

Chronos[®] Max

UV-C HIGH-LEVEL DISINFECTION DEVICE
FOR TEE PROBES & ENT ENDOSCOPES WITHOUT OPERATING CHANNEL



Chemical-free



4 minutes



Classe IIb – CE MDR
for invasive devices



Cardiology



ENT

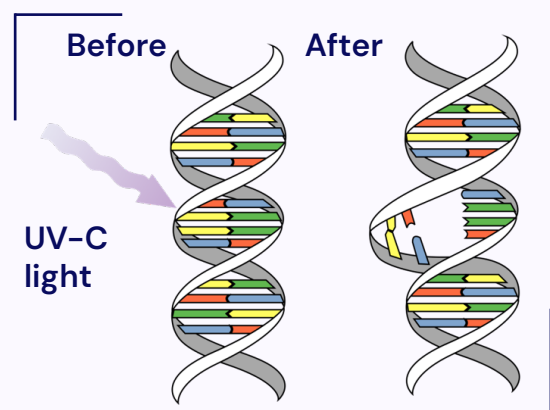
Protect patients & Healthcare professionals

Germitec's mission is to improve healthcare standards by **preventing the risk of cross-infection through innovative UV-C High-Level Disinfection (HLD) devices**.

Revolutionise your disinfection practices by choosing **automation** thanks to our **patented Yuvee® technology**.

What is UV-C and how does it work?

UV-C is an **electromagnetic radiation** invisible to the naked eye, with **maximum germicidal efficacy** achieved at a wavelength of **254 nanometers**.



- ✓ UV-C penetrates the **membrane** of micro-organisms
- ✓ Disrupts cellular DNA, RNA and protein bonds, **destroying and inactivating** their pathogenicity and ability to reproduce
- ✓ **Effective, safe and fast solution**

Chronos® Max

- ✓ HLD automated chemical-free process
- ✓ Class IIb device CE marked in accordance with MDR 2017/745 for the disinfection of **Invasive Medical Devices**:
 - Transesophageal ultrasound probes (TEE/TOE)
 - Long endocavitary ultrasound probes
 - ENT endoscopes without operating channel

Designed to meet healthcare facility's needs



Configuration 1
Examination room



Configuration 2
Operating room



Configuration 3
Reprocessing room



FAST

Chronos® Max workflow

Thanks to an **intuitive interface**, users can quickly and easily get started.

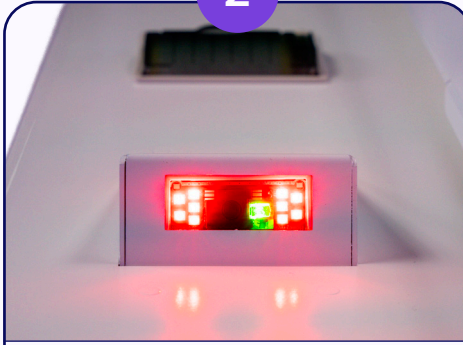
When using Chronos® Max, follow your facility's protocols regarding hand hygiene, glove usage and cleaning procedures.

1



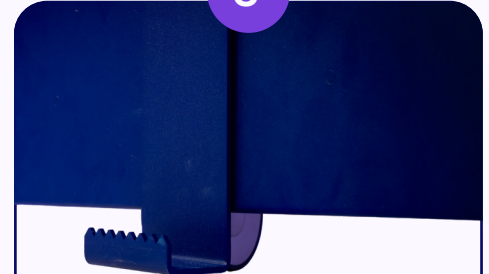
Remove the protective sheath and carry out a pre-cleaning.

2



Scan the operator badge. (optional)

3



Open the door with the hands-free pedal designed to reduce the risk of cross-contamination.

4



Place the Medical Device inside the chamber.
Identification is automatic. (traceability)
Close the door.

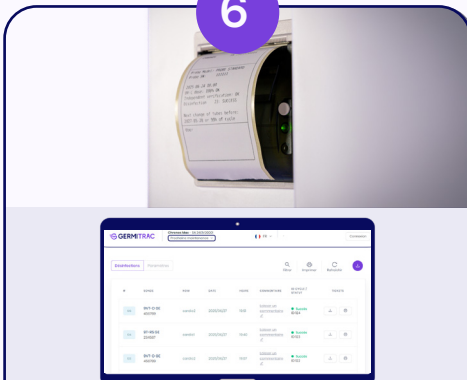
5



Press the single control button.

HLD cycle time:
4 minutes on average*

6



Automatic traceability at the end of the cycle: labels and/or access to Germitrac via a web page.

7



Open the door with the hands-free pedal.

Remove the disinfected Medical Device now ready to use.

Close the door.

