Controller Unit.

Use the power adapter to attach the Controller Unit to the power supply socket nearby. After the Controller is connected to a power supply, all its LED lights automatically turn on for a while and the LCD screen will display a default screen with zero values as showed in below right photo for 3 seconds.



After that, the LCD screen remains as below photo. The date and time displayed on the screen are default setting from production.



Now keep the Controller Unit powered on at all times.

Step 2: Pairing of the Controller with the Sensor Plug Sockets

The Sensor Plug Sockets in the standard package were already paired successfully with the Controller during production. They are marked with the numbers 1, 2, 3….. These numbers are also their corresponding button numbers on the Controller Unit.

Locate an electrical appliance that is to be monitored and controlled. Attach the plug of the appliance to one Sensor Plug Socket. Then attach the Sensor Plug Socket into the power supply socket nearby.

Now switch on the Sensor Plug Socket and it will automatically connect to the Controller Unit. Wait for about 30 seconds and its corresponding numbered button will light up on the Controller. The default screen of the Controller will then update to show the electricity usage of the connected appliance. The communication between the Sensor Plug Socket and the Controller has now been established.

Note: We suggest you write down the button numbers and their corresponding appliance names for future reminder.

Now locate other electrical appliances that need to be monitored and controlled and repeat the same way to set up the communication for the second and third Sensor Plug Socket.

To install extra Sensor Plug Sockets into the system, follow below instruction to pair the extra Sensor Plug Sockets with the Controller.

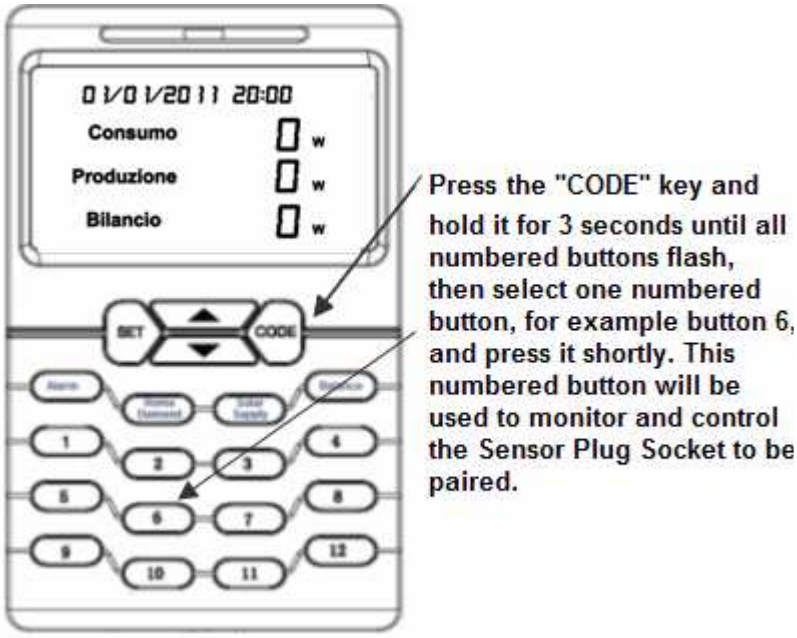
Note: Though the Sensor Plug Sockets in the standard package were already paired successfully during production, we still suggest you to follow below instruction to re-pair them with the Controller during the installation. This can avoid a very small probability of conflict if your neighbor is also using RCS-S09L system.

Pairing of extra Sensor Plug Socket with the Controller

When pairing, try to use a power supply socket nearest to the Controller. Attach the Sensor Plug Socket into the power supply socket and switch it on.

Press the "CODE" key of the Controller and hold it for 3 seconds until all numbered buttons flash, then select one numbered button, for example button 6 (means channel 6 is to be used for the pairing), and press it shortly. Now only button 6 will flash, and the Controller is now waiting to be paired.

Note: The button 6 will be used to monitor and control the Sensor Plug Socket to be paired.



Now use a slim stick to push into the pairing hole of the Sensor Plug Socket (as shown in below photo) and hold there for 3 seconds until the LED light of the Sensor Plug Socket flashes quickly. The Sensor Plug Socket is now starting to pair with the Controller Unit. The pairing may take up to 30 seconds.

After successful pairing, button 6 of the Controller Unit will stop flashing and its light will be on. Now pull out the Sensor Plug Socket from the power supply socket near the Controller and attach it again to the power supply socket near the actual electrical appliance to be monitored and controlled, then put the plug of the electrical appliance in the Sensor Plug Socket. And the connected electrical appliance can now be monitored and controlled by the Controller Unit remotely.

Repeat this for all extra Sensor Plug Sockets thus establish communication between the Controller and all connected electrical appliances.

One Controller can support up to 12pcs of Sensor Plug Sockets.

Note: The Sensor Plug Socket can be used as a power supply socket for a multi-socket plug adapter. If so, all appliances attached to the multi-socket plug adapter will be monitored and controller as one unit through the Sensor Plug Socket.

Step 3: Pairing of the Controller with the 1-way Transmitters

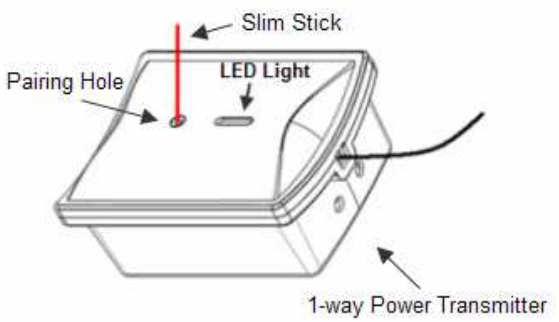
The 2pcs 1-way transmitters are used to monitor respectively the total home electricity consumption and the total electricity output of the home solar plant. Please pair them with the Controller according to below instruction. The transmitters themselves have no difference, so you can choose any transmitter to pair for the solar plant or for the total home consumption. After pairing, the transmitter's role in the system will be fixed.

To pair the transmitter for the solar energy output:

Press the "CODE" key of the Controller and hold it for 3 seconds until all numbered buttons flash, then select the button and press it shortly. Now only the button and the antenna icon will flash, as below photo, and the Controller is waiting to be paired.

Keep the Transmitter in the same room as the Display Unit. Pull out the clear plastic tab (it is an insulation sheet marked with "removing before using") from the back of the transmitter and the built-in batteries will make the transmitter start to work immediately.

Now use a slim stick to push into the pairing hole of the transmitter (as shown in below photo) and hold it there for 3 seconds until the LED light of the transmitter flashes quickly. The transmitter is starting to pair with the Display Unit.



The pairing may take up to 60 seconds. After successful pairing, we suggest you to stick a label of "solar output" or any other similar words on the transmitter to avoid confusion. The button will light up if it can receive signal from the transmitter.

To pair the transmitter for the total home electricity consumption:

Press the "CODE" key of the Controller and hold it for 3 seconds until all numbered buttons flash, then select the button and press it shortly. Now only the button and the antenna icon will flash, as below photo, and the Controller is waiting to be paired.

Then repeat the same way to pair the other transmitter with the controller. After successful pairing, we suggest you to stick a label of “Home Consumption” on the transmitter. The button will light up if it can receive signal from the transmitter.

Step 4: Installation of the 1-way Power Transmitter and the Sensor Clamp

To install the transmitter and sensor clamp for the solar energy output:

Place the transmitter labeled with “solar output” near the output trunk cable of the solar energy plant. Fix the Sensor Clamp around the null line or the live line of the output trunk cable for the home solar plant. Make sure to let the line pass through the clamp.

The Sensor Clamp immediately starts to detect the current and the monitoring system starts to monitor the electricity output of the home solar plant.

Note: There are two kinds of optional sensor clamp, one with the diameter of 10mm (as shown in above photo); the other is 25mm (as shown in below photo). 18mm sensor clamp will be available soon.

