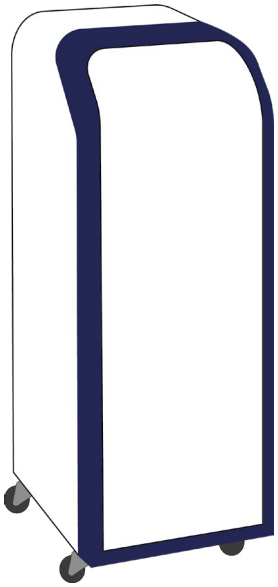
GERMITEC®

Your Partner in Preventing Infection.

Chronos®

User Manual

MAN-N001-INT Rev 3 / September 2025



Chronos®

User Manual

EN

MAN-N001-EN

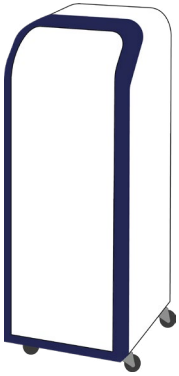
This manual must be read
before using the Chronos® disinfecting system.

This ensures that it is used under the safest and most efficient conditions.

For any questions concerning the equipment, its maintenance, breakdowns, or end-of-life, please contact your after-sales representative.
The description of the disinfection system is accurate on the date this manual is printed.

The model of the device is AS1-V2.
Chronos® is a product from the Hypernova family.
Chronos® is a registered trademark of Germitec®.

The equipment's technology is protected by several Germitec®'s patents.



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CE 0459

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1 INTRODUCTION

1.1 Presentation of the Chronos®

1.1.1 Intended use

The Chronos® is a High-Level Disinfection system indicated for the disinfection of ultrasound transducers. Note: According to Spaulding Classification, the Chronos® device is intended to disinfect semi-critical transducers (in contact with non-intact skin, mucous membranes, blood contact).

1.1.2 Certified probes

Contact your Germitec representative for information on certified probes.

1.1.3 Users and environment

The Chronos® is intended mainly for use in hospitals, radiology or sonography practices, and primary-care or specialist physician practices.

It is designed to be used by healthcare professionals such as sonographers, radiologists, gynecologists, obstetricians, cardiologists, urologists, primary-care physicians, nurses, and healthcare assistants.

1.1.4 Training

It is the responsibility of the owner of the device to ensure that:
- All users are trained with regard to the instructions and warnings contained in this manual.
- All users are aware of the risks and the preventive measures described in this manual.

1.2 Recommended use

- The Chronos® is an automated disinfection system that forms part of a general probe-handling protocol.
- This device must be used in compliance with the operating procedure described in the Section 4 “Use“.
- The Chronos® is an enclosure strictly reserved for medical use. Only external (e.g.: abdominal) or endocavitary ultrasound probes may be placed internally.
- The disinfection data are saved in the Chronos®. These data may be downloaded using a PC connected to the unit via the Germitrac communication interface.



The equipment must be used in accordance with the instructions given in this manual, in particular:
- *by the users and in the environment described in Section 1.1.3*
- *or the recommended use and intended use described in Sections 1.1.1 and 1.2, respectively.*

Using the equipment in any other way is prohibited and contraindicated by the manufacturer as, if not, the equipment’s interlocks could be undermined, the equipment may be damaged, the user and third parties may be seriously injured, the probes may be degraded, the adjacent equipment and environment may be at risk.

1.3 Associated products

- The Chronos® must be used on probes that have already had the ring installed. The installation of the rings must be performed by a Germitec-approved technician or a trained Advanced user (see Advanced user manual MAN-N001-EN-A).
- The Chronos® must be operated using the provided power cable.
- To communicate with the Germitrac communication interface, the Chronos® must be used with the enclosed Ethernet cable.
- The Chronos® may be used with a label printer, its power cable, and its USB cable. At the end of each cycle, a customizable number of labels are printed with the details of the disinfection.
- The Chronos® may be used with other associated products as a mast and a tray.

1.4 Disinfection technology

The Chronos® is a chemical-free disinfection device for ultrasound probes, which allows high-level disinfection through the use of UV-C radiation.

The Chronos® ensures probe disinfection by exposure to UV-C radiation at 254 nm.
This type of radiation has a powerful germicide effect: the absorption of UV-C photons by microorganisms causes DNA and RNA molecular dissociation.

The Chronos® is equipped with a complete automated control and traceability system that allows healthcare professionals to verify the disinfection cycle between each patient. The traceability data, associating each probe with the conditions of the cycle performed (including the verification of the degree of disinfection reached), are archived and consultable. Healthcare professionals can thus provide proof of their disinfection procedures.

The Chronos® allows the realization of cost-effective disinfection between each patient without the need to disconnect the probe. The disinfection step is safe and easy to perform.

1.5 Certification

The Chronos® model is the AS1-V2. It is compliant with Medical Devices Regulation (MDR) 2017/745. According to this directive, it is a class IIb device.

