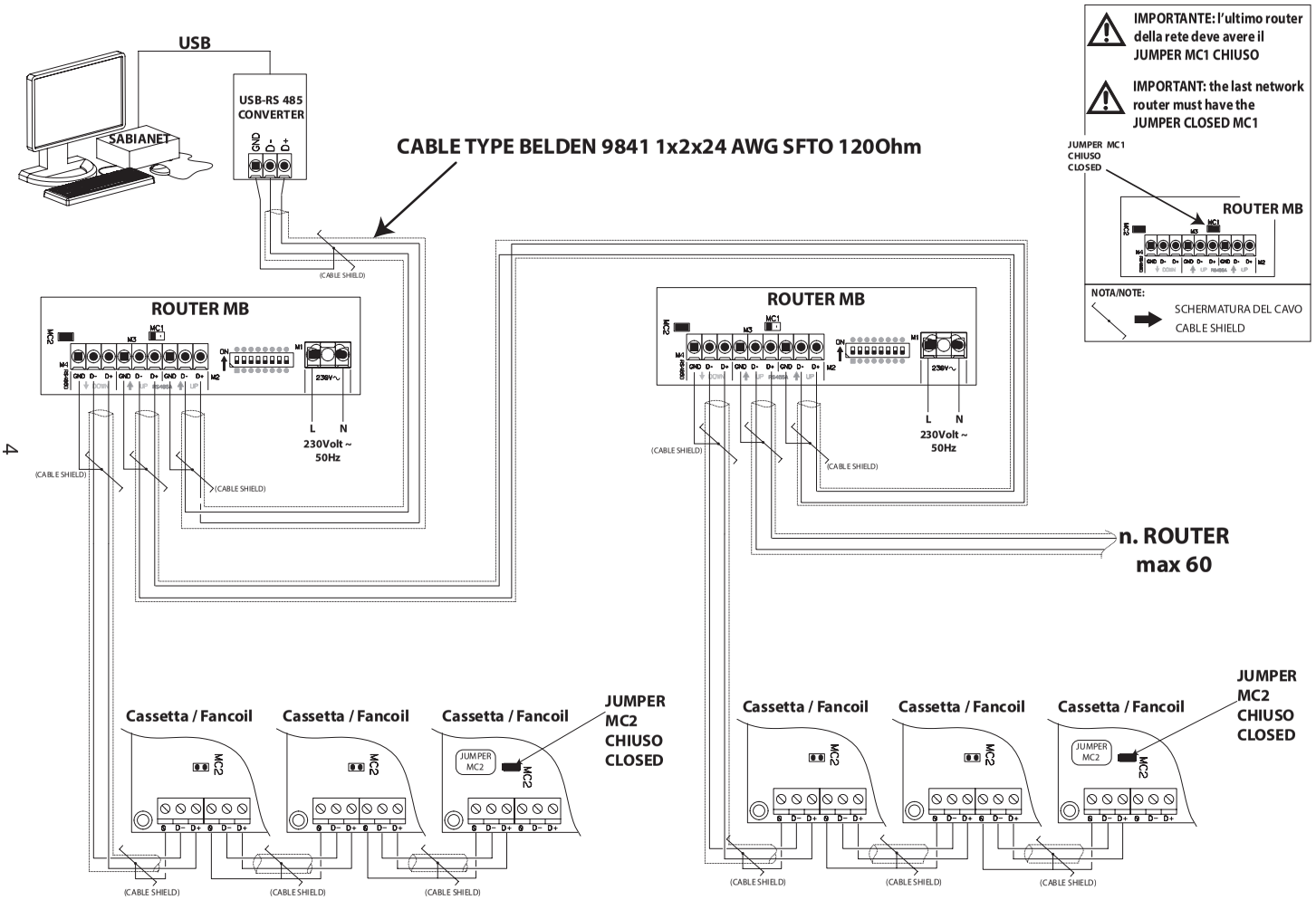
IL CLIMA AMICO

A leading brand of AFG

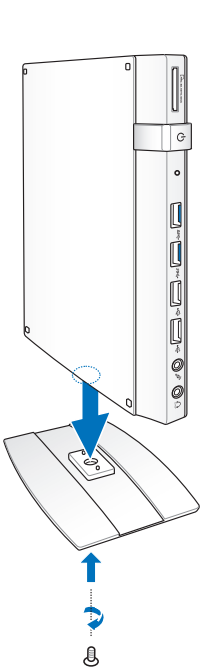
SABIANET 2.0
Operating Manual

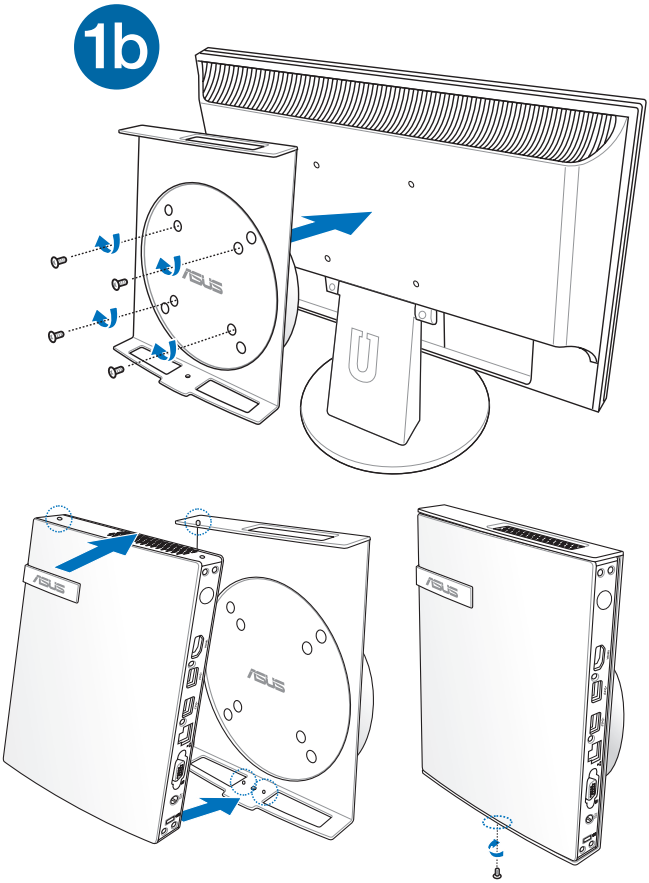
Indice

Wiring Diagram **4**
Installation **5**
Network addresses **8**
Board address Dip Switch setting 8
Operational Instructions For Connection With Rs 485 Serial Line **9**
Installation notes 9
Earthing of network 9
Cable specification 10
USB / RS485 Adapter **11**
Configuration 1 – connection up to 60 units 11
Configuration 2 – connection of more than 60 units using the Router (1 every 60 units) 12
Configuration 3 – connection of more than 60 units using more Router (1 every 60 units) and sub-networks. 13
Configuration 4 – Master and Slave connection with T-MB wall mounted control 14
Activation – Login- First installation **15**
Main interface **17**
User menu 17
Monitoring **18**
To modify operation parameters 18
System management **20**
Input - Output I/O Board **22**
I/O board management 23
Programs management **25**
Alarms **28**
Reports **29**
Administration **29**
Backup 31
BUS errors and lost units 32


USB
SABIANET
USB-RS 485 CONVERTER
GND
D-
D+
CABLE TYPE BELDEN 9841 1x2x24 AWG SFTO 120Ohm
(CABLE SHIELD)
ROUTER MB
MC2
MC1
M3
M1
M2
M4
ON
GND D- D+ GND D- D+ GND D- D+
230V~
L
N
230Volt ~
50Hz
(CABLE SHIELD)
n. ROUTER
max 60
Cassetta / Fancoil
MC2
JUMPER MC2
JUMPER MC2 CHIUSO CLOSED
IMPORTANTE: l'ultimo router della rete deve avere il JUMPER MC1 CHIUSO
IMPORTANT: the last network router must have the JUMPER CLOSED MC1
JUMPER MC1 CHIUSO CLOSED
NOTA/NOTE:
SCHERMATURA DEL CAVO
CABLE SHIELD

Installation





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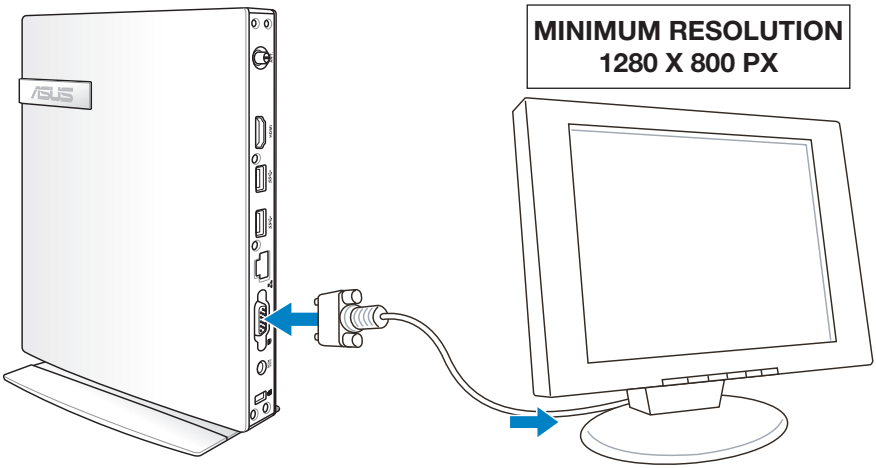

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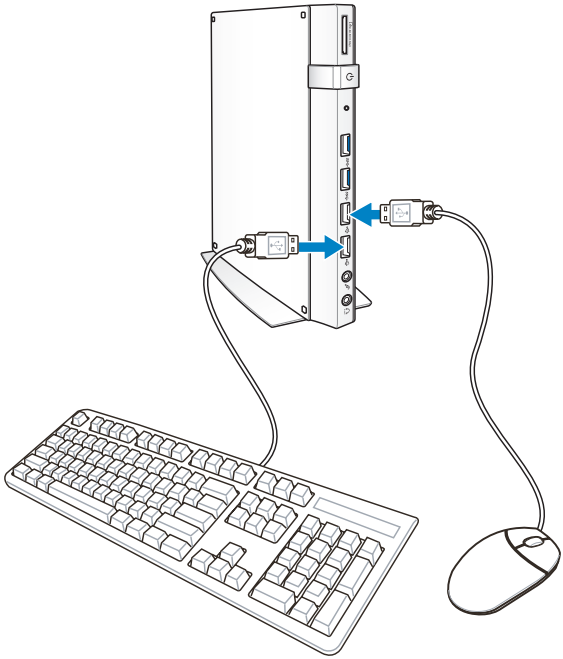

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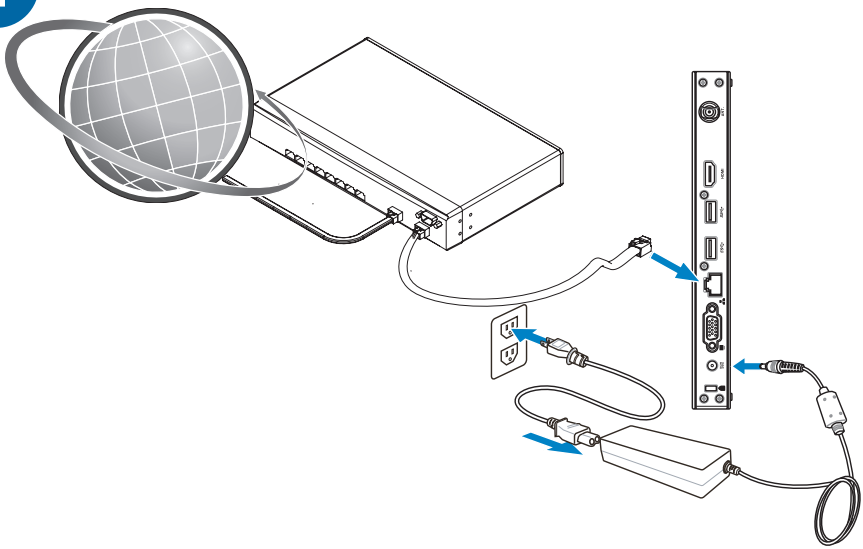

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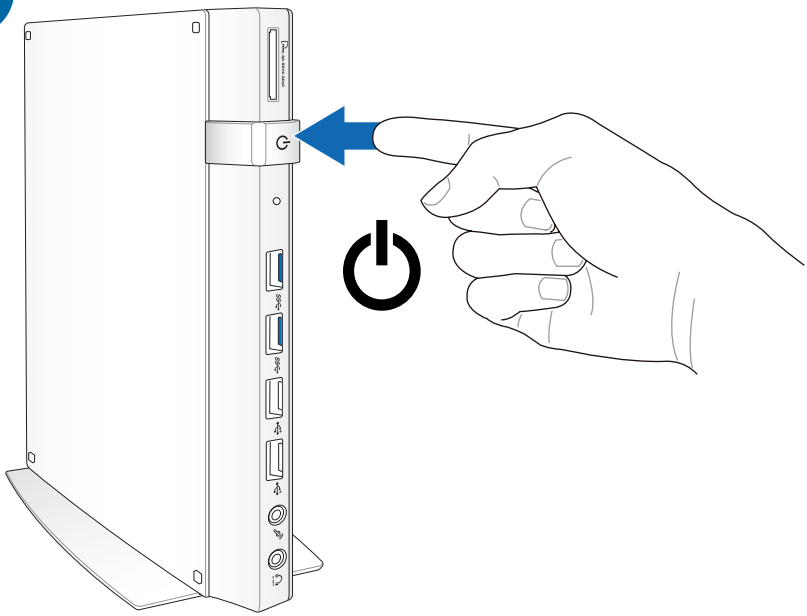


Network addresses

It is important for every unit to have an univocal address when an appliance network is set up, so that the software recognises it and, therefore, manages it. The ROUTER terminals forming part of the main dorsal must be identified and named, based on the type of project layout.
All units connected under the same ROUTER, must be subsequently numbered. It is important for more units forming part of the same network not to be named with the same address. An error message would be generated should this occur.
We recommend making a note of each machine's position, with its address number, onto a system drawing, to simplify machines' setting and management. We, therefore, recommend creating a table with all data required for tracing each individual installed unit.

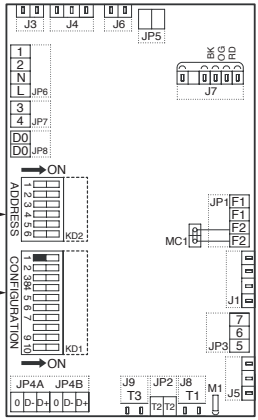
Board address Dip Switch setting

Two micro switch blocks are present on each unit's electronic board: D1 is used to configure the wanted operation; D2 is used to define the address number of each machine. The assignment works according to the binary method; the number is defined by placing the different Dips at On or at Off. Use the following table to set the numbering. Pay particular attention to avoid assigning the same number to more units.

D1 = Configuration Dip Switch
D2 = Address Dip Switch

Example of address assigning: wanting to assign 1 to the first unit, 2 to the next and so on for the others:

- No. 1 unit: Dip 1 ON — all others OFF
- No. 2 unit: Dip 2 ON — all others OFF
- No. 3 unit: Dip 1 and 2 ON — all others OFF
- No. 4 unit: Dip 3 ON — all others OFF
- No. 5 unit: Dip 1 and 3 ON — all others OFF



Indirizzo/ Address	Dip Switches ON	Indirizzo/ Address	Dip Switches ON	Indirizzo/ Address	Dip Switches ON	Indirizzo/ Address	Dip Switches ON
1	1	21	1+3+5	41	1+4+6	61	1+3+4+5+6
2	2	22	2+3+5	42	2+4+6		
3	1+2	23	1+2+3+5	43	1+2+4+6		
4	3	24	4+5	44	3+4+6		
5	1+3	25	1+4+5	45	1+3+4+6		
6	2+3	26	2+4+5	46	2+3+4+6		
7	1+2+3	27	1+2+4+5	47	1+2+3+4+6		
8	4	28	3+4+5	48	5+6		
9	1+4	29	1+3+4+5	49	1+5+6		
10	2+4	30	2+3+4+5	50	2+5+6		
11	1+2+4	31	1+2+3+4+5	51	1+2+5+6		
12	3+4	32	6	52	3+5+6		
13	1+3+4	33	1+6	53	1+3+5+6		
14	2+3+4	34	2+6	54	2+3+5+6		
15	1+2+3+4	35	1+2+6	55	1+2+3+5+6		
16	5	36	3+6	56	4+5+6		
17	1+5	37	1+3+6	57	1+4+5+6		
18	2+5	38	2+3+6	58	2+4+5+6		
19	1+2+5	39	1+2+3+6	59	1+2+4+5+6		
20	3+5	40	4+6	60	3+4+5+6		

Operational Instructions For Connection With Rs 485 Serial Line

Particular attention must be given in electrically connecting a cassette network using serial connection:

1. type of cable to be used;
2. the network's overall length must not exceed 700/800 metres. (provide more terminals if necessary to increase the overall distance);
3. a maximum of 60 cassette can be connected.

Installation notes

1 . Tighten the cables to a force of less than 12 kg. A greater force may fray the cables reducing the transmission properties.

2. Do not twist, knot, crush or fray the cables.

3. Do not lay the signal and power cables together if they must cross, intersection must be at 90°, do not join cable sections. Always use only one cable to connect the individual units together.

4. Do not excessively tighten the cables under the terminal connection clamps.

5. Carefully strip the cable end.

6. Do not crush the cable at cable glands or safety supports.

7. Always respect the colours position in correspondence of the connection start and end points.

8. Visually and physically check the cables are in good condition and correctly positioned, once wiring is completed.

9. Install the cables and units minimising the possibility of accidental contacts with other power cables or potentially dangerous cables, such as the lighting system cables.

10. Do not lay the 12 volt power supply and communication cables near power rods, lights, antennae, transformers or hot water or steam pipes.

11. Never position the communication cables in any conduits, pipes, junction boxes or other container together with the power cables or lighting system cables.

12. Always adequately separate communication cables from all other electrical cables.

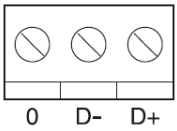
13. Keep the communication cables and the units, at least 2 metres away from units with heavy inductive loads (distribution panels, motors, generators for lighting systems).

Earthing of network

Respect the connection symbols during appliances' serial connection:

- clamp "D-" with clamp "D-"
- clamp "D+" with clamp "D+"
- clamp "0": connect the serial cable's shielding.

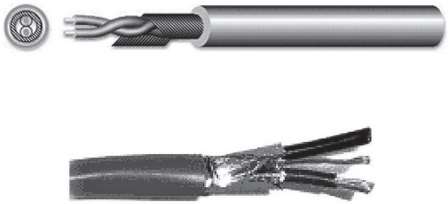
NEVER INVERT CONNECTIONS.

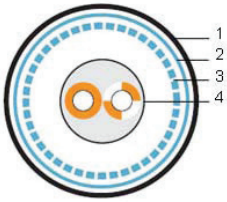


Cable specification

Use **Belden 9841** cable for the RS 485 serial line execution.

RS-485, 1x2x24 AWG SFTP, 120 Ohm, Interface cable, PVC wrap, resistant to cold





1 – External sheath
2 – Sheet shielding
3 – Network shielding
4 – Solid twisted pair

Description

Instrumental cable for RS-485 applications consists of a twisted pair (24 AWG), wrapped in aluminium sheet shielding and twisting. The cable is wrapped in extremely resistant PVC wrap.

Material

Conductive material: multicore, soft tinned copper conductor
Cores insulation: foamed polyolefin.
Shielding: aluminium sheet (metal side on external part) and copper twisted mesh, density of sheet shielding - 100%, twisting - 90%, 0.127 mm
External sheath: extremely resistant PVC

Line limits

The line must not be longer than 800 metres. A maximum of 60 units can be connected under each branch. Use the ROUTER if having to connect a higher number of machines. Every router supports a maximum of 60 machines.

Connection diagram

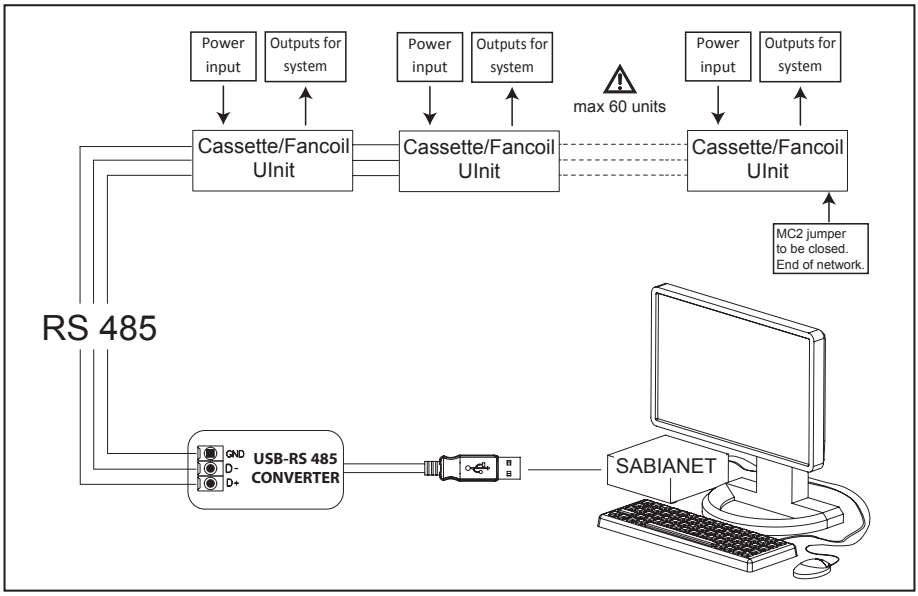
Connect all cascade appliances with a chain connection

USB / RS485 Adapter

IMPORTANT: the Sabianet system only works with the supplied USB adapter.
The different types of connections in series that can be used are illustrated. Particularly:

- **Configuration 1** – connection up to 60 units
- **Configuration 2** – connection of more than 60 units using the Router (1 every 60 units)
- **Configuration 3** – connection of more than 60 units using more Router (1 every 60 units) and sub-networks.
- **Configuration 4** – Master and Slave connection with T-MB wall mounted control

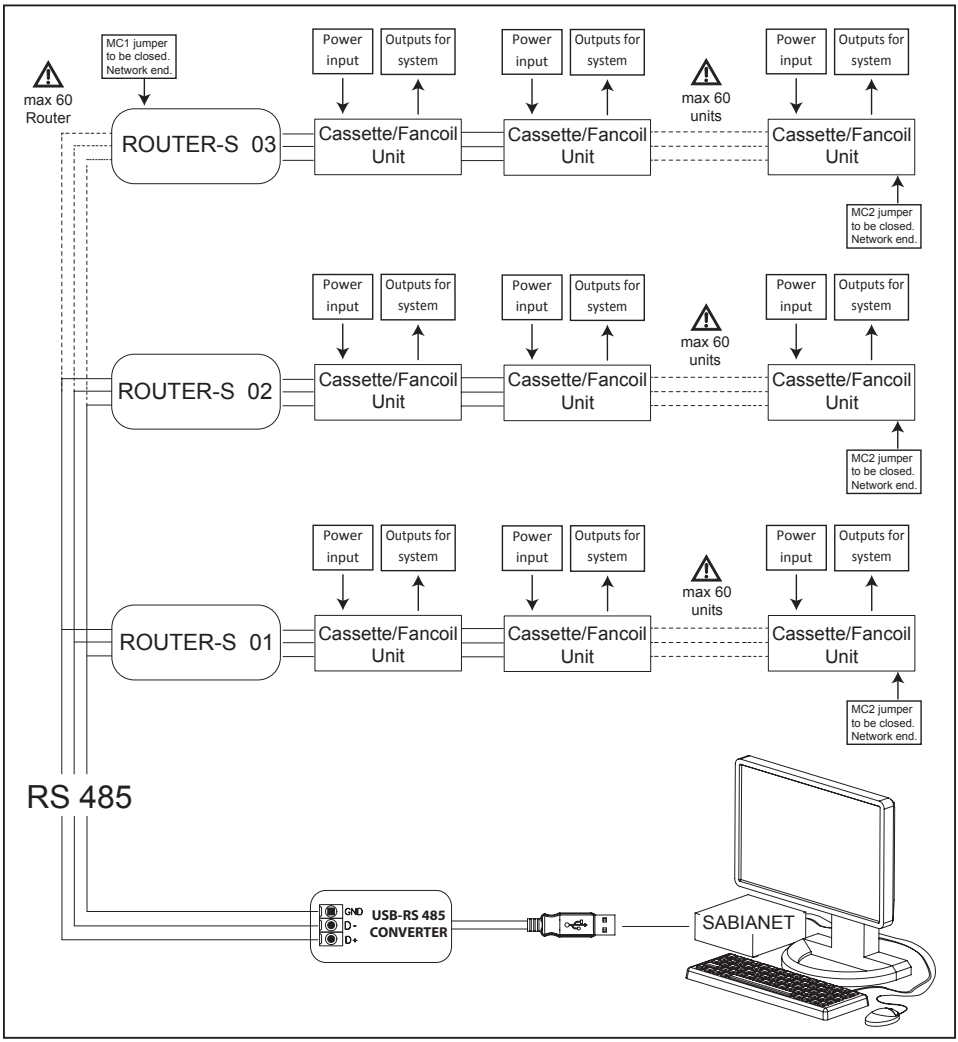
Configuration 1 – connection up to 60 units



First Element = Software
Last Element = Cassette / Fancoil Unit

The units may be connected in series without inserting a Router, if having less than 60 units connected in network and not requiring an on field control.

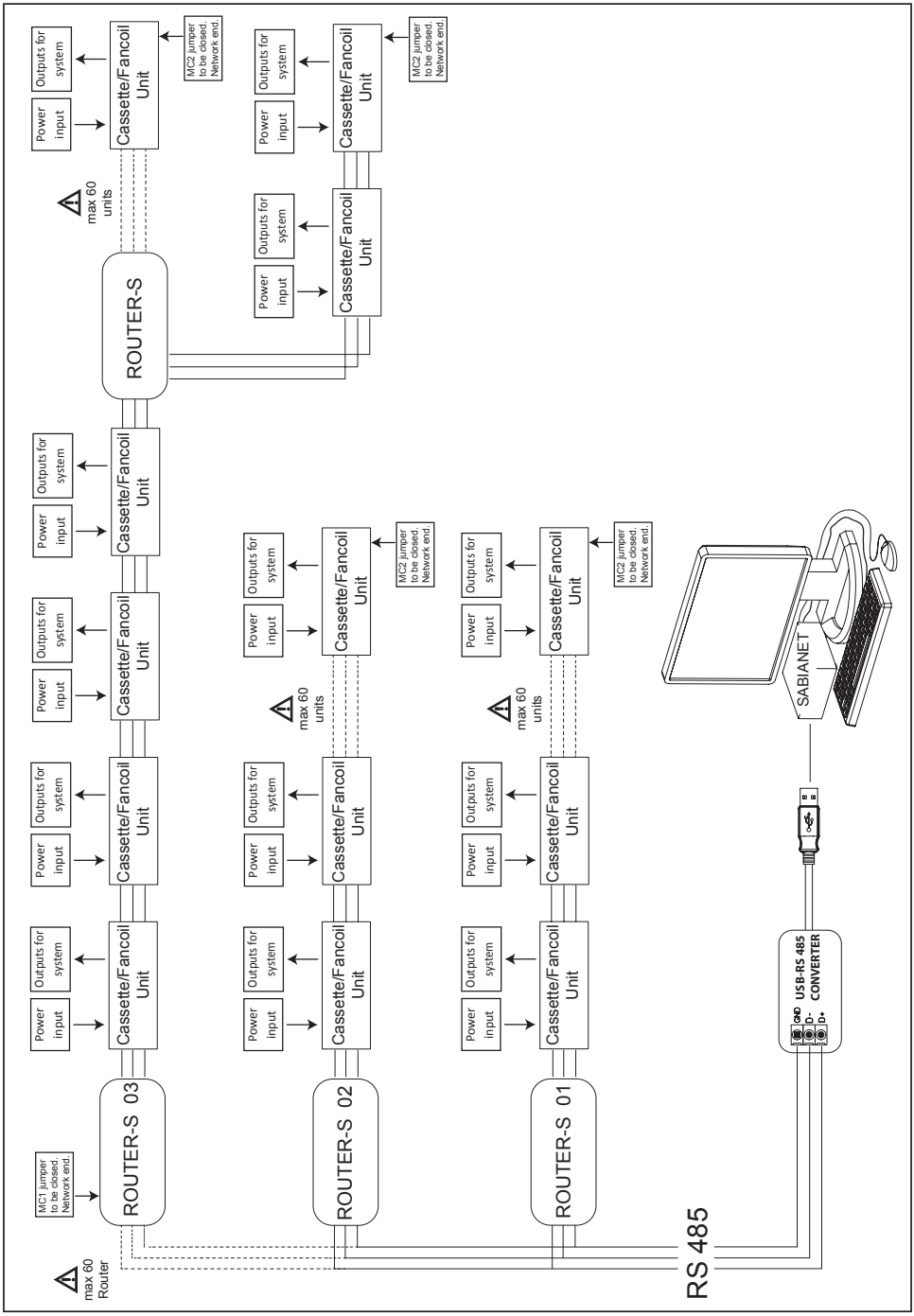
Configuration 2 – connection of more than 60 units using the Router (1 every 60 units)



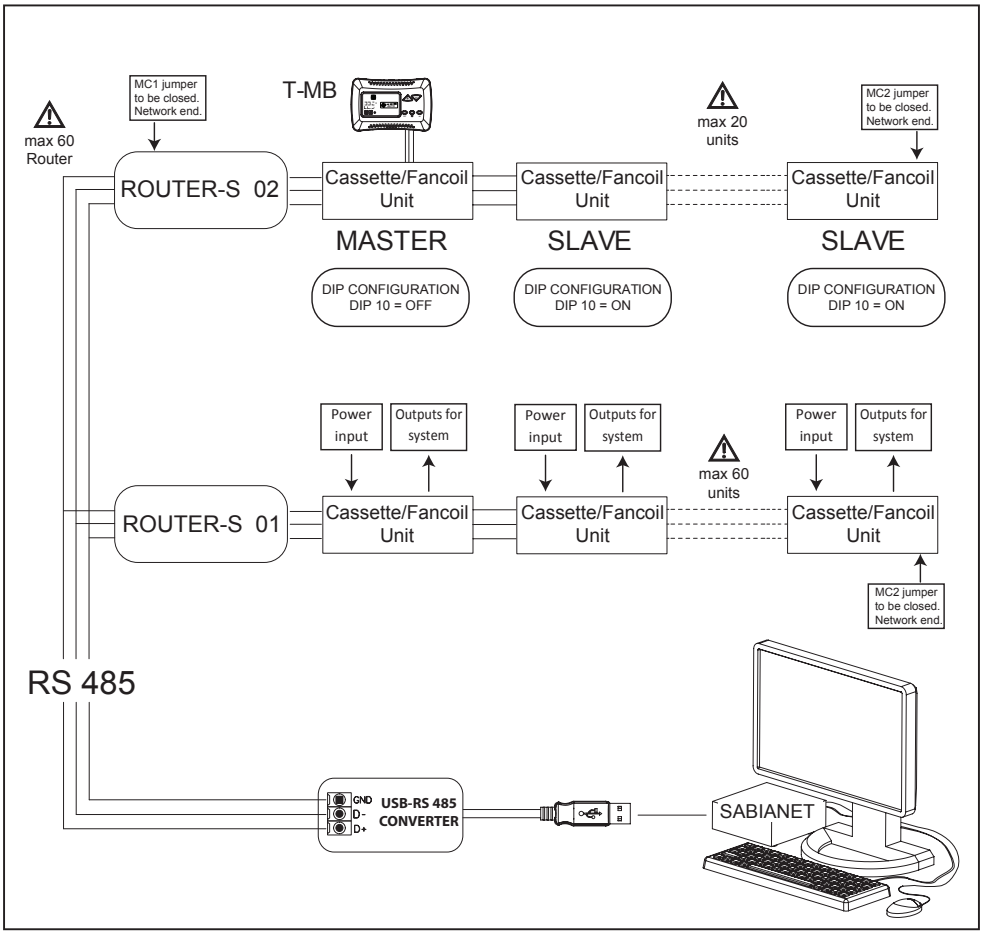
First and last sub-network element: Router and cassette/fancoil unit.
First and last main network element: Adapter and Router.

This connection configuration allows placing more than 60 units in series.
The overall network is divided into sub-networks, each connected to a Router.
60 units can be connected for each Router.
The Router are connected to PC by means of USB / RS485 adapter.

Configuration 3 – connection of more than 60 units using more Router (1 every 60 units) and sub-networks.



Configuration 4 – Master and Slave connection with T-MB wall mounted control



First and last sub-network element: Router and cassette/fancoil unit.
First and last main network element: Adapter and Router.

The Router are connected to PC by means of USB / RS485 adapter.

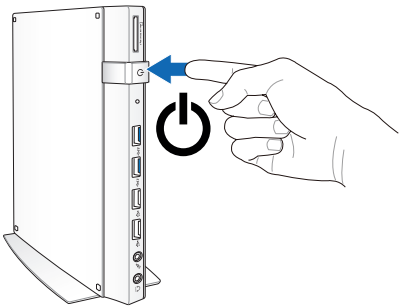
The overall network is divided into sub-networks, each connected to a Router.

ROUTER-S 01: 60 units can be connected for each Router.

ROUTER-S 02: Managing a group of appliances, via serial connection, with just one T–MB control. It is possible to connect multiple devices controlling them simultaneously, transmitting settings from the T–MB control to a single MASTER unit. All other units are defined SLAVE.

The operation of each individual appliance will depend, on the other hand, on the temperature conditions measured by each of these.

Activation – Login- First installation

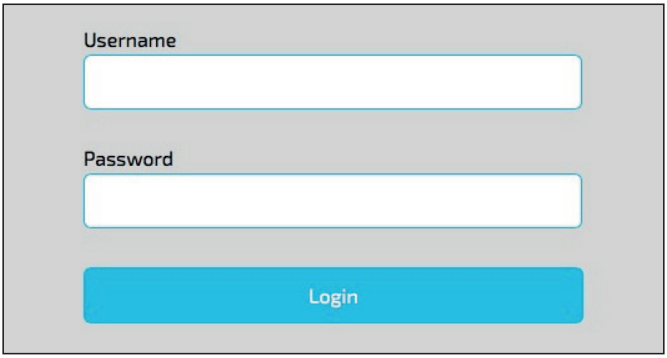


Press the switch located on Sabianet front part, once all connections have been correctly made (as shown in figure).

The white indicator switches on.

Login is displayed after a few seconds on the previously connected monitor.

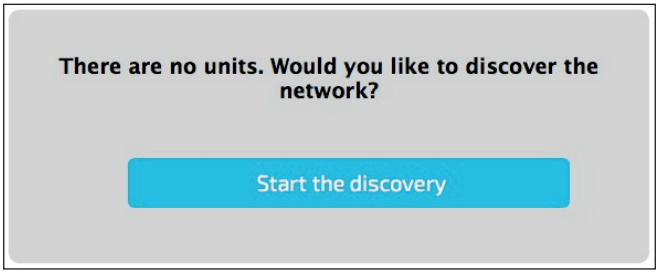
Enter the Username and press “Login”. The Sabianet system first setting window is accessed if the Username and password are correct.



For the first login use:
Username: manager
Password: manager

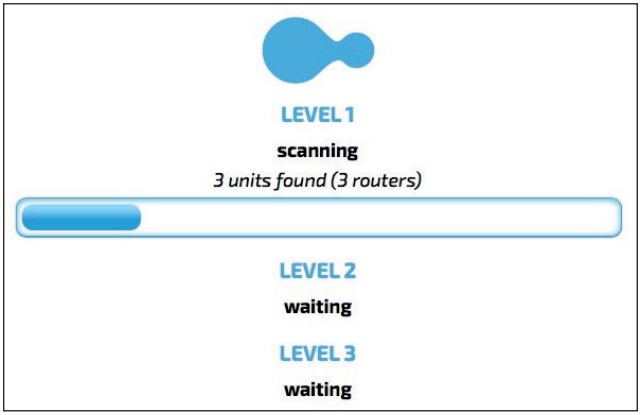
NOTE: the Username and password can be subsequently created/modified as required.

A window allowing the network discovery start will appear once logged in. You’ll then be able to identify all units on the bus.



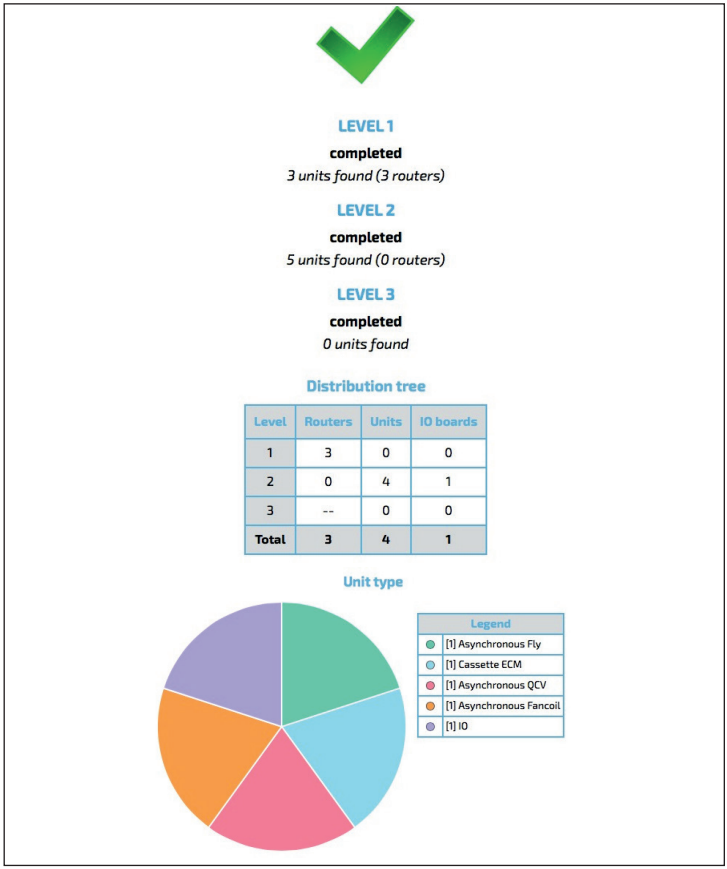
Press button “Star the discovery” and wait for a few seconds.

An interactive window will show you the progress of the scan during the discovery execution.

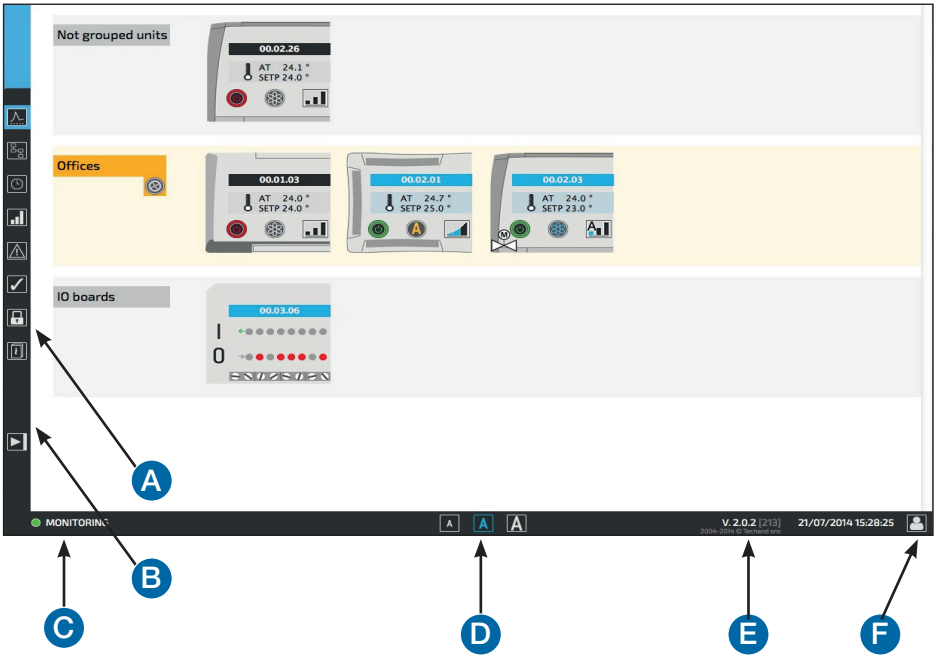


The discovery can understand the structure of the network, time necessary for completion varies and depends on the number of units on bus and their location.

Upon completion, a summary of what identified on the network will be shown.



Main interface

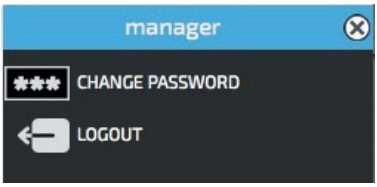


A. Menu bar: it gives access to all software modules
B. Expand/minimize button: it shows a bigger menu bar
C. Daemon status: it provides information on the BUS demon status
D. Icon size buttons: they enlarge or reduce the size of monitor icons
E. Sabianet version
F. User menu: it allows the logoff and the change of your password

User menu

By clicking on the  icon, you open the user menu:

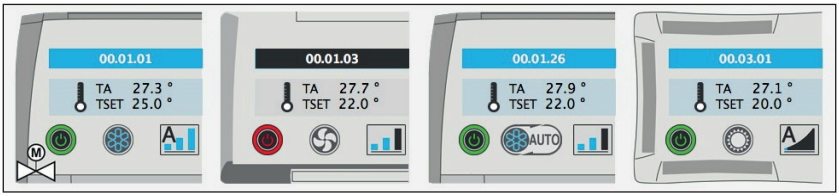
- In the top blue row your username is shown
- The “change password” button opens a window where you can enter a new password. For safety reasons you’ll be asked to enter also the current password
- The “logout” button disconnects your user and opens the login window



The user menu can be closed by clicking again on its icon or on the “X” button in the upper right.

Monitoring

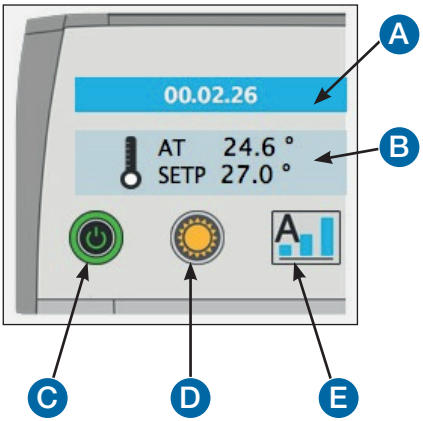
Select “Monitor” from menu bar.
The screen displays the main parameters of each unit in network in real time.



Each unit is shown by means of an icon.
Each icon shows symbols and values providing the following info:

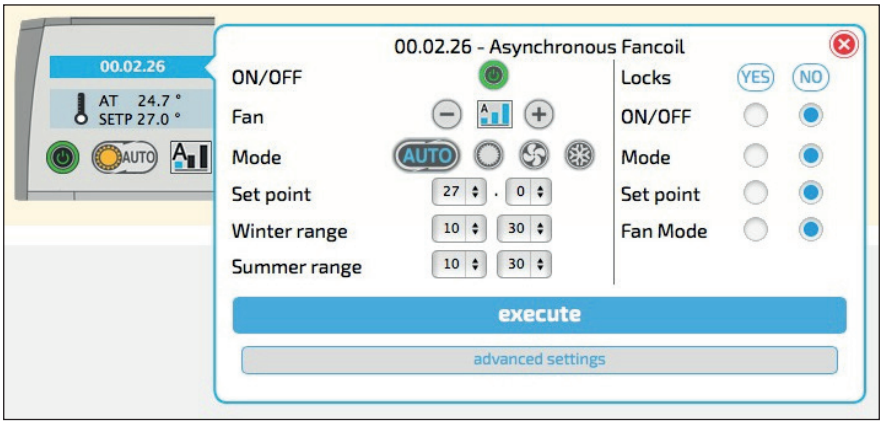
A. Unit name (if set), or network address
B. Ambient temperature (AT) and set temperature (SETP)
C. Unit status: ON or OFF
D. Unit mode: summer winter automatic AUTO or only fan
E. Fan speed: Minimum Medium Maxim or Automatic A

A lock near one of the symbols means the user cannot modify the relevant parameter through the local control on the unit.



To modify operation parameters

The parameters of the single unit can be easily set by clicking on the relevant icon, a balloon like the following will be shown:



On the first row you’ll see the network address, unit type and name (if set).
In the left column you can change the main parameters:

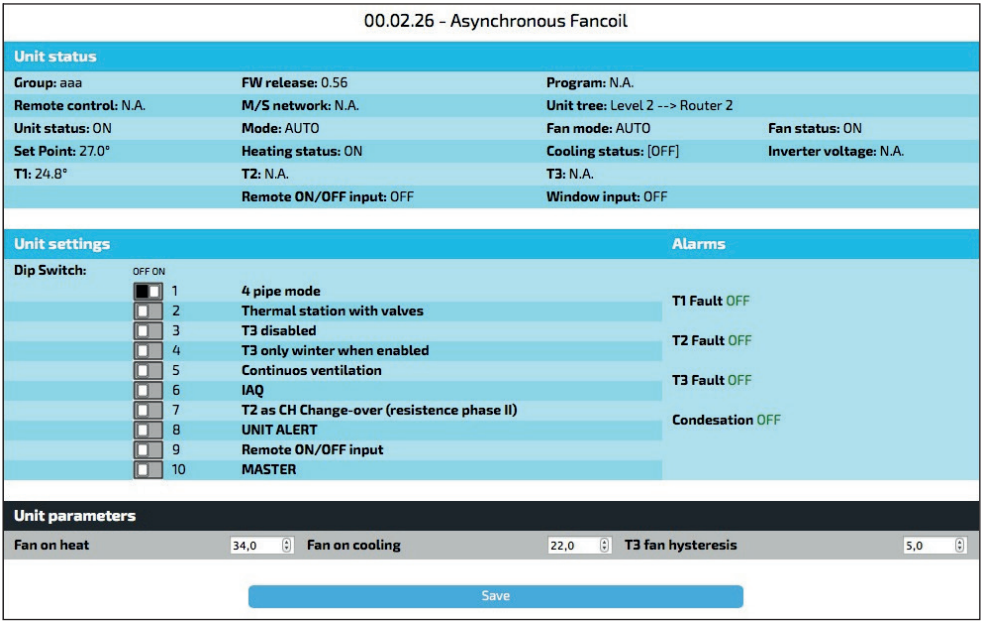
- ON/OFF: you can switch ON or switch OFF the unit

- Fan speed: with – and + buttons you can adjust the fan speed
- Set point: temperature to be maintained
- Winter range / Summer range: you can define the set point limits in all seasons

In the right column you can set up the locks of the remote control on the unit in order to prevent the user from changing all or any operational parameters. By clicking on the “YES” button above you turn on all blocks and with the “NO” button you turn all them off.

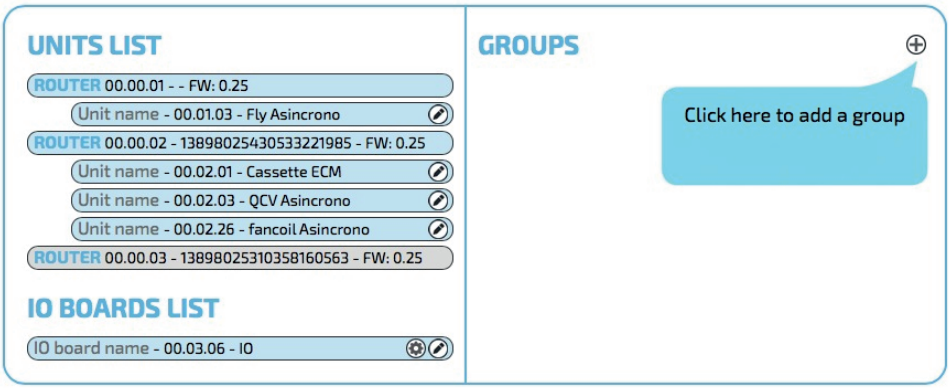
Once you’ve made the changes you want, press the ”Execute” button to send data to the unit.

The “advanced setting” button opens up a window with all operational data in real time and the unit installation parameters.

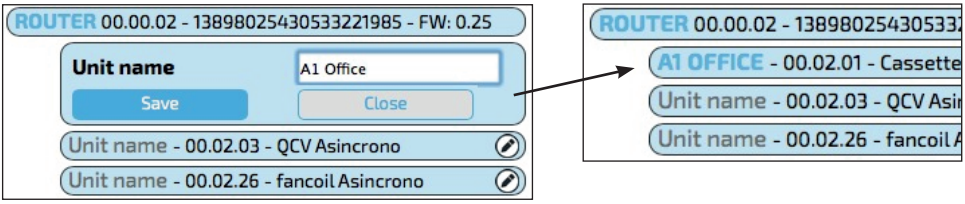


System management

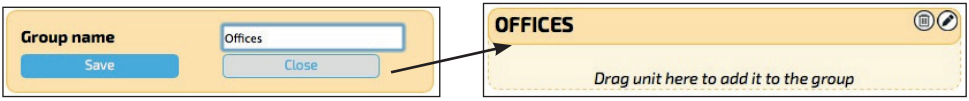
From the menu bar select “Manage”.
On the main window appears a tree with all units and their routers.



The name of each unit can be changed through its pencil button.

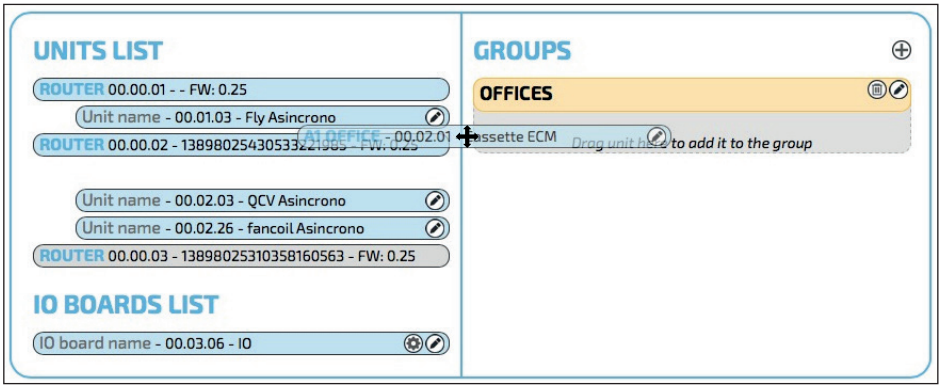


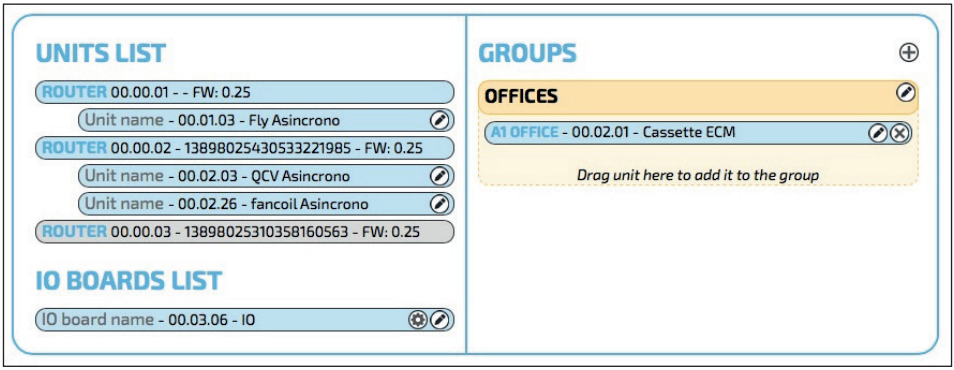
With the “+” button in the upper right more groups can be added to the system. The use of groups is strongly recommended as it helps to easily manage all installed units.



Once a group is added, its name can be changed through the “pencil” button as done per the units and it can be deleted through the “bin” button provided that it contains no units.

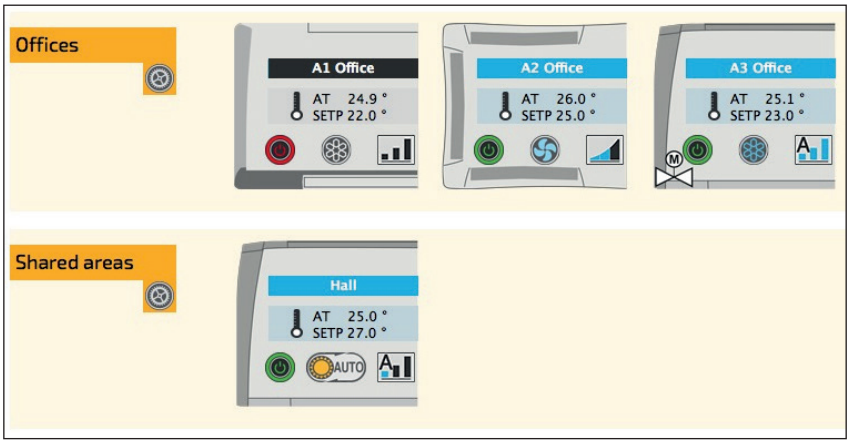
Units can be assigned to a group by easily dragging them inside it; an entire router can also be dragged in order to assigne all its units.



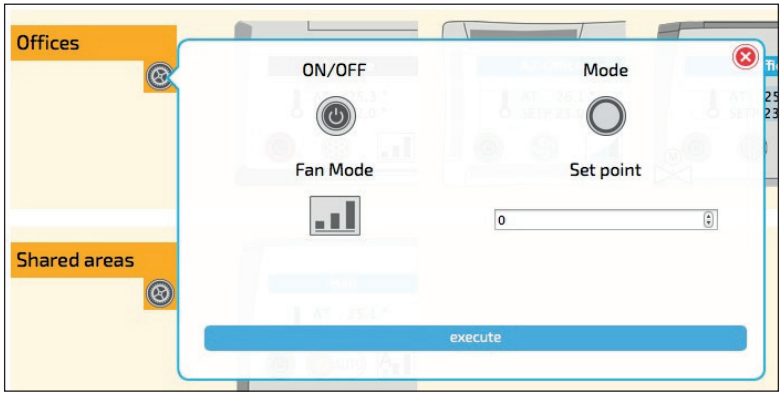


Once a unit is assigned to a group its name can still be changed through the “pencil” button or removed with the “X” button.

After the rearrangement of units within the groups, the main window will reflect the status:



The “Gear” icon located under the group name can be used to set parameters for all the group units.



Input - Output I/O Board

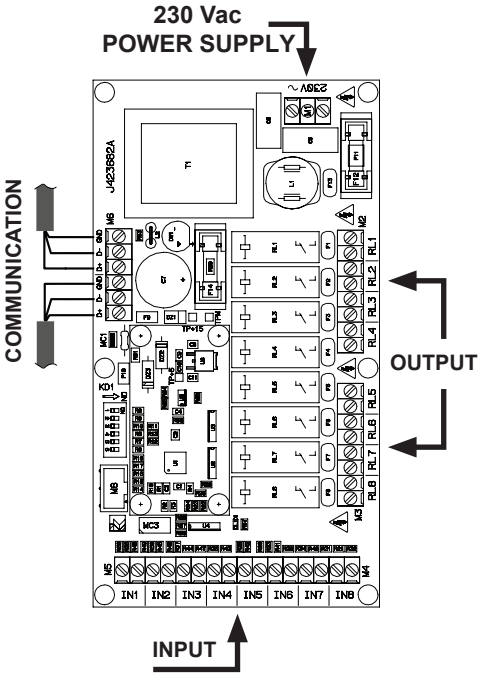
The I/O board is an electronic power board equipped with 8 vol- tage-free contact inputs for displaying the different devices status and 8 relay outputs with SP-ST (2A AC3) type NO contact, for controlling remote electric utilities switch-on or off, for example:

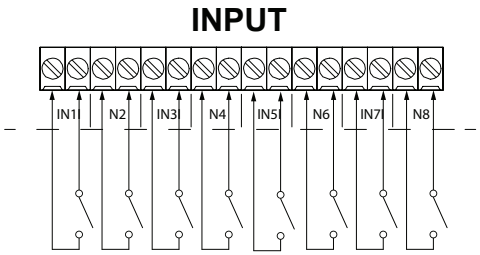
- Pumps and Solenoid Valves
- Chiller
- Air shutter
- Lights, Outdoor lights
- Extractors
- Fans

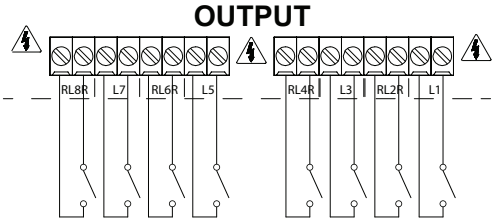
Use the Output board combined with the Sabianet supervi- sory program or the PSM-DI wall-mounted control.

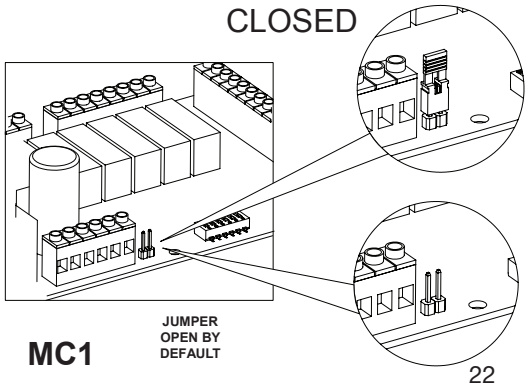
The contacts of each individual relay (OUTPUT) identified by output number from 1 to 8 opening/closing can be managed by means of the Sabianet program or the PSM-DI control, checking the status at any moment.
Also, the output relay status can be combined to a weekly program.
Similarly, the status of the inputs contacts can be displayed.

IMPORTANT!: Firstly define the physical address using the 6 Dip connector.







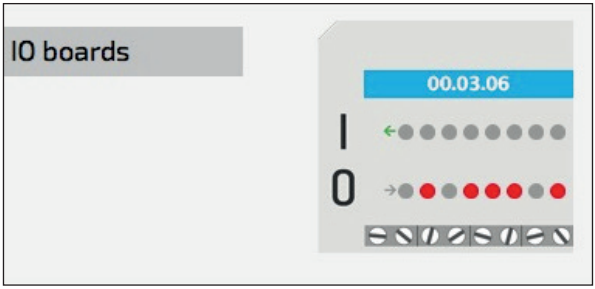


Serial connection - network end JUMPER.

The network must be closed on the last board in case of RS485 connection (Master/Slave or Sabia- net). Closure is through J**UMPER MC1** if the last card is the I/O card.

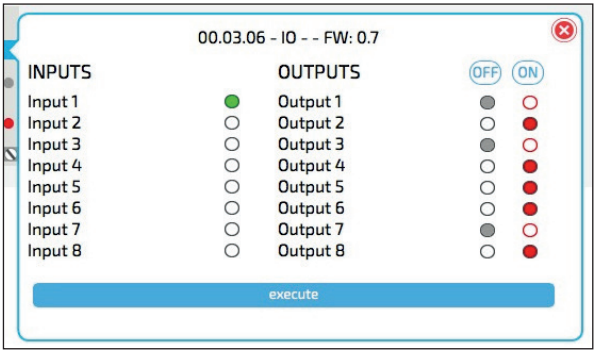
I/O board management

In the “Monitor” window the I/O boards appear always at the bottom inside a dedicated “group” and the icon shows the I/O status.

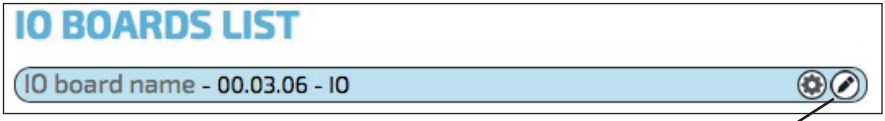


As per the units, by clicking on the icon a balloon will appear to enable the manual setting of outputs.
The “ON” and “OFF” buttons above can be used to quickly set all outputs at the same time.

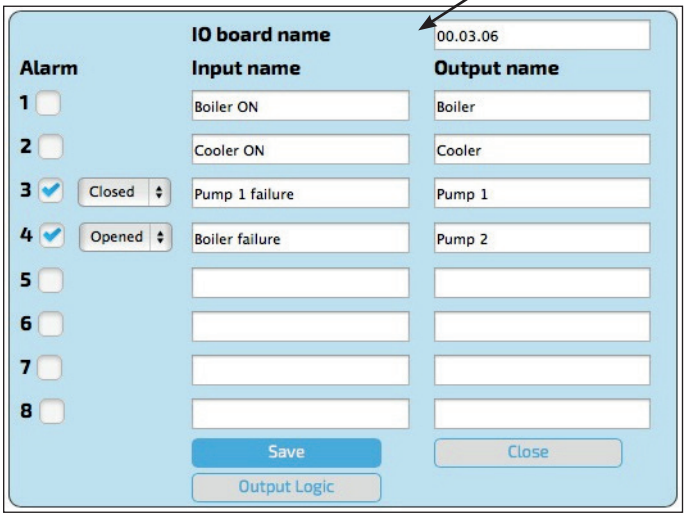
The “Execute” button sends the changes to the board.



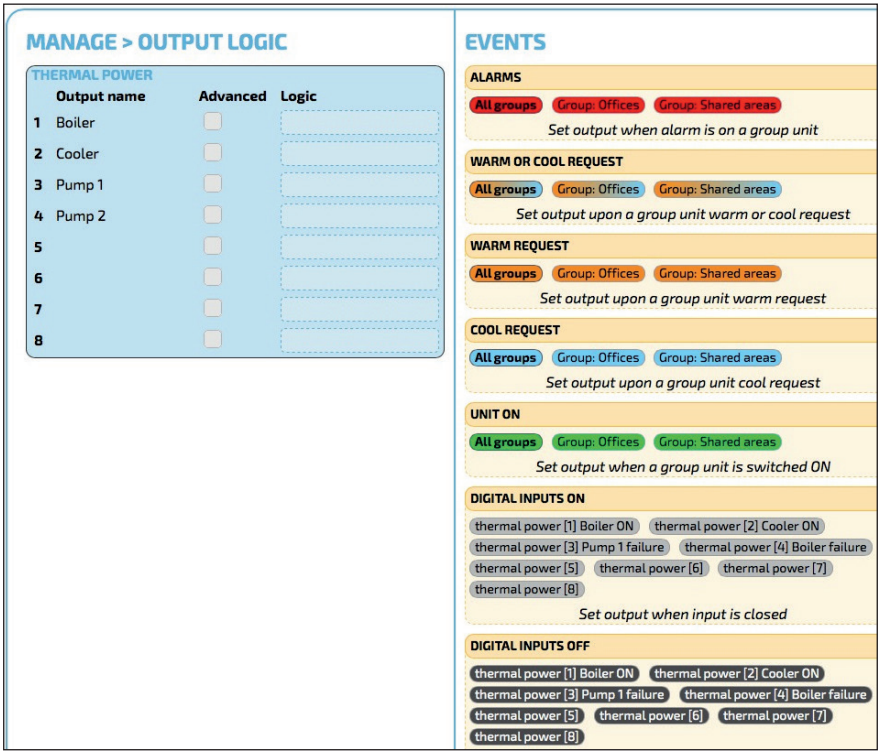
In the “Management” section, as per the units, a “pencil” button enables the change of the board name, the I/O names and which inputs are to be considered alarms.



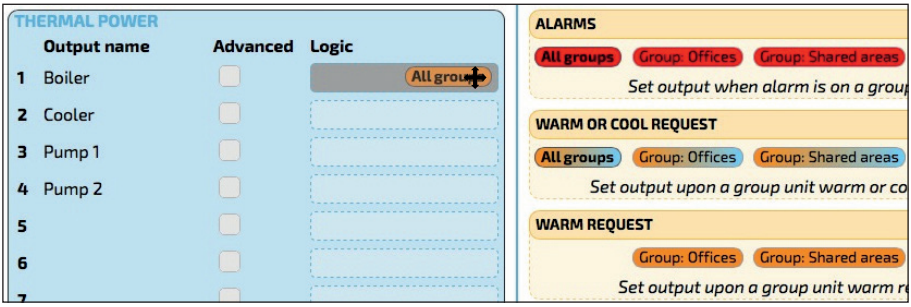
For each input flagged as alarm, you must select if the alarm is on when the contact is closed or open



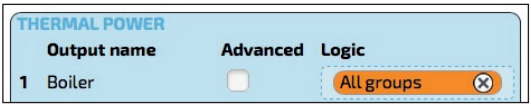
The “Output logic” button shows a window through which you can define the logics for the output contacts opening and closing basing on the system status.



