

## CERTOMAT® CTplus



### Features

- Designed for cultivation of mammalian cells
- Fully encapsulated incubation chamber
- Optimal control of temperature, CO<sub>2</sub> level and humidity
- Separate heating systems prevent condensation
- Polished stainless steel interior
- Capacity: 6 × 5 Liter flasks
- Programmable for time, speed and temperature
- DCU controller for all process parameters
- Data management by connection to MFCS/win

CERTOMAT® CTplus is the first incubation shaker designed specifically for cultivation of mammalian cells under stringent control of temperature, CO<sub>2</sub> concentration and humidity. Instead of modifying existing bacterial shakers, a radically new design was chosen placing all components into their functional context.

Basic design principle for CERTOMAT® CTplus is encapsulation – incubation chamber, mechanical drive unit and control unit are strictly isolated from another. This prevents corrosion of the drive unit and other parts due to formation of carbonic acid in the incubation chamber. Insulation and advanced sealing of the incubation chamber ensure highly constant temperature levels, CO<sub>2</sub> levels and relative humidity levels. Loss of CO<sub>2</sub> to the environment is minimal, and recovery of all parameters after door opening is very fast. Separate heating systems for incubation chamber, doors and humidification pan prevent effectively any condensation.

The interior of the incubation chamber is made from stainless steel, glued with sealed seams, and can be easily kept clean. The stainless steel humidification pan can be taken out for autoclaving. Even the inspection light is sealed against the chamber.

CERTOMAT® CTplus incubators can be stacked three units high and run fully independently without speed reduction of the upper units. Maximum capacity is six 5 Liter flasks. Doors opening to the front make it easy to transfer cultivation vessels from one unit to the other.

CERTOMAT® CTplus features a central DCU controller unit for all process parameters operated by a touchscreen display. It is ready for connection to MFCS/win software for data acquisition and remote control via Ethernet. An analog-output for data documentation and a potential-free contact for connection to external alarm systems are available.

The working parameters time, speed, temperature, illumination (option) and cooling (option) can be programmed, linear or in cycles, in 20 programs, each consisting of 4 steps plus one pre-step. Safety features include visual and acoustic alarms, memory function for automatic re-start after power failure, and recording of the time of any interruptions.

CERTOMAT® CTplus is available with a choice of two shaking amplitudes. Integrated cooling for cultivation below 30°C will be available as an option. Other optional accessories include support frames of different height and a photosynthetic illumination unit. Clamps for Erlenmeyer flasks, racks for centrifuge tubes or holders for microtiter plates are the same as for the standard shaker units.

## Technical Data

### Mechanical Construction

Incubator dimensions	Outer 1275×735×790 mm (W×H×D)   inner 886×476×645 mm (W×H×D)
Weight (incl.accessories)	Approx. 230 kg
Shaker table	440×420 mm (W×D)
Material	Incubator made of steel with acid-proof paint; incubation chamber stainless steel
Trays	Type E/EU: (420×420 mm)*; type F/FU: (800×420 mm)
Load	Depending on tray and mounting system and other accessories of the Sartorius Stedim Biotech GmbH range of accessories
Volume of watertank	Approx. 1.7 L, incl. level sensor

### Electrical Connections

Power connection	Ground earth plug
Mains voltage	230 V (±5%)/50 Hz or 115 V (±5%)/60 Hz
Power consumption	1.8 kW
Photo illumination	0.4 kW – option
Light	Approx. 0.0023 kW, encapsulated LEDs
Fuses	T10A at 230 V

### CO<sub>2</sub>-supply and control

Connection	Quick coupling for tubing Ø 6×4 mm
Pressure	1...5 bar; built-in internal pressure controller
Sensor	0–20% (v/v)
Accuracy of controller	0.1% (v/v)

### Humidity measurement and control

Water supply	Stainless steel tank, approx. 1.7 L, incl. level sensor, with external heater
Sensor	0–100% r.H.
Accuracy of controller	1% r.H.

### Operating data

Orbital motion	Ø 25 mm or Ø 50 mm, depending on drive ordered
Speed range	20...400 min <sup>-1</sup>
Speed deviation	max. ±1% (relative to end value)
Incubation temperature	Heated version (UH) RT +8°C...+70°C Refrigerated version (UHK) 10°C below RT...+70°C
Accuracy of incubation temperature	±0.1°C
Ambient temperature	+10...+40°C (+10...+30°C for UHK-version)
Ambient relative humidity	10...80%, non condensing

### Interface

Ethernet	Connection for MFCS/win and MFCS/DA
Analog out	Socket, 15-pin Sub-D, 0–10 V, ±0.1 V
Collective alarm	Potential-free contact (changer), max. 230 VAC (6.5 A)

### Option cooling

Refrigerant	R 134a
Filling volume	270 g

RT = Room temperature  
(We reserve the right to change design and dimensions)

### Ordering information

CTMCTPA2H	CERTOMAT® CTplus, 25 mm orbit, 230 V 50 Hz, UH version
CTMCTPA5H	CERTOMAT® CTplus, 50 mm orbit, 230 V 50 Hz, UH version

Sartorius Stedim Biotech GmbH  
August-Spindler-Strasse 11  
37079 Goettingen, Germany  
Phone +49.551.308.0  
Fax +49.551.308.3289  
www.sartorius-stedim.com

USA Toll-Free +1.800.368.7178  
UK +44.1372.737159  
France +33.442.845600  
Italy +39.055.63.40.41  
Spain +34.91.3586102  
Japan +81.3.3740.5407

Specifications subject to change without notice. Printed and copyrighted by Sartorius Stedim Biotech GmbH W · G  
Publication No.: SL-2059-e09091  
Order No.: 85032-535-43  
Ver. 09 | 2009