This model carries the CE 0459 marking and has also the Curtis Straus marking C US NCCA .
Date of first CE marking: April 17th, 2019

In accordance with the requirements of the Medical Devices Regulation (MDR) 2017/745, the Chronos® is compliant with the following standards:

EN 61326-1	Electromagnetic compatibility
IEC 61010-1 IEC 61010-2-40	Electrical safety including specific requirements for sterilizers and disinfecting washers.
EN ISO 14971	Risk management
EN 62366-1	Application of usability engineering
IEC 62304	Medical-device software

1.6 Technical characteristics

Dimensions	H102 x L38 x D43 cm
Weight	36 kg
Power supply	120-240 VAC 50-60 Hz
Power consumption	495 W
Disinfection efficacy	High-level disinfection
Disinfection-cycle duration	Between 90 and 180 seconds
External operating temperature	+10°C to +40°C
Relative humidity	Less than 90% without condensation
Maximum operating altitude	2000 m
Acoustic power	45 dB (excluding isolated noise emissions)

2 REGULATORY INFORMATION, SAFETY RULES, AND OPERATING PRECAUTIONS

2.1 Safety rules

The following rules must be distributed by the equipment owner to all potential users of the Chronos®. In the event of noncompliance with these rules, the equipment's interlocks could be undermined, the equipment may be damaged, the user and third parties may be seriously injured, the probes may be degraded, and adjacent equipment and the environment may be at risk.

2.1.1 Handling

- The equipment weighs approximately 36 kg. Use safe handling techniques, in accordance with the health and safety rules at your place of work.
- Do not subject the Chronos® to any impacts. If it falls or is damaged, return it to the manufacturer for repair.
- Do not use the Chronos® if there is any suspicion of damage.
- Never force open the door, especially not during an operating cycle.
- Do not attempt to disassemble or repair the device. The Chronos® must be repaired exclusively by the manufacturer. Opening the equipment's rear panels will result in voiding the warranty.
- Do not bypass the equipment's safety systems and interlocks.
- Incorrect loading of the probe in the disinfection chamber may damage the probe. The probe must not come into contact with the walls of the disinfection chamber. To find out more about the proper positioning of the probe, consult Section 3.3 "Installation".
- UV-C lamp contains mercury: In case of accidental breakage of a lamp, wear gloves to isolate the broken pieces in a hermetic bag and ventilate the room for 30 minutes. The waste must be considered hazardous material and must be disposed of or recycled in accordance with the applicable laws. Do not use a vacuum cleaner

2.1.2 Environmental conditions

- Use the Chronos® and its associated products at temperatures of between 10 and 40°C, and at a relative humidity below 90% without condensation.
- Do not store the Chronos® or its associated products at temperatures below -10°C or above 50°C.
- Use the Chronos® in a pollution degree 2 environment.

2.1.3 Use

- The Chronos® is intended to be used exclusively for the use described previously, in the environment described previously, and by the personnel described previously. Do not use this equipment in any other way.
- The Chronos® is not intended for the reprocessing of single-use devices.
- The Chronos® is not intended for pre-cleaning ultrasound probes.
- The Chronos® is not a storage cabinet.
- In case the Chronos® is out of function, alternative methods of high-level disinfection such as chemical soaking should be used to disinfect the probe.

2.1.4 Ultraviolet radiation

- Any attempt to disassemble one of the equipment's components may create a UV-C leak risk.
- Never expose yourself to UV-C radiation. Acute overexposure may result in:
    - Incapacitation due to eye discomfort, which will then subside after a few days without permanent lesions,
    - Skin lesions resulting in erythema, redness of the skin similar to sun burn, but without tanning.

2.1.5 Electricity

- The equipment must be connected to a grounded power outlet. Ensure that the power cable used is effectively that provided with the equipment.
- Connect the equipment only to a power supply having the appropriate voltage and frequency, as specified in Section 3.3 “Installation”. The use of an incorrect voltage may damage the equipment.
- Any attempt to disassemble one of the components of the equipment may cause electrocution.
- When shutdown is controlled by the switch on the control panel, certain parts of the cabling remain powered. The Chronos® must therefore be disconnected from the power supply before any technical intervention.
- The user must take all precautions to avoid the ingress of liquid into the equipment other than for that intended for maintenance (see Section 5 “Maintenance”), which could create an electrical hazard.
- The machine has not been tested for electrical safety when connected on power strips. Connect only to mains supplies. Do not connect the machine to power strips.
- The fluctuation of the supply network voltage must be lower than ± 10%.

2.1.6 Electromagnetism

- Warning: It is recommended to avoid using this equipment adjacent to other equipment or stacked on top of other equipment as this may result in incorrect operation. If this type of use is necessary, the operation of this equipment and any other equipment must be observed to verify normal operation.
- Warning: Portable RF communication devices should not be used (including peripherals such as antenna cables and external antennas) at less than 30 cm (12 inches) from any part of the Chronos®, including the cables specified by the manufacturer. If not, the performance of such equipment may be adversely affected.
- Warning: The use of associated products, transducers, and cables other than those specified or provided by the equipment manufacturer may result in an increase in electromagnetic emissions or a reduction of the equipment’s immunity and cause inappropriate operation.

2.1.7 Routine care and maintenance

- Only the UV-C tubes provided by the manufacturer (which, in particular, do not emit ozone) must be placed in the Chronos®.
- Protective glasses must be worn for all technical interventions.

2.1.8 Temperature

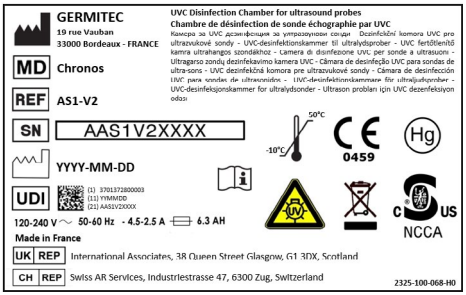
- Do not touch the tubes within 2 minutes after the end of a cycle to avoid burns to the hand. As a reminder, a symbol representing a hot surface is positioned at the entry to the disinfection chamber.