* Internal data: cycle duration subject to reaching the pre-defined UV-C dose validating the HLD cycle

Yuvee® Technology:
A patented disinfection chamber to guarantee effectiveness

4 Quartz holders

- Simple and robust design of transparent UV-C holders
- Medical Device intuitive positioning
- Disinfection at all points

RFID reader

- Medical Device automatic identification inside the chamber
- Continuous traceability guaranteed throughout the cycle

6 germicidal UV-C tubes

- Light coverage of the entire disinfection chamber



2 photodiodes

- Control the UV-C dose during the HLD cycle

Temperature measurement

- To guarantee a Medical Device at room temperature at the end of the cycle and ready to use for the next examination

3rd photodiode: independent control system

- Validates the HLD cycle with a second UV-C dose check
- Eliminates the manual verification process (indicators and test strips)

Bandoxal aluminum reflective walls

- Provide 360° illumination of the Medical Device surface

Automated and reproducible HLD cycle in about 4 minutes

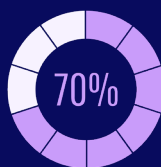
- ✓ Significantly faster than manual procedures
- ✓ Immediate availability after disinfection: no waiting time, no rinsing, no wiping



EFFECTIVE



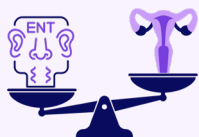
1 in 14 hospitalised patients in Europe will contract a Healthcare-Associated Infection¹



of Healthcare-Associated Infections can be prevented by implementing new infection prevention measures²

Major risks linked to ENT and Cardiology specialties

Human Papillomavirus = ENT



The incidence of HPV-related oropharyngeal cancers has exceeded that of cervical cancer³



42% of oropharyngeal cancers are due to HPV, particularly strains 16 & 18⁴

Infectious Endocarditis = Cardiology



30% are related to Staphylococci⁵

10 - 15% are related to Enterococci⁵



Proven efficacy against bacteria, yeasts and fungi, viruses, mycobacteria and spores with a reduction between 4-Log₁₀ (99.99%) and 6-Log₁₀ (99.9999%) depending on the type of microorganisms tested



Inactivation of:

- Staphylococci (*S. aureus*) and Enterococci (*E. hirae*)
- HPV inactivation including strains 16 and 18 (clinical conditions) and HIV



In accordance with the requirements of standard NF EN 14885:2022**



Tests carried out by the independent laboratory Eurofins Biotech-Germande

Microbial activity	Standards	Strain tested	Acceptance criterion (log)	Chronos® Max efficacy
Bactericidal	EN 14561	<i>Staphylococcus aureus</i> <i>Enterococcus hirae</i> <i>Pseudomonas aeruginosa</i>	5-log ₁₀	✓ Validated
Levuricidal/ Fungicidal	EN 14562	<i>Candida albicans</i> <i>Trichophyton mentagrophytes</i>	4-log ₁₀	✓ Validated
Virucidal	EN 17111	<i>Murine norovirus</i> <i>Adenovirus type 5</i>	4-log ₁₀	✓ Validated
Mycobactericidal	EN 14563	<i>Mycobacteria avium</i> <i>Mycobacteria terrae</i>	4-log ₁₀	✓ Validated
Sporicidal	EN 17126	<i>Bacillus subtilis</i>	4-log ₁₀	✓ Validated

** EN 14885:2022 (Medical field – Disinfection of instruments) – Antiseptics and chemical disinfectants – Application of European Standards on Antiseptics and Chemical Disinfectants



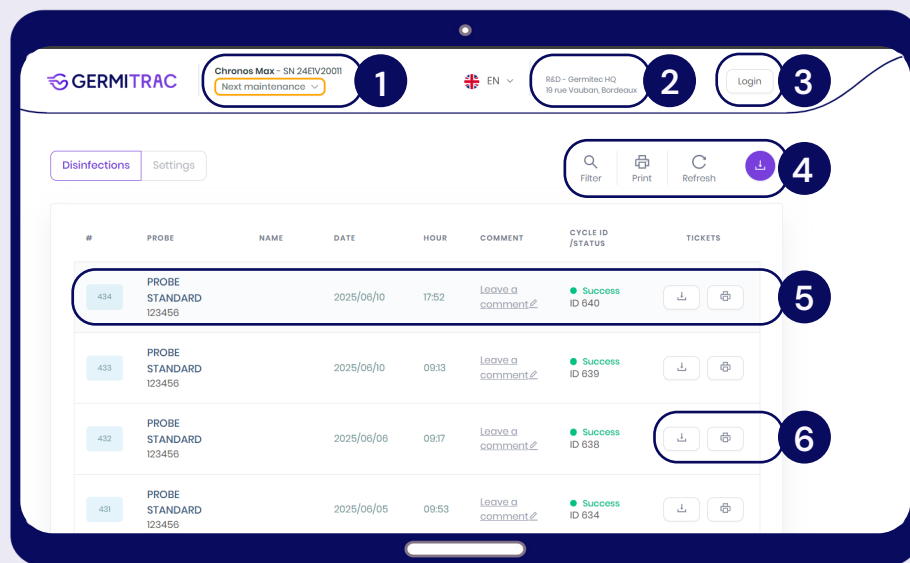
With Chronos® Max, traceability is integrated, continuous and controlled.

Included printer

Medical Device identification
inside the disinfection chamber

Only Medical Devices equipped
with a Chronos® Max strap can
be disinfected

Operator identification (optional)



Germitrac is an intuitive interface that allows users to access, via a web page, to traceability data of HLD cycles performed with the Chronos® Max.

This interface is available on PC or tablet via a fixed IP address provided by Germitec.

1

Chronos® Max serial number
Time left before next preventive maintenance

2

Chronos® Max installation site information

3

Login button for advanced settings

4

- Data filter
- Print page
- Refresh page
- Download data in .CSV format

5

- HLD cycle information:
- Disinfection number
 - Medical Device model and serial number
 - User name
 - Date and time
 - Status (Success or Error)
 - Unique cycle identifier
 - Add comment (manually or via the QR code/barcode reader)

6

Download ticket in .PDF format
Re-print ticket



COMPATIBLE

Close collaboration with leading ultrasound Medical Devices manufacturers

Based on **test protocols co-validated** with manufacturers, compatibility campaigns, including accelerated aging tests, are conducted to ensure the **continued performance and safety of Medical Devices**.

Thanks to a **patented methodology** using **innovative simulation tools**, the UV-C dose distribution on each Medical Device geometry is verified to **ensure effective HLD at all points**.



SUSTAINABLE



Long-lasting design

- ✓ **Low energy consumption:** short and energy-efficient cycle
- ✓ **Solid-state technology** with minimal moving parts (no pumps, valves, reservoirs, nebulizers, etc.)



Chemical-free

- ✓ **No handling or exposure to chemicals for HLD: elimination of the risk of burns or toxic fumes**
- ✓ **No purchase, storage or recycling of HLD consumables**
- ✓ **Automated system: time saving and human error risk reduction**

Sustainable and responsible approach

- Long-lasting design and manufacturing
- Optimisation of weight and components
- Durable equipment: made to last and spare parts availability secured for minimum 7 years



Features

Device Class	IIb – CE MDR
HLD Cycle Time	In about 4 minutes
Reprocessing Capacity	1 Medical Device per cycle
Internal Chamber Dimensions	H164 cm x W28 cm x D38 cm (64.6" x 11.1" x 14.9")
Weight	82 kg (180.7 lbs)
Sound Volume	During HLD cycle: <ul style="list-style-type: none"> • 25 dB • 46 dB (when ventilators are activated)
Disinfection Performance***	<ul style="list-style-type: none"> • EN 14885¹ which includes the following sub-standards: <ul style="list-style-type: none"> • EN 14561 : Bactericidal activity • EN 14562 : Levuricidal/Fungicidal activity • EN 14563 : Mycobactericidal activity • EN 17111 : Virucidal Activity • EN 17126 : Sporicidal activity
Chronos® Max meets the requirements of technical standards	<ul style="list-style-type: none"> • IEC 61010-1 & IEC 61010-2-40 : Electrical safety • IEC 62304 : Medical device software • EN 61326-1 : Electromagnetic compatibility • EN 62366-1 : Application of usability engineering to medical devices • EN ISO 14971 : Risk management



*** Tests carried out by the independent laboratory Eurofins Biotech-Germande

References:

1. European Centre for Disease Prevention and Control – Animation: Infection prevention in hospitals: a shared responsibility – 5 May 2025 – <https://www.ecdc.europa.eu/en/publications-data/animation-infection-prevention-hospitals-shared-responsibility>
2. ONU Info – 70% des infections liées aux soins de santé peuvent être évitées grâce à la prévention (OMS) – 6 mai 2022 – <https://news.un.org/fr/story/2022/05/1119552>
3. Roman et al Epidemiology and incidence of HPV-related cancers of the head and neck. J Surg Oncol. 2021 Nov;124(6):920–922. doi: 10.1002/jso.2668
4. Ndon S, Singh A, Ha PK, Aswani J, Chan JY, Xu MJ. Human Papillomavirus-Associated Oropharyngeal Cancer: Global Epidemiology and Public Policy Implications.
5. Chapitre 9 – Item : 152; 2024 – Endocardite infectieuse | Société Française de Cardiologie <https://www.sfcadio.fr/publication/chapitre-09-item-152-endocardite-infectieuse>

For any questions, contact your local sales representative.

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Chronos® Max (AE1-V2), UV-C disinfection chamber.

Notified Body: GMED – CE0459. Medical device classification: IIb according to MDR 2017/745.

This device is intended to be used by a healthcare professional for High-Level Disinfection of transesophageal probes, long endocavitary ultrasound probes and ENT endoscopes without operating channel.

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