In the left column you can see all available outputs, whereas in the right column are listed all events that can generate the closing of the output contact. The events can be dragged in outputs so that the logic can be set. For instance, should we want to switch on a boiler when a unit requests warm, the “All groups” box under “WARM REQUEST” should be dragged in output 1.



Once the logic is released, you can see it like this:

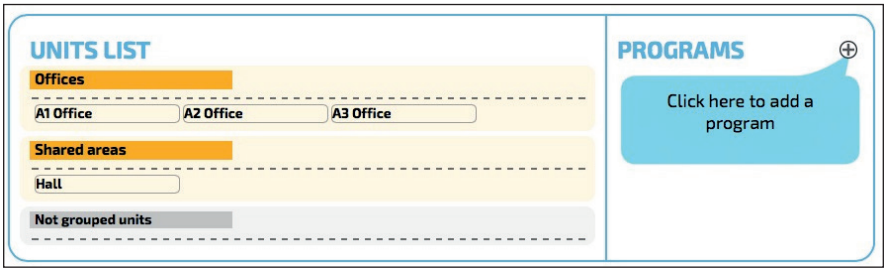


When an output has a logic, you can flag the “Advanced” option that enables the dragging of more events in one output, specifying if the transiton occurs when all the event conditions are on (AND) or only when one is on (OR). **Please be aware that in order to use this advanced function you should be confident with boolean logic. Do not use use this function if you’re not sure of what you’re doing!**

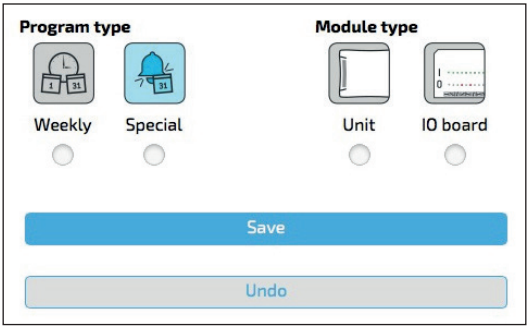
Programs management

Sabianet allows the creation of several programs which can be assigned to each unit or groups.
Two types of program are available: the “Weekly program” and the “Special program”.
The weekly program allows several unit parameter changes within the 7-day week, whereas the special program defines a single day program which is repeated during the program validity period.

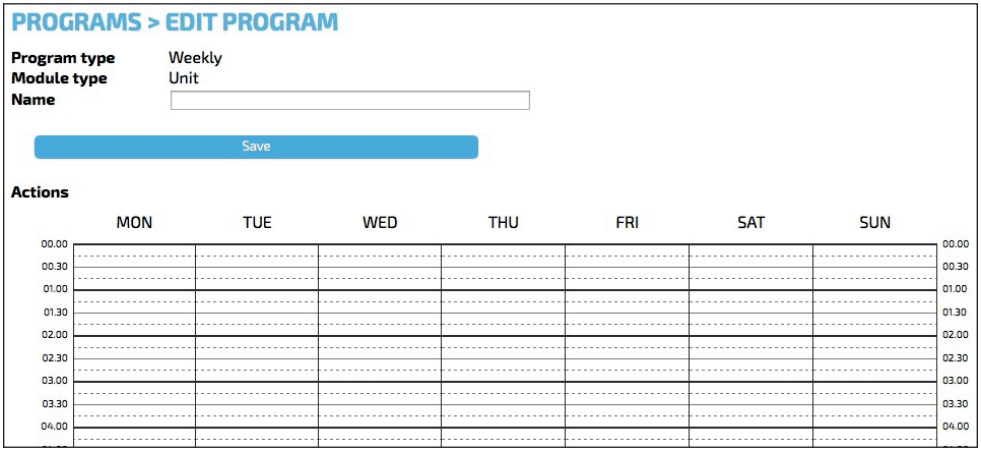
Select “Programs” from the menu bar.
The main window will show a list of the units divided in groups and in the right column all the events already included.



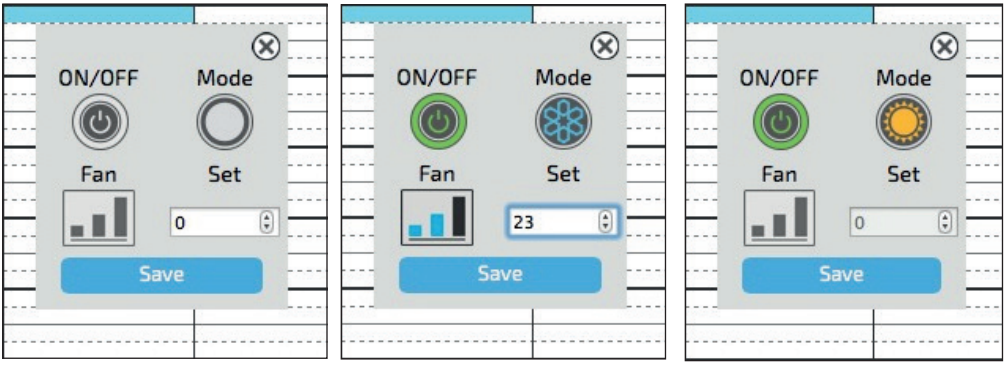
The “+” button in the upper right corner enables the addition of a new program.



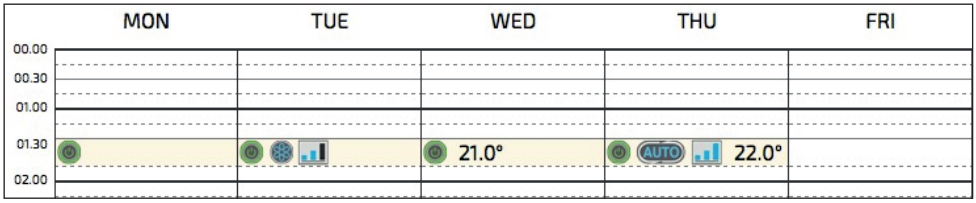
If you select “I/O board”, you must specify for which board the program is being created.



Every 15 minutes you can set diferrent parameters by clicking on the table cell corresponding to the desired day and time.



All icons change by clicking, cycling among the available status.
Grey icons mean that the parameter will not be changed when the program is running or when the set point is 0.
During insertion you can click on various cells and set them simultaneously.
Saved parameters will be shown in the table.



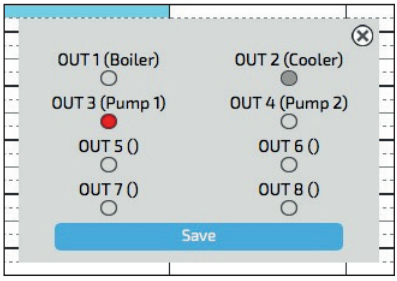
Each cell can be modified by simply clicking on it.

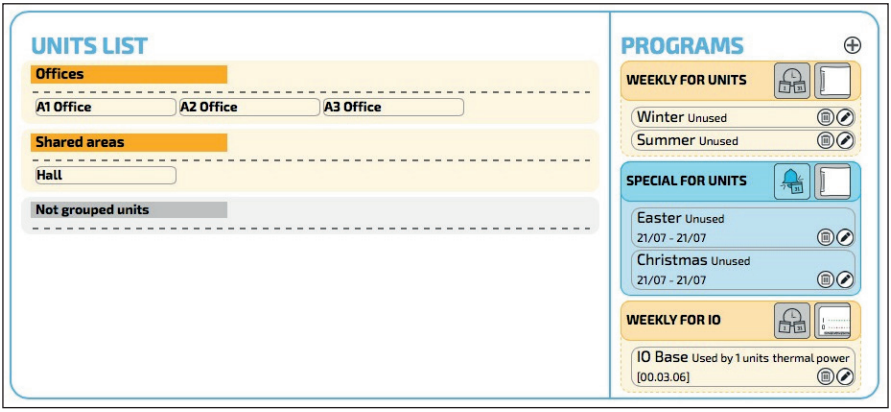
In the edit mask it's also possible to remove or duplicate in different positions a cell.

Once all time variations have been set, you can save the program. If not already done, you'll be remined to give a name to the program in order to easily identify it.

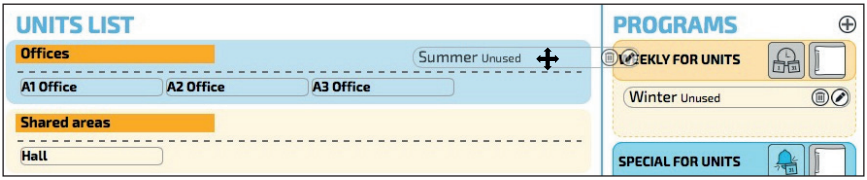
In case of special programs, in addition to the name, you'll have to indicate the program validity period as well.

I/O board programs have a different edit window
The edit window of I/O board programs is different in that you can indicate if the outputs should be turned on, turned off or ignored.
The window shows a useful color legend.





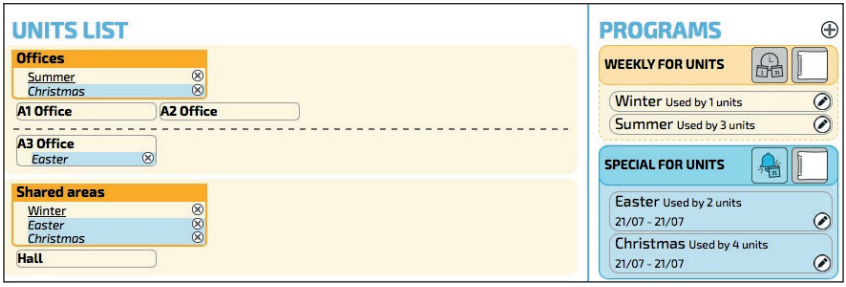
After the necessary programs are created, they must be assigned to the chosen groups or units. Weekly programs can only be assigned to groups or individually to units not assigned to groups (if any available). Each group or unit can only have one weekly program assigned.
Special programs can be assigned both to groups and to each unit, with no limits.
You can assign a program to a group or unit by simply dragging it to the group or unit.



Programs assigned to groups are shown under the group name, above the weekly program and below, in blue, the special ones.
Within a group, units with associations different from the group ones are shown under a dotted line along with the additional special programs

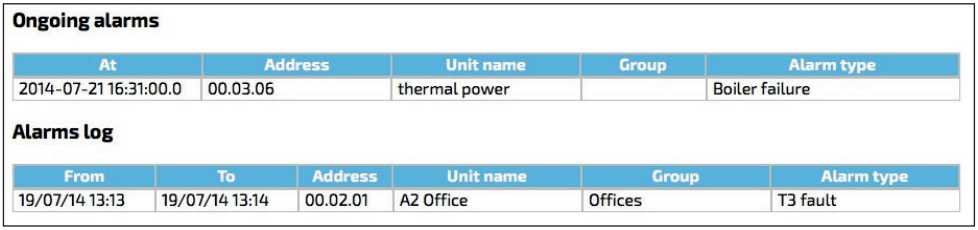
In the right list, a usage summay for each program is displayed. I/O board programs are only shown in the right column as they're assigned at the time of creation,

To replace a group weekly program, simply drag the new program on the previous one.



Alarms

Select “Alarms” from the menu bar.
The main window shows a double list: the first one displays ongoing alarms the second historical data.



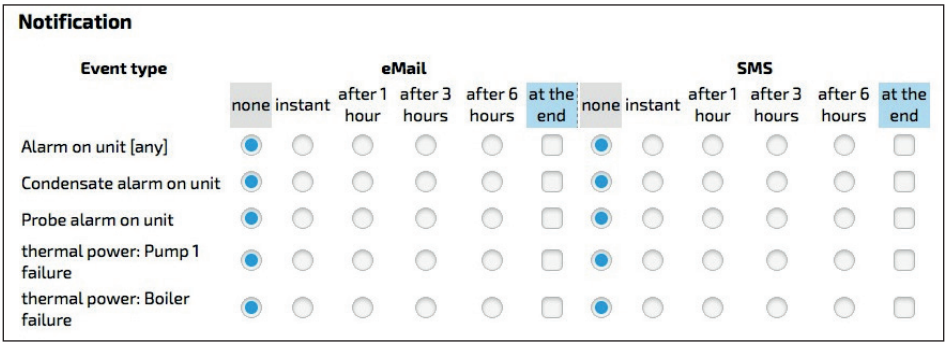
Ongoing alarms

At	Address	Unit name	Group	Alarm type
2014-07-21 16:31:00.0	00.03.06	thermal power		Boiler failure

Alarms log

From	To	Address	Unit name	Group	Alarm type
19/07/14 13:13	19/07/14 13:14	00.02.01	A2 Office	Offices	T3 fault

In the window lower part you can set the alarm notifications.



Notification

Event type	eMail						SMS					
	none	instant	after 1 hour	after 3 hours	after 6 hours	at the end	none	instant	after 1 hour	after 3 hours	after 6 hours	at the end
Alarm on unit [any]	◉	○	○	○	○	☐	◉	○	○	○	○	☐
Condensate alarm on unit	◉	○	○	○	○	☐	◉	○	○	○	○	☐
Probe alarm on unit	◉	○	○	○	○	☐	◉	○	○	○	○	☐
thermal power: Pump 1 failure	◉	○	○	○	○	☐	◉	○	○	○	○	☐
thermal power: Boiler failure	◉	○	○	○	○	☐	◉	○	○	○	○	☐

The first three rows refer to the units and they’re always there, the next ones depend on I/O board inputs set as alarms.

For each of the different alarm types you can set eMail or SMS notifications and for each service you may choose to be notified immediately or later on. Also, you can be advised when the alarm is closed by flagging the “At the end” box.

The eMail service is available only if Sabianet is connected to the internet and the SMTP server parameters are set properly. Please ask your network administrator for additional info.

The SMS service is available only if Sabianet is connected to the internet and a SMS pack has been purchased from one of the three recommended providers.

Reports

Select “Report” from the menu bar.
In the upper part of the main window you can see 6 tabs that lead to corresponding reports:

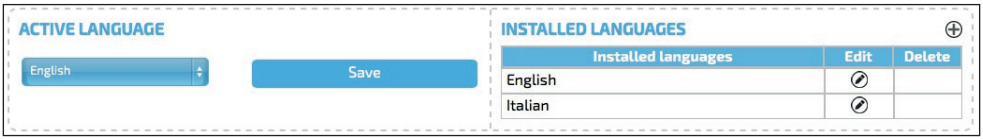
- **Run programs log**: it logs all commands sent to the units basing on the weekly and special programs inserted.
- **Units state change log**: it logs minute by minute the state change (ON/OFF, mode, fan speed and setpoint) of the units.
- **I/O boards state change log**: it logs minute by minute the I/O boards state change.
- **Temperature charts**: you can view the trend of temperatures read by the unit probes and compare the data of two units. The last 15 days records are available.
- **Daemon log**: daemon messages record.
- **Web log**: application messages record.

Each report, except for temperature charts, shows two icons and some parameters:

- With the “Disk” button you can save the report data as Excel file.
- With the “Reload” button you can refresh the report contents.

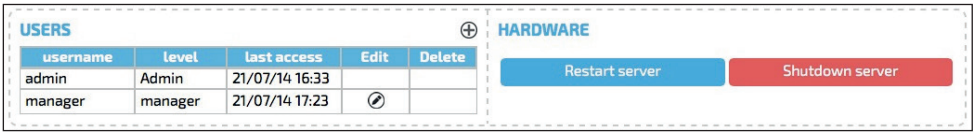
Administration

Select “Admin” from the menu bar.
The main window shows several boxes with which you can modify different Sabianet parameters.

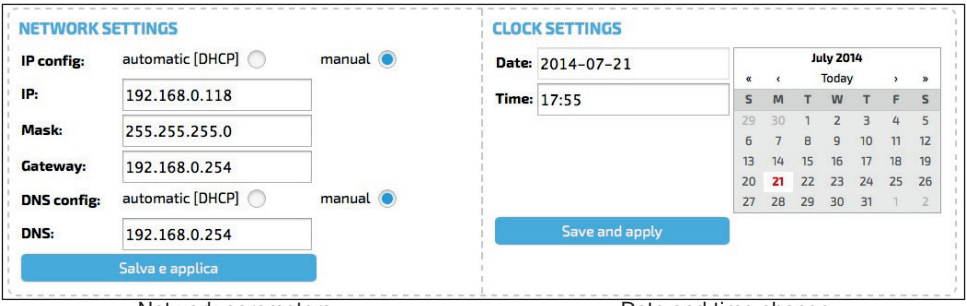


Language selection — Language change and addition

Plant name setting for advices. — Sabianet software update

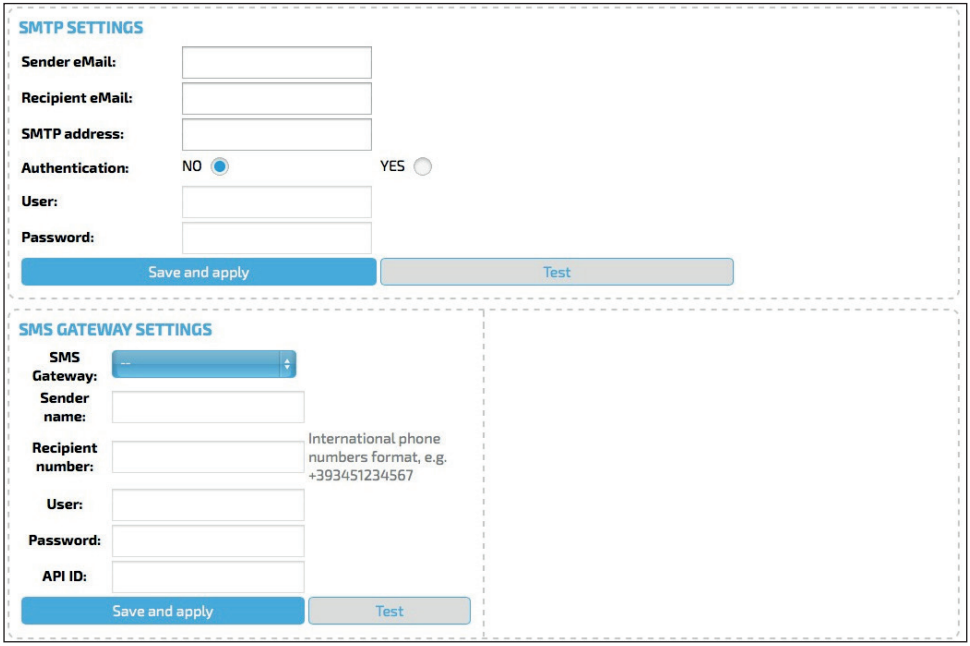


Users change and addition — Sabianet server restart or stop



Network parameters

Date and time change



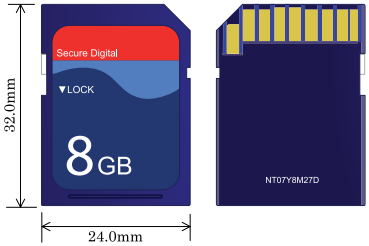
eMail and SMS settings

Backup

Sabianet provides an automatic backup system.
In the front part of the machine there is a slot where you can insert a min. 8Gb secure digital card.

The card must be strictly inserted or removed when the machine is switched OFF!

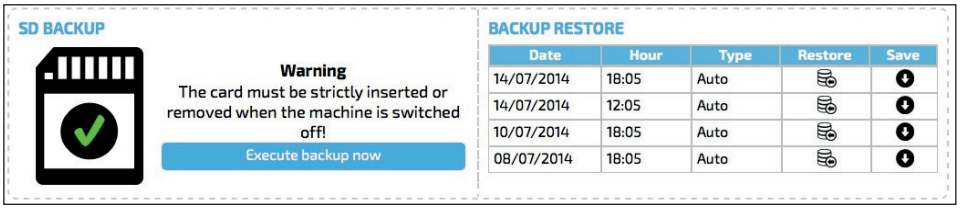
The card must be empty and previously FAT 32 formatted.



In the “Admin.” section there is a backup window where you can see a SD that shows the status:

SD card properly inserted and readable

SD missing or unreadable

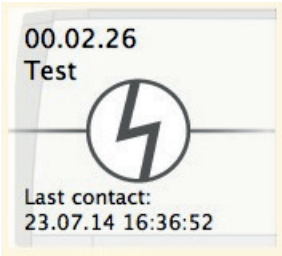


The backup is normally made automatically every 6 hours, you can make an additional backup by clicking the “Make backup now” button.

In the right table above you can see all the backups made and it’s possible to save them on external drive or proceed with restore.

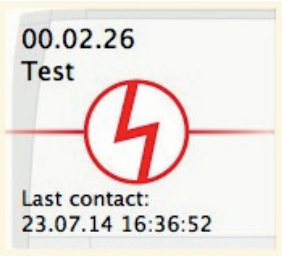
BUS errors and lost units

Because of BUS failures or problems, Sabianet may not be able to contact a unit. In this case the relevant icon will turn white and show date and time of the last contact.



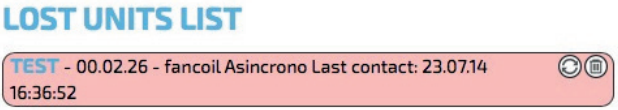
Should failures last over time, the icon will turn red to indicate that the problem is lasting and persistent.

Sabianet updates in real time the state of the units on BUS. When a unit does not respond correctly, time is wasted by the system waiting for a valid response and this slows the entire process. To overcome the problem Sabianet keeps track of how many



failures in a row occurred on each unit and sends queries to the units at a frequency inversely proportional to the number of failures recorded.

In the “Manage” section a list of the lost units is displayed.



The “bin” button allows the deletion of the unit from the system in case the failure is permanent and won’t be fixed.
The “reload” button forces the system to contact the unit immediately without considering the logic frequency described above.

NOTE:

NOTE: