



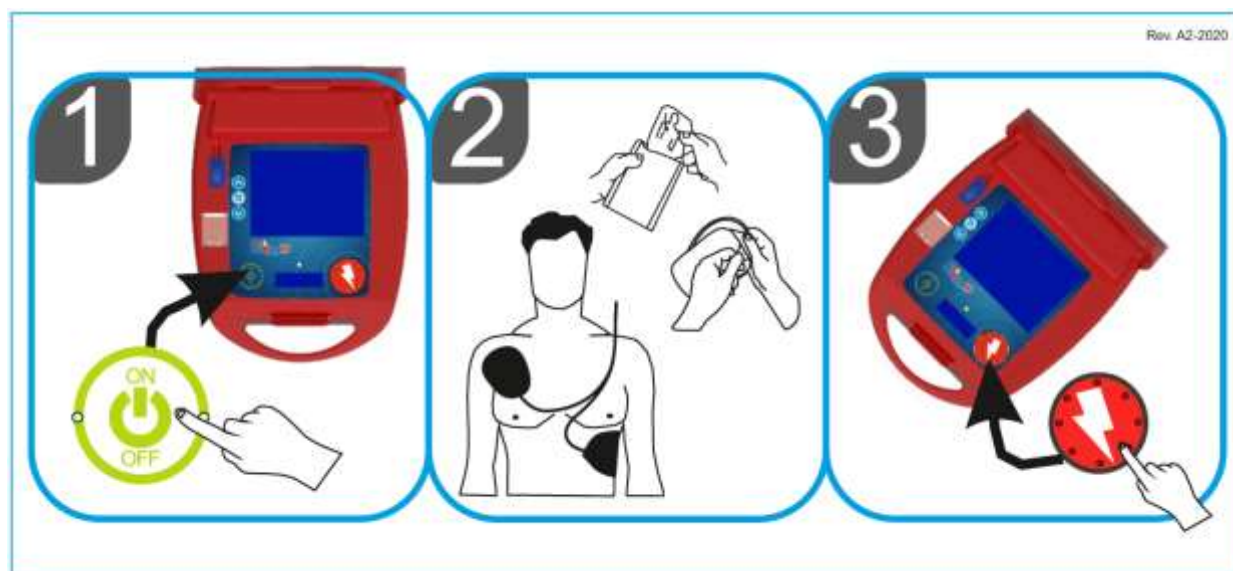
User Manual
External Semiautomatic Defibrillator
with Display

Rev.	4.2
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Geo
Saver[®] *D*

AED_S

QUICK USE GUIDE



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These instructions for use are subject to changes.

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Summary

1	Introduction.....	8
1.1	Preface.....	8
1.2	Use in accordance with provisions	8
1.3	Guarantee.....	8
1.4	Exclusion from liability.....	8
1.5	Indications	8
1.6	Counter indications	8
1.7	Version information.....	9
1.8	Symbols in the manual	9
1.9	Manufacturer contacts.....	9
2	Safety instructions	10
2.1	Indications of DANGER	10
2.2	Indications of CAUTION	11
2.3	Cautions for use in ECG Monitoring	12
2.4	Indications of DISPOSAL.....	12
3	Description of the device.....	13
3.1	Device Information	13
3.2	Service activation procedure.....	15
3.3	Classifications	15
4	Description of device details	16
4.1	General structure of the device.....	16
4.2	Keys, icons and indicators	17
4.3	Status mini display.....	17
4.4	TFT colour display	18
4.5	Standard and optional accessories of the device	19
5	Parts and accessories of the <i>Geo Saver D</i>	21
5.1	AED Batteries.....	21
5.1.1	Non-rechargeable Li-SOCl ₂ battery (SAV-C1032).....	21
5.1.2	Rechargeable Li ion battery (SAV-C1033).....	22
5.1.3	Suggestions for a proper maintenance of battery SAV-C1033.....	22
5.1.4	Inserting and removing the batteries.....	23
5.1.5	Recharging station for rechargeable batteries.....	23
5.1.6	Structure of the battery charger	24
5.1.7	Recharge procedure	24
5.2	Geoloc Batteries	25

5.2.1	Non-rechargeable battery Li-SOCl ₂ (SAV-C1038)	25
5.2.2	Rechargeable Li ion battery (SAV-C1039)	26
5.2.3	Inserting and removing the batteries	27
5.2.4	Recharge procedure	28
5.3	PADs for defibrillation	29
5.3.1	Defibrillation PADs for Adults SAV-C0846	29
5.3.2	PADs for Children SAV-C0016	29
5.3.3	Positioning of defibrillation PADs	30
5.4	2-pole ECG cable SAV-C0017	31
5.4.1	Positioning of the electrodes	31
5.5	Memory Card	32
5.6	Martel MCP7830 thermal printer (SAV-C1070)	33
5.6.1	Printer structure	33
6	Geo Saver D selection menu	34
6.1	Main Menu	34
6.2	Settings Menu	35
6.3	System information Menu	36
6.3.1	Power Supply Submenu	37
6.4	Streaming Menu	38
6.5	Print Menu	39
7	Auto test	40
7.1	Control LED and mini display	40
7.2	ACTIVATION test	41
7.3	AUTOMATIC test	42
7.4	POWER ON Test	42
8	Defibrillation	43
8.1	Switching on the Geo Saver D	43
8.2	Remove clothes	44
8.3	Positioning of defibrillation PADs	44
8.4	Cardiac rhythm analysis	45
8.5	Shockable rhythm	46
8.6	Non-shockable rhythm	48
8.7	Change of rhythm	48
8.8	CPR	49
9	ECG monitoring	51

9.1	Activation of ECG Monitoring mode.....	51
9.2	Description of ECG Monitoring feature	53
10	Recording, printing and archiving of rescue data.....	55
10.1	Data recording	55
10.2	Printing of rescue data	56
10.2.1	Martel MCP7830 Printer Installation.....	56
10.2.2	Selection of the data to be printed	57
10.2.3	Print execution	58
10.3	Data storage on PC	58
11	Web Management.....	59
11.1	Main features	60
11.1.1	Changing the language	60
11.1.2	User profile and password.....	60
11.1.3	Device management.....	61
11.1.4	ECG Streaming	62
11.1.5	Auto tracking	63
11.1.6	Battery replacement.....	63
11.1.7	Firmware update	64
11.2	Dashboard	65
11.3	Devices.....	66
11.4	Geo Saver.....	67
11.5	Saver Log.....	68
11.6	Geoloc Log	69
11.7	Streaming.....	70
11.8	List of saved ECG Streaming	71
11.9	Tracks.....	72
12	Maintenance.....	73
12.1	After each use.....	73
12.2	Ordinary maintenance.....	73
12.3	Cleaning	74
12.4	Preservation.....	74
12.5	Troubleshooting Guide	75
13	Technical specifications	76
13.1	Physical characteristics.....	76
13.2	Environmental requirements	76

13.3	Reference regulations	76
13.4	Technical alarms table	77
13.5	Physiological Alarms Table (only in Monitoring Mode).....	77
13.6	Controls and indicators.....	77
13.7	Data memory	77
13.8	Defibrillator.....	78
13.9	Efficiency of delivered energy	79
13.10	Patient analysis system.....	81
13.11	ECG Analysis Function	81
13.12	ECG Monitoring	81
13.13	Display	82
13.14	Non-rechargeable battery	82
13.15	Rechargeable battery	82
13.16	Internal back-up battery.....	83
13.17	Rechargeable battery charger	83
13.18	Thermal printer.....	83
13.19	Defibrillation PADS.....	83
13.20	ECG Cables	84
13.21	Timing of Shock cycles	84
13.22	Geoloc Module	84
13.23	Geoloc Module Battery Type.....	84
14	Compliance with electromagnetic emission standards.....	85
14.1	Guidelines and manufacturer's declaration - Electromagnetic emissions	85
14.2	Guidelines and manufacturer's declaration - Electromagnetic immunity	85
14.3	Recommended separation distance between portable and mobile RF communication equipment and Geo Saver device	87
15	Simbology	88
16	Certifications.....	89
16.1	EC Certificate	89
16.2	IMQ Brand	91
17	Geo Saver Series Defibrillator Warranty	92
18	Product registration.....	93

1 Introduction

1.1 Preface

Thank you for having chosen the defibrillator of A.M.I Italia S.r.l. model **Geo Saver D**.

So that you can correctly use the device it is necessary, before usage, to carefully read this user manual. The User Manual of **Geo Saver D** contains the instructions for its use in compliance with its function and purpose. For a function free of error and to achieve the right benefits, it is fundamental to respect the prescriptions indicated in this user manual, to guarantee the safety of the patient, of the rescuer and of any third parties. This manual is an integral part of the defibrillator and must always be kept together with the device, so that it can be easily accessible if necessary.

1.2 Use in accordance with provisions

The device **Geo Saver D** can be used exclusively if the conditions indicated in the user manual are respected. Any use not as prescribed is considered not in accordance with the provisions and can cause damage to people or objects. In such cases A.M.I. Italia S.r.l declines all responsibility.

1.3 Guarantee

The device **Geo Saver D** has a guarantee of 6 (six)* years.

The non-rechargeable battery Li-SOCl₂ (SAV-C1032) has a guarantee of 4 (four)* years in Stand-by mode (assuming a battery activation test, daily self-tests without turning on the AED). This information refers to new batteries, fully charged at a temperature of 20°C and humidity of 45%.

* For more information consult **Chapter 17** “Geo Saver Series defibrillators warranty”

1.4 Exclusion from liability

The rights of liability are excluded in cases of damage to people or objects, if attributable to one of the indicated causes:

- Use of the appliance not in compliance with the provisions.
- Improper use and maintenance of the appliance.
- Use of the device and / or its accessories which show obvious or partial damage.
- Failure to comply with the instructions in the user manual concerning precautions, operation, maintenance and repair of the appliance.
- Use of non-original accessories and/or parts not approved by the manufacturer.
- Arbitrary interventions, repairs or modifications of the device.
- Arbitrary overcoming of performance limits.
- Lack of surveillance of parts subject to wear.

1.5 Indications

The **Geo Saver D** can only be used if the patient:

- is unconscious and...
- does not breathe and...
- shows no signs of blood circulation

1.6 Counter indications

The **Geo Saver D** cannot be used if the patient:

- is in a conscious state or...
- shows normal respiration or...
- shows signs of blood circulation



1.7 Version information

This user manual has a version number. The version number changes every time the manual is updated for changes made to the function of the device or to the device itself. The contents of this user manual are subject to change without notice. The information on the version of this manual is as follows.

Version number: 4.2
Issuing date: 01/09/2020

1.8 Symbols in the manual

In this user manual there are several symbols that indicate the various precautions for use:

SYMBOL	INDICATION	DESCRIPTION
	DANGER	Indicates an immediate risk to the safety of people, which also involves death and damage to the device or parts thereof
	CAUTION	Indicates an unsafe situation or practice involving serious personal injury and damage to the device or parts thereof

1.9 Manufacturer contacts

You can contact our company at the following addresses:

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2 Safety instructions

For a correct use of the *Geo Saver D* defibrillator, users must be aware of the safety factors listed below.

Please read them carefully.

The *Geo Saver D* defibrillator, individually and in connection with its standard and optional (original) accessories, complies with the safety regulations currently in force and is in compliance with the provisions of the directives on medical products.

The appliance and its accessories are to be considered safe in the case of application according to the provisions and if the descriptions and indications listed in this user manual are respected.

The following are the main precautions to be taken for the correct and safe use of the defibrillator, divided for easy consultation between hazard indications, warning indications and disposal instructions.



2.1 Indications of **DANGER**

- Use the *Geo Saver D* in accordance with the prescriptions in this user manual. Carefully read these instructions for use and in particular the safety instructions indicated in them.
- In accordance with IEC standards (section 2.4), the use of the *Geo Saver D* device or its accessories in the presence of flammable substances (petrol or similar) or in an atmosphere enriched with oxygen or flammable gases / vapours is not allowed.
- Do not recharge the Li-SOCl₂ battery (SAV-C1032). Explosion risk!
- Do not allow the batteries to come into contact with an open flame. Do not expose to fire.
- Do not short circuit the battery terminals.
- In case of leakage of liquids or strange smells from the batteries, keep them away from fire to prevent any leaked electrolytes from catching fire.
- Danger of electric shock. The device generates high voltages and dangerous levels of current.
- Do not open the *Geo Saver D*, do not remove the panels and do not attempt to repair it. The *Geo Saver D* contains no components that users can repair. For repair purposes, the *Geo Saver D* must be sent to an authorized technical service center.
- Do not apply the electrodes to the patient's chest if nitro-glycerine patches are present. Remove the patches and only then position the electrodes. Otherwise there is a risk of causing an explosion.
- Do not touch the patient and prevent third parties from coming into contact with the patient during the defibrillation shock phase. Avoid any contact between:
 - parts of the patient's body
 - conductive liquids (such as gel, blood or solution of table salt)
 - metal objects in the surroundings of the patient (such as bed frame or stretching device) that represent indirect ways for the defibrillation current
- Before using the device ensure the patient's safety, if necessary move them carefully and position them in a safe place as per the AHA / ERC 2017 guidelines
- Do not immerse any part of the *Geo Saver D*, its parts or accessories in water or other liquids.
- Do not allow liquids to enter the *Geo Saver D* its parts or accessories. Avoid spilling liquid on the device and its accessories. Failure to do so may cause damage or cause a risk of fire or electric shock. Do not sterilize the *Geo Saver D* or its accessories.

2.2 Indications of CAUTION



- Avoid the formation of air bubbles between the skin and defibrillation PADS. The formation of air bubbles during defibrillation can cause severe burns to the patient's epidermis. To avoid the formation of air bubbles, make sure that the electrodes fully adhere to the skin. Do not use electrodes whose gel has dried, check the expiration date before use.
- Do not delay treatment in patients with an implanted pacemaker and perform a defibrillation attempt if the patient has lost consciousness and is not breathing or breathing normally. The **Geo Saver D** is equipped with a pacemaker detection system that allows ignoring the signal emitted by the latter; however, with some types of pacemakers, **Geo Saver D** may discourage a defibrillation shock

During the application of the electrodes:

- Do not apply the electrodes directly to an implanted device.
- Apply the electrodes at least 2.54 cm (1 inch) from any implanted device

- RF (radio frequency) interference, caused by devices such as cellular phones and two-way radios, can cause the **Geo Saver D** to malfunction. The **Geo Saver D** must be kept at least 2 meters away from these RF devices, as indicated in the standards of EN 61000- 4-3. Keep away from other therapeutic and diagnostic energy sources (eg diathermy, high-frequency surgery, magnetic tomography).
- Use the **Geo Saver D** only if you have achieved a BLS-D or ALS-D training course.
- Before using the device, make sure that there is no obvious damage.
- The infrared interface emits optically invisible radiation. The emission diode complies with IEC/EN 60825-1 Class 1 "Eye Safe"
- Do not use paediatric defibrillation PADS (SAV-C0016) on adult patients (older than 8 years and weighing more than 25Kg). Using paediatric defibrillation PADS the **Geo Saver D** automatically switches to paediatric mode, reducing the maximum energy available to 50J.
- Arrange the patient cables so as to reduce the possibility of wrapping or strangling the patient.
- In a domestic environment, keep the defibrillator out of the reach of children and pets.
- Do not apply the defibrillation electrodes directly on an implanted pacemaker to avoid any errors in the interpretation of the device and to avoid damage to the pacemaker through the defibrillation impulse.
- Disconnect high-voltage pulse-sensitive equipment from the patient, ie that is not defibrillator-proof, before delivering the shock.

CAUTION



- Do not allow defibrillation electrodes to touch or come into contact with ECG electrodes, swabs, transdermal patches, etc. Failure to do so may result in creation of electric arcs and burns to the patient during defibrillation, and even current leakage.
- Position the defibrillation PADS as indicated in this user manual and indicated on the package.
- Do not use defibrillation PADS if the gel has been detached from the support or is torn, split or dry.
- If damage has been detected, do not operate the **Geo Saver D** under any circumstances.
- Before using the device, remove metal objects from the patient's body (including necklaces or bracelets, etc.)
- Do not use defibrillation PADS other than those supplied by the manufacturer. Otherwise the defibrillator may make false interpretations.
- Do not use defibrillation PADS if they are damaged, even partially.
- Do not use defibrillation PADS if the expiration date has been exceeded.
- When applying the ECG cable SAV-C0017 make sure it is not in contact with any conductor element. Verify that all ECG electrodes are properly secured to the patient
- Do not touch the patient or PADS during heart rhythm analysis.
- Moving or transporting the patient during the cardiac rhythm analysis performed by the device can lead to an incorrect or not timely diagnosis. During the heart rhythm analysis phase, minimize the movements. If the device is used in an ambulance in motion, stop the vehicle and start again only after having delivered the shock.
- In order to use the **Geo Saver D**, you must have completed a training course for basic or advanced cardio-pulmonary resuscitation with the use of a defibrillator (BLS-D or ALS-D course)
- Avoid the use of adult defibrillation PADS (SAV-C0846) on children (ages 1-8 years or 8-25kg).
- Before applying the defibrillation PADS, if necessary, dry the patient's chest and remove unwanted hair.
- Do not subject **Geo Saver D**, its accessories, its parts to falls and / or strong impacts
- Do not use damaged accessories and / or parts, otherwise the device may malfunction.
- Use only original accessories and / or spare parts.
- Avoid excessively aggressive handling of the device of its accessories or parts in order to avoid possible damage. Inspect the entire system periodically.
- Carry out the sanitation operations of the device in compliance with the standards indicated in paragraph 10.3 and always make sure that the device is switched off with the battery removed and PADS disconnected.
- Recharge the rechargeable Li-Ion battery (SAV-C1033) at least once every 4 months to ensure its perfect function and extend its life.
- The Li-Ion rechargeable batteries ACC model (SAV-C1033) must be charged using only the (SAV-C1035) battery charger from A.M.I. Italia S.r.l. otherwise the batteries could be damaged
- Remove the batteries from the device only if it has been turned off for at least 5 seconds. Otherwise the device and the battery can be seriously damaged.
- The **Geo Saver D**, its parts and accessories are not sterile or sterilizable
- Do not expose the **Geo Saver D**, its parts or accessories to direct light or high temperatures
- The Battery Charger (SAV-C1035) must only be used with the Meanwell power supply model GS40A15-P1J (SAV-C1037) supplied by A.M.I. Italia S.r.l. The use of different power supplies could compromise the correct functioning of the battery charger and damage the ACC rechargeable batteries (SAV-C1033)
- In order to safeguard the battery life (SAV-C1032) and guarantee automatic daily tests, after installing it, it is advisable to not remove the battery (SAV-C1032) unless it is to be replaced. The removal of the battery and the subsequent insertion involves a complete test of the AED which considerably consumes its capacity. Furthermore, if the battery is not properly attached it could be damaged.

2.3 Cautions for use in ECG Monitoring

- The monitoring mode based on the use of the screen, for the purpose of identifying an ECG rhythm, represents an important aid for the specific use of the device itself, ie the detection of a shockable rhythm for the eventual subsequent decision to release of a therapeutic shock. The monitoring mode is intended for those environments or rescue conditions where experienced operators, or under the specialized medical direction, may have the benefit of evaluating patients with a high risk of a cardiac event that can be life threatening. By switching the defibrillator operation from the analysis mode to the monitoring mode, the device continues to analyse the patient's ECG and, if a potentially shockable rhythm is detected, the operator can return to defibrillation mode and prepare to shock. In any case, do not use the device in "ECG Monitoring" mode in environments such as operating rooms or intensive care units and consequently with medical equipment typical of such environments (such as for example an electrosurgical unit). Moreover, for the intended use, the device does not guarantee completely suitable display performance in the presence of patients with pacemakers.
- Use the device only with accessories (patient cables, electrodes, adhesive clips) supplied by AMI Italia following the instructions indicated in this manual for their application.
- Pay attention that the conductive parts of the electrodes do not come into contact with other conductive parts, including the floor.
- As a precaution, if there is a defibrillator connected to the patient with whom a defibrillation shock can be delivered, avoid touching the patient while undergoing ECG Monitoring and, to ensure the necessary protection, use only accessories (patient cables, electrodes, adhesive clips) supplied by AMI Italia and listed in this manual.
- In the presence of patients with pacemakers, the calculation of heart rate could count pacemaker pulses even in the event of cardiac arrest or some arrhythmias. In this case, do not rely completely on alarms related to the counting of beats. Monitor patients with pacemakers and follow the instructions in this manual regarding pacemaker pulse rejection capabilities of this device.
- In the presence of patients with pacemakers, the parameter values presented by the device may not be sufficiently accurate. In this case, these should not be used to draw medical conclusions.
- The device is able to recognize and manage T waves appropriately up to a maximum width of 1 mV.
- To monitor whether the electrodes have been applied to the patient, the device injects a sinusoidal current of $I_{pp} = 0.5\text{mA}$ and $f = 25.2\text{ KHz}$.
- The frequency of the QRS complexes is calculated by making the arithmetic average over 3 consecutive intervals (4 QRS complexes) and the value shown on the display is updated every second.
- Delays in determining the alarm conditions relating to the monitoring mode are contained within 5 seconds, except for the LOW FREQUENCY and ASYSTOLE alarms for which the signalling delay remains within 10 sec. In this case, in fact, in the lower limit conditions (30bpm), there are 2 sec between two consecutive beats, and since the QRS detection algorithm requires 4 complexes, the time required to identify an LF (LOW Frequency) alarm condition is greater than 6 seconds. For ASYSTOLE signalling, having to exclude first that it is not an LF condition and then confirm that it is ASYSTOLE, the signalling time is greater than the previous one by about 2 seconds (about 8 seconds).
- The device takes less than 3 seconds to switch the indication of 80 bpm to 120 bpm and vice versa.
- The device takes less than 3 seconds to switch the indication of 80 bpm to 40 bpm and vice versa.
- For the two waveforms of fast ventricular tachycardia: 195 bpm @ $V_{pp} = 2\text{mV}$, 1mV, 4mV and 206 bpm @ $V_{pp} = 1\text{mV}$, 0.5mV, 2mV, the device signals the alarm condition within 5 seconds.
- In the event of an alarm, the sound emitted is composed of at least 4 different frequencies so that it can be heard even by people who have partially impaired hearing. Simultaneously, icons and descriptions of the detected alarm status are shown on the display.
- The device guarantees 35 hours of continuous monitoring with a new fully charged battery.

2.4 Indications of **DISPOSAL**



- The *Geo Saver D*, its parts and accessories must not be disposed of with other household waste within the European community. To prevent possible damage to the environment or human health caused by incorrect waste disposal, recycle this product responsibly also to promote sustainable use of resources. To dispose of the used product, use the appropriate waste collection services or return it to the local distributor. In this way it will be possible to recycle safely for the environment.

3 Description of the device

3.1 Device Information

Geo Saver D is called **AED** or **Automatic External Defibrillator** equipped with TFT display and mini LCD.

The device was designed to be used by lay personnel as well as by healthcare personnel who have duly achieved and passed a BLSD course according to international guidelines.

Designed to automatically detect and analyse the victim's heart rhythm, it is able to deliver one or more defibrillation shocks if ventricular fibrillation or ventricular tachycardia (monomorphic or polymorphic with beat > 180) is detected. The energy is supplied by an exponential truncated biphasic electrical shock (B.T.E.) able to adapt to the patient's thoracic impedance.

Geo Saver D is available in two versions:

Geo Saver D 200J (SGD-B0992) – Maximum deliverable energy 200J

Geo Saver D 360J (SGD-B0993) – Maximum deliverable energy 360J

It can be used with two types of batteries:

- **Non-rechargeable battery Li-SOCl₂** (SAV-C1032), which requires no maintenance, is guaranteed to operate in standby mode for 4 years or carry out a high number of shocks
- **ACC Rechargeable battery Li-Ion** (SAV-C1033), recommended for those who use the defibrillator intensively

The device is equipped with a large 5.7-inch LCD colour display that allows you to view all information relating to the treatment and its functional status. Furthermore, the **Geo Saver D** is equipped with a mode that allows the patient's ECG monitoring to be performed using a special 2-pole ECG cable (SAV-C0017) with detection of 1 lead (II) or directly from the Pads.

