MMM Group

LABORATORY DRYING OVENS AND INCUBATORS

with innovated control automatics ECO line and EVO line

ECOCELL® DUROCELL VENTICELL® STERICELL® VACUCELL® INCUCELL®
INCUCELL® V FRIOCELL® CLIMACELL® CO2CELL

Innovative heating technology in new lines

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Date: 2021.08.11 10:12:21 EEST
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protecting human health

Tradition, Quality, Innovation

As one of the world's leading suppliers of sterile processing systems, MMM has been working actively to promote good health since 1954. With a full range of sterilization and disinfection products and services – that can be found in every branch of healthcare from hospitals and scientific institutes, to laboratories and the pharmaceutical industry – MMM, has over the years, consolidated its position as a pioneer of quality and innovation both in the German and international market.

In our two production facilities based in Stadlern, Germany, and Brno, in the Czech Republic, we manufacture products that meet the highest demands of our customers world wide. The depth and precision of production standards at both plants ensure that we accomplish the rigorous quality requirements of medical engineering.

900 competent employees work together as a committed and enthusiastic team, dedicated to achieving the mission of the MMM Group.

General and Actively Provable Quality

Possible technical acceptance of the device (FAT) in the range based on agreement with the customer, on request also in the presence of the user or, if possible, even in the place of installation of the device (SAT). After the output control, 27-point measuring according to DIN 12880 and 3-point measuring of RH may be performed on some devices. Documentation may be supplied to heating technology users to prove permanent quality of processes in compliance with the device parameters as declared by the device manufacturer (importer).
IQ – Installation qualification
OQ – Operation qualification
PQ – Function qualification (validation).
Tests and validation according to standards are performed using the potential of our accredited testing laboratory.

Applications

Pharmaceutical Industry

Stability testing and photo stability testing according to ICH 279/95 Option 2, long term storage.

Food and Beverage Industry

Testing of food quality under simulated transport or storage conditions – export of fruits, etc.

Zoology

Simulation of conditions for sea organisms research – seaweed or cultivation of insect eggs.

Cosmetic Industry

Durability testing, testing of cosmetic products or primary materials stability.

Packaging Material Industry

Long-term testing of packing technologies.

Botany

Studies of germination, green plants growing for further research.

Construction Industry

Long-term testing of quality and ageing of materials in construction industry – cement, paints, asphalt, construction plastics, glues, etc.

Electronic Industry

Durability testing of electronic boards and printed circuits.

Field of Metrology and Quality Control in Industry

Checking and calibration of industrial measuring gauges.

General and Applied Industry

E.g. cultivation of tissue cultures – human or animal ones.

Automotive Industry

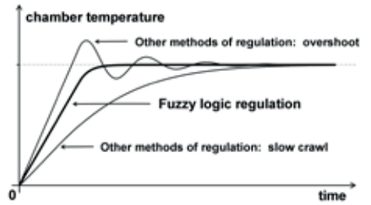
Testing of materials ageing – tyres, sealing, etc.

Chemical – Industrial

Fertilizers, pesticides, detergents, paint, oil, etc.

Fuzzy Logic Regulation

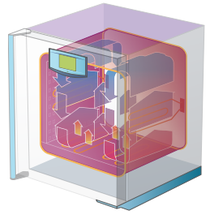
The Fuzzy logic technology, unlike conventional mechanical or electronic control (PID), evaluates - after the program start - the data from a specific process, given chamber size, operation temperature, humidity, and other controlled variables using a specially developed software. Based on the information, it continuously adjusts the input values of regulation (intensity of heating, cooling, etc.) and optimises the process of regulation with the aim of minimising the time for reaching the process parameters without individual items overshoots. In this way it is possible to reach pre-set operation levels of items in shortest possible time, without useless power consumption and to make the work with the device maximally efficient. Simultaneously, the Fuzzy logic reduces restoration times after the device door opening in the course of the operation cycle.



6 Ways of Heat Transfer

Natural Circulation

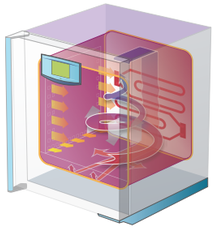
ECOCELL®, DUROCELL, INCUCELL®



The principle of operation is based on fine gravitation air flow in electrically heated chamber of the device.
The double-tube construction of the chamber together with control automatics arrange homogenous distribution of temperature in the chamber, exact progress of processes and short recovery times (return to selected temperature) after the door opening. It is characterised by its economic operation. It is suitable for simple process of drying and heating of standard materials. The devices work on no-noise basis.

Forced Circulation

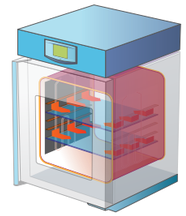
VENTICELL®, STERICELL®, INCUCELL® V



The principle of operation is based on fine patent-protected air flow using a ventilator in electrically heated chamber of the device. The used patent thermo-dynamic system arranges development of a homogenous air flow rising in a spiral inside of the operation chamber. By natural tempering from the bottom upstairs, the process simulates natural processes and it arranges optimal heating of materials and high space precision of temperature in the chamber with minimal power consumption.

Heat Propagation in Vacuum or Inert Gas

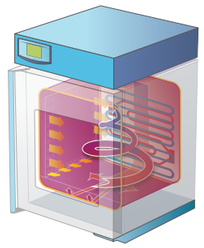
VACUCELL®



The principle of operation is based on the principle of drying in vacuum with the possibility of air displacement in the chamber by an inert gas. The direct heated stainless steel chamber of the device allows precise heating and drying of samples up to constant weight. Standard equipment includes a bushing with a diameter of 40 mm, input for inert gas connection and a needle valve for fine dosing. For the case of inner overpressure, the device is equipped with a large-area door overpressure valve "Ventiflex".

Circulation with Cooling

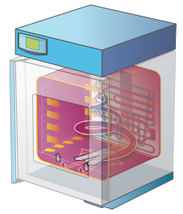
FRIOCELL®



The principle of operation is based on fine forced circulation of air in connection with patent-protected powerful cooling located in the chamber. The cooling system together with multi-processor control automatics offers exact and economical simulation of selected natural processes and it reduces samples evaporation.

Circulation with Humidity

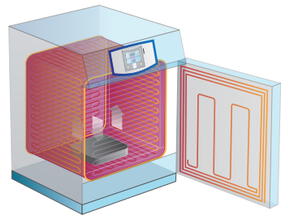
CLIMACELL®



The principle of operation is based on fine forced circulation of air in connection with patent-protected powerful cooling and humidifier located in the chamber. The multi-processor control system of active humidification and dehumidification with powerful lighting system guarantees excellent homogenous conditions for exact simulation of selected climatic actions.

Circulation with CO_2 Atmosphere

CO2CELL



The principle of operation is based on fine gravitation flow of operation gas in direct heated chamber at high relative humidity and selected gas concentration. The unique system of chamber and door eliminates the necessity of a ventilator and so it eliminates even related risks of mutual contamination of samples due to vibrations and forced circulation of operation atmosphere. Possible work in CO_2, respectively O_2 and N_2 atmosphere.

Eco line

- Intuitive control
- Microprocessor process control Fuzzy logic
- Multi-lingual communication
- Acoustic and visual alarm
- LED indicator of device functionality
- LCD display - 3 inches (7,6 cm)
- Transflective brilliant FSTN display, using COG technology (it is backlit and it uses external lighting reflection – higher intensity of external light increases the display readability)
- Adjustable display contrast depending on device placement
- Exceptionally wide vision angle
- Large signs on the display visible from afar
- Current values (eg. temperature, humidity for CLIMACELL®, pressure for VACUCELL®) during the device operation are enlarged for easy readibility
- Resistant foil keyboard with SoftTouch surface (pleasant to touch)
- Mechanic response of keys
- Lit symbols integrated directly in the foil keyboard
- Keyboard lock to block unauthorised access – adjustable by multiple pressing
- Real time programming and cycling (ramps as optional equipment)
- Up to 9 programs, 2 segments for each program and up to 99 cycles.
- USB Host port for flash disc connection for easy export of the relevant data (optional equipment)

Evo line

- Intuitive control
- Microprocessor process control Fuzzy logic
- Multi-lingual communication
- Acoustic and visual alarm
- LED indicator of device functionality
- LCD display touch screen – 5,7 inches (14,5 cm)
- Graphic displaying of a new program
- Control through colour icons
- Touch display lock – protection from unauthorised access by a password
- Multi-level administration of users (corresponding to FDA 21 Part 11)
- Data coding and no-manipulability (according to FDA 21 Part 11)
- Up to 100 programs and up to 100 segments for each program
- Programming of temperature ramps, real time and cycling
- Annual data recording in graphic and numeric form
- Data export in online and offline mode
- Pre-set service programs for prompt diagnostics of failures
- Easy service diagnostics including remote access
- SD memory card, USB Host and interface RS 232 – included as a standard
- Connection: WiFi, USB Device or Ethernet interface with proper IP address for remote data transfer, control and diagnostics (optional equipment)

Connectivity

RS 232

USB Device

SD card

WiFi (optional equipment)

USB Host (optional equipment)

Ethernet / Internet (optional equipment)

BMS remote alarm (optional equipment)

Data Output

Thanks to the use of modern and reliable electronic components, both the EVO line and the ECO line devices offer the possibility of connection to a wide range of communication interfaces.
The basic configuration contains traditional and reliable interface RS 232 and USB Device. The device may be easily completed with another interface – see the table.

Basic equipment			
ECO line		EVO line	
Interface	Use for	Interface	Use for
RS 232	PRINT, PrinterArchiv, WarmComm 4	RS 232	PRINT, PrinterArchiv, WarmComm 4
USB Device	PrinterArchiv, WarmComm 4	USB Device	WarmComm 4
		SD karta	Export, Import*

Optional equipment			
ECO line		EVO line	
Interface	Use for	Interface	Use for
Ethernet – RJ 45	PrinterArchiv, WarmComm 4	WiFi - 802.11b/g	WarmComm 4 (remote diagnostics), web server, e-mail, android appl.- CLC EVO monitor.
USB Host	Export, Import ** Flashdisk	USB Host	Export, Import* Flashdisk
		Ethernet – RJ 45	WarmComm 4 (remote diagnostics), web server, e-mail, android appl.- CLC EVO monitor.

* Export –recording of data, programs, user interface (users administration), communication settings, audit trail
Import – of programs, user interface (users administration), communication settings
** Export - recording of data, programs, (datalogger - via flash disk)
Import – of programs

Connection of software WarmComm 4.0

Local

Integrated data logger, SD card

Compatible thermo-printer via RS 232

Specified desk-top printer (USB/WiFi)

Smartphones CLC monitor

Remote (Internet)

WarmComm 4.0

Universal data administration for BMT/MMM heating technology devices

Messages

Internet

GSM

- Compatible with EVO line and ECO line devices
- Backward compatible with older heating technology series (Standard, Comfort - all except CO2CELL)
- Stable platform of the SQL library
- User-friendly environment
- Connection via Ethernet, RS 232 and USB
- Two-way communication – data monitoring and device control
- Client-Server architecture
- Three levels of the program depending on client's requirements (Basic-Professional-FDA)
- In compliance with FDA CFR 21 Part 11 (version F)
- Web support, on-line updating
- Protected licence policy
- Compatible with MS Windows XP / 7/8/10 operating systems
- Validation documentation IQ/OQ

Set Up the Drying Oven or Incubator Based on Your Needs

Approval acc. to 2014/35/EU, 2014/30/EU, ICH 279/95 Option 2, FDA 21 Part 11.
The STERICELL® product line complies also with requirements of Medical Device Directive 93/42/EEC.
The FRIOCELL® / CLIMACELL® range complies with EU Directive 517/2014.

Natural Air Convection

ECOCELL®

The line of economic driers with wide temperature range, exact and reliable course of drying processes and materials heating. The ECOCELL® line produces no noise and provides a very soft air convection within the chamber.

Technical data

Volume: 22, 55, 111, 222, 404, 707 litres
Working temperature: 5°C above ambient temperature up to 250/300°C
Interior: stainless steel, mat. No. 1.4301 (AISI 304)
Clean premises version – on request

DUROCELL

Special purpose drying ovens DUROCELL with highly resistant EPOLON coating, protecting the internal chamber aggressive substances like acids or alkaline liquids. This device ensures an optimal goods temperature equalisation. Ideal for acidic and alkaline hydrolysis, extraction of non-flammable substances and heat decomposition.

Volume: 22, 55, 111, 222 litres
Working temperature: 5°C above ambient temperature up to 125°C
Interior: stainless steel, mat. No. 1.4301 (AISI 304)
covered with chemically resistant layer
Clean premises version – on request

Forced Air Convection

VENTICELL®

Due to a patented ventilation system the air within the VENTICELL® chamber is ventilated in a regular spiral way. This leads to a homogenous temperature profile throughout the chamber and short heating times. Operating economy is ensured by higher rate and precision of heating in laboratories. Especially suitable for very moist goods.

Volume: 22, 55, 111, 222, 404, 707, 1212 litres
(pass-through version except for the 22 l volume)
Working temperature: 10°C above ambient temperature up to 250/300°C
Interior: stainless steel, mat. No. 1.4301 (AISI 304)
Clean premises version – on request

STERICELL®

CE 0123

STERICELL® is intended for hot air sterilization of materials under the specified temperature and duration. It is characterized by quiet running with a patented fine system of forced air circulation in the chamber by means of a built-in fan which eliminates the "cold air" area formation. Loose and deposit-forming substances can be sterilized in closed bottles. The device is suitable for medical and veterinary clinics, hospitals, pharmacies, health care centres, and laboratories. .

Volume: 22, 55, 111, 222, 404 litres
(pass-through version except for the 22 l volume)
Working temperature: 10°C above ambient temperature up to 250°C
Interior: stainless steel, mat. No. 1.4301 (AISI 304)
Clean premises version – on request

Vacuum

VACUCELL®

Temperature sensitive, easy decomposable or oxidative materials can be dried very tenderly in VACUCELL® vacuum drying ovens, where there is the opportunity of extrusion of air by inert gas. Also complicated components with hardly accessible hollow spaces are drying quickly and effectively in VACUCELL® ovens. Ideal for drying of samples to constant weight. Special application of the device is possible mainly in the fields of plastics processing, pharmaceutical, chemical, electro technical and other industries.

Volume: 22, 55, 111 litres
Working temperature: 5°C above ambient temperature up to 200/300°C
Door window
Integrated duct for sensors etc. (Ø 40 mm)
Inert gas connection
Needle valve for fine dosing
Pressure resistant inner chamber
Safety valve-door VENTIFLEX
Interior: stainless steel, mat. No. 1.4571 (AISI 316Ti)

Natural / Forced Air Convection

INCUCELL® / INCUCELL® V

Suitable for safe treatment of microbiological cultures. The INCUCELL® line produces no noise and provides a very soft air convection within the chamber, the variant INCUCELL® V (with a fan) has an advantage of more precise temperature distribution with small deviations. These devices can be used especially in biological and microbiological laboratories, quality tests in pharmacy, cosmetics and testing in veterinary medicine and food processing industry.

Technical data

Volume: 22, 55, 111, 222, 404, 707, 1212 litres
Working temperature:
INCUCELL®: 5°C above ambient temperature up to 100°C
INCUCELL® V: 10°C above ambient temperature up to 100°C
Inner glass door
Interior: stainless steel, mat. No. 1.4301 (AISI 304)

Cooling Incubators

FRIOCELL®

The high technical standard of our FRIOCELL® incubators allows exact incubation processes both for variation and deviation. The units have very short recovery times and show an excellent results in keeping the precise regulation. A unique cooling system ensures, that the samples are not dried while cooling. A high performance system of lighting ensures outstanding homogenous parameters for tests and growth conditions. These devices are designed for use in biotechnology, botany, food processing industry, cosmetics, chemical industry etc.

Volume: 55, 111, 222, 404, 707, 1212 litres
Working temperature: 0.0°C up to 100°C
range up to 70°C for the volume of 1212 l
FC EVO as optional equipment up to -20°C
FC EVO as optional equipment of chamber decontamination up to 160°C (except for the 1212 litres volume)
Refrigerant: R134a without CFC (for -20 °C R449a without CFC)
CO_2 concentration: 0,2% up to 20%
Inner glass door
Interior: stainless steel, mat. No. 1.4301 (AISI 304)

Climatic Chambers

CLIMACELL®

The CLIMACELL® series was specially developed for applications, in which as far as possible exact and reproducible simulation of various environmental conditions is important, e.g. stability testing of components, packaging materials, food or chemicals, drugs, germination studies, plant cell or tissue cultures, insect cultures. This devices offers an interesting alternative to expensive testing chambers and testing rooms. Microprocessor controlled humidity assembly with powerful lighting system are warranty of the excellent homogene parameters for tests and growth conditions.

Volume: 111, 222, 404, 707, 1212 litres
Working temperature: without humidity 0.0°C up to 100°C, with humidity: 10°C up to 90°C
range up to 70°C for the volume of 1212 l
CLC EVO as optional equipment up to -20°C
CLC EVO as optional equipment of chamber decontamination up to 160°C (except for the 1212 litres volume)
Refrigerant: R134a without CFC (for -20 °C R449a without CFC)
Cooling medium for generating the humidity: distilled water
Controlled humidity: 10% - 98% RH
Microprocessor controlled humidifying / dehumidifying system
CO_2 concentration: 0,2% up to 20%
Inner glass door
Interior: stainless steel, mat. No. 1.4301 (AISI 304)

CO_2 – Atmosphere

CO2CELL

Latest generation of CO_2 incubators is focused on constant and reproducible conditions for cell growth procedures, tissue and other cultivating cultures. Trial circuit heating system eliminates the need of fan and consequently lowers the risk of vibrations and cross-contamination. Precise CO_2 infrared sensor with high stability provides maximum reliability and measurement accuracy throughout the process. Thanks to the direct heated chamber, installation and maintenance is very easy. The inner glass door is sealed, allowing you to inspect the samples without losing the conditions in the chamber of the device. Outer glass door is sealed towards external sealing. Range of useful options supports features like sterilization on 200°C while CO_2 sensor remains inside machine, split inner glass door lowers the recovery time after door opening, Oxygen control, etc.

Inner volume: 50, 190 litres
Working temperature: 5°C above ambient temperature up to 60°C
Non-controlled relative humidity: max 90 ± 5% RH at 37°C
CO_2 concentration: 0,2 up to 20% CO_2
Interior:
Standard: Stainless steel DIN 1,4571 (AISI 304)
Comfort: Stainless steel DIN 1.4571 (AISI 316)

CO2cell 50 Standard

Laboratory Drying Oven for Efficient Drying Processes

VENTICELL® ECO line

- The best price / performance ratio
- High speed or air exchange during samples drying
- Patented vertical airflow in double-shell chamber with asymmetrically perforated panels ensure proven spiral airflow with excellent spatial homogeneity
- Main door can be opened up to the angle of 200°, fitted with a patented and practical handle
- Fast start-up and recovery temperature times thanks to strong heating elements and Fuzzy logic regulation

Smart design with user friendly control panel

Microprocessor control Fuzzy logic for minimising the start-up and recovery times

Protection thermostat class 2 or 3 (user adjustable)

Robust but easily permeable shelves for efficient air flow in the chamber

Easily removable inner panels for easy chamber cleaning

Stainless steel (AISI 304) chamber making regular device cleaning easy

Efficient chamber insulation for long-term stability of parameters in the chamber and low operation costs

Heating elements located between the chamber shells ensure maximum surface utilization for the most efficient heat exchange

Stylish movable table in identical design, with braked casters and a shelf (optional equipment)

Transflective FSTN display with active backlight and adjustable contrast

Durable foil keyboard with mechanical button response, using SoftTouch surface, mechanical buttons response

USB Host for connecting a flash disc (data export, external data logger); optional equipment

3-wire PT 100 sensor for accurate temperature measurement

Vertical device construction for saving the space in your lab

Four-point, adjustable door grip for perfect sealing of the chamber

Ergonomic handle for easy and safe door closing (patent protected)

Unique vertical system of air flow in the chamber for precise conditions in the chamber and short recovery time

Climatic Chamber with Excellent Parameters

CLIMACELL® EVO line

- Precise device for the most demanding simulation processes of diverse climatic conditions
- Patented vertical airflow in double-shell chamber together with asymmetrically perforated panels provide proven spiral airflow with excellent spatial homogeneity
- Main door opening up to the angle of 200° (except for the volume of 1212 l), fitted with patented and practical door handle
- High pressure steam generator in an easily accessible service position and a powerful freezer
- Robust castors with brakes for easy transport

Smart design with user friendly control panel

WiFi connection for wireless connection to PC/smartphone (optional equipment)

Microprocessor control Fuzzy logic for minimising the start-up and recovery times

Extension of the device designed for easy service access

Efficient LED diodes (up to 30 000 lx) – low temperature programmable exposition lighting (optional equipment)

Robust but easily permeable shelves for efficient air flow in the chamber

Stainless steel (AISI 304) chamber making regular device cleaning easy

Easily removable inner panels for easy chamber cleaning

Heating elements located between the chamber shells ensure maximum surface utilization for the most efficient heat exchange

Inner tight glass door made of Security Izolas glass according to EN 12150-2

Braked castors for easy and safe device handling

RH sensor Rotronic for reliable and precise results of RH measuring

Memory SD card for data transfer

Service diagnostics via remote access

Touch display with graphic interface

Increased bottom slope for easier condensate discharge

Main switch ON/OFF for reliable switch off of the device

Increased maximal temperature – up to 160°C for chamber decontamination (optional equipment)

Automatic defrosting system (optional equipment)

High pressure steam generator so as to reach high humidity in the chamber quickly

Protection thermostat class 2 or 3 (user adjustable)

Vertical device construction for saving the space in your lab

Efficient chamber insulation for long-term stability of parameters in the chamber and low operation costs

Adjusted dehumidification system for fast RH change in the chamber

Improved cooling system for shorter recovery times

Four-point adjustable door hanging for perfect door sealing

Unique vertical system of air flow in the chamber for precise conditions in the chamber and short recovery time

Ergonomic handle for easy and safe door closing (patent protected)

Pass-through Version

VENTICELL® EVO line and STERICELL® ECO line

NEW

This version is available for the devices VENTICELL® 55 to 707 litres and STERICELL® 55 to 404 litres. The pass-through design allows the material to be loaded from one side of the machine (loading side) and removed after sterilization from the other side (unloading side, e.g. clean premises). This solution can be used in case of the device to be built in in pharmaceutical partition walls separating premises with different cleanness class.
Control panels on both sides of the device inform about the process in progress and about the device status. Depending on the device type, the devices may provide additional drying of the material before sterilization.

Optional Equipment Allows the Device Adjustment so as to Meet Various Specifications:

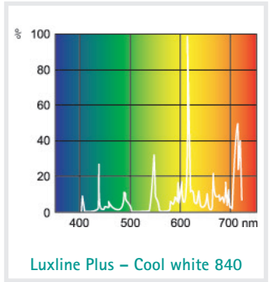
- Mechanic door lock
- Electro-magnetic door lock
- Flexible temperature sensor PT 100
- Transport and loading system with carriages made of stainless steel AISI 304/AISI 316
- Exterior of stainless steel AISI 304
- Inner chamber of stainless steel AISI 316
- BIOSEAL partition walls for separation of premises with different cleanness classes
- Independent control panel placed on the wall next to the device (except for STERICELL®)
- Overpressure version of the device with an additional fan (except for STERICELL®)
- HEPA filters for inlet air H13 or H14
- Extension chimneys for connection to external air conditioning
- WarmComm data management software (except for STERICELL®)
- Automatically adjustable flap is for EVO by 1%, for ECO (STERICELL®) there are only the open and closed states

Programmable exposition lighting

FRIOCELL® and CLIMACELL® ECO and EVO line devices offers wide range of possible use of selected lighting. Variability of placement, selection of light sources, user-friendliness and possibility of fluent control of intensity meet even the highest demands towards applications with exposition lighting.

Fluorescent Tubes in Doors

Traditional placement of the light case with new design and increased intensity of lighting (up to 36 000 lx). Exposure of the whole cross-section of the chamber with the lowest purchase costs and minimal influence on conditions in the chamber. Program-controlled switching on and off of the lighting for CLIMACELL® ECO and FRIOCELL® ECO. Program-controlled regulation of intensity within the range of 10-100% in increments of 1%, which can be completed with intensity measuring for CLIMACELL® EVO and FRIOCELL® EVO. Suitable for industrial simulation of materials ageing or undemanding processes of growth simulations. Simulation of day and night conditions.



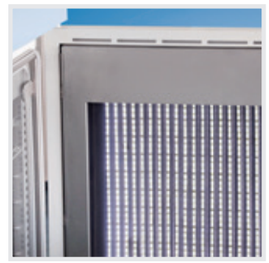
Luxline Plus – Cool white 840

Fluorescent Tubes in Shelves

A vertical source of up to three light cases with direct lighting and variable height of lighting. Even lighting of the whole shelf and optimal use of the chamber volume for the area size lighting. Efficient balancing of temperature emissions thanks to perforation of cases and precise regulation of conditions in the chamber even under full lighting. Maximal intensity 23 000 lx (12 cm below the source). Program-controlled switching on and off of the lighting for CLIMACELL® ECO and FRIOCELL® ECO. Program-controlled regulation of intensity within the range of 10-100% in increments of 1%, which can be completed with intensity measuring for CLIMACELL® EVO and FRIOCELL® EVO. Typical for tests of photo-stability or basic growth simulations in botany. Simulation of day and night conditions.

LED Lighting in the Door

Economic solution of white exposition LED lighting with higher intensity (up to 21 000 lx).
Exposure of the whole cross-section of the chamber with low temperature emissions. Program-controlled switching on and off of the lighting for CLIMACELL® ECO and FRIOCELL® ECO. Program-controlled regulation of intensity within the range of 10-100% in increments of 1%, which can be completed with intensity measuring for CLIMACELL® EVO and FRIOCELL® EVO. Suitable for industrial testing with high demands towards intensity. Simulation of day and night conditions. May be completed with intensity measuring.



LED Lighting in Shelves

Precise horizontal lighting with white LED lighting with maximal intensity (up to 30 000 lx), low temperature emissions of the light source, variability of enlightened cases placement. Program-controlled switching on and off of the lighting for CLIMACELL® ECO and FRIOCELL® ECO. Program-controlled regulation of intensity within the range of 10-100% in increments of 1%, which can be completed with intensity measuring for CLIMACELL® EVO and FRIOCELL® EVO.
It is suitable for industrial use or use in botany. Maximal use of enlightened surface of shelves in relation to the chamber volume. Simulation of day and night conditions.

Colour LED Lighting in Shelves

Special colour source of LED light, irradiating vertical rays combining high intensity of lighting with optimal colour spectrum of the LED source for photosynthesis and low power consumption. Light sources (e.g. DeepRed, FarRed, Blue) with individual adjustment of intensity develop ideal conditions for green plants growth and they allow acceleration of different development phases of plant's life. It may be completed with measuring of lighting intensity (µmol m^2 s^{-1}). Program-controlled regulation of intensity within the range of 10-100% in increments of 1%, which can be completed with intensity measuring.
Available for CLIMACELL® EVO and FRIOCELL® EVO only.

Ovens Equipment	EC ECO	DC ECO	VC ECO	VC EVO	SC ECO	VU ECO	VU EVO
Fan revolutions 10-100%	–	–	•	•	•(16)	–	–
Acoustic alarm	•	•	•	•	•	•	•
Visual alarm	•	•	•	•	•	•	•
Safety thermostat class according to DIN 12880 (user adjustable)	2, 3	2, 3	2, 3	2, 3	2, 3	2, 3	2, 3
Security - keypad lock + password protected settings	•	•	•	–	•	•	–
Security - user management system	–	–	–	•	–	–	•
Main switch ON / OFF	–	–	–	–	–	•	•
Chromed tray	2+o (1212: 6+o)	–	2+o (1212: 6+o)	2+o (1212: 6+o)	2+o	–	–
Stainless steel tray	o	2+o	o	o	2+o	–	–
Stainless steel shelf, perforated (for VU ECO and VU EVO not perforated)	o	o	o	o	o	o	o
Chamber without tray holders and without trays	o(7)	o	o(7)	o(7)	o	–	–
Aluminium shelf	–	–	–	–	–	2+o	2+o
Test tubes holder (Loewenstein)	o(1)	o(1)	o(1)	o(1)	o(1)	–	–
Test tube shelf Ø 16 mm	o(1)	o(1)	o(1)	o(1)	o(1)	–	–
Test tube shelf Ø 22 mm	o(1)	o(1)	o(1)	o(1)	o(1)	–	–
Drip tub	o	o	o	o	o	–	–
Suspension system for samples under the chamber ceiling	o(1)	o(1)	o(1)	o(1)	o(1)	–	–
Left door	o(1,7)	o(1,7)	o(1,7)	o(1,7)	o(1)	–	–
Door lock (same key for order)	o	o	o	o	o	o	o
Door lock (different keys for order)	o	o	o	o	o	o	o
Automatic door lock	o(1)	o(1)	o(1)	o(1)	o(1)	o	o
Automatic door lock (for pass-through version)	–	–	•(1,7)	•(1,7)	•(1,7)	–	–
Stainless steel shell	o	o	o	o	o	o	o
Stainless steel interior DIN 1.4301/AISI 304	•	•	•	•	•	o(10)	o(10)
Stainless steel interior DIN 1.4404/AISI 316L	o	o	o	o	o	o(10)	o(10)
Flexible PT sensor (max. number)	o 1	o 1	o 1	o 4	o 1	o 1	o 4
Flexible PT sensor lead from the inner side of the door (max. number)	Δ 1	Δ 1	o 1	o 4	o 1	–	–
Flexible PT sensor at the temperature of 300°C	o	-	o	o	-	-	Δ
Access port Ø 25 mm R (centre / centre)	o	o	o	o	o	-	-
Access port Ø 25 mm L (centre / centre)	o	o	o	o	o	-	-
Access port ISO KF Ø 40 mm T	-	-	-	-	-	•	•
Access port CF Ø 40 mm B	-	-	-	-	-	o	o
Access port Ø 50 mm R (centre / centre)	o	o	o	o	o	–	–
Access port Ø 50 mm L (centre / centre)	o	o	o	o	o	–	–
Access port Ø 100 mm R (centre / centre)	o(1)	o(1)	o(1)	o(1)	–	–	–
Access port Ø 100 mm L (centre / centre)	o(1)	o(1)	o(1)	o(1)	–	–	–
Access port - special shape or position	Δ	Δ	Δ	Δ	–	Δ	Δ
Window and interior lighting (max. up to 250°C)	o(1)	–	o(1)	o(1)	–	•(9)	•(9)
Interior lighting (no window)	o(1)	–	o(1)	o(1)	–	–	o
Pass-through version (including covering sheets on unloading side)	–	–	o(1,7)	o(1,7)	o(1)	–	–
Covering sheets for the loading side	–	–	o(1,7)	o(1,7)	o(1)	–	–
Special housing modification for insulator technologies	Δ(7)	Δ	Δ(7)	Δ(7)	Δ	Δ	Δ
Loading system	o(1, 2, 3, 4)	–	o(1, 2, 3, 4)	o(1, 2, 3, 4)	o(1, 2, 3, 4)	–	–
H13 HEPA filter 99,95%	–	–	o	o	o	–	–
Overpressure in the chamber incl. HEPA H13	–	–	o	o	–	–	–
H14 HEPA filter 99,995%	–	–	o	o	o	–	–
Overpressure in the chamber incl. HEPA H14 99,995%	–	–	o	o	–	–	–
Measurement of overpressure in the chamber	–	–	Δ	Δ	–	–	–
Modification without particles	Δ	Δ	o	o	–	Δ	Δ
Straight chimney extension	o	o	o	o	o	–	–
Chimney extension 90 °	o	o	o	o	o	–	–
Straight chimney extension (with condensate drain)	o	o	o	o	o	–	–
90 ° chimney extension (with condensate drain)	o	o	o	o	o	–	–
Air flap manual	•	•	•	•	•	–	–
Automatic air flap (open / closed)	o	o	–	–	–	–	–
Automatic air flap (adjustable position)	–	–	–	o	–	–	–
Modification of the device with wheels for adjustable feet	o(1, 2, 3, 4)	–	o(1, 2, 3, 4)	o(1, 2, 3, 4)	o(1, 2, 3, 4)	–	–
Modification of the device without wheels to wheels	o(1, 5, 6, 7)	o(1)	o(1, 5, 6, 7)	o(1, 5, 6, 7)	o(1, 5)	–	–
Wheels with extendable feet (levelling wheels)	o(1)	o(1)	o(1)	• 1212, o (1)	o(1)	–	–
Increased load capacity / reinforced chamber frame + built-in frame	Δ(1)	–	Δ(1)	Δ(1)	–	–	–
Increased load capacity of shelves	o(1)	–	o(1)	o(1)	–	–	–
Increased load capacity of the chamber bottom	Δ(1)	–	Δ(1)	Δ(1)	–	–	–
Device table / Sub-structure Vacustation VU ECO and VU EVO	o(1, 5, 6, 7)	o(1)	o(1, 5, 6, 7)	o(1, 5, 6, 7)	o(1, 5)	o	o
Vacuum pump Vacubrandt MZ2CNT+AK+EK	–	–	–	–	–	o	o
Vacuum pump Vacubrandt MD4CNT+AK+EK	–	–	–	–	–	o	o
Vacuum pump on request	–	–	–	–	–	Δ	Δ
Special electric access port	–	–	–	–	–	Δ	Δ
Open door alarm	o	o	o	o	•	o	•
RAMPS	o	o	o	•	–	o	•

	EC ECO	DC ECO	VC ECO	VC EVO	SC ECO	VU ECO	VU EVO
Aggressive heating	o	o	o	o	o	o	o
Internal socket max. 125°C (230 V, 3 A protection, IP67)	Δ(1)	–	Δ(1)	Δ(1)	–	Δ	Δ
Potential-free contact (BMS) – remote alarm 24V/1A	o	o	o	o	o	o	o
External flap switching	o	o	o	o	–	–	–
Emergency stop button	Δ(1)	Δ(1)	Δ(1)	Δ(1)	–	Δ	Δ
National design of the electric plug	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Operation temperature [°C] shift	o 300 °C(5,6,7)	–	o 300 °C (8)	o 300 °C (8)	–	–	o 300 °C
Hot-air sterilization	–	–	o	o	•	–	–
Integrated data logger (capacity for more than 1 year of recording)	–	–	–	•	–	–	•
Possibility of flash disk connection as an external data logger	o	o	o	–	o	o	–
Inert gas or aeration connection	–	–	–	–	–	manual	•
Switching the vacuum pump with the button	–	–	–	–	–	•	–
Switching the pump on automatically	–	–	–	–	–	o	•
Manual vacuum control - pressure gauge + needle valve	–	–	–	–	–	•	–
Automatic vacuum control (10-1100 mbar) with aeration	–	–	–	–	–	–	•
Automatic vacuum control (0.1-1100 mbar) with aeration	–	–	–	–	–	–	o
Digital vacuum display (10-1100 mbar)	–	–	–	–	–	o	•
Digital vacuum display (0.1-1100 mbar)	–	–	–	–	–	o	o
Analogue output 4-20mA	o T	o T	o T	o T	–	o T, p	o T, p
Software WarmComm 4 Basic (B)	o	o	o	o	–	o	o
Software WarmComm 4 Professional (P)	o	o	o	o	–	o	o
Software WarmComm 4 FDA (F)	o	o	o	o	–	o	o
External printer	o	o	o	o	o	o	o
Software PrinterArchiv	o	o	o	o	o	o	o
Internal temperature measurement, 1 point	o	o	o	o	o	o	o
Measurement of temperature distribution, 3 points	o	o	o	o	o	o	o
Temperature measurement, 9-point (DIN 12880)	o	o	o	o	o	o	o
Temperature distribution measurement, 27-point (DIN 12880)	o	o	o	o	o	o	o
Validation documentation	o	o	o	o	o	o	o

• within standard equipment
o optional equipment
– cannot be ordered
Δ consultation required

o[x], •[x], Δ[x] with a note
[1] except for the volume of 22 l
[2] except for the volume of 55 l
[3] except for the volume of 111 l
[4] except for the volume of 222 l
[5] except for the volume of 404 l
[6] except for the volume of 707 l
[7] except for the volume of 1212 l
[8] only stainless steel version for volumes of 404 l, 707 l
[9] without light
[10] only the inner equipment of the chamber, the chamber always from DIN 1.4404/AISI 316L
[16] out of sterilization

WARNING: some combinations of optional equipment are excluded
The values may differ depending on specific charge and media parameters.
Change in the design and make reserved.

Explanatory notes:

EC ECO - ECOCELL® ECO line
DC ECO - DUROCELL ECO line
VC ECO - VENTICELL® ECO line
VC EVO - VENTICELL® EVO line
SC ECO - STERICELL® ECO line
VU ECO - VACUCELL® ECO line
VU EVO - VACUCELL® EVO line

Notes

Incubators Equipment	IC ECO/ IC-V ECO	IC EVO/ IC-V EVO	FC ECO	FCp ECO	FC EVO	CLC ECO	CLC EVO	CO2 S/K
Fan revolutions 10-100%	-/•	-/•	•	•(16)	•	•	•	-
Acoustic alarm	•	•	•	•	•	•	•	•
Visual alarm	•	•	•	•	•	•	•	•
Safety thermostat class according to DIN 12880 (user adjustable)	2, 3	2, 3	2, 3	2, 3	2, 3	2, 3	2, 3	-
Security - keypad lock + password protected settings	•	-	•	•	-	•	-	-
Security - user management system	-	•	-	-	•	-	•	-
Main switch ON / OFF	-	-	•	-	•	•	•	•
Chromed tray	2+o (1212: 6+o)	2+o (1212: 6+o)	-	-	-	-	-	-
Stainless steel tray	o	o	2+o (1212: 6+o)	2+o	2+o (1212: 6+o)	2+o (1212: 6+o)	2+o (1212: 6+o)	-
Stainless steel shelf, perforated	o	o	o	o	o	o	o	4+o/ 4+o[12]
Chamber without tray holders and without trays	o[7]	o[7]	o[7]	o	o[7]	o[7]	o[7]	-
Test tubes holder (Loewenstein)	o[1]	o[1]	o	o	o	o	o	-
Test tube shelf Ø 16 mm	o[1]	o[1]	o	o[1]	o	o	o	-
Test tube shelf Ø 22 mm	o[1]	o[1]	o	o[1]	o	o	o	-
Drip tub	o	o	o	o	o	o	o	•
Suspension system for samples under the chamber ceiling	o[1]	o[1]	o	o[1]	o	o	o	-
Left door	o[1,7]	o[1,7]	o[5,6,7]	o[1]	o[5,6,7]	o[5,6,7]	o[5,6,7]	o
Door lock (same key for order)	o	o	o	o	o	o	o	-
Door lock (different keys for order)	o	o	o	o	o	o	o	-
Automatic door lock	o[1]	o[1]	o	o[1]	o	o	o	-/•
Stainless steel shell	o	o	o	o	o	o	o	-
Stainless steel interior DIN 1.4301/AISI 304	•	•	•	•	•	•	•	•/-
Stainless steel interior DIN 1.4404/AISI 316L	o	o	Δ	-	Δ	Δ	Δ	-
Inner glass door ESG	•	•	•	•	-	•	-	-
Tight inner glass door ESG	-	-	-	-	•	-	•	•
Flexible PT sensor (max. number)	o 1	o 4	o 1	o 1	o 4	o 1	o 4	-
Flexible PT sensor lead from the inner side of the door (max. number)	o 1	o 4	Δ 1	Δ 1	Δ 4	Δ 1	Δ 4	-
Access port Ø 25 mm R (centre / centre)	o	o	o	o	o	o	o	•[15]
Access port Ø 25 mm L centre/centre)	o	o	o[5,6,7]	o	o[5,6,7]	o[5,6,7]	o[5,6,7]	-
Access port Ø 50 mm R (centre / centre)	o	o	o	o	o	o	o	-
Access port Ø 50 mm L (centre / centre)	o	o	o[5,6,7]	o	o[5,6,7]	o[5,6,7]	o[5,6,7]	-
Access port Ø 100 mm R (centre / centre)	o[1]	o[1]	o	o[1]	o	o	o	-
Access port Ø 100 mm L (centre / centre)	o[1]	o[1]	o[5,6,7]	o[1]	o[5,6,7]	o[5,6,7]	o[5,6,7]	-
Access port - special shape or position	Δ	Δ	Δ	Δ	Δ	Δ	Δ	-
Window and interior lighting (max. up to 250°C)	o[1]	o[1]	Δ	-	Δ	Δ	Δ	-
Interior lighting (no window)	o[1]	o[1]	o	-	o	o	o	-
Special housing modification for insulator technologies	Δ[7]	Δ[7]	Δ[7]	Δ	Δ[7]	Δ[7]	Δ[7]	-
Modification without particles	Δ	Δ	-	-	-	-	-	-
Straight chimney extension	o	o	-	-	-	-	-	-
Chimney extension 90 °	o	o	-	-	-	-	-	-
Straight chimney extension (with condensate drain)	o	o	-	-	-	-	-	-
90 ° chimney extension (with condensate drain)	o	o	-	-	-	-	-	-
Exhaust chimney	•	•	Δ	-	Δ	Δ	Δ	-
Air flap manual	•	•	-	-	-	-	-	-
Automatic air flap (open / closed)	o	o	-	-	-	-	-	-
Version against drying-out	o	o	-	-	-	-	-	•
Modification of the device with wheels for adjustable feet	o[1,2,3,4]	o[1,2,3,4]	o[2,3,4]	o[1,2,3,4]	o[2,3,4]	o	o	-
Modification of the device without wheels to wheels	o[1,5,6,7]	o[1,5,6,7]	o[5,6,7]	o[1,5,6,7]	o[5,6,7]	-	-	-
Wheels with extendable feet (levelling wheels)	o[1]	o[1] (• [1212])	o	o(1)	o[1] (• [1212])	o	o[1] (• [1212])	-
Increased load capacity / reinforced chamber frame + built-in frame	Δ[1]	Δ[1]	Δ	Δ[1]	Δ	Δ	Δ	-
Increased load capacity of shelves	o[1]	o[1]	o	o[1]	o	o	o	-
Increased load capacity of the chamber bottom	Δ[1]	Δ[1]	Δ	Δ[1]	Δ	Δ	Δ	-
Device table	o[1,5,6,7]	o[1,5,6,7]	o[5,6,7]	o[1,5,6,7]	o[5,6,7]	-	-	o
Open door alarm	o	o	o	o	•	o	•	•
RAMPS	o	o	o	o	•	o	•	-
Aggressive heating	o	o	o	o	o	o	o	-
Internal socket max. 125°C (230 V, 3 A protection, IP67)	o[1]	o[1]	o	o	o	o	o	-
Potential-free contact (BMS) – remote alarm 24V/1A	o	o	o	o	o	o	o	•
External flap switching	o	o	-	-	-	-	-	-
Emergency stop button	Δ[1]	Δ[1]	Δ	Δ	Δ	Δ	Δ	-
National design of the electric plug	Δ	Δ	Δ	Δ	Δ	Δ	Δ	-
Operation temperature [°C] shift	-	-	o -10 °C	-	o -20 °C	o -10 °C	o -20 °C	-
Hot-air decontamination [°C]	-/ o 190 °C	-/ o 190 °C	-	-	o 160 °C [7]	-	o 160 °C [7]	o 160 °C [14]/ o
Regulation of CO_2 0,2-20% (-20 up to 55°C) without decontamination	-	o[5,6,7]/o	-	-	o[6]	-	o[6]	•
Regulation of CO_2 0,2-20% (0 up to 65°C) decontamination possible	-	o[5,6,7]/o	-	-	o[6]	-	o[6]	-
One-way CO_2 valve	-	o[5,6,7]/o	-	-	o[6]	-	o[6]	o

	IC ECO/ IC-V ECO	IC EVO/ IC-V EVO	FC ECO	FCp ECO	FC EVO	CLC ECO	CLC EVO	CO2 S/K
Integrated data logger (capacity for more than 1 year of recording)	-	•	-	-	•	-	•	-/•
Possibility of flash disk connection as an external data logger	o	-	o	o	-	o	-	-
Inert gas or aeration connection	-	Δ	-	-	Δ	-	Δ	-
Cooling without defrosting up to 0°C	-	-	•	•	-	•	•	-
Cooling with defrosting up to 0°C	-	-	o	o	-	o	o	-
COOLING PLUS	-	-	o[2,3,7]	o[2,3,7]	-	o[2,3,7]	o[2,3,7]	-
Strengthened cooling without defrosting (the lowest temperature)	-	-	o -10 °C	o -20 °C	-	o -10 °C	o -20 °C	-
Strengthened cooling with defrosting (the lowest temperature)	-	-	o -10 °C	o -20 °C	-	o -10 °C	o -20 °C	-
Enhanced COOLING PLUS	-	-	o -10 °C [2,3,7]	o -20 °C [2,3,7]	-	o -10 °C [2,3,7]	o -20 °C [2,3,7]	-
Enhanced cooling and heating - Extension of operating temperatures in the range of 21 ° C below ambient temperature to 45 ° C above ambient temperature.	-	-	-	-	o[17]	-	-	-
Exposition lighting VIS in the door	-	-	o	o	-	o	o	-
LED exposition lighting VIS in the door	-	-	o	o	-	o	o	-
Exposition lighting, shelves VIS	-	-	o[2]	o[2]	-	o	o	-
Exposition lighting, shelves UV	-	-	o[2])	o[2])	-	o	o	-
Exposition lighting, shelves MIX	-	-	o[2]	o[2]	-	o	o	-
LED exposition lighting, shelves VIS	-	-	o[2]	o[2]	-	o	o	-
Light exposition control, VIS (max number)	-	-	-	o 4	-	-	o 4	-
Light exposition control, UV (max number)	-	-	-	o 4	-	-	o 4	-
Analogue output 4-20mA	o T	o T, CO_2	o T	o T, CO_2	o T	o T, RH	o T, RH, CO_2	-
Software Warmcomm 4 Basic (B)	o	o	o	o	o	o	o	-
Software Warmcomm 4 Professional (P)	o	o	o	o	o	o	o	-
Software Warmcomm 4 FDA (F)	o	o	o	o	o	o	o	-
External printer	o	o	o	o	o	o	o	-
Software PrinterArchiv	o	o	o	o	o	o	o	-
Internal temperature measurement, 1 point	o	o	o	o	o	o	o	o
Measurement of temperature distribution, 3 points	o	o	o	o	o	o	o	o
Temperature measurement, 9-point (DIN 12880)	o	o	o	o	o	o	o	o
Measuring of RH, 3 point	-	o	-	-	o	o	o	-
Temperature distribution measurement, 27-point (DIN 12880)	o	o	o	o	o	o	o	o
Validation documentation	o	o	o	o	o	o	o	o
3-section inner door	-	-	-	-	-	-	-	o[13]
8-section inner door	-	-	-	-	-	-	-	o[14]
O_2 concentration control within the range 1-19%	-	-	-	-	-	-	-	-/o
Displaying RH/Alarm RH	-	-	-	-	-	-	-	-/o
Stacking set for two devices	-	-	-	-	-	-	-	o
Two-way CO_2 valve	-	-	-	o[6]	-	-	o[6]	o
Automatic replacement unit of CO_2 at the input	-	-	-	o[6]	-	-	o[6]	o
Max. temperature 70 ° C	-	-	-	•(1,2,3,4,5,6)	-	•(1,2,3,4,5,6)	•(1,2,3,4,5,6)	-

• within standard equipment
o optional equipment
– cannot be ordered
Δ consultation required
o[x], •[x], Δ[x] with a note

[1] except for the volume of 22 l
[2] except for the volume of 55 l
[3] except for the volume of 111 l
[4] except for the volume of 222 l
[5] except for the volume of 404 l
[6] except for the volume 707 l
[7] except for the volume 1212 l

[12] maximally 3 shelves are possible for the 50 l volume
[13] only for the volume of 50 l
[14] only for the volume of 190 l
[15] from the rear of the device
[16] Speed is fixed at 100%
[17] Only for size 404, other sizes (22 to 222) already have it in the base

WARNING: some combinations of optional equipment are excluded
The values may differ depending on specific charge and media parameters.
Change in the design and make reserved.

Explanatory notes:

IC ECO - INCUCELL® ECO line
IC-V ECO - INCUCELL® V ECO line
FC ECO - FRIOCELL® ECO line
FC EVO - FRIOCELL® EVO line
CLC ECO - CLIMACELL® ECO line
CLC EVO - CLIMACELL® EVO line
CO2 S - CO2CELL Standard
CO2 K - CO2CELL Komfort

Notes

Unique Line... Cell

CE

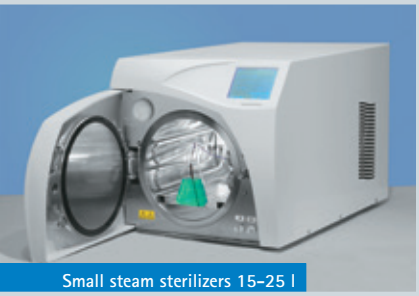
Designation	Type marking	Laboratory case type	ECO line / EVO line	Linie Standard / Linie Comfort	Natural air circulation	Forced air circulation	Temperature range in °C (Optional equipment)	Volume 22 (l)	Volume 50 (l)	Volume 55 (l)	Volume 111 (l)	Volume 190 (l)	Volume 222 (l)	Volume 404 (l)	Volume 707 (l)	Volume 1212 (l)
drying, tempering, sterilization	ECOCELL®	drying oven	●		●		5*–250/300	●		●	●		●	●	●	
	DUROCELL	drying oven with protective layer of inner space EPOLON	●		●		5*–125	●		●	●		●			
	VENTICELL®	drying oven	●			●	10*–250/300	●		●	●		●	●	●	●
	STERICELL® ***	hot-air sterilizer	●			●	10*–250	●		●	●		●	●		
	VACUCELL®	drying oven with vacuum	●				5*–250/300	●		●	●					
incubation	INCUCELL®	incubator / biological thermostat	●		●		5–100	●		●	●		●	●	●	●
	INCUCELL® V	incubator / biological thermostat	●			●	10–100	●		●	●		●	●	●	●
	FRIOCELL®	incubator with cooling	●			●	0–100 (-20)			●	●		●	●	●	●
	CLIMACELL®	incubator with cooling and controlled humidity	●			●	0–100 (-20)				●		●	●	●	●
	CO2CELL**	incubator with CO_2 atmosphere		●	●		5*–60		●			●				

* above the exterior temperature

** manufacturer MMM Medcenter Einrichtungen GmbH, Semmleweisstrasse 6, D-82152 Planegg / Munich, tel.:+49 89 89 92 26 20, e-mail: medcenter@mmmgroup.com

*** the STERICELL® line also meets the Directive No. 93/42/EEC CE 0123

Make acquaintance with our further offers...


Small steam sterilizers 15–25 l


Steam sterilizers 140–1,490 l


Steam sterilizers 70 l


Hot-air sterilizers 400-3,900 l

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