



## FDM Environment Makers Products

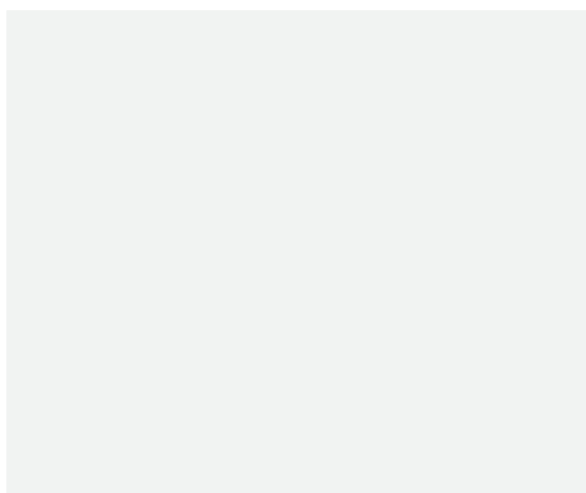
Climatic and Thermostatic Chambers

Growth Chambers

Environmental Chambers

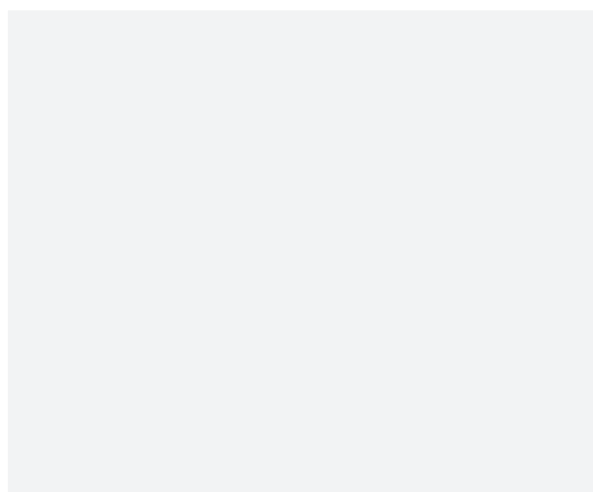
Ultrafreezers

Custom Products



# Climatic Chambers

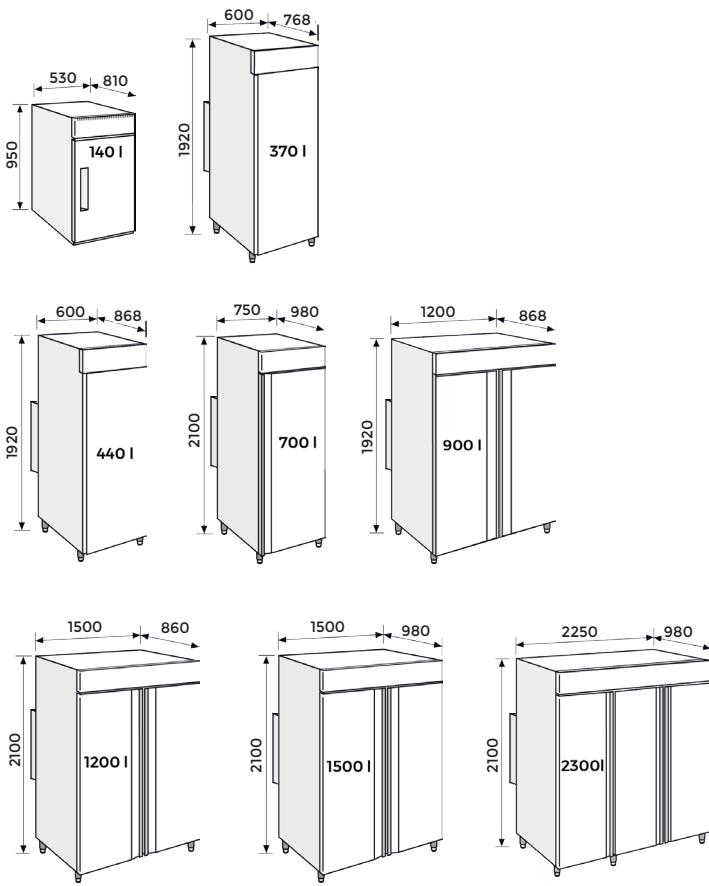
## CB-CS Series



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Technical specifications are subject to change

## Sizes



The CB-CS series is the standard FDM climate chamber category: you can select different temperature, humidity and volume parameters.

You can also choose between a cyclic or a constant climatic chamber: the cyclic climate chamber was developed for programming different test cycles with different temperatures during the same test.

The climatic chamber is an extremely important laboratory tool also and above all because the various tests to be carried out are regulated by different standards, established by official research bodies.

The range of products to be tested is various, below are some of the most important application areas:

- cosmetic and pharmaceutical
- food
- textile
- military/aerospace
- electronic components
- Automotive
- construction and building materials

For some categories, which require more strict and accurate parameters and also the reproduction of more "extreme" tests, we mostly refer to an environmental chamber.

## Advantages

|  |
|--|
| Volumes from 140 up to 2300 liters                               |
| Adjustable temperature -25°C...+70°C*                            |
| Humidity range 10...98%.   |
| Internal shelves adjustable in height                            |
| Programmable controller revoFACE or stillFACE for stable testing |
| Internal forced and homogeneous ventilation                      |
| High and low temperature and humidity alarms                     |
| Electrical power 220-240V /50Hz or 110V                          |
| Compliant to the ICH Q1A pharmaceutical stability test           |

\*Except for chamber with 140 liters volume starting from -20°C up to +70°C



The stillFACE controller is designed for stability testing.



The revoFACE programmer is designed for cycle testing.

## Configuration examples



| Positive Range (S)  | C140S  | C370S     | C440S | C700S | C900S   | C1200S    | C1500S | C2300S |
|---|--|-----------|-------|-------|---|-----------|--------|--------|
| Negative Range (B)  | C140B  | C370B     | C440B | C700B | C900B   | C1200B    | C1500B | C2300B |
| Temperature range without humidity [°C]                     | (S)  |           |       |       | 0...+70   |           |        |        |
|   | (B)  | -20...+70 |       |       |   | -25...+70 |        |        |
| <b>Temperature performance</b>                              |  |           |       |       |   |           |        |        |
| Temperature uniformity depending on setpoint [± K]          |  |           |       |       | 0.5..2.5  |           |        |        |
| Temperature fluctuation depending on setpoint [± K]         |  |           |       |       | 0.1..0.5  |           |        |        |
| Average heating-up rate according to EN 60068-3-5 [K/min]   |  |           |       |       | +2  |           |        |        |
| Average cooling down rate according to EN 60068-3-5 [K/min] |  |           |       |       | -1  |           |        |        |
| <b>Performance Data Climate</b>                             |  |           |       |       |   |           |        |        |
| Temperature range [°C] humidity is on                       |  |           |       |       | +10/+70   |           |        |        |
| Humidity range in according to Chart <sup>*1</sup> [% r.h.] |  |           |       |       | 10/98   |           |        |        |
| Humidity fluctuation depending on setpoint [± %]            |  |           |       |       | ≤ 3   |           |        |        |
| Humidification system                                       | Ultrasonic humidification system   |           |       |       |   |           |        |        |
| Water filter  | Water softening filter and replaceable cartridge equipped <sup>*2</sup>    |           |       |       |   |           |        |        |
| Max Water hardness permitted                                |  |           |       |       | 600 ppm CaCO <sub>3</sub>   |           |        |        |
| Water inlet   |  |           |       |       | Pressure 0.2÷5 BAR<br>Temperature 10÷40°C<br>Pipe connection 3/4" |           |        |        |
| <b>Outer dimensions</b>                                     |  |           |       |       |   |           |        |        |
| Width net [mm]  | 530  | 600       | 600   | 750   | 1200  | 1500      | 1500   | 2250   |
| Depth net [mm]  | 810  | 768       | 868   | 980   | 868   | 860       | 980    | 980    |
| Height net [mm]   | 950  | 1920      | 1920  | 2100  | 1920  | 2100      | 2100   | 2100   |
| <b>Doors</b>  |  |           |       |       |   |           |        |        |
| Unit doors  | 1  | 1         | 1     | 1     | 2   | 2         | 2      | 3      |
| <b>Internal Dimensions</b>                                  |  |           |       |       |   |           |        |        |
| Width [mm]  | 450  | 500       | 500   | 600   | 1090  | 1340      | 1300   | 2090   |
| Depth [mm]  | 540  | 480       | 580   | 670   | 580   | 570       | 670    | 670    |
| Height [mm]   | 520.5  | 1257      | 1257  | 1340  | 1257  | 1350      | 1340   | 1340   |
| <b>Measures</b>   |  |           |       |       |   |           |        |        |
| Interior net volume [L]                                     | 130  | 310       | 370   | 530   | 810   | 1020      | 1180   | 1830   |
| Net weight of the unit (empty) [kg]                         | 78   | 98        | 108   | 165   | 195   | 210       | 213    | 365    |
| Permitted load per rack [kg]                                | 30   | 30        | 30    | 30    | 30  | 30        | 30     | 30     |
| <b>Fixtures</b>   |  |           |       |       |   |           |        |        |
| Number of shelves (std./max.)                               | 3/5  | 3/5       | 3/5   | 3/6   | 6/10  | 6/12      | 6/12   | 9/14   |
| Shelf Width [mm]  | 400  | 460       | 460   | 530   | 460   | 530       | 530    | 530    |
| Shelf Depth [mm]  | 500  | 470       | 570   | 650   | 570   | 550       | 650    | 650    |
| <b>stillFACE Controller</b>                                 |  |           |       |       |   |           |        |        |
| Controller  | Constant monitoring temperature and humidity controllers                   |           |       |       |   |           |        |        |
| Interface port  | Optional: RS485  |           |       |       |   |           |        |        |
| <b>revoFACE Programmer</b>                                  |  |           |       |       |   |           |        |        |
| Set-up Display  | Programme status, set up temperature and humidity, date, time and language |           |       |       |   |           |        |        |
| Programmer  | 10 programs and 50 segments each, adjustable from 1 min. to 999 hrs.       |           |       |       |   |           |        |        |
| Calibration   | Possibility to calibrate all parameters                                    |           |       |       |   |           |        |        |
| Interface port  | Optional: RS485 - Optional: Ethernet - Wifi - Dedicated mobile app         |           |       |       |   |           |        |        |
| <b>Environment-specific data</b>                            |  |           |       |       |   |           |        |        |
| Sound-pressure level [dB(A)]                                |  |           |       |       | 60  |           |        |        |

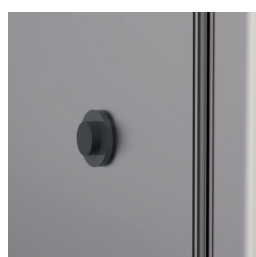
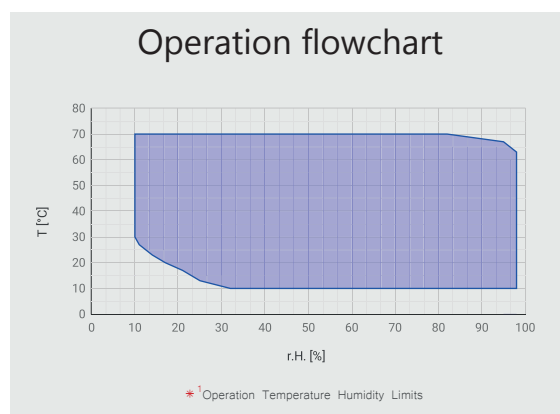
<sup>\*2</sup>The cartridge should be change every 4÷6 months at most.

All technical data are specified for units with standard equipment at an ambient temperature of +24 °C and a voltage fluctuation of ±10 %.

| Positive Range (S)              | C140S   | C370S | C440S | C700S | C900S | C1200S | C1500S | C2300S |     |
|---------------------------------|---|-------|-------|-------|-------|--------|--------|--------|-----|
| Negative Range (B)              | C140B   | C370B | C440B | C700B | C900B | C1200B | C1500B | C2300B |     |
| <b>Structure and insulation</b> |   |       |       |       |       |        |        |        |     |
| Exterior material               | Stainless steel AISI 304  |       |       |       |       |        |        |        |     |
| Internal material               | Stainless steel AISI 304  |       |       |       |       |        |        |        |     |
| Insulation                      | CFC and HCFC free   |       |       |       |       |        |        |        |     |
| Shelf grill                     | Removable and height adjustable steel grid                            |       |       |       |       |        |        |        |     |
| <b>Ventilation</b>              |   |       |       |       |       |        |        |        |     |
| Fan                             | forced ventilation  |       |       |       |       |        |        |        |     |
| <b>Safety</b>                   |   |       |       |       |       |        |        |        |     |
| Temperature                     | Class 2 independent adjustable temperature safety devices (DIN 12880) |       |       |       |       |        |        |        |     |
| Alarm                           | Audio-Visual  |       |       |       |       |        |        |        |     |
| <b>Electrical data</b>          |   |       |       |       |       |        |        |        |     |
| Rated Voltage [V]               | 220/240   |       |       |       |       |        |        |        |     |
| Power frequency [Hz]            | 50  |       |       |       |       |        |        |        |     |
| Nominal power [kW]              | (S)   | 1.4   | 1.5   | 1.4   | 1.8   | 2.2    | 2.4    | 2.6    | 2.7 |
|                                 | (B)   | 1.6   | 1.7   | 1.7   | 2.3   | 2.6    | 2.7    | 2.9    | 3.1 |
| Unit fuse [A]                   | 16  |       |       |       |       |        |        |        |     |
| Phase (nominal voltage)         | 1 ~   |       |       |       |       |        |        |        |     |

## Main Options

- ETH100 - Ethernet interface for remote connection
- RS485 - Interface port RS485
- PG50200 - Upgrade. 50 program 200 step for revofACE
- PE100 - Interior socket coverable universal 220-230 V
- SPS100 - Interior compartment glass doors
- SPS07 - Flooding system for EN1348-2007
- BDS020 - Relative humidity decreasing up to 2% @ 20°C
- BSU10 - Humidity extension range below the 10°C
- TE110 - Power supply 110 V 50-60 Hz
- CO200 - CO2 Regulation System for EN 12390-10
- ICHQ1A - Equipment for pharmaceutical stability testing ICH Q1A



- FD100  
Cable hole installed on the side of the chamber that allows the passage of cables inside without loss of performance. Rubber cap included.



- UDB100  
USB port for downloading test data with the possibility of viewing them on a PC in Excel format.



- GP100R  
The reinforced stainless steel shelf differs from the standard one (pictured above) in that it has a higher supported load capacity.



- RT100  
Swivel castors with chamber lock for easy movement.



- PV101  
Double tempered glass door for a complete visibility of the environment and stability of the climatic conditions inside the chamber.



- WTO16  
System of supply demineralized water tank 16 liters.

All technical data are specified for units with standard equipment at an ambient temperature of +24 °C and a voltage fluctuation of ±10 %.

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