SISTEMA MAX MARINE

MAX MARINE 20
MAX MARINE 30

MAX MARINE 45
MAX MARINE 70

	CORPO 1	CORPO 2
MATRICOLA		
DATA PRODUZIONE		
PROSSIMA MANUTENZIONE		

SISTEMA MAX MARINE

	TYPE	PROTECTED VOLUME		STANDARD EQUIPMENT
		GROSS (cm)	NET (cm)	
	MAX MARINE 10	Up to 13	Up to 10	- N° 1 aerosol generator (Module 1) - Clamping bracket - Tearing activator - Control box with cable and sheat - Instructions' handbook
	MAX MARINE 20	From 14 to 25	From 11 to 20	- N° 1 aerosol generator with electric activation (Module 2) - Clamping bracket - Control board - Instruction handbook - Alarm siren with flash-light
	MAX MARINE 30	From 26 to 37	From 21 to 30	- N° 1 aerosol generator with electric activation (Module 3) - Clamping bracket - Control board - Alarm siren with flash-light - Remote manual discharge switch - Instruction handbook
	MAX MARINE 45	From 38 to 50	From 31 to 40	- N° 2 aerosol generators with electric activation (Module 2) - Clamping brackets - Control station - Alarm siren with flash-light - Remote manual discharge switch - Instruction handbook
	MAX MARINE 70	From 51 to 70	From 41 to 65	- N° 2 aerosol generators with electric activation (Module 3) - Clamping brackets - Control board - Alarm siren with flash-light - Remote manual discharge switch - Instruction handbook

MINIMAX
ESTINTORI ED IMPIANTI ANTINCENDIO

Via A. Ristori, 31 - 16151 Genova
Tel. +39 010 6450004 Fax +39 010 6450450
www.minimax.it E-mail: minimax@minimax.it
C.F. e P.IVA:00262160104

HANDBOOK FOR INSTALLATION, USE AND MAINTENANCE OF AEROSOL FIREFIGHTING SYSTEMS "MAX MARINE 20-30-45-70"

INDEX

1. PRINCIPLE OF OPERATION AND APPLICATIONS

The "MAX MARINE" fire extinguishing system uses modular aerosol extinguishing units (generators), specially designed and manufactured for the fire protection of engine rooms.

The extinguishing modules of the "MAX MARINE" system contain a solid extinguishing agent based on potassium salts which, after activation, rapidly transforms into an aerosol (system of solid or liquid particles suspended in a gaseous environment).

The very fine particles of extinguishing agent contained in the combustion gas are rapidly dispersed in the environment to be protected and are able to penetrate into every point of the protected area, distributing themselves evenly.

The aerosol particles also have the ability to remain in suspension for long periods, thus obtaining an effective inerting action avoiding the risk of dangerous resumption of fire outbreaks.

Given the particular chemical composition of the aerosol generated, the "MAX MARINE" is able to extinguish fires by saturation of the environment without however decreasing the oxygen content, unlike what happens for carbon dioxide systems; it is also totally eco-friendly, not interfering in any way in the processes of ozone destruction.

These characteristics make the "MAX MARINE" an extremely versatile system both in installation and in applications, capable of replacing, with great effectiveness, all the extinguishing systems used till now (dry powder, inert gas, CO2 etc.).

In fact, these systems require more space in environments that are already small, entail higher costs for the installation and assembly of pressurized tanks, distribution pipes and nozzles; they also require the necessary periodic tests.

2. DESCRIPTION

The "MAX MARINE" system consists of one or more cylindrical containers (generators), inside which there is the extinguishing charge (in the upper part) and the discharge cooler of the extinguishing agent in discharge (in the lower part). In the standard configuration, the generators are equipped with a trigger which can be mechanical or electrical.

This trigger is positioned in the upper part of the container, inside the extinguishing agent. In the standard configuration, the MAX MARINE 10 is equipped with a steel wire remote control, while the MAX MARINE 20, 30, 45 and 70 are equipped with a screw connector and are operated remotely via a command located on the Control and Activation Board.

The Control and Activation Board manages all the system functions:

- Optical / acoustic PRE-ALARM signals
- Delayed discharge intervention
- Activation of external security systems
- Monitoring of the integrity of the lines
- Discharge activation

The ignition device provides the energy necessary to activate the combustion of the extinguishing solid material.

After activation, the solid material is transformed into a rapidly expanding aerosol, essentially consisting of potassium carbonate which, after passing through a cooling area, is discharged into the protected area through the special openings located in the lower part of the generator.

The internal cooling zone is made up of a compound of elements that absorb large amounts of heat both mechanically and chemically, allowing installation, respecting safety distances, in manned places.

The aerosol generated consists mainly of Potassium Chloride (KCl), Potassium Nitrate (KNO_3), Potassium Carbonate (K_2CO_3); it is composed of micro-particles suspended in inert gas with a high ratio between the external surface and the mass of the extinguishing agent (thus reducing the amount of active material necessary for the extinguishing action).

After the discharge, the particles, having dimensions of the order of microns, remain in suspension for a long period during which they move by natural convection in the currents generated by the combustion products; this feature increases the efficiency of the extinguishing agent.

Transported in suspension, in the room where the discharge took place, these particles saturate the protected volume by extinguishing the fire through a chemical / physical action that does not decrease the oxygen concentration in the protected area.

3. TECHNICAL FEATURES

TAB. **A**

STANDARD VERSION			
MODEL	COMPOSITION	TOTAL WEIGHT	TRIGGER
"MAX MARINE 10"	N. 1 200 g **MODULE "1"**	1,800 kg	MECHANIC
"MAX MARINE 20"	N. 1 500 g **MODULE "2"**	3,350 kg	ELECTRIC
"MAX MARINE 30"	N. 1 850 g **MODULE "3"**	5,200 kg	ELECTRIC
"MAX MARINE 45"	N. 2 500 g **MODULE "2"**	6,900 kg.	ELECTRIC
"MAX MARINE 70"	N. 2 850 g **MODULE "3"**	10,400 kg	ELECTRIC

TAB. **B**

TECHNICAL FEATURES	**MODULE "1"**	**MODULE "2"**	**MODULE "3"**
GENERATOR OUTSIDE DIAMETER	86 mm	100 mm	113 mm
GENERATOR LENGTH	137 mm	240 mm	260 mm
OPERATING TIME	IMMEDIATE	IMMEDIATE	IMMEDIATE
BRACKET + ADJUSTABLE SUPPORT	see MAN 8171/2	STD 3673/2	STD3654/3

CONDITIONS OF USE:

Usage temperature:	from -50 to +95 °C
Relative humidity:	up to 98%
ODP (Ozone Depletion Potential):	0
GWP (Global Warming Potential):	0
ALT (Atmospheric Lifetime):	negligible
Fire Class:	**A**,**B**,**C**

CHARACTERISTICS OF THE DISCHARGED AEROSOL:

Electrical conductivity:	comparable to the dry air
Corrosivity:	none
Thermal shock:	none (at the safety distance indicated in this Handbook)
Electrostatic discharges:	none
Condensation phenomena:	none
Residues after extinction:	negligible

Each module (generator) must be installed in such a way as to allow effective mixing of the aerosol in the protected area and directed towards the area considered most at risk; it must not be positioned at eye level or near emergency exits or in areas that may cause dangerous situations.

Due to the high temperature of the discharging aerosol (about 350 ° C at the outlet), the modules must not be directed towards delicate instruments or equipment that may be damaged, and must respect the minimum safety distance established in 1 m from the generator delivery area.

The temperature values at this minimum safety distance do not exceed 75 ° C

4. MAIN COMPONENTS

The “MAX MARINE” fire extinguishing system is supplied, in the STANDARD version, equipped with the components necessary for its correct functioning.

The Max Marine 10 system is equipped with:

- Aerosol generator MODULE “1” with mechanical actuator
- Control cable with sheath
- Remote control box
- Generator fixing brackets

The Max Marine 20, 30, 45 and 70 systems are equipped with:

- Aerosol generator module with connector and cable (lenght 1,5 m) for connection to the junction box (the modules amount is indicated above in the Tab. **A**)
- Fixing bracket with adjustable locking collar
- Control and activation Board
- Alarm siren with flashing light
- Remote **Activation** button (only for models "MAX MARINE 30", "MAX MARINE 45" and "MAX MARINE 70")

The available contacts on the Control and Activation Board (PX / 2) allow the signalings for the activation of all those safety measures necessary when the generator becomes operative (Ex: general alarm, shutters closing, fans and exhausters lock, electric power supply block, fuel flow interruption, engine and equipment shutdown, etc.), depending on the systems on board, or any supplementary fire detection systems that MINIMAX srl can supply separately.

4.1 AEROSOL GENERATOR MODULE

The aerosol generator module consists of a cylindrical container in carbon steel (shown in the drawings cited in table B) which, as reported in Paragraph 2, contains inside:

- The extinguishing agent charge consisting of solid material (in the upper part)
- The cooler of the extinguishing agent being discharged (in the lower part)
- The ignition system

4.2 GENERATOR FIXING BRACKET WITH ADJUSTABLE LOCKING COLLAR

For correct and functional installation, the “MAX MARINE” aerosol generator module is supplied with a fixing bracket with adjustable locking collar to orient its position. The fixing bracket allows anchoring on any wall or beam of adequate consistency, ensuring a suitable constraint of the generator module and thus avoiding damage in the presence of shocks and vibrations. The adjustable locking collar allows optimal adjustment of the position of the generator module, being able to orient it between 0 ° and 90 ° for a more effective distribution of the aerosol according to the service conditions, the equipment to be protected, the shape of the compartment and the anchoring condition.

4.3 CONTROL AND ACTIVATION BOARD

The "MAX MARINE" Control and Activation Board consists of an extremely compact and sturdy self-extinguishing plastic container, equipped with a transparent protective door for viewing the information provided, and housing inside the management cards (see drawing MINIMAX SPD7426 / 1) and the direct ACTIVATION Command.

The connection terminal block of the Control and Activation Board is located in the rear part of the same as indicated on the drawing MINIMAX ELE 4008.

The Control and Activation board is always supplied with a prearrangement for extinguishing set to "MANUAL ACTIVATION" as indicated in the RINA Type Approval.

4.3.1 POWER SUPPLY

The Control and Activation Board must be powered at a voltage of 24 Vcc (voltage in any case between the minimum value of 20 Vcc and maximum of 28 Vcc) derived from a preferential energy system.

The presence of the power supply will be signaled by a **GREEN LED**.

The system must be powered through a panel with key switch (key removable only with system inserted), voltage presence lamp and 6.3 A fuse; this Panel must be accompanied by the appropriate writing “FIRE-FIGHTING POWER LINE SECTIONING PANEL. THE LAMP MUST BE NORMALLY ON ”.

This panel is not part of the standard MINIMAX supply.

4.3.2 SIGNALS AND CONTROLS

The following signals are present on the front of the Control and Activation Board:

a) green LED for **POWER** supply
b) red LED for **ALARM** condition
c) red LED for **ACTIVATED** discharge
d) yellow LED for **FAULT LINES** condition (button line and / or fire alarm line).
e) yellow LED for **FAULT ACTIVATORS A** condition (electric activator line **A**).
f) yellow LED for **FAULT ACTIVATORS B** condition (electric activator line **B**).

and the following controls:

g) **PRESS** Activation Button, if pressed for 5 seconds it will activate the discharge.
h) **SILENCE** Button, if pressed after an Alarm it will silences the buzzer.
i) **RESET** Button, if pressed after the Silence Button, it will restore the system to its initial conditions.

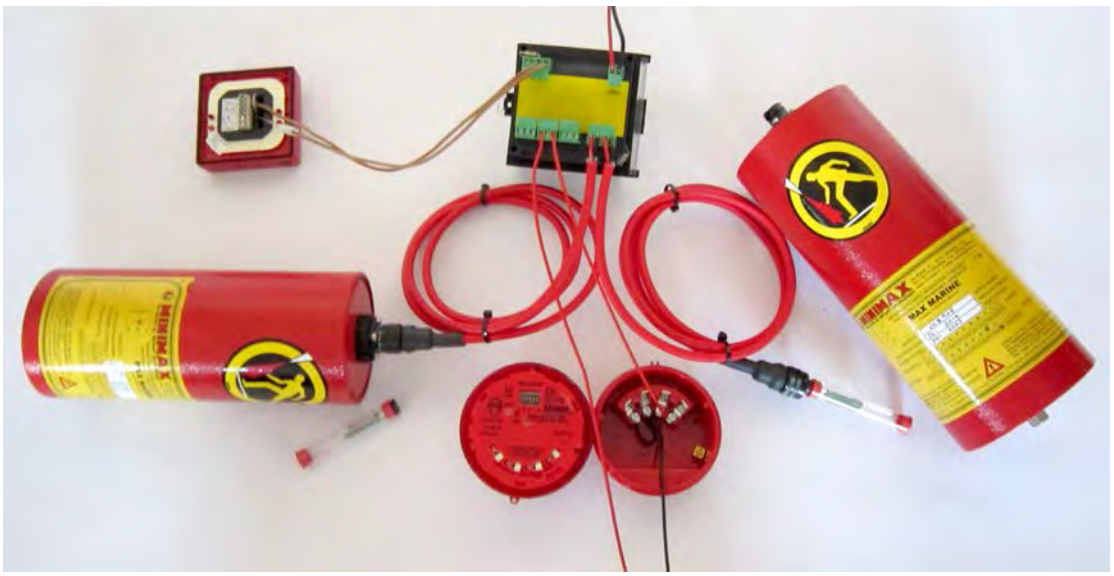
If the RESET button is pressed when the Control and Activation Board is in normal supervision, it performs the LAMP TEST function and tests the operation of the board buzzer.

The buzzer-type acoustic alarm of the Control and Activation Board signals, by means of a continuous or intermittent sound, the status of DISCHARGE ACTIVATION, ALARM and FAULT of the lines.

4.3.3 INPUTS

The management card inside the Control and Activation Board is equipped with the following inputs:

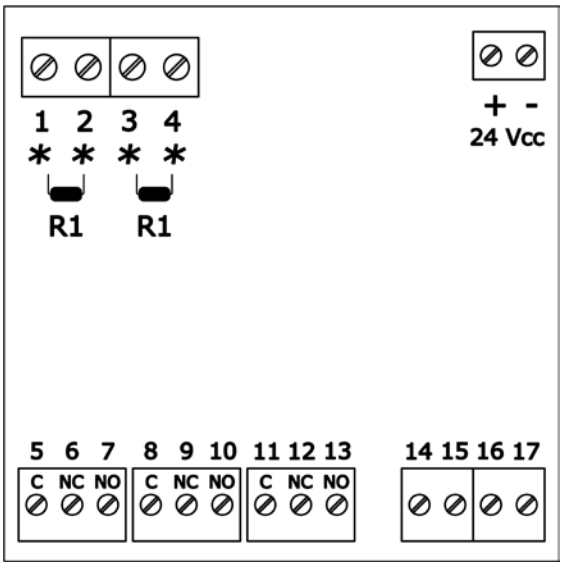
a) A current monitored line to which a manual DISCHARGE ACTIVATION button is connected. The discriminated states are the following: **OPEN** - **NORMAL** - **ALARM** - **SHORT CIRCUIT**.
b) A current monitored line to which the **ALARM** output from any external fire detection control unit can be connected. The discriminated states are the following: **OPEN** - **NORMAL** - **ALARM** - **SHORT CIRCUIT**. This line will be able to manage, by programming with DIP SWITCH 1, the alarm signaling logic only (OFF position) or start the automatic fire extinguishing command (ON position). The Control and Activation Board (PX / 2) is always supplied with provision for the “Manual Activation”.
c) The power supply lines to the electrical activators of the Modules (See Tab. A - Paragr. 3) are crossed by a control current which allows the continuity of the lines to be constantly monitored, thus highlighting any anomalies. The discriminated states are the following: **OPEN** - **NORMAL**.



4.3.4 OUTPUTS

The management card is equipped with the following outputs:

A) Two outputs able to command the electrical activators of the Modules in sequence (See Tab.A - Paragr. 3), in ALARM condition (same line as the INPUTS Pos. C Par 4.3.3).
B) Two outputs for **ALARM** with potential-free single pole, double throw contacts (relay contact capacity 1A - 30 Vdc Max 30 W).
C) One output for **FAILURE** with potential-free single pole, double throw contacts (relay contact capacity 1A - 30 Vdc Max. 30 W).



4.3.5 TERMINAL BLOCKS

+	POWER SUPPLY 24 Vdc	
-	ALIMENTAZIONE 24 Vdc	
Pos. 1	**ALARM** INPUT from the fire detection control panel	
Pos. 2	**ALARM** INPUT from the fire detection control panel	
Pos. 3	INPUT from remote **DISCHARGE ACTIVATION** button	
Pos. 4	INPUT from remote **DISCHARGE ACTIVATION** button	
Pos. 5	OUTPUT "**C**"	**FAILURE** relay output 1A – 30 Vdc. Max. 30 W
Pos. 6	OUTPUT "**NC**"	**FAILURE** relay output 1A – 30 Vdc. Max. 30 W
Pos. 7	OUTPUT "**NA**"	**FAILURE** relay output 1A – 30 Vdc. Max. 30 W
Pos. 8	OUTPUT "**C**"	**ALARM** first relay output 1A – 30 Vdc Max. 30 W
Pos. 9	OUTPUT "**NC**"	**ALARM** first relay output 1A – 30 Vdc Max. 30 W
Pos. 10	OUTPUT "**NA**"	**ALARM** first relay output 1A – 30 Vdc Max. 30 W
Pos. 11	OUTPUT "**C**"	**ALARM** second relay output 1A – 30 Vdc Max. 30 W
Pos. 12	OUTPUT "**NC**"	**ALARM** second relay output 1A – 30 Vdc Max. 30 W
Pos. 13	OUTPUT "**NA**"	**ALARM** second relay output 1A – 30 Vdc Max. 30 W
Pos. 14	GENERATOR **"A"** ELECTRIC ACTIVATOR	
Pos. 15	GENERATOR **"A"** ELECTRIC ACTIVATOR	
Pos. 16	GENERATOR **"B"** ELECTRIC ACTIVATOR	
Pos. 17	GENERATOR **"B"** ELECTRIC ACTIVATOR	

4.3.6 DIP SWITCH FUNCTIONS

1	**OFF:**	EXCLUSION OF THE AUTOMATIC DISCHARGE BY COMMAND FROM THE FIRE DETECTION SYSTEM
1	**ON:**	CONSENT TO THE AUTOMATIC DISCHARGE ACTIVATION BY COMMAND FROM THE FIRE DETECTION SYSTEM
2	**OFF:**	GENERATOR **"B"** ELECTRIC ACTIVATOR DISCONNECTED
2	**ON:**	GENERATOR **"B"** ELECTRIC ACTIVATOR CONNECTED
3	**OFF:**	NOT USED
3	**ON:**	NOT USED
4	**OFF:**	NOT USED
4	**ON:**	NOT USED

4.4 ALARM SIREN WITH FLASHING LIGHT

This device (See drawing MINIMAX STD 4371/2) allows to signal, both acoustically and visually, the **DISCHARGE** of the extinguishing system to any personnel present in the room, allowing them to leave with a **PRE-ALARM time of 20 seconds**.

The siren must be powered by a 24 Vdc voltage derived from a dedicated independent source.

The positive pole of the siren (IN +) must be connected to the NO (normally open) terminal (10) of the first alarm relay of the Control and Activation Panel;

The terminal **-** of the siren will be connected to the terminal - of the independent power supply;

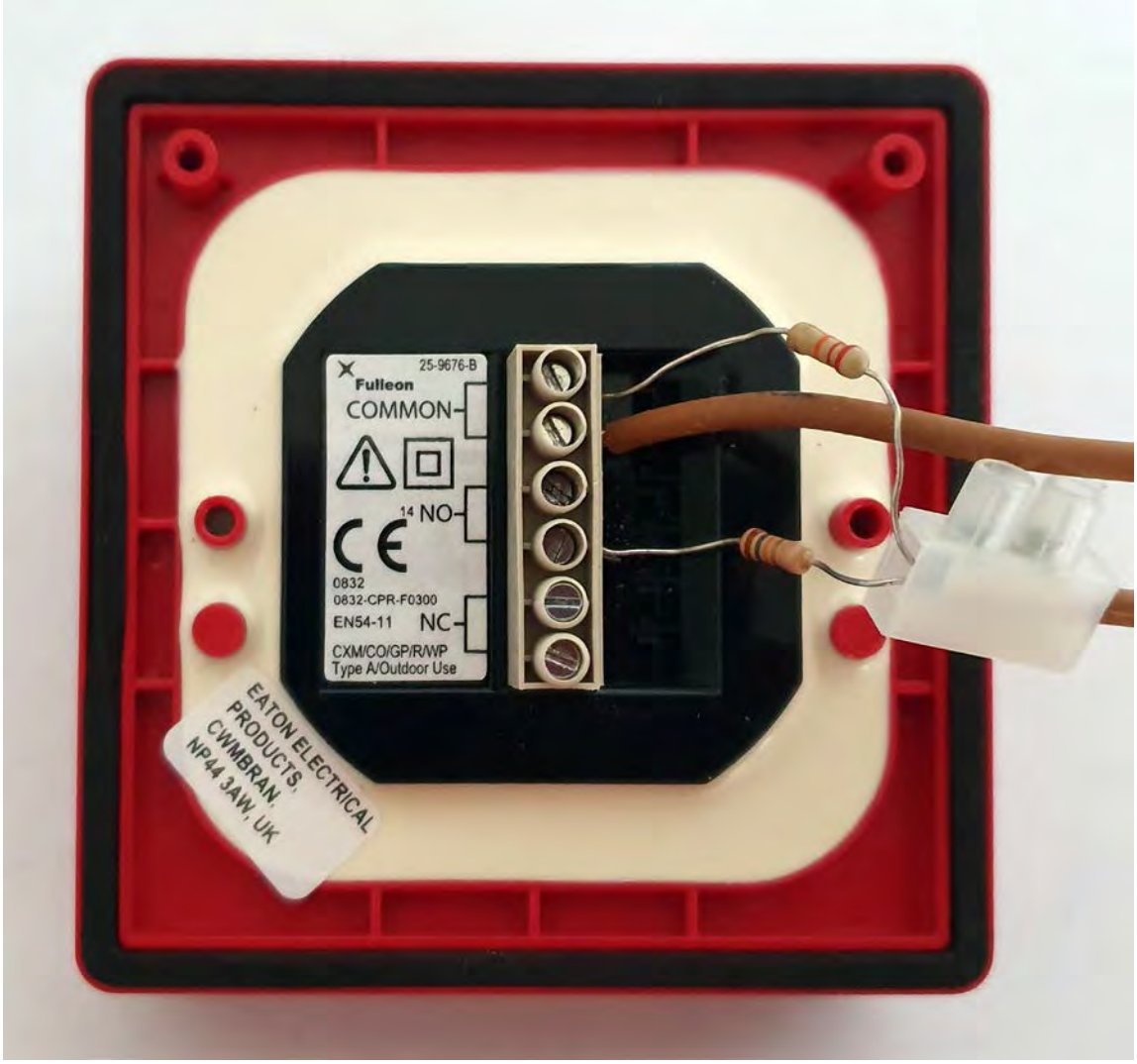
The terminal C (9 - common) of the first alarm relay of the Control and Activation Panel will be connected to the **+** terminal of the independent power supply.

4.5 REMOTE ACTIVATION BUTTON (CALL POINT)

This Button (See drawing MINIMAX **STD 3681/1**) allows to manually activate the **DISCHARGE** of the extinguishing system without acting on the Control and Activation Panel installed on the dashboard.

The Remote Activation Button must be placed immediately outside the protected area and installed in the event that the Control and Activation Panel is located **more than 5 m** away from the exit of the protected area.

IMPORTANT:
the remote activation button is equipped with a key for testing and replacing the glass in case of intervention. THIS KEY MUST NEVER BE USED FOR TESTING WITH GENERATORS CONNECTED TO THE CONTROL PANEL BECAUSE IT WILL CAUSES THEIR DISCHARGE



4.6 SIGNALING PLATES

To be installed outside the protected area

To be installed inside the protected area

5. ACCESSORIES

The "MAX MARINE" aerosol generator Modules can be combined with accessories **not supplied with the system in the STANDARD version:**

- automatic fire detection systems whose signals, coming from detection control units, control pulpits and / or alarm signaling desks, synoptic panels, etc., can be connected to the Control and Activation Panel.
- Any sirens and / or optical / acoustic PRE-ALARM / ALARM signaling plates.

6. START-UP OF THE AEROSOL GENERATOR

The "MAX MARINE" aerosol generator Module is activated, generating the aerosol discharge, following the pressure for 5 seconds of the **"PRESS"** Manual Command Button **(DISCHARGE ACTIVATION)** on the Control and Activation Panel.

If additional **ALARM** and **DISCHARGE ACTIVATION** command signals are provided from remote positions (Remote Activation Button), the Control and Activation Panel is able to manage the **DISCHARGE ACTIVATION** provided by these signals which must be connected to the appropriate external inputs provided (see Pos. 1-2 and 3-4 of the Terminal Block)

Following the **DISCHARGE ACTIVATION** command (by holding down **"PRESS"** for at least 5 seconds or breaking the glass of the Remote Activation Button) an acoustic warning device (buzzer inside the Control and Activation Panel) will produce an intermittent acoustic signal lasting 5 seconds and, at the same time, the **ALARM** LED will flash.

During this short period, if the condition that produced the **ALARM** is removed (by activating the system from the remote button this is no longer possible), the system will return to the normal condition (if the button is not pressed for more than 5 seconds, the system does not come into operation).

At the end of the 5 seconds, the **ALARM** condition continuing to persist, either by intervention of the manual control button or by external line intervention with DIP SWITCH in the **AUTOMATIC** position, the discharge procedure will be activated in the following ways:

The red **ALARM** LED will become fixed.

- The red **ALARM** LED will become fixed.
- The red LED for **ACTIVATED** discharge will start flashing.
- The buzzer will produce an intermittent acoustic signal with a faster frequency than the previous one.
- The two **ALARM** relays will switch.

After 20 seconds of discharge delay, the aerosol generators will be activated and the following system signal will appear:

- The red **DISCHARGE ACTIVATION** LED will be on with a fixed light.
- The buzzer will produce a continuous acoustic signal.
- The **DISCHARGE ACTIVATION** output will be activated.
- The two **ALARM** relays remain active.

During the whole time in which the discharge procedure will be active, if the **SILENCE** BUTTON is pressed, the buzzer will be silenced, the **ALARM** LED will light up intermittently but it will no longer be possible to interrupt the discharge.

If the DIP SWITCH 1 of the external line is in the OFF position (**MANUAL**), the automatic extinguishing command is excluded. The following system signals will be present:

- The **ALARM** LED will remain flashing and the buzzer will flash.
- The discharge can only be carried out by pressing the manual control button (s).

PLEASE NOTE: IT WILL NOT BE POSSIBLE IN ANY WAY TO INHIBIT THE DISCHARGE DURING TIMING.

7. ANOMALIES AND / OR FAULTS

7.1 FAULT IN THE EXTERNAL LINES OF THE DETECTION SYSTEM AND MANUAL BUTTONS

The **FAULT** condition of the Manual Command Buttons line or that of the auxiliary input will occur when the line itself is interrupted or short-circuited.

In **FAULT** condition:

- The yellow line **FAULT** LED will start flashing.
- The buzzer will sound intermittently.
- The **FAULT** relay will switch (terminal 5-6-7).

7.2 ELECTRICAL ACTIVATORS POWER LINE FAILURE

The **FAULT** condition of the power lines of the electric activators will occur when the lines themselves are interrupted

In **FAULT** condition:

- The yellow **FAULT ACTIVATOR** LED of the relative line will start flashing.
- The buzzer will sound intermittently.
- The **FAULT** relay will switch.

b) If the **SILENCE** BUTTON is pressed, the buzzer will be silenced and the **FAULT** LED will light up steadily.

7.3 MAIN POWER SUPPLY 24 VDC MISSING

This condition will be signaled by the failure of the green power led (POWER) to light up.

8. RESTORING NORMAL OPERATION

Following the occurrence of any of the ALARM or FAULT conditions, **after the restoration of the conditions that determined this signal**, the board will return to the normal operating condition by first pressing the **SILENCE** BUTTON and then the **RESET** BUTTON, the **SILENCE** has in fact the function of silencing the buzzer and recognizing the anomalous condition

Any relays that have switched will return to their normal state, and supervision of the lines will resume.

If the event that generated the ALARM or FAULT condition has not been resolved, after pressing the SILENCE and RESET BUTTONS the alarm condition will recur.

9. INSTALLATION

9.1 GENERALITY

Before proceeding with the installation of the "MAX MARINE" aerosol systems, it is necessary:

- Make sure there is no electricity in the system, and restore it only after installation is complete.
- Read carefully this **“installation, use and maintenance manual"**, making sure that the instructions, indications and recommendations provided and contained therein have been understood.

9.2 REQUIRED MATERIALS (NOT INCLUDED IN THE SUPPLY)

2 x 1.0 mm2 for fire alarm repetition from external control panel

- 2 x 1.5 mm^2 flame retardant cable, for connecting the Control and Activation Panel, the Remote Activation Button for manual emergency control and the aerosol generator (s).
- Shielded flame retardant cable S = 1.0 mm^2 for connecting the external fire detection system.
  - 2 x 1,0 mm^2 for fire alarm repetition from external control panel.
  - 4 x 1,0 mm^2 for fire detection system.
- Panel with key switch, voltage presence lamp and 6.3 A fuse, for system power supply line; this Panel must be accompanied by the appropriate writing “FIRE-FIGHTING POWER LINE SECTIONING PANEL. THE LAMP MUST BE NORMALLY ON ”.
- 2 x 1.5 mm^2 cable for connecting the Alarm siren with flashing light.

9.3 ASSEMBLY SEQUENCE OF ELECTRICAL AND ELECTRONIC COMPONENTS

a) Check that all equipment in the room to be protected is stopped so that all connections and component installations can be carried out with the necessary safety.

b) Proceed with the recessed installation of the Control and Activation Panel on the command console or on a wall panel placed in a safe and dry area.

c) Install the bracket (s) of the aerosol generator (s) inside the machine room according to the instructions described.

d) Install the Alarm siren with flashing light inside the engine compartment.

e) Install the Remote Activation Button (if provided) outside the engine compartment in the vicinity (within 5 m) of the access door.

f) Install the 24 Vdc power supply panel.

g) Install the fire detectors (if provided) on the ceiling of the protected room.

h) Proceed to lay the electrical lines for connecting the various components, respecting the sections of the cables indicated and the auxiliary electrical lines for stopping motors, ventilation, etc., using the contacts of the second alarm relay (terminals 11-12-13).

i) Proceed to connect the components, with the exception of the aerosol generator (s), to the terminal blocks.

j) Connect a control lamp to test the system on each power connector (instead of the generator / s). Note: the test bulbs are always supplied with the system.

k) Power the Control and Activation Panel with the 24 Vdc line via the key switch of the Sectioning Panel.

l) Wait a few seconds, make sure that only the POWER LED on the control unit is lit and that the buzzer does not signal any faults or alarms.

m) Check the system logic by pressing the PRESS button on the control unit for 5 seconds, the following will occur in sequence:

- The red ALARM LED lights up for the first 5 seconds.
- Activation of the red ACTIVATED LED after the first 5 seconds and for a further 20 seconds with the intervention of the alarm siren with flashing light, in the protected area.
- Switching on, after the delay time of 20 seconds, of the A yellow LED and of the relative lamp (MAX MARINE 20 and 30 models) and of the A and B yellow LEDs with an interval of 5 seconds between the two and of the relative test lamps (MAX MARINE 45 and 70 models), to simulate the activation of the aerosol generators.

n) Reset the Control and Activation Panel by pressing the silencing button (SILENCE) and the reset button (RESET).

o) Check that the normal state has been restored, with only the green LED (POWER) lit.

The system is now ready to be powered by turning the key on the sectioning panel and checking that the the lamp and the green voltage LED light up.

Disconnect the system using the key switch on the sectioning panel, checking that its signal lamp is off and the green LED on the control unit is off and disconnect the test lamp (s).

IMPORTANT: The plant is now ready for connection to the aerosol generators; before this operation, check with a digital meter that the maximum resistance of the power supply line is approximately 4.5 ohm excluding the generator resistance which is 2.5 ±0.7 ohm. The control current must be a maximum of 2 mA.

Before connecting the "MAX MARINE" aerosol extinguisher, make sure that there is no current in all electrical cables. The connection of the "MAX MARINE" aerosol extinguisher must always be the final operation of the installation.

p) Connect the power supply line (s) of the generator (s) using the connector (s) and connect the same line (s) to the terminal block on the control unit.

q) The system is now ready to be powered by turning the key on the sectioning panel and checking the lighting of the lamp and the green POWER supply LED.

9.4 INSTALLING THE AEROSOL GENERATOR

The "MAX MARINE" aerosol extinguisher must be positioned in such a way as to allow the discharge to spread in the best possible way within the room to be protected and directed towards the area of greatest risk. Areas that are potentially very humid and close to heat sources and, therefore, high temperatures must be absolutely avoided. The positioning of the aerosol generator must take into account a minimum safety distance from the discharge nozzle of about 1 m. At this distance, in fact, the temperature of the discharge product is approx. 75 ° C while, near the nozzle, it is much higher (about 350 ° C).

IMPORTANT:

For the reasons listed above, it is absolutely necessary to avoid placing the aerosol generator near emergency exits, entrance doors or in any other place where there could be a potentially dangerous situation.
The extinguishing substance has a specific weight lower than that of the air, so after discharge it tends to remain suspended in the air of the protected area; this factor must be taken into account in order to study a location of the aerosol generator suitable for obtaining a uniform discharge distribution.
In order to ensure the extinction of the fire, the aerosol must protect a closed room or in any case equipped with shutters capable of automatically closing, in an emergency, all air intakes and ventilation ducts. Otherwise, the discharge products could be dragged away and in the worst case, do not put out the fire.

10. SAFETY RULES

IN CASE OF FIRE, the following General Instructions must always be kept in mind:

- Give the GENERAL FIRE ALARM ON BOARD signal, ensuring that all passengers and crew wear life-saving equipment and that the Security staff prepare the equipment required for the emergency.
- Check that the entire area affected by the event has been evacuated by the assigned personnel.
- When not controlled by the contact of the Control and Activation Panel, switch off the engines and close the fuel inflow valves.
- Deactivate the ventilation and close the shutters, check that there are no doors or hatches open.
- Activate the "MAX MARINE" fire extinguishing system as quickly as possible.

Due to the presence of dense fumes and combustion products, it is necessary to avoid the presence of people in the room where the extinction occurs; this room must also be adequately ventilated, in order to ensure adequate air exchange, once extinguishing has taken place.

If for any reason it is necessary to enter the protected area before the discharge is over, the use of self-contained breathing apparatus or similar safety means available is mandatory, to avoid the risk of inhaling gas and combustion products.

10.1 PRECAUTIONS FOR HIGH TEMPERATURES

As previously indicated, near the dispensing nozzle the aerosol reaches temperatures of about 350 ° C so, when installing the system, consider this factor and respect the minimum safety distance of 1 m.

For the "MAX MARINE" fire extinguishing system, in any case, hot work should be avoided in the immediate vicinity of the aerosol generator.

If carrying out such work is absolutely necessary, the aerosol generator must be removed in advance from the protected area and reinstalled once the work is completed.

10.2 AIR EXCHANGE AFTER DISCHARGE

After the discharge, it is necessary to remove the aerosol particles from the protected area by suction, blowing, sweeping or possibly washing.

In this circumstance, use suitable protective gloves and goggles.

10.3 CONSIDERATIONS ON THE TOXICITY OF THE EXTINGUISHING AGENT

As already specified, the main products contained in the aerosol and described in Paragraph 2, are clearly below the toxicity limits. The quantities of product used for extinguishing (g/m^3) are very low and can only cause transient irritation in the event of their inhalation due to physiological factors.

11. REPLACEMENT OF AEROSOL GENERATORS

After activation, each aerosol generator must be replaced as it can no longer be refilled. For this purpose it will be necessary to request new generators of the same type which will be supplied complete with the connection cable and relative connector.

For replacement, the following operations must be carried out:

- Remove power from the system using the key switch from the sectioning panel.
- Remove the generators, with relative extension cables and connectors, from the fixing brackets.
- Proceed to install the new generators as described in paragraph 9.3

12. MAINTENANCE

The "MAX MARINE" fire-fighting system does not require any particular maintenance since the Control and Activation Panel is equipped with balanced connection lines for:

- Discharge Remote Activation Button.
- Fire alarm line.
- Generator control lines.

It is able to automatically report malfunction conditions of these lines. However, it is advisable to periodically carry out visual inspections of each component of the system to check for any damage or abnormal situations.

During these checks it is necessary to check:

- The integrity of the components (Remote Activation Button, Alarm siren with flashing light, connection lines, Control and Activation Panel).
- Check for any obstructions to the discharge of the aerosol generators that could prevent correct dispensing or divert the jet.
- Check the integrity of the fixing bracket of the aerosol generators.
- Changes made to the protected volume with respect to the initial design condition.
- Control of the closing efficiency of the shutters of the ventilation ducts.
- control of any free openings not present in the initial phase of the project and not equipped with special shutters enslaved by the automatic closing system.

13. LIFE OF THE "MAX MARINE" AEROSOL GENERATORS

The maximum duration of the “MAX MARINE” generators is expected to be 8 years in normal storage conditions; however, after 4 years from the date of production, the MAX MARINE generators must be subjected to a check carried out by an authorized service station.

14. DRAWINGS

DANGER!

THE **MINIMUM SAFETY DISTANCE** PROVIDED AND ESTABLISHED OF **1 m**, BETWEEN THE DELIVERY PORT OF THE AEROSOL GENERATOR AND THE PRESENT ENCUMBRANCES, **MUST ALWAYS BE RESPECTED** IN ORDER TO AVOID DAMAGE TO PLANTS, STRUCTURES, EQUIPMENT AND INSTRUMENTS.

CAUTION

THE AEROSOL GENERATOR MUST BE INSTALLED, IN ADDITION TO THE **MINIMUM SAFETY DISTANCE**, IN SUCH A WAY AS TO ALWAYS GUARANTEE THE SAFETY OF PEOPLE AND IN ANY CASE NOT IN CORRESPONDENCE WITH TRANSIT OR EMERGENCY EVACUATION AREAS.

CAUTION

THE AEROSOL GENERATOR MUST BE INSTALLED, ALWAYS RESPECTING THE ORIENTATION PROVIDED BY THIS MANUAL OR BY THE PROJECT, IN ORDER TO ENSURE AND GUARANTEE THE BEST INTERVENTION EFFECTIVENESS.

DANGER OF BURNS!

PAY MAXIMUM ATTENTION NOT TO TOUCH THE AEROSOL GENERATOR IMMEDIATELY AFTER DISCHARGE, DUE TO THE HIGH TEMPERATURE DEVELOPED, WAIT FOR THE AEROSOL GENERATOR COOLING BEFORE CARRYING OUT ANY INTERVENTION.

CAUTION

AFTER DISCHARGE AND THE FIRE EXTINCT, BEFORE ACCESSING THE ROOM WHERE THE AEROSOL GENERATOR HAS STARTED, THE ROOM MUST BE VENTILATED ADEQUATELY. IN THE EVENT WHEN, FOR EMERGENCY REASONS, IT IS NECESSARY TO ACCESS IMMEDIATELY THE ROOM CONCERNED BY THE EVENT, PROVIDE TO WEAR THE PERSONAL SAFETY PROTECTION SYSTEMS AND THE BREATHING APPARATUS.

PROHIBITION

IT IS PROHIBITED TO USE OPEN FLAMES OR HEATING SYSTEMS NEAR THE AEROSOL GENERATOR. IN THE CASE OF WORKS THAT PROVIDE SUCH MEANS, THE AEROSOL GENERATOR MUST BE REMOVED FOLLOWING WHAT PRESCRIBED IN THIS MANUAL.

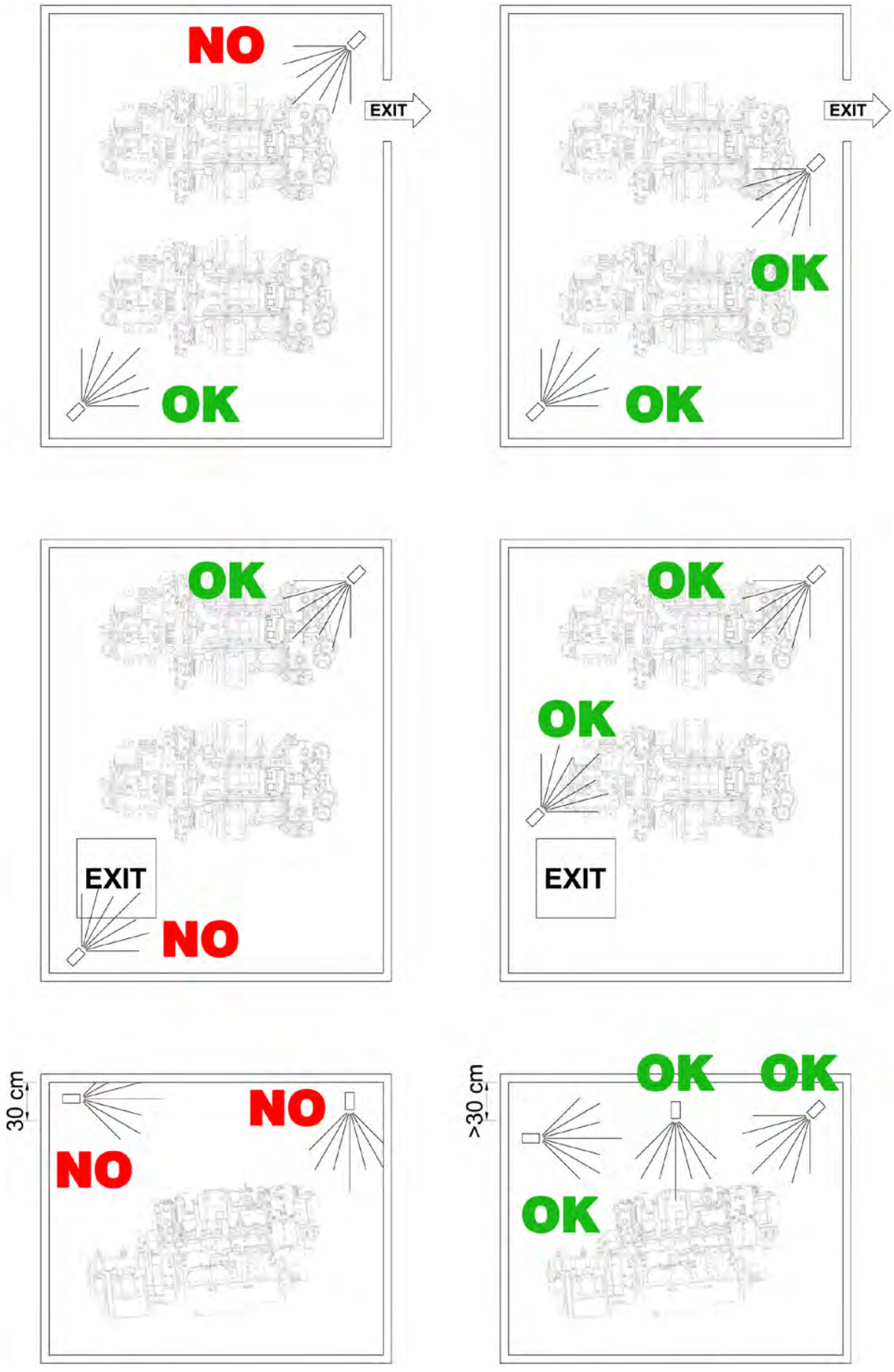
DANGER!

BEFORE ANY MAINTENANCE INTERVENTION TO BE MADE TO THE AEROSOL GENERATOR OR TO THE CONTROL AND ACTIVATION PANEL, MAKE SURE THAT ALL THE ELECTRICAL CONNECTION CABLES ARE CORRECTLY AND ADEQUALLY INSULATED.

CAUTION

MAKE SURE THAT THE CONTROL AND ACTIVATION PANEL IS LOCATED AND INSTALLED IN THE BEST SAFE POSITION OUTSIDE THE ROOM PROTECTED BY THE AEROSOL GENERATOR.

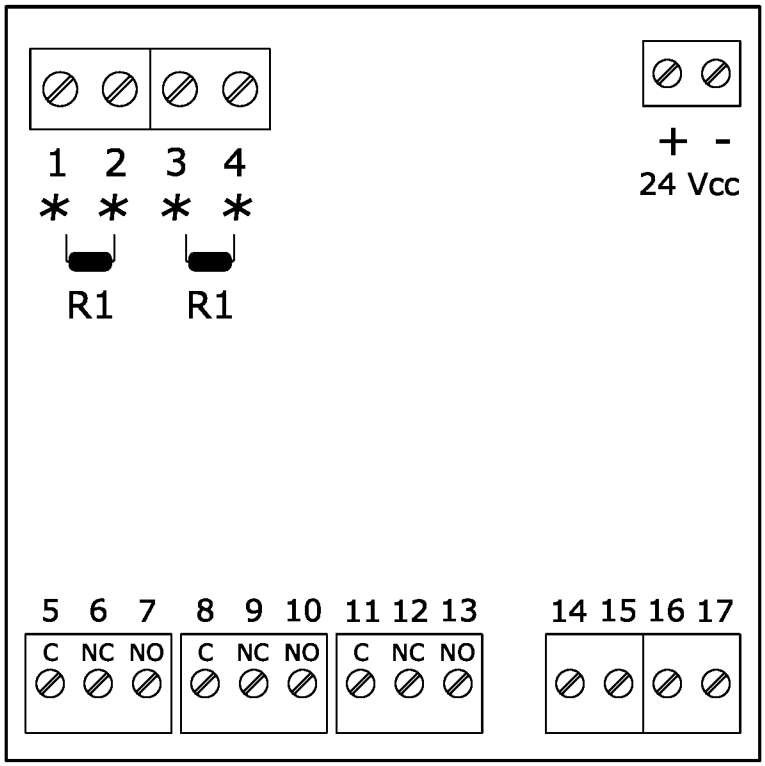
CORRECT POSITIONING IN THE PROTECTED ROOM WITH RESPECT TO ACCESS



IMPIANTO "MAX MARINE" - MORSETTIERA DEL CENTRALINO DI COMANDO E CONTROLLO mod. PX/2

"MAX MARINE" SYSTEM - TERMINAL BOARD FOR CONTROL BOARD mod. PX/2

MORSETTIERA
TERMINAL BOARD



R1=22 K ohm - 1/2 W

* I morsetti 1-2 e 3-4 dovranno essere chiusi dalla loro resistenza (R1) di fine linea quando non utilizzati.
The terminal 1-2 and 3-4 must be closed by theirs resistance (R1) when not used

0	01/04/05	EMISSIONE	E.C.	E.P.
Rev	Data	Modifica	Eseguito	Verificato

IMPIANTO "MAX MARINE" - MORSETTIERA DEL CENTRALINO DI COMANDO E CONTROLLO mod. PX/2

"MAX MARINE" SYSTEM - TERMINAL BOARD FOR CONTROL BOARD mod. PX/2

* - MORSETTO 1 *TERMINAL 1* * - MORSETTO 2 *TERMINAL 2*	INGRESSO ALLARME INCENDIO DA CENTRALE ESTERNA O RIVELATORI CON CONTATTO N.A. *FIRE ALARM INPUT FROM EXTERNAL FIRE DETECTION BOARD OR FIRE DETECTORS WITH CONTACT N.O.*
* - MORSETTO 3 *TERMINAL 3* * - MORSETTO 4 *TERMINAL 4*	INGRESSO PULSANTE REMOTO DI ATTIVAZIONE SCARICA *INPUT REMOTE MANUAL DISCHARGE SWITCH*
- MORSETTO 5 (C) *TERMINAL 5 (C)* - MORSETTO 6 (NC) *TERMINAL 6 (NC)* - MORSETTO 7 (NA) *TERMINAL 7 (NO)*	USCITA RELE' AVARIA 1A-30 V.c.c- max 30 W *OUTPUT FAILURE RELE' CONTACTS 1A-30 V.c.c- max 30 W*
- MORSETTO 8 (C) *TERMINAL 8 (C)* - MORSETTO 9 (NC) *TERMINAL 9 (NC)* - MORSETTO 10 (NA) *TERMINAL 10 (NO)*	USCITA 1° RELE' ALLARME 1A-30 V.c.c- max 30 W *OUTPUT FAILURE 1° RELE' CONTACTS 1A-30 V.c.c- max 30 W*
- MORSETTO 11 (C) *TERMINAL 11 (C)* - MORSETTO 12 (NC) *TERMINAL 12 (NC)* - MORSETTO 13 (NA) *TERMINAL 13 (NO)*	USCITA 2° RELE' ALLARME 1A-30 V.c.c- max 30 W *OUTPUT FAILURE 2° RELE' CONTACTS 1A-30 V.c.c- max 30 W*
- MORSETTO 14 *TERMINAL 14* - MORSETTO 15 *TERMINAL 15*	ATTIVATORE ELETTRICO GENERATORE A *ELECTRIC ACTIVATOR FOR GENERATOR A*
** - MORSETTO 16 *TERMINAL 16* ** - MORSETTO 17 *TERMINAL 17*	ATTIVATORE ELETTRICO GENERATORE B *ELECTRIC ACTIVATOR FOR GENERATOR B*
MORSETTO + *TERMINAL +* MORSETTO - *TERMINAL -*	ALIMENTAZIONE *POWER SUPPLY*

* I morsetti 1-2 e 3-4 dovranno essere chiusi dalla loro resistenza (R1) di fine linea quando non utilizzati.
The terminal 1-2 and 3-4 must be closed by theirs resistance (R1) when not used

** - NON USATI PER MAX MARINE 20 E MAX MARINE 30
-NOT USED FOR MAX MARINE 20 and MAX MARINE 30

0	01/04/05	EMISSIONE	E.C.	E.P.
Rev	Data	Modifica	Eseguito	Verificato

MINIMAX S. r. l. GENOVA
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ELE N ° 4008

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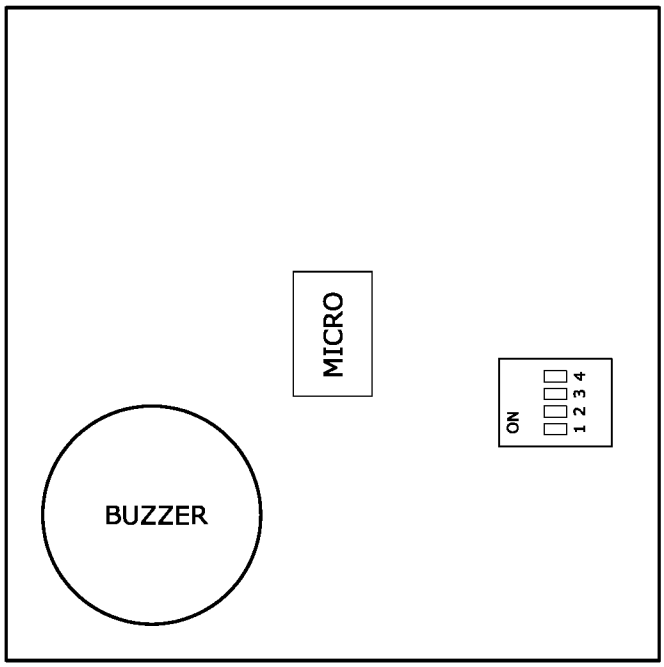
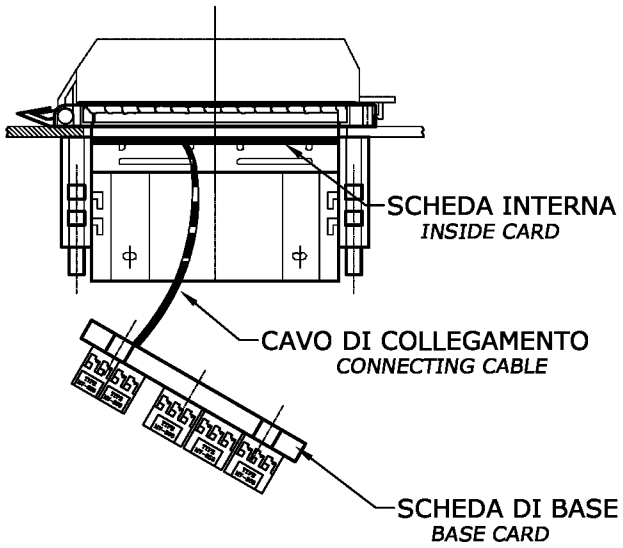
IMPIANTO "MAX MARINE" - MORSETTIERA DEL CENTRALINO DI COMANDO E CONTROLLO mod. PX/2

"MAX MARINE" SYSTEM - TERMINAL BOARD FOR CONTROL BOARD mod. PX/2

SCHEDA INTERNA
INSIDE CARD





PER ACCEDERE ALLA SCHEDA INTERNA STACCARE LA SCHEDA DI BASE CON LA MORSETTIERA

TO OPERATE ON INSIDE CARD TAKE OUT THE BASE CARD

- DIP. SWITCH 1	OFF: ESCLUSIONE *EXCLUDED* ON: ATTIVAZIONE *ACTIVATED*	SCARICA AUTOMATICA ESTINZIONE ATTIVATA DA IMPIANTO RIVELAZIONE INCENDI *AUTOMATIC EXTINCTION ACTIVATED BY FIRE DETECTION SYSTEM*
- DIP. SWITCH 2	OFF: DISINSERITO *(*) OFF* ON: INSERITO *(**) ON*	GENERATORE B *B GENERATOR*
- DIP. SWITCH 3	NON UTILIZZATO *NOT CONNECTED*	
- DIP. SWITCH 4	NON UTILIZZATO *NOT CONNECTED*	

- Questa operazione e' eseguita in fase di programmazione del modello e sigillata.
- *This operation is accomplished during set up and sealed*

* - USATO PER MAX MARINE 20 E MAX MARINE 30
- *USED FOR MAX MARINE 20 and MAX MARINE 30*

** - USATO PER MAX MARINE 45 E MAX MARINE 70
- *USED FOR MAX MARINE 45 and MAX MARINE 70*

Rev	Data	Modifica	Eseguito	Verificato
0	01/04/05	EMISSIONE	E.C.	E.P.

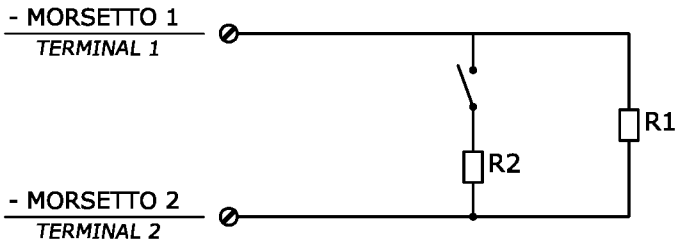
MINIMAX S. r. l. GENOVA
ESTINTORI ED IMPIANTI ANTINCENDIO

ELE N° 4010

Fg. 1 di 1

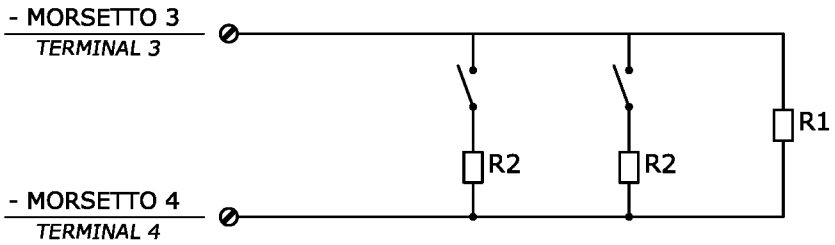
SCHEMI DI INSTALLAZIONE LINEE ESTERNE CONTROLLATE SU CENTRALINO DI COMANDO E CONTROLLO " mod.PX-2 " IMPIANTO " MAX MARINE "

TYPICAL INSTALLATION FOR EXTERNAL CHECKED LINES ON CONTROL BOARD mod. PX-2 " MAX MARINE " SYSTEM



ALLARME INCENDIO DA CENTRALE ESTERNA O RIVELATORI CON CONTATTO N.A.

FIRE ALARM INPUT FROM EXTERNAL FIRE DETECTION BOARD OR FIRE DETECTORS WITH CONTACT N.O.



max. N° 2 PULSANTI

COLLEGAMENTO PULSANTE PER COMANDO MANUALE SCARICA mod. "MX 67"

CONNECTION OF REMOTE MANUAL DISCHARGE SWITCH model "MX 67"

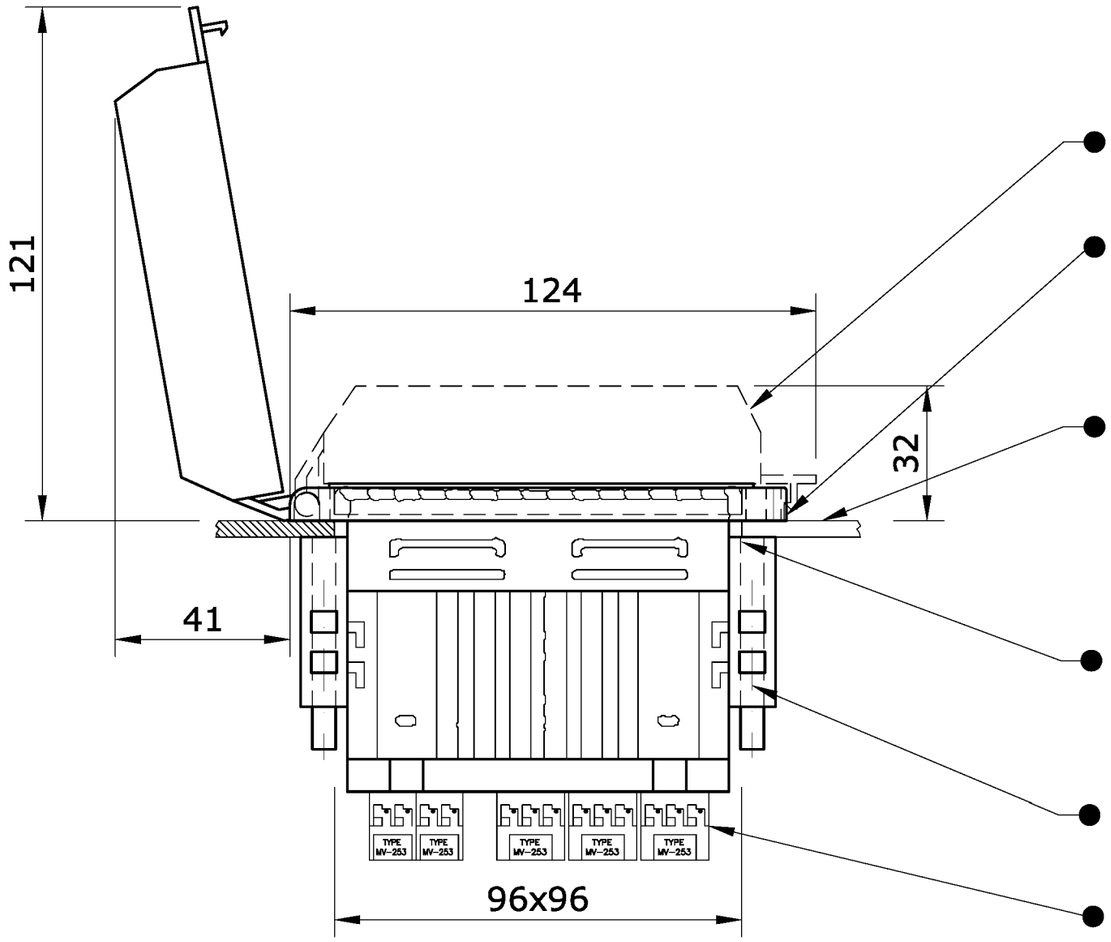
RESISTENZE

RESISTANCES

R1=22 K ohm - 1/2 W

R2=18 K ohm - 1/2 W

0	07/04/05	EMISSIONE	E.C.	E.P.
Rev	Data	Modifica	Eseguito	Verificato



Coperchio di protezione trasparente e sigillabile.
Clear protection cover equipped for safety sealing.

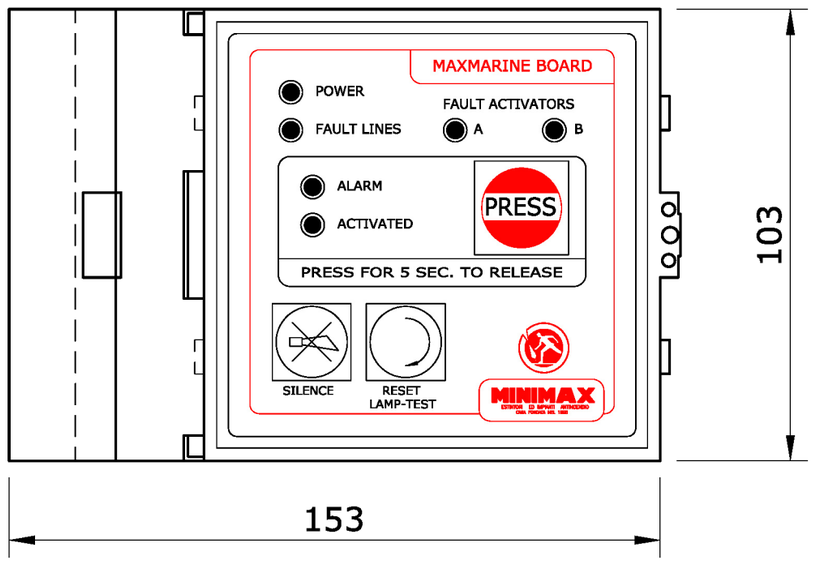
Telaio di fissaggio coperchio di protezione,posizionabile sui quattro lati del centralino di comando.
Cover fixing frame adjustable on four sides

Spessore della superficie di fissaggio max 2 mm.
Max thickness of frame 2 mm

Foratura su pannello 96x96 mm
Opening, 96x96 mm, on the frame.

N°2 Dispositivi di fissaggio centralino
N°2 Control board fixing devices

Morsettiera per collegamenti esterni (max.dia. 2.5 mm)
Terminal board for external lines



Modello per sistemazione incassata.
Model for recessed location.

MINIMAX S. r. l. GENOVA
ESTINTORI E IMPIANTI ANTINCENDIO

CENTRALINO DI COMANDO E CONTROLLO mod. " PX/2 "
Control board mod. " PX/2 "

COMMITTENTE	N° DISEGNO	FG.#
.	SPD 7426/1	01
DISEGNATO: EC	DATA	TOT.#
CONTROLL.: EP	30.03.2005	01

SIRENA D'ALLARME OTTICO/ACUSTICA A 24Vdc

24Vdc OPTICAL/AUDIBLE ALARM SIREN

Sonos Sounder Beacon (DC)

A general purpose electronic sounder for fire, security and industrial applications; the Sonos Sounder Beacon is certified to EN54.

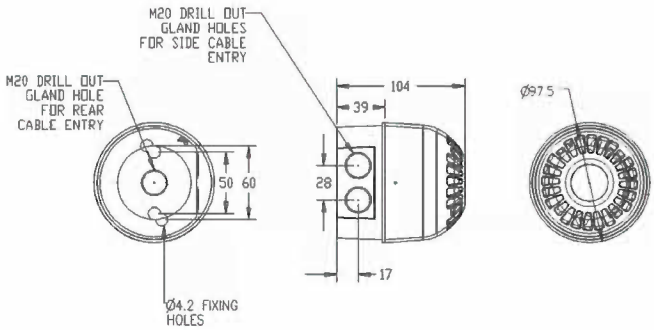
With the TimeSaver base, connections are made to the base during the initial wiring phase which results in faster and more reliable installation. The sounder head 'twists and clicks' into the base on commissioning, avoiding the wiring and connection problems associated with traditional sounders. With a choice of 32 tones including all the major international standards, the Sonos Sounder Beacon has universal acceptance.

Applications - Fire; security; industrial alarm

Features

- Low current LED beacon
- Simple 'First Fix' installation
- Weatherproof to IP65 (deep base units)
- Choice of lens colours
- Sounder and beacon can be controlled separately
- Tone and volume can be preset or adjusted off-base - 20dB
- Separate connections for sounder & beacon

Lens Colour



Specifications

Audibility at 1m	Tones	Voltage	Sounder Current	Beacon Current
Up to 106dB (A)	32	17-60V DC	4-45mA	5mA

THE SOUNDER BEACON IS AVAILABLE WITH SWALLOW BASE OR DEEP BASE

OTHER VERSIONS ARE AVAILABLE ON REQUEST

Rev	Data	Modifica	Eseguito	Verificato
1	15/07/2016	MODIFICA	SP	AM
0	06/10/2014	EMISSIONE / First Issue	PS	AF

SIRENA D'ALLARME OTTICO/ACUSTICA A 24Vdc
24Vdc OPTICAL/AUDIBLE ALARM SIREN

IT Istruzioni di installazione

Installazione

Se necessario, è possibile attivare il meccanismo di bloccaggio del segnalatore acustico alla base rimuovendo la sottile linguetta di plastica illustrata nella Fig. 1 con un tronchesino o un attrezzo simile. Per aprire una testina bloccata, rimuovere il piccolo tappo bianco dal foro laterale del segnalatore acustico, inserire un attrezzo nel foro e premere il fermo evitando la testina. La guarnizione ad anello e il tappo devono essere riposizionati per mantenere la resistenza alle intemperie.

Cablaggio

Linea	Contrassegno sui terminali
IN alimentazione positiva comune	(3) IN+
Alimentazione negativa segnalatore acustico	(2) – of COM –
Alimentazione negativa segnalatore luminoso	(1) ♫/☼

È possibile collegare tra loro i terminali 0V del segnalatore acustico e del segnalatore luminoso per il controllo simultaneo del suono e della luce usando un collegamento a due fili.

La base profonda è dotata di un terminale di terra separato per il collegamento dello schermo o della terra funzionale. Sulla base superficiale, allo stesso scopo è possibile usare il terminale 5.

Selezione toni e Controllo volume

a) Il tono viene selezionato usando un commutatore a 5 vie situato sulla parte inferiore della testina del segnalatore acustico. Consultare la tabella a tergo per informazioni sui toni disponibili e sulle impostazioni del commutatore necessarie per selezionarli.

b) È possibile ridurre l'emissione di suono dell'unità regolando il potenziometro sulla parte inferiore del segnalatore.

Specifiche tecniche:

Gamma tensione di alimentazione	17 - 60V CC
Corrente	Segnalatore acustico: 4 -45mA*
	Segnalatore luminoso: 5mA
Livello di picco del suono	94 - 106 dBA a 1m*
Numero di toni	32
Gamma di frequenza	400 - 2850 Hz*
Temperatura di esercizio	- 25°C/ + 70°C
Alloggiamento	Policarbonato ad alto impatto
Classe di IP	IP21
	IP65 (SOLO con base profonda)
Sincronizzazione	Automatica

*dipende dal tono selezionato e dalla tensione di ingresso. Per informazioni cettagliate, consultare la tabella dei toni. Certificazione EN54-3 solo sui toni 1,2,3,4,5,6,7 e 13.

La Direttiva europea nota come "Waste Electrical and Electronic Equipment" (WEEE), è volta a ridurre al minimo l'impatto sull'ambiente e sulla salute umana provocato dallo smaltimento di apparecchiature elettriche ed elettroniche. Al fine di garantire conformità a tale direttiva, è vietato smaltire le apparecchiature elettriche contrassegnate da questo simbolo nei comuni cassonetti per lo smaltimento dei rifiuti siti in territorio europeo. Gli utilizzatori europei sono tenuti a restituire le apparecchiature elettriche ed elettroniche al termine del loro ciclo di vita per consentirne il corretto smaltimento.Per ulteriori informazioni, visitare il seguente indirizzo: http://www.recyclethis.info/.

EN Installation Manual

Installation

If required, the mechanism for locking the sounder to the base can be activated by removing the thin section of plastic shown in Fig. 1 with side cutters or a similar tool. To open a locked head, remove the small rubber bung from the hole on the side of the sounder, insert a tool into the hole and depress the clip whilst twisting the head. The O-ring and bung must be re-fitted to maintain the weatherproofing.

Wiring

Line	Terminal Marking
Common Positive Supply IN	(3) IN+
Sounder Negative Supply	(2) – or COM –
Beacon Negative Supply	(1) ♫/☼

The sounder and beacon 0V terminals can be linked together for simultaneous control of sound and light using a 2-core connection.

(Common-Operation models are supplied with terminals 1 & 2 already linked by a permanent internal connection.)

A separate earth terminal is provided on the deep base for connecting the screen or functional earth. On the shallow base, terminal 5 can be used for this purpose.

Tone Selection and Volume Control

a) The tone is selected using the 5 way dipswitch on the bottom of the sounder head. Refer to the table overleaf for details of the available tones and the switch settings required to select them.

b) The sound output of the unit can be reduced by adjusting the potentiometer on the bottom of the sounder.

Technical Specification:

Supply Voltage Range	17 - 60V DC
Current	Sounder: 4 - 45mA*
	Beacon: 5mA
Peak Sound Level	94 - 106 dBA at 1m*
Number of Tones	32
Frequency Range	400 - 2850 Hz*
Operating Temperature	-25°C to + 70°C
Casing	High Impact Polycarbonate
IP Rating	IP21
	IP65 (with deep base)
Synchronisation	Automatic

*depends on selected tone and input voltage. See tone table for details.
EN54-3 certified on tones 1,2,3,4,5,6,7 & 13

The European directive "Waste Electrical and Electronic Equipment" (WEEE) aims to minimise the impact of electrical and electronic equipment waste on the environment and human health. To conform with this directive, electrical equipment marked with this symbol must not be disposed of in European public disposal systems. European users of electrical equipment must now return end-of-life equipment for disposal. Further information can be found on the following website: http://www.recyclethis.info/.

MINIMAX S. r. l. GENOVA
ESTINTORI ED IMPIANTI ANTINCENDIO

STD N° 4371/1

Fg. 3 di 3

SIRENA D'ALLARME OTTICO/ACUSTICA A 24Vdc

24Vdc OPTICAL/AUDIBLE ALARM SIREN

TONE	TONE TYPE	TONE DESCRIPTION/ APPLICATION	DIP SWITCH	dBA @ 1m	mA
1.		970Hz	O-O-O-O-O	99	21
2.		800Hz/970Hz @ 2Hz	O-O-O-O-I	100	20
3.		800Hz – 970Hz @ 1Hz	O-O-O-I-O	100	20
4.		970Hz 1s OFF/1s ON	O-O-O-I-I	99	14
5.		970Hz, 0.5s/ 630Hz, 0.5s	O-O-I-O-O	99	19
6.		554Hz, 0.1s/ 440Hz, 0.4s (AFNOR NF S 32 001)	O-O-I-O-I	97	13
7.		500 – 1200Hz, 3.5s/ 0.5s OFF (NEN 2575:2000 Dutch Slow Whoop)	O-O-I-I-O	99	16
8.		420Hz 0.625s ON/0.625s OFF (Australia AS1670 Alert tone)	O-O-I-I-I	96	9
9.		1000-2500Hz, 0.5s/ 0.5s OFF x 3/1.5s OFF (AS1670 Evacuation)	O-I-O-O-O	104	14
10.		550Hz/440Hz @ 0.5Hz	O-I-O-O-I	97	14
11.		970Hz, 0.5s ON/0.5s OFF x 3/ 1.5s OFF (ISO 8201)	O-I-O-I-O	98	12
12.		2850Hz, 0.5s ON/0.5s OFF x 3/1.5s OFF (ISO 8201)	O-I-O-I-I	94	21
13.		1200Hz – 500Hz @ 1Hz (DIN 33 404)	O-I-I-O-O	99	17
14.		400Hz	O-I-I-O-I	95	13
15.		550Hz, 0.7s/1000Hz, 0.33s	O-I-I-I-O	98	17
16.		1500Hz – 2700Hz @ 3Hz	O-I-I-I-I	104	34
17.		750Hz	I-O-O-O-O	99	18
18.		2400Hz	I-O-O-O-I	106	45
19.		660Hz	I-O-O-I-O	96	17
20.		660Hz 1.8s ON/1.8s OFF	I-O-O-I-I	96	12
21.		660Hz 0.15s ON/0.15s OFF	I-O-I-O-O	96	11
22.		510Hz, 0.25s/ 610Hz, 0.25s	I-O-I-O-I	98	15
23.		800/1000Hz 0.5s each (1Hz)	I-O-I-I-O	100	21
24.		250Hz 1200Hz @ 12Hz	I-O-I-I-I	98	13
25.		500Hz – 1200Hz @ 0.33Hz	I-I-O-O-O	99	17
26.		2400Hz – 2900Hz @ 9Hz	I-I-O-O-I	101	40
27.		2400Hz – 2900Hz @ 3Hz	I-I-O-I-O	104	40
28.		500 – 1200Hz, 0.5s/ 0.5s OFF x 3/1.5s OFF (AS1670 Evacuation)	I-I-O-I-I	98	10
29.		800Hz – 970Hz @ 9Hz	I-I-I-O-O	99	20
30.		800Hz – 970Hz @ 3Hz	I-I-I-O-I	100	20
31.		800Hz, 0.25s ON/1s OFF	I-I-I-I-O	99	8
32.		500Hz – 1200Hz, 3.75s/0.25s OFF (AS2220)	I-I-I-I-I	99	17

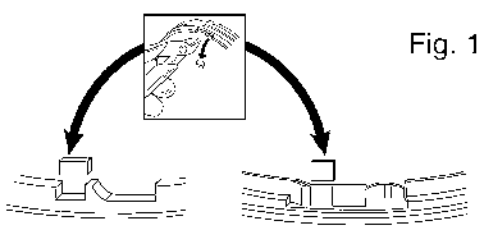


Fig. 1

EN54-3:2001+A1+A2
Technical Data Document 18-186215
Fire Alarm Device - Sounder
Type A: For indoor use (Shallow Base)
Type B: For outdoor use (Deep Base)

CE 0832 06

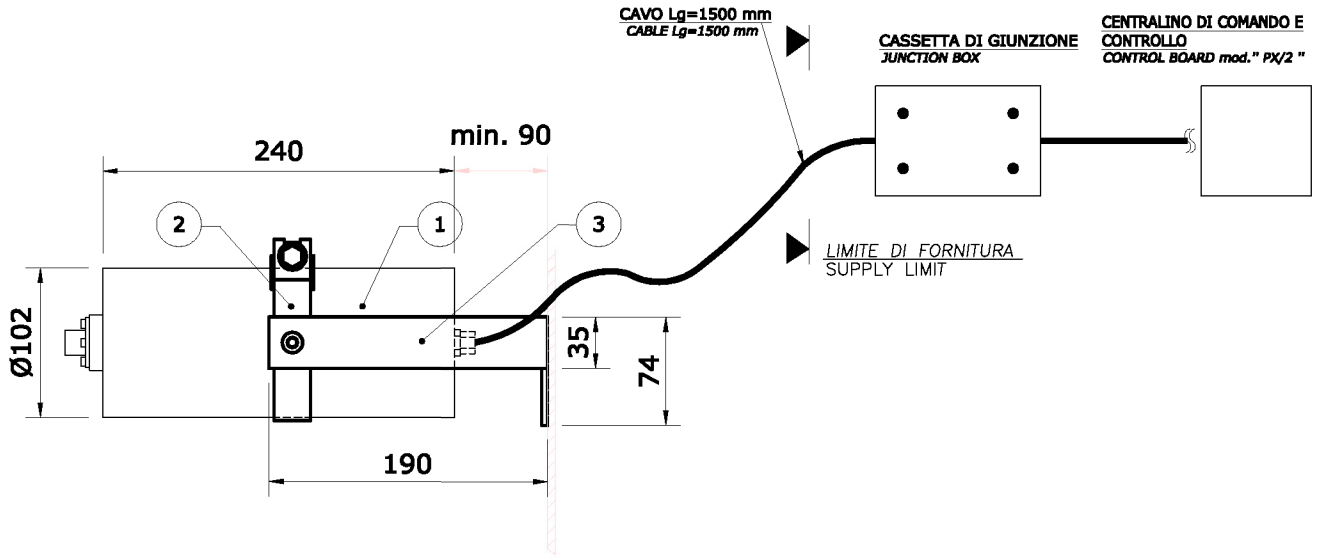
MINIMAX S. r. l. GENOVA
ESTINTORI ED IMPIANTI ANTINCENDIO

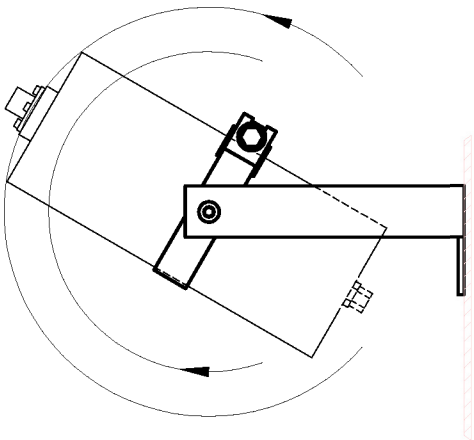
STD N° 3673/2

Fg. 1 di 1

SCHEMA DI INSTALLAZIONE TIPICA GENERATORE D' AEROSOL " MAX MARINE " mod. 2

TYPICAL INSTALLATION FOR AEROSOL GENERATOR " MAX MARINE " mod. 2





POS.	DESCRIZIONE	Q.TA'
1	GENERATORE D' AEROSOL " MAX MARINE " mod. 2 COMPLETO DI CONNETTORE E CAVO (l=1.5 m) "MAX MARINE" AEROSOL GENERATOR WITH ELECTRICAL CONNECTOR AND CABLE (l=1.5 m - 2X1.5 mmq)	1
2	COLLARE DI BLOCCAGGIO CLAMP	1
3	STAFFA DI FISSAGGIO E REGOLAZIONE FIXING PLATE	1

Rev	Data	Modifica	Eseguito	Verificato
2	22/02/2021	REVISIONE GENERALE	SP	PP
1	07.09.09	REVISIONE GENERALE	PS	EP
0	07.12.04	EMISSIONE	EC	EP

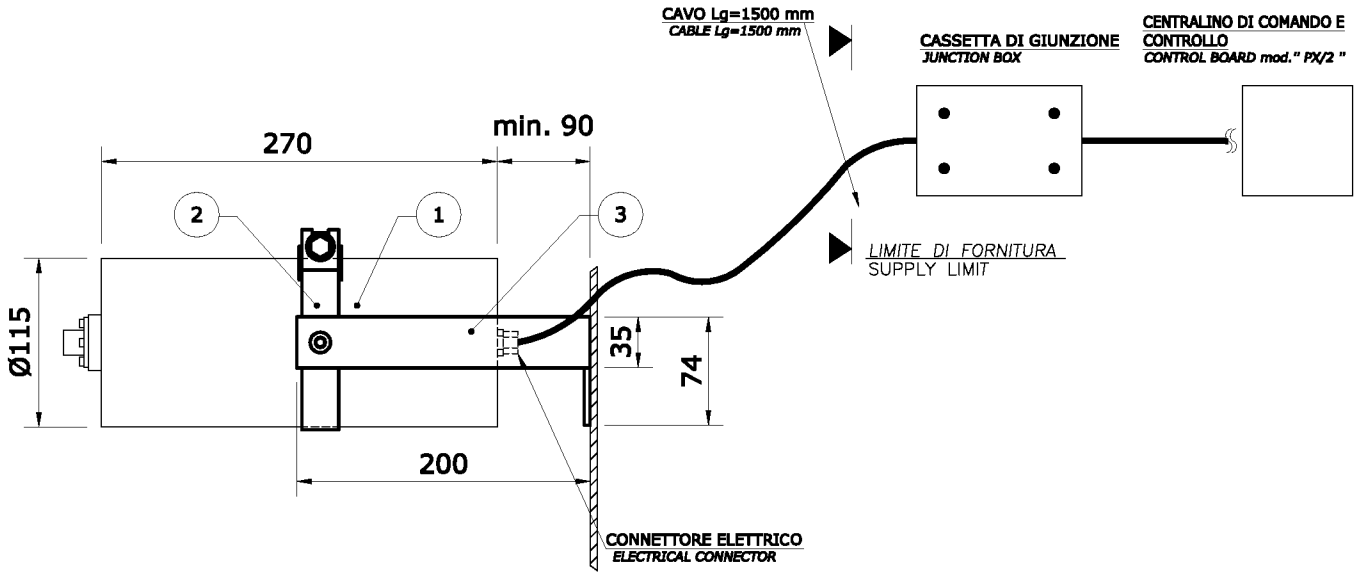
MINIMAX S. r. l. GENOVA
ESTINTORI ED IMPIANTI ANTINCENDIO

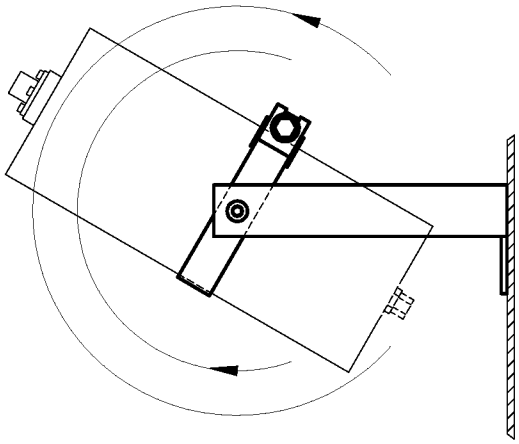
STD N° 3654/3

Fg. 1 di 1

SCHEMA DI INSTALLAZIONE TIPICA GENERATORE D' AEROSOL " MAX MARINE " mod. 3

TYPICAL INSTALLATION FOR AEROSOL GENERATOR " MAX MARINE " mod. 3





POS.	DESCRIZIONE	Q.TA'
1	GENERATORE D' AEROSOL " MAX MARINE " mod. 3 COMPLETO DI CONNETTORE E CAVO (l=1.5 m) "MAX MARINE" AEROSOL GENERATOR WITH ELECTRICAL CONNECTOR AND CABLE (l=1.5 m - 2X1.5 mmq)	1
2	COLLARE DI BLOCCAGGIO CLAMP	1
3	STAFFA DI FISSAGGIO E REGOLAZIONE FIXING PLATE	1

Rev	Data	Modifica	Eseguito	Verificato
3	20/01/2021	REVISIONE GENERALE	SP	PP
2	09.09.09	REVISIONE GENERALE	PS	EP
1	30.03.05	REVISIONE GENERALE	EC	EP
0	07.12.04	EMISSIONE	EC	EP

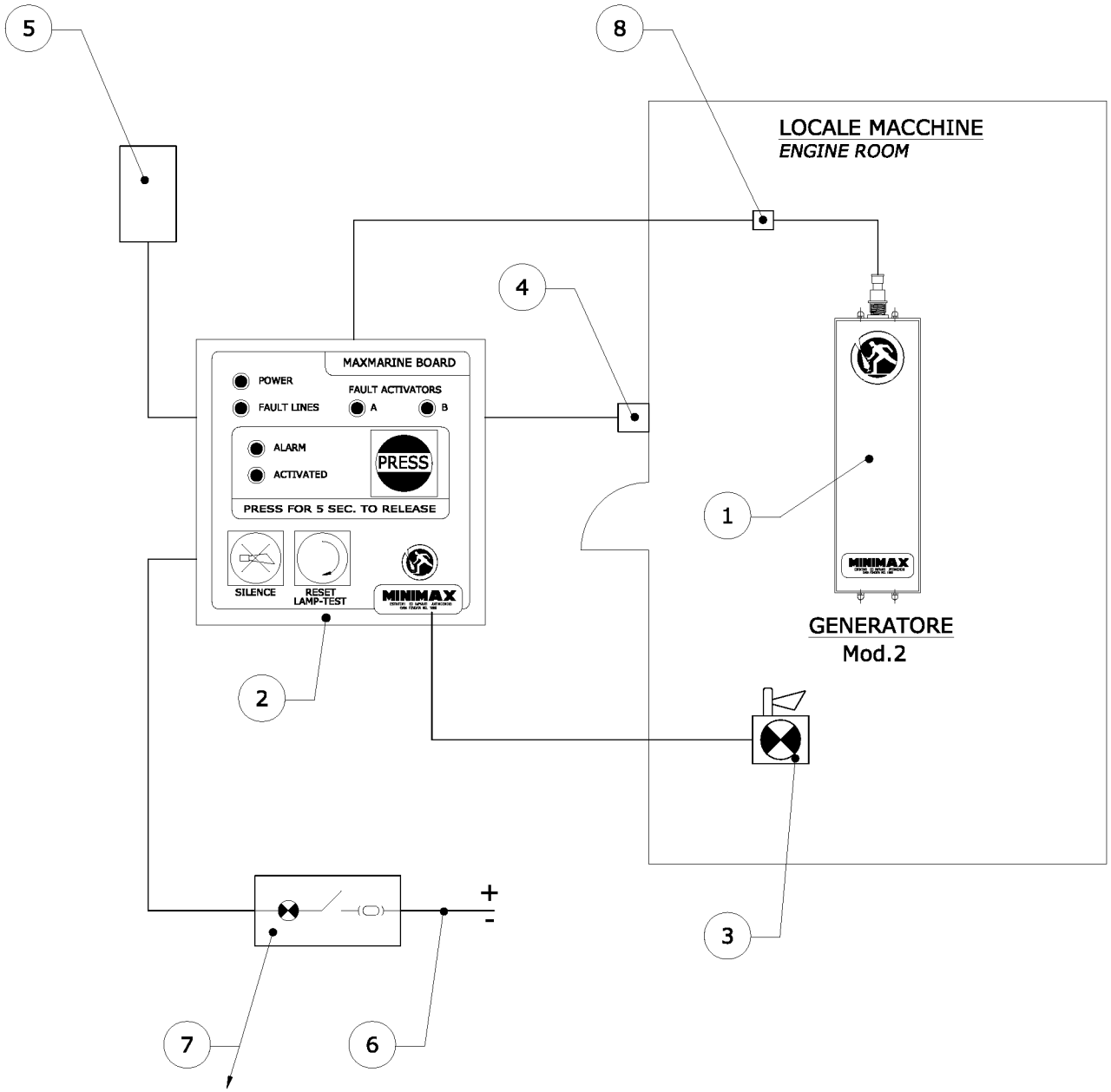
MINIMAX S. r. l. GENOVA
ESTINTORI ED IMPIANTI ANTINCENDIO

STD N° 3680/1

Fg. 1 di 1

SCHEMA DI INSTALLAZIONE TIPICA IMPIANTO "MAX MARINE 20"

SCHEMATIC ARRANGEMENT OF " MAX MARINE 20 " SYSTEM



PANNELLO CON INTERRUTTORE A CHIAVE PER INSERIMENTO IMPIANTO, LAMPADA DI SEGNALAZIONE, FUSIBILE 3 A ; COMPLETO CON SCRITTA:

PANEL WITH KEY SWITCH TO CONNECT SYSTEM, POWER LAMP, FUSE 3 A, COMPLETE WITH THE FOLLOWING INSTRUCTION LABEL:

QUADRO DI SEZIONAMENTO PER LINEA DI ALIMENTAZIONE IMPIANTO ESTINZIONE INCENDI. LA LAMPADA DEVE ESSERE NORMALMENTE ACCESA	*SECTIONING BOARD FOR POWER LINE FIRE EXTINGUISHING SYSTEM. LAMP MUST BE NORMALLY LIGHTED*

CHIAVE ESTRAIBILE CON IMPIANTO INSERITO *EXTRACTABLE KEY WHEN SYSTEM ON*

* NON INCLUSA NELLA FORNITURA STANDARD
NOT INCLUDED IN STANDARD SUPPLY

	POS.	DESCRIZIONE	Q.TA'
	1	GENERATORE D' AEROSOL " MAXMARINE " mod. 2 *"MAX MARINE" AEROSOL GENERATOR*	1
	2	CENTRALINO DI COMANDO E CONTROLLO *CONTROL BOARD*	1
	3	SIRENA CON LAMPEGGIATORE, ALIM. 24 V.c.c., IP 65 *SIREN WITH FLASHLIGHT, 24 V d.c.*	1
*	4	PULSANTE PER COMANDO MANUALE SCARICA *REMOTE MANUAL DISCHARGE SWITCH*	1
*	5	CENTRALE DI RIVELAZIONE INCENDI *FIRE DETECTION BOARD*	1
*	6	LINEA DI ALIMENTAZIONE 24 V.c.c. *POWER LINE 24 V d.c.*	1
*	7	VEDERE NOTA *SEE NOTE*	1
*	8	CASSETTA DI GIUNZIONE *JUNCTION BOX*	1

Rev.	Data	Modifica	Eseguito	Verificato
1	29.10.10	REVISIONE GENERALE	PS	EP
0	30.03.05	EMISSIONE	EC	EP

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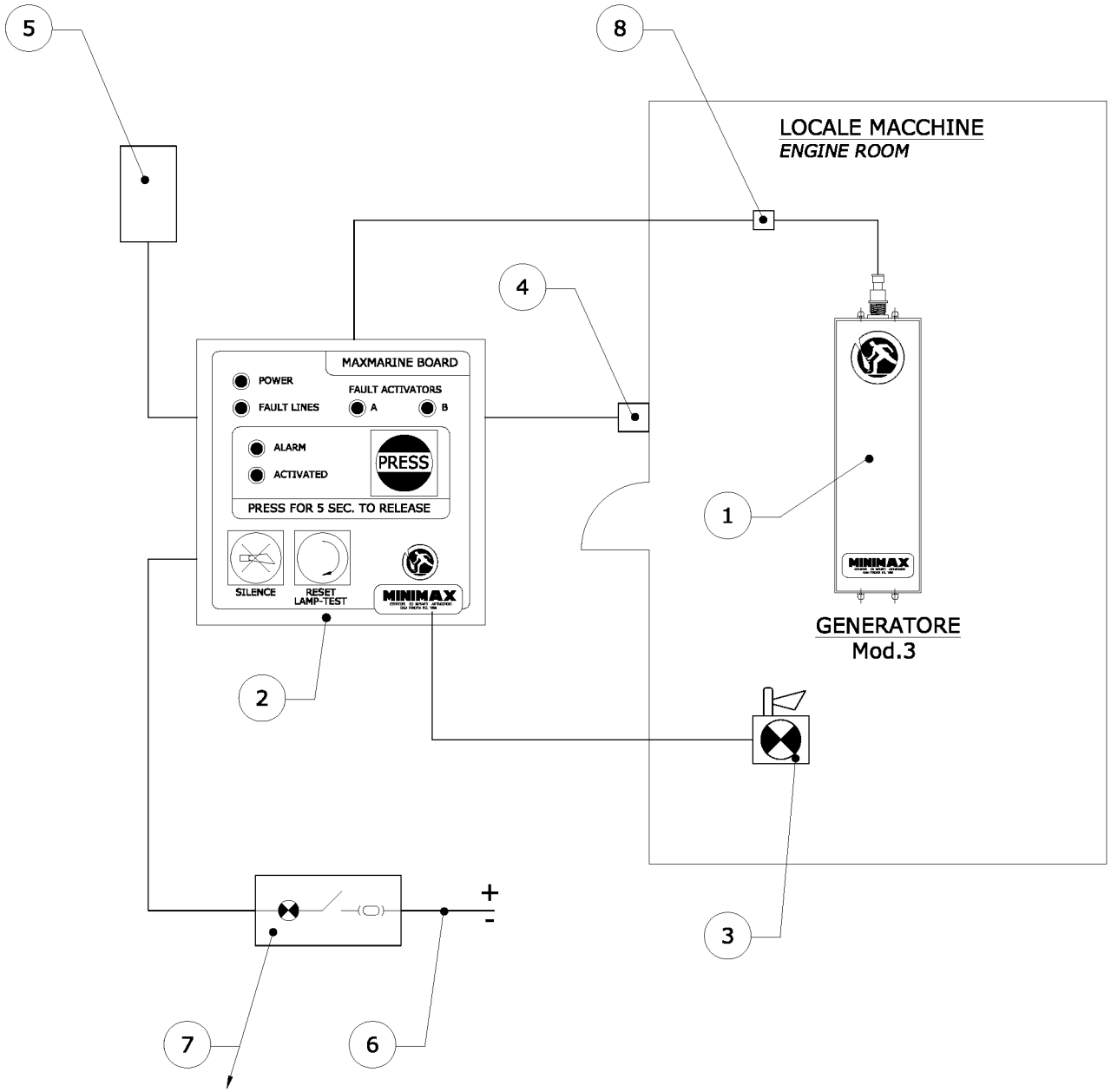
ESTINTORI ED IMPIANTI ANTINCENDIO

STD N° 3656/2

Fg. 1 di 1

SCHEMA DI INSTALLAZIONE TIPICA IMPIANTO "MAX MARINE 30"

SCHEMATIC ARRANGEMENT OF " MAX MARINE 30 " SYSTEM



PANNELLO CON INTERRUTTORE A CHIAVE PER INSERIMENTO IMPIANTO, LAMPADA DI SEGNALAZIONE, FUSIBILE 3 A ; COMPLETO CON SCRITTA:

PANEL WITH KEY SWITCH TO CONNECT SYSTEM, POWER LAMP, FUSE 3 A, COMPLETE WITH THE FOLLOWING INSTRUCTION LABEL:

QUADRO DI SEZIONAMENTO PER LINEA DI ALIMENTAZIONE IMPIANTO ESTINZIONE INCENDI. LA LAMPADA DEVE ESSERE NORMALMENTE ACCESA	*SECTIONING BOARD FOR POWER LINE FIRE EXTINGUISHING SYSTEM. LAMP MUST BE NORMALLY LIGHTED*

CHIAVE ESTRAIBILE CON IMPIANTO INSERITO *EXTRACTABLE KEY WHEN SYSTEM ON*

* NON INCLUSA NELLA FORNITURA STANDARD
NOT INCLUDED IN STANDARD SUPPLY

	POS.	DESCRIZIONE	Q.TA'
	1	GENERATORE D' AEROSOL " MAXMARINE " mod. 3 *"MAX MARINE" AEROSOL GENERATOR*	1
	2	CENTRALINO DI COMANDO E CONTROLLO *CONTROL BOARD*	1
	3	SIRENA CON LAMPEGGIATORE, ALIM. 24 V.c.c., IP 6S *SIREN WITH FLASHLIGHT, 24 V d.c.*	1
	4	PULSANTE PER COMANDO MANUALE SCARICA *REMOTE MANUAL DISCHARGE SWITCH*	1
*	5	CENTRALE DI RIVELAZIONE INCENDI *FIRE DETECTION BOARD*	1
*	6	LINEA DI ALIMENTAZIONE 24 V.c.c. *POWER LINE 24 V d.c.*	1
*	7	VEDERE NOTA *SEE NOTE*	1
*	8	CASSETTA DI GIUNZIONE *JUNCTION BOX*	1

Rev	Data	Modifica	Eseguito	Verificato
2	29.10.10	REVISIONE GENERALE	PS	EP
1	30.03.05	REVISIONE GENERALE	EC	EP

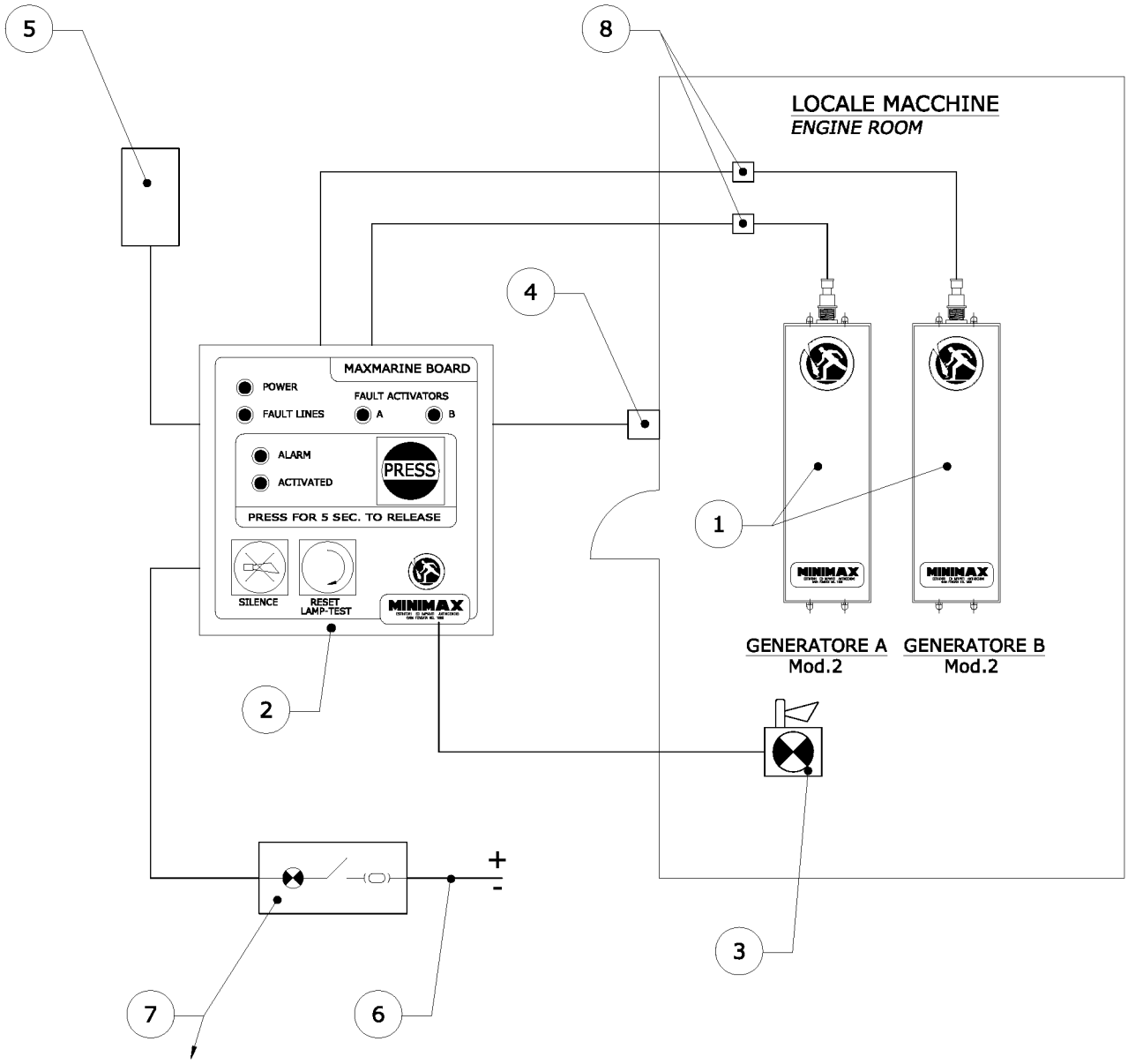
MINIMAX S. r. l. GENOVA
ESTINTORI ED IMPIANTI ANTINCENDIO

STD N° 3679/1

Fg. 1 di 1

SCHEMA DI INSTALLAZIONE TIPICA IMPIANTO "MAX MARINE 45"

SCHEMATIC ARRANGEMENT OF " MAX MARINE 45 " SYSTEM



PANNELLO CON INTERRUTTORE A CHIAVE PER INSERIMENTO IMPIANTO, LAMPADA DI SEGNALAZIONE, FUSIBILE 3 A ; COMPLETO CON SCRITTA:

PANEL WITH KEY SWITCH TO CONNECT SYSTEM, POWER LAMP, FUSE 3 A, COMPLETE WITH THE FOLLOWING INSTRUCTION LABEL:

QUADRO DI SEZIONAMENTO PER LINEA DI ALIMENTAZIONE IMPIANTO ESTINZIONE INCENDI. LA LAMPADA DEVE ESSERE NORMALMENTE ACCESA	*SECTIONING BOARD FOR POWER LINE FIRE EXTINGUISHING SYSTEM. LAMP MUST BE NORMALLY LIGHTED*

CHIAVE ESTRAIBILE CON IMPIANTO INSERITO *EXTRACTABLE KEY WHEN SYSTEM ON*

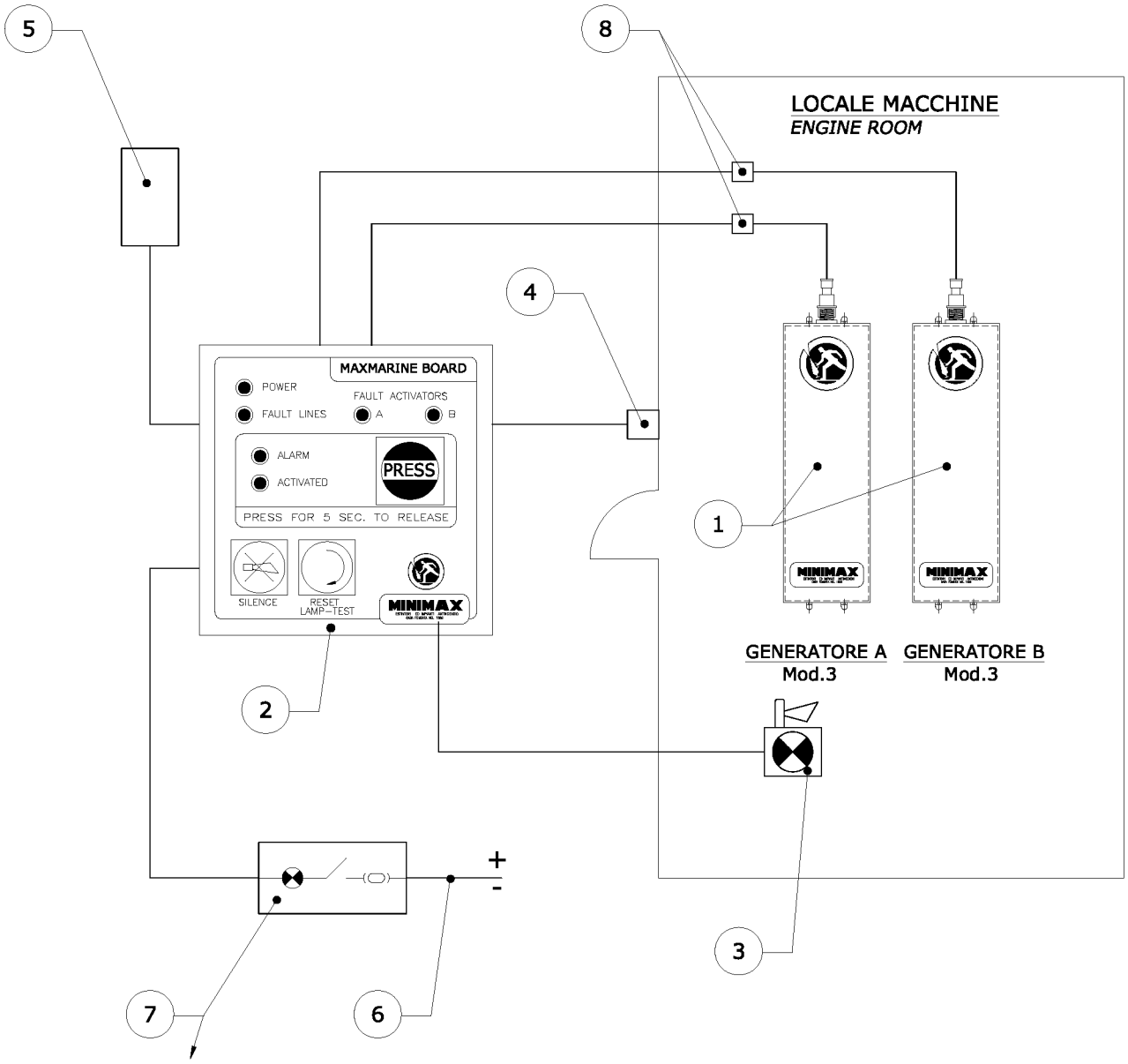
* NON INCLUSA NELLA FORNITURA STANDARD
NOT INCLUDED IN STANDARD SUPPLY

	POS.	DESCRIZIONE	Q.TA'
	1	GENERATORE D' AEROSOL " MAXMARINE " mod. 2 *" MAX MARINE "AEROSOL GENERATOR*	2
	2	CENTRALINO DI COMANDO E CONTROLLO *CONTROL BOARD*	1
	3	SIRENA CON LAMPEGGIATORE, ALIM. 24 V.c.c., IP 65 *SIREN WITH FLASHLIGHT, 24 V d.c.*	1
	4	PULSANTE PER COMANDO MANUALE SCARICA *REMOTE MANUAL DISCHARGE SWITCH*	1
*	5	CENTRALE DI RIVELAZIONE INCENDI *FIRE DETECTION BOARD*	1
*	6	LINEA DI ALIMENTAZIONE 24 V.c.c. *POWER LINE 24 V d.c.*	1
*	7	VEDERE NOTA *SEE NOTE*	1
*	8	CASSETTA DI GIUNZIONE *JUNCTION BOX*	2

Rev.	Data	Modifica	Eseguito	Verificato
1	29.10.10	REVISIONE GENERALE	PS	EP
0	30.03.05	EMISSIONE	EC	EP

SCHEMA DI INSTALLAZIONE TIPICA IMPIANTO "MAX MARINE 70"

SCHEMATIC ARRANGEMENT OF " MAX MARINE 70 " SYSTEM



PANNELLO CON INTERRUTTORE A CHIAVE PER INSERIMENTO IMPIANTO, LAMPADA DI SEGNALAZIONE, FUSIBILE 3 A ; COMPLETO CON SCRITTA:

PANEL WITH KEY SWITCH TO CONNECT SYSTEM, POWER LAMP, FUSE 3 A, COMPLETE WITH THE FOLLOWING INSTRUCTION LABEL:

QUADRO DI SEZIONAMENTO PER LINEA DI ALIMENTAZIONE IMPIANTO ESTINZIONE INCENDI. LA LAMPADA DEVE ESSERE NORMALMENTE ACCESA	*SECTIONING BOARD FOR POWER LINE FIRE EXTINGUISHING SYSTEM. LAMP MUST BE NORMALLY LIGHTED*

CHIAVE ESTRAIBILE CON IMPIANTO INSERITO *EXTRACTABLE KEY WHEN SYSTEM ON*

	POS.	DESCRIZIONE	Q.TA'
	1	GENERATORE D' AEROSOL " MAXMARINE " mod. 3 *AEROSOL GENERATOR*	2
	2	CENTRALINO DI COMANDO E CONTROLLO *CONTROL BOARD*	1
	3	SIRENA CON LAMPEGGIATORE, ALIM. 24 V.c.c., IP 65 *SIREN WITH FLASHLIGHT, 24 V d.c.*	1
	4	PULSANTE PER COMANDO MANUALE SCARICA *REMOTE MANUAL DISCHARGE SWITCH*	1
*	5	CENTRALE DI RIVELAZIONE INCENDI *FIRE DETECTION BOARD*	1
*	6	LINEA DI ALIMENTAZIONE 24 V.c.c. *POWER LINE 24 V d.c.*	1
*	7	VEDERE NOTA *SEE NOTE*	1
*	8	CASSETTA DI GIUNZIONE *JUNCTION BOX*	2

* NON INCLUSA NELLA FORNITURA STANDARD
NOT INCLUDED IN STANDARD SUPPLY

Rev	Data	Modifica	Eseguito	Verificato
2	29.10.10	REVISIONE GENERALE	PS	EP
1	30.03.05	REVISIONE GENERALE	EC	EP

PULSANTE PER COMANDO MANUALE SCARICA IMPIANTO " MAX MARINE 20-30-45-70" mod. "MX 67"

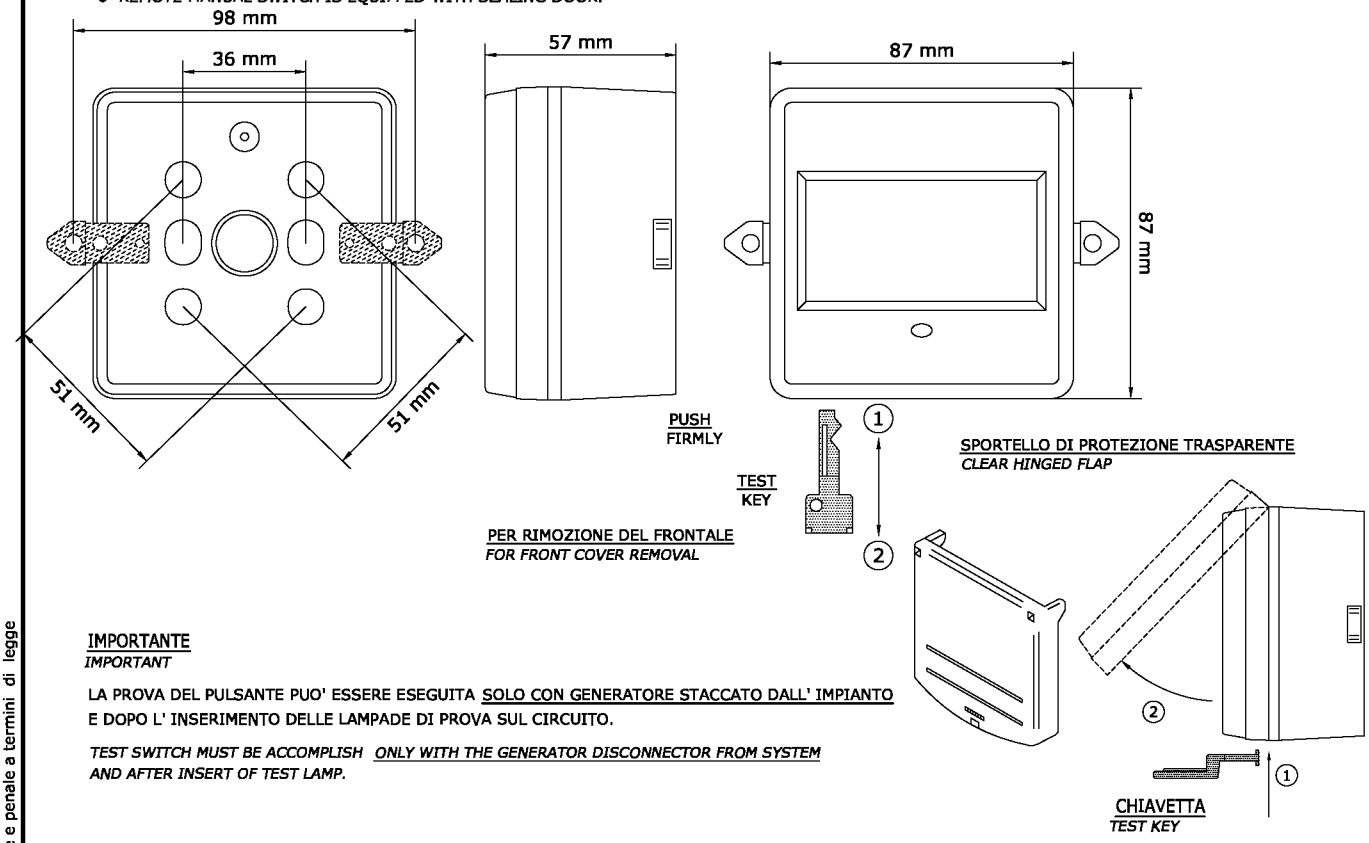
REMOTE MANUAL DISCHARGE SWITCH FOR " MAX MARINE 20-30-45-70 " SYSTEM model "MX 67"

PULSANTE PER IL COMANDO MANUALE DI ESTINZIONE INCENDIO CONFORME ALLA NORMA EN54-11.

- UNA PRESSIONE AL CENTRO DEL VETRO (PROTETTO DA PELLICOLA ANTI INFORTUNISTICA) NE PROVOCA LA ROTTURA E L' ATTIVAZIONE.
- LA CHIAVE IN DOTAZIONE HA LE FUNZIONI DI CHIAVE DI TEST E DI APERTURA DEL PULSANTE.
- IL CIRCUITO STAMPATO INTERNO E' COMPLETAMENTE INCAPSULATO CON RESINA POLIURETANICA A GARANZIA DI UNA ELEVATA AFFIDABILITA'.
- E' DOTATO DI SPORTELLO DI PROTEZIONE PIOMBABILE.

REMOTE MANUAL SWITCH FOR FIRE EXITINGUISHING SYSTEM COMPLYING WITH SPECIFICATION EN54-11

- *A PUSH IN CENTER OF GLASS (PROTECTED BY SAFETY FILM) GENERATES A BREAK OF GLASS AND START OF SYSTEM.*
- *THE KEY HAS TWO FUNCTIONS:*
  - TEST KEY
  - KEY TO OPEN FRONT COVER
- *INSIDE PRINTED CIRCUIT IS METAL-CLAD BY POLYURETHAN RESIN FOR HIGH RELIABILITY.*
- *REMOTE MANUAL SWITCH IS EQUIPPED WITH SEALING DOOR.*



IMPORTANTE
IMPORTANT

LA PROVA DEL PULSANTE PUO' ESSERE ESEGUITA SOLO CON GENERATORE STACCATO DALL' IMPIANTO E DOPO L' INSERIMENTO DELLE LAMPADE DI PROVA SUL CIRCUITO.

TEST SWITCH MUST BE ACCOMPLISH ONLY WITH THE GENERATOR DISCONNECTOR FROM SYSTEM AND AFTER INSERT OF TEST LAMP.

SPECIFICA TECNICA / *TECNICAL SPECIFICATION*	
MATERIALE CONTENITORE *BOX MATERIAL*	TERMOPLASTICO, COLORE ROSSO *THERMOPLASTIC, RED COLOR*
TIPO DI FUNZIONAMENTO *TYPE OF WORKING*	DIRETTO *DIRECT*
TIPO DI CONNESSIONE *TYPE OF CONNECTION*	6 MORSETTI (3 MORSETTI DOPPI PER DERIVAZIONE) CAVI DIAM.(0.28-2.5) mm *6 TERMINALS (3 DOUBLE TERMINALS FOR SHUNT) CABLE DIAM.(0.28-2.5) mm*
TEMPERATURA DI FUNZIONAMENTO *TEMPERATURE RANGE*	DA -20°C A +70°C *FROM -20°C TO +70°C*
DOTAZIONE STANDARD *STANDARD EQUIPMENT*	CHIAVETTA PER TEST E APERTURA *KEY FOR TEST AND FRONT REMOVAL*
LINEA DI ALIMENTAZIONE *POWER LINE*	24 V.c.c. *24 V d.c.*
CORRENTE MAX CONTATTI *MAX CURRENT FOR CONTACTS*	3 A
TENSIONE MAX. CONTATTI *MAX VOLTAGE FOR CONTACTS*	24 V.c.c. *24 V d.c.*
GRADO DI PROTEZIONE *PROTECTION*	IP 67

PARTI DI RICAMBIO / *SPARE PARTS*	
VETRINO *GLASS*	mod. MX 67/G
SPORTELLO DI PROTEZIONE *CLEAR HINGED FLAP*	mod. MX 67/S
SUPPORTI PER ANCORAGGIO *FIXED WALL SUPPORTS*	

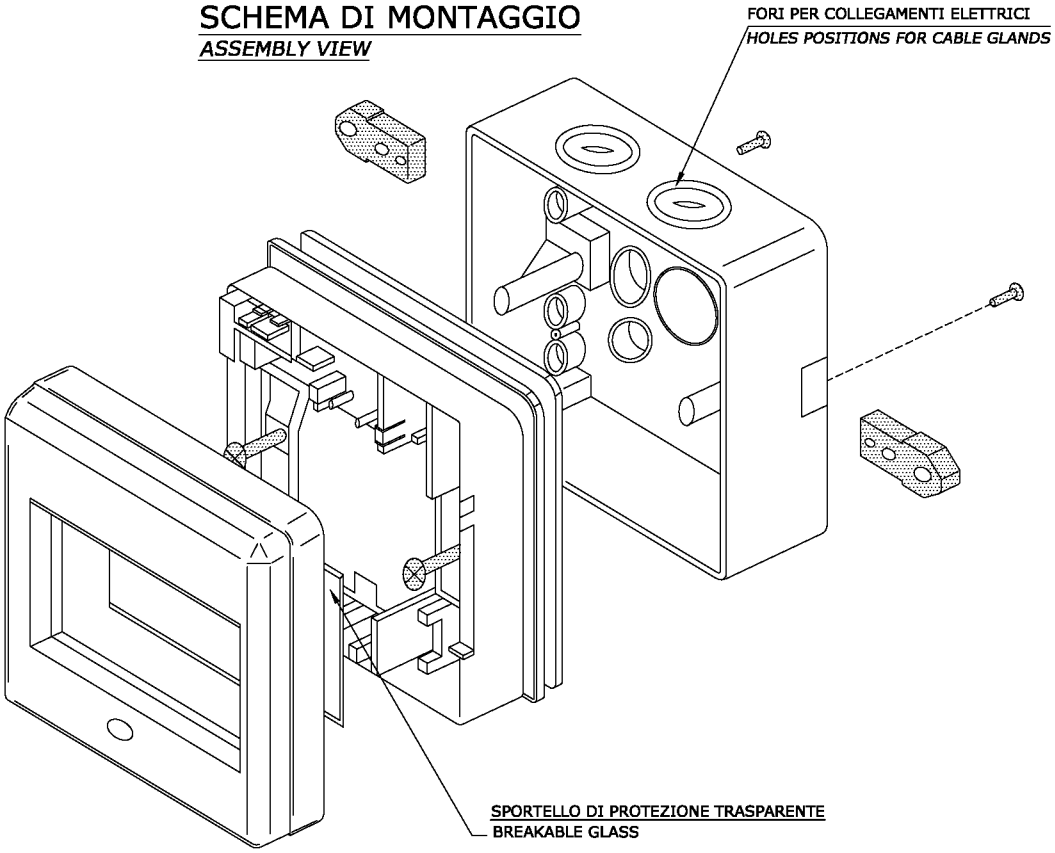
Rev	Data	Modifica	Eseguito	Verificato
1	03.09.09	REVISIONE GENERALE / GENERAL REVISION	RS	EP
0	04.04.05	EMISSIONE / FIRST ISSUE	EC	EP

PULSANTE PER COMANDO MANUALE SCARICA IMPIANTO " MAX MARINE 20-30-45-70" mod. "MX 67"

REMOTE MANUAL DISCHARGE SWITCH OF " MAX MARINE 20-30-45-70 " SYSTEM model "MX 67"

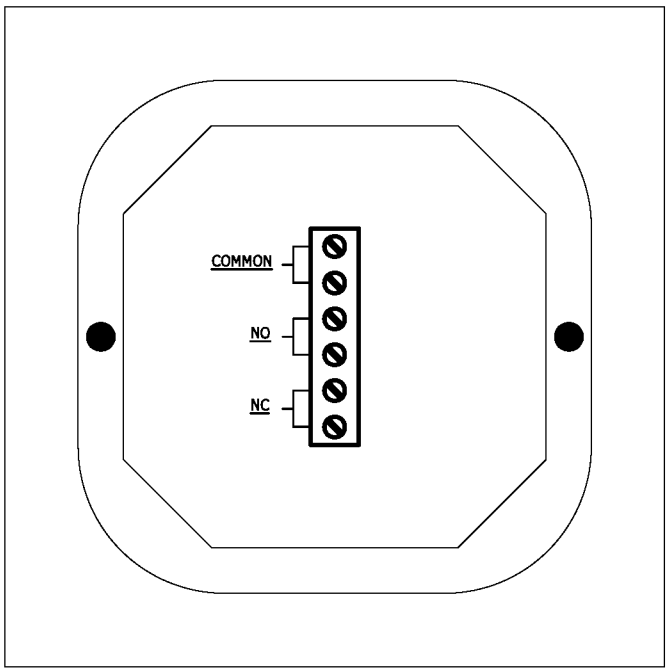
SCHEMA DI MONTAGGIO

ASSEMBLY VIEW



MORSETTIERA

TERMINAL BOARD



Rev	Data	Modifica	Eseguito	Verificato
1	03.09.09	REVISIONE GENERALE / GENERAL REVISION	RS	EP
0	04.04.05	EMISSIONE / FIRST ISSUE	EC	EP

TYPE APPROVAL CERTIFICATE
No. **FPE346820CS**

This is to certify that the product identified below satisfies the requirements of the standard quoted under "Reference standard"

Description	**FIXED AEROSOL FIRE-EXTINGUISHING SYSTEM**
Type	**MAX MARINE SYSTEM**
Applicant	**MINIMAX SRL** **VIA RISTORI 31** **16151 GENOVA** **ITALY**
Manufacturer *Place of manufacture*	**MINIMAX SRL** **VIA RISTORI 31** **16151 GENOVA (GE)** **ITALY**
Reference standards	**RULES FOR THE TYPE APPROVAL OF FIXED AEROSOL FIRE-EXTINGUISHING SYSTEMS IN MACHINERY SPACES; ISO 9094:2015.**
Reference documents	**-**

Issued in **Genoa** on **March 12, 2021**. *This Certificate is valid until* **March 11, 2026**

RINA Services S.p.A.
Davide Campora

This certificate consists of this page and 1 enclosure

RINA Services S.p.A.
Via Corsica, 12 - 16128 Genova
Tel +39 010 53851
Fax +39 010 5351000

TYPE APPROVAL CERTIFICATE
No. **FPE346820CS**
Enclosure - Page 1 of 2
MAX MARINE SYSTEM

Product description

Remote controlled pre-engineered fixed aerosol fire-extinguishing system based on self-standing modules having the capacity of 200 g, 500 g and 850 g respectively.

The remote activation of the system is electrical type by means of control box located outside the protected space.

Field of application

A and B Class Fires in Unmanned machinery spaces of all vessels having a length not exceeding 24 m and machinery spaces with a gross volume not exceeding 70 m^3, to which Directive 2014/90/EC as amended is not applicable.

Installation requirements

The system shall be designed and installed according the following table and according the manufacturer technical specification booklet*s*:

System designation	Number of "Max Marine" modules (4)	Protected Net volume (1)
MAX MARINE 10	One module having the capacity of 200g (2)	up to 10 m^3
MAX MARINE 20	One module having the capacity of 500g (2)	from 11 m^3 to 20 m^3
MAX MARINE 30	One module having the capacity of 850g (2)	from 21 m^3 to 30 m^3
MAX MARINE 45	Two modules having the capacity of 500g each (3)	from 31 m^3 to 40 m^3
MAX MARINE 70	Two modules having the capacity of 850g each (3)	from 41 m^3 to 65 m^3

(1) The system cannot be installed in machinery spaces having a gross volume exceeding 70 m^3.
(2) When one module is installed it shall be located approximately between two corners of the protected space.
(3) When two modules are installed they shall be located facing one to each other on two opposite corners of the protected space.
(4) Modules shall be located within 500 mm from the ceiling of the protected space.

Reference documents

Technical specification booklets *"Manuale d'uso installazione e manutenzione sistema antincendio ad aerosol MAX MARINE 10"* and *"Manuale d'uso installazione e manutenzione sistema antincendio ad aerosol MAX MARINE 20-30-45-70"* issued by Minimax Srl and filed by RINA with n°CSST 19100 and CSST 19101.

Tests carried out

Fire tests witnessed by RINA and filed with n° FPE0007586.

RINA Services S.p.A.
Via Corsica, 12 - 16128 Genova
Tel +39 010 53851
Fax +39 010 5351000

TYPE APPROVAL CERTIFICATE
No. **FPE346820CS**
Enclosure - Page 2 of 2
MAX MARINE SYSTEM

Remarks

For vessels classed by RINA:
a.The release device shall be readily accessible and operable;
b. A visual indication of discharge shall be provided;
c. A pre-alarm system shall sound before the system is released;
d. Automatic release of the system is not accepted.
e. Ventilation openings serving the protected space shall be provided with means of closure operable from outside the protected space.

For vessels certified in accordance with Directive 2013/53/EU:
In lieu of what in the above items a) to e) the systems shall be installed in compliance with the requirements contained in ISO 9094:2015 (EN ISO 9094:2015)

Mass produced articles of the aforesaid material are to be marked or labelled with the trade name and the data of the Company to whom this Certificate is addressed. The validity of this Certificate is dependent on the compliance of each manufactured product with the prototype which underwent the type approval tests and such compliance shall be stated by the manufacturer. Moreover, the Company is fully responsible for ensuring compliance by performing all the necessary checks also in respect of its sub-suppliers. Notwithstanding the above, RINA reserves the right to make any checks it deems appropriate during production. The validity of this Certificate ceases in the case of amendments to the rules on the basis of which the Certificate was issued.

This certifficate annuls and replaces certificate n° FPE382615CS dated November 13, 2015.

Genoa 12/03/2021

RINA Services S.p.A.
Via Corsica, 12 - 16128 Genova
Tel +39 010 53851
Fax +39 010 5351000

MINIMAX

ESTINTORI ED IMPIANTI ANTINCENDIO

Via A. Ristori 31-16151 Genova -ITALY Ph. +39 (0)10 6450004 minimax@minimax.it