2.1.9 Cybersecurity

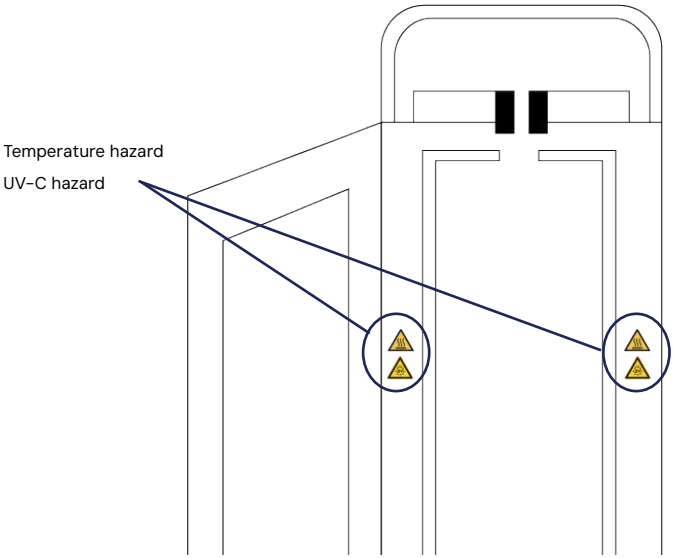
- Do NOT write down you Germitrac interface password.
- Users should connect to the RJ45 interface of the Chronos® with a computer.
- Respect your Health Deliver Organization’s network security protocol, and have anti-virus/anti-malware installed.
- The computer must have a recent web browser application installed (e.g. Chrome, Firefox, Edge, Opera 2018 version or later).

2.2 Marking

2.2.1 Label

	**Rating plate:** Manufacturer's identification Description of the equipment in all European required languages Model Serial number Electrical characteristics Country of manufacture Markings UDI-DI number with associated QR code UK REP Contact CH REP Contact
	**Risk of burns** Do not touch the tubes within 2 minutes after the end of a cycle.
	**Risk of exposure to UV-C radiation** This symbol acts as a reminder that UV-C radiation is emitted inside the equipment. The system is designed to prevent the exposure of users to UV-C radiation. Never expose yourself to UV-C radiation.
	**Do not dispose of with municipal waste** This symbol indicates that waste originating from electrical and electronic equipment (WEEE) must be handled with care and must not be disposed of with unsorted municipal waste. WEEE can pollute the environment and must be handled in a waste stream that is appropriate for WEEE. Contact the manufacturer or a company specialized in waste disposal to handle the disposal of this equipment.
	**Manufacturer** This symbol adjacent to Germitec indicates that Germitec is the manufacturer of this equipment.
	**Information in the manual** This symbol indicates that the user must read the manual before using the device.
	**Manufacturing date** This symbol indicates the manufacturing date (in year) of the device.
	UV-C lamp containing mercury

2.2.2 Location of the labels on the Chronos® device

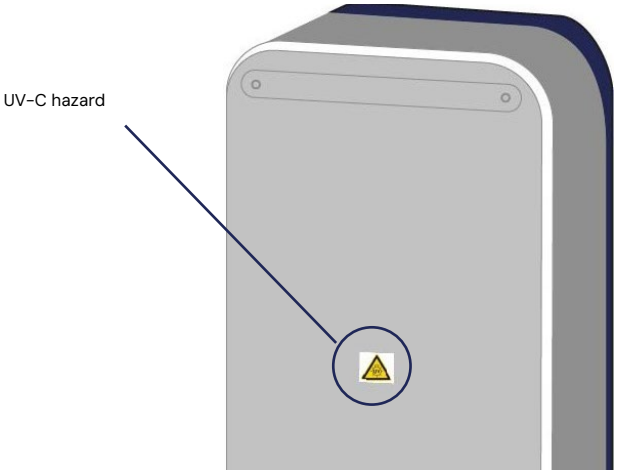


Temperature:



UV-C:





UV-C:

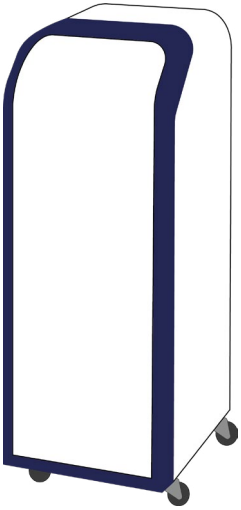


3 INSTALLATION, ADJUSTMENTS, AND COMMISSIONING

3.1 Packaging contents

The packaging contains the following components:

- 1 **Chronos®**



1 set with:



1 Quartz protective plate

3 Kits of rings for probes

1 AC power cable

1 Ethernet network cable

1 User manual

- 1 optional **Label printer**



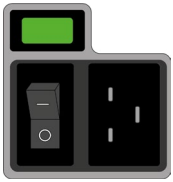
with specific label roll



3.2 Presentation of the interfaces

Connection to the AC power supply

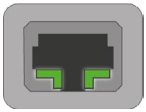
The AC power connector is positioned on the lower rear of the equipment.
Connection to AC power is made via the IEC-standard cable provided with the equipment.
The system is powered when the switch is in position 1.



