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STERIMEDIC - Technical manual



Model: Device for automatic, non-contact hand disinfection using the spraying method.

Type:

- A) Sterimedic Glass Series,
- B) Sterimedic Alu Pro Series,
- C) Sterimedic Stainless Pro Series

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1. Introduction

Thank you for purchasing the STERIMEDIC sterilization device. Welcome to the growing number of users of our products and congratulations on your choice! We are convinced that the combination of elegance and the latest technical solutions with the reliability of the brand will bring you a lot of satisfaction.

The operating manual describes the principles of proper use, safety requirements, inspection schedules and other guidelines for the daily use of the device. Before starting the device, read the Manual carefully, as it can significantly contribute to increasing the satisfaction with its operation.

The operating instructions contain important information on the controls and accessories that facilitate the comfortable and safe use of the device.

It also contains guidelines for periodic inspections and maintenance activities that affect the safe use of the device. We recommend that all inspection and maintenance activities are performed by an Authorized Company Service Center. This ensures the highest level of control and maintenance activities as well as other services necessary during the operation of the device.

This User Manual is an integral part of your device and should be available to its user at any time. In the event of resale of the device, the Operating Instructions must be handed over to the new owner.

1.1. Scope

All information contained in these Operating Instructions is correct at the time of issue. The company reserves the right to make changes at any time in accordance with the policy of continuous improvement of manufactured products.

The operating manual applies to all versions of the devices, therefore it contains descriptions and explanations of standard and optional equipment. There may be fragments in the Manual that do not relate to a specific copy.

1.2. Related documents Document

name	Comments
EC	Declaration of Conformity Declaration of Conformity will be attached in a separate document.

Table 1: Related documents

2. Safety measures

Please read this manual carefully before use. In the event of a defective operation or faults that cannot be removed on your own, it is recommended to contact the manufacturer. The manufacturer reserves the right to introduce technical changes.

2.1. Requirements

- This device may be used by children from 8 years of age and older and people with reduced physical, sensory or mental abilities or without experience and knowledge, provided they are supervised or have been instructed to use the device in a safe manner and understand the dangers. Children must not play with the device. Children may not clean or maintain the appliance without supervision.
- Close supervision is necessary when any appliance is used by or near children.
- Disconnect the device from the outlet and / or from the battery when not in use for an extended period and before cleaning.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or a similarly qualified person in order to avoid a hazard.
- This appliance is intended for use in public places and similar applications such as:
 - staff kitchens in shops,
 - offices and other workplaces,
 - by customers in hotels,
 - motels and other residential environments.
- There is a potential risk of injury due to improper use
- . Do not use the device if any of the parts or the cover is damaged or has visible cracks.

When using electrical appliances, basic precautions should always be followed to reduce the risk of fire, electric shock, and / or injury to persons.

2.2. Safety precautions

Please read these instructions carefully before using the device for the first time.

- Before using the device for the first time, make sure that the power supply corresponds to the current specified on the housing.
- Do not use the device outdoors, unless the version permits it.
- Do not place the device on a hot surface.
- Use only manufacturer's accessories.
- Do not let children play with the device.
- To avoid electric shock, do not submerge the device in water or any other liquid.
- Make sure the cord does not come into contact with sharp edges and hot surfaces.
- Do not use the device if the power cord is damaged.
- Do not repair the device yourself. If there is any damage to the device, contact an authorized service center.
- Always turn off and unplug the device when not in use or before cleaning.

3. Description of the device

3.1. Scope of delivery

The package contains a ready, complete device. The content may vary depending on the ordering option selected.set is:

- 1 .
- Charger 1 pc.
- User manual 1 pc.
- Mounting template 1 pc.
- Tray for excess fluid 1 pc.

device

- 1. pc

standard

SteriMedic packaging, it is a typical transport packaging. It is quantitatively reduced to the minimum necessary so that high-quality parts can be transported and unloaded without damaging them.

Package dimensions: 200x400x500.

Transport and storage

If there are any restrictions related to transporting the device in an assembled state, it will be delivered in subassemblies. Pay attention to careful unloading and storage of components until assembly. Store the device and its accessories in a safe and dry place. The recipient of the goods bears the risk of storage. Do not use sharp objects for unpacking in order to prevent damage.

Complaints regarding missing parts as well as damage caused during transport should be reported immediately. Complaints about damage or missing parts submitted late will not be accepted.

3.2. Principle of operation

The basic function of the device is effective and safe hand disinfection. Disinfection takes place by bringing the hands closer to a fixed distance in the disinfecting chamber, followed by automatic detection of the hand and the release of an appropriate amount of disinfecting liquid in

the form of a mist sprayed on the hands. If necessary, the operation can be repeated until a satisfactory result is obtained.

3.3. Technical data of the device

This manual covers a series of disinfecting devices that differ in terms of the material they are made of. In this way, we can distinguish the following types:

- A) Sterimedica Glass Series,
- B) Sterimedica Alu Pro Series,
- C) Sterimedica Stainless Pro Series

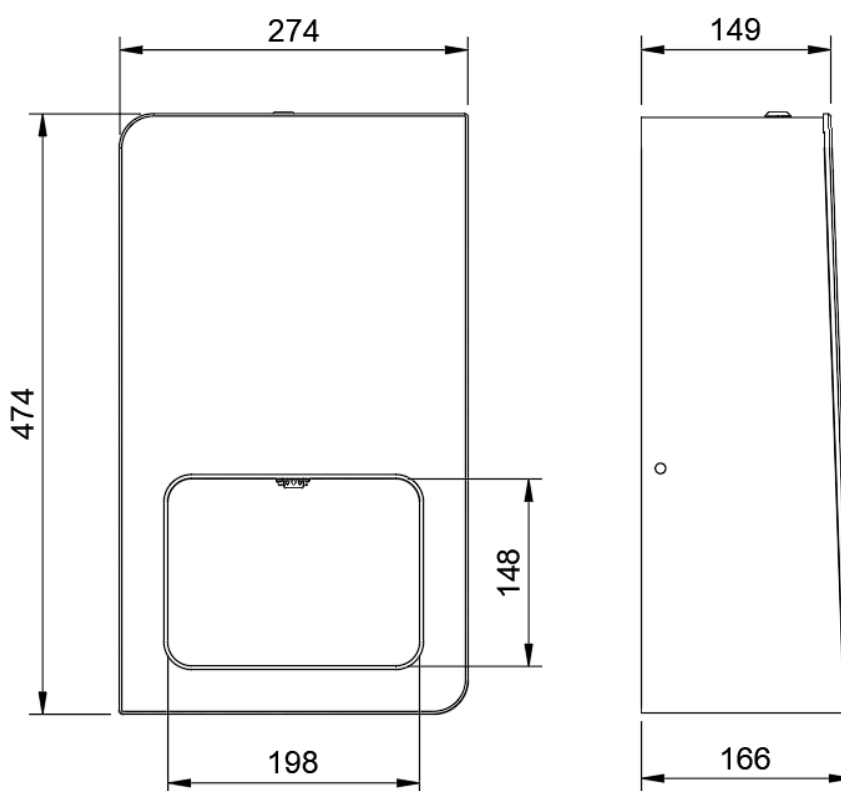


Figure 1: Device dimensions

Parameter	Minimum	Typical	Maximum
Mains voltage	~ 230 V, 50 Hz		
Voltage of an external, stabilized power supply	12 V =	14 V =	14 V = (with battery) 24 V = (without battery)
Supply voltage of components	7 V =	12 V =	14 V = (with 24)
current	18 mA	23 mA	28 mA
Current during disinfection	0.5 A	2.5 A	7.0 A
Power consumption when idle	1 W	1 W	1 W
Power consumption during disinfection	30 W	48 W	75W
Operating temperature	-10 °C	20 °C	60 °C
Dosing system capacity	0.5ml	2.5ml	5ml
Disinfectant capacity	1L		
Device weight	11kg		
Dimensions	474x274x166		

Table 2: Technical data

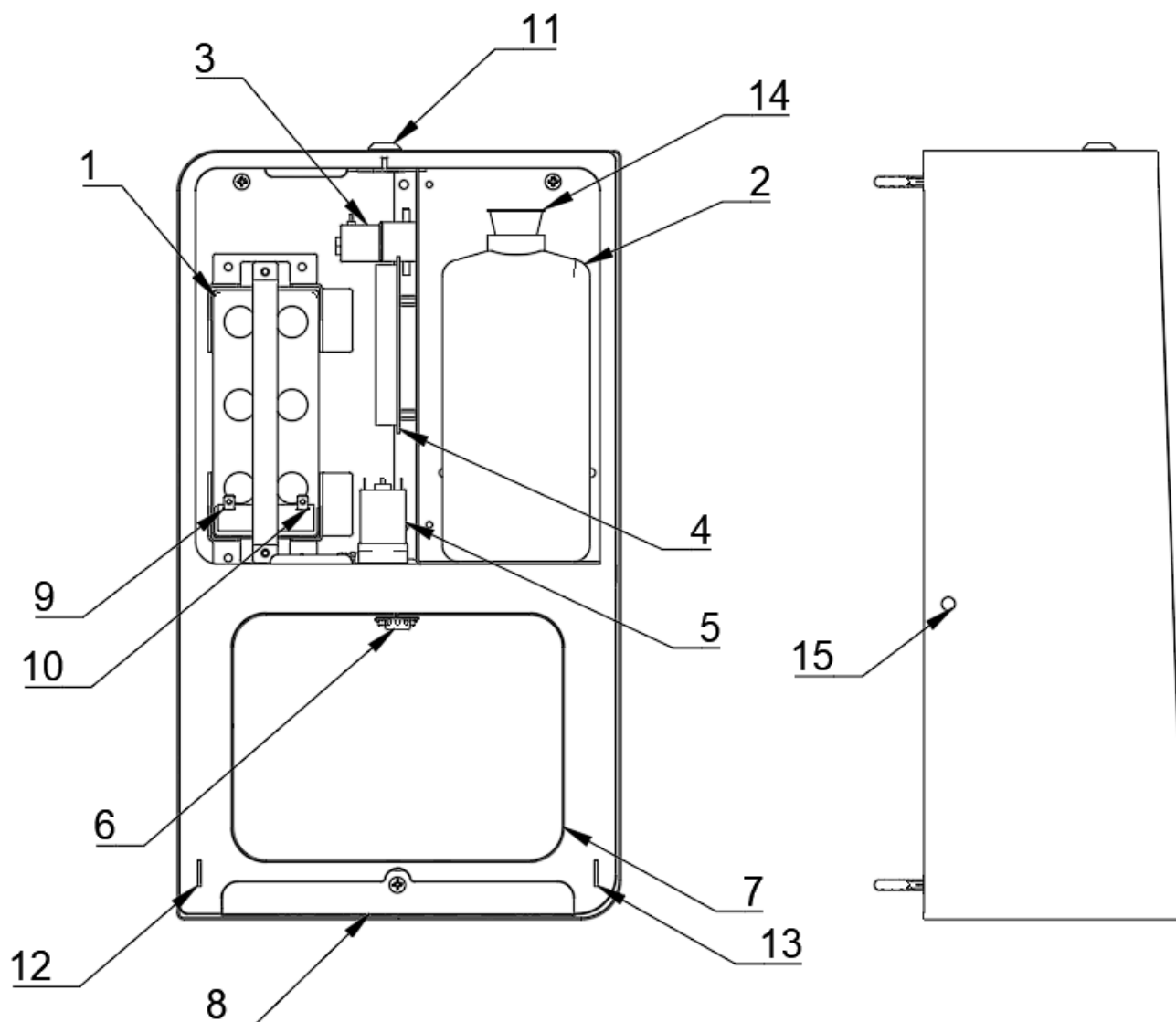


Figure 2: Diagram with description

1. Battery 12V
2. 1000 ml bottle
3. Non-return valve
4. Device control system
5. Pump Pump
6. atomizer
7. Disinfection
8. chamber Chamber for excess fluid tray
9. Plus battery
10. Minus battery
11. Lock m the main cover / front of the device.
12. Mounting slot for front handle.
13. Mounting slot for front handle.
14. Bottle stopper for attaching the tubing.
15. Device charging port.

3.4. Marking

The disinfecting device is marked with a permanent nameplate or a nameplate with the following content. Markings should be visible after installation of the device.

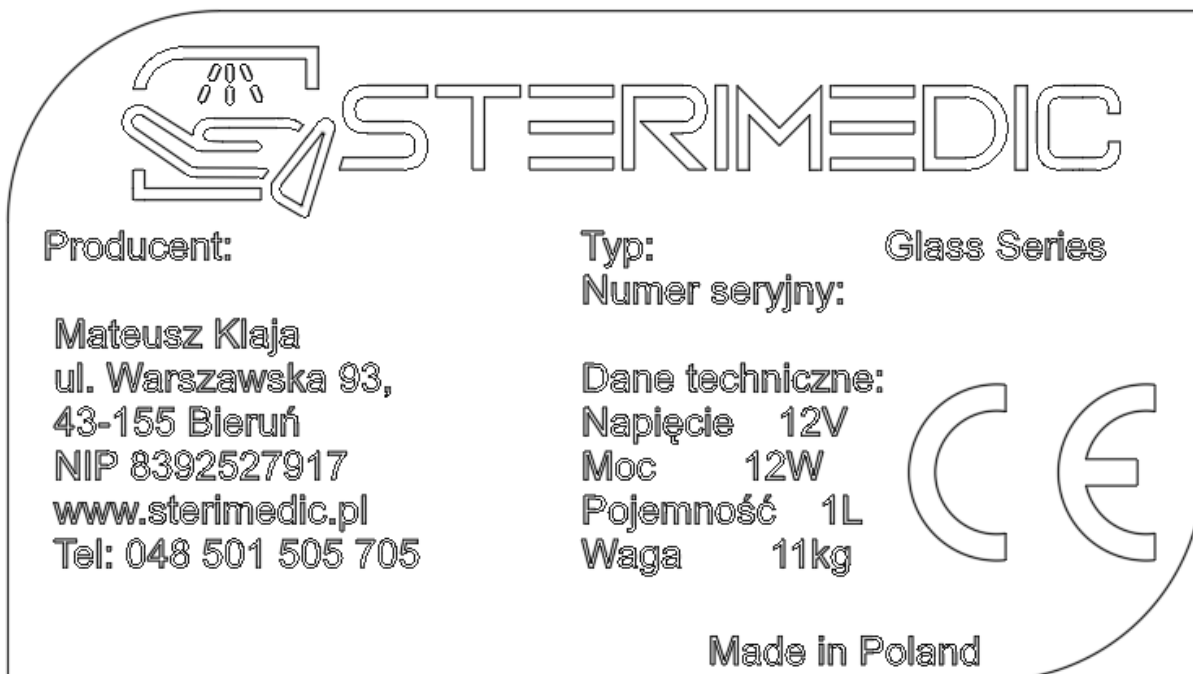


Figure 3: Model nameplate

3.5. Intended use

The hand disinfection device is designed to spray (a predetermined dose) mist of a disinfectant. The mist is created by compressing the agent and then depressurizing it through a nozzle that allows the liquid to be atomized. The device was made in accordance with the rules of technology and applicable regulations.

The user should comply with applicable law. Each entrepreneur is obliged to keep records of pollutants released into the environment, in accordance with the environmental protection regulations.

3.6. Instructions for installing the device

The installation of the disinfection device should be carried out by qualified specialists on a level, stable surface according to the guidelines. When mounting the device on a wall, use the template attached to the device. It allows you to mark out the holes. It is recommended to install the device 90 cm from the floor or 70 cm from the floor if the users are children.

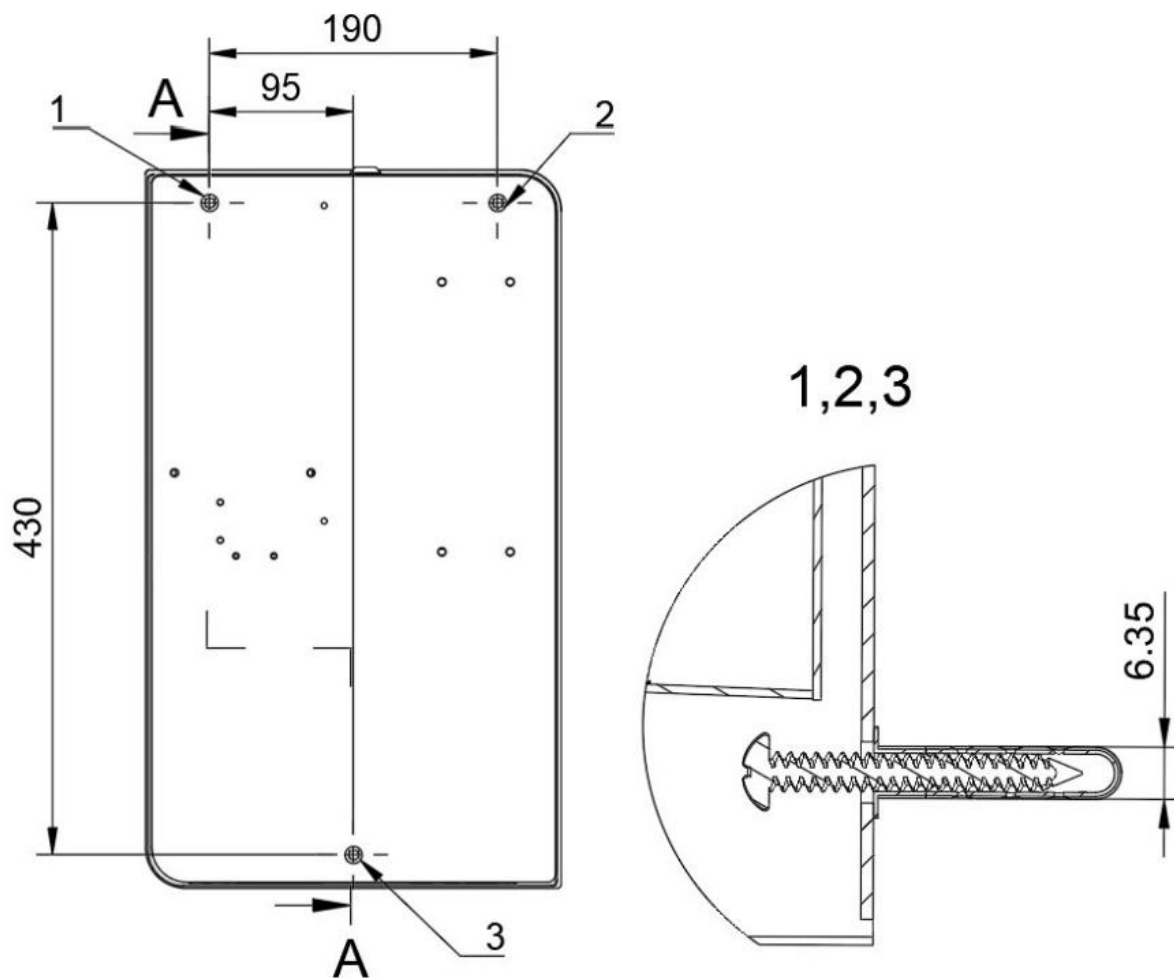


Figure 4: Installation diagram of the device

3.7. Materials used for the production of disinfection devices

Structural elements

The following materials were used to produce the device:

Stainless steel # 1.0mm # 1.5mm # 2.0mm

Aluminum sheet # 1.0mm # 1.5mm # 2.0mm

Tempered glass # 6mm

Fasteners

The following elements were used in the project:

- Allen screws DIN 912
- Screws with washer heads ISO 7380
- Washers DIN 125
- Nuts DIN 934

3.8. Control system - main

board The motherboard contains components that control all components of the device. The microprocessor control unit enables communication with the device, its configuration and operation status control. An OLED display is attached to the plate, showing all the parameters of the device.

3.8.1. Safety requirements

CAUTION! The motherboard contains sensitive electronic components that must be handled with care. In particular, pay attention to the OLED display, the main element of which is made of thin glass. Too much pressure may damage the display glass and it will no longer be usable. In addition, glass elements can damage the skin. A damaged display must be replaced.

3.8.2. Mainboard sockets and components

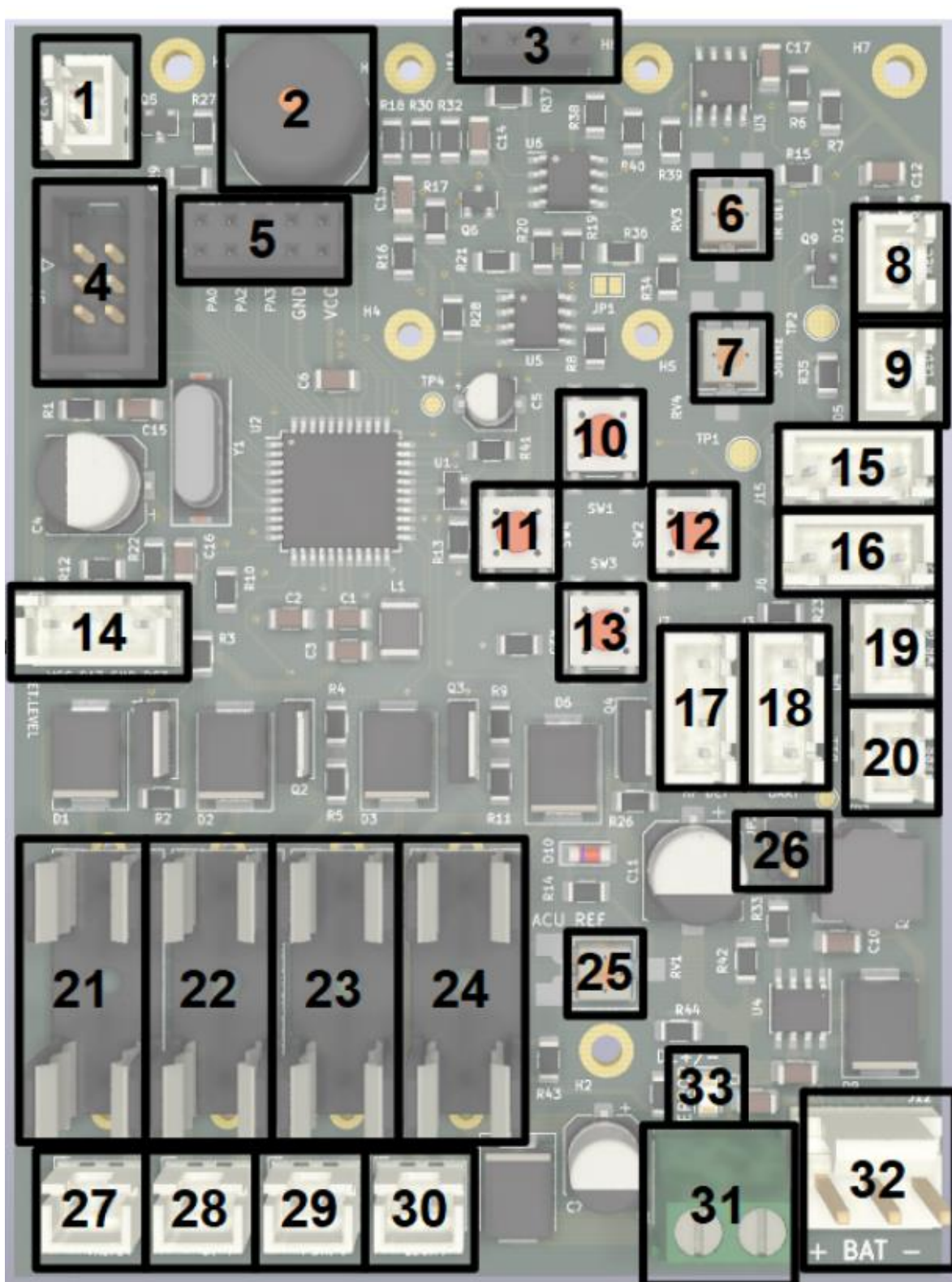


Figure 5: Main board components location

1. Housing sensor socket (COVER)

2. Hand
3. OLED display
4. socket ISP programming
5. socket Expansion socket
6. IR sensor adjustment for hand presence IR
7. remote transmitter frequency control (36kHz)
8. presence sensor IR LED socket (receiving)
9. IR remote control transmitter socket
10. Control button SW1 (up)
11. Control button SW4 (left)
12. Control button SW2 (right)
13. Control button SW3 (down)
14. Fluid presence sensor
15. socket Expansion socket I²C
16. Laser sensor socket ToF hand presence
17. Proximity sensor socket, prompts
18. Socket of the RS232 serial port UART
19. Socket of the operation LED, green, power
20. Socket of the error LED, red
21. Socket of the fluid valve fuse
22. Socket of the UV lamp
23. fuse Socket of the fluid pump fuse
24. Socket of the electric-lock fuse
25. Adjustment of the battery voltage reading converter
26. Jumper for power supply of the rudder system (5V)
27. Fluid valve
28. socket. UV lamp
29. . Fluid pump
30. socket. Electro-lock
31. power socket from the power supply
32. . Battery socket
33. socket

3.8.3. DC

- Mains supply with a buffer battery that works as a backup in the event of a mains power failure. Powered by an external 14V AC adapter.
- Battery powered. Battery charged when needed using an external 14V AC adapter.

WARNING! Verify the polarity before connecting the power. The system is protected against connecting the power supply with wrong polarity, which is signaled by the red diode on the motherboard, however, connecting the power supply with the wrong polarity to the battery will damage the power supply and / or the battery.

3.8.3.1 Battery

Parameter	Description
Product type	Lead battery
cell type	AGM
Voltage	12 V
Capacity	7.2 Ah
Battery properties	VDS certified, Maintenance-free, Low self-discharge
Battery connection	Flat plug 4.8 mm
Weight	2470 g
Manufacturer part number	LC-R127R2PG
Type (manufacturer type)	12 V 7 , 2 Ah
Rechargeable	yes
Dim.	(W x H x D) 151 x 94 x 65 mm

Table 3: Battery technical data

3.8.3.2 Mains adapter

Parameter	Description
Product type	Stabilized mains adapter
Input voltage	~ 230V AC 50Hz
Output voltage	14V DC
Output current	3A (for the version of the device with a battery) min. 7A (for the version of the device without a battery)

Table 4: Technical data of the AC adapter

3.8.3.3 Start

-up Before the first start-up, check the technical condition of the motherboard, paying attention to any mechanical damage that may have arisen during transport. All initial adjustments and configuration settings are made by the manufacturer. In some cases it will be necessary to make adjustments to the regulation. The system has been designed so that none of the adjustments in any of the settings will damage the device.

1. The motherboard circuit is connected to the power supply via the socket [31]. Pay attention to the diode [33]. If it lights up, the polarity of the power supply must be changed.
2. An optional battery is connected to the socket [32]. Pay attention to the polarity of connecting "+" to "+" and "-" to "-". The battery may also be the only source of power for the system.
3. Jumper [26] must be installed.
4. Connect the housing sensor to the socket [1].
5. The fluid presence sensor should be connected to the socket [14]
6. . Suitable fuse inserts should be installed in sockets [21], [22], [23], [24].
7. Connect the fluid solenoid valve to the socket [27].
8. Connect the optional UV lamp of the chamber to the socket [28].
9. Connect the fluid pump to the socket [29].
10. Connect the electro-lock's coil to the socket [30].
11. Signaling diodes should be installed in sockets [19] and [20] - green operation and red error.
12. The hand presence laser sensor should be connected to the socket [16].
13. IR LEDs should be connected to sockets [8] and [9], if they are applicable in the given configuration.

The connected motherboard is ready to work. Turn on the power. After the initialization phase, the device will start up and start working. The green operation LED will flash and the red error LED will also flash if the device housing is open.

During the first phase of commissioning the device, the display shows the STERIMEDIC logo and the firmware version number.

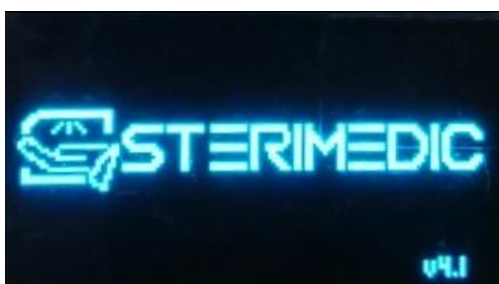


Figure 6: Welcome screen

After 2 seconds, the screen goes blank, all services are started and the system starts working, which is signaled by the blinking green operation LED [19].

3.8.3.4 Principle of operation

The device's work cycle consists of one main control process, which includes:

- Control of sensors of operating parameters:
- supply / battery voltage,
- ambient temperature,
- housing,
- liquid level,
- laser hand presence sensor,
- transmitting data for the remote control,
- reading device keys and OLED display control.

This cycle is constant and its individual elements are run on the basis of task management algorithms in order to ensure maximum efficiency and speed of operation of the entire system.

In the event of a specific event, appropriate response procedures are launched, taking into account the current state of sensors.

3.8.3.5 Disinfection

The procedure is initiated by the activation of the hand sensor in the chamber. When the sensor is actuated, the UV lamp inside the chamber lights up.

- If a suitable delay time has elapsed since the last disinfection, the valve and the washer pump are activated for a predetermined time (dose volume) and with a specified power. Both the batch volume and the pump power are preset at the factory or by the user. The factory setting is 1ml
- . The pump and valve are turned off, the UV lamp remains on and the device waits for the hand to be removed from the chamber and the sensor to be unlocked.
- When the hand is removed, the UV lamp goes out and, if it has been properly configured and connected, the gate electro-lock or other device allowing the entry of a person to the protected room is triggered.

3.8.3.6 OLED display

The device communicates with the user by means of the display and keys on the motherboard. The display is blank in standby mode. It can be turned on by clicking any key on the motherboard. This causes the display of all current operating parameters of the device. The parameters are updated in real time.



Figure 7: Main screen. The

individual elements on the display show:

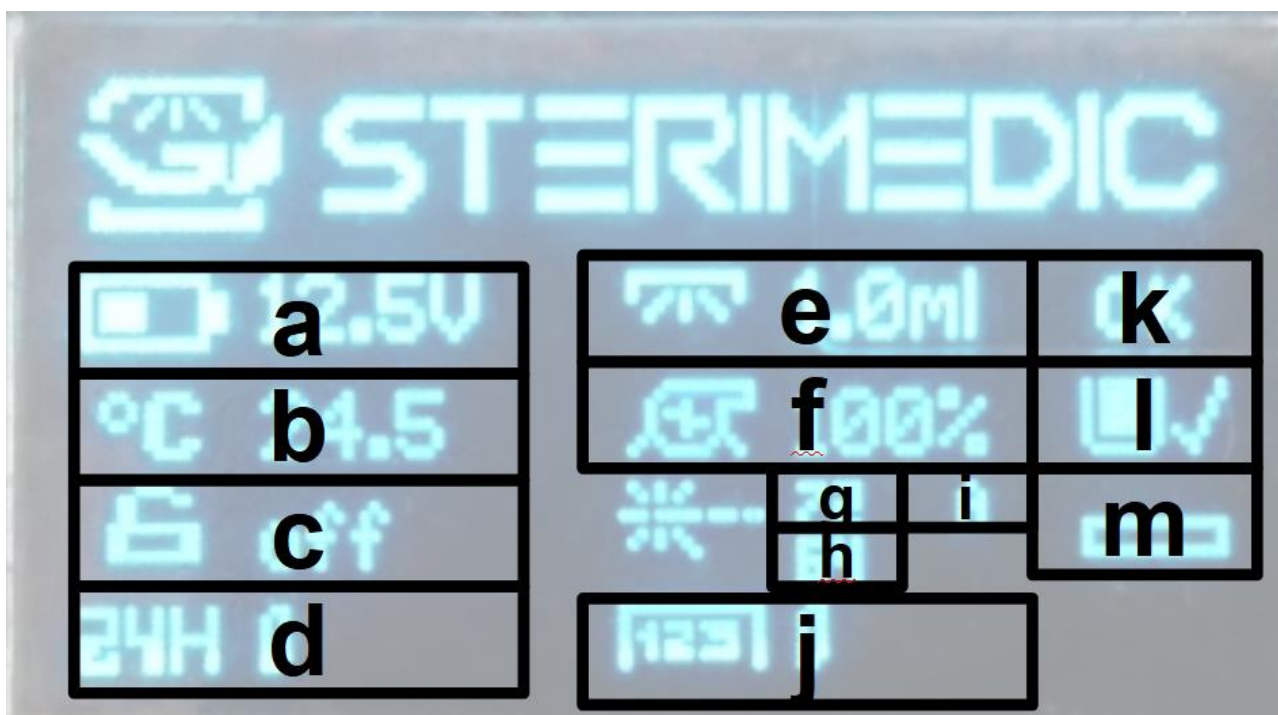


Figure 8: Description of the displayed functions

- a) Battery voltage, power supply
- b) Internal temperature
- c) Status of the electric lock function
 - a. "on" - on
 - b. "off" - off

- d) “Daily” counter to use the device. Reset after 24 hours of operation
- e) Volume of a single dose of liquid
- f) Pump power
- g) Current distance measured by the laser sensor
- h) Distance calibration value of the laser sensor
- i) Type of detected laser sensor
- j) Total counter use the device Device
- k) status
 - a. “OK” - in case of no error
 - b. “!!!” when an error is detected
- l) Disinfectant fluid status
- m) Indicator of housing opening

If the laser sensor has not been detected, a dash will appear instead of the values read from the laser (g, h, i). The device tries to re-establish communication with the laser every few minutes.

3.8.3.7 Keys

There are four control keys on the motherboard. Each of them is assigned a specific function and reacts differently at a certain moment.

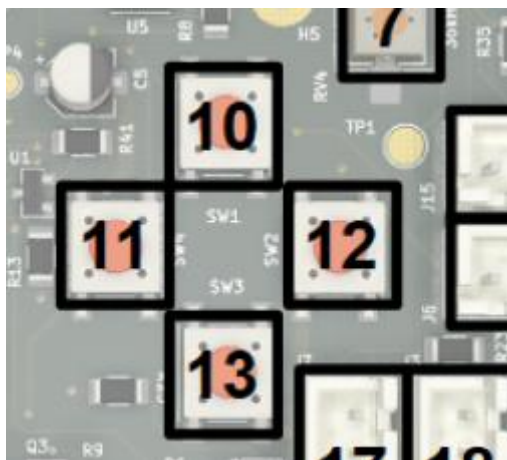


Figure 9: Description of the buttons

[10] Up - navigating through the menu

[13] Down - navigating through the menu

If the screen is blank, clicking will display the main screen.

If the basic screen is displayed, the key has no function.

If a menu is displayed or a specific parameter is selected, subsequent clicks cause a change up / down, i.e. either moving to the previous / next, higher / below item in the menu or changing the parameter value up / down.

[12] Right - entering the function.

If the screen is blank, clicking on it will display the basic screen. Another click takes you to the menu and another entry to editing the value of the configuration parameter.

[11] Left - exiting the function, returning.

If the screen is blank, click to display the basic screen. It causes the exit from the edition of the configuration parameter value or the exit from the menu to the main screen. On the home screen, turns off the display.

3.8.3.8 Configuration parameters menu



Figure 10: The

Device settings changes menu is changed with a simple menu. We enter the menu by pressing the SW2 key ("Right"). A list of menu items, parameters appears.

The list of menu items can be browsed and scrolled using the SW1 ("Up") and SW3 ("Down") keys. The ">" sign indicates the active menu item.

Selecting the SW2 button again ("Right") causes the transition to the change of the value of the selected parameter.

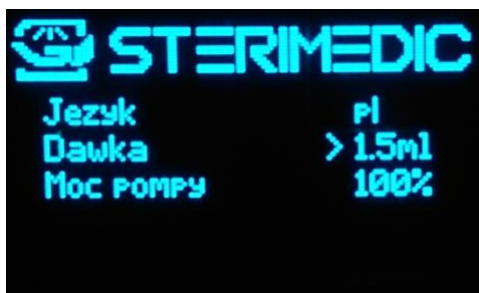


Figure 11: Editing a parameter in the menu

Change the parameter value using the SW1 ("Up") and SW3 ("Down") keys. Each change is automatically saved in the non-volatile memory of the processor.

Return to the previous menu level by pressing the SW4 key ("Left"). This way, we exit the parameter value edition to the parameter list or we exit the parameter list, from the menu to the

main screen. The next selection of the SW4 key ("Left") causes the display to go blank.

In different versions of the device, additional menu items may be available and configuration parameters may appear, the value of which cannot be modified. Then, instead of the ">" sign, the "-" sign appears next to the item and you cannot proceed to editing the parameter.

Parameter. Language

Change the language in the menu.

Parameter. Dose

This parameter specifies the fluid dose volume for a single use from 0.5ml to 9.5ml in 0.5ml steps.

Parameter. Pump power

This parameter specifies the disinfectant pump power value from 10% to 100% in 10% steps.

3.8.3.9 Hand detection and sensor calibration

The device has two types of hand detection devices depending on the requirements of the installation. Both can work simultaneously and, in specific cases, detect hands in two different chambers.

- **Laser sensor**

Hand detection is based on a high-precision laser sensor. The detection process consists of measuring the distance to an object (ToF).

When starting the device, the firmware calibrates the measurements by measuring the average value of the sensor distance from the bottom of the washer chamber and remembers this value. The value read in the calibration process is presented on the device's display [h].

This sensor does not require manual calibration.

During operation, the device constantly monitors the distance with a laser sensor and if it falls below the calibration value, it starts the disinfection process.

- **Diode sensor**

Hand detection is based on IR (infrared) diodes where one transmits light signals and the other receives them. If the received signals are consistent with the transmitted signals, it is treated as the presence of a hand. Such a situation will only occur when the transmitted signal is reflected from some surface.

For proper operation, the detection sensitivity must be set in each device under the target operating conditions. The potentiometer [6] on the main board is used for this. It should be rotated slowly from the extreme right position to the left until the UV diode of the device goes out, which means no hand detection. This switch-off point is the point at which the sensor responds later. Check the

setting by putting your hands in it and correct the setting if necessary.

The diode sensor service function is disabled by default and can be enabled by the manufacturer.

- **Pilot signal**

transmitter The signal transmitter for the pilot is part of the LED hand detection sensor. It is factory set to generate a variable pilot signal with a carrier frequency of approx. 36 kHz. This frequency can be corrected using the potentiometer [7]. In most cases, the correction is not needed because the remote control has a sensor with a very wide range of signal detection.

The remote control signal transmitter function is disabled by default and may be enabled by the manufacturer.

3.8.3.10 Calibration of voltage measurement

The device is pre-calibrated and shows the value of the supply voltage of the device with certain accuracy. The default is the battery voltage value and indicates its charge level. If for some reason it is necessary to correct these indications, it can be done by adjusting the setting of the potentiometer [25] on the main board.

3.9. Dosing system The dosing

system is a suction-forcing gear pump. All components of the system in contact with the disinfecting liquid are made of an inert material that does not react with the substance.

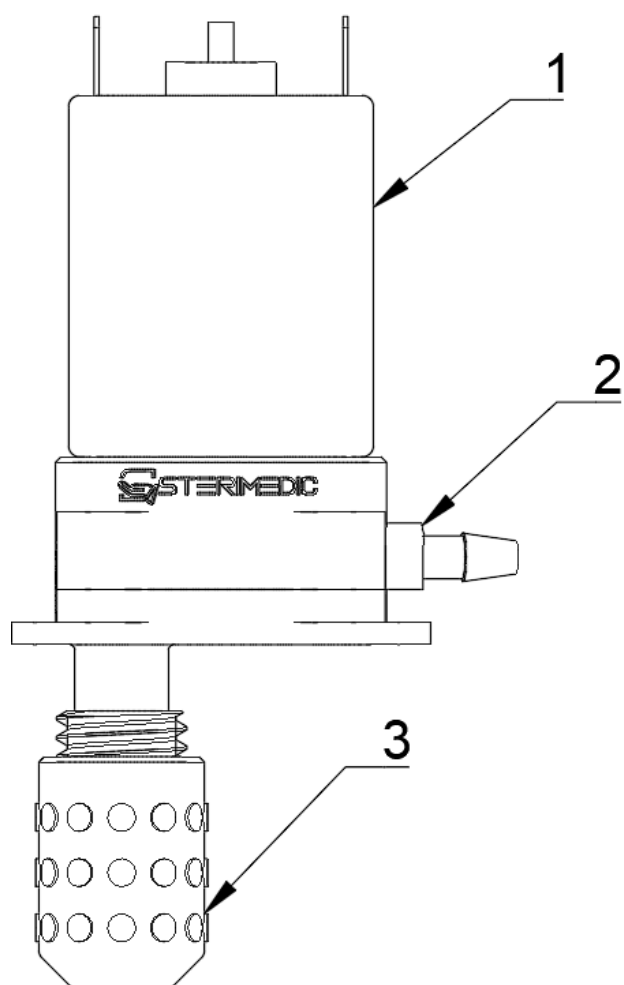


Figure 12: Schematic drawing of the pump

1. 12V motor
2. mechanism Pump
3. nozzle

4. Risk card

The hazards (residual risk) which may nevertheless occur in the event of improper handling are listed below. Other risks are also listed.

- Residual risks from the mechanism and electricity:

Danger of injury from the machine when servicing and risk of electric shock when charging the battery if parts of the housing or guards are removed and can only be dismantled with tools.

- Residual risk of fire and explosion.

Unacceptable mixing and spraying of flammable materials, as well as the use of fire and smoking in the area of the disinfection device may cause spontaneous combustion and explosion. If the electrical installation is not installed in accordance with the applicable technical rules, and the device is incorrectly installed, it is possible that a fire or an explosion will occur.

5. Safety

5.1. instructions Information for the customer

The basic condition for safe operation and failure-free operation of the device is knowledge of the basic principles of occupational health and safety. Before commissioning the device, it is necessary to pay attention to the following points:

- Read the operating instructions completely before setting up and starting up the device.
- Pay particular attention to the health and safety guidelines.
- Ask us if the description of a particular operation or maintenance is not clear.
- Keep the operating manual in such a place that any employee can refer to it at any time.
- On the basis of these instructions, the rules of conduct in the plant should be developed. They must take into account the working conditions in the plant and the specific situation at the place of use of the equipment.
- Service activities may only be performed by trained personnel.
- In the event of a failure, notify our service department.

5.2. Information about this manual

This manual has been prepared, inter alia, for the following users:

- Operating personnel
- Technicians responsible for maintenance and repair work.

5.3. Procedures when working with the device



Smoking, naked flames and similar ignition sources are prohibited.

5.4. Prohibition of the use of flammable

substances It is forbidden to use flammable substances.

5.5. Intended use



The device may only be used for its intended purpose. Use of the device is allowed only when it is in perfect technical condition and being aware of the existing dangers and avoiding them by observing the instructions contained in the manual.



If the device for hand disinfection is not used in accordance with this purpose - the safe operation of the device is not ensured. The manufacturer, but the user, is not responsible for any damage suffered by persons or for damage to items resulting from improper and inconsistent with the intended use of the device.

Faults that may affect safety must be repaired immediately. Intended use also includes:

- observing the instructions in the operating manual,
- observing the inspection and maintenance intervals,
- operating or maintaining the device only by trained personnel.

6. Operating instructions

6.1. Recommendations

Disconnect the power supply before opening the device, eg remove the charger. To prevent damage to the cable, please pull on the charger, not on the cable. Use only the original charger. Never connect damaged chargers. Used battery should be taken to the point of recycling batteries.

6.2. Working with the device

Place both hands with the inside facing up into the opening.

The fingertips should point up.



The hands will be sprayed with disinfectant automatically.



Remove your hands and spread the liquid to increase its effectiveness.

7. Maintenance instructions

7.1. Scope of maintenance activities

Maintenance of the technical and electronic parts may only be performed by qualified personnel. Use only original parts. Do not change anything on the device.

- Keep the device clean. Clean the device with a soft cloth and a cleaning agent. Clean the stainless steel device with a suitable agent.
- Do not spray with water, do not use pressurized air, and do not use dissolving agents to clean the device.
- Rinse the system with alcohol before it is not used for a long time. charge the battery 24 hours and disconnect the plus of the battery.
- Zachować szczególną ostrożność podczas otwierania frontu urządzenia, po zwolnieniu zamka zabezpieczającego należy podtrzymywać pokrywę

Nie jest napisane , że jak się ściąga klapę, jak otwiera zamek? że klapę trzeba trzymać aby nie spadła.