



NEBULA12, NEBULA24

Security fog system

090060843





FOREWORD

FOR THE INSTALLER:

Comply strictly with current standards governing the installation of electrical systems and security systems, and with the manufacturer's directions given in the manuals supplied with the products.

Provide the user with full information on using the system installed and on its limitations, pointing out that there are different levels of security performance that will need to suit the user's requirements within the constraints of the specific applicable standards. See that the user looks through the warnings given herein.

FOR THE USER:

Check the system's operation thoroughly at regular intervals, making sure the equipment can be armed and disarmed properly.

Make sure the system receives proper routine maintenance, employing the services of specialist personnel who meet the requirements prescribed by current regulations.

Ask your installer to check that the system suits changing operating conditions (e.g. changes in the extent of the areas to be protected, change in access methods, etc...).

This device has been designed, built and tested with the utmost care and attention, adopting test and inspection procedures in accordance with current legislation. Full compliance of the working specifications is only achieved in the event the device is used solely for its intended purpose, namely:

Security fog system

The device is not intended for any use other than the above and hence its correct functioning in such cases cannot be assured.

Consequently, any use of the manual in your possession for any purpose other than those for which it was compiled - namely for the purpose of explaining the product's technical features and operating procedures - is strictly prohibited.

Production processes are closely monitored in order to prevent faults and malfunctions. However, the componentry adopted is subject to an extremely modest percentage of faults, which is nonetheless the case with any electronic or mechanical product.

Given the intended use of this item (protection of property and people), we invite you to adapt the level of protection offered by the system to suit the actual situation of risk (allowing for the possibility of impaired system operation due to faults or other problems), while reminding you that there are specific standards for the design and production of systems intended for this kind of application.

We hereby advise you (the system's operator) to see that the system receives regular routine maintenance, at least in accordance with the provisions of current legislation, and also check on as regular a basis as the risk involved requires that the system in question is operating properly, with particular reference to the control unit, sensors, sounders, dialler(s) and any other device connected. You must let the installer know how well the system seems to be operating, based on the results of periodic checks, without delay.

Work involved in the design, installation and maintenance of systems incorporating this product should be performed only by personnel with suitable skills and knowledge required to work safely so as to prevent any accidents. It is vital that systems be installed in accordance with current legislation. The internal parts of certain equipment are connected to the mains and therefore there is a risk of electrocution when maintenance work is performed inside without first disconnecting the primary and emergency power supplies. Certain products include batteries, rechargeable or otherwise, as an emergency backup power supply. If connected incorrectly, they may cause damage to the product or property, and may endanger the operator (explosion and fire).

EU DECLARATION OF CONFORMITY

The product complies with current European EMC and LVD directives.

You can log into the elmospa.com website to read the full Declaration of Performance: registration is quick and easy.

DISPOSAL INSTRUCTIONS - INFORMATION FOR THE USER



IT08020000001624

In accordance with Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), please be advised that the EEE was placed on the market after 13 August 2005 and must be disposed of separately from normal household waste.

If the product is ever disposed due to irreparable faults or to the end of the product life, remove any lithium battery soldered to the PCB by cutting the terminals. Dispose of the batteries in the special containers for exhausted batteries, dispose of the remaining part of the product as indicated above.



1. GENERALS

The NEBULA security fog system is to be used along with any security system managed by an intrusion detection control unit. Once it has been activated, the device creates a barrier that is impenetrable to sight, greatly slowing any intruders and making it hard for them to locate their intended target.

The NEBULA devices equipped with firmware version v2.x.x or higher support connection to ETRG2 control units (equipped with firmware version v1d or higher), PREGIO control units (equipped with firmware version v2.3.2 or higher), VILLEGGIO control units (equipped with firmware version v8.3.2 or higher) and other expressly compatible models via RS-485 ULTRABUS serial line, thus making it possible to directly control the fog system using the BrowserOne software platform.

2. TECHNICAL DATA

Model:	NEBULA12	NEBULA24
Max saturable volume:	150 m ³	266 m ³
Max emission time:	35 s	60 s
Saturation time*:	60 s typical	90 s typical
Mains power supply:	AC 230 V +10/-15%, 50 Hz	
Environmental class:	II	
Protection fuse:	F1 = T 6.3A L; 250 V F2 = T 1.0A L; 250 V F3 = T 10A L; 250 V	
Mains power supply fuse:		
Max consumption:	300 W	1000 W
Mean consumption:	25 W	60 W
Command inputs:	4 programmable	
Alarm outputs:	4 programmable	
Power supply outputs for additional components:	2 × DC 12 V @ 150 mA (PTC protected output)	
Ethernet connection:	RJ45 port	
RS-485 ULTRABUS connection:	On board connector (A, B, GND terminals), enabled <u>only for NEBULA equipped with firmware version v2.x.x or higher</u>	
Internal power supply:	2 × DC 12 V @ 1.3 A batteries with automatic disconnection at 18 V	
Standby temp. ready in:	25 min	
Working temp. (from standby) in:	8 min	
Temperature drop (to reach the lower threshold for a 60 s emission) with no power supply:	50 min	90 min
Security fog liquid:	Glycol diluted with demineralized water	
Weight:	13 kg	18 kg
Dimensions:	W318×H316×D176 mm	W310×H464×D200 mm
Parts supplied:	Technical manual, battery connection cable and 8 × 10 kΩ resistors	

*of 80% of the maximum volume, measured at max emission time

3. INSTALLATION

3.1 Model choice

The model to use has to be chosen based on the volume of the room that the fog has to fill. Compare the volume, measured in cubic meters, with the emission time of each model.

Let's suppose we want to protect a room 8 m wide, 11 m long and with a 3 m ceiling: multiplying the three values we get a 264 m³ volume (8×11×3=264).

A NEBULA24 model can fill the whole room.

Models covering higher volumes, NEBULA39 and NEBULA78, are described in their own manuals.

EL.MO. SpA organizes dedicated classes to explain the procedures for proper setting evaluation and product choice.

3.2 Positioning

NEBULA series devices have to be mounted at a minimum height of 2.5 m (height of the spray nozzle) and at 2.5 m at least from the doors to be protected.

For proper ventilation, leave a 20 cm clearance all around the device.

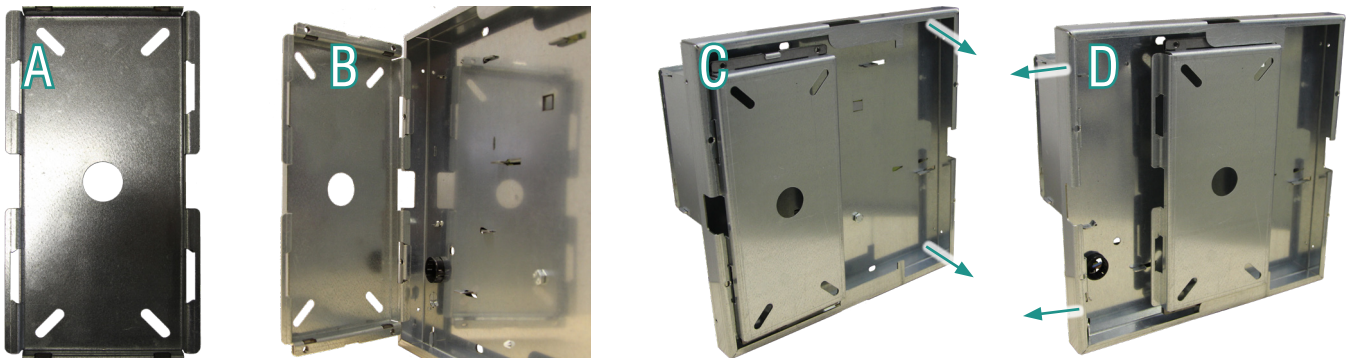
Point the nozzle upon or towards the protected goods while leaving the exit routes as free as possible, so to encourage the



intruders to evacuate the room as fast as possible.
 Do not expose the device to drops or splashes of water.
 Avoid positioning recipients filled with liquid, such as pots, above the device.
Do not install the device in areas where highly flammable or explosive materials are stored or used.
The wall shall be able to support at least four times the weight of the device.