Peripheral connection interface

The other connectors (USB and Ethernet) are located just above the equipment's rear panel.





The connector's green LED lights up when the Ethernet connection is set.

User interface
The user interface is at the top of the door.



3.3 Installation

3.3.1 Verification

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Any damage during transport or storage may be a source of danger.
Therefore, the user must check the integrity of the device before installation.

3.3.2 Placement

To facilitate the use of the equipment and take full advantage of its ergonomic design in the frame of dedicated use, it is recommended to position it close to the ultrasound equipment.
In the context of shared use, it may be centralized in an appropriate area.

The equipment must be installed on a hard and flat floor.
A gap of at least 20 cm must be left at the rear of the equipment.

Once the equipment has been installed, the quartz plate must be placed in its housing at the bottom of the disinfection chamber.

3.3.3 Connection to electrical power

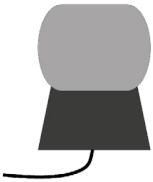
The Chronos® must be connected to an electrical installation that is compliant with the current regulations. This connection must be performed by a qualified person.
The Chronos® is connected to an AC power supply that must have a voltage between 120 and 240 VAC. Check that the power source is in accordance with that indicated on the label. This product is of electrical class 1, therefore designed to be connected to a protective ground. If this is not the case, this may expose persons to the risk of an electric shock.
Only power cables provided with the equipment may be used to connect it.
The power cable is used as a circuit-breaking system (cut-off of electrical power if necessary) and must therefore be accessible.

→ Connect the power cable to the IEC connector at the rear of the chamber.
→ Connect the plug at the other end of the cable to a 16-Amp power outlet (2P+G). This outlet must be protected by a 3 A circuit-breaker on 240 VAC or a 6 A circuit-breaker on 120 VAC.

3.3.4 Connection of associated products

Never connect peripherals other than those indicated below to the connectors.

→ To connect the equipment to a PC or a local Ethernet network, connect the Ethernet cable to the Ethernet connector at the rear and to a network connector.
→ To connect the equipment to a label printer, connect the printer to one of the two USB connectors at the rear.
→ Connect the printer to an AC power outlet using the power cable provided with the printer.
→ Make sure that the connected cables are RJ45 type



Only printers provided by the manufacturer are compatible with the Chronos®.
The use of another printer does not guarantee the proper operation of the system.

3.3.5 Installation of rings on probes

Each probe to be disinfected using the Chronos® must first be fitted with a ring.
Two kind of rings exist – the screw ring and the magnetic ring. Either must be installed exclusively by a technician approved by the manufacturer or a trained Advanced user (see Advanced user manual MAN-N001-A).
Contact your after-sales representative if there was no ring on the probe cable.



Screw ring



Magnetic ring

Only probes fitted with their ring can be disinfected using the Chronos®.
Do not slide the ring on the cable, do not dismount the ring if you don't have been trained to be an Advanced user.
The ring should not be in contact with the patient.

4 USE

4.1 Switching on

As for any electrical equipment, malfunctions may arise over the lifetime of the product. Therefore, before switching on, ensure that the installation steps described above have been properly completed and that the maintenance has been performed in accordance with the indications set out in Section 6 "Scheduled maintenance". In the event that these operations are not performed, the equipment's interlocks could be undermined, the equipment may be damaged, the user and third parties may be seriously injured, the probes may be degraded, and adjacent equipment and the environment may be at risk.

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Only probes fitted with their ring can be disinfected by the Chronos®.

1. Apply power to the equipment by pressing the power switch (located at the bottom rear of the unit). The green indicator lamp lights.
2. The equipment displays HELLO during its startup sequence (about 30 seconds).
3. A melody indicates the end of the startup.
4. The system is ready for use.

In the event of any malfunctions being observed when switching on, refer to Section 7 "Troubleshooting".

Once the equipment is switched on and as long as a cycle has not been initiated, the interface displays, the number of cycles remaining if the equipment has been purchased with a prepaid cycle plan, else the time.



The 6-LED gauge indicates equipment use before the next tube change. When the gauge ends with the orange LED (5th LED), it is recommended to ensure that a maintenance intervention has been scheduled. When the gauge ends with the red LED (6th LED), it is recommended to perform a maintenance intervention as soon as possible.



The indicator lamp on the right indicates the recognition of a probe if it is powered. The purple color corresponds to a probe that has not been disinfected, the blue color indicates that the probe has been disinfected.



To switch on the printer, press the ON button.



4.2 Switching off

The system should never be switched off directly using the AC power switch at the risk of irremediably damaging it and losing the saved traceability data.

1. To switch off the unit, press the button on the door for at least 3 seconds.
2. A melody sounds and the interface is switched off.
3. Press the illuminated AC power switch at the rear of the unit. The green indicator lamp is switched off.
4. The Chronos® is now powered off.

The AC power can be completely removed by disconnecting the AC power cable.

4.3 Prerequisites to probe disinfection

"Only clean items can be properly disinfected"

The probe must be cleaned before being placed in the Chronos® for any high-level disinfection process.

Consult the instructions of the probe manufacturer for information on suitable cleaning procedures.

If the probe is not first cleaned, there is a risk that the disinfection cycle is unable to provide disinfection to a high level.
In particular, ensure that all traces of gel or dirt on the probe are removed before being placed in the chamber.