To install the transmitter and sensor clamp for the home total electricity consumption:

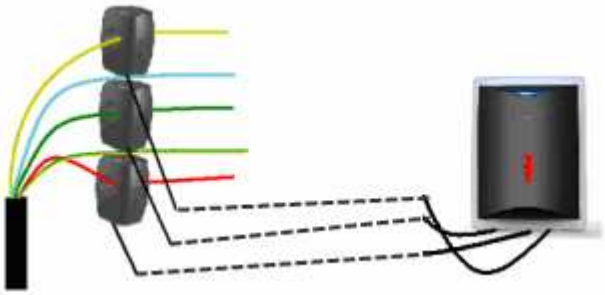
Place the transmitter labeled with “Home Consumption” near the input trunk cable for home. Fix the

Sensor Clamp around the null line or the live line of the input trunk cable for home. Make sure to let the line pass through the clamp.
The Sensor Clamp immediately starts to detect the current and the monitoring system starts to monitor the home total electricity consumption.

3-phase power supply

If the home trunk power supply use a 3-phase power supply. You need two more sensor clamps. Attach the DC plug of each sensor clamp into the DC sockets on the back of the Transmitter.


Fix the 3pcs of Sensor Clamps around the lines of Phase-A, B and C (Don't fix the clamps around the ground wire and neutral wire).



3. Settings of the Controller Unit

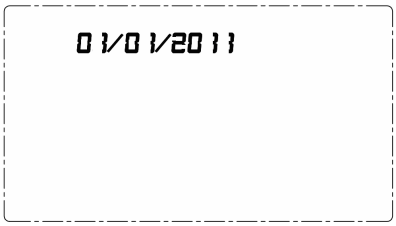
Settings of Date, Time, Currency, Tariff, Alarm

Press the SET button and hold it there for about 3 seconds to enter the setting interface of date, time, currency, and tariff, as below photo. First you see 01/01/2011 flashing. Use the UP button or the DOWN button to select the item to be set (when the item is selected it will flash), then press **SET** button to enter the setting interface of the selected item.

Setting Interface

3.1 Date Setting

When 01/01/2011 (day/month/year) is flashing, press **SET** button shortly and enter into the setting interface for date, as below photo. Use the UP button or the DOWN button to set the correct value for each flashing number and press **SET** button to confirm. The confirmation of the day value will return the LCD screen to Setting Interface.



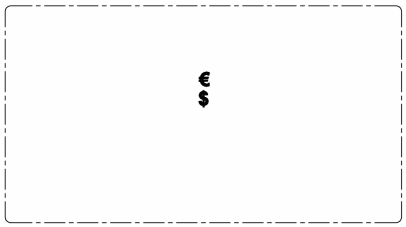
3.2 Time Setting

Operate the same way to set the time and currency easily and Press CODE to exit.

3.3 Currency Setting

Short press SET button when the icon € is flashing to enter into currency setting as below figure showing.

Press the DOWN button, the icon $ will flash, then press the SET button for choosing the currency.



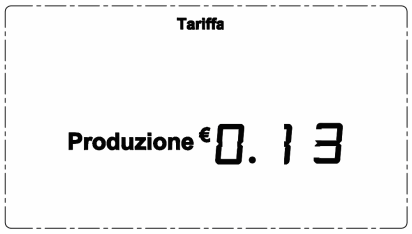
3.3 Tariff Setting

This system supports two-tariff for the home electricity consumption and single tariff for the solar output. To set the tariff, on the setting interface please use the UP button or the DOWN button to select the icon **Tariffa** and press SET button to enter into the setting interface of the first tariff for home electricity consumption first, as below photo.

The default tariff is 0.13. First you'll find the "0" of 0.13 is flashing, please use the UP button or the DOWN button to adjust to correct value and press the SET button to confirm. Operate the same way until the last digit is set to correct value. The pressing of the SET button to the last digit will lead to the setting of the starting time for the first tariff. First you will find the hour value of the time is flashing, please use the UP button or the DOWN button to adjust to correct value (range: 00-23) and press the SET button to confirm. Then operate the same way for the minute value (range: 00-59) to finish the setting of the starting time for tariff 1 of home electricity consumption.

The pressing of the SET button to the starting time of tariff 1 will lead the setting interface for tariff 2. Operate the same way to set the correct rate and starting time accordingly.

The completion of the tariff setting for home electricity consumption will lead the LCD screen to automatically enter the setting interface of the tariff for Solar yield as below photo:

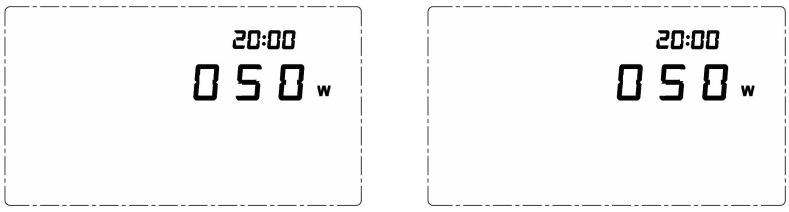


Operate the same way to set the correct rate for Solar yield tariff. No need to set the starting time. The completion of the setting for solar yield tariff will return the LCD screen to Setting Interface, where you'll find again 01/01/2011 is flashing.
The **Bilancio** is calculated according to the setting of the tariffs.

3.4 Alarm Setting

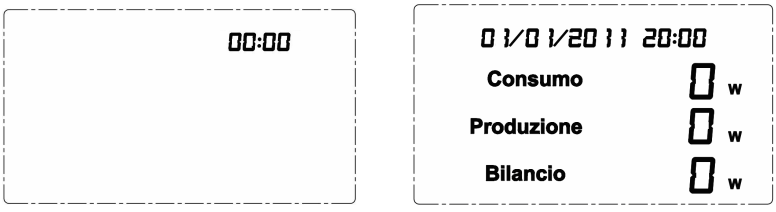
3.4.1 The setting of Power Alarm Value

When the tariff setting for solar has been finished, it will enter into power alarm value setting automatically as below left LCD displaying. The default value is 050w, press the UP or DOWN button to adjust the correct value when the first digit "0" flashes (range from 0-9). Press the SET button to confirm then the second digit "5" begin to flash, the same operation as the first digit value setting. After finish the setting of power alarm value, press the SET button to enter into the starting time setting for alarm period (default value 08:00). Then the hour of starting time "08:" begins to flash, press the UP or DOWN button to adjust the correct value (range from 00-23), then press the SET button to confirm and the minute of starting time ":00" begin to flash, press the UP or DOWN button to adjust the correct value (range from 00-59).
Then press the SET button to confirm and enter into the setting of the terminal time (default value 20:00) as below right LCD showing, the same operation as the starting time setting. Press the SET key to confirm.



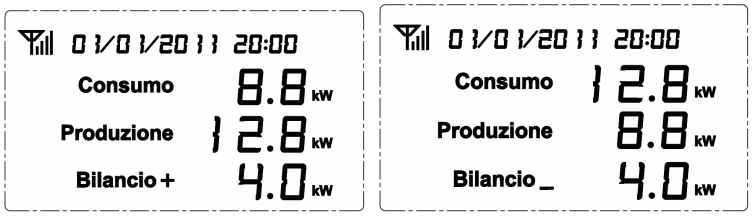
3.4.2 Delay Time Setting for Alarm

When finish setting of starting time, it will enter into the delay time setting as below left figure display (default value is 00:00, that means do not have delay on alarm). Then the digits of hour "00:" begins to flash, press the UP or DOWN button to adjust the correct value (range from 00-23), press the SET button for confirmation. Then the digits of minute "00" flashes, operate the same as the hour value setting. It will return the normal interface as shown below right figure.

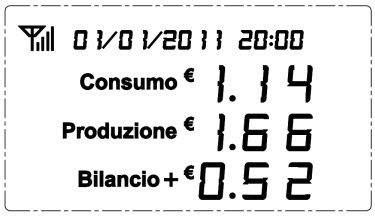


LCD Display Screen

Under normal working condition, there are two displays switching between each other in an interval of 20 seconds.
The first display is as photos below (can be + or -). The first line is the power under home consumption. The second line is the power of solar output. The last line is the balance = the solar power - consumption power.



The other display is as photo below (can also be + or -, only one photo for reference). The first line is the forecast cost of next hour of home electricity consumption based on current power. The second line is the forecast yield of next hour of solar output based on current power. The last line is the balance = Solar output yield – Home consumption cost.



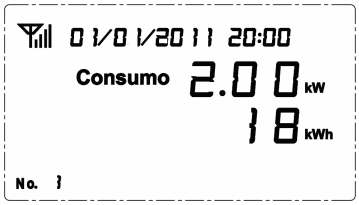
4. LED Indicator and Alarm Function

On top of the controller, there is a LED indicator. The LED color mean different balance status between the home electricity consumption and the electricity output of home solar plant..
When home electricity consumption is higher than the setting value of the electricity output of home solar plant, the second LED indicator is red. If the buzzer is on at that time, the buzzer will make double beeps every 15 seconds; On the contrary, the second LED indicator is green. The default alarm value is 50W and the user can set the alarm value freely.

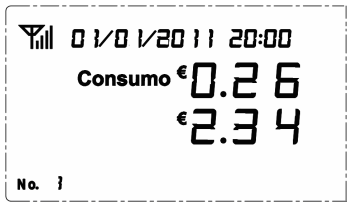
5. Single Sensor Sockets Data View and Alarm controlling

5.1 Current power checking

To view the data of each sensor socket, please just press the socket's corresponding numbered button on the controller under normal working condition. For example, by pressing button 1 on the controller, you will see the data of socket 1 as below photo. The first line is power of socket 1 under consumption. The second line is the accumulated electricity consumption after the socket is paired with the controller.



In 10 seconds, the data display of the socket will automatically be switched to its cost display as below photo. The first line is the forecast cost of next hour based on current power. The second line is the accumulated cost after the socket is paired with the controller.



After the second display is displayed for 10 seconds, the LCD screen will return back to normal display.

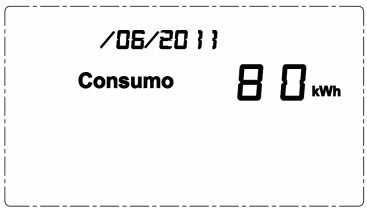
5.2 Alarm controlling

When the system meets the alarm conditions and the first socket plug has been cutting off, the balance is still negative (under set threshold) then cut off the second socket plug. After the second socket plug cutting off, the balance is still negative (under set threshold) then cut off all the connected socket plugs. Once the balance will return to normal condition, switch on again all the connected sockets.

Note: The alarm condition refers to when Home consumption cost - Solar output yield> alarm setting value and the time is within the alarm setting time and exceeds the delay alarm time setting.

6. Home Electricity Consumption History Data View

To view the history data of home electricity consumption for current month and the last 11 months, please press the DOWN button on the controller and hold it for about 3 seconds under normal working conditions. When below display (assuming current month is June of 2011), release the DOWN button and use the UP button or DOWN button to adjust to the past other months.



To view the history data of home electricity consumption for the last 30 days, please press the UP button on the controller and hold it for about 3 seconds under normal working conditions. When below display (assuming current month is June of 2011), release the UP button and use the UP button or DOWN button to adjust to the past other days.

7. UP TO NOW History Data View

There are four kinds of UP TO NOW history data that can be viewed on the display screen.

Oggi(Today): Means the accumulated data for current day up to now from 00:00 of current day.

Settimana (This Week): Means the accumulated data for current week up to now from 00:00 of Monday of current week.

Mese (This Month): Means the accumulated data for current month up to now from 00:00 of the 1st day of current month.

Anno (This Year): Means the accumulated data for current year up to now from 00:00 of January 1st of current year.

To view the UP TO NOW history data, please press any button of  ,  or  to enter into the UP TO NOW history data interface as below photo. The first display is for electricity data. The first line displays the home electricity consumption data up to now for today. The second line displays the solar plant output data up to now for today. The last line displays the balance data up to now for today.

Please use the UP button to switch among UP TO NOW data for different time frame of **Oggi**(Today), **Settimana** (This Week), **Mese** (This Month) and **Anno** (This Year).

Please use the DOWN button to switch among the UP TO NOW data for different types of COST (**€**), CO2 Emission (**kg co_2**) and Electricity Amount (**kWh**), as below photos.

During the viewing, press shortly the SET button to exit. Idleness of 20 seconds will return the LCD screen to normal display.

8. Switching on/off the monitored appliances remotely from the controller

To switch off one monitored electrical appliance remotely from the Controller, press the numbered button of the targeted appliance on the Controller and hold it for 3 seconds. The numbered button will flash (other LED lights of the Controller will all turn off). While the numbered button is flashing, press the SET key shortly and the Sensor Plug Socket of the targeted appliance will be switched off, thus turning off the targeted appliance. To switch on it again, press its numbered button on the Controller and hold it for 3 seconds, press the SET key shortly while the button is flashing and its Sensor Plug Socket will be switched on, thus turning on the targeted appliance.

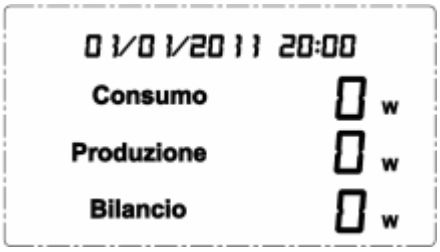
Note:

1) All Sensor Plug Socket has one switch, you may also use that switch to turn on/off the electrical appliance connected to the Sensor Plug Socket.
2) You are not able to switch on/off the 1-way power transmitter remotely from the Controller.

9. Resetting and Data Clearance

If the unit needs to be reset and the data needs to be cleared from the unit, please operate as below:

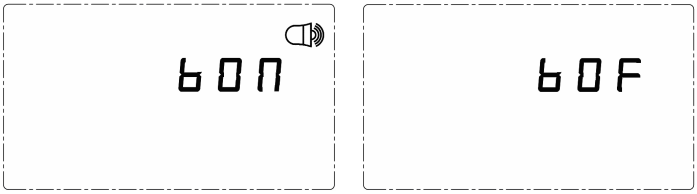
1) Please pull out the power adapter.
2) Now Press the SET button and hold it there, then attach the power adapter. The LCD screen will display the full LCD screen characters and all LED lights will be on.
3) Now release the SET button and the LCD screen will display the programming version number then enter into the display screen with zero values, as below photo. The data has now been cleared.



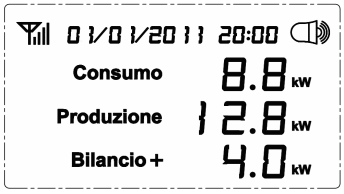
In case the controller is powered off due to power cut or battery has been used up, the data will not be lost.

10. Buzzer Setting

If the Buzzer is on, press the  for 3 seconds to turn it off. If the Buzzer is off, press the  button and hold it for 3 seconds to switch the Buzzer on.



2 seconds after switching, the LCD screen will return to normal display automatically.
If the buzzer is set on, the buzzer icon will always stay on the right top corner.



11. RJ45-USB Data Cable and Software

The RJ45-USB Data Cable and the software allow you to view your electricity consumption data, Solar production data and turn on/off the connected electrical appliances on your computer.

Download (www.ecodhome.com/prodotti) and install the software on your PC.

In the pop up window, please input the password (the default password is nothing (blank) and click “Yes” button first access don’t type any password, just press Yes.

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