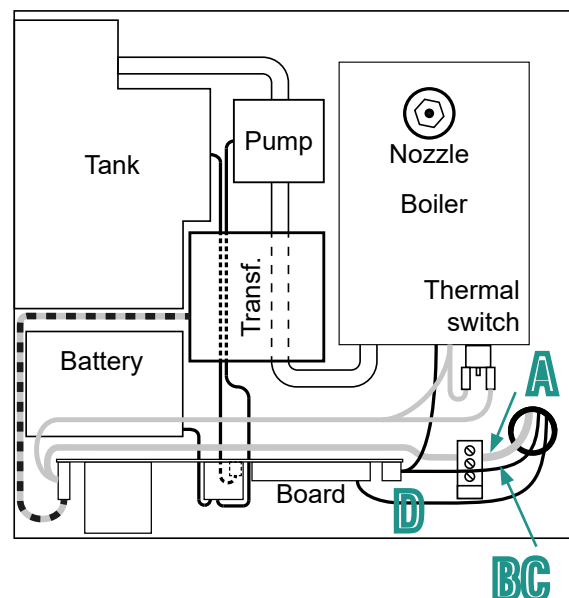
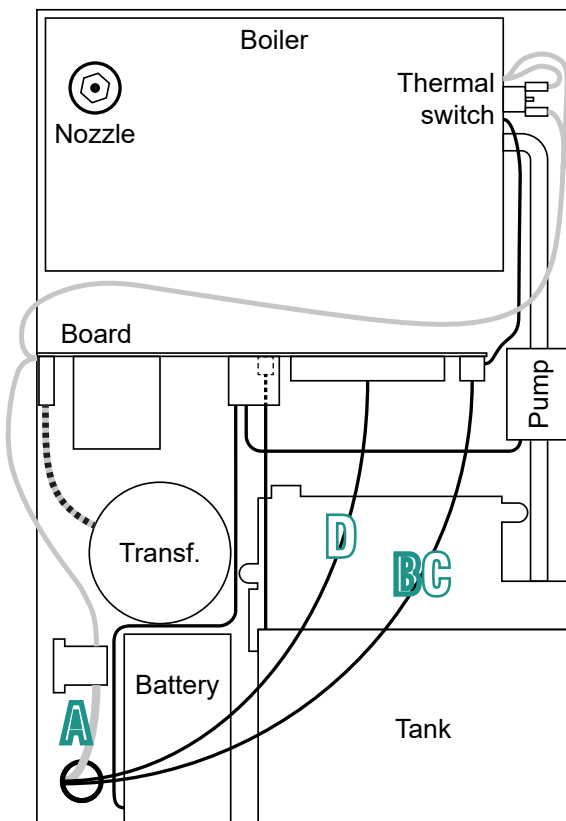
3.3 Fixing the device

Use the provided fixing tray as a drill template in order to mark and drill the holes in the ceiling or in the wall.
 Use at least 4 screw anchors, each able to resist a 25 kg traction when coupled with the material of the wall.
 For NEBULA12, screw the fixing tray to the wall, in portrait orientation, at least 35 cm away from the left wall (A).
 Hook the body to the right side of the fixing tray (B) and, pivoting the body on the hooks, close it towards the wall (C).
 Slide the body to the right, so that the tray locks with the tabs on the body (D). Screw the body to the tray.



To mount NEBULA24 horizontally, with the boiler to the right and the nozzle on the upper half, follow the same procedure.
 To mount NEBULA24 vertically, screw the fixing tray in landscape orientation, at least 35 cm from the ceiling.
 Hook the body to the upper side of the fixing tray, with the boiler up.
 Lift the body until the tabs on its back lock with the tray border, then screw the body to the tray.

3.4 Electrical wirings



▲ NEBULA12

◀ NEBULA24

AC 230 V cables in gray
 DC 24 V cables in black



The hole in the fixing tray shall be used to feed the following cables in the container:

- A. 230 V mains cable;
- B. Ethernet cable for web interface management (LAN or WAN);
- C. RS-485 serial cable to connect the device to the serial line (available starting from firmware version v2.x.x);
- D. cables from the RL1–RL4 relay output terminals and to the IN1–IN4 inputs of the electronic board (chapter 4).

Wire the cables as shown in chapter 5.

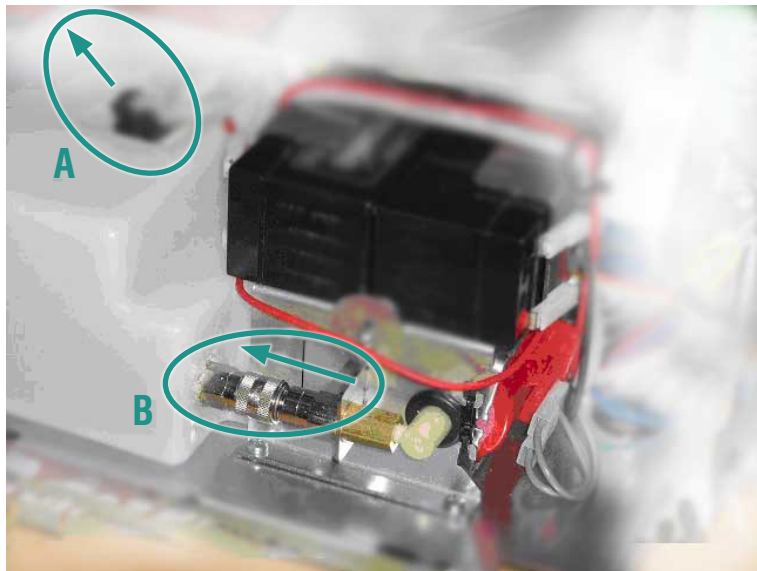
Power up the device from the mains cable first, then bridge the two batteries with the provided cable.

If you need to leave the case open and unattended after the device has been powered, power it down or cover the high voltage parts, preventing unauthorized access to these potentially dangerous components.

After powering up the device, some components will become very hot; avoid touching the boiler and the nozzle especially. If you need to leave the device unattended during the installation, power the device down and close the cover in order to avoid accidental contact of unknowing personnel with hot parts.

If it is ever necessary to unmount the device while it is still hot, use leather safety gloves in order to avoid touching the hot parts accidentally while removing the device from its fixing tray.

3.5 Tank



To remove the tank, loosen the bracket fixing screw and proceed as shown in the picture above: remove the connector from the tank chip (A), then pull the quick release connector (B).

For connecting a new tank, proceed in reverse order, starting from B and then connecting A.

IMPORTANT: make sure that the quick release connector clicks when coupling it; repeat the operation until it clicks.

It is **mandatory** to perform an emission test (chapter 11) after connecting any tank.

Several tank models are available. Make sure you ordered the one that is compatible with your fog system:

NEBULA12: **SFNEB1.1**

NEBULA24: **SFNEB1.6**

It is strongly suggested to replace the liquid every 2 years.

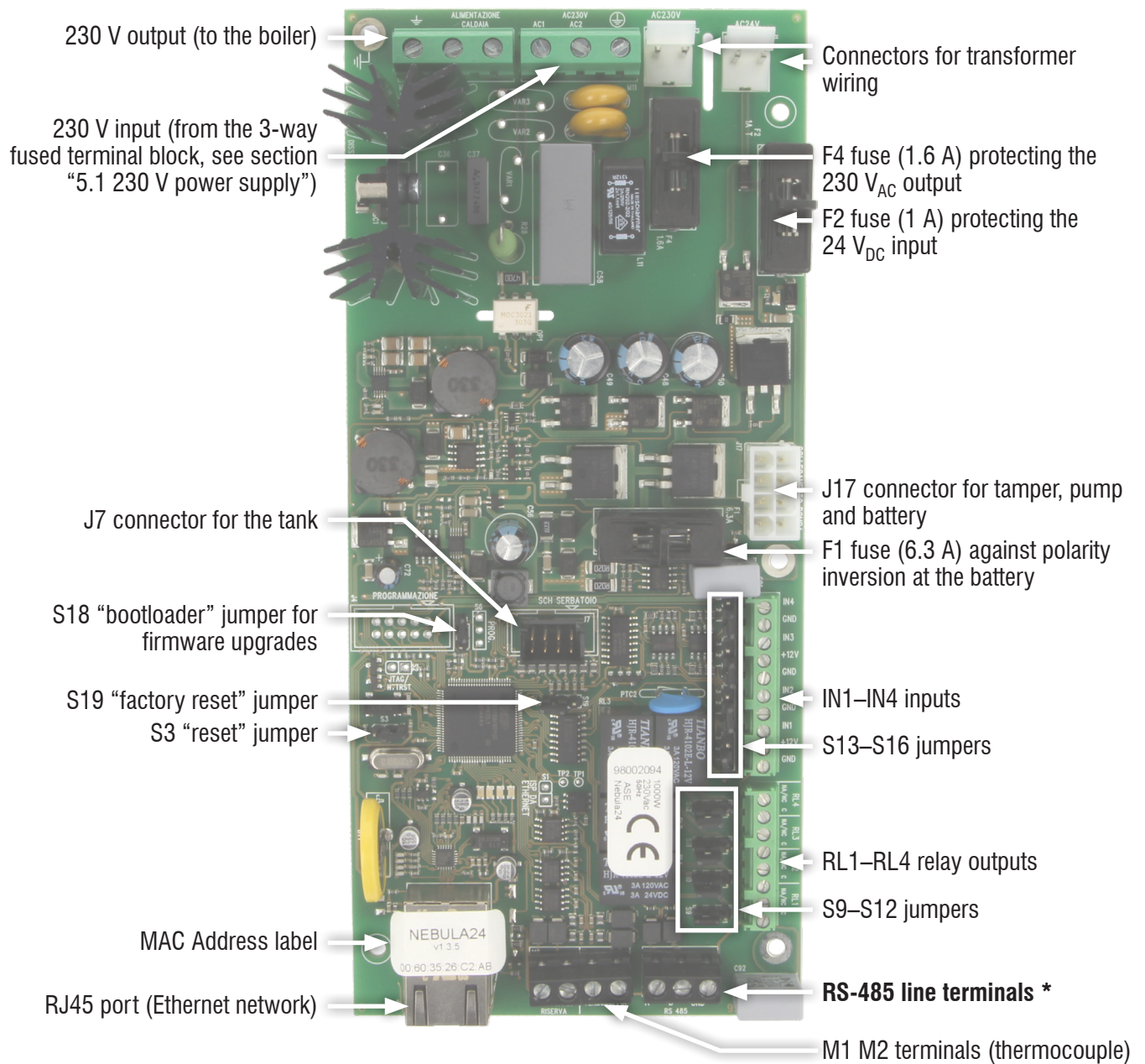
3.6 Closing the cover

In models with a metallic cover, remember to connect the ground cable to the cover before closing it.