The device allows the data to be recorded on an SD Memory Card so that they can be re-displayed on a PC or printed directly on the **Martel MCP7830** printer (*optional function*). During the non-use phase the device, if installed, the battery carries out daily self-tests to verify its functional condition, in order to guarantee its prompt use in the moment of need. On the keyboard of the device there is a mini LCD display and a two-colour LED (red / green) through which it is possible to see the outcome of the functional tests and to know the functional status of the device even if switched off (stand-by mode).

The Geo Saver D is a defibrillator equipped with a SIM card, GPS and a battery power system. These characteristics make it an extremely versatile device suitable for installation both in public practices and in constantly moving vehicles such as trains or buses.

. The presence of a SIM card allows the Geo Saver to transmit and receive data through the mobile telephone network. The GPS makes it possible to track the movements.

The battery power supply of the system dedicated to Geolocation and communication via mobile phone network is autonomous and additional to that of the components dedicated to the basic functionality (defibrillator).

The information that the Geo Saver sends remotely are consultable through the web platform <http://www.AMISAVERCLOUD.com> which is accessible from any device with a browser (PC, tablet or smartphone); no dedicated equipment or software is required.

Each user will be able to access the AMISAVERCLOUD platform in a safe way through the use of personalized credentials; then he will be able to quickly visualize the location and status of their Geo Savers.

Compared to a classic defibrillator, the main differences are:

- Remote control
- Telemetry
- Geo-location
- Teleservice
- Management of AEDs and AEDs' users
- Updates through remote connection

Remote control

Thanks to the AMISAVERCLOUD it is possible to control the device quickly and easily.

By accessing the section dedicated to each Geo Saver it is possible to configure each aspect by sending simple commands and knowing the last ones sent.

Telemetry

The Geo Saver connects with the portal at least once a day and sends an AED log containing its parameters and status information which are consultable through the access to the AMISAVERCLOUD:

- Each Geo Saver is represented by a coloured icon which will allow the immediate recognition of its status :
 - Green: ready to use device;
 - Yellow: Warning of an anomaly that does not affect the defibrillator functionality;
 - Red: device failed, service required;
- The consultation of logs allows the user to carry out the check of the device and its accessories.

In case of connection failure (due to lack of network coverage or malfunctions) AMISAVERCLOUD will notify the disservice to the owner via SMS or email.

Geo-location and Anti-theft

For any Geo Saver is possible to:

- locate the last position on a map;
- tracking the movements (auto tracking) and visualize the path on the map through the web portal;
- notify the owner whenever it is moved, by configuring on the AMISAVERCLOUD the “antitheft” functionality. In this case, the web portal will send a message (via SMS or email) as soon as the device detects a movement.

Teleservice

Streaming ECG

The Geo Saver system allows the ECG to be transmitted to AMISAVERCLOUD in real time and, through the web portal; it is possible to monitor the signal in real time.

All the recorded ECGs are saved in the portal and made available for future consultations.

LIVE call

During a rescue it is possible to make a voice call directly from the Geo Saver to the local EMS using a dedicated button.

Through the portal, it is possible to assign up to three telephone numbers to which the call is addressed. The telephone numbers must be set according to the regulations in place in the individual countries where the Geo Saver is installed.

3.2 Service activation procedure

In order for the Geo Saver series defibrillators to fully provide the features for which they were designed, it is necessary to follow the service activation procedure.

1. Check that the SIM card(*) supplied is correctly inserted;
2. Make sure you are in an area covered by a GSM / GPRS signal;
3. Insert the battery for the Geoloc module into the battery compartment;
4. Insert the Geo Saver battery into the battery compartment;
5. Check that the Geo Saver performs the test designed for battery insertion;
6. Turn off the Geo Saver;
7. Wait a minute and check on the AMISAVERCLOUD the arrival of the session log on the page related to the device being activated.

(*)

- The SIM cards supplied by the manufacturer only work if inserted into Geo Saver equipment;
- Each SIM supplied by the manufacturer only works if inserted in the Geo Saver to which it is paired;
- A SIM paired with a Geo Saver does not work if inserted in another Geo Saver device;

3.3 Classifications

The **Geo Saver D** defibrillator is classified as follows:

Code UMDNS	11132
Code GMDN	47910
Code CND	Z12030501
Directory number RDM	1793132 / 1793141
Code CIVAB	DEF01
Class of belonging according to directive 2007/47/CE	IIb
Type of protection against electric shock	Internally powered
Type of patient isolation	BF CF (only for ECG cables)
Degree of protection against penetration of liquids	IPx6
Degree of protection against dust penetration	IP5x
Degree of safety in the presence of a flammable anaesthetic mixture with air, oxygen or nitrous oxide	Not protected
Sterilization or disinfection method suggested by the supplier	See Paragraph 12.3
Mode of operation	Continuous operation

4 Description of device details

4.1 General structure of the device



Image 1

Nr.	Description
1	Compartment for PADS connector or ECG cable
2	Live Call Button
3	Microphone for environmental recordings
4	Status mini display
5	Carrying handle
6	TFT colour display
7	IrDA port (service only)
8	Loudspeaker
9	Keyboard with buttons
10	Live call microphone

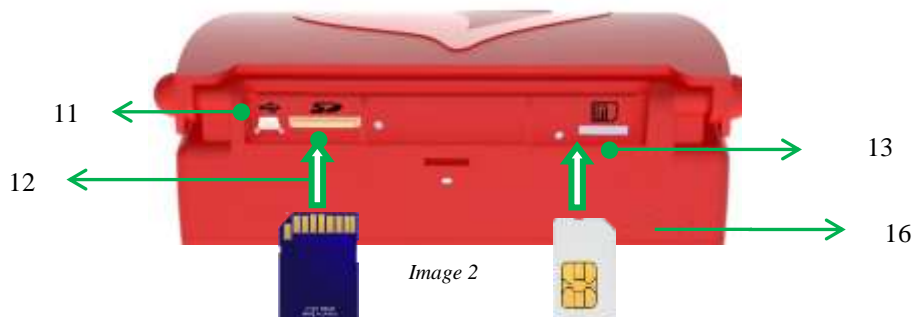


Image 2

Nr.	Description
11	USB port
12	Compartment for SD Memory Card
13	Compartment for SIM card
14	Geo Saver battery compartment
15	Geoloc battery compartment
16	Live call speaker



4.2 Keys, icons and indicators

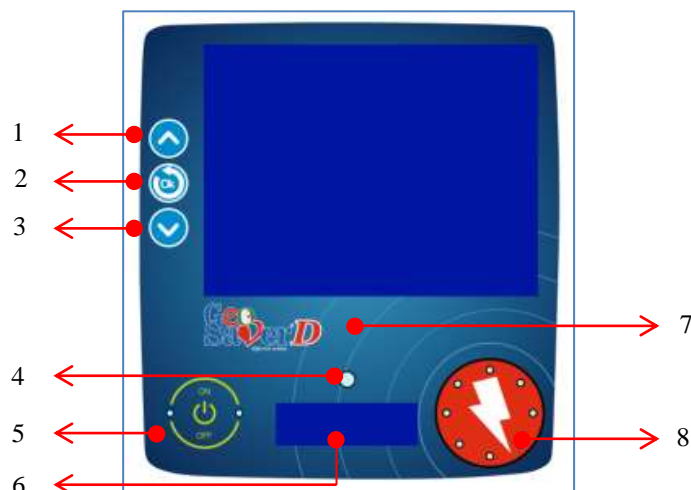


Image 3

Nr.	Function	Nr.	Function
1	Navigation key UP Allows you to scroll up the menu	5	ON / OFF button Allows you to switch the device on or off
2	Navigation key ENTER Allows you to enter the menu and confirm the selection you made	6	Status mini display It allows you to check the functional status of the device
3	Navigation key DOWN Allows you to scroll down the menu	7	Product logo Indicates the model of the device
4	Control LEDs Luminous LED (red / green) allows you to check the functional status of the device	8	Shock button Equipped with luminous LEDs it allows to deliver a defibrillation shock if indicated

4.3 Status mini display

The mini Display is designed to inform the user about the functional status of the device and its battery even when the device is switched off (stand-by mode).





Nr.	Description
1	Functional status of the device
2	Remaining battery level

4.4 TFT colour display









Image4

Nr.	Description	Nr.	Description
1	Indicates the OPERATIVE MODE		9
	DAE: Semiautomatic defibrillation	 AED MODE	
	MONITORING: ECG monitoring	 ECG	
2	Indicates the type of patient to be treated and Ratio Compressions/Insufflations: Adult 30:2 Paediatric 30:2 (<i>requires children pads</i>)	10	Indicates the duration of the rescue
3	Indicates the patient's heart rate	11	Indicates not to touch the patient in certain operations
4	Indicates the patient's thoracic impedance detected	12	Energy in charge and subsequently delivered
5	Progressive charging bar	13	ECG track of the patient
6	Indicates the remaining level of the SD Memory Card	14	Text command that instructs the operation to be performed
7	Indicates the remaining battery level	15	Indicates whether the recording microphone is active
8	Indicates the number of shocks made	16	Indicates current date and time
		17	Indicates streaming ECG transmission

4.5 Standard and optional accessories of the device

The *Geo Saver D* defibrillator comes with the following standard accessories:

Code	Image	Quantity	Description
SGD-B0992		1 Unit (Version 200J or 360J)	<i>Geo Saver D 200J</i>
SGD-B0993			<i>Geo Saver D 360J</i>
SAV-C0846		1 Unit	Adult Pads
SAV-C1032		1 Unit	Li-SOCl ₂ AED Disposable battery
SAV-C1073		1 Unit	User guide
SAV-C1038		1 Unit	Li-SOCl ₂ Geoloc disposable battery
SAV-C1071		1 Unit	SIM card

The following are the optional **Geo Saver D** accessories that can be purchased separately:

Code	Image	Quantity	Description
SAV-C1033		1 Unit	ACC Rechargeable Li-Ion battery
SAV-C1035		1 Unit	Charger
SAV-C1037		1 Unit	GS40A15-P1J Power supply
SAV-C1034		1Unit (Contains 3 units)	N.01 Charger
			N.01 GS40A15-P1J Power supply
			N.01 Power supply cable
SAV-C0016		1 Unit	Children Pads
SAV-C0017		1 Unit	2-way ECG cable
SAV-C0019		1 Unit	CD-ROM Saver View Express
SAV-C0906		1 Unit	SD Card
SAV-C1070		1 Unit	Thermal printer MARTEL MCP7830
SAV-C0027		1 Unit	Memory Card reader for PC
SAV-C1072		1 Unit	Carry bag
SAV-C1039		1 Unit	Geoloc rechargeable Li-Ion battery
SAV-C1040		1 Unità	Geoloc battery charger

5 Parts and accessories of the *Geo Saver D*

5.1 AED Batteries

The *Geo Saver D* defibrillator can work with two different types of batteries:

- (SAV-C1032) Non-rechargeable Li-SOCl₂ battery
- (SAV-C1033) ACC Rechargeable Li ion battery

For AED models *Geo Saver D* and *Geo Saver P*, considering the higher consumption due to the presence of the TFT display, AMI ITALIA recommends the use of the rechargeable battery SAV-C1033 (combined to the charging station SAV-C1034) rather than the disposable battery SAV-C1032.

5.1.1 Non-rechargeable Li-SOCl₂ battery (SAV-C1032)

The non-rechargeable battery with Li-SOCl₂ technology (SAV-C1032) is supplied fully charged and ready for use. The Li-SOCl₂ non-rechargeable battery has been designed to have a long battery life and no maintenance whatsoever.



Image 5

The non-rechargeable battery of the *Geo Saver D* in Standby mode is guaranteed for 4 (four) years^{*1} assuming a battery activation test, daily self-tests without turning on the AED. The Li-SOCl₂ non-rechargeable battery (SAV-C1032) is able to carry out a large number of shocks which vary according to the version:

<i>Geo Saver D Standard 200J</i>	250 complete rescue cycles (shocks at 200J. and CPR) ^{*1}
<i>Geo Saver D Power 360J</i>	160 complete rescue cycles (shocks at 360J. and CPR) ^{*1}

^{*1}New and fully charged battery, constant temperature at 20°C and relative humidity without condensation 45%

If the remaining battery level is low, the *Geo Saver D* informs the user via audio and visual messages.

The *Geo Saver D* will give a **low battery** warning when the level is ≤5% (**WARNING**) and a **very low battery** warning when the level is ≤1% (**ALARM**)

WARNING: Remaining capacity level of Battery equal or less than 5%.
This notice will only be provided in Operating mode as indicated in paragraph 5.1.
With a 5% battery the *Geo Saver D* allows to shock about **14 shocks** or **40 days of stand-by**^{*2}

ALARM: Remaining capacity level of Battery at ≤1%
This warning will be provided both in Stand-by and in operating mode, as indicated in the paragraph
With a battery at ≤1% the *Geo Saver D* carries out about **7 shocks** or **20 days of stand-by**^{*2}
In this condition the use of the device is not recommended.

^{*2}, Constant temperature at 20°C and relative humidity without condensation 45%

!!ATTENTION!!

In order to protect the battery life (SAV-C1032) and guarantee automatic daily tests, after installing it, it is advisable not to remove the battery (SAV-C1032) unless it is to be replaced. The removal of the battery and the subsequent insertion involves a complete test of the AED which considerably consumes its capacity. Furthermore, if the battery is not properly attached it could be damaged.

5.1.2 Rechargeable Li ion battery (SAV-C1033)

The rechargeable battery with Li-Ion technology (SAV-C1033) of the *Geo Saver D* is suitable for those who use the defibrillator intensively. Being rechargeable, it allows operators to reduce management costs and guarantee a greater number of interventions.



Image 6

The ACC rechargeable battery of the *Geo Saver D* can be recharged using only the dedicated charger (SAV-C1035) with relative accessories supplied by A.M.I. Italia S.r.l. The battery allows you to carry out a high number of shocks which varies according to the version of the *Geo Saver D* in your possession:

<i>Geo Saver D Standard200 J</i>	typically 200 continuous shocks ^{*1}
<i>Geo Saver D Power360 J</i>	typically 110 continuous shocks ^{*1}

^{*1} New and fully charged battery, constant temperature at 20°C and relative humidity without condensation 45%

If the remaining battery level is low, the *Geo Saver D* informs the user via audio and visual messages.

The *Geo Saver D* will give a **low battery** warning when the level is $\leq 5\%$ (**WARNING**) and a **very low battery** warning when the level is $\leq 1\%$ (**ALARM**)

WARNING: Remaining capacity level of Battery equal or less than **5%**.
This notice will only be provided in Operating mode as indicated in paragraph 5.1.
With a 5% battery the *Geo Saver D* allows to shock about **14 shocks** or **40 days of stand-by** ^{*2}

ALARM: Remaining capacity level of Battery at $\leq 1\%$
This warning will be provided both in Stand-by and in operating mode, as indicated in paragraph 5.1
With a battery at $\leq 1\%$ the *Geo Saver D* carries out about **7 shocks/20 days of stand-by** ^{*2}
In this condition the use of the device is not recommended.

^{*2}Constant temperature at 20°C and relative humidity without condensation 45%

It is advisable to replace these batteries every 2 years or after having made a number of recharges greater than **300** (the event that occurs first).

5.1.3 Suggestions for a proper maintenance of battery SAV-C1033

A.M.I Italia recommend that batteries SAV-C1033 left in a “storage stage” to be fully recharged at least every 4 months from the receipt of the goods and to be recharged regularly every 4 months when attached to the device “ready to use”, to avoid completely discharging it and to maintain maximum life expectancy of the battery. The battery pack technology and the modules offered are to ensure a long lasting duration but they require a correct maintenance; failure to follow these requirements will result in an early deterioration of the battery, which will not be covered by warranty.

For warranty replacement consideration, batteries are to be returned to the original supplying distributors/dealer.

5.1.4 Inserting and removing the batteries

To be able to operate the **Geo Saver D** the insertion of a battery is required. Below are detailed instructions for correctly installing the batteries (rechargeable or non-rechargeable) in the **Geo Saver D**.



Image 7



Image 8



Image 9

- Position the appliance on its side as shown in image (7)
- Remove the cover of the battery compartment as shown in image (7)
- Insert the battery as shown in image (8)
- Push the battery as shown in image (8) positioning it at the bottom of the special compartment
- Close the battery compartment cover as shown in image (9)

Follow the instructions below to **remove** the battery:



Image 10



Image 11

- Position the device as shown in image (10)
- Pull the clamps to extract the battery as shown in image (11)

5.1.5 Recharging station for rechargeable batteries

The charging station (SAV-C1034) allows you to recharge rechargeable batteries with Li-Ion technology ACC model (SAV-C1033) of the **Geo Saver D**. The charging station consists of the following parts:

- Charger (SAV-C1035) image (12)
- AC/DC power supply/adaptor model GS40A15-P1J (SAV-C1037) image (13)
- Power cable with three-pole Italian plug (SAV-C0366) image (14)



Image 12



Image 13



Image 14

5.1.6 Structure of the battery charger



Image 15

Nr.	Description	Function
1	Charger LED	Indicates the battery charge level or the functional status of battery charger
2	Supply	Input for 12V, 5A power supply connector
3	Battery contacts	Contacts for energy exchange between charger and battery

The Battery Charger (SAV-C1035) must only be used with the AC/DC power supply/adaptor supplied by A.M.I. Italia S.r.l. model GS40A15-P1J of Meanwell (SAV-C1037).

The battery charger (SAV-C1035) and the relative power supply unit (SAV-C1037) are not certified under the supervision of the IMQ notified entity, therefore they do not fall into the EC certificate no.1104 / MDD. Furthermore, these devices do not have the IMQ mark, therefore they are not indicated in the IMQ certificate no. CA10.00185.

5.1.7 Recharge procedure

- A** Place the charger on a perfectly horizontal shelf and firmly attached to the floor
- B** Connect the power supply (SAV-C1037) to the charger and then to the power outlet
- C** The LED on the charger will flash green, indicating that it is ready to charge
- D** Insert the battery to be charged into the battery charger as shown in image (16)

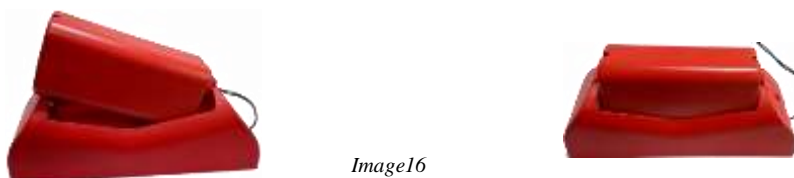


Image16

The recharging station allows you to recharge exclusively original ACC rechargeable Li-Ion batteries (SAV-C1033) of A.M.I. Italia S.r.l. The charging time of around 2.5 hours may increase in the case of batteries that have undergone recharging cycles higher than the one indicated. The battery charger is equipped with a control LED that indicates both its functional status and the battery charge level, if inserted. The following is a table that allows identification of the control LED coding:

INDICATOR	RED	GREEN
FIXED	Battery not working	
FLASHING	Battery inserted	Battery inserted
	Battery not inserted	Battery not inserted
	Faulty battery charger	Battery charging
		Battery charger waiting for battery insertion

When recharging, the battery charger control LED will flash green with a different frequency depending on the level of recharge, until the charge is fully indicated by the control LED with FIXED green light.

Charge level	0%	25%	50%	75%	100%
Number of consecutive flashes	1	2	3	4	Fixed

5.2 Geoloc Batteries

The **Geo Saver D** defibrillator can work with two different types of batteries:

- (SAV-C1038) Non-rechargeable Li-SOCl₂ battery
- (SAV-C1039) ACC Rechargeable Li-Ion battery

5.2.1 Non-rechargeable battery Li-SOCl₂ (SAV-C1038)

The non-rechargeable battery with Li-SOCl₂ technology (SAV-C1038) is supplied fully charged and ready for use. The Li-SOCl₂ non-rechargeable battery has been designed to have a long battery life and no maintenance whatsoever.



Image 17

The **Geoloc** non-rechargeable battery in Standby mode is guaranteed for 4 (four) years*¹ assuming a machine activation test, daily self-test without any connection to the AMISAVERCLOUD for transfers other than the session log and a good coverage area for GPS and GPRS signal.

If the remaining battery level is low, the **AMISAVERCLOUD** highlights the status by colouring yellow or red the graphic representation (pie chart) of the remaining capacity and eventually informs the user by sending e-mail or sms if sending was enabled from the specific configuration panel (par. 11.4).

5.2.2 Rechargeable Li ion battery (SAV-C1039)

The rechargeable battery with Li-Ion technology (SAV-C1039) of the **Geoloc** is recommended for those who intensively use the unique features of the Geo Saver – Geoloc - AMISAVERCLOUD system (Streaming, Speakerphone calls, tracking). Being rechargeable, it allows operators to reduce management costs and guarantees a greater number of connections.



Image 18

The ACC rechargeable battery of the **Geo Saver** can be recharged using only the dedicated charger (SAV-C1040) with relative accessories supplied by A.M.I. Italia S.r.l.

If the remaining battery level is low, the **AMISAVERCLOUD** highlights the status by colouring yellow or red the graphic representation (pie chart) of the remaining capacity and eventually informs the user by sending e-mail or sms if sending was enabled from the specific configuration panel (par. 11.4).

!!ATTENTION!!

The rechargeable batteries require maintenance which consists of a complete recharge every 4 months.

5.2.3 Inserting and removing the batteries

In order to function, the **Geoloc** module requires the insertion of a battery. Below are the detailed instructions for correctly installing the batteries (rechargeable or non-rechargeable) for the **Geoloc** module inside the **Geo Saver D**.

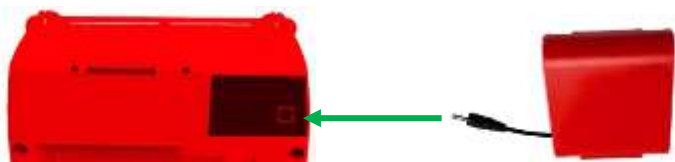


Image 19



Image 20



Image 21



- Position the appliance on its side as shown in image (19)
- Remove the cover from the battery compartment as shown in image (19)
- Hook the Battery connector to the Geoloc as shown in image (20)
- Insert the battery
- Close the battery compartment cover as shown in image (21)

Follow the instructions below to remove the battery from the device:



Image 22



Image 23

- Open the cover of the Geoloc battery compartment as shown in image (22)
- Remove the battery
- Disconnect the battery connector as shown in image (23)

5.2.4 Recharge procedure

- A Remove the rechargeable battery (SAV-C1039) from the Geo Saver
- B Connect the power adapter / battery charger (SAV-C1040) to the power outlet
- C Hook the connector of the battery charger / power supply into the battery as shown in image (24)

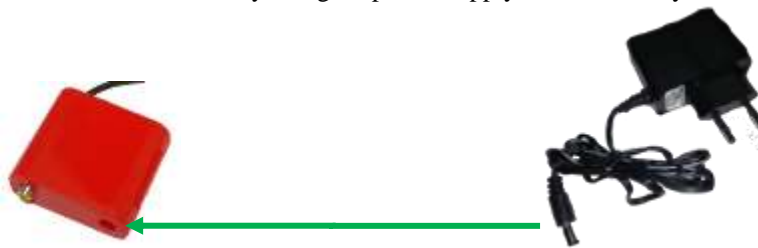


Image 24

The recharging station allows recharging exclusively original ACC rechargeable Li ion batteries (SAV-C1039) of A.M.I. Italia S.r.l. The charging time of around 2.5 hours may increase in the case of batteries that have undergone recharging cycles higher than the one indicated. The battery charger is equipped with a control LED that indicates both its functional status and the battery charge level, if inserted. The following is a diagram that allows the identification of the control LED coding:

INDICATOR	RED		GREEN	
FIXED	Battery inserted	Battery charging	Battery inserted	Battery end of charge
			Battery not inserted	Battery charger waiting for battery insertion

5.3 PADs for defibrillation

The **Geo Saver D** allows the use of two different defibrillation PADs depending on the patient to be treated:

- Defibrillation PADs for **Adults** model SAV-C0846
- Defibrillation PADs for **Children** model SAV-C0016

5.3.1 Defibrillation PADs for Adults SAV-C0846

The SAV-C0846 defibrillation PADs are pre-gelled disposable types.

They must be used on adult patients (**age > 8 years or weight > 25Kg**). Defibrillation PADs are supplied in a single sealed package with the expiration date (typically 30 months). On the expiry date the PADs must be replaced even if not used.

The **SAV-C0846** Pads are characterized by the presence of the cable and the PAD connector **outside the sealed package**. This solution has been adopted in order to maximally speed up the positioning of the Pads avoiding the need to insert the connector during the phases of the rescue.



Image 25

The **SAV-C0846** PADs are polarized type, that is, the positioning of the electrodes **must not be reversed**.

For more information on positioning the defibrillation PADs, refer to the relevant paragraph.

5.3.2 PADs for Children SAV-C0016

The SAV-C0016 defibrillation PADs are pre-gelled disposable types.

They must only be used on children patients (**age < 8 years or weight < 25Kg**). The defibrillation PADs are supplied in a single sealed package with the expiration date (typically 30 months). On the expiry date the PADs must be replaced even if not used.

The cable, connector and PAD adapter **are inside the sealed package**.

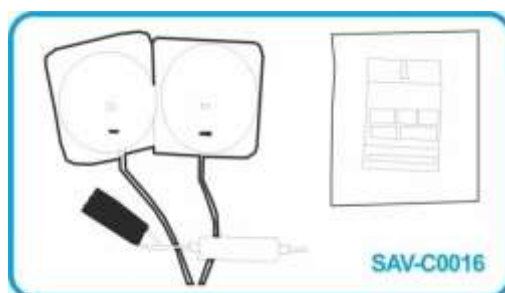


Image 26

The PADs SAV-C0016 allow to deliver shocks on paediatric patients with a maximum energy level of 50J as prescribed by the international guidelines ERC/AHA 2017. The PADs SAV-C0016 are polarized type, that is, the positioning of the electrodes **must not be reversed**.

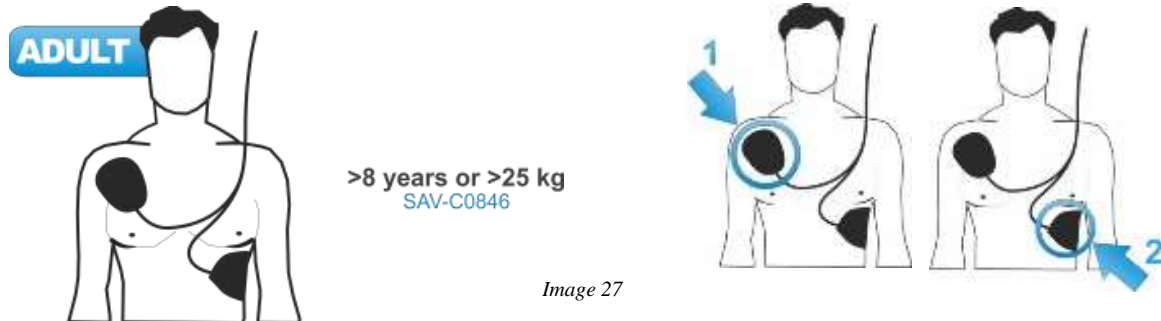
For more information on positioning the defibrillation PADs, refer to the relevant paragraph.

5.3.3 Positioning of defibrillation PADs

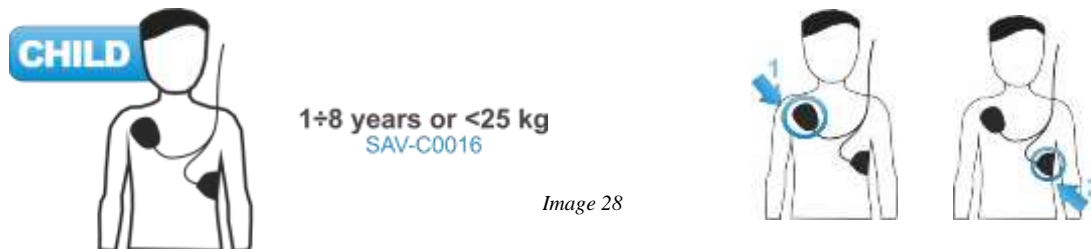
The correct placement of the PADs is essential for an efficient analysis of the patient's heart rhythm and for the consequent delivery of the shock (if necessary).

Always refer to the instructions given both on the packaging of the PADs and directly on each individual pad.

The PADs of the *Geo Saver D* are polarized type; do not reverse the positioning of each single pad.



- 1 Position **Pad 1** immediately below the patient's right collarbone
- 2 Position **Pad 2** on the ribs on the left side of the patient under the left side of the chest



- 1 Position **Pad 1** immediately below the patient's right collarbone
- 2 Place **Pad 2** on the ribs on the left side of the patient under the left side of the chest

5.4 2-pole ECG cable SAV-C0017

The SAV-C0017 ECG cable is equipped with two clip terminals for single-use pre-gelled electrodes (*optional*).

The ECG cable is able to carry out the detection of the patient's derivation II and the relative display of the ECG tracking on the **Geo Saver D** display. The SAV-C0017 ECG cable can only be used if *the Geo Saver D* is set in "ECG MONITORING" operating mode (see Chapter 8).

The ECG SAV-C0017 cable is classified as type CF



Image 29



5.4.1 Positioning of the electrodes

The SAV-C0017 ECG cable electrodes must be positioned as shown in image (22):

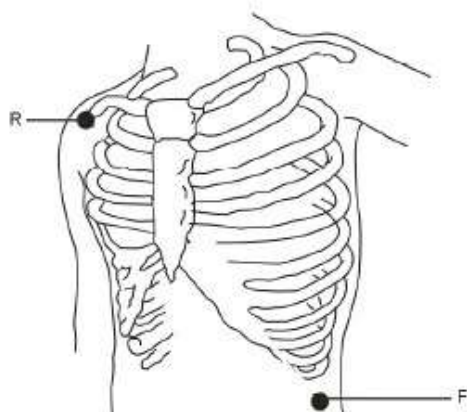


Image 30

International coding (European IEC)	
Code (IEC)	Color (IEC)
R	RED
F	GREEN

Electrode R: near the right shoulder, directly below the clavicle.

Electrode F: on the left side of the hypogastrium.

5.5 Memory Card

The **Geo Saver D** allows the recording of data on the **internal memory** as well as on the **external memory card**. Supported memory cards are **SD/SDHC** cards with capacities up to 8GB



Image 31

To install a **Memory Card** in the **Geo Saver D** follow this procedure:

- A. The memory card must be inserted before attaching the battery
- B. Place the device on a firm, stable horizontal shelf as shown in the image

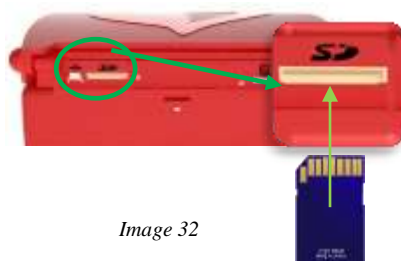


Image 32

- C. Insert the Memory Card with the contacts facing upwards as shown in the image and push it until it is completely inserted

The data recorded directly on the internal memory of the **Geo Saver D** can be downloaded via the **USB port** on the back of the device (image 32).

The USB cable to be used must be a **mini USB 2.0** (USB / Mini USB connection)



Image 33

To connect the mini USB cable to the **Geo Saver D** follow this procedure:

- A. Detach the battery and insert the Mini USB terminal of the cable in the appropriate compartment on the Geo Saver D
- B. Connect the USB terminal of the cable to a Personal Computer
- C. Use the PC Saver View Express software

!!ATTENTION!!

The USB is a service port used for device configuration purposes (for the exclusive use of personnel authorized by AMI) or for downloading recorded data stored internally.

The functions related to the USB port are enabled and accessible only when the device is turned off.

WARNING: When the device is switched on, and especially when a patient is connected to it, it is recommended:

- do not use the USB port
- do not touch the USB port
- remove the USB cable, if inserted in the USB port, before starting the device

5.6 Martel MCP7830 thermal printer (SAV-C1070)

The **Geo Saver D** defibrillator can print the ECG tracing and patient data using the external thermal printer model **Martel MCP7830** (SAV-C1070).

The communication between printer and defibrillator is wireless thanks to the use of the IrDA port of the **Geo Saver D** (located on the left side of the defibrillator) and that of the printer.

The **Martel MCP7830** printer is supplied with the following accessories:

- Rechargeable Ni-MH battery
- AC/DC battery charger
- PC interface cable
- Thermal paper roll (57mm, 30Ø)



All information on the thermal printer can be found in the specific user manual of **Martel MCP7830**. Before using the printer, carefully read the user manual attached to it; pay particular attention to the Precautions and Warnings section.

To print the events, a memory card must be installed in the **Geo Saver D**. Otherwise the defibrillator will not allow printing.

5.6.1 Printer structure



Image 34

Nr.	Description
1	Compartment for thermal paper roll
2	Power button
3	IrDA port
4	Power LED - Communication LED - Error LED
	PC communication port (bottom side)
	DC connector (bottom side)

6 Geo Saver D selection menu

The **Geo Saver D** menu allows you to make multiple selections, settings and view useful information about the device and the rescue. In the next paragraphs all the settings that can be selected to use the device to its full potential will be described in detail.

6.1 Main Menu

Press the ON/OFF button to turn on the device.

When the device is turned on, the model name and operating status of the device will be shown on the display



Image 35



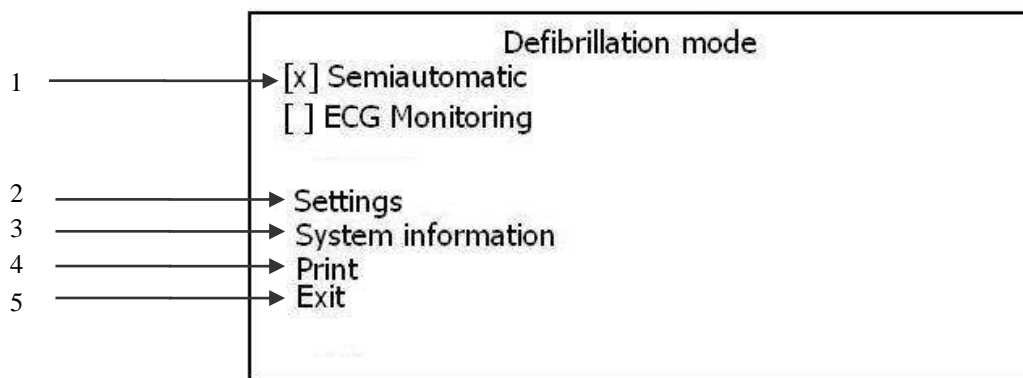
Image 36



Image 37

To access the settings menu, press the ENTER key as shown in image (37).

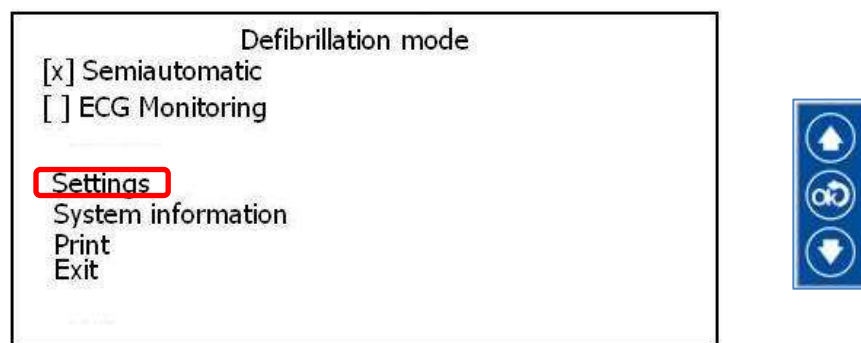
After pressing the ENTER key, the following screen will be shown on the **Geo Saver D** display:



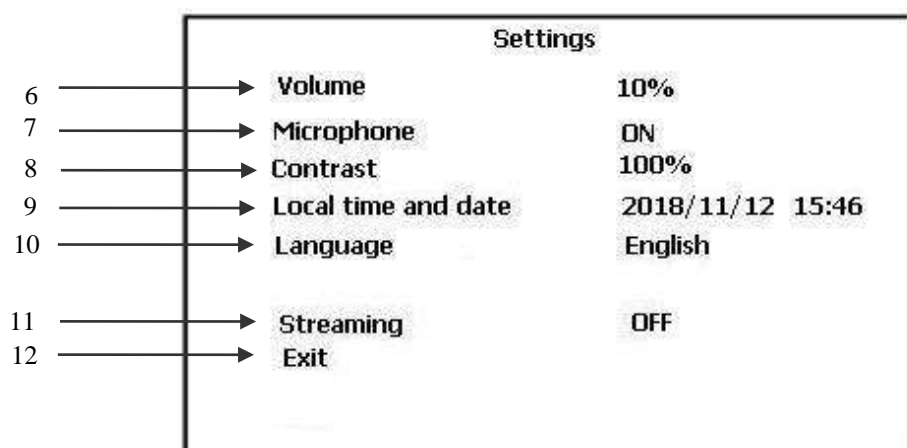
Nr.	Image	Function
1	[x] Semiautomatic [] ECG Monitoring	Allows you to select the desired operating mode: Semiautomatic Defibrillation ECG Monitoring
2	Settings	Allows access to the settings submenu
3	System information	Allows access to the device information submenu
4	Print	Allows access to the print submenu (only if using Martel MCP7830 printer)
5	Exit	Allows you to return to the main screen

6.2 Settings Menu

Enter the *MAIN* menu and using the navigation keys on the defibrillator keyboard, select the *SETTINGS* item and press the enter key.



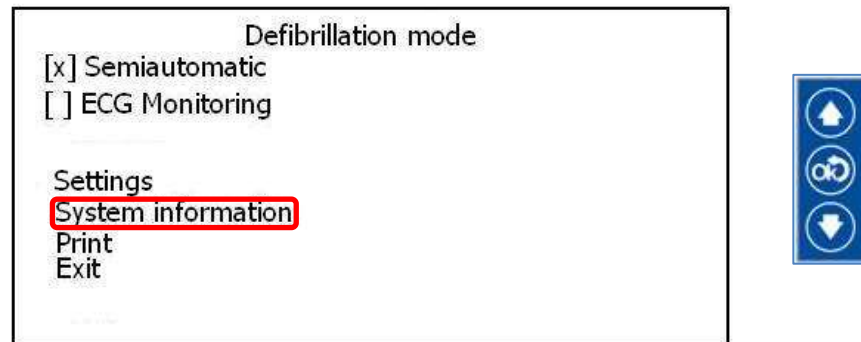
After pressing the ENTER key, the following screen will be shown on the *Geo Saver D* display:



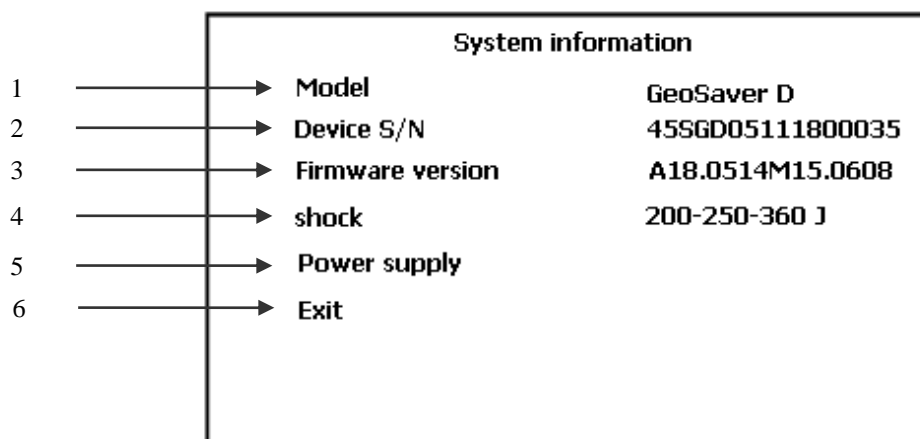
Nr.	Image	Function	Possible variations
6	Volume	Allows you to increase or decrease the sound level (voice + acoustic signals)	10% - 100%
7	Microphone	Allows the activation or deactivation of the microphone for recording on the Memory Card of environmental events	ON - OFF
8	Contrast	Allows you to change the contrast level of the display	0% - 100%
9	Local time and date	Allows you to change the local date and time	y/m/d - hh:mm
10	Language	Allows you to change the language selected for voice and text commands (<i>default 1 language, up to 5 selectable languages on request</i>)	English
11	Streaming	Allows you to manage remote transmission of ECG data	ON - OFF
12	Exit	Allows you to exit the Settings menu and return to the main operating screen	

6.3 System information Menu

Enter the *MAIN* menu and using the navigation keys on the defibrillator keyboard, select the *SYSTEM INFORMATION* item and press the enter key.



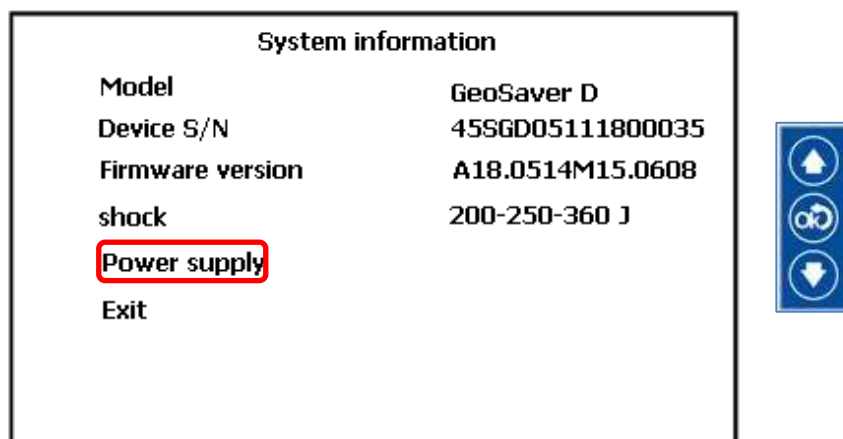
After pressing the ENTER key, the following screen will be shown on the *Geo Saver D* display:



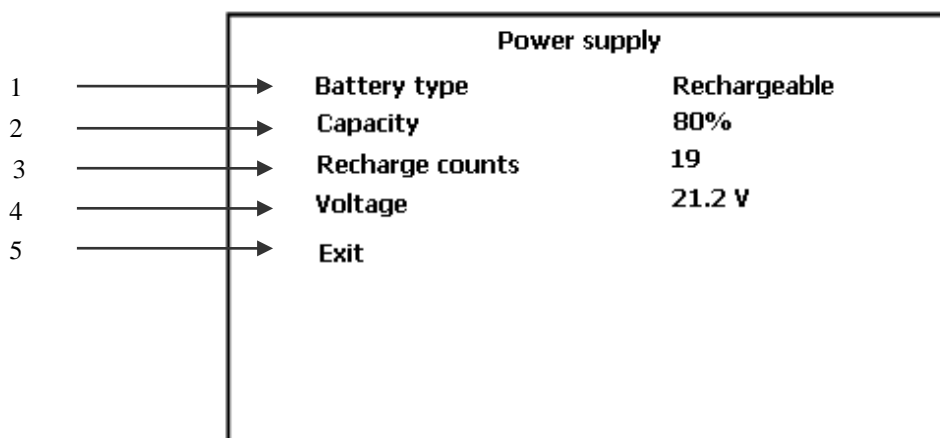
Nr.	Image	Function	Possible variations
1	Model	Indicates the model of the device	Geo Saver D
2	Device Serial No.	Reference number for service	00SGD00000000000
3	Firmware version	Indicates the software version installed on the device	A00.0000M00.0000
4	Shock	Indicates the shock protocol used	
5	Power Supply	Allows access to the power sub-menu	
6	Exit	Allows you to exit the Settings menu and return to the main operating screen	

6.3.1 Power Supply Submenu

Enter the *SYSTEM INFORMATION* menu and use the navigation keys on the defibrillator keyboard to select the item *POWER* and press the enter key.



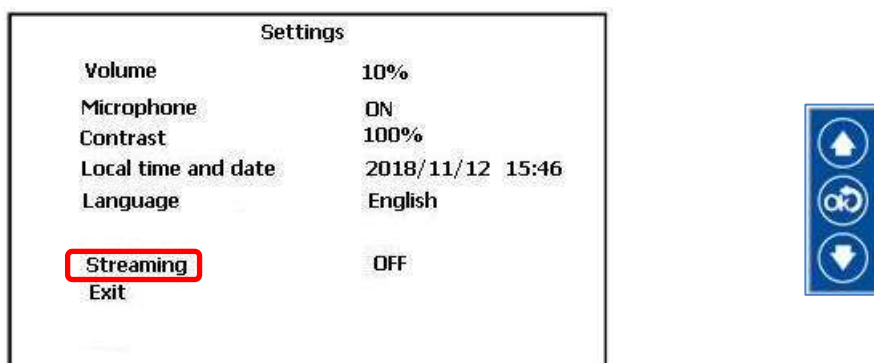
After pressing the ENTER key, the following screen will be shown on the *Geo Saver D* display:



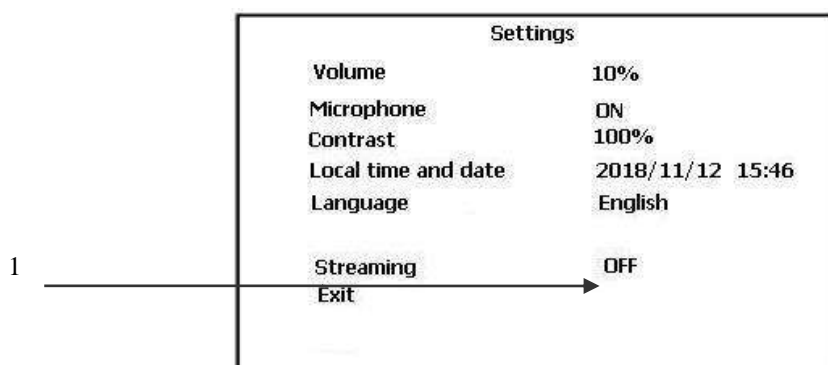
Nr.	Image	Function	Possible variations
1	Type	Indicates the type of battery installed	Disposable (Li-SOCl ₂) Rechargeable (Li-Ion)
2	Capacity	Indicates the remaining battery capacity	0 – 100%
3	Recharge No.	***This item is only displayed if the rechargeable ACC battery is inserted Indicates how many times the rechargeable battery has been recharged	0 - XX
4	Voltage	Indicates battery voltage	00V
5	Exit	Allows you to exit the Settings menu and return to the main operating screen	

6.4 Streaming Menu

Enter the *MAIN* menu and using the navigation keys on the defibrillator keyboard, select the *SETTINGS* item and press the enter key. The following menu will be displayed. Using the navigation keys on the defibrillator keyboard, select the *STREAMING* item and press the enter key



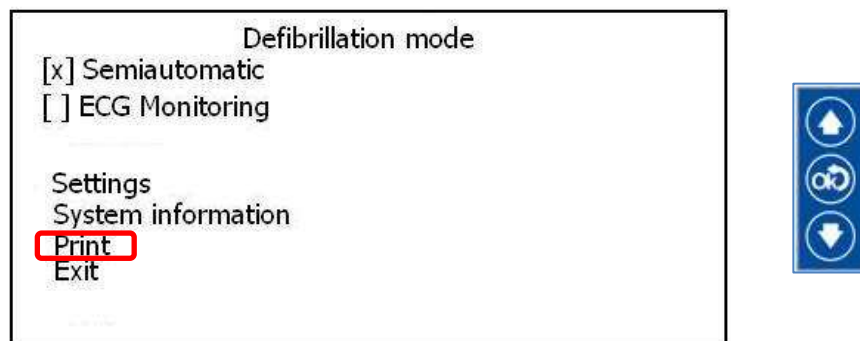
After pressing the ENTER key, the following screen will be shown on the *Geo Saver D* display:



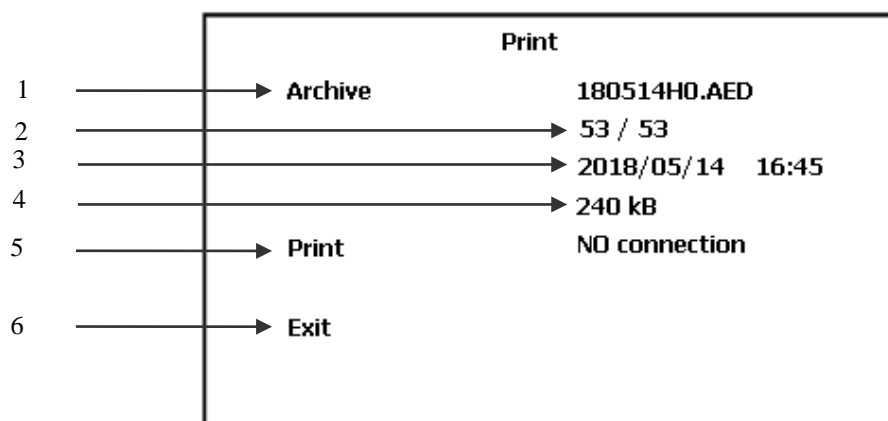
Nr.	Image	Function	Possible variations
1	Streaming	Allows you to enable/disable remote sending of ECG data	ON - OFF

6.5 Print Menu

Enter the *MAIN* menu and using the navigation keys on the defibrillator keyboard, select the *PRINT* item and press the enter key.



After pressing the ENTER key, the following screen will be shown on the *Geo Saver D* display:



Nr.	Image	Function	Possible variations
1	Archive	Allows you to select rescue events recorded on memory card	000000L0.AED
2	53/53	Indicates the selected rescue and the total amount of recorded rescues	1/X
3	2018/05/14 16:45	Indicates the date and time of the selected rescue	y/m/d - hh:mm
4	240kB	Indicates the size of the file	XX KB/MB
5	Print	Indicates whether the external printer is connected or disconnected	Ready No connection
6	Exit	Allows you to exit the Settings menu and return to the main operating screen	

7 Auto test

The Geo Saver D has been designed to be a totally safe device, always ready for use and able to automatically and constantly verify correct operation, minimizing maintenance operations.

The Geo Saver D performs different types of self-tests:

- **Activation:** Every time a battery is inserted in the device
- **Automatically:** During Stand-by mode with daily/monthly/half-yearly intervals
- **Switching on:** When the device is switched on

The outcome of the control test can be viewed via a two-colour LED (green/red) and the LCD mini-display.




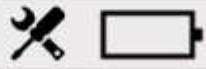




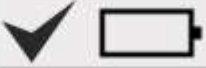



The mini-display and the control LED let you know at any time, even when the device is switched off (stand-by mode), the functional status of the device and its battery.

7.1 Control LED and mini display

Both the mini display and the control LED are positioned on the front of the **Geo Saver D** keyboard.

Based on the different colour of the control LED and the information shown on the display, the operator can independently determine the functional status of the defibrillator and its battery.


The following table shows the flashing code of the control LED and the relative screens of the control mini display.

Control LED green / red blinking			
IN STAND-BY (with battery)	Device ready for use		
	Warning for a low battery level, replace it		
	Faulty device, needs service		
WORKING	Device working	OFF	
	Warning: battery is getting low (5% left)	OFF 	 battery is getting low
	Caution! low battery, replace it	 	 low battery, replace it

7.2 ACTIVATION test


The **Geo Saver D** performs functional tests only if the battery is installed. Each time a battery is inserted, the device will perform a diagnostic ACTIVATION test. During this test, the device performs a complete control (firmware/hardware), which involves a consumption of the battery equal to a shock; therefore, it is advisable, once performed, not to remove the battery from the device. The ACTIVATION test requires a manual intervention by the operator, who must perform the following steps:

❖ Insert the battery into the device

If the battery is correctly inserted, the **Geo Saver D** will automatically turn on emitting an acoustic signal and the power button  will light up green while the control LED will turn off. The following screens will appear on the colour TFT display:



The device will issue a voice command (audio):

 "Testing device"
"Press shock button"

The shock button will light up with flashing light.



The operator will have a maximum time of 60 seconds* to press the shock button.

❖ Press the shock button to start the ACTIVATION test



If the shock button is pressed correctly it will stop flashing and the device will start the activation test. The following screens will appear on the colour TFT display:



❖ Turn off the device

If it is not to be used immediately turn off the **Geo Saver D** and leave the battery inserted to ensure that periodic self-diagnostic tests are performed (see Paragraph 5.1.3)

* If the shock button is not pressed within the time limit indicated by the countdown, the **Geo Saver D** detects an error.

Switch the device back on and press the shock button within the time limit indicated by the countdown.

If, on the other hand, the shock button has been pressed but the shock button continues to flash it means that the shock button does not work properly. Turn off the device and perform the operation again; if the problem persists, contact the authorized technical assistance center.

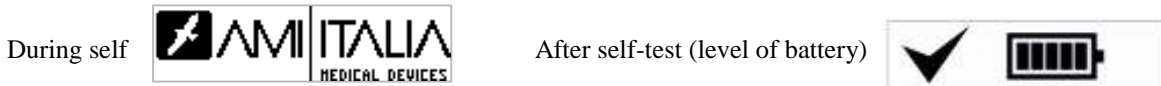
7.3 AUTOMATIC test

The **Geo Saver D** has been designed to always be ready in the moment of real need.

The device is equipped with a mode, called stand-by, in which when the device is switched off (with battery installed) it performs diagnostic tests **automatically** on a daily basis.

The automatic self-test does not require any manual operation by the operator and takes a few seconds.

The **Geo Saver D** will inform the operator of the start of the automatic self-test through the mini status display:



The automatic self-test involves a reasonable consumption of the battery.

Since a daily test with complete analysis would lead to excessive battery consumption, three levels of automatic tests have been set: **basic** (daily), **in-depth** (monthly), **complete** (half-yearly).

The result of the automatic self-test can be verified using the LED and the mini-control display located on the device keyboard.


Consult the tables for Led and status mini- display shown in paragraphs 4.2 and 7.1

7.4 POWER ON Test

The **Geo Saver D** performs self-diagnostic tests each time it is turned on.

This test is performed in order to verify the proper function of the device before use.

The test is conducted automatically and lasts a few seconds.

After pressing the power button  the **Geo Saver D** will emit an acoustic signal to confirm power-up, the control LED will be off and the following screen will be displayed on the colour display:



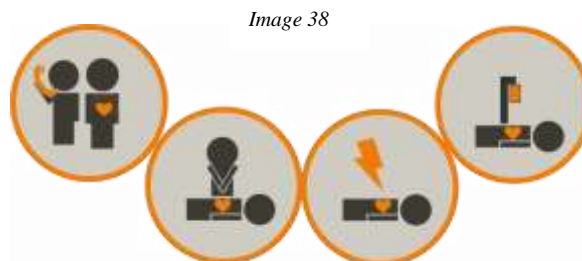
From this moment the device will be ready for use and will provide the operator with the first instructions to start the intervention.

If not to be used immediately, switch off the Geo Saver and leave the battery inserted to ensure periodic self-testing (see Section 7.3).

8 Defibrillation

If you need to help a person with sudden cardiac arrest, remember to implement the sequence of actions recommended by ERC and AHA 2017.

The ERC has established a rescue protocol to be respected during the resuscitation of a person suffering from sudden cardiac arrest. This protocol has been called the "chain of life".



- 1 Make sure the person needs help (is unconscious, does not breathe and shows no signs of blood circulation) and call local emergency number immediately
- 2 While waiting for a defibrillator to be available, begin CPR manoeuvres immediately
- 3 Use the **Geo Saver D** defibrillator to restore normal heart rhythm
- 4 Continue this until resuscitation of medical competence

8.1 Switching on the Geo Saver D

Geo Saver D defibrillator will automatically start the semi-automatic defibrillation mode every time it is turned on (default setting). Below are the procedures to follow to use the device in this mode.

Press the power button on the device



Geo Saver D will emit an acoustic signal to confirm the ignition; the ON/OFF button will be lit fixed green. On the colour display the following screens will be shown in sequence:



If the test is successful, the device will suggest the first sequence of operations to be performed through voice (audio) and visual (colour display) commands, as shown in the following table:

Voice commands	Text
Make the emergency call	Call Emergency Medical Services
Stay calm and follow the voice instructions	Stay calm and follow the voice instructions

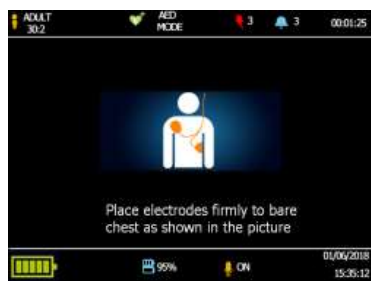

8.2 Remove clothes

The Geo Saver D suggests to the operator -before correctly positioning the defibrillation PADs on the patient- how to ascertain the patient's condition. This information is highlighted by voice commands (audio messages) and visual commands (colour display), as shown in the table below:

Voice commands	Text
If the patient is unconscious and does not breathe, remove their clothes to expose bare chest and apply electrodes	Remove clothing expose bare chest

8.3 Positioning of defibrillation PADs


Geo Saver D suggests to the user the operations to be carried out to correctly position the defibrillation PADs to the patient. This information is highlighted by voice (audio) and visual (colour display) commands, as shown in the following table:

Voice commands	Text	Video Display
Place the two electrodes firmly to bare chest as shown in the picture	Place electrodes firmly to bare chest as shown in the picture	
		 <p>ONLY IF PEDIATRIC PADS CONNECTOR SAV-C0016 are INSERTED</p>

Consult the relative paragraph for more information on defibrillation PADs and their application parag.5.3

8.4 Cardiac rhythm analysis

If the defibrillation PADs have been correctly applied and the connector is inserted in the appropriate compartment, the **Geo Saver D** automatically analyses the heart rhythm of the patient. This information is highlighted by voice (audio) and visual (colour display) commands, as shown in the following table:

Voice commands	Text	Video Display
Do not touch the patient	Cardiac rhythm analysis ... in progress..	
Cardiac rhythm analysis		

During cardiac rhythm analysis the patient's body must not be touched and must not be subjected to vibrations or movements. The **Geo Saver D** analysis software was designed to recommend defibrillation shock treatment only if the patient is suffering from the following arrhythmias:

VF Ventricular fibrillation

Peak to peak Amplitude min. 200 μ Volts



Some rhythms with very low amplitude or low frequency VF may not be interpreted as shockable.

VT Ventricular Tachycardia (including ventricular flutter and polymorphic ventricular tachycardia)

Rhythm frequency min. 180 bpm and peak-to-peak amplitude min.200 μ Volts



Some rhythms with very low amplitude or low frequency VT may not be interpreted as shockable




The **Geo Saver D** detects both noise artefacts in the ECG, caused, for example, by patient movement, defibrillation electrode adjustment, and electronic disturbances from external sources. In these cases the analysis is delayed or interrupted.


The **Geo Saver D** is able to detect and filter impulses coming from an implanted pacemaker.

8.5 Shockable rhythm

If the *Geo Saver D* after having analysed the patient's heart rhythm recognizes a VF or VT, this information is highlighted by voice (audio) and visual (colour display) commands, as shown in the following table:



Voice commands	Text	Video Display
Shock recommended	Shock recommended	

Then it automatically performs the charging phase. This information is highlighted by voice (audio) and visual (colour display) commands, as shown in the following table:

Voice commands	Text	Video Display
Do not touch the patient	Charging in progress ... in progress ..	
Charging		

The progress of the charge of the device is indicated by the loading bar.

Once the charging phase is over, the *Geo Saver D* is ready to shock. This information is highlighted by voice (audio) and visual (colour display) commands, shown in the table; in addition, the shock button will flash with light.

Voice commands	Text	Video Display
Move away from the patient	Press the shock button	
Press the flashing red button		
		

Before pressing the shock button, move away and make sure that no one is touching the patient.

To shock, press the shock button within 15 seconds

If the shock button is not pressed within 15 seconds of the shock notice, the *Geo Saver D* will automatically disarm.

This information is highlighted by voice (audio) and visual (colour display) commands, as shown in the following table:

Voice commands	Text
Shock button not pressed	Shock button not pressed Shock cancelled
Shock cancelled	

If the shock button is pressed, the **Geo Saver D** will perform the defibrillation shock. This information is highlighted by voice (audio) and visual (colour display) commands, shown in the table; in addition the shock button will stop flashing.

Voice commands	Text
Shock delivered	Shock delivered
You can now touch the patient	

Geo Saver D performs the shock using the BTE (Biphasic Truncated Exponential) waveform with auto compensation of the patient's thoracic impedance. The **Geo Saver D** shock protocol is incremental, i.e. the energy delivered to the patient varies incrementally based on the number of shocks performed:

Geo Saver D 200J: The first shock is delivered at energy of **150J** the following ones at **200J**


Geo Saver D 360J: The first shock is delivered at energy of **200J** the second at **250J** the subsequent ones at **360J**

The detected impedance value must be between 20 and 200 Ohm; if a value outside this range is detected, it is required to position the PADs.

The shock protocol is pre-set, cannot be modified by the user and is reset at each power up. It can be changed exclusively by A.M.I. Italia S.r.l. under explicit request of the customer and endorsed by an entity in charge.

8.6 Non-shockable rhythm

If the *Geo Saver D* does not detect a VF or a VT during cardiac rhythm analysis, this information is highlighted by voice (audio) and visual (colour display) commands, as shown in the following table:

Voice commands	Text	Video Display
Shock NOT recommended	Shock NOT recommended	

All rhythms other than VF and VT will be considered as non-shockable. For more information, paragraph 13.10.

8.7 Change of rhythm

The *Geo Saver D* is designed to analyse the patient's heart rhythm continuously, moment by moment.

If the device after recommending the shock detects a sudden change in the heart rate of the patient who no longer needs a defibrillation, it will carry out the automatic disarmament. This information is highlighted by voice (audio) and visual (colour display) commands, as shown in the following table:


Voice commands	Text
Shock Cancelled, rhythm changed	Shock Cancelled, rhythm changed

8.8 CPR

The **Geo Saver D** defibrillator will guide the operator to CPR (Cardio Pulmonary Resuscitation) in one of the following cases:


- A shockable rhythm was detected and a defibrillation shock was delivered
- A non-shockable rhythm was found
- A shockable rhythm was found but the shock button was not pressed
- A shockable rhythm was found but the patient's rhythm changed

This information is highlighted by voice (audio) and visual (colour display) commands, shown in the table








Voice commands	Text	Video Display
Begin cardiopulmonary resuscitation	Begin cardiopulmonary resuscitation	
Perform 5 cycles of 30 compressions followed by 2 breaths		

The **Geo Saver D** will provide instant by instant instructions for performing CPR, instructing the operator on how to perform chest compressions and insufflations. According to the 2017 AHA/ERC guidelines, the duration of cardiopulmonary resuscitation is about 2 minutes.

The compressions/insufflations ratio must be **30/2** for 2 minutes (5 cycles) for both adult and child patients.

Video Display		
ratio 30/2 for 2 minutes (5 cycles)		

The following table shows the main operations to be performed and the relative visual-text-vocal commands provided by *Geo Saver D*.

No.	Type of command (<i>Geo Saver D</i>)	Instruction <i>Geo Saver D</i>	Operations to be performed
1	Voice / Text	“Begin Cardio-Pulmonary Resuscitation”	<p>A. Check that the patient is on a rigid surface B. Kneel beside the victim C. Place the heel of one hand in the center of the victim's chest D. Place the heel of the other hand over the first one E. Interlace the fingers of both hands and make sure that the pressure is not applied to the ribs. Do not exert any pressure on the upper portion of the abdomen or the lower portion of the sternum</p> 
	Visual		
2	Voice / Text	“Quickly compress the patient's chest”	<p>F. Stand vertically on the victim's chest and, with arms extended, compress the sternum. Keeping the arms stretched, the external cardiac massage is exercised using the weight of the trunk; the oscillation movement must be from pivoting on the coxo-femoral joint G. After each compression release all pressure from the chest without losing contact between one's hands and the sternum; repeat the manoeuvre with a frequency of 100 / min (a little less than 2 compressions per second) H. The compression and release phase must be approximately equal in duration</p> 
	Visual		
	Acoustic signal (BEEP)	The <i>Geo Saver D</i> signals with a BEEP every compression to be performed.	
3	Voice / Text	“Perform two breaths”	<p>Immediately open the air passage using the head and chin towards the back manoeuvre</p>  <p>Perform two insufflations The rescuer inhales normally and, keeping the chin lifted with two fingers, makes the lips adhere around the mouth of the injured person. The contralateral hand closes the nostrils to avoid air release and keeps the head in hyperextension. Blow out the air by performing a normal expiration lasting about 1 second.</p> 
	Visual		
4	<i>Geo Saver D</i> will repeat STEP 1 to 3 for about 2 minutes		Follow the voice and text instructions of the <i>Geo Saver D</i> until the device stops the CPR phase (about 2 minutes)


9 ECG monitoring

Geo Saver D defibrillator can also be used to monitor the patient's ECG tracing. The "ECG Monitoring" mode allows the operator to monitor the patient's cardiac rhythm in total safety by disabling automatic defibrillation (in order to perform defibrillation, exit the current mode and select semi-automatic defibrillation).

The detection of the ECG trace of the patient in this mode can be done with the help of two different accessories:

- **Using defibrillation PADS**
- **Using the 2-pole ECG cable SAV-C0017**

Geo Saver D allows you to view one single ECG channel by analysing the derivation II. Since the use of this mode is indicated to specialized medical personnel, in order to be started, it can optionally require the insertion of a security password (see the following paragraphs for more information).

	In this mode, the defibrillator does not automatically analyse the ECG tracing, does not allow the charging phase, and does not allow defibrillation.
	This mode is intended for exclusive use by specialized medical personnel. The password must only be used by medical personnel.
	In monitoring mode, it is expected that the internal capacitor does not store any energy and it is always discharged, so this operating mode is extremely safe.

9.1 Activation of ECG Monitoring mode

After switching it on, the *Geo Saver D* will automatically start the semiautomatic defibrillation mode. In order to start the ECG Monitoring mode you should enter the menu and select the new mode.

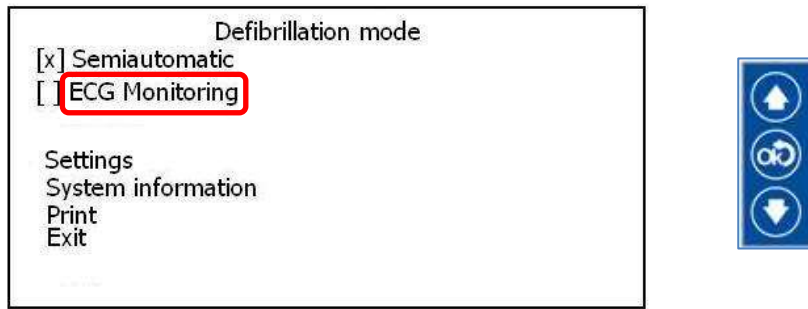
- 1 Enter the main menu by pressing the enter key on the device keyboard as shown in image (39)



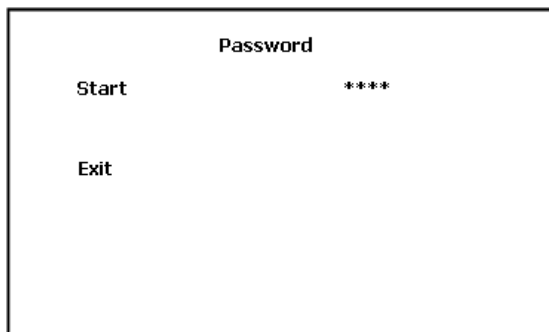
Image 39

For more information on the *Geo Saver D* menu, consult the relevant paragraph.



- 2 From the menu select the "ECG Monitoring" item







- 3 If the password entry request has been configured, the following screen will be displayed when accessing one of the two modes:



At this point you need to enter the security password. This protection (optionally configurable at the Customer's request) can be used to avoid random selection errors by personnel not adept at using this mode. The password must only be used by medical personnel.

This password consists of a sequence of 4 characters (the arrows  and  on the defibrillator keyboard) must be entered in the following order:

MANUAL Defibrillation Mode Password			
			
UP	DOWN	UP	DOWN




Enter the password following the sequence above. As you enter the sequence, the dashes placed laterally under "Enter password" will turn into asterisks. Once the sequence is completed, the ECG Monitoring mode will automatically start.

9.2 Description of ECG Monitoring feature




Once the ECG Monitoring mode has been selected, an icon-based MENU is presented on the right side of the display to manage the functionalities provided in this mode. In addition, other icons relating to events and/or states that appear during the use of Monitoring mode can appear on the upper part of the display.



Nr.	Description	Nr.	Description
1	Status of "Inhibition of acoustic alarm signals"	7	"Enable alarm detection" button
2	Status of "Alarm detection inhibition"	8	"Pause acoustic alarm signals" button
3	Gain in amplitude of the ECG signal ratio	9	"Enable alarm acoustic signal" button
4	"Alarm detection" event	10	"ECG amplitude gain setting" button
5	"Alarm Reset" button	11	"Exit Monitoring Mode" button
6	"Pause alarm detection" button		

The icon-based MENU on the right of the Display is used to manage the Monitoring mode functions. The selected icon is highlighted by a yellow box surrounding it; to move along the MENU, use the  and  keys. To press the selected key use the button .

In particular:

- Pressing button 5 resets the alarms;
- Pressing button 6 disables alarm detection for 30 seconds. This status is highlighted by the presence of the icon 2 in display;
- Pressing key 7 will force enable the detection of alarms. This status is highlighted by the absence of the icon 2;
- Pressing button 8 disables the acoustic alarm signalling for 30 seconds. This status is highlighted by the presence of the icon 1 in display. In this state the alarms continue to be detected but only generate visual signals (Icon 4 displayed).
- Pressing key 9 enables the acoustic alarm signalling. This status is highlighted by the absence of icon 1;
- Pressing key 10 enters the submenu for selecting the gain value in amplitude of the ECG signal. This state is highlighted by the presence of a more marked box around the key 10. Standing in this state, the  and  keys are used to select the desired gain. Once chosen, press the button  again to return to the main icon MENU.
- Pressing button 11 exits the Monitoring mode and returns to the main MENU.

The physiological alarms detected are:

Code	Displayed message	Description	Priority	Alarm signalling delay (max)
1	Cardiac Low frequency	Detection of a slow sinus rhythm	HIGH	< 10 sec *
2	Asystole	Detection of an absent sinus rhythm	HIGH	< 10 sec *
3	Fibrillation Detected	Detection of a ventricular fibrillation. In this case the patient should undergo a defibrillation shock.	HIGH	< 5 sec
4	Tachycardia Detected	Detection of fast ventricular tachycardia. In this case the patient should undergo a defibrillation shock.	HIGH	< 5 sec
5	Cardiac High frequency	Detection of an accelerated sinus rhythm. In this case the patient should NOT undergo a defibrillation shock	HIGH	< 5 sec

* see warning section for the use of the monitoring mode

The technical alarms detected are:

Code	Displayed message	Description	Priority	Alarm signalling delay (max)
1	Patient lost	Absence of patient detection	HIGH	< 5 sec
2	ECG saturation	Inoperative device condition due to saturation of the ECG amplifier stage	HIGH	< 5 sec

10 Recording, printing and archiving of rescue data

Geo Saver D defibrillator is able to record and store both the **SERVICE data of the device** and the **complete data of the rescue operations** carried out. Data recording and archiving is done automatically (cannot be deactivated by the user) both on the **internal memory** of the device and on the **memory card** when installed (with the exception of the recording of voices and environmental noise). The operator can also print the data recorded directly from the device thanks to the use of the portable thermal printer Martel MCP7830 (SAV-C1070) or thanks to the PC Saver View Express software.

10.1 Data recording

The **internal memory** of the *Geo Saver D* allows the storage of up to 6 hours of environmental recordings (audio), ECG tracing, patient data (FC and Ω) and all rescue events. The stored data can be viewed on a PC using the PC Saver View Express software (SAV-C0019).

Two types of files are stored on the **SD Card external memory**:

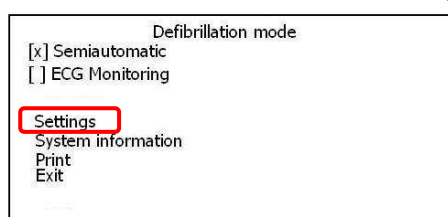
- **AED1LOG.txt** This file stores all the automatic self-tests performed by the device with its outcomes and all the **SERVICE** information. This type of file can be viewed on a PC using a simple reading program.
- **AEDFILE.aed** This file stores the rescue data such as: environmental recordings (audio), ECG tracing, patient data (FC and Ω) and all rescue events. This type of file can be redisplayed on a PC using the PC Saver View Express software.

The number and duration of recordings depend on the capacity of the memory card, below is an example:

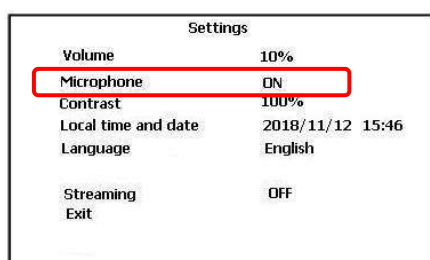
Type	Capacity	Stored Data	
SD Card	512 MB	Sounds, Events, Parameters, ECG. Service (AED1LOG + AEDFILE)	1.500 minutes (25hours)
	1 GB		3.000minutes(50hours)
	2 GB		6.000 minutes(100 hours)
SDHC Card	4 GB		12.000 minutes(200 hours)

The recording of the voices and environmental noise of the rescue (audio) can be activated or deactivated. This procedure is possible by activating or deactivating the device's microphone from the settings menu:

- 1 Turn on the device and enter the settings menu



- 2 Select the microphone item and set the desired setting



- ON** Active microphone
Geo Saver D makes environmental recordings
- OFF** Microphone disabled
Geo Saver D does not make environmental records

10.2 Printing of rescue data

Geo Saver D defibrillator allows you to print data stored in the memory directly from the device by using the portable thermal printer model Martel MCP7830 (SAV-C1070).

Rescue data can only be printed if the data has been previously stored on the memory card.

To proceed with data printing, the operator will have to perform the following operations:

- 1 Install the printer (*Geo Saver D* communication >> Martel MCP7830)
- 2 Select the data to be printed (print data search)
- 3 Proceed with printing

10.2.1 Martel MCP7830 Printer Installation

For more information on the Martel MCP7830 (SAV-C1070) portable printer, consult its user manual.

1 Preparation for printing

- Make sure the printer battery is charged and working
- Insert the paper roll
- Position the printer so that its IrDA port is in line with that of the *Geo Saver D*

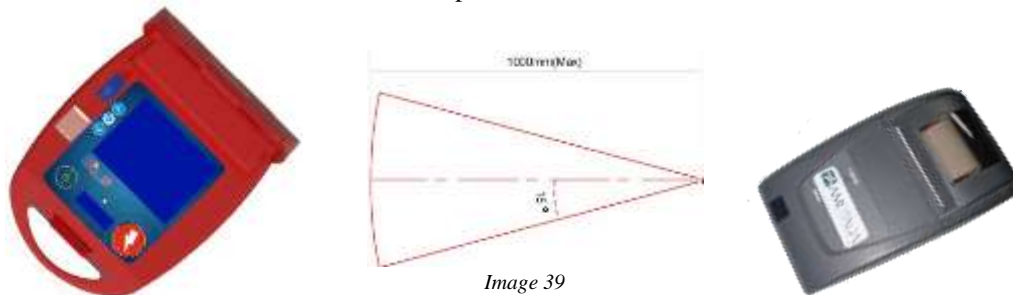
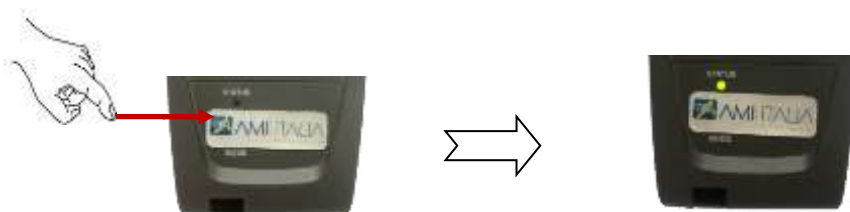


Image 39

2 Turn on the printer Martel MCP7830



Push for one second and verify that the printer has been turned on when the LED with fixed green light.

3 Turn on the Geo Saver D

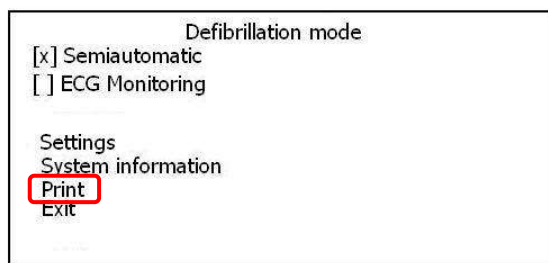


When turned on, the *Geo Saver D* will automatically detect the printer and be ready to print the stored data. The correct connection of the printer will be displayed in the settings menu in the print section.

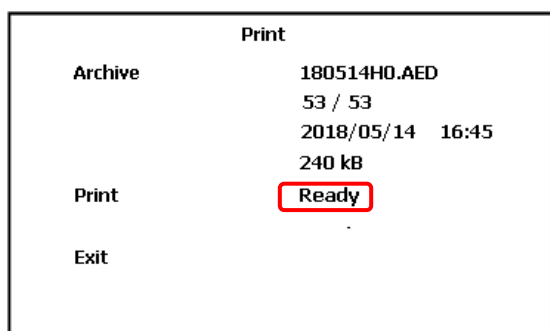
10.2.2 Selection of the data to be printed

After interfacing the printer with the *Geo Saver D* defibrillator, the operator will have to select the data and start printing. The printing of the data will only be possible if the device is not in operating mode (PADs not placed on patient). To be able to select the various rescues to be printed, the operator must follow the procedure below:

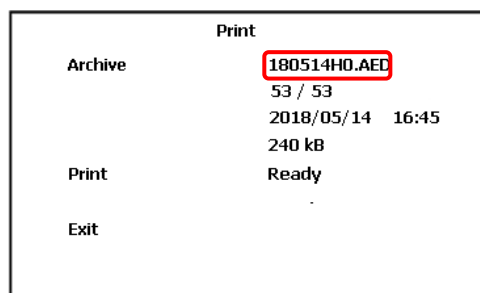
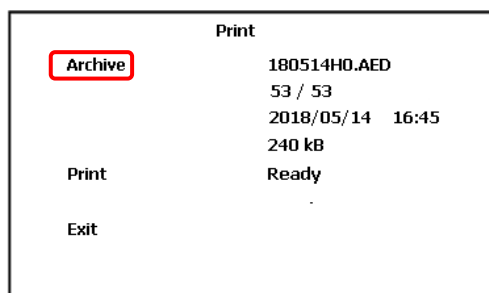
- 1 Enter the *Geo Saver D* menu and select the PRINT item



- 2 Make sure the *Geo Saver D* defibrillator has correctly detected the printer



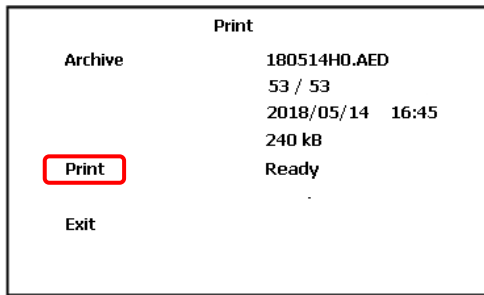
If the *Geo Saver D* does not detect the printer, the message "No connection" will be displayed. In the print menu select the ARCHIVE item and select the rescue data to print.



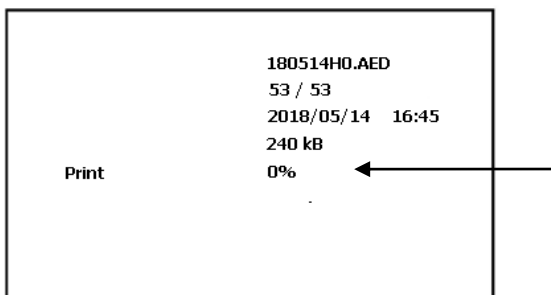
Each single file with the .AED extension corresponds to the recording of the data of one single rescue. It is possible to select the file by consulting the information directly below its name (date and time of beginning of rescue). For more information on the print menu see the relevant paragraph.

10.2.3 Print execution

From the print menu, after selecting the desired file, select the PRINT item to start printing



The following screen will be displayed in which the operator can check the print progress.



If the operator wishes to interrupt the printing procedure, they must select the PRINT item again and confirm; printing will be interrupted and we automatically return to the previous menu.

All the rescue events, the data relating to the device and the ECG tracing of the patient will be displayed on the print slip. It will also be possible to note down some personal data relating to the patient and the name of the resuscitator.

10.3 Data storage on PC

The rescue data recorded by the **Geo Saver D** defibrillator can be stored, analysed and printed from a Personal Computer using the management software Saver View Express.



Saver View Express®

Image 40

For more details on the PC Saver View Express software, consult the relevant user manual.

11 Web Management

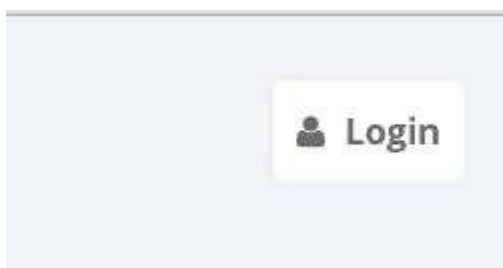
AMISAVERCLOUD is the platform through which a user can check the status of its Geo Saver .

To access the functions of AMISAVERCLOUD there is a mechanism of authentication with password.


When a Geo Saver is purchased, a new user is generated in AMISAVERCLOUD by referring to an e-mail provided by the customer. When the new account is created, the system automatically sends the login credentials with an invitation to change the password at the time of the first login to secure the data relating to the Geo Saver .

To access your account, go to the page:

www.amisavercloud.com



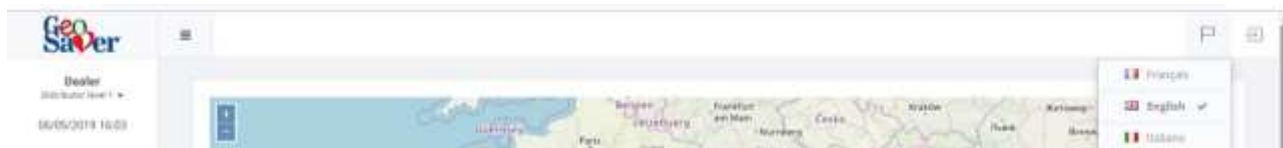
Click on the button “Login” and enter your credentials to enter your account.



11.1 Main features

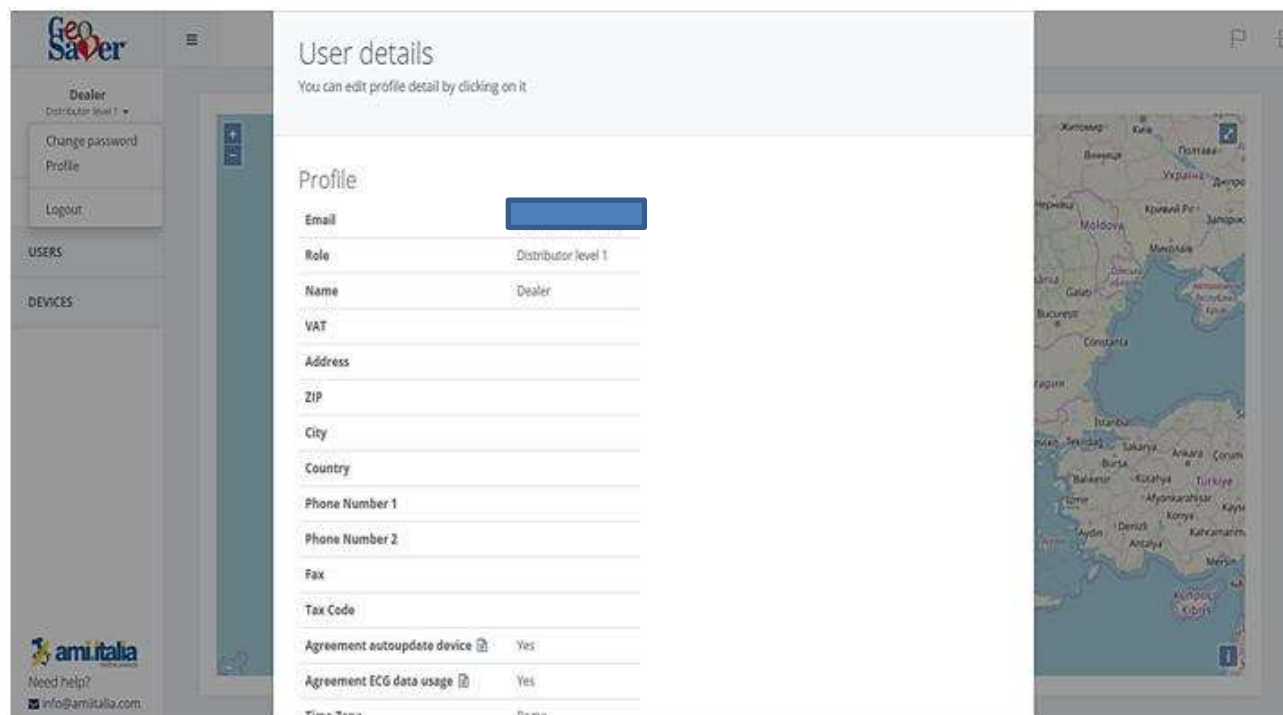
11.1.1 Changing the language

AMISAVERCLOUD is a multilingual cloud service. You can select one of the languages available through the specific icon on the top left.



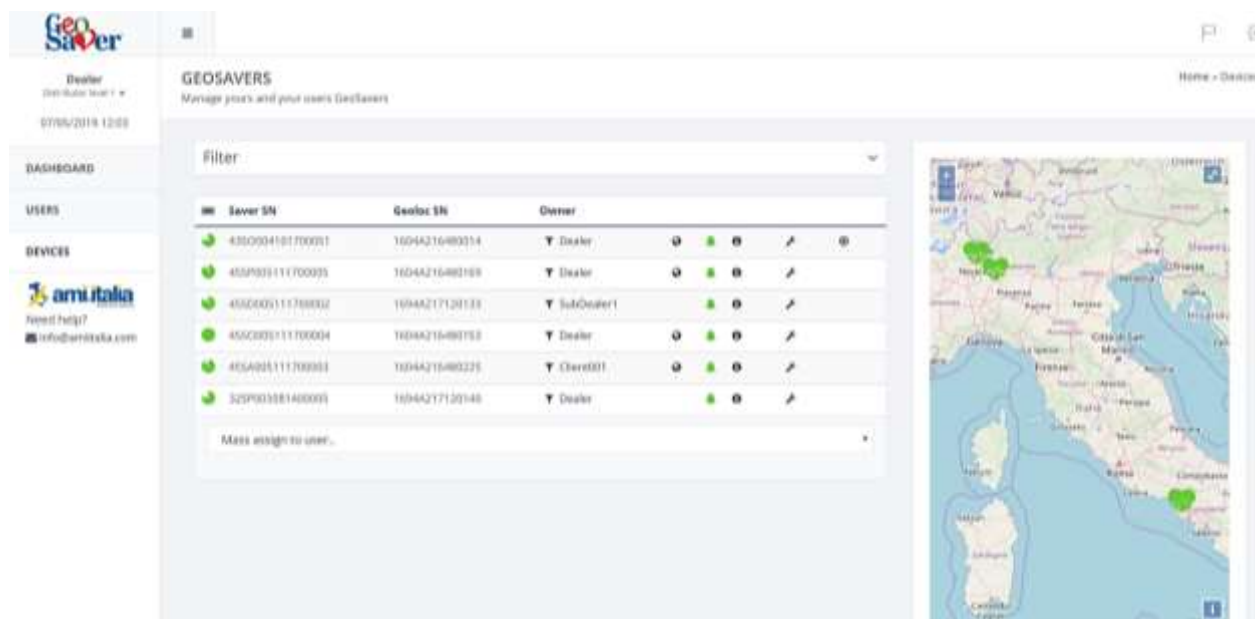
11.1.2 User profile and password

The current user has the possibility to view his profile and modify the password via the links located on the menu above.



11.1.3 Device management

Each user can be associated with one or more Geo Savers. These are listed under the "DEVICES" menu item and displayed on a map that briefly summarizes their status.



Saver SN	Geoloc SN	Owner	Status
400004101700001	10044216480014	Dealer	Active
400005111700005	10044216480109	Dealer	Active
400000111700002	10044217120133	SubDealer1	Active
400000111700004	10044216480153	Dealer	Active
400400111700001	10044216480225	Client001	Active
525000381400000	10044217120140	Dealer	Active

It is possible to view the details of each device by following the link in the table (or inside the map) for each of them.

When viewing a Geo Saver detail, the menu is expanded with the following items:

- Geo Saver: summary page details
- Saver Log: list of logs received from the Saver
- Geoloc Log: list of logs received from the Geoloc
- ECG Streaming List (if data is present): list of ECG streaming files and possibility to download or reproduce each of them.
- GPS tracks (if data is present): list of GPS tracks recorded by Geo Saver and display of each of these on a map
- Maintenance: management of accessories expiring date (Geoloc battery, pads)
- Alarms configuration: configuration of the recipients to whom the alarm messages are to be sent (via SMS or e-mail).



- GEOSAVES
- SAVER LOG
- GEOLOC LOG
- ECG STREAM HISTORY
- GPS TRACKS
- MAINTENANCE
- ALARMS CONFIG

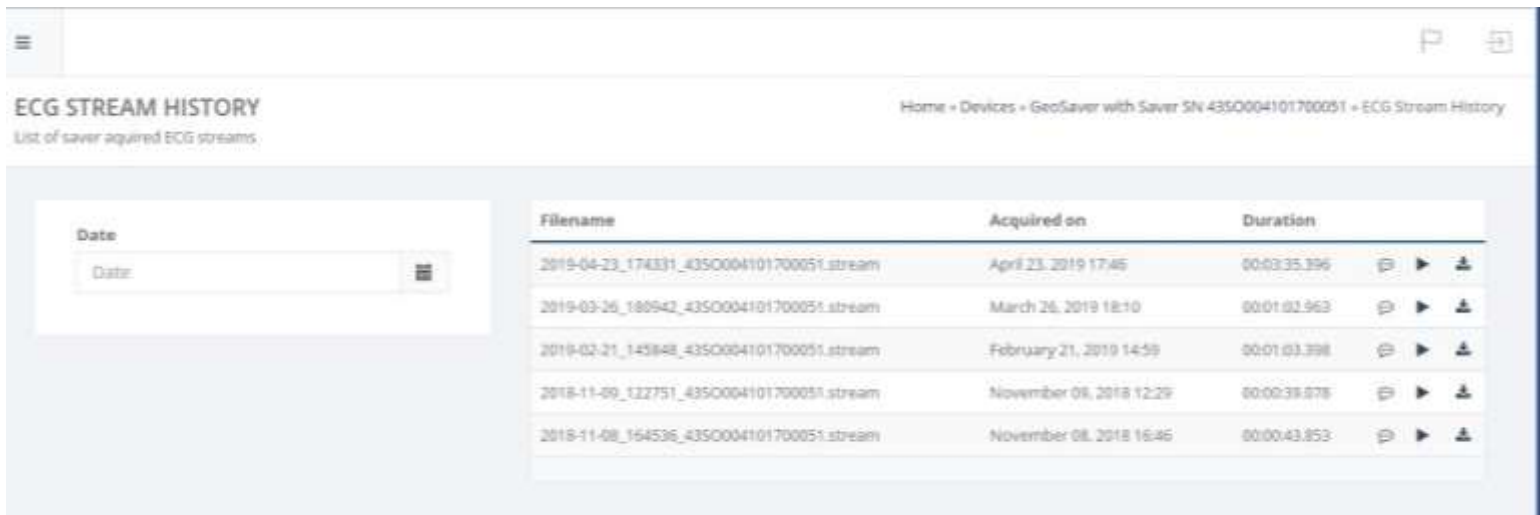
11.1.4 ECG Streaming

To activate the ECG transmission, switch on the Geo Saver and then (depending on the model) enable ECG transmission.

While the ECG is streaming from the Geo Saver, a notification is displayed on the cloud and the "STREAMING" section becomes accessible as a "GEO SAVER" sub-level of the menu.

The device in the ECG check phase is highlighted in the Geo Saver table and a link to the section appears on the same page. In this section it is possible to view the streaming in real time.

At the end of the ECG control phase the transmitted data are saved and becomes available for review in the "STREAMING ECG HISTORY" section.

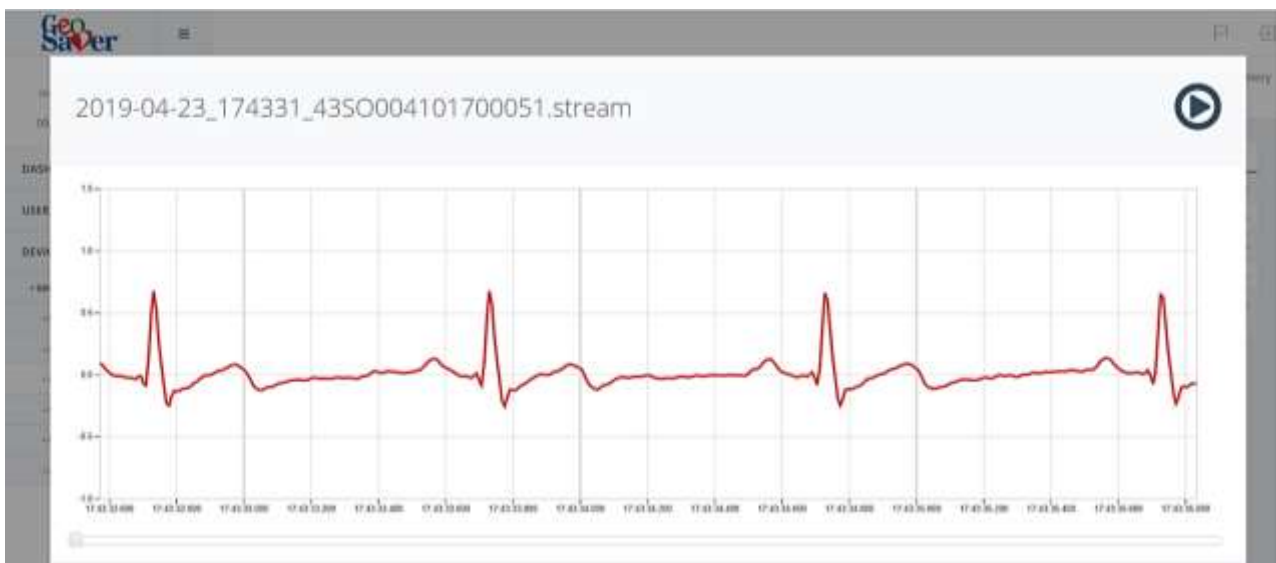


ECG STREAM HISTORY
List of saver aquired ECG streams

Home » Devices » GeoSaver with Saver SN 43SO004101700051 » ECG Stream History

Date:

Filename	Acquired on	Duration	
2019-04-23_174331_43SO004101700051.stream	April 23, 2019 17:45	00:03:35.396	
2019-03-26_180942_43SO004101700051.stream	March 26, 2019 18:10	00:01:02.963	
2019-02-21_145848_43SO004101700051.stream	February 21, 2019 14:59	00:01:03.398	
2018-11-09_132751_43SO004101700051.stream	November 09, 2018 12:29	00:00:39.078	
2018-11-08_164536_43SO004101700051.stream	November 08, 2018 16:46	00:00:43.853	

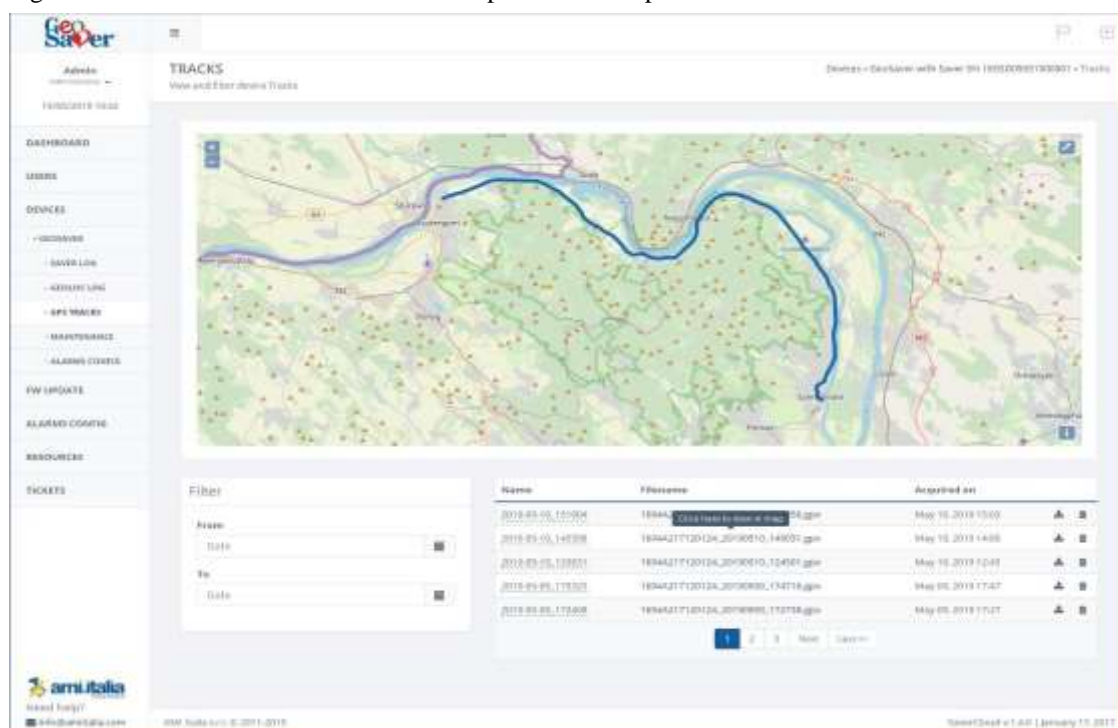


11.1.5 Auto tracking

Among the command that can be sent to the Geo Saver through the cloud there's enable/disable Auto tracking. This functionality can be found in the GEOSAVER page –GEOLOC section.

When this function is active the Geo Saver, after having detected a movement, will start sending its positions to the cloud. After few minutes from the last move, the file with the path becomes available in the "GPS TRACKS" section accessible from the Geo Saver page as a menu sub-level.

Clicking on one of the files in the table shows the path on the map.



11.1.6 Battery replacement

Follow the instructions in paragraph 5.2.3 to replace the Geoloc battery. Once completed, go to the AMISAVERCLOUD and, from the MAINTENANCE page of the device in possession, follow the instructions below.

Battery

Disposable

3500 mAh

1

Enter the Serial Number of the inserted battery here

2

Select here the type of battery inserted

3

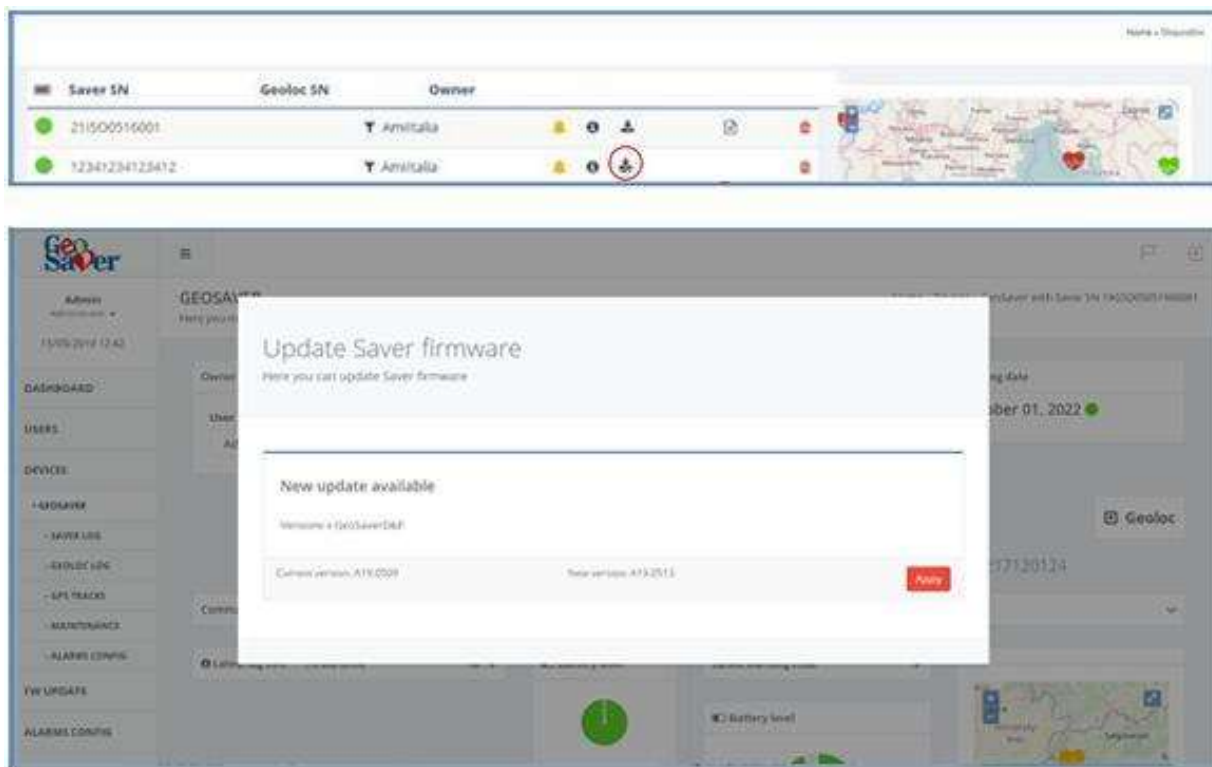
Press this key to save the set values

11.1.7 Firmware update

If AMI Italia makes new firmware available, the user is notified with an icon on the device table.

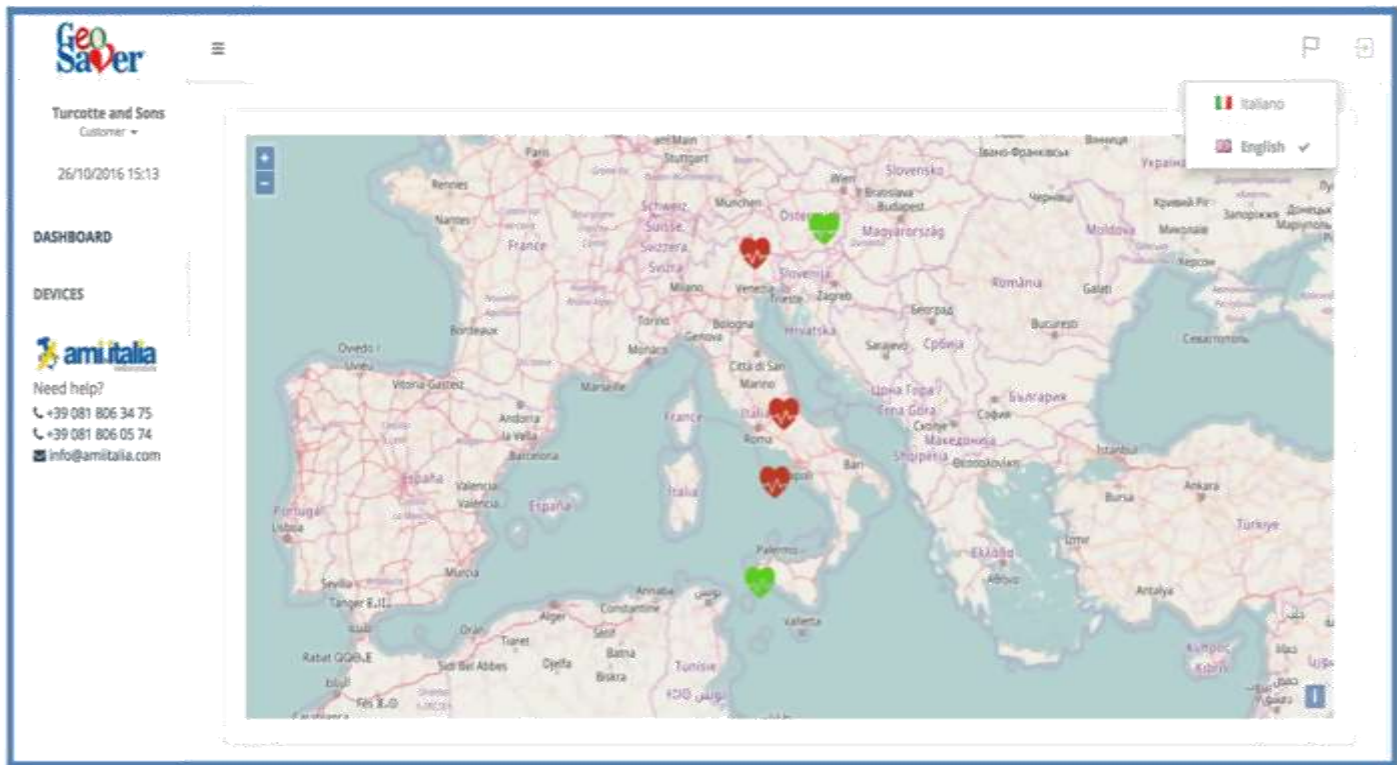
If a device has a less recent version of the firmware than the last one released on the line corresponding to the Geo Saver in question, an icon will be displayed, by clicking that you are taken to the device page. There the user can see which component needs an update: an icon the same as the one on the table is displayed next to the serial number of the device to be updated.

The update process begins with sending the command to the device: click on the aforementioned icon and follow the proposed steps.



11.2 Dashboard

After logging in to the cloud you are redirected to the Dashboard. In this page there is a map with all Geo Savers devices -linked to the current users- located through a coloured icon. The colour of the icon is representative of the state of the Geo Saver. Clicking one of these icons a small window appears with some of the main information related to that specific device.



11.3 Devices

In the section dedicated to the Devices, all the devices to which the current user has access are shown in a paged table. These devices can be filtered by:

- Membership user
- Range of serial numbers of the Saver
- Range of serial numbers of the Geoloc
- Geographic area

From the table it is possible to have quick access to some sections / actions by:

1. Link to the page dedicated to the specific Geo Saver
2. Icon that notifies the presence of a new release (for at least one of the components - Saver, Geoloc, radio)
3. Link to the section that lists Complete Logs received from Geo Saver (where present)
4. Link to the section that lists the history of ECG streaming received from Geo Saver (where present)

USERS	Saver SN	Geoloc SN	Owner					
DEVICES	21ISO0516001		AmilItalia					
	12341234123412		AmilItalia					
	17SA003041500021	1604A216480004	AmilItalia					
	45SA005111600061	1604A216410215	Asd Volley Sport					
	45SA005111600062	1604A216410001	GeoSaver Demo					
	52SP004121600001	1604A216410230	AmilItalia					
	37SP003091700001	1604A216410006	AmilItalia					
	18SP003051700001	1604A216410231	AmilItalia					

1 2 3 4

11.4 Geo Saver

The section dedicated to the specific Geo Saver can be divided into three parts

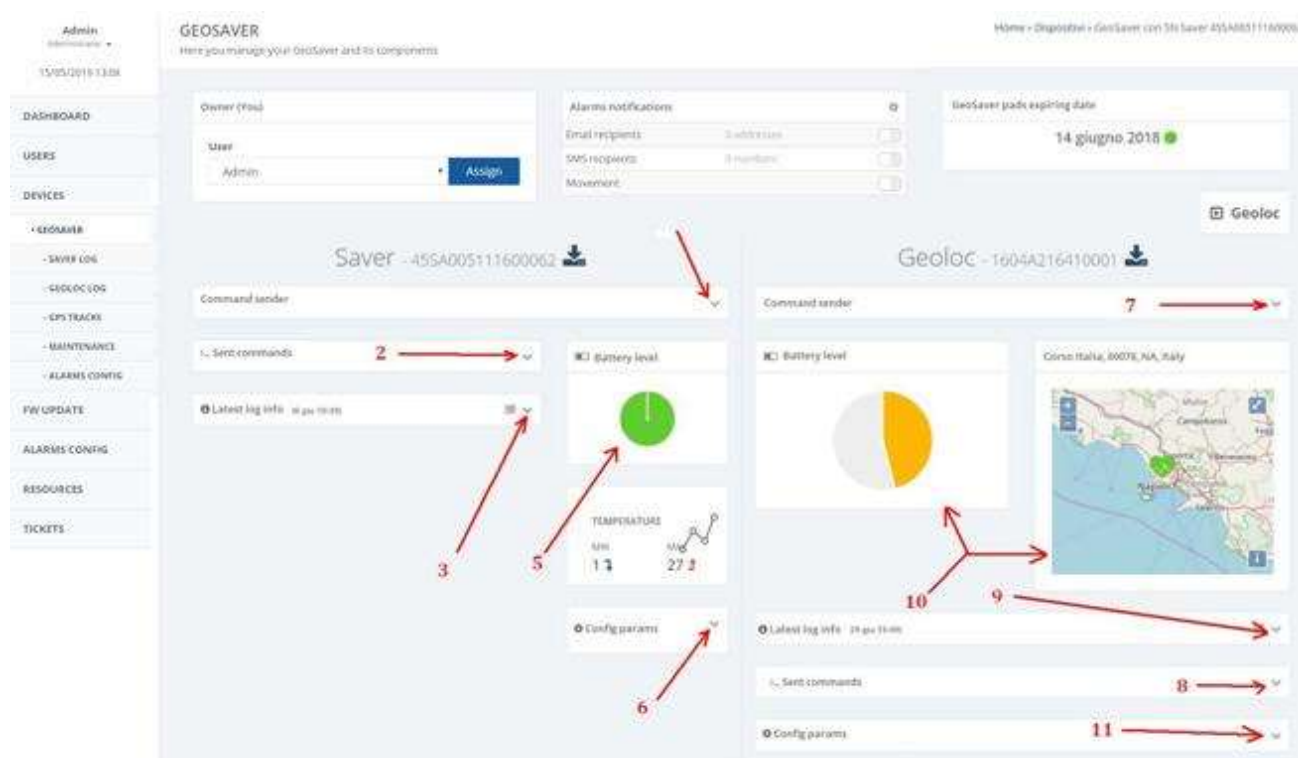
- At the top enabling / disabling of alarms
- On the left everything related to the Saver
- On the right everything related to the Geoloc (concealed)

In the area relating to the Saver we can distinguish:

1. Collapsible panel for sending a command
2. Collapsible panel with the last commands sent and relative completion status
3. Collapsible panel with the details of the last log received or Code of the last error
4. Code of the last warning (if present)
5. Pie chart with battery level
6. Collapsible panel with the last set of configurations

In the area relating to the Geoloc we can distinguish:

7. Collapsible panel for sending a command
8. Collapsible panel with the last commands sent and relative completion status
9. Collapsible panel with the details of the last log received or Code of the last error
10. Map showing the last position received or Pie chart with battery level
11. Collapsible panel with the last set of configurations



The screenshot displays the GeoSaver web interface. On the left is a sidebar menu with options like DASHBOARD, USERS, DEVICES, GEOSAVES, Saver LOG, GEOLOC LOG, GPS TRACKS, MAINTENANCE, ALARMS CONFIG, FW UPDATE, ALARMS CONFIG, RESOURCES, and TICKETS. The main content area is divided into two sections: Saver and Geoloc. The Saver section (ID: 45SA005111600062) includes a 'Command sender' panel (2), a 'Latest log info' panel (3), a 'Battery level' pie chart (5), a 'TEMPERATURE' gauge (4), and a 'Config params' panel (6). The Geoloc section (ID: T604A216410001) includes a 'Command sender' panel (7), a 'Latest log info' panel (9), a 'Battery level' pie chart (10), a map showing the location (10), and a 'Config params' panel (11). Red arrows point from the numbered list items to their corresponding elements in the interface.

11.5 Saver Log

The section dedicated to logs received from the Saver presents a list of logs that can be expanded by clicking on them with the mouse.

On the left side of the page there is a box where it is possible to filter the list of logs arrived by arrival date. An additional filter can be added selecting only the logs with errors and / or warnings.

SAVER LOG HISTORY

View and filter saver log history

Home » Devices » GeoSaver with Saver SN 45500

Filter

From

Date

To

Date

☐ Only with errors

☐ Only with warnings

1

2

3

...

Next

Last >>

MAY 15, 2019 00:04

MAY 14, 2019 09:47

MAY 14, 2019 00:05

MAY 13, 2019 16:44

MAY 13, 2019 15:52

MAY 13, 2019 15:25

MAY 13, 2019 13:27

MAY 13, 2019 13:24

MAY 13, 2019 02:04

MAY 12, 2019 02:05

MAY 11, 2019 02:06

MAY 10, 2019 15:32

MAY 08, 2019 17:02

MAY 08, 2019 17:00

MAY 08, 2019 02:05

68

11.6 Geoloc Log

The section dedicated to logs received from the Geoloc presents a list of logs received which can be expanded by clicking on them with the mouse.

On the left side of the page there is a box where it is possible to filter the list of logs arrived by arrival date. An additional filter can be added by selecting only the logs with errors. There is also a map showing the position of the selected log or the last positions.

GEOLOG LOG HISTORY

View and filter geoloc log history

Devices » GeoSaver

Filter ^

From

📅

To

📅

☐ Only with errors

1

2

Next

Last >>

📌 MAY 15, 2019 00:04
📌 MAY 14, 2019 00:05
📌 MAY 13, 2019 00:05
📌 MAY 12, 2019 00:05
📌 MAY 11, 2019 00:06
📌 MAY 10, 2019 00:05
📌 MAY 09, 2019 17:05
📌 MAY 09, 2019 17:03
📌 MAY 09, 2019 15:47
📌 MAY 09, 2019 15:42
📌 MAY 09, 2019 10:29
📌 MAY 09, 2019 08:19
📌 MAY 09, 2019 00:05
📌 MAY 08, 2019 16:23
📌 MAY 08, 2019 16:13

11.7 Streaming

During the streaming phase of a Geo Saver the link to this section will become visible, presenting:

- A graph showing the streaming in real time
- Some relevant data on the current stream
- The GPS position on a map

During the streaming, a Grawl notification is also presented with the link to this section and a red panel on the Geo Saver page.



11.8 List of saved ECG Streaming

The section dedicated to the list of ECG streams for the specific Geo Saver is made visible only in the presence of at least one file and presents:

- A graph to playback the streaming
- A filter from which to select the date of interest
- A table with the list of streaming resulting from application of the filter. From it you can start / stop playback or download the file.

ECG STREAM HISTORY

List of saver acquired ECG streams

Home » Devices » GeoSaver with Saver 5N 4350004101700051 » ECG Stream History

Date

Date

Filename	Acquired on	Duration			
2019-04-23_174331_4350004101700051.stream	April 23, 2019 17:46	00:03:35.396			
2019-03-26_180943_4350004101700051.stream	March 26, 2019 18:10	00:01:02.963			
2019-02-21_145848_4350004101700051.stream	February 21, 2019 14:58	00:01:03.300			
2018-11-08_122751_4350004101700051.stream	November 08, 2018 12:20	00:00:59.078			
2018-11-08_164536_4350004101700051.stream	November 08, 2018 16:46	00:00:43.853			

11.9 Tracks

The section dedicated to the saved tracks for the specific Geo Saver is made visible only in the presence of at least one file and presents:

- A map
- A filter to select the set of dates of interest
- A table with the list of tracks resulting from the application of the filter. By selecting one of these it is possible to view its layout on the map above.

TRACKS
View and filter device Tracks

Devices » GeoSaver with Saver SN 19G5005051900001 » Tracks

Filter

From

Date

To

Date

Name	Filename	Acquired on		
2019-05-10_151004	1694A217120124_20190510_150350.gpx	May 10, 2019 15:03		
2019-05-10_145508	1694A217120124_20190510_140031.gpx	May 10, 2019 14:00		
2019-05-10_133831	1694A217120124_20190510_124501.gpx	May 10, 2019 12:45		
2019-05-09_175325	1694A217120124_20190509_174716.gpx	May 09, 2019 17:47		
2019-05-09_173408	1694A217120124_20190509_172738.gpx	May 09, 2019 17:27		

1 2 3 Next Last >>

12 Maintenance

The **Geo Saver D** defibrillator was designed to make maintenance operations as simple and autonomous as possible. In fact, thanks to the control tests carried out in total autonomy by the device, it is not necessary to perform any extraordinary maintenance, but only routine maintenance which consists of a frequent visual check of the LED and the control display, together with a visual inspection of the relative accessories. Alternatively, you can consult AMISAVERCLOUD in the GEO SAVER section to check the operating status or enabling the alarms to be automatically sent if a malfunction occurs.

Whenever it is necessary to contact the supplier for assistance during an installation, or to report anomalies, contact the supplier using the references:

Assistance request

email: info@amiitalia.com

Tel.: +39 081 806 05 74

Website: www.amiitalia.com

12.1 After each use




After using the **Geo Saver D** defibrillator it is necessary to proceed with the following operations in order to prepare the device for the next use:

- 1 Check the presence of the memory card and its remaining capacity (see paragraph 4.4 and 6.5)
- 2 Check that the control LED is on with flashing lighting (flashing green)
- 4 If they have been used, replace the PADS with a new package
- 5 If not used, check the expiry date of the PADS, if expired replace them with a new package

12.2 Ordinary maintenance

Thanks to the control tests carried out in total autonomy by **Geo Saver D**, ordinary maintenance will require a simple and quick inspection, following the operations described in the table:

Check Daily	Check Monthly	Check before use	Check after use	Action indicated
*		*	*	Check the LED and the control display.
*		*	*	Check the integrity of the device, its parts and the accessories supplied.
	*	*		Check the expiration date of the defibrillation PADS.
		*	*	Check the remaining capacity of the memory card.

	 CONTROL LED	 PADS EXPIRATION	 DEVICE	
Date	Is flashing only in green?	Is the date still valid?	Visual inspection	Signature
	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="ok"/>	
	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="ok"/>	
	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="ok"/>	
	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="ok"/>	
	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="ok"/>	
	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="ok"/>	
	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="ok"/>	
	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="Y"/> <input type="button" value="N"/>	<input type="button" value="ok"/>	

12.3 Cleaning

The structure of the **Geo Saver D** defibrillator, including the connection port of the defibrillation electrodes, can be sanitized using a soft cloth dampened with one of the cleaning solutions listed below:

- a) Isopropyl alcohol (70% solution)
- b) Soap water
- c) Bleach (30 ml per litre of water)
- d) Detergents containing ammonia
- e) Detergents containing glutaraldehyde
- f) Oxygenated water



Do not immerse the **Geo Saver D** in any liquid.

Do not use abrasive materials or detergents, strong solvents such as acetone or acetone-based detergents, and enzymatic detergents.

Do not sterilize the **Geo Saver D** or its accessories.

















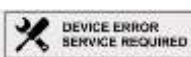


12.4 Preservation

The **Geo Saver D** must be stored in a place where the environmental and safety conditions indicated in the table below are observed according to the temperature and humidity indicated in the chapter 13.2. If installed it is advisable to keep the device with the battery always inserted to allow it to carry out periodic self-diagnostic tests. For easy retrieval of the device in case of emergency, place it in easily accessible place and faced in a way that the control LEDs are clearly visible.

	Do not use, install or store the Geo Saver D in conditions of temperature or humidity that exceed the ranges indicated in this user manual.		Do not install or store the Geo Saver P in areas directly exposed to sunlight.
	Do not install or store the Geo Saver D in areas subjected to sudden changes in temperature or humidity.		Do not install or store the Geo Saver P near heat sources.
	Do not use, install or store the Geo Saver D in places subjected to strong vibrations.		Do not use, install or store the Geo Saver P in environments with high concentrations of flammable gases or anaesthetics.
	Do not install or store the Geo Saver D in areas with a high concentration of dust.		The Geo Saver P must be opened for maintenance only by A.M.I. Italia S.r.l or by personnel authorized by the same.

12.5 Troubleshooting Guide

The following table lists the symptoms, the possible causes and the possible corrective actions of the problems that may arise. For more information on the implementation of corrective actions, refer to the other sections of the user's manual. If the failure of the unit persists, request assistance.

Symptom	LED	Mini display Colour TFT	Possible cause	Corrective action
Device with battery installed does not switch on, the LED and the control display are both off.	OFF	OFF	The battery is totally dead or faulty	Try replacing the battery. If the problem persists, call for assistance
			The device does not work	Ask for assistance
In standby the control LED flashes green but the mini Display is off		OFF	The mini display is broken	Contact the assistance center
In standby the control LED is off but a "V" appears on the control mini-display.	OFF		The control LED is broken	Contact the assistance center
In standby the control LED flashes RED and a wrench appears on the control display.			During the daily self-test a critical error of the device was found	Contact a service center and report the error code.
In standby the control LED flashes GREEN / RED alternately and a wrench appears on the control display.	 		Very low battery Level <1% The device may turn off during use. (see the relevant paragraph)	Replace the battery
In the operating mode the voice command "Low battery" is issued.	 OFF		Low battery. 5% battery level. It is possible to use the device but the battery level is low (see the relevant paragraph)	Get a new battery and replace it as soon as possible.
During normal use the voice command "Battery low, Replace"	 		The battery is depleted. Level <1% The device may turn off during use. (see the relevant paragraph)	Avoid using the device if possible. Replace the battery
				
With the device turned on and after placing the PADS on the patient, the device continues to communicate: "Place electrodes"	OFF		The Pads connector has not been inserted correctly or it has been removed	Insert the Pads connector in the appropriate compartment
			The Pads have been placed incorrectly	Correctly position the PADS on the patient's stripped chest. If necessary, remove the hair from the chest with a razor
			PADS are not working properly	Check the integrity and expiration of the PADS, replace them if necessary
Installing the battery the Activation test requires you to press the shock button to start the test. The button is pressed but the test is not started. For about 60 seconds the AED requires to press the button and then it turns off automatically, signalling "Error XX" on the mini LCD.	OFF	 	The shock button does not work properly	Try turning off the device and retesting. If the problem persists, call for assistance
The device turns on, the mini Display and the TFT are on but no voice command is issued	OFF	 	The device's speaker does not work	Ask for assistance

13 Technical specifications

The technical specifications of the *Geo Saver D* defibrillator, its parts and accessories are shown below.

13.1 Physical characteristics

Category	Nominal specifications
Dimensions	29,5 x 23,0 x 11,5 cm
Weight	with battery Li-SOCl₂ (SAV-C1032): 2,74 Kg + Pad Adult (2,83 Kg)
	with battery Li-Ion (SAV-C1033): 2,77 Kg + Pad Adult (2,86 Kg)

13.2 Environmental requirements

Category	Nominal specifications
Temperature	Operational and standby: 0 a 55°C (32 to 131°F)
	Storage and transport: -40 a 70°C (-40 to 158°F)
Relative humidity	Operational and standby: 10% to 95% (without condensation)
	Storage and transport: without humidity control (from -40°C to +5°C) up to 90% (from +5°C to +35°C) with water vapor up to 50 hPa (from >35°C to +70°C)
Atmospheric pressure	Operating conditions: 620 hPa to 1060 hPa (altitude calculated min -382 mt and max 3955 mt)
Operating functional conditions	Normal use: Keep the AED device within the operating and standby ranges (not the storage and transport ranges) so that the device is ready for use. When starting from the inoperative conditions, let the device stabilize at the operating conditions for at least 2 hours, before the normal use.
IrDA Port	Free of biological risks. Compliant with IEC 62471 (2006) "photo biological safety of lamps and lamp systems" exempt.
Tolerance to impacts and falls	Complies with IEC/EN 60601-1 clause 21 (mechanical forces)
Sealing system	Complies with IEC/EN 60529 class IP56 standards; anti-spray, dustproof (with battery installed)
ESD (electrostatic shock)	Complies with IEC/EN 61000-4-2:2002 (3), Security level 4
EMC emissions / immunity	See chapter 14
Radio Equipment Directive	Directive 2014/53/UE

13.3 Reference regulations

Regulations and Directives	DIRECTIVE 2007/47/CE IEC/EN 60601-1 IEC/EN 60601-1-2 IEC/EN 60601-1-4 IEC/EN 60601-1-6 IEC/EN 60601-1-8 IEC/EN 60601-1-11 IEC/EN 60601-1-12 IEC/EN 60601-2-4 IEC/EN 60086-4 IEC/EN 60529 DIRECTIVE 2014/53/UE – RED ETSI EN 301 489-1, 7, 19, 52 IEC60601-2-27 except points 202.6.2.101, 201.12.1.101.12.13, 208.6.6.2.101, not executed because of the intended use of the device not intended for environments such as operating theatres or intensive care units (see section warnings for use of monitoring mode)
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13.4 Technical alarms table

Priority	Cause	Visual signal	Operating Mode
HIGH	Device ready to deliver the shock	Shock button LED flashing	Defibrillator
HIGH	Low battery (<1% capacity)	Control LED flashing	Defibrillator / Monitoring

13.5 Physiological Alarms Table (only in Monitoring Mode)

Priority	Cause	Visual signal	Operating Mode
HIGH	Cardiac Low frequency	Alarm icon and cause indication	Monitoring
HIGH	Asystole	Alarm icon and cause indication	Monitoring
HIGH	Fibrillation Detected	Alarm icon and cause indication	Monitoring
HIGH	Tachycardia Detected	Alarm icon and cause indication	Monitoring
HIGH	Cardiac High frequency	Alarm icon and cause indication	Monitoring

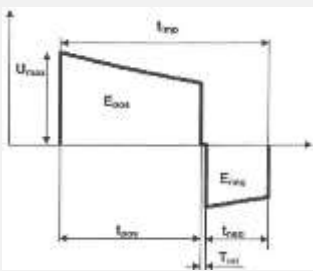
13.6 Controls and indicators

Category	Nominal specifications
Buttons	ON / OFF button (device switching on and off) 3 Navigation Buttons UP, ENTER, DOWN Shock button (to deliver the defibrillation shock)
Visual Indicators	<ul style="list-style-type: none"> • Mini Display LCD control of device status • Device status control LED (RED / GREEN bicolour) • ON / OFF button LED (2 green LEDs) • Shock button LED (8 Red LEDs)
Sound Indicators	Multilingual voices for instructions during use of the device Acoustic signals of warnings and dangers
Speaker	Adjustable volume 20-100% (Emissions in compliance with IEC/EN 60601-2-4 point 6.1) Min. Variation 20% max 100% (60 dBA to 80 dBA \pm 3 dBA)
Microphone	ON / OFF setting from menu for recording voices and environmental noise
Streaming	ON / OFF setting from menu for sending ECG data to remote

13.7 Data memory

Category	Nominal specifications				
Internal memory capacity	6 hours of environmental audio recording, ECG tracing and events				
External memory (optional)	External SD / SDHC memory cards up to 8GB				
Archived data	<table border="1"> <tr> <td>AED1LOG.txt</td><td>Daily self-tests, Errors found, Device usage data, Device information</td></tr> <tr> <td>AEDFILE.aed</td><td>Rescue events, voices and environmental noises, ECG tracing of rescue, Vital parameters of the patient analysed and detected by the <i>Geo Saver D</i></td></tr> </table>	AED1LOG.txt	Daily self-tests, Errors found, Device usage data, Device information	AEDFILE.aed	Rescue events, voices and environmental noises, ECG tracing of rescue, Vital parameters of the patient analysed and detected by the <i>Geo Saver D</i>
AED1LOG.txt	Daily self-tests, Errors found, Device usage data, Device information				
AEDFILE.aed	Rescue events, voices and environmental noises, ECG tracing of rescue, Vital parameters of the patient analysed and detected by the <i>Geo Saver D</i>				
Data display	Via PC Saver View Express software (Microsoft Windows compatible)				

13.8 Defibrillator

Category	Nominal specifications	
Waveform 	Biphasic Truncated Exponential (BTE) <p>The waveform parameters are automatically adjusted according to the patient's impedance. In the graph on the left t_{pos} represents the duration of phase 1 (ms), t_{neg} represents the duration of phase 2 (ms), t_{int} is the delay between phases, U_{max} indicates the peak voltage, t_{imp} is the final voltage. In order to compensate for variations in the patient's impedance, the duration of each phase of the waveform is dynamically adjusted based on the charge delivered, as indicated in the paragraph following.</p>	
Energy delivered (max) (Adults)	Version 200J:	200J nominal with a charge of 50 Ω
	Version 360J:	350J nominal with a charge of 50 Ω
Shock protocol (Adults)	Version 200J:	Incremental: First: 150J – Subsequent: 200J
	Version 360J:	Incremental: First: 200J – Second: 250J – Subsequent: 350J
Energy delivered (max) (Children)	Version 200J:	50 J nominal with a charge of 50 Ω
	Version 360J:	(when using defibrillation PADs SAV-C0016)
Shock protocol (Children)	Version 200J:	Fixed: First and subsequent: 50J
	Version 360J:	
Charge control	Automatic through patient analysis system	
Charge time (from the shock notice)	Version 200J:	≤ 9 SEC (according to IEC/EN 60601-2-4 §6.8.2 (7a)) (150J with new fully charged SAV-C1032 battery)
	Version 360J:	≤ 15 SEC (according to IEC/EN 60601-2-4 §6.8.2 (7a)) (360J with new fully charged SAV-C1032 battery)
Charge time (from the beginning of the analysis)	Version 200J:	≤ 15 SEC (according to IEC/EN 60601-2-4 §6.8.2 (8a)) (150J with new fully charged SAV-C1032 battery)
	Version 360J:	≤ 21 SEC (according to IEC/EN 60601-2-4 §6.8.2 (8a)) (360J with new fully charged SAV-C1032 battery)
Indication charge completed	<ul style="list-style-type: none"> • The SHOCK button flashes • Voice command "Press red flashing button" 	
Shock delivery	The shock is delivered by a single SHOCK button	
Disarmament	Automatic: Manual:	<ul style="list-style-type: none"> • If the patient's analysis system considers the rhythm no longer shockable, or • If the operator has not pressed the Shock button within 15 seconds of completing charge, or • If defibrillation PADs have been removed from the patient or disconnected from the unit. • If the operator presses the OFF / DEACTIVATE button at any time to deactivate or switch off the appliance.
Shock detection vector	Through the defibrillation PADs (Lead II)	
Isolation of the patient	Type BF	

13.9 Efficiency of delivered energy

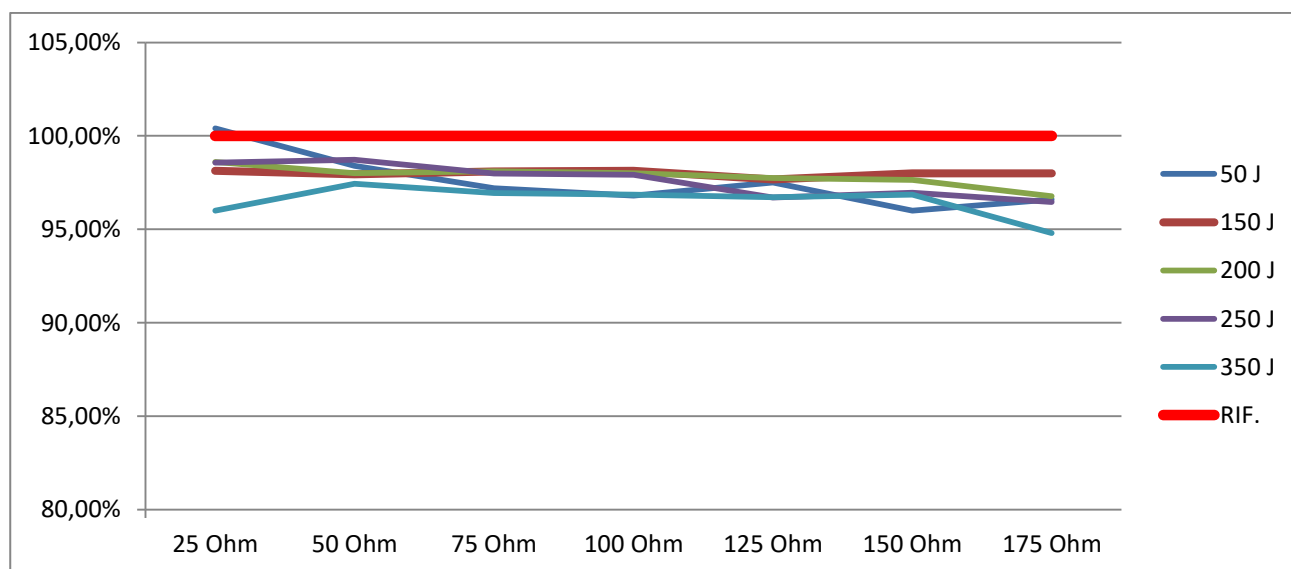
Impedance	Shock of 50 J (Paediatric)				Energy delivered (Joules)
	T _{pos} (ms)	T _{neg} (ms)	U _{max} (A)	Set energy(J)	
25 Ohm	6,8	3,3	18,6	50	50,2
50 Ohm	7,2	3	12,3	50	49,2
75 Ohm	7,4	2,8	9,6	50	48,6
100 Ohm	7,5	2,7	8,1	50	48,4
125 Ohm	7,6	2,6	7,1	50	48,75
150 Ohm	7,7	2,5	6,4	50	48
175 Ohm	7,7	2,4	5,8	50	48,3

Impedance	Shock of 150J				Energy delivered (Joules)
	T _{pos} (ms)	T _{neg} (ms)	U _{max} (A)	Set energy(J)	
25 Ohm	4,6	5,6	43,8	150	147,2
50 Ohm	6,2	4	24,9	150	146,9
75 Ohm	6,8	3,3	18,4	150	147,15
100 Ohm	7,2	3	15	150	147,2
125 Ohm	7,4	2,8	13	150	146,5
150 Ohm	7,5	2,7	11,5	150	147
175 Ohm	7,6	2,6	10,4	150	147

Impedance	Shock of 200J				Energy delivered (Joules)
	T _{pos} (ms)	T _{neg} (ms)	U _{max} (A)	Set energy(J)	
25 Ohm	4,6	5,6	57,6	200	197,2
50 Ohm	6,1	4	28,8	200	196
75 Ohm	6,8	3,3	15,9	200	196,2
100 Ohm	7,2	3	17,3	200	196
125 Ohm	7,4	2,8	14,9	200	195,5
150 Ohm	7,5	2,7	13,2	200	195,3
175 Ohm	8,5	3	11,4	200	193,55

Impedance	Shock of 250 J				Energy delivered (Joules)
	T _{pos} (ms)	T _{neg} (ms)	U _{max} (A)	Set energy(J)	
25 Ohm	4,6	5,6	56,6	250	246,4
50 Ohm	6,2	4	32,3	250	246,8
75 Ohm	6,8	3,3	23,7	250	244,95
100 Ohm	7,2	3	19,4	250	244,8
125 Ohm	8,4	3,4	15,8	250	241,75
150 Ohm	10	4	13,3	250	242,4
175 Ohm	11,5	4,6	11,4	250	241,15

Impedance	Shock of 350 J				Energy delivered (Joules)
	T _{pos} (ms)	T _{neg} (ms)	U _{max} (A)	Set energy(J)	
25 Ohm	4,9	9,4	65,2	350	336
50 Ohm	7,2	6	36,6	350	341
75 Ohm	9,5	6,9	25,4	350	339,3
100 Ohm	12	8,2	19,4	350	339
125 Ohm	14,4	9,5	15,8	350	338,5
150 Ohm	16,9	10,9	13,3	350	339
175 Ohm	18,9	11,5	11,4	350	331,8



Graph showing the efficiency of delivered energy

13.10 Patient analysis system

Category	Nominal specifications
Function	Determines the patient's impedance and evaluates the ECG rhythm and signal quality to determine whether or not the shock delivery is appropriate.
Impedance range	20- 200 Ω
ECG analysis time	≥ 4 seconds (with new fully charged battery) in compliance to IEC/EN 60601-2-4
Sensibility	97% Respects the guidelines IEC/EN 60601-2-4 2002 (3) sources AHADB, MITDB and EDB
Specificity	99% Respects the guidelines IEC/EN 60601-2-4 2002 (3) sources AHADB, MITDB and EDB
Shockable rhythms	<p>If used on a patient who has the characteristics listed in the usage criteria, the Geo Saver D defibrillator is designed to recommend a defibrillating shock when it detects the right impedance and when the following situations occur:</p> <p>Ventricular Fibrillation peak-to-peak amplitude at least 200μVolts Ventricular Tachycardia with cardiac rhythm frequency min. 180 bpm and peak-to-peak amplitude at least 200μVolts (including ventricular flutter and polymorphic ventricular tachycardia)</p>
Non-shockable rhythms	The Geo Saver D is designed to not recommend shocks with all other rhythms, including: normal sinusoidal rhythm, moderate ventricular fibrillation (<200 μ Volts), some slow ventricular tachycardia and asystoles.

13.11 ECG Analysis Function

ECG rhythm	Dimension Test sample	Objective	Detected value
Shockable rhythm Ventricular Fibrillation (VF)	500	Sensibility > 90%	98%
Shockable rhythm Ventricular Tachycardia (VT, bpm > 140)	600	Sensibility > 75%	92%
Non-shockable rhythm Normal sinus rhythm	1500	Specificity > 99%	100%
Non-shockable rhythm Asystole	30	Specificity > 95%	100%
Untreatable rhythm generic AF, SVT, PVC	30	Specificity > 95%	100%
Positive predictive values			97.1%
False positives			4.1%

13.12 ECG Monitoring

Category	Nominal specifications
Type of protection	BF with defibrillation PADs CF only with SAV-C0017 cable
Intended use	The ECG Monitoring function is intended to be used in situations where the patient is always followed by an operator and is never left alone
Bandwidth	0,5 a 40Hz (default) with defibrillation PADs or ECG cable SAV-C0017
Lead ECG	Lead II
ECG Amplitude Range	10 mm/mV
Heart Rate Range	30 – 200 bpm
Heart Rate Resolution	1 bpm
Heart Rate Alarm (*)	Threshold MIN = 30 bpm; Threshold MAX 120 bpm

(*)The alarm thresholds are set by the Manufacturer and cannot be changed locally. On request it is possible to have thresholds of different value

13.13 Display

Category	Nominal specifications
Type	Colour TFT with LED backlight
Visible area	5,7" (diagonal) - 112 x 80 mm
Resolution	640 x 480 pixel
ECG tracing displayed	1 (Derivation II)
ECG tracing speed	25 mm/sec (default)
Information shown on Display	<ul style="list-style-type: none"> • Patient's heart rate (bpm) • Patient thoracic impedance (Ω) • FV or TV detected (numeric value) • Shocks delivered (numeric value) • Textual commands on operations to be performed (text) • Graphic images on operations to be performed (graphic icons) • Active technical and physiological alarms (graphic icons) • Operational mode • Set energy level (J) • Charge duration (graphic incremental bar) • Treatment duration (hh / mm / sec) • Battery level (graphic incremental bar) • Local date and time (dd / month / year - hh / mm / sec)

13.14 Non-rechargeable battery

Category	Nominal specifications						
REF (Model)	SAV-C1032						
Type	Li-SOCl ₂ (lithium-thionyl chloride) disposable, non-rechargeable						
Voltage	28,8 VDC – 3500 mAh						
Capacity	<table> <tr> <td>Version 200J</td><td>250 continuous shocks with new fully charged battery *</td></tr> <tr> <td>Version 360J</td><td>160 continuous shocks with new fully charged battery *</td></tr> <tr> <td>Monitoring</td><td>ECG monitoring duration 24 hours continuously *</td></tr> </table>	Version 200J	250 continuous shocks with new fully charged battery *	Version 360J	160 continuous shocks with new fully charged battery *	Monitoring	ECG monitoring duration 24 hours continuously *
Version 200J	250 continuous shocks with new fully charged battery *						
Version 360J	160 continuous shocks with new fully charged battery *						
Monitoring	ECG monitoring duration 24 hours continuously *						
Duration in Standby (battery installed)	4 years if installed in the AED, assuming an activation test, daily self-tests without turning on the AED *						

* New and fully charged battery at a constant temperature of 20°C and relative humidity without condensation 45%

13.15 Rechargeable battery

Category	Nominal specifications						
REF (Model)	SAV-C1033						
Type	Li ion (lithium ions) Rechargeable						
Voltage	21,6 VDC - 2100 mAh						
Capacity	<table> <tr> <td>Version 200J</td><td>200 continuous shocks with new fully charged battery *</td></tr> <tr> <td>Version 360J</td><td>110 continuous shocks with new fully charged battery *</td></tr> <tr> <td>Monitoring</td><td>ECG monitoring duration 14 hours continuously *</td></tr> </table>	Version 200J	200 continuous shocks with new fully charged battery *	Version 360J	110 continuous shocks with new fully charged battery *	Monitoring	ECG monitoring duration 14 hours continuously *
Version 200J	200 continuous shocks with new fully charged battery *						
Version 360J	110 continuous shocks with new fully charged battery *						
Monitoring	ECG monitoring duration 14 hours continuously *						
Charging time	≤ 2,5 hours with charging station SAV-C1035*						
Shelf Life	2 years or 300 charge / shock cycles (the one that occurs first) *						

* New and fully charged battery at a constant temperature of 20°C and relative humidity without condensation 45%

13.16 Internal back-up battery

Category	Nominal specifications
Type	Battery Coin Cell (LiMnO ₂)
Purpose	Maintaining configuration data (date / time, etc)
Voltage	3 VDC
Duration	Maintains data for 3 years (without external battery) Maintains data for 6 years (with external battery inserted within 12 months)

13.17 Rechargeable battery charger

Category	Nominal specifications
REF (Model)	SAV-C1035
Charge control	LED multicolour red green (see par 5.1.6)
Power supply	<i>Input</i> 15Vdc-2.67A / 12Vdc-5.5A <i>Output</i> 26VDC – 1,5A <i>Absorption</i> 40W/66W
AC/DC Adapter	<i>Model</i> MeanWell GS40A15-P1J <i>Identification code</i> SAV-C1037 <i>Input</i> 100-240VAC – 50/60Hz – 1.5A <i>Output</i> 15V – 2.67A <i>Absorption</i> 40W

13.18 Thermal printer

Category	Nominal specifications
Model	Martel MCP7830
Identification Code	SAV-C1070
Type	Thermal, Dot matrix
Dimensions	85,5 x150x55mm
Weight	400g including battery and paper
Power Supply	Rechargeable battery 4,8 V DC/1600 mAh (4 x cell AA Ni-MH)
Autonomy	1 hour of continuous printing
Recharge duration	4 hours
Print speed	80 mm/sec
Resolution	203dpi, 8dots/mm
Paper type	Thermal paper (57mm, 30Ø)

13.19 Defibrillation PADS

Category	ADULTS	CHILDREN
REF (Model)	SAV-C0846	SAV-C0016
Series	Cable and connector outside the envelope	Cable PADS and connector inside the envelope
Patient range	Adult age >8 years or weight > 25Kg	Children age 1 - 8 years or weight < 25Kg
Intended use	Disposable	
No. of shocks tolerated	50 shocks at 360J	
Support material	Medical FOAM, thickness 1 mm	
Conductive gel	Low impedance conductive adhesive gel	
Total area (for pad)	136 cm ²	75 cm ²
Active area (for pad)	94 cm ²	40 cm ²
Conductive material	Metal foil	
Connection	Anti-shock safety connector	
Cable length	120 cm (normally)	

13.20 ECG Cables

Category	Nominal specifications
Code	SAV-C0017
Type	Single cable with connector and terminals
Intended use	Reusable
Terminals	2 poles with CLIP terminals (button)
Coding	International IEC /EN
Model	CF

13.21 Timing of Shock cycles

Charging time performance in accordance with 60601-2-4 (201.101)	Specific	Result
The maximum time between the beginning of the ECG rhythm analysis and the completion of the charge at maximum energy	< 30 seconds	OK
The maximum time from ignition to completion of charging at maximum energy	< 40 seconds	OK

13.22 Geoloc Module

Geoloc Module	
Frequency	GSM: 850, 900, 1800, 1900 MHz; UMTS: 900, 2100 MHz GPS: 1575, 1600 MHz
Performance	<ul style="list-style-type: none"> • Geo-location (geographical position of the device in real time) • Remote control (tracking, anti-theft and device configuration) • Telemetry (real-time acquisition of device status, parameters and alarms) • Remote assistance (real-time phone call and ECG data streaming)

13.23 Geoloc Module Battery Type

Geoloc Module Battery Type	
Type	Li-SOCl ₂ disposable code SAV-C1038
Autonomy	4 years after installation on AED with a battery insertion test and daily self-test but without activating AED*
Shelf-Life	5 years if stored in its original packaging*
Type	Li-Ion Accumulator (rechargeable), code SAV-C1039
Recharging time	2.5 hours with the charging station code SAV-C1040 *
Autonomy	2 years after installation on AED and running only the daily self-diagnosis, but without activating AED*
Shelf-Life	2 years or 300 charge cycles*

*New and fully charged battery at constant temperature of 20°C and non-condensing relative humidity 45%.

14 Compliance with electromagnetic emission standards

The following paragraphs will specify the compliance with electromagnetic emission standards:

- Guidelines and manufacturer's declaration - Electromagnetic emissions
- Guidelines and manufacturer's declaration - Electromagnetic immunity
- Recommended distances between portable and mobile radiofrequency communication equipment and the AED

14.1 Guidelines and manufacturer's declaration - Electromagnetic emissions

The **Geo Saver D** was designed to be used in electromagnetic environments with features listed below. The customer or the user of the **Geo Saver D** must ensure that it is used in such an environment

Emissions test	Compliance	Electromagnetic environment - Guidelines
RF Emissions CISPR 11	Group 1	The AED uses RF energy only for its internal operation. Therefore its RF emissions are very low and are unlikely to interfere with nearby electronic equipment.
RF Emissions CISPR 11	Class B	The AED can be used in any building, including those for residential use and those directly connected to the public low-voltage power supply network that supplies residential buildings.
Harmonic Emissions IEC/EN 61000-3-2	Not applicable	
Voltage fluctuations / flicker IEC/EN 61000-3-3	Not applicable	

14.2 Guidelines and manufacturer's declaration - Electromagnetic immunity

The **Geo Saver D** was designed to be used in electromagnetic environments with features listed below. The customer or the user of the **Geo Saver D** must ensure that it is used in such an environment.

Immunity test	Test level IEC 60601-1	Compliance level	Electromagnetic environment - Guidelines
Electrostatic shock (ESD) IEC/EN 61000-4-2	±6 kV contact	±6 kV contact	Floors must be wood, concrete or ceramic tiles. If the floors are covered with synthetic material, the relative humidity must be at least 30%.
	±8 kV air	±8 kV air	
Fast transients / bursts IEC /EN 61000-4-4	±2 kV by electricity networks	Not applicable	
	±1 kV by input / output networks	±1 kV for input and output lines	
IEC/EN 61000-4-11	< 5% U_T (> 95% dip in U_T) for 0,5 cycles 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (>95% dip in U_T) for 5 seconds	Not applicable	


















Immunity test	Test level IEC 60601-1	Compliance level	Electromagnetic environment - Guidelines
Supply frequency (magnetic field) 50/60 Hz IEC/EN 61000-4-8	3 A/m	80 A/m	Power frequency magnetic fields must be at levels no higher than those of stations located in typical heavy industrial applications, power plants and control rooms of high voltage substations.
Note: U _T is the main AC current before the test level is applied			
RF conduct	3 Vrms	Not applicable	
IEC/EN 61000-4-6	3 Vrms from 150 kHz to 80 MHz outside the ISM ^a bands 10 Vrms from 150 kHz to 80 MHz inside the ISM ^a bands	Not applicable	
RF radiated IEC/EN 61000-4-3	10 V/m from 80 MHz to 2,5 GHz	10 V/m	<p>The distance between portable and mobile RF communications equipment in use and any part of the AED, including cables, must never be less than the recommended separation distance calculated based on the equation applicable to the transmitter frequency.</p> <p>Recommended separation distance</p> $d = 1.2\sqrt{P} \text{ from 80 MHz to 800 MHz}$ $d = 2.3\sqrt{P} \text{ from 800 MHz to 2,5 GHz}$ <p>Where P is the transmitter's maximum output power range in watts (W) according to the transmitter manufacturer's data and d is the recommended distance in meters (m) ^b.</p> <p>The field strengths of fixed radiofrequency transmitters, as determined by an investigation in electromagnetic sites,^c should be less than the compliance level in each frequency range.^d</p> <p>Interference may occur near the devices marked with this symbol.</p> 
NOTE 1	From 80 MHz to 800 MHz, the higher frequency range applies.		
NOTE 1	These guidelines may not apply in all situations. Electromagnetic propagation is influenced by absorption and reflection from structures, objects and people.		
a	The ISM bands (industrial, scientific and medical) between 150 kHz and 80 MHz are from 6.765 MHz to 6.795 MHz; from 13.553 MHz to 13.567 MHz; from 26.957 MHz to 27.283 MHz; and from 40.66 to 40.70 MHz.		
b	The levels of compliance in the ISM bands between 150 kHz and 80 MHz and between 80 MHz and 2.5 GHz are designed to reduce the possibility of interference in the event that portable and mobile communication devices are inadvertently approached to the area where the patient is found. For this reason, an additional factor of 10/3 is added to the calculation of the recommended separation distance for transmitters whose frequencies fall within these ranges.		
c	It is not possible to accurately predict theoretically the field strengths of fixed transmitters, such as base stations for radio (cellular / cordless) telephones and mobile radios, amateur radio, AM and FM radio and TV. To assess the electromagnetic environment with fixed RF transmitters, consider conducting an electromagnetic site survey. If the power of the fields measured in the location in which the AED is used exceeds the specific RF compliance level mentioned above, it will be necessary to monitor the AED to verify its correct functioning. If operating anomalies are observed, it may be necessary to take corrective measures, for example by moving or reorienting the AED.		
d	Over the frequency range between 150 kHz and 80 MHz, field strengths must be less than 1 V / m.		


















14.3 Recommended separation distance between portable and mobile RF communication equipment and Geo Saver device

Geo Saver D must be used in an electromagnetic environment in which radiated RF interference is controlled. The customer or the operator of the **Geo Saver D** can help prevent electromagnetic interference by maintaining the minimum distances recommended below, between the portable and mobile RF communications equipment (transmitters) and the **Geo Saver D**, based on the maximum output power of the devices of communication.

Maximum transmitter power output rate W	Separation distance according to the transmitter frequency m			
	From 150kHz to 80 MHz outside the ISM bands	From 150kHz to 80 MHz outside the ISM bands	From 80 MHz to 800 MHz	From 80 MHz to 800 MHz
	$d = 1.2\sqrt{P}$	$d = 1.2\sqrt{P}$	$d = 1.2\sqrt{P}$	$d = 2.3\sqrt{P}$
0.01	0,12 m	0,12 m	0,12 m	0,23 m
0.1	0,37 m	0,38 m	0,38 m	0,73 m
1	1,12 m	1,2 m	1,2 m	2,3 m
10	3,7 m	3,8 m	3,8 m	7,3 m
100	12 m	12 m	12 m	23 m
For transmitters rated at a maximum power not listed above, the separation distance "d" in meters (m) can be determined using the equation applicable to the transmitter frequency, where P represents the maximum power produced by the watt transmitter (W) according to the transmitter manufacturer.				
NOTE 1:	At 80 MHz and 800 MHz, the separation distance applied is that used for high frequency ranges.			
NOTE 2:	The ISM frequency bands (for industrial, scientific and medical applications) between 150 kHz and 80 MHz are 6,765 MHz up to 6,795 MHz; 13,553 MHz up to 13,567 MHz; 26,957 MHz up to 27,283 MHz and 40,66 MHz up to 40,70 MHz			
NOTE 3:	An additional factor of 10/3 is used in the calculation of the recommended separation distance for transmitters in the ISM frequency bands between 150 kHz and 80 MHz and in the frequency range from 80 MHz to 2.5 GHz to decrease the possibility that a Mobile / portable equipment may interfere if inadvertently brought into the patient's area.			
NOTE 4:	These guidelines may not be applicable in all situations. Electromagnetic diffusion is influenced by the absorption and reflection of structures, objects and people.			

15 Simbology

	ILCOR Universal Symbols for AED
	High Voltage Electrical Hazard
	General Notices: Refer to the consultation of accompanying documents before using the appliance
	Type BF, Defibrillation-proof Equipment
	Do not expose to high temperatures or flames
	Do not recharge
	Do not open
	Do not destroy or damage it
	Do not use it in puddles of water
	Read the User Manual
	Battery recycling
	Follow local waste regulations
	Fragile
	Store in a dry place
	Do not expose to direct sunlight
	Risk of electric shock do not open
	Type CF applied part

	IMQ brand
	CE mark with identification number
	Degree of protection of the appliance against dust and water (including battery)
	Serial Number
	Manufacturing date
	Lot Number (LOT)
	Expiration date
	Model identifier
	Manufacturer Name
	Absence of latex
	Single use, do not reuse
	Not Sterile
	External directions on the box
	This side up
	Temperature Limits
	Only stack up to 6 cartons in height
	Non-ionizing electromagnetic radiation

16 Certifications

16.1 EC Certificate

Mod. 4606/0



CERTIFICATO CE

Certificato n. 1104/MDD

Dichiarazione di approvazione del sistema qualità

(Sistema completo di garanzia qualità)

Visto l'esito delle verifiche condotte in conformità all'Allegato II, con l'esclusione del punto 4, della direttiva 93/42/CEE e s.m.i., si dichiara che la ditta:

A.M.I. ITALIA S.R.L.

80143 NAPOLI (NA) - VIA G. PORZIO CENTRO DIREZIONALE IS.G2 (ITA) - Italy

mantiene nello stabilimento di:

A.M.I. INTERNATIONAL KFT - 2000 SZENTENDRE - KOZUZO u. 5/A (HUN) - Hungary

80010 QUARTO (NA) - VIA CUPA REGINELLA 15A (ITA) - Italy

un sistema qualità che assicura la conformità dei seguenti prodotti:

Defibrillatore cardiaco esterno

Modd. come da documento "Defibrillatore Cardiaco Esterno" Rev.0 del 09/11/2018; valido solo se provvisto del timbro IMQ.

ai requisiti essenziali della direttiva suddetta ad essi applicabili (in tutte le fasi dalla progettazione al controllo finale) ed è sottoposta alla sorveglianza prevista dal punto 5 dell'Allegato II. Per i dispositivi in classe III questo certificato è valido solamente con il relativo certificato di esame CE della progettazione di Allegato II.4.

Riferimento pratiche IMQ:

10AJ00006; 10AJ00117; COMEDCONMHDM110027747-01; 10EN00018; 10AO00009; DM17-0009799-01; DM17-0018806; DM17-0020656-01; DM18-0023720-01; DM18-0032037-01; DM19-0034531-01.

Questa Dichiarazione di approvazione è rilasciata dall'IMQ S.p.A. quale organismo notificato per la direttiva 93/42/CEE e s.m.i. Il numero identificativo dell'IMQ S.p.A. quale organismo notificato è: 0051.

Emesso il:	2008-02-18
Data aggiornamento:	2019-02-22
Sostituisce:	2018-11-15
Data scadenza:	2023-02-15


IMQ iccg

Questa Dichiarazione di approvazione è soggetta alle condizioni previste dall'IMQ nel "Regolamento per la certificazione CE dei dispositivi medici - Marcatura CE - Direttiva 93/42/CEE".

IMQ S.p.A. | I-20138 Milano
| Via Quintiliano 43 |
www.imq.it



EC CERTIFICATE

Certificate No 1104/MDD

Full Quality Assurance System Approval Certificate

On the basis of our examination carried out according to Annex II, excluding section 4, of the Directive 93/42/EEC and its revised version, we hereby certify that:

A.M.I. ITALIA S.R.L.

80143 NAPOLI (NA) - VIA G. PORZIO CENTRO DIREZIONALE IS.G2 (ITA) - Italy

manages in the factory of:

A.M.I. INTERNATIONAL KFT - 2000 SZENTENDRE - KOZUZO u. 5/A (HUN) - Hungary

80010 QUARTO (NA) - VIA CUPA REGINELLA 15A (ITA) - Italy

a quality assurance system ensuring the conformity of the following products:

External cardiac defibrillator

Type ref. as to Document "Defibrillatore Cardiaco Esterno" Rev.0 dated 2018/11/09; valid only if provided with IMQ mark.

with the relevant essential requirements of the aforementioned directive (from design to final inspection and testing) and it is subject to surveillance as specified in section 5 of Annex II. For class III devices, this certificate is valid only with the relevant EC Design-Examination Certificate of Annex II.4.

Reference to IMQ files Nos:

10AI00006; 10AJ00117; COMEDCONMHDM110027747-01; 10EN00018; 10AO00009; DM17-0009799-01; DM17-0018806; DM17-0020656-01; DM18-0023720-01; DM18-0032037-01; DM19-0034531-01.

This Approval Certificate is issued by IMQ S.p.A. as Notified Body for the Directive 93/42/EEC and its revised version. Notified Body notified to European Commission under number: 0051.

Date: 2008-02-18
Updated: 2019-02-22
Substitution Date: 2018-11-15
Expiry Date: 2023-02-15


IMQ design

This Approval Certificate is subjected to the provisions laid down in the "IMQ regulation for the certification of Medical Devices - CE Marking - Directive 93/42/EEC".

This is a translation of the Italian text, which prevails in case of doubts

IMQ S.p.A. | I-20138 Milano
| Via Quintiliano 43 |
www.imq.it

16.2 IMQ Brand



IMQ S.p.A. - Società con Socio Unico
I-20138 Milano - via Quintilano, 43
tel. 0250731 (p.a.) - fax 0250991500
e-mail: info@imq.it - www.imq.it

Rea Milano 1595884
Registro Imprese Milano 12898410159
C.F./P.I. 12898410159
Capitale Sociale € 4.000.000

CA10.00185
SN.I000XN

PID:
10010024
CID:
CN.I0005Y

Certificato di approvazione

Approval certificate



PRD N° 005B

Membro degli Accordi di Mutuo
Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC
Mutual Recognition Agreements

**IMQ, ente di certificazione accreditato,
autorizza la ditta**

IMQ, accredited certification body, grants to

A.M.I. ITALIA S.R.L.
VIA G. PORZIO CENTRO DIREZIONALE IS.G2
80143 NAPOLI NA
IT - Italy

all'uso del marchio

the licence to use the mark

IMQ

Il presente certificato è
soggetto alle condizioni
previste nel Regolamento
"MARCHI IMQ -
Regolamento per la
certificazione di prodotti" ed
è relativo ai prodotti
descritti nell'Allegato al
presente certificato.



per i seguenti prodotti

Defibrillatori cardiaci esterni
(Modd.: SAVER ONE; SAVER
ONE D; SAVER ONE P; GEO
SAVER; GEO SAVER D; GEO
SAVER P)

*This certificate is subjected to
the conditions foreseen by Rules
"IMQ MARKS - RULES for
product certification" and is
relevant to the products listed in
the annex to this certificate.*

for the following products

External cardiac defibrillators
(Models: SAVER ONE; SAVER ONE
D; SAVER ONE P; GEO SAVER; GEO
SAVER D; GEO SAVER P)

Emissa il / Issued on **2008-09-25**
Aggiornato il / Updated on **2019-03-04**
Sostituisce / Replaces **2014-03-18**

Stefano D. M.

IMQ S.p.A.

17 Geo Saver Series Defibrillator Warranty

1 Warranty Restriction

A.M.I. Italia S.r.l guarantees the original purchasers that its Geo Saver series defibrillators and related accessories and batteries are free from any material or manufacturing defect according to the terms and conditions of this restrictive warranty. The original purchaser is considered to be the final user of the product purchased. This limited warranty is granted only to the original purchaser of the Geo Saver series defibrillator of A.M.I. Italia S.r.l and is not transferable or assignable to third parties.

The Geo Saver Series defibrillators are as follows:

Geo Saver Semi-Automatic (code SGS-B0988 or SGS-B0989)

Geo Saver Automatic (code SGA-B0990 or SGA-B0991)

Geo Saver D (code SGD-B0992 or SGD-B0993)

Geo Saver P (code SGP-B0994 or SGP-B0995)

2 Duration

A.M.I. Italia S.r.l guarantees the original purchaser of Geo Saver series defibrillators, starting from the date of dispatch* of the warranty validation form (to A.M.I. Italia S.r.l) or starting from 30 (thirty) days from the date of shipment from A.M.I. Italia S.r.l, the one that occurs chronologically first; defibrillators have a typical life expectancy of about 10 years. The guarantee offered by A.M.I. Italia S.r.l covers a period equal to:

- **AED Geo Saver Series** have a six (6) year warranty
- **Non-rechargeable batteries Li-SOCl₂** (SAV-C1032) if installed in the AED and in Standby mode they are guaranteed for 4 (four) years assuming a battery activation test, daily self-tests, without the AED being switched on at the following environmental conditions temperature (20 ° C) and humidity S / C (45 %)
- **Rechargeable batteries Li-Ion** (SAV-C1033) are guaranteed for two (2) years from the date of production only if the temperature conditions (temperature 20 ° C) and humidity (45%) are met and if they are recharged at least one (1) time every four (4) months
- **The disposable pads** guaranteed until their expiration date.
- **All other accessories** are guaranteed for six (6) months starting 30 days after the original shipping date from our warehouse.

**The date shown on the registered letter with return receipt will still be valid*

3 Procedure

Please complete (in its entirety) the limited warranty validation form and send it by post (Registered letter A / R) to A.M.I. Italia Srl. The date shown on the A / R recommendation will prevail. You will find the Warranty validation form attached to the user manual or inside the original packaging of the Geo Saver series defibrillator. In the event that a defect covered by this warranty is found, the original purchaser must contact the reference retailer or an authorized A.M.I. Italia Srl.

A.M.I. Italia S.r.l reserves the exclusive right to repair or replace the product.

4 Exclusions

This warranty does not cover non-conformities subsequent to purchase, such as those caused by accidents, modifications, negligence, incorrect use or abuse, non-compliance with procedures or hazards, or warnings or cautions described in the user manual, failure to perform a reasonable and adequate maintenance, incorrect installation, replacement of parts and accessories that do not comply with the specifications provided by AMI Italia S.r.l, any modifications made to the device and in general all subsequent non-conformities deriving from failure to comply with the provisions contained in the user manual.

This warranty does not cover, as it does not constitute cases of original non-conformity, the normal wear and tear of components subject to decay during use such as buttons, LEDs and battery contacts. This warranty will also be automatically invalidated in one of the following cases:

- if the Geo Saver AED series serial number is modified, deleted, rendered illegible or otherwise tampered with;
- if the warranty seal (opening of the device) on the Geo Saver DAE is removed;
- in case the commercial name of the product or manufacturer is covered, modified or cancelled

Finally, this warranty does not apply to used Geo Saver series AEDs sold, in which case the warranty must be offered by the reseller of the used product with the exclusion of any liability, even indirect, borne by A.M.I. Italia S.r.l

5 Damage

Except as explicitly provided in this warranty, A.M.I. Italia S.r.l, WILL NOT BE LIABLE FOR ANY INCIDENTAL OR INDIRECT DAMAGES ARISING FROM THE USE OF THE GEO SAVER SERIES DEFIBRILLATOR OR CLAIMS IN VIRTU OF THIS AGREEMENT, WHETHER THE CLAIM REFERS TO THIS AGREEMENT, TO ILLEGAL OR OTHERWISE. The warranty statements mentioned are exclusive and replace any other remedy. Some states do not allow the exclusion or limitation of incidental or indirect damages, so the above limitation or exclusion may not be relevant.

6 Waiver

ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ALL IMPLIED WARRANTIES ARISING OUT OF NEGOTIATIONS, USE OR BUSINESS CONSUMPTIONS, BY STATUTE OR OTHERWISE ARE STRICTLY LIMITED TO THE TERMS OF THIS WRITTEN WARRANTY. This warranty will be your sole and exclusive buyer's remedy for this purchase. In the event of an alleged violation of any guarantee or legal action brought by the original purchaser for alleged negligence or other unlawful conduct by A.M.I. Italia Srl, the sole and exclusive remedy of the original purchaser will be constituted by the repair or replacement of the resulting defective materials, based on what was previously established. No retailer or agent or employee of A.M.I. Italia S.r.l is authorized to make changes, extensions or additions to this warranty.

7 Territorial limit

This warranty is valid for products purchased in one of the countries of the European Union or in the countries in which the EU laws and regulations apply.

8 Warning

Install, use and maintain Geo Saver series defibrillators by A.M.I. Italia S.r.l in absolute compliance with the instructions contained in the user manual

9 Other rights

This limited warranty guarantees the original purchaser specific legal rights; any other rights may vary depending on the state of belonging.

10 Applicable law

Any dispute relating to this agreement or arising from the use of Geo Saver series defibrillators by A.M.I. Italia Srl will be governed by Italian law, at the Court of Naples, Italy



Warranty Card
Scheda di Garanzia
Carte de Garantie
Tarjeta de Garantía



Device Model Modello del Dispositivo Modèle du Dispositif Modelo de Dispositivo	Serial Number (see label on the back) Numero di Serie (vedere l'etichetta sul retro) Numéro de Série (voir l'étiquette sur le dos) Número de Serie (ver la etiqueta en la parte posterior)	Date of Purchase Data d'Acquisto Date d'Achat Fecha de la Compra
End User's Name Nome dell'Utente Finale Nom de l'Utilisateur Final Nombre del Usuario Final	Address Indirizzo Adresse Dirección	
City Città Ville Ciudad	State/Province/Region Stato/Provincia/Regione Etat/Province/Région Estado/Provincia/Región	Country Paese Pays País
Telephone Number Numero di Telefono Numéro de Téléphone Número Telefónico	Fax Number Numero di Fax Numéro de Fax Número de Fax	Email Address Indirizzo Email Adresse Email Correo Electrónico
Seller's Company Name Ragione Sociale del Venditore Nom du Vendeur Nombre del Vendedor	Seller's Country Paese del Venditore Pays du Vendeur País del Vendedor	Seller's Phone Number Telefono del Venditore Téléphone du Vendeur Teléfono del Vendedor



Geo
Saver® *D*



AED *S*