Some rare probes (identified in the compatibility list) require a reinforced protocol of cleaning.
Probe design does not always allow the verification of the cleaning by visual examination (for example, some biopsy notches) thus, in such case, Germitec recommends an additional step to the cleaning protocol described in Appendix I.

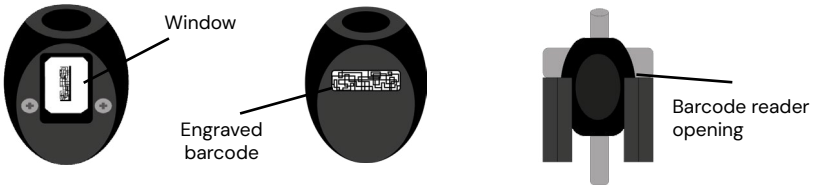
To print one or more labels, ensure that there are blank labels in the printer.

4.4 Disinfecting a probe

Install only one probe at a time.
Ensure that the probe does not come into contact with the equipment.

1. Open the door of the Chronos®.
2. Hang the probe in the chamber by installing its ring in its receptacle. The window must be turned towards the device barcode reader opening.

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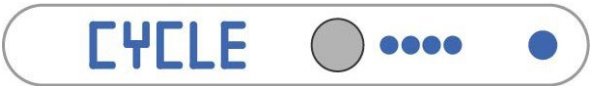


Screw ring Magnetic ring

The Probe LED on the far right turns on purple indicating that the probe is identified but not disinfected. A beep is emitted.

3. Bring the cable out via the side opening.
4. Verify that the probe is not swinging
5. Gently close the door.
6. Visually check that the cable has not been pinched during closure.
7. Initiate the disinfection cycle by pressing the button on the door. Do not move the device once the cycle starts.

A beep confirms cycle initiation. The indication panel displays “Cycle”:



The LEDs in the gauge LED bar scroll during the cycle.
A melody indicates the end of the cycle. The indication panel displays “CYCLE OK”. The Probe LED on the far right becomes blue.
The printer, if turned on, prints the defined number of labels.

8. Open the door.
9. Remove the probe.

If a probe is inside the disinfection chamber and must be removed urgently, press long on the button. The cycle is stopped, a sound signal indicates when the door may be opened.

In the event of an error, the cycle is stopped automatically. In this case, refer to Section 7 “Troubleshooting”.

If the probe is not used for examination immediately after disinfection, it is preferably to package the probe in a sterile disposable bag provided for this purpose.

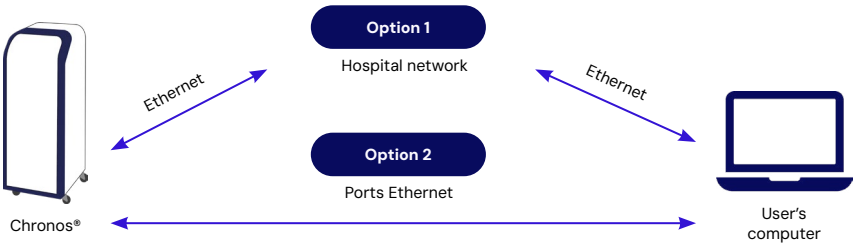
http://www.cgmedical.fr/produit/la-protection-des-sondes-dechographie-polyethylene/

Store the probe in a clean, dry place.

4.5 Use of the Germitrac communication interface

Germitrac is the communication interface that allows access to all traceability data relating to the probes disinfected by the Chronos®.

Germitrac is a Webpage hosted on a browser and accessible thanks to a computer connected to Chronos®, via the Ethernet cable (RJ45).

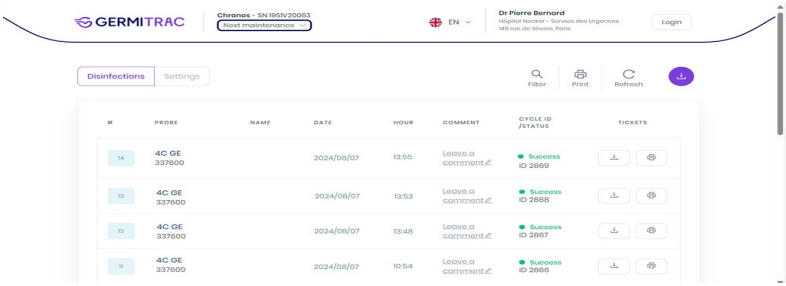


To connect to Germitrac:
1. Open a web browser application.
2. Type the device's IP address into the address bar and press enter
   - If you are connected through the hospital network (option 1 figure above), the IP address is given at the end of installation by your Germitec Authorized Service Representative.

   - If you connect directly your laptop to the device (option 2 figure above), you can also use the following address:
     - https://169.254.XX.XX a fix IP address, where XX.XX are the 4 last digits of the serial number of the Chronos® (local Ethernet), e.g. https://169.254.03.19 for the Chronos® SN 20S1V20319

     - https://ChronosXXXX.local with the name of the device, where XX.XX are the 4 last digits of the serial number of the Chronos® (local Ethernet), e.g. https://Chronos0319.local for the Chronos® SN 20S1V20319.

3. The Germitrac main page is displayed:



The compatible browsers are indicated below:

Browser	Minimum version
Chrome	8.0
Internet Explorer	7.0
Mozilla Firefox	2.0
Opera	9

4.5.1 Germitrac Main Interface

The main interface is accessible by all users, without any need for login information or password. The page gathers general information on the device and the disinfection cycles.

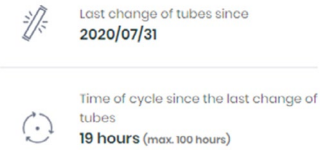
General information is displayed at the top of every page:
- Chronos® serial number
- Information about the next maintenance (when to change the tubes)
- Site:
    - Main user
    - Site name
    - Address



Information about tube changeover ("Next maintenance") contains two criteria:

- Date of the last change
- Hours of use

Tubes need to be changed after 2 years of operation or 100 hours of use, **whichever comes first.**



4.5.2 Disinfection data

Data from each disinfection cycle is displayed:
- Disinfection number (which is incremented by 1 with each new disinfection)
- Probe model and serial number
- A name for the individual probe which can be set by the end-user (optional)
- Date and time of disinfection
- A comment which can be added by the end-user (optional)
- Disinfection result: "Success" or "Failure", with any appropriate notifications about what disrupted the cycle
- The unique cycle ID
- Ticket



4.5.3 Filters

The data on the main page can be filtered on:
- Probe model
- Probe serial number
- Probe username
- Date range
- Comment
- Disinfection status

Several filters can be applied simultaneously.

4.5.4 Downloading data

The download button allows the end-user to download data in the form of a .csv file which can be opened with software like Excel, to safeguard their records. This file contains all disinfection cycle data returned by the selected filters.

Print The printing button at the top of the page allows the user to print the disinfection table for the page displayed with the web browser used.

> *It is recommended that data be backed up daily. It is also recommended that a security backup be performed to transfer data to another drive. Germitec may not, under any circumstances, be held responsible for the loss of data stored in the equipment.*

4.5.5 Managing tickets



The button allows the user to download the ticket of a cycle as a .pdf file.

The button enables the ticket to be printed on the printer connected to the Chronos®.

Chronos SN 24E1V20001
Germitec

Probe Model: PROBE STANDARD
Probe SN: 123456

2025-05-12 12:56
UV-C dose: 100% OK
Independent verification: OK
Disinfection 3834: SUCCESS

Next change of tubes before:
2027-04-23 or 76h of cycle

User
Comments from
Germitrac

4.6 Label printing

4.6.1 Label traceability data

The printed labels comprise all traceability data demonstrating the successful completion of the disinfection.



Device identification (name, serial number)
Name of the healthcare center

Probe identification (model, serial number)

Disinfection cycle data
(date and time, percent of targeted UV dose – OK or NOK, result of the verification made by the internal independent monitoring system – OK or NOK, disinfection unique ID, final disinfection status: SUCCESS or FAILURE)

Information regarding the next change of UV-C tubes

User field (free use or comments completed in Germitrac)
QR code

4.6.2 Example of a label in the event of a disinfection failure

In the event of any disinfection failure, regardless of the origin, the failed status of the disinfection is clearly indicated on the label.



Device identification (name, serial number)
Name of the healthcare center

Probe identification (model, serial number)

Disinfection cycle data
(date and time, percent of targeted UV dose – OK or NOK, result of the verification made by the internal independent monitoring system – OK or NOK, disinfection unique ID, final disinfection status: SUCCESS or FAILURE) Error identification (code, short name)

User field (free use or comments completed in Germitrac)
QR code

In this case, consult the error messages in Section 7 to determine the origin of the failure, follow the steps to resolve the problem and proceed with another disinfection cycle for the probe.

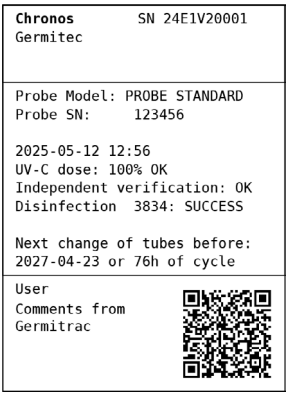
4.6.3 QR code on the ticket

The option "QR code on the ticket in Germitrac" can be activated by a Germitec Authorized Service Representative.

The QR code appears in the bottom part of the ticket.
It is readable with a QR code reader.

Information is included as a serialized string text with a field separator
as '|':

SN of the Chronos®: Text, 10 chars | Probe Model: Text, up to 10 chars | Probe SN: Text, up to 10 chars | Cycle ID: Number, up to 5 digits | Date: Number, 8 digits, format: YYYY-MM-DD | Time (in local hour): Number, 4 digits: HH:MM | Result: Text, 1 char, S for « Success » or F for « Failure» | Comment: Text, up to 32 chars



Example:
'19S1V20009|10L24EA MI|360100|5378|2021-10-129|11:14|S|Comments from Germitrac'

5 ROUTINE CARE

5.1 External cleaning

For cleaning the outside of the equipment and the ring, use a cloth or paper cloth, dampened with water or a surface cleaner/disinfectant.

Do not spread liquid inside and over the Chronos®.

Do not immerse the ring in any liquid.

5.2 Cleaning internal walls

A super-soft cloth (optical quality) soaked in a water-alcohol solution may be used to clean the quartz plate and the side surfaces.

Do not perform cleaning in the 2 minutes following a disinfection cycle. The tubes are still hot and present a burn hazard.

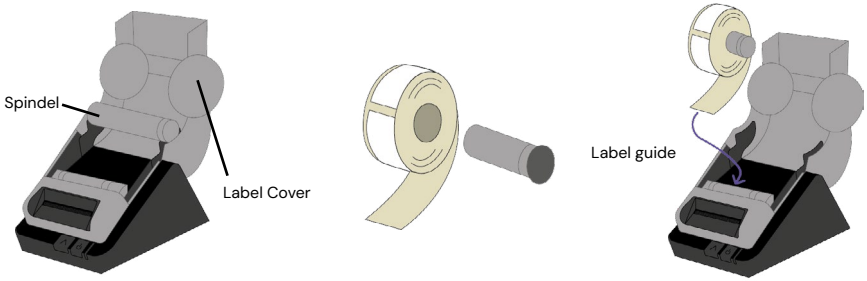
Do not clean the tubes.
Do not clean behind and in immediate proximity to the tubes.

The remainder of the internal walls must be cleaned by Germitec Authorized Service Representative during maintenance operations.

5.3 Replacing printer paper

Only the label format sold by Germitec is compatible with the printer.

1. Disconnect the printer and open the top cover.
2. Place the cylindrical holder into the label roll.
3. Insert the end of the roll in the slot as shown in the figure:



4. Close the cover.
5. Re-connect and press the power button.

EN

6 SCHEDULED MAINTENANCE

Scheduled maintenance must be performed every year.

Non-compliance with this period and the recommended operations may result in dangerous situations as the equipment's interlocks could be undermined, the equipment may be damaged, the user and third parties may be seriously injured, the probes may be degraded, and adjacent equipment and the environment may be at risk.

Only a technician approved by Germitec is authorized to perform maintenance operations on the Chronos®.

The UV-C tubes must be changed every 2 years or every 100 hours of cumulative cycle time (whichever comes first).

Scheduled maintenance includes:

- A general system check
- A cleaning of external and internal parts if necessary
- The replacement of wear parts, the UV tubes, if necessary
- The calibration of the photodiodes
- The replacement of the ventilation filter if necessary

Only Philips UV-C tubes supplied by Germitec may be placed in the Chronos®. The worn tubes are recovered by the Germitec-approved technician.

7 TROUBLESHOOTING

The Chronos® is equipped with numerous sensors (temperature, optical, etc.) which monitor the device to ensure proper operation.

If the Chronos® detects a malfunction during the cycle, even if only temporary, UV-C emission is stopped and the system goes into error mode.

The system displays the code corresponding to the error on the indication panel.



Below is a list of Error codes and possible debug actions. If the error persists after several attempts of debug, contact your after-sales representative.

Error code	*Error meaning*	*Possible debug action*
ERR01 START	Failure of initialization	Acknowledge the error by pressing the button. If the error occurs again, switch off the device, check if the power cable is well plugged, and restart.
ERR02 DETEC	Barcode not valid	Check that the ring is well installed in the receptacle. Visually check that the barcode is legible in the ring's window.
ERR03 START	Failure of the barcode reader initialization	Acknowledge the error by pressing the button. If the error occurs again, switch off the device, check if the power cable is well plugged, and restart.
ERR04 DOOR	Door not closed properly	Make sure the door is closed properly. Acknowledge the error by pressing the button, open and close the door, and restart the cycle.
ERR05 LOCK	Door lock not properly engaged	Acknowledge the error by pressing the button, open and close the door, and restart the cycle.
ERR06 PROBE	Loss of probe detection during the cycle (for example, ring moved up by pulling the cable)	Acknowledge the error by pressing the button, verify the ring position and restart the cycle.
ERR07 HOT	Detection of too high temperature in the chamber	Check if the ventilation is activated. Check that there is a free space of at least 20 cm behind the device. Check that the external temperature is below 40°C. When all of the above conditions have been checked, wait 5 minutes for the system to cool, preferably leaving the door open, then acknowledge the error by pressing the button.
ERR08 TUBE	UV-C tube or its power supply is not operating properly	Acknowledge the error by pressing the button, open the door, check that nothing seems abnormal on the tubes, check that the LED bar has not reached the red level (it would mean that the maintenance due date is passed), and restart the cycle.

ERR09 CUVE	Detection of unusual light distribution	Acknowledge the error by pressing the button, open the door, check that no object has been forgotten in the chamber and that everything is clean, then restart the cycle. Take care to not move the device during a cycle.
ERR10 EVO1	Detection of unusual light distribution	Acknowledge the error by pressing the button, open the door, check that no object has been forgotten in the chamber and that everything is clean, then restart the cycle. Take care to not move the device during a cycle.
ERR11 EVO2	Detection of unusual light distribution	Acknowledge the error by pressing the button, open the door, check that no object has been forgotten in the chamber and that everything is clean, then restart the cycle. Take care to not move the device during a cycle.
ERR12 PREV1	Detection of unusual light distribution	Acknowledge the error by pressing the button, open the door, check that no object has been forgotten in the chamber and that everything is clean, then restart the cycle. Take care to not move the device during a cycle.
ERR13 PREV2	Detection of unusual light distribution	Acknowledge the error by pressing the button, open the door, check that no object has been forgotten in the chamber and that everything is clean, then restart the cycle. Take care to not move the device during a cycle.
ERR14 DELAY	Maximum cycle time exceeded	Acknowledge the error by pressing the button, open the door, check that no object has been forgotten in the chamber and that everything is clean, then restart the cycle.
ERR15 DELAY	Reserved for service representative use only.	Error code not possible to occur with the user.
ERR16 UV3	Invalidation of the cycle by the independent monitoring system	Acknowledge the error by pressing the button, open the door, check that no object has been forgotten in the chamber and that everything is clean, then restart the cycle. Take care not to move the device during a cycle.
ERR17 SOLO	Reserved for service representative use only.	Error code not possible to occur with the user.
ERR18 SOLO	Reserved for service representative use only.	Error code not possible to occur with the user.
ERR19 DEVIA	Reserved for service representative use only.	Error code not possible to occur with the user.
ERR20 CREDT	Reserved for service representative use only.	Error code not possible to occur with the user.
ERR21 CALIB	Reserved for service representative use only.	Error code not possible to occur with the user.
ERR22 STOP	Cycle manually stopped by a long press on the button	Acknowledge the error by pressing the button. Restart the cycle.
ERR23 UVOFF	Incorrect signal from a UV sensor	Acknowledge the error by pressing the button, open and close the door, and restart the cycle.

ERR24 SIGN	Incorrect signal from a UV sensor	Acknowledge the error by pressing the button, open and close the door, and restart the cycle.
ERR25 BASE	Reserved for service representative use only.	Error code not possible to occur with the user.
ERR26 SHUT	Device switched off during a cycle	Acknowledge the error by pressing the button. Restart the cycle.

Other situations that are not with an error code are listed in below table with its debug actions.

Symptom	*Checks to be performed / explanations*
Nothing is displayed. No sound emitted by the equipment.	Check that the AC power connector is connected to power. Check that the equipment is well connected to the AC supply. Check that the button is in position 1. Check that the green indicator lamp next to the power connector is illuminated. If nothing lights, disconnect and replace fuses. The fuses must be replaced in accordance with the characteristics indicated on the rating plate (6.3Ah).
Impossible to install the probe properly in the disinfection chamber (the Probe LED at the far right of the indication panel does not light)	Check that the ring has been installed on the probe. Check that the barcode is visible through the ring's window. Check that the ring's window is turned towards the barcode reader.
The Probe LED at the far right of the indication panel is purple.	This is normal if the probe has not been properly disinfected. The purple Probe LED indicates the presence of a probe that cannot be confirmed as being properly disinfected.
The maintenance gauge on the panel has reached the orange and/or red LED (5 and 6th).	The orange level indicates that a maintenance intervention should be scheduled soon (about 2 months or 400 cycles remain when this indicator lights for the first time). The red LED indicates that a maintenance intervention must be performed immediately.
Impossible to start the cycle when pressing the button.	Check that the device has a probe inside.

Your after-sales representative should be notified of each error requiring an acknowledgement.
In case of impossibility to use the device, alternative high-level disinfection methods such as chemical soaking should be used.

8 TRANSPORT AND STORAGE

The equipment must be packaged for transport appropriate for an enclosure of this type such as that provided on initial delivery. Before moving the equipment, ensure it is disconnected, remove the quartz plate, and close the door. Once unpacked, the Chronos® can be moved when carried by 2 persons. Each person carrying the equipment should grip it with one hand under the unit as close as possible to the door and the other hand at the top rear of the unit.

Comply with the equipment's storage and transport requirements:

- Storage temperature: -10 to +50°C
- Relative humidity: less than 90 % without condensation

9 DISPOSAL

When the Chronos® reaches the end of its life, the owner must dispose of the equipment in accordance with the current applicable regulations (e.g., Decree No. 2005-829 of 20 July 2005 for France).

10 WARRANTY

The Chronos® device is under warranty from the date of delivery, according to Warranty Agreement signed with the Health Facility. This warranty covers defective parts and repair labor. See servicing manual.
The Chronos® must be repaired exclusively by the manufacturer or a repair center authorized by the manufacturer. Contact your after-sales representative to organize this repair before returning the equipment.

APPENDIX I

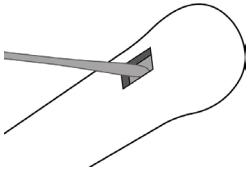
The following additional protocol is recommended for probes that don't allow an efficient visual inspection after cleaning, that probes are marked with a ★ in the compatibility list (from v19 onwards). Germitec recommends adding that special protocol in the hygiene protocol of the healthcare center, right after the cleaning protocol recommended by the manufacturer of the probe.

Material

- Cleaning-disinfecting agent (low level disinfection performance) recommended by the probe manufacturer.
- Low lint swabs

Protocol

1. Identify the indentation whose surfaces are not easily visible.
2. Premoister a swab with the cleaning-disinfecting agent.
3. Turn the swab five times in the hole.
4. Use another dry swap to dry and clean the indentation.



CONTACT

The user and/or patient that any serious incident that has occurred in relation to the device should be reported to the manufacturer at prrc@germitec.com and the Competent Authority of the Member State in which the user and/or patient is established.

For any further information, contact your after-sales representative or the Germitec customer service:

Germitec customer service
19 rue Vauban, 33000 Bordeaux, France
Phone: +33 (0)1 49 87 18 00 – support@germitec.com
In case of vigilance, please contact: prrc@germitec.com

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Notes

Read the online version: