



SEM

Sin Energy Manager

S_{IN}E_{NERGY}M_{ANAGER}

Monitoring and automatic management of energy

INSTRUCTION MANUAL





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Introduction

The SEM is a smart device designed to optimize the use of energy from renewable sources by maximizing its use on site.

The SEM is equipped with 4 relay outputs capable of managing electrical loads up to 230 Vac, 10 A, and signals of 1A – 24 V Ac/DC, to enable relays, actuators or any other remote control switch of higher power where needed.

The term "electrical load" means any device capable of absorbing electrical power, such as appliances, lamps, heat pumps, water heaters etc.

The 4 outputs on the SEM can also be used as "timed outputs" to manage electrical devices that need to stay on for a defined length of time (e.g. dishwasher, washer machine, etc.).

The 4 loads can be managed defining up to 12 combinations of them:

- 4 combinations are reserved for managing the loads set as "timed".
- the remaining 8 combination can be defined by the user in order to create a list of loads that better covers the range of energy produced by its plant during the day.

The SEM system has an Updating Time of 5 minutes: this means that the status of the loads may change every 5 minutes if the power production and consumption detected by the SEM change during this lapse of time and the SEM itself evaluate that there is a better combination of load to be activated.



Software features

The SEM is equipped with an on board web server that let the user easily manage the device by:

- real time monitoring of
 - energy production
 - energy consumption
 - loads status (on / off).
- management of electrical loads connected to the SEM and their combinations;
- consulting of logs up to 13 months;
- management of SEM software settings.



Web Interface

The SEM is equipped with a WEB interface easy to navigate through the MENU on the top of each page.

The SEM HOME PAGE can be reached at the IP address of your subnet:

192.168.0.111

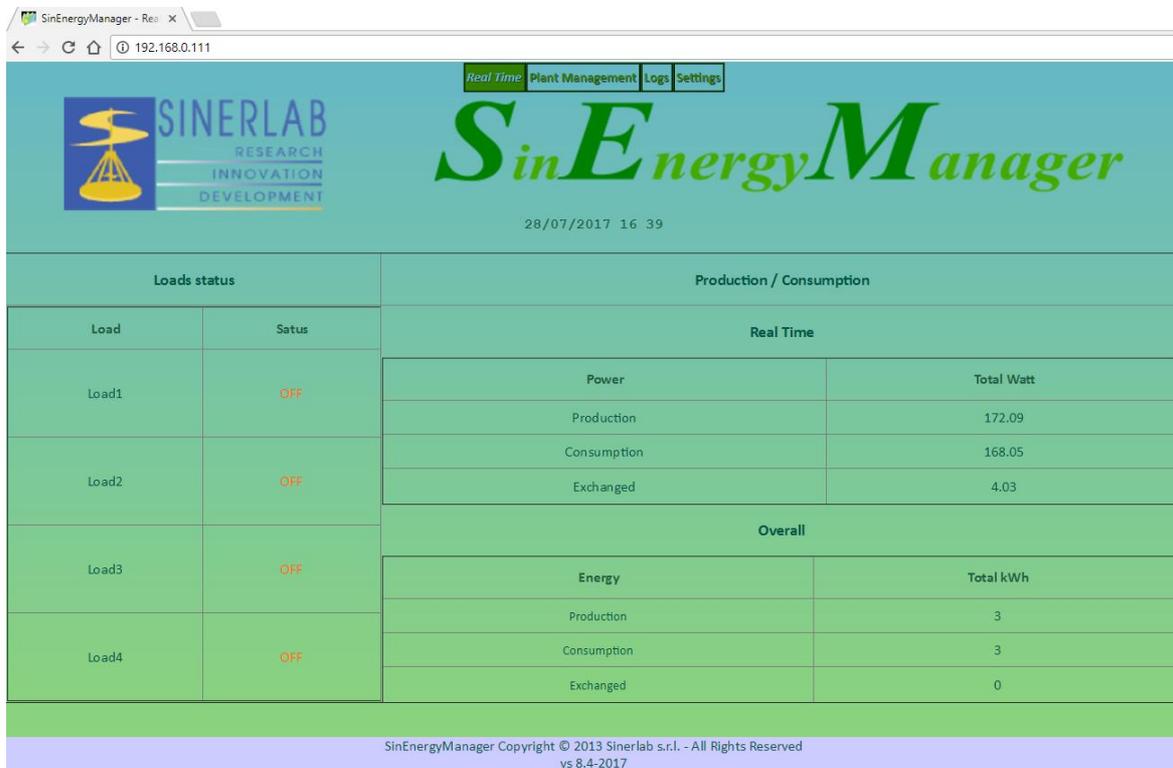


FIGURE 1: HOME PAGE

If your subnet has a different prefix (for example, 192.168.1.0) you will need to temporarily modify it (see page 26) or use a serial connection (see page 28) to modify the IP address of the SEM.



Real Time

This is the page that allows the use to monitor the system and is set as the start page of the Web Interface, reachable by default at the IP address 192.168.0.111.

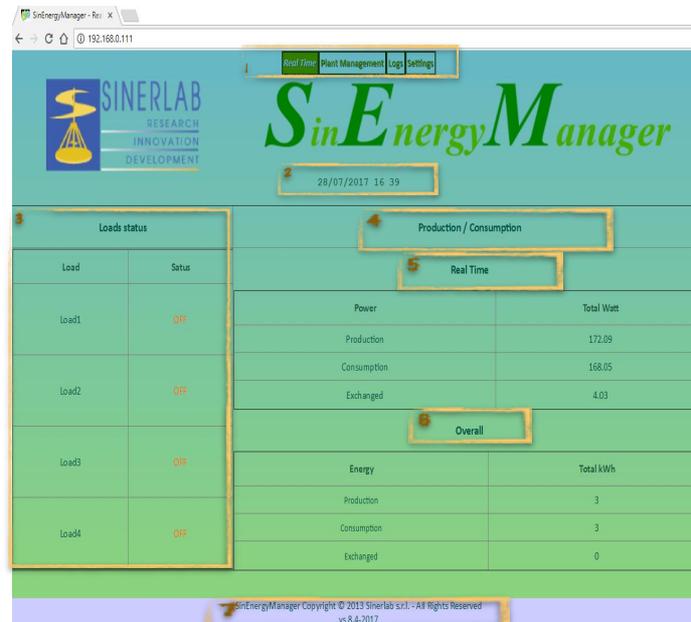


FIGURE 2: REAL TIME

On this page you can distinguish seven element:

1. The MENU bar in which the page that the user is currently on is highlighted;
2. Date and Time;
3. State of electrical loads managed by the SEM;:
 - Load Name, as defined by the user;
 - ON: load ON
 - OFF: load OFF
4. Table that shows how much energy is being produced, consumed and exchanged with the supplier:
 5. Real Time data that refers to the latest power sampling (SEM update its status every 5 minutes).
 6. Overall data that refers to the total amount of energy produced, consumed and exchanged since the SEM has started working on the user plant.
7. Version of the current firmware running on the SEM.



If the SEM has been configured to monitor a three-phase system, the display of this page will be slightly different, as the different monitored energy values are displayed on all phases.

Production / Consumption			
Real Time			
Power	Phase	Watt	Total Watt
Production	1	0.00	0.00
	2	0.00	
	3	0.00	
Consumption	1	0.00	0.00
	2	0.00	
	3	0.00	
Exchanged	1	0.00	0.00
	2	0.00	
	3	0.00	
Overall			
Energy	Phase	kWh	Total kWh
Production	1	5	3
	2	0	
	3	0	
Consumption	1	5	3
	2	0	
	3	0	

FIGURE 3: THREE-PHASES REAL TIME



Loads Management

The Plant Management Page lets the user define its loads..

The page is divided in 2 section:

1. Timed Loads List

Any load connected to the SEM can be timed or not. To define a load as “TIMED” the user just need to assign a time to the load.

- If the time is set on “N.D.” the load will be managed as a simple load;
- If the time is set on a value different from “N.D” then it will be managed as a timed load.

Admissible values of time for the loads are expressed are:

- 5 min, 15 min,30 min , 45min, 1hr, 1 hr 15 min, 1 hr 30 min , 1 hr 45min, 2 hr, 2 hr 15 min, 2 hr 30 min, 2 hr 45min, 3 hr.

The screenshot shows the 'Sin Energy Manager' interface with the 'Plant Management' tab selected. It features two main sections: 'TIMED LOADS LIST' and 'LOADS COMBINATIONS'.

TIMED LOADS LIST

INDEX	NAME	POWER [W]	TIME	PIN
A	load1	0	N.D.	1
B	load2	0	N.D.	2
C	load3	0	N.D.	3
D	load4	0	N.D.	4

LOADS COMBINATIONS

INDEX	A	B	C	D	ENABLED	POWER [W]
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0

Buttons: RESET ALL, SALVA

FIGURE 4: PLANT MANAGEMENT

Timed loads are electrical loads that need to remain on for a predefined length of time (eg dishwasher, washing machine, etc.).



More about Timed Loads:

- The SEM manages every timed load as a load included in a single combination;
- It is not possible to add a timed load to a combination of non-timed loads;
- The first 4 combinations of the LOADS COMBINATIONS TABLE are reserved for the management of timed loads.

2. Loads Combinations

- In order to increase the efficiency of the SEM the user can combine the loads attached to the device in different combinations;
- The first 4 combinations are reserved for the management of timed loads.



Timed Loads List

The table for the management of times loads has 5 columns where following data are shown:

- Progressive identifying alphabetical value of the load
- Name of the load
- Power (max Watt value) of the load
- Load time
- PIN of the SEM to which the load is connected.

INDEX	NAME	POWER [W]	TIME	PIN
A	Load1	0	15 min	1
B	Load2	0	nd	2
C	Load3	0	nd	3
D	Load4	0	nd	4

FIGURE 5: TIMED LOADS LIST

The fields INDEX and PIN are not editable by the user because the device uses them with referencing purposes. The remaining three fields should be defined by the user in order to describe its plant:

- NAME: is a text field with max length of 8 characters where the user can insert a descriptive name for the load.
- POWER: is a numeric field where the user should insert the power of the load as reported by the specifications of the load itself.
- TIME: is a single selection list where the user can select a time value from 15 minutes up to 3 hours or the value “nd” (Not Defined) that means that the load is untimed.

TIME	PIN
nd	
15 min	
30 min	
45 min	
1 hr	
1 hr 15 min	
1 hr 30 min	
1 hr 45 min	
2 hr	
2 hr 15 min	
2 hr 30 min	
2 hr 45 min	

FIGURE 6: DURATIONS

WARNING Changing a “SIMPLE LOAD” to a “TIMED LOAD”, and vice versa, has several effects in the management of the loads.

In particular:

- from SIMPLE LOAD to TIMED LOAD:



- * in the Combination Table the column associated with that load will be removed from all the combinations where it may have been previously included;
- * a combination (one of the first 4) that contains only that load will be enabled.
- from TIMED LOAD to SIMPLE LOAD:
 - * in the Combination Table the column that contains that load will be enabled;
 - * the user will be able to include that load in a combination with other untimed loads;
 - * the combination used when the load is timed will be disabled.

Example: (from SIMPLE LOAD to TIMED LOAD)

Let us analyze a situation where:

- the user has connected to the SEM 4 loads as defined in the Loads List

TIMED LOADS LIST				
INDEX	NAME	POWER [W]	TIME	PIN
A	Load1	100	▼ nd	1
B	Load2	150	▼ nd	2
C	Load3	70	▼ nd	3
D	Load4	190	▼ nd	4

FIGURE 7: LOADS LIST

- the user has created different combinations with the loads at his disposal.

LOADS COMBINATIONS						
INDEX	A	B	C	D	ENABLED	POWER [W]
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	100
6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	150
7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	70
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	190
9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	220
10	<input checked="" type="checkbox"/>	360				
11	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	410
12	<input checked="" type="checkbox"/>	510				

FIGURE 8: EXAMPLE: LOADS COMBINATIONS

- **NB:** The first 4 combinations, each of which has just a single load selected and not changeable, are currently disabled because all the loads are defined as **untimed** (time value selected "nd").



If we change the loads combination as described below:

- we connect the dishwasher to PIN 1 of the SEM; let us suppose that:
 - pick power of the dishwasher is 1200 Watt;
 - the washing program we set has a duration of 1 hour.
- we need to insert this data in the loads list table. The table will look like the following figure:

TIMED LOADS LIST				
INDEX	NAME	POWER [W]	TIME	PIN
A	Dishwasher	1200	1 hr	1
B	Load2	150	nd	2
C	Load3	70	nd	3
D	Load4	190	nd	4

FIGURE 9: EXAMPLE: CHANGING TIMED LOADS LIST



NOTES:

1. the A column has been disabled;
2. the A load has been removed from all the combinations where it was included (5,10,12);

LOADS COMBINATIONS						
INDEX	A	B	C	D	ENABLED	POWER [W]
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1200
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	150
3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	70
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	190
5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	150
7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	70
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	190
9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	220
10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	260
11	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	410
12	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	410

FIGURE 10: EXAMPLE: LOADS COMBINATIONS CHANGES

3. the first combination that includes only the A load, when it is defined as timed, has been activated.

We also notice that combination 11 and 12 have now equals value because they are composed by the same loads, so we may think of changing one of the combination as to define a different total load.



Loads Combinations

The Table of Loads Combinations is composed of 6 characteristic elements:

The screenshot displays the Sin Energy Manager interface. At the top, there are navigation tabs for 'Real Time', 'Plant Management', 'Logs', and 'Settings'. The main header features the Sinerlab logo and the text 'Sin Energy Manager'. Below this, the 'TIMED LOADS LIST' table is shown, which includes columns for INDEX, NAME, POWER [W], TIME, and PIN. The table lists four loads: Load1 (1000W, 30 min), Load2 (500W), Load3 (200W), and Load4 (800W). Below the 'TIMED LOADS LIST' is the 'LOADS COMBINATIONS' table, which has columns for INDEX, A, B, C, D, ENABLED, and POWER [W]. The table shows 12 combinations of loads, with checkboxes for each load and an 'ENABLED' checkbox. A 'RESET ALL' button is located below the table, and a 'SALVA' button is at the bottom. The interface is highlighted with orange boxes around the 'LOADS COMBINATIONS' table and the 'SALVA' button.

FIGURE 11: LOADS COMBINATIONS

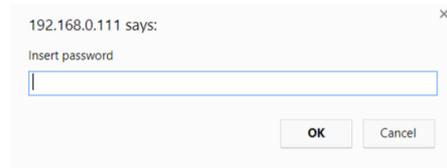
1. the first row shows the alphabetical index of the loads as they are identified in the loads list
 - * by referencing this index in the row below the user can select the loads to insert in each combination;
2. the first column shows the numeric index of the combination;
3. in the column "ENABLED" the user can select if the combination is enabled or not;
4. the last column shows fields compiled by the system using the data inserted by the user referring to each load;
5. this kind of interface offers the user the possibility of having a clear vision of the structure of the system he is defining so he will be able to modify the loads combinations as to have a more distributed list of powers.



6. the RESET ALL button let the user uncheck all the box with just one click.



WARNING Changes applied by the user will be in place only after the saving process. The user need to click on the  button at the bottom of the page and then confirm the saving process



by inserting the password **semtech** in the Confirm pop-up that will appear afterwards, as shown in the following figure. Then press the OK button.

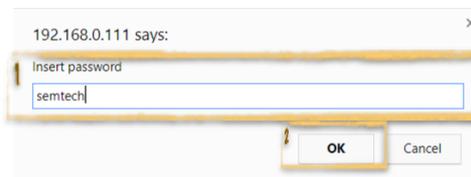


FIGURE 12: SAVING CONFIRM POP-UP WINDOW



NOTES:

- ★ The first four combination are reserved for timed loads only. Each one of this combinations is enabled only when its associated loads is defined as timed. For this four rows the only field accessible by the user is the ENABLE checkbox. The timed combination will be automatically disabled if the load is once again defined as not timed.

★



Logs

The LOGS page shows 3 elements:

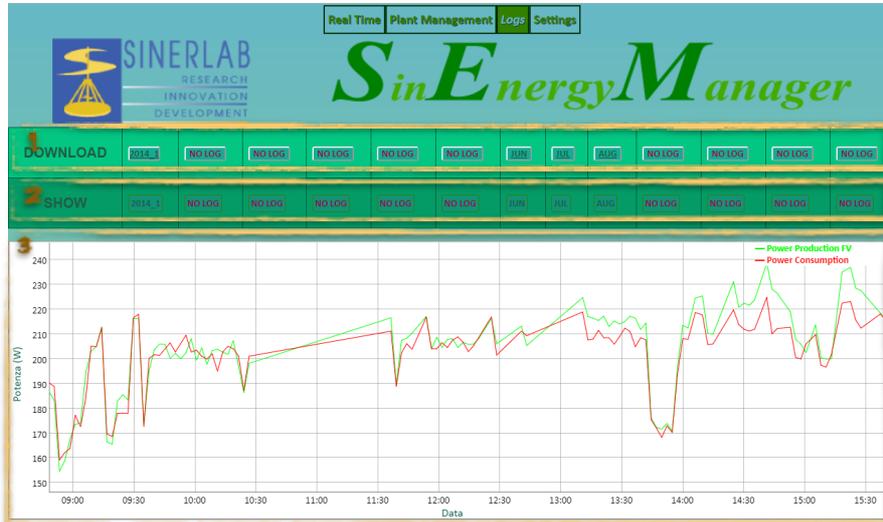


FIGURE 13: LOGS PAGE

1. **DOWNLOAD:** A row contains a button for each month that the SEM have been in use and has recorded data. If the device has no records for a month the relative link will be disabled and will show the text “NO LOG”. By clicking the chosen month, the user will be able to download a “.csv” file to open with an application for data processing, like Microsoft EXCEL or Open Office, and analyze the data.

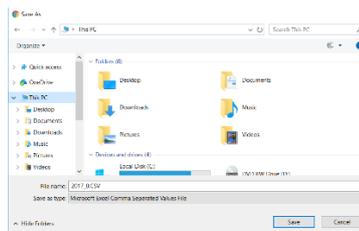


FIGURE 14: DOWNLOAD LOG

The file name is formatted as “yyyy_m.csv”

2. **SHOW:** A row contains a button for each month that the SEM have been in use and has recorded data. By clicking on one of the button, the data recorded for the chosen month will be plotted on the screen.
3. Container where the system plots the data of the month that the user has selected in the SHOW row.



If, for example, the user would like to plot the data for the month of august, it will only need to click on the **AUG** button on the SHOW row.

After a few seconds, needed by the web-server to process the request, the data of production and consumption recorded for the month will be plotted on screen.

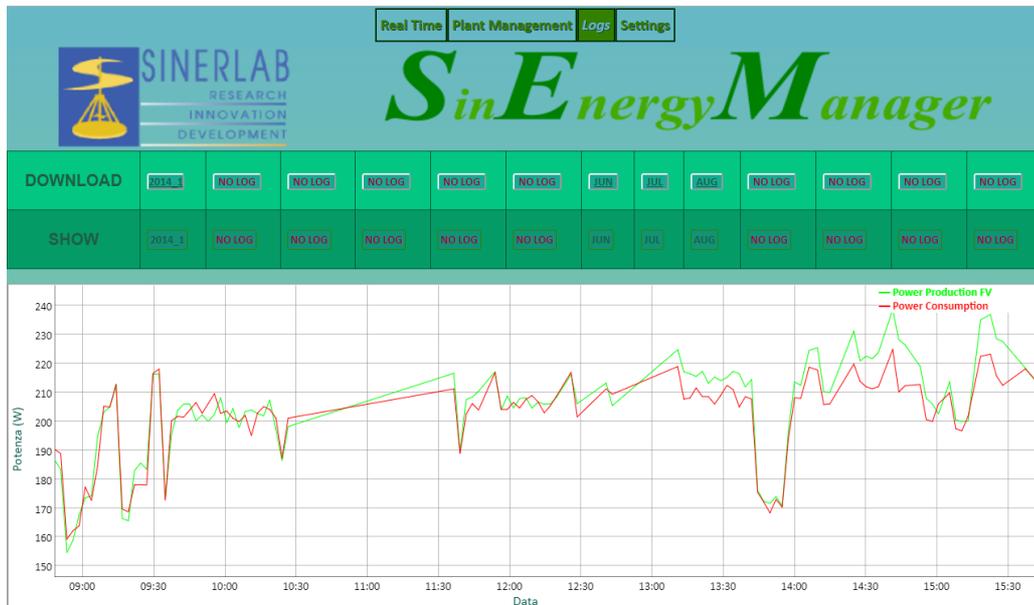


FIGURE 15: AUGUST LOGS PLOT

It will be also possible to choose only a portion of the plot as to better analyze only a limited time interval (as shown in FIGURE 16). To do so, the user needs to:

- choose the starting point of its interval;
- click with the left button of the mouse over the plot where the chosen interval should start, and keep the button down;
- drag the pointer along the chart until the end of the chosen interval;
- release the mouse button.

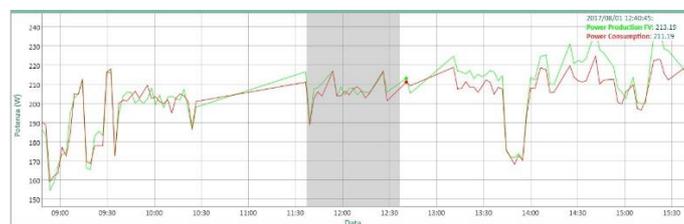


FIGURE 16: LOG INTERVAL SELECTION

The web-server will re-plot only the selected time interval.



FIGURE 17: LOG SELECTED INTERVAL PLOT AND DATA DISPLAY

NB: the user will also be able to display the value of a recorded data by moving the pointer along the chart (as shown in the red box in the top-left part of FIGURE 17).

For example, in FIGURE 18, we have the display of max consumption pick for the 17th of august, recorded at 14:40, that shows a value of instant Production power of 1587.3 W and a value of consumed power of 1564.12 W.

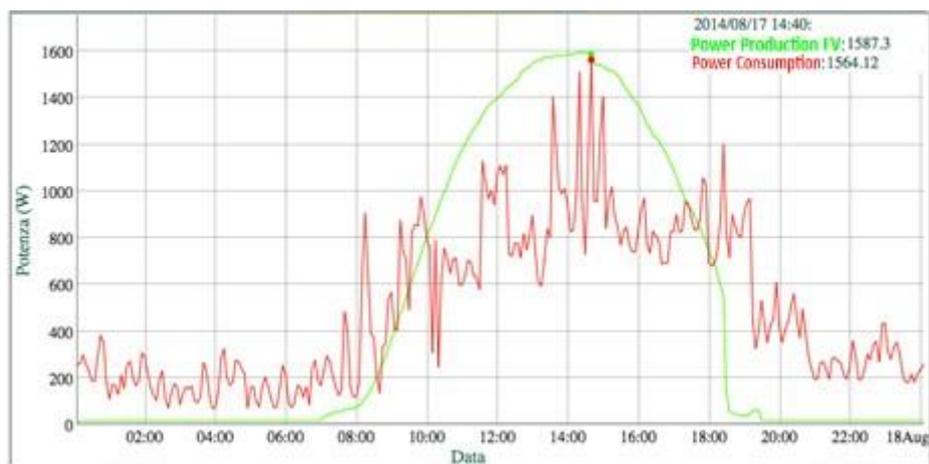


FIGURE 18: LOG: INTERVAL ZOOM

NOTES:

- ★ The SEM is equipped with an internal Micro SD memory card where log files and other system files are stored.
- ★ The SEM will store up to 13 log files to let the user compare data of current month with data referring to the same month of the previous year.(if the device was already working in the plant).
- ★ The user has, at any time, the possibility of downloading the log file of any chosen month (before the SEM automatically deletes it when it becomes the 14th file) and keep it on its computer.





WARNING Changing or corruption for any reason of the configuration files on the SEM Micro SD will void the warranty / service on the product.



Settings

The settings page is divided in 5 main section:

The screenshot shows the 'Settings' page of SinEnergyManager. At the top, there are navigation tabs for 'Real Time', 'Plant Management', and 'Settings'. The page title is 'SinEnergyManager'. The settings are organized into five numbered sections:

- 1. TYPE OF PLANT:** Radio buttons for 'Single Phase' and 'Three Phase'. Below are fields for 'S1' and 'S2' with dropdown menus, and a 'SAVE' button.
- 2. POWER GRID PARAMETERS:** Fields for 'IP Address' and 'GATEWAY Address', each with sub-fields for 'ip1', 'ip2', and 'ip3'. A 'SAVE' button is at the bottom.
- 3. DAILY LOG BY E-MAIL:** Radio buttons for 'Enabled' and 'Disabled'. A 'SAVE' button is at the bottom.
- 4. DATE:** A 'Exact Time' section with a 'SYNC' button. Below are fields for 'dd', 'mm', 'yy', 'hh', and 'mm' with 'SAVE' buttons for each.
- 5. RESTORE:** Two buttons: 'Restore last configuration' and 'Reset to default'.

FIGURE 19: SETTINGS PAGE

1. **Type of plant** - where to set the type of utility that should be managed by the SEM: single phase or three phases.
2. **Network parameters** - where to set the data for the connection to the SEM.
3. **Daily log by e-mail** - where to set email addresses to which the SEM should send daily report about the its working data (daily power data and eventually malfunctioning report).
4. **Date** - for setting the time on the SEM.
5. **Restore** - to reset the SEM to the Factory settings or the last saved configuration.



1. Power network type

The settings of the network type refer to two fundamental parameters for proper operation of the SEM.

Le impostazioni relative al tipo di utenza si riferiscono a due parametri fondamentali per il corretto funzionamento del SEM.

In particular, the first selection to be made by the user will be the choice between a single-phase or a three-phase network depending on the type of system to which the SEM is to be connected.



Figure 20: Single-phase user



Figure 21: Three-phase user

Depending on the network type the user would need to set the type of sensor that will be used in the amperage monitoring.

The SEM is sold with 30 A or 100 A sensors. The user will need to set the correct amperage value on the settings page. In order to do so the user will only need to use the drop down list below every sensor (S1, S2,) and select the correct value.

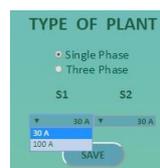


FIGURE 22: SENSORS SETUP



2. Network parameters

IP ADDRESS

The SEM on board Web-Server can be reached, by default, at

192.168.0.111

In order to reach this address within your home network, the network must be set to 192.168.0.x base address: this addressing depends on your router's settings.

In the event that your network has different settings you will need to set up your router on the 192.168.0.x network for as long as you need to change the SEM IP address. You will then be able to bring the router back to the previous configuration.

(Alternatively, you can change the SEM IP address by connecting the device, via a USB serial port, to a computer, see p. 28 for further instructions)

For example, if the user router

For example, if your router is set up on the 192.168.1.x network and can be reached at 192.168.1.1, you will need to connect to your router at 192.168.1.1 and following the instructions in the router's manual you need to change its settings so to take it to the 192.168.1.x network.

As you change the home network address, you will need to assign a new IP address to the router within this network to which you will be able to access it on the new network (ie 192.168.0.1).

After saving the changes, using the browser on one of the devices within your network, you will be able to reach the SEM by typing in the address bar the IP address 192.168.0.111.

Address Type	ip0	ip1	ip2	ip3
IP Address	192	168	0	111
GATEWAY Address	192	168	0	1

SAVE

Figure 23: Network Parameters

You may now reach the SEM "Real Time" (FIGURE 2). Use the top MENU to move to the "Settings" page.

You can now change the IP address of the SEM. For example, if you want the SEM to be accessed within the 192.168.1.x network, or the network managed by the router before the changes are made, you will need to assign an address within this network to the SEM, for example 192.168.1.110 . To do this we will digit 192 as ip0, 168 as ip1, 1 like ip2 and 110 as ip3.



After saving the changes, SEM will no longer be reachable at 192.168.0.110 but at the new address 192.168.1.110.

In order to reach the SEM you will need to reconnect to the router and bring it back to the previous configuration where it ran in the 192.168.0.x network.

GATEWAY IP ADDRESS

Gateway is the device through which the private network interfaces with the outside and generally coincides with the network router. The correct gateway setting is essential to allow SEM to send via email the daily production / consumption report of your plant.

To change the Gateway address, you will need to edit the four fields in your address (FIGURE 24) and save the changes you made.



SemSerial

SemSerial is a software (available for Windows operating systems and downloadable from the [SEM web site](#)) that allows the configuration of the SEM and GATEWAY IP address via serial.

1. Connect the SEM device to the computer using a USB 2.0 Type A to B cable



FIGURE 24: USB CABLE

2. Run SemSerial.exe: the following window will open:

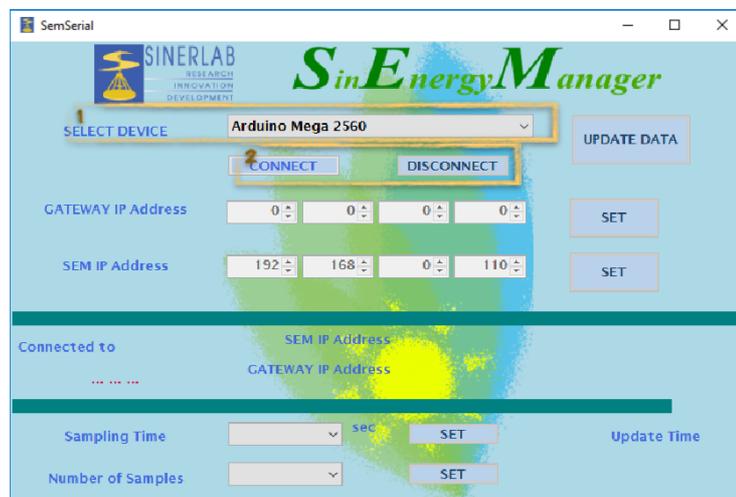


FIGURE 25: SEMSERIAL - START SCREEN

3. In the drop down menu "SELECT DEVICE", select the Arduino Mega 2560¹ and then click on CONNECT.

¹ If the **Arduino Mega 2560** does not as an option, please proceed as instructed below:

- verify that the SEM is connected to the computer via the USB cable
- unplug and then reattach the USB cable
- verify that the SEM is present among the devices recognized by the computer
- contact [Sinerlab](#) service.



FIGURE 26: SEMSERIAL - STATO ATTUALE

4. At the time of connection to the SemSerial interface, the current SEM data will be loaded.

The user can then learn:

- a. Gateway IP address
- b. SEM IP address
- c. Sampling Time
- d. Number of sampling for each cycle
- e. Updating Time

Gateway IP address

By modifying the Gateway IP address values (box "a" in FIGURE 26) and clicking on its "SET" button, you will change the value of the IP address of the gateway on the device.

SEM IP address

By modifying the values of the IP address of the SEM (box "b" in FIG. 26) and clicking on its "SET" button, you will change the value of the IP address of the SEM on the device.

Sampling Time

"Sampling time" represents the time that elapses between two samplings of the current sensors.

By changing the sampling time values (box "c" in FIG. 26) and clicking on the "SET" button, the value of the sampling time will be changed on the device.

Number of samplings

The "Number of samplings" represents the number of samples that the SEM detects before performing a system upgrade.

By modifying the Number of Sampling value (box "d" in FIG. 26) and clicking on the "SET" button, the value of the Sampling Number will be changed on the device.



Updating Time

The "Updating Time" (box "e" in Figure 26) represents the time interval between an upgrade of the system and the next.

$$\text{Updating Time} = \text{Sampling Time} * \text{Number of samplings}$$

For instance:

- Sampling Time = 5 sec
- Number of Samplings = 4

means

- Sampling Time = 20 sec

Thus the electrical loads managed by the SEM may change their state every 20 based on sensor measurements.

5. The saved network parameters are shown at the bottom of the window



FIGURE 27: SEM SERIAL CONNECTION STATUS

6. The "Update Data" button (box "f" in FIG. 26) serves to update the interface with the current data in the SEM. This feature is useful if the user has changed some value and does not remember what the current data is.



3. Daily log by e-mail

The SEM is able to send, at the end of the day, a synthetic report of the total energy produced and consumed by the system to which it is connected.

To enable this feature, you must enable it by checking "Enabled" in the "Daily Log by e-mail" section of the Settings Page.



Figure 28: Daily Log by E-mail

By enabling logging, the related section will expand, giving the user the ability to set up to 3 different e-mail addresses to which the SEM will send the report.

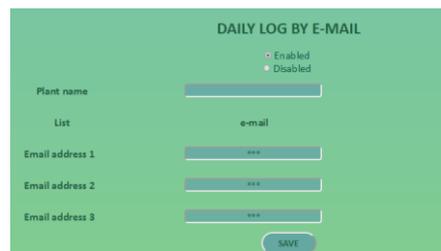


Figure 29: E-mail addresses setting

To enter the e-mail addresses just type in the address in the box and save the changes made by clicking on the SAVE button located inside the section.



4. Date

In this section you can set the SEM time.

When the SEM first enters the internet network, it try a connection to the Italian time server in order to set the correct time. So if the SEM has been installed in Italy and the connection has been successful, the time set should be correct. Otherwise the user will need to set the correct time.

This operation may be also useful from time to time if the time kept on the SEM is not aligned with the exact time shown in the section itself, which returns the time set on the pc you are using to connect to SEM.

If the date and time values in the gg, mm, aa, hh, mm fields do not match the exact time, to synchronize the two times just click on the SYNC button and the exact time will be transmitted to the SEM and Reported in relative fields.

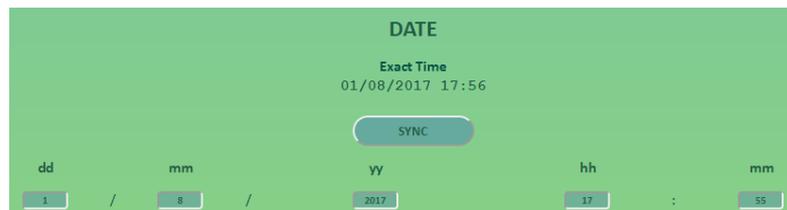


FIGURE 30: TIME

Please note that the date and time of the SEM will be transmitted to the page during its loading process and are not reloaded while the page is on. So if you are on the “Settings” page and you have been there for 1 minute, the exact time (that is automatically updated) will be 17:56, whereas the time on the SEM will remain 17:55².

² In case the two times are synchronized.



5. Restore

In this section you can RESET the SEM to its default setup or to the last saved configuration.

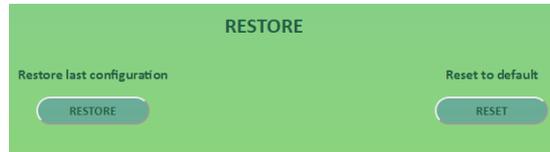


Figure 31: RESTORE

By clicking on the RESTORE button a “Confirm Pop-up” will appear asking if you want to proceed in restoring last saved configuration. Clicking on the SAVE button will restore the last saved configuration, meanwhile clicking on the CANCEL button will abort the procedure.

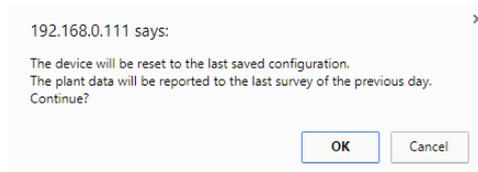


FIGURE 32: RESTORE CONFIRM POP-UP

By clicking on the RESET button a “Confirm Pop-up” will appear asking if you want to proceed in restoring the SEM default configuration. Clicking on the SAVE button will restore the SEM factory parameters, meanwhile clicking on the CANCEL button will abort the procedure.

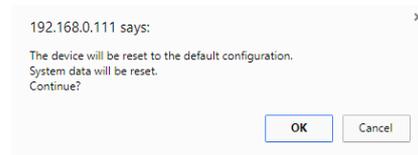


FIGURE 33: RESET CONFIRM POP-UP



Hardware factory reset

You can reset the SEM factory settings with a procedure that replaces configuration files and load lists with the default ones.

By connecting the din1 and GND (ground) pin for three seconds, as shown in FIG. 31, all files stored on the SEM Micro SD Memory Card, for load lists and configurations (user type, network parameters and address Log mails) will be deleted and replaced by default ones.

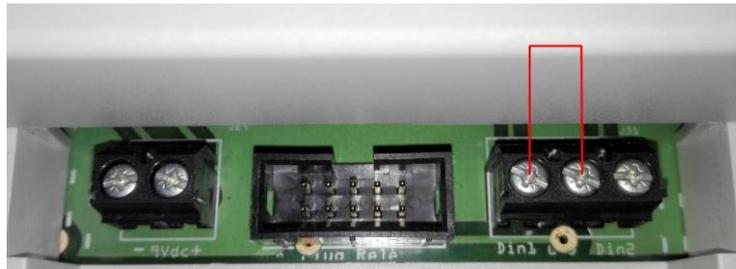


FIGURE 34: HARDWARE FACTORY RESET

The monthly logs for production and power consumption of the plant will not be removed.

Technical information and service

For technical information and service, please contact the dealer from whom you purchased the SEM device..

Further details are available on the site www.sinerlab.it.