Line up the holes on the sides of the cover and those on the sides of the tray, then fix the cover in place with screws.



4. ELECTRONIC BOARD



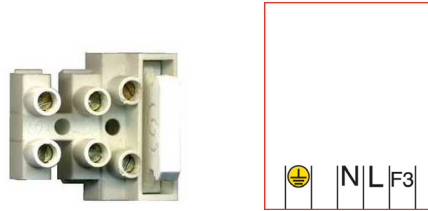
* These terminals can only be used starting from firmware version v2.x.x



5. ELECTRICAL CONNECTIONS

Semi rigid conductors do not need their ends to be soldered to the terminals.

5.1 230 V power supply



Connect the device to the mains supply with a permanent cable or with a power supply cable. If using an external power supply cable with a CE standard compliant Schüko plug, have a qualified operator install a socket in an easily accessible position near to where the device has to be mounted.

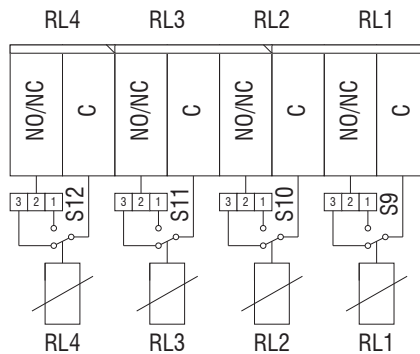
Connect the AC 230 V power supply to the 3-way fused (10 A) terminal block using terminals L and N, connect the ground wire to the GND terminal. The mains cables fed into the device and connected to the 3-way terminal must be double insulated. The wiring between the 3-way terminal and the “240 V” terminal of the board exists already.

WARNING: AC 230 V current can flow through the mains cable and the part of the board with the heat sink.

According to the National Electric Code and the local regulations, it is possible to disconnect the device by removing the 10 A fuse; the terminal is able to provide protection against over-voltage and short circuits.

5.2 Alarm outputs

5.2.1 Connection of programmable alarm outputs



Four relay outputs (over terminal blocks M4 M5 M6) are available. They can be assigned to events (chapter 8.10.3) and they can be set as normally open or normally closed using the S9, S10, S11, S12 jumpers (see chapter 6.5). The four relay outputs shall be connected to circuits operating with SELV currents.



5.3 Command inputs

The M7 M8 M9 M10 terminal blocks host four command inputs, programmable as normally closed, normally open (NA/NO), single or double balancing.

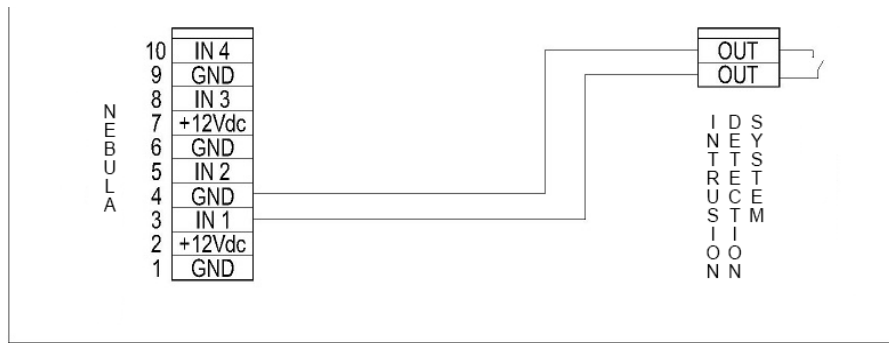
Programming can be done by using jumpers S13 to S16 (chapter 6.5) and the web interface (chapter 8.10.1).

The default values are recorded in chapters 6.1 and 6.5.

For double and single balance connections, use the provided resistors (R1 in the following schemes).

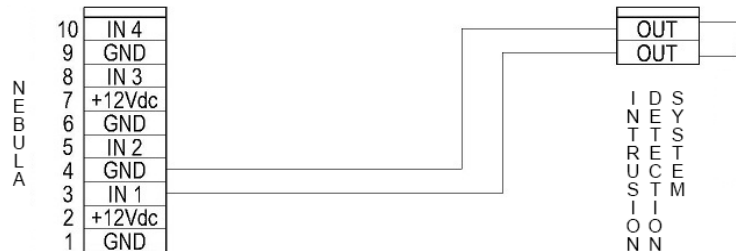
5.3.1 Default connection: Normally Open (NA/NO)

Follow the diagram below to connect the device to an intrusion detection system without any web interface programming, allowing for immediate use.



The device switches from stand-by to *armed* when the circuit closes.

5.3.2 Normally Closed (NC)



The device switches from stand-by to *armed* when the circuit opens.

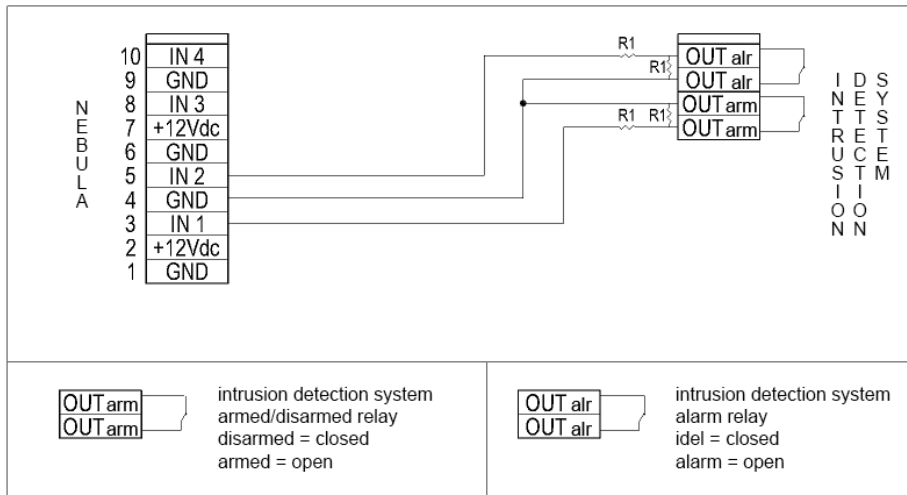


5.4 Inputs with potential difference commands (Open Collector)

It is possible to accept DC 12 V commands by setting the S13, S14, S15, S16 selection jumpers and wiring as shown. **IMPORTANT:** physically connect the GND of the device with the GND of the intrusion detection system.

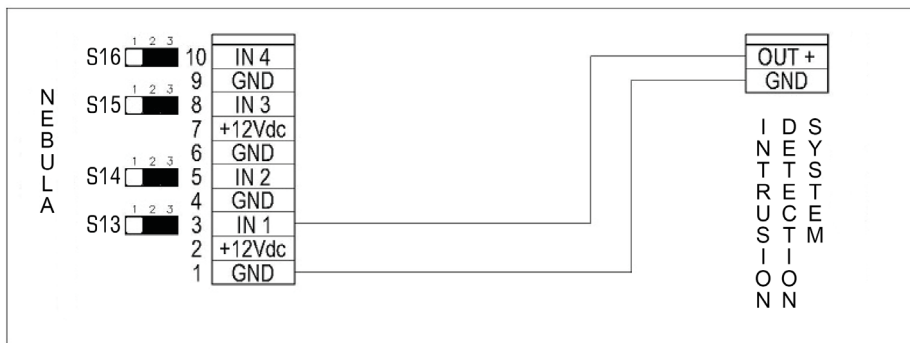
Pay attention to setting the S13, S14, S15, S16 jumpers before connecting a positive 12 V or negative GND command to the inputs of the device.

5.4.1 Double balanced connection



Note: R1 = 10 kΩ resistors.

5.4.2 Positive reference

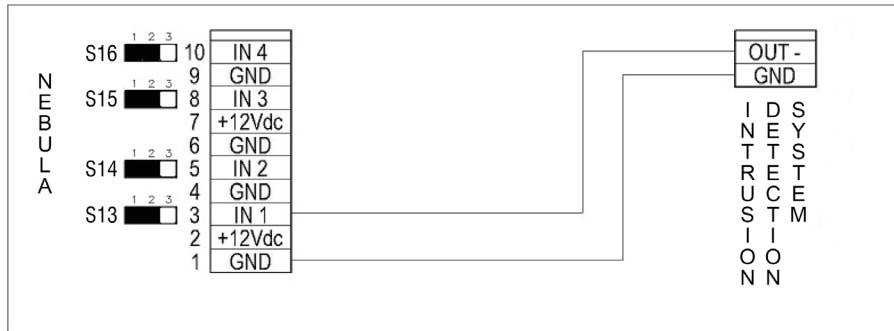


If the Open Collector output of the intrusion detection control unit is positive (12 V), move the jumper to the 2–3 position. If the line is powered (12 V) while the intrusion detection system is in alarm (not powered while idle), select NC (see 8.10.1);

If the line is powered (12 V) while the intrusion detection system is idle (not powered while in alarm), select NO instead.



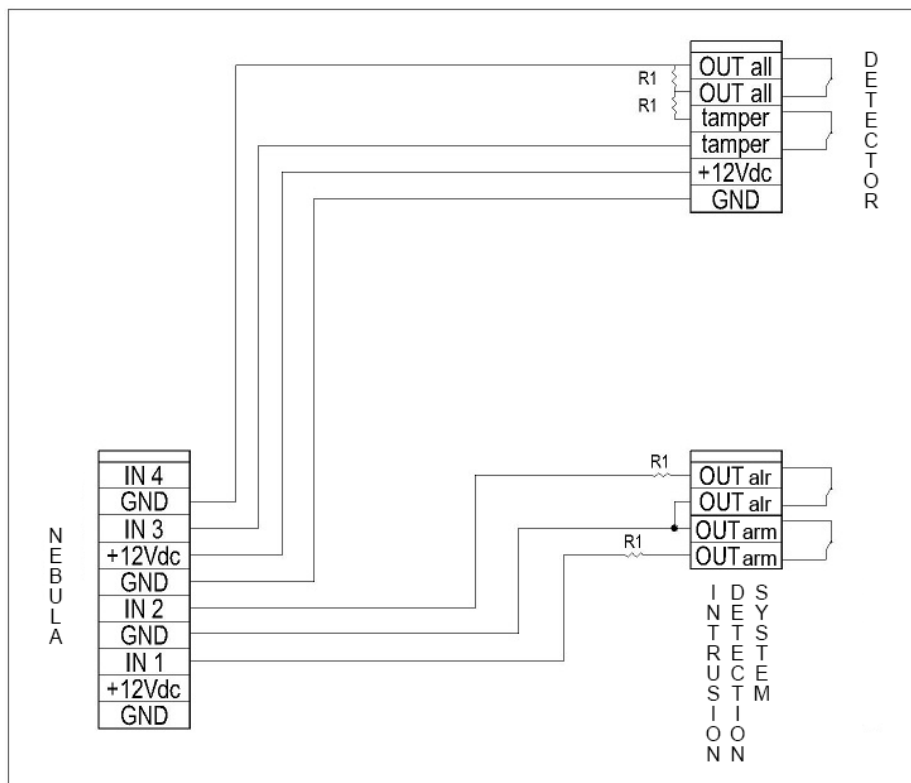
5.4.3 Negative reference



If the Open Collector output of the intrusion detection control unit is negative (GND), move the jumper to the 1–2 position. If the GND reference is available when the intrusion detection system is in alarm (not when idle), select NO (see 8.10.1); If the GND reference is available when the intrusion detection system is idle (not when in alarm), select NC instead.

5.5 Inputs, wiring example 1

Input 1: Arm, single balancing;
 Input 2: Primary Alarm, single balancing;
 Input 3: Secondary Alarm, double balancing;



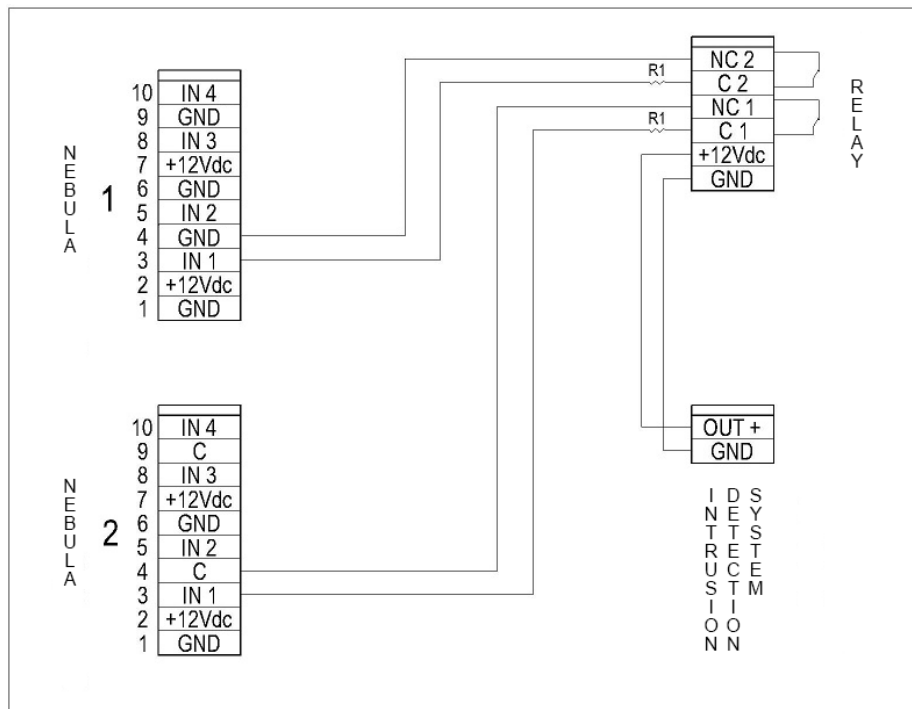
Note: R1 = 10 kΩ resistors.

When the intrusion detection system “armed” contact opens, the device switches from the stand-by status to the armed status. When the intrusion detection system “alarm” contact opens, the device switches to the pre-alarm status and it goes back to the stand-by status if the intrusion detection system “alarm” contact closes. When the secondary “alarm” contact opens, if the device is in pre-alarm, it generates fog for the set duration.



5.5.1 Connection among several fog generating devices and an intrusion detection system

If you need to use several NEBULA devices piloted by the same intrusion detection system or from the same output, multiply the signals with a relay board.

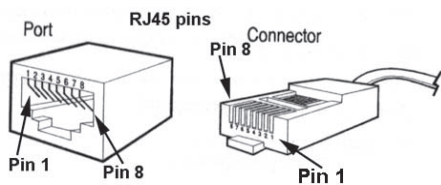


Note: R1 = 10 kΩ resistors.

5.6 Ethernet data network

The LAN port (J5 connector) makes it possible to connect the device to a PC using the most common web browsers. It will be possible to change the default settings and to include the device in the client’s network in order to activate the remote assistance service.

The connection requires using a T568B cable connected to a switch/hub module or to the Internet line router. To connect the device directly to the PC, use a crossover cable, i.e. a cable with one end wired in T568A and one in T568B. The Ethernet line speed shall be 100 Mbit at least.



Pin	RJ45 T568A	RJ45 T568B
1	White/Green	White/Orange
2	Green	Orange
3	White/Orange	White/Green
4	Blue	Blue
5	White/Blue	White/Blue
6	Orange	Green
7	White/Brown	White/Brown
8	Brown	Brown

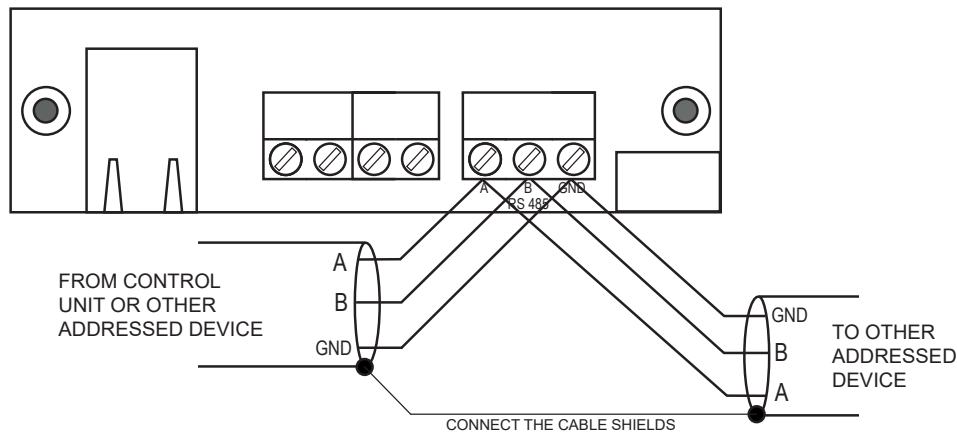


5.7 Connection via RS-485 serial line

The serial line connection to NEBULA is available for ETRG2 control units (equipped with firmware version v1d or higher), PREGIO control units (equipped with firmware version v2.3.2 or higher), VILLEGGIO control units (equipped with firmware version v8.3.2 or higher) and other expressly compatible models.

Available only for NEBULA devices equipped with firmware version v2.x.x or higher.

Use the proper terminals (A, B, GND) to wire the board to the serial line.



6. DEFAULT PARAMETERS

6.1 Default input values table

IN 1	ARM	NO	ARMS the device
IN 2	PRIMARY ALARM	NO	Activates the fog generation
IN 3	DISABLED	NO	-
IN 4	DISABLED	NO	-

6.2 Default output values table

OUT 1	FOG	NC	Becomes open during emission
OUT 2	GENERIC FAILURE ALARM	NC	Mains fault, Battery between 22 V and 18 V, tank between 30% and 15%
OUT 3	SERIOUS FAULT ALARM	NC	Battery < 18 V, Low temperature, No tank or < 15%, Hot boiler
OUT 4	ALARM 24H	NC	Cover tamper open, Unbalanced input, Sabotage

6.3 Default emission sequence values table

SEQUENCE INTERVAL	TIME [20 min]
SEQUENCE 1 (main emission)	30 seconds (NEBULA12), 60 seconds (NEBULA24)
SEQUENCE 2 (pulse emission)	Deactivated

6.4 Default web interface values

IP ADDRESS:	DHCP generated dynamic address
PORT:	80
SUBNET MASK:	255.255.255.0
GATEWAY:	192.168.1.1
Installer login:	tech
Installer password:	admin



User login:	guest
User password:	guest

6.5 Jumpers

S9	OUT 1	1-2 NO	2-3 NC (default)
S10	OUT 2	1-2 NO	2-3 NC (default)
S11	OUT 3	1-2 NO	2-3 NC (default)
S12	OUT 4	1-2 NO	2-3 NC (default)
S13	IN 1	1-2 negative ref. (default)	2-3 positive ref.
S14	IN 2	1-2 negative ref. (default)	2-3 positive ref.
S15	IN 3	1-2 negative ref. (default)	2-3 positive ref.
S16	IN 4	1-2 negative ref. (default)	2-3 positive ref.
S3	board reset	open (default)	never leave closed
S18	firmware upgrade	open (default)	follow the Remote Manager instructions (cap. 9)
S19	factory reset*	open (default)	close S19, close and reopen S3, open S19 again

*Factory reset restores all default values and deletes any programming

7. LED INDICATIONS

Three amber LEDs and a red one signal the state of the device.
LD1, LD2, LD3 blink with the following patterns; LD4 has a fixed light.

Name		LED status	Meaning
LD1	Tank	1 flash	100% to 30% charge
		2 flashes	29% to 15% charge
		3 flashes	14% to 0% charge
		4 flashes	No tank
LD2	Temperature status	1 flash	Between 92% and 100%
		2 flashes	Between 85% and 91%
		3 flashes	Between 53% and 84%
		4 flashes	52% or less
LD3	Battery status	1 flash	Over 24 V
		2 flashes	Between 24 V and 22 V
		3 flashes	Between 22 V and 18 V
		4 flashes	Under 18 V
LD4 (red)	Armed / stand-by status	ON	Armed
		OFF	Unarmed



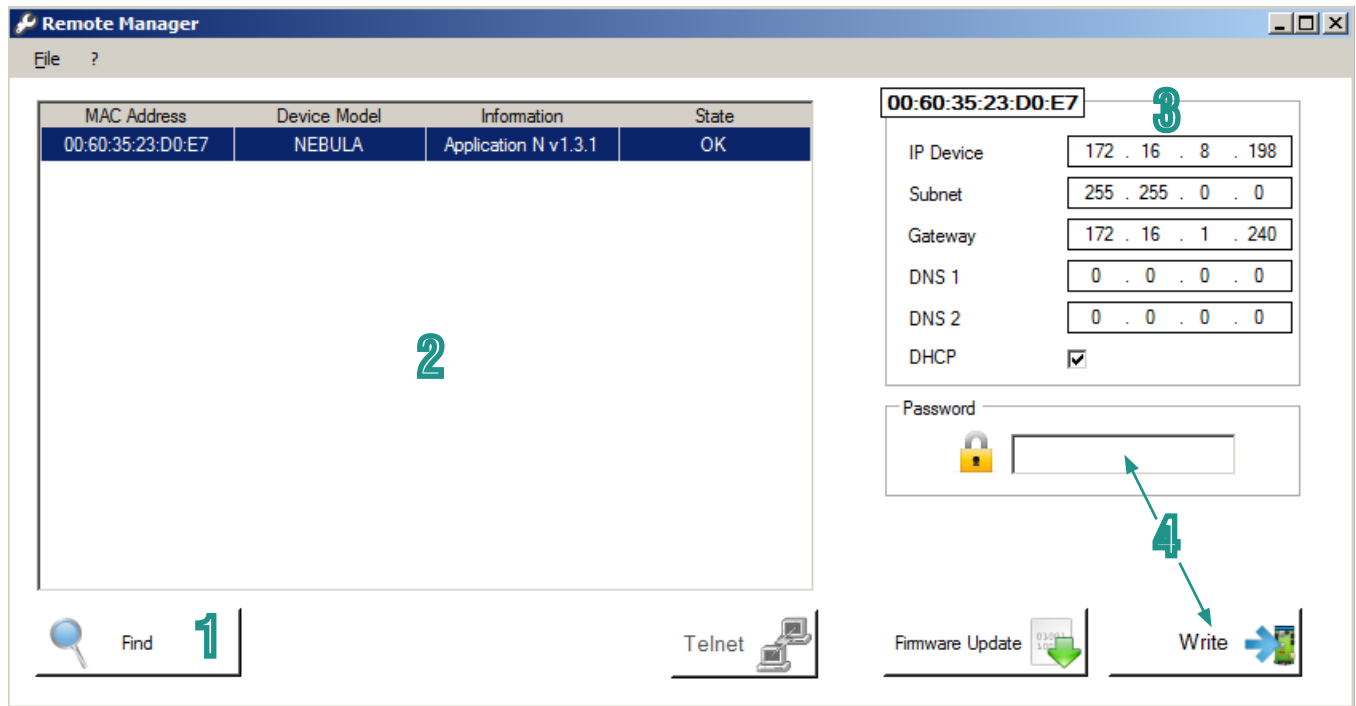
8. WEB INTERFACE

The device has a web interface consisting of pre-loaded html pages that can be displayed using the most recent web browsers in order to visualize the status of the device, read the log of past events, set its parameters and, if necessary, operate outside the default ones.

8.1 Installing and using Remote Manager

To access the web pages, it is necessary to find the DHCP dynamically generated IP address of the device.

- Install Remote Manager from the provided CD or available on elmospa.com for authorized users.
- Run Remote Manager by double-clicking its desktop icon or from the Start menu.



1. Click Find to refresh the list of connected devices (2).
 2. Recognize the NEBULA device in the list and select it with a click. If more NEBULA devices are connected, recognize the one you want to program from the MAC Address printed on the label placed over the Ethernet port on the board of the device.
 3. Together with the network administrator, choose a static IP address for the device. Type it in the IP Device field and unflag the DHCP checkbox.
 4. Write the default password, "admin", then click Write to save.
- Remote Manager works on Windows XP, Vista, 7, 8, 8.1 and 10 on 32 and 64 bit PCs.
 - To uninstall Remote Manager, use the standard Windows uninstall utilities or run the specific uninstall program placed in its installation folder.

8.2 Access to the web interface and general rules

To access the web interface, open a web browser and type the IP address of the device in the address bar. For instance, to configure the device shown in the screenshot above, type <http://172.16.8.198> and press enter.

In the web interface pages, press enter or click SET to save changes.

The rightmost column will show the menu entries and, below them, time and date, device model, firmware version (the firmware can be upgraded locally or remotely, see chapter 9) and serial number.

Click on any flag in the Home page to change the language. The default language depends on the default language of the operating system of the PC.



8.3 Login page

The device shows the login page first. Insert your login (username) and password.

Default values are in chapter 6.4.

(A user will only be able to access the Home, Log and Users pages)

8.4 Home page

The Home page holds the general data of the device and its status

8.4.1 Electronic state

Status shows if the device is unarmed (**NORMAL**) or **ARMED**.

By default, when unarmed the temperature falls to 85% in order to save energy and the device does not accept alarm signals for fog generation, getting ready when the system is armed; when using the Energy-saving option, unarmed temperatures fall to room temperature and the device takes 15–20 minutes after the intrusion detection system has been armed before it can emit fog. Alarm outputs are immediately available anyway.

When *Armed*, the device waits for a primary alarm (and for a secondary alarm if so instructed) before starting the emission sequence. The emission stops after its set duration or when the device switches to the unarmed status.

Boiler temperature shows the heating of the boiler as a percentage.

Note: while unarmed, the temperature will drop to around 85%.

Power source states if the device is powered by the 230 V mains or by the batteries.

8.4.2 Battery charger

Battery voltage shows the voltage of the battery pack, the ideal value is 27 V.

Battery status shows if the battery is “charged”, “charging” or “discharged / not present”.

Battery charge status is usually **DISABLED**, it changes to “**ENABLED**” if the voltage is lower than 27 V.

8.4.3 Tank

Status **PRESENT** - the tank is connected correctly; **ABSENT** - no tank or unrecognised tank.

Tank level residual liquid in the tank, expressed as a percentage and in milliliters.

Model shows the type and, in brackets, size of the tank.

8.5 Log page

The Log page hosts a list of every event recorded by the device. The topmost event is the last one. The list contains only the last 540 events.

Download LOG

Download

Type the name of a .txt format file, then click Download to save a snapshot of the current history log to disk. We suggest using a meaningful name including the date and time of the download.



8.6 Users page

The Users page lets you modify the username and password for both the installer and the user (login shall be 5 to 20 characters long, password shall be 6 to 20 characters long).

USER	
LOGIN:	guest
PASSWORD:
REPEAT PASSWORD:
SET	

INSTALLER	
LOGIN:	tech
PASSWORD:	
REPEAT PASSWORD:	
SET	

Type the same password in the **password** and **repeat password** fields to ensure you typed it correctly, then click **change** to confirm the new username and password.

8.7 LAN/485 page

8.7.1 LAN

LAN:						
IP ADDRESS:	172	.016	.008	.167		
PORT:						00080
SUBNET MASK:	255	.255	.000	.000		
GATEWAY:	172	.016	.001	.240		
DHCP:						<input type="checkbox"/>
MAC ADDRESS:	00	.60	.35	.23	.d0	.e0
SAVE AND REBOOT						

The fields can be used to change the **IP address** of the device (if setting an invalid value it will be impossible to access the web interface, a factory reset will restore the default value shown in chapter 6.4), the communication **port** used by the router to transfer remote assistance data traffic and the **subnet mask** and **gateway** values made available by the network manager.

It is also possible to flag the **DHCP** checkbox in order to activate the DHCP protocol.

The MAC address of the board is also shown.

The modified settings will become operative after clicking on **save and reboot**.

An invalid address makes it impossible to communicate with the control unit. If this happens, reset the device to factory defaults (chapter 6.5, jumper S19).



8.7.2 RS-485

RS485:	
RS485 ADDRESS:	001
EMITTING FOR LOST RS485 COMMUNICATION:	<input type="checkbox"/>
SET RS485 CONFIGURATION	

Note: these settings are only available for NEBULA devices equipped with firmware version v2.x.x or higher.

Type the NEBULA serial line address in the **RS485 address** field.

Emitting for lost RS485 communication: disabled by default. Check the box if you want the *Armed* fog system to automatically emit after the serial communication has been missing for a scheduled time.

Click on **Set RS485 configuration** to confirm the changes made.

8.8 e-mail page

NEBULA can send e-mail messages to the addresses entered in the designated fields. The messages can be fault or alarm warnings or a daily report of the status of the fog system.

8.8.1 SMTP

Activate the service by checking **Enable**.

Enter the outgoing mail **Server** (SMTP) relevant to the connection used.

Enter **Port** 25 (default).

Check **Authentication** if the mail server requires a **User** and a **Password**, and enter them below.

Enter the **Sender** for the e-mail messages sent by this service, using the name@domain.com format.

8.8.2 E-MAIL

Enter up to three e-mail addresses that will receive the alerts.

You can choose which alerts are received by each addressee.

Generic Failure: no 230 V power, battery voltage falls between 22 and 18 V, tank charge level falls between 30% and 15%.

Serious Failure: battery voltage below 18 V; boiler temperature below the minimum emission threshold (around 50%); boiler temperature activated the thermal switch, which needs a manual reset (see page 4); tank not connected; tank charge level below 15%; pump failure.

Alarm: an input is alarmed.

Check the box in the **Status** column to have NEBULA send to the addressee, once per day at the entered time, the contents of the Home page. Press **Test** to send a test e-mail.

8.8.3 GLOBAL CONFIGURATION

Enter the number of maximum e-mail messages that can be sent to each addressee each day.



8.9 Date and time

WATCH:			
TIME:	11	:	55
		:	44
DATE:	23	/	06
		/	2016
SET DATE/TIME			

Type the current date and time and update them with the **Set date/time** button.

8.10 IN/OUT page

INPUT:	STATUS:	FUNCTION:	TYPE:
#1	IDLE	ARM+ENERGY SAVING ▾	SINGLE BALANCE ▾
#2	IDLE	PRIMARY ALARM ▾	DOUBLE BALANCE ▾
#3	IDLE	DISABLED ▾	NC ▾
#4	IDLE	DISABLED ▾	NO
TAMPER	ALARM	EXCLUDED ▾	NC
			SINGLE BALANCE
			DOUBLE BALANCE
SET INPUT			

OUTPUT:	STATUS:	FUNCTION:	[F]MANUAL:
#1	IDLE	FOG ▾	[AUTO] -- ▾
#2	IDLE	HOT BOILER ▾	[AUTO] -- ▾
#3	ALARM	SERIOUS FAULT ALARM ▾	[AUTO] -- ▾
#4	IDLE	SMOKE SYSTEM BLOCK ▾	[AUTO] -- ▾
SET OUTPUT			

8.10.1 Inputs

The four inputs can be associated to a specific event each by using the “function” dropdown menu.

ARM	For switching the device from the NORMAL to the ARMED status. This command has no effect if the device is already in alarm (solve the alarm status before arming).
ARM + ENERGY SAVING	Same as ARM, but the boiler temperature can drop to room temperature during standby.
PRIMARY ALARM	The ARMED device generates fog. If an input programmed as SECONDARY ALARM exists, the device goes into pre-alarm status instead.
SECONDARY ALARM	The device in pre-alarm status generates fog. Note: for the emission to take place, it is required that <u>both</u> primary and secondary alarms issue either from fog system inputs or from serial line. If one comes from an input while the other comes from serial line, the emission does not occur.
SMOKE	Blocks any emission and stops the boiler. Used in case of fire, as detected by smoke sensors.
SABOTAGE	If the optional anti-sabotage sensor has been installed, a 24H alarm is started.
EXTERNAL FAULT	Receives a fault signal from another device.
DISABLED	Disabled input, the terminals are not monitored.



The input connection type can be changed as well.
For a description of the several connection types, see chapter 5.3.

The status column shows the status of the input at the time when the page loaded.

For NO and NC inputs:

IDLE: no alarm in progress.

ALARM: the input is in alarm.

For inputs with single or double balancing:

BALANCED: the input has a correct balance and there is no alarm in progress.

ALARM: the input has a correct balance and it is in alarm.

UNBALANCED: the cable connected with the input has been tampered with.

Note: refresh the web page to see the current status.

8.10.2 Cover tamper

The dropdown menu allows you to disable the mechanical contact Tamper of the cover, used for the 24H device protection. The status of the Tamper input is also shown:

IDLE: the cover is closed.

ALARM: the cover is open.

DISABLED: the Tamper function is currently excluded.

8.10.3 Outputs

The four outputs can be programmed using proper dropdown menus. For the “function” column:

FOG	The relay switches during the emission time.
ALARM 24H	The relay switches when any double balancing input detects that the cable has been tampered with, when the device cover is opened and if the optional sabotage sensor has been set in the inputs section; if the system is ARMED, it will begin the standard emission sequence.
GENERIC FAILURE ALARM	The relay switches when there is no 230 V power, when the battery voltage falls between 22 and 18 V, when the tank charge level falls between 30% and 15%.
SERIOUS FAULT ALARM	The relay switches when the battery voltage falls below 18 V; if the temperature of the boiler falls below the minimum emission threshold (around 50%); if the temperature of the boiler activated the thermal switch, which needs a manual reset (see page 4); if the tank is not connected or if its charge level falls below 15%; if the pump does not work.
SMOKE SYSTEM BLOCK	The relay switches when the emission starts and stays active for the next 20 minutes.
LOW TANK	The relay switches when the tank charge level falls below 30%, if this option is activated the tank charge level does not activate the generic failure alarm.
HOT BOILER	The relay switches if the temperature of the boiler is at least 55%.
EXTERNAL FAULT	The relay switches if at least one EXTERNAL FAULT input is ON.
ARMED STATUS	The relay switches if NEBULA is armed

The four outputs can be forced by using the “[F]manual” dropdown menu:

[AUTO] --	The relay keeps its original position.
[F]IDLE	The relay is always at rest.
[F]ALARM	The relay is always in alarm.



8.11 Sequences page

This page makes it possible to set the emission times of the device.

Choose if you want the device to wait 20 minutes between activations or if it can emit fog again as soon as the temperature rises enough.

Choose if you want to activate the pulse mode (0 to 5 sequence 2 cycles) after the first emission (sequence 1).

SEQUENCES:	
SEQUENCE INTERVAL:	TIME [20min] ▼
SEQUENCE 1 TIME ON (MIN 1 - MAX 60):	60 Sec
SEQUENCE 2 TIME ON (MIN 5 - MAX 20):	20 Sec
SEQUENCE 2 #CYCLES (MIN 0 - MAX 5):	0 Cycles

SET SEQUENCES

PUMP TEST:

TEST

Sequence interval:

TIME [20min]	This is the minimum time between one activation and the next one when sequence 1 has been set to 60 seconds. Otherwise, the minimum time is calculated according to the emission time. No alarm is acknowledged during this interval.
TEMPERATURE	The device will accept new alarms as soon as it reaches the optimal temperature (up to 5 minutes, depending on the duration of the previous emission).

Sequence 1 time on is the main emission time, settable from 15 to 35 seconds (default 30) for NEBULA12 and from 1 to 60 seconds (default 60) for NEBULA24.

Sequence 2 time on is the secondary emission time, activated 3 minutes after the end of Sequence 1.

Sequence 2 #cycles is the number of subsequent sequence 2 emissions, each starting 5 seconds after the previous one has ended. Set this to 0 to only perform the main emission.

8.11.1 Pump test

This command activates the emission for 5 seconds, independently from any condition except boiler temperature.

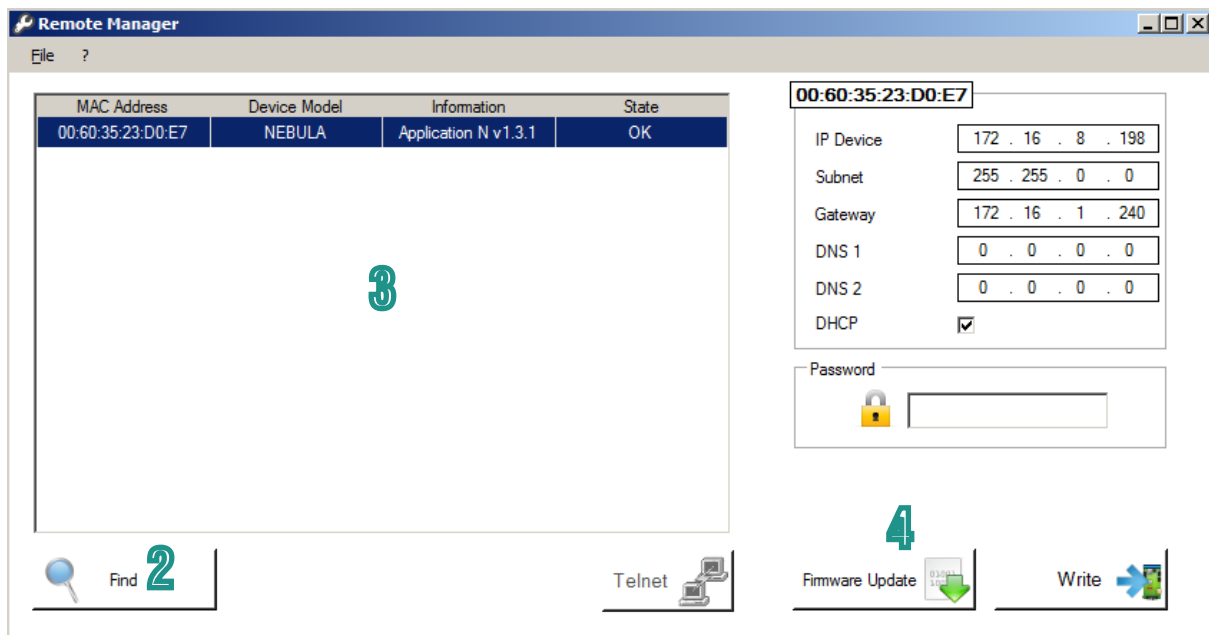
The test can only be performed while the boiler temperature is 65% or higher.

We suggest performing the test when the boiler temperature reaches 100%.

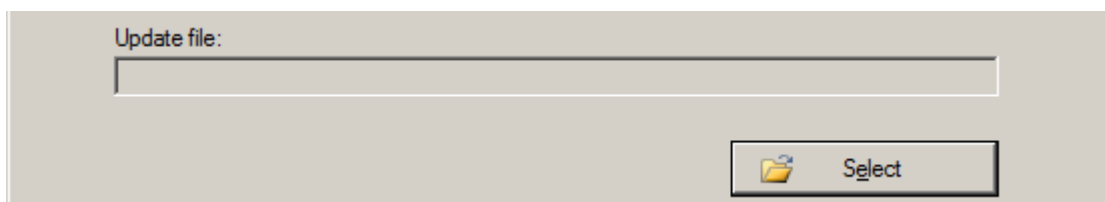


9. FIRMWARE UPGRADE

To run a firmware upgrade, install and start the Remote Manager software as seen in chapter 8.1



1. Download the firmware update file (.zip) from the elmospa.com website, and then unzip it. The address can be reached using the QR Codes made available in the last page of the manual (choose one according to the model you are using).
2. Launch Remote Manager, then click “Find” to refresh the list of installed devices.
3. Select the device to upgrade. If more are available, use their MAC address to understand which is which.
4. Click “Firmware update”.



5. Click “Select” and browse to the downloaded firmware packet (a .prg file).
6. Click “Next”. A summary screen with several informations on the device will appear.
7. Click “Next” to proceed.
8. In case the fog system is connected over RS-485 serial line, disconnect it before proceeding.
9. Open or close the jumpers on the electronic board to mimic those shown in Remote Manager, then press “Next” again. A progress bar will show the advancement status of the upgrade.
10. At its end, one last screen will be shown. Open or close the jumpers as shown. Reconnect the device to the serial line, if disconnected at step 7.

Note: if any error message appears at the end of the process, press “Back”; double-check the position of the jumpers and press “Next” again to get the last screen.

If the “Information” column of Remote Manager says “bootloader”, the installation failed: repeat the whole process.



10. MANAGEMENT OF NEBULA USING BROWSERONE

NEBULA can be connected via RS-485 serial line to ETRG2 control units (equipped with firmware version v1d or higher), PREGIO control units (equipped with firmware version v2.3.2 or higher), VILLEGGIO control units (equipped with firmware version v8.3.2 or higher) and other expressly compatible models.

Serial line connection, **available starting from firmware update v2.x.x**, allows to use the BrowserOne software platform to configure the fog system, as an alternative to the web interface.

BrowserOne version v3.5.16 or higher is required for fog system management.

Connect to a compatible control unit and load the proper module (for example the module for ETR control units v1.4.5 or higher, the module for PREGIO control units v2.3.5 or higher, the module for VILLEGGIO control units v8.5.10 or higher).

In the **Devices** page, click on the **Smoke machines** tab.

Flag the **Connected** field to enable connection.

Keypads Actuators Sirens IDTeck Remote Power Packs **Smoke machines**

Connected

Pertaining Areas

1 2 3 4 5 6 7 8

Outputs	
Primary alarm	Output n.1
Secondary alarm	Output n.2
Energy saving	Output n.3
Smoke	Output n.4

Open management window

Select the **Pertaining Areas** by checking the boxes: arm at least one sector within a pertaining area and you will have the fog system armed; the boiler temperature will raise to the operating value and the system will wait for the primary (and possibly the secondary) alarm in order to start emitting.

The **Outputs** pane shows which control unit outputs are used to trigger the fog system inputs: in the previous picture, for example, control unit output 1 generates the primary alarm for the corresponding fog system input.

The control unit outputs can be used to control the following fog system inputs:

- **Primary alarm:** if only the primary alarm is enabled, the *Armed* fog system will emit when it receives this alarm.
- **Secondary alarm:** if the secondary alarm is also enabled, the *Armed* fog system will only emit after receiving both the alarms (“AND-type” function).
Note: for the emission to take place, it is required that both primary and secondary alarms issue either from fog system inputs or from serial line. If one comes from an input while the other comes from serial line, the emission does not occur.
- **Energy saving:** in *Normal* (unarmed) state, the boiler temperature drops to room temperature for energy saving purposes.
- **Smoke:** once this output is activated (in event of fire, as detected by smoke sensors), any emission is blocked and the boiler is stopped.

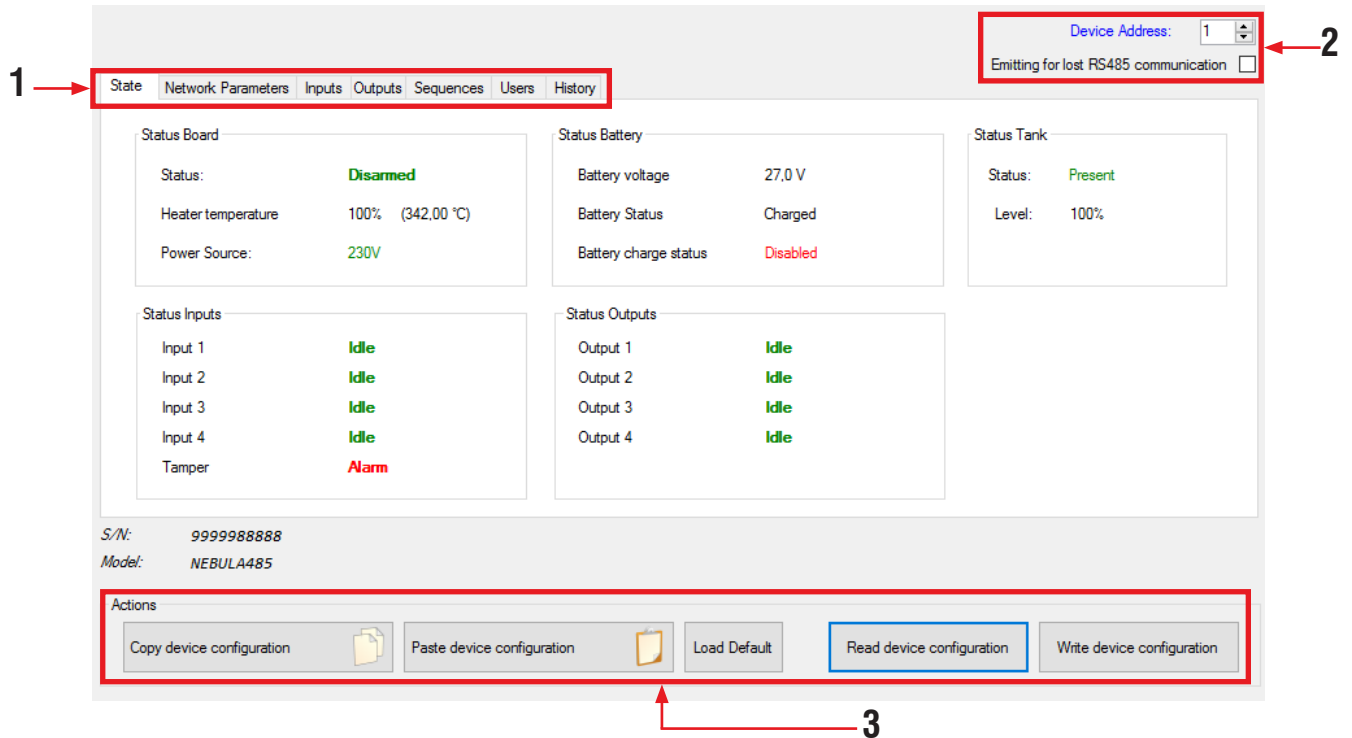
Control unit outputs configured with weekly programmer or employed in the definition of MFT (*Multi Functional Timer*) functions can also be used to control the fog system.

The MFT functions allow to program control unit outputs for building up automatic operations (e.g. switching the lights on upon alarm reception and then switching them off after a precise time after system disarming).

You can access the **MFT** menu in the BrowserOne main page to configure MFT functions; for further information on MFT configuration and operation, see the programming manual of the control unit in use.



Access the configuration menu by clicking on the **Open management window** button.



The following keys can be used at any time, no matter which menu you have entered:

1. Keys to access the device menus;
2. Keys to set the address on the serial line and to enable/disable automatic emission in case of lack of RS-485 communication (see “8.7.2 RS-485” on page 17).
3. **Actions** keys, allowing to manage the current configuration:
 - *Copy device configuration*: copy the device configuration to the memory.
 - *Paste device configuration*: paste the previously copied values.
 - *Load default*: restore configuration to default parameters.
 - *Read device configuration*: acquires the current configuration values.
 - *Write device configuration*: save the set parameter values as current configuration.

State

This page reports a summary of the overall fog system data, as well as the input and output states. The data reported in the **Status Board**, **Status Battery** and **Status Tank** panes have the same meaning as described in the “8.4 Home page” section: see this section for more information. The **Status Inputs** and **Status Outputs** panes show the configuration parameters concerning inputs and outputs that have been set in the respective menus.

Network parameters

Set in this page the parameters for correct communication (**IP Address**, **LAN Port**, **Netmask** and **Gateway** addresses). Here you can also enable/disable the DHCP protocol adoption (check the box) and see the board MAC address.

Enable DHCP MAC: 00:60:35:26:CF:77

IP Address: 172 . 16 . 3 . 17 LAN Port: 80

Net mask: 255 . 255 . 0 . 0 Primary DNS Server: 0 . 0 . 0 . 0

Gateway: 172 . 16 . 1 . 240 Secondary DNS Server: 0 . 0 . 0 . 0



Inputs, Outputs, Sequences

In the “Inputs” page, you can use the drop-down menus to associate each of the 4 inputs to a specific event and select the input type:

	<i>Function</i>	<i>Type</i>	<i>State</i>
Input 1	<input type="text" value="Arming + Energy Saving"/>	<input type="text" value="Normally Open"/>	<input type="text" value="Idle"/>

The same can be done for the Tamper contact on the cover:

Tamper	<input type="text" value="Excluded"/>	<input type="text" value="Alarm"/>
---------------	---------------------------------------	------------------------------------

In the “Outputs” page, you can program function and type for each of the 4 outputs, again using the drop-down menus:

	<i>Function</i>	<i>Type</i>	<i>State</i>
Output 1	<input type="text" value="Alarm 24H"/>	<input type="text" value="Auto"/>	<input type="text" value="Idle"/>

In the “Sequences” page, you can set the emission times of the device and perform a pump test by clicking on the **Test pump** button (activation of the emission for 5 seconds, independently from any condition except boiler temperature, which has to be at least 65%):

Sequences Interval	<input type="text" value="Time (20min)"/>
Sequence 1 ON Time	<input type="text" value="60"/>
Sequence 2 ON Time	<input type="text" value="20"/>
Sequence Number 2 cycles	<input type="text" value="0"/>

The meanings of function/types for each input/output and of the settings concerning the sequences are exactly the same as described in the “8.10 IN/OUT page” and “8.11 Sequences page”: see them for further information.

Users

Set the username (5-20 characters) and password (6-20 characters) for both user and installer in this page. You will be asked to enter the password twice and, finally, confirm by pressing **Change password**.

<p>User</p> <p>Login <input type="text" value="guest"/></p> <p>Password: <input type="text"/></p> <p>Repeat Password <input type="text"/></p> <p style="text-align: center;"><input type="button" value="Change Password"/></p>	<p>Installer</p> <p>Login <input type="text" value="tech"/></p> <p>Password: <input type="text"/></p> <p>Repeat Password <input type="text"/></p> <p style="text-align: center;"><input type="button" value="Change Password"/></p>
---	---

History

In this page you can consult the last events in chronological order, including information on date, time and description of each single event.

Use the shown keys to read and save the events log, or to load a previously saved one.

The events are displayed as “generic” events in control unit keypad; several specific events concerning the fog system may correspond to the same event recorded in control unit: the specific events are shown in this event log.

NOTIFICATION TO THE COMPETENT AUTHORITIES

We hereby inform you, as the CEI EN 50131-8 standard mandates, that a SECURITY FOG SYSTEM has been installed and connected to an intrusion detection device in the following location:

Address	City	ZIP code	Notes
Name or business name			
Contact	Contact		
Phone	Phone		
Mobile	Mobile		
e-mail	e-mail		

When the intrusion detection system generates an alarm, the security fog system generates a thick fog in order to block the sight of the intruder(s). The fog is composed of a vaporized mix of demineralized water and propylene glycol, and it is not harmful to people, animals, objects and food.

This notification has been sent and/or delivered to the following Bodies, Corps and Societies that are in charge of territorial security:

Fire brigade	Contact
	Phone
	Mobile
	e-mail

Police authority	Contact
	Phone
	Mobile
	e-mail

Private vigilance	Contact
	Phone
	Mobile
	e-mail

Place and date

Stamp and signature

NOTIFICATION TO THE COMPETENT AUTHORITIES

cut along the dotted line

GLOBAL SECURITY SOLUTIONS

EL.MO. spa

Via Pontarola 70, IT-35011 Campodarsego (PD)

Phone +39 0499203333 AA - Fax +39 0499200306 - Help desk +39 0499200426

international@elmospa.com - www.elmospa.com

Share capital € 3.000.000 fully paid up - VAT number and tax code IT00605640283 - REA 126325-PD



UNI EN ISO 9001:2008
CERT. 9115.ELMI



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11. EMISSION TEST / FIRST ACTIVATION

The emission test aims at confirming that the system is fully operative.

It must be performed after powering the fog device for the first time and every time a new tank gets installed.

1. Verify that the cover is properly closed.
2. Disable any inputs/outputs of the intrusion detection control unit that might send alarms or prealarms to the fog device.
3. Make sure that the “emitting for lost RS-485 communication” option is not selected (chapter 8.7.2).
4. Make sure that the fog device is armed.
5. Wait for the boiler temperature (chapter 8.4) to reach 100%.
6. Run a pump test (chapter 8.11.1).
7. After the test ends, if the fog device was not armed at the start of this procedure, disarm it.
8. Restore the initial conditions of points 2 and 3 of this procedure.

This is the only correct test procedure: do not generate fake alarms and do not disconnect the tank during the test.

12. WARNINGS

12.1 Installation limitations

Security fog systems **HAVE TO** be connected to a certified intrusion detection system.

Security fog systems can **ONLY** be installed and serviced by expert and qualified personnel.

12.2 Warranty limitations

The warranty will only be valid if the installation of the security fog system is carried out by EL.MO. certified personnel.

12.3 Returning the device for repair - important information

Products to be returned for repair must be strictly sent back in their original packaging (also with the Micro Pallet, if it was used for delivery), or in other packaging that is suitable for the weight, in order to provide protection against possible damage during transportation.

Products whose return has not been previously approved will not be accepted.

The Delivery Note of return must compulsorily bear the references to the sales invoice and delivery note.

13. ADDITIONAL COMPONENTS REQUIRED

Computer with Windows® 95, 98, NT, 2000, XP, Vista, 7, 8, 8.1 or 10 operating system or MAC or LINUX system.

Computer with Windows® XP, Vista, 7, 8, 8.1 or 10 operating system for firmware upgrades and for finding the IP address of the device thanks to Remote Manager.

Web browser (Internet Explorer, Microsoft Edge, Google Chrome, Mozilla Firefox, ...).

LAN connection cable (crossover patch cable).

14. SERVICING

For the proper maintenance of the security fog system, have the system be serviced by qualified personnel in possession of an EL.MO. certificate every 5 years. Otherwise, the 5-years extension of the warranty will be voided.

At least yearly, verify the essential functions of the system (especially the pump) and verify the consumption of goods such as batteries and tank liquid.

During these operations, we suggest also upgrading the firmware (where an upgrade is not specifically requested by the producer), to benefit from potential innovations.

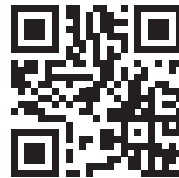
Before upgrading, read the log files and verify that all error messages have been completely acknowledged (we guarantee no proper functioning of the device when the outputs are not connected to an intrusion detection control unit).

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NEBULA12: goo.gl/gzm1yG



NEBULA24: goo.gl/rjkbZS