CRUMA CO_2 INCUBATOR

The new **CO_2 Incubator** "Direct Heat" equipped with an "on-demand" decontamination cycle, is designed to provide a stable and convenient environment for Cell and Tissue culture, taking into consideration the most stringent needs of the cell biologists, for both continuous and batch cultures.

CO_2 Incubator maintains an accurate CO2 gas percentage, uniform temperature and a consistently high level of humidity providing a stable culturing environment, even for most critical applications like IVF and Hybridoma cultures.

THE BEST IN ITS CLASS

At the very heart of the **CO_2 Incubator** is the large internal capacity of 188.6 litres, corresponding to an actual available space of 140 litres, unmatched in the industry, thanks to a specially designed rack and 4 shelves system that provides a usable surface of 0.23 sqm per shelf.

BEST IN ITS CLASS: CULTURING ENVIRONMENT GUARANTEED

The accurate and precise temperature is maintained by means of 4 independently controlled and validated "Direct Heating" elements, located on all 6 sides of the chamber, able to measure and control temperature down to 0.1 degree of the set value. Precise CO2 percentage is maintained by a state-of-the-art IR sensor and controller system, that is independent from the humidity of the culturing environment.

Humidity is passively maintained at 95% , thanks to a 2.5 litres stainless steel humidity tray, heated by the base heater. Finally, the unit has a built-in "on-demand" decontamination cycle programme, for absolute safety.

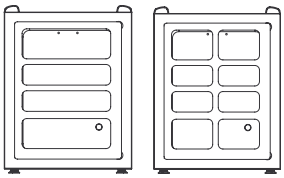
TECHNICAL FEATURES

An elegantly crafted standard control panel and display, for your convenience ...

- √ Programmable audio-visual alarm, warning "parameter out of range". Autoreset after chamber condition recovery.
- √ Large 2 x 24 message centre, with alpha numeric display for setup and status information
- √ Temperature display in steps of 0.1°C
- √ Mode key to enter programmable parameters
- √ Scroll keys for selection of the parameters
- √ CO_2 display in steps 2 of 0.1%

In case of specific application requirements your CO_2 Incubator can be conveniently customized

√ The diagram shows the Multi- position Shelf Rack Set, allowing the use of 8 shelves (maximum capacity)



√ The unit can be ordered with an inner glass door, which in turn can be fitted with 4/8 smaller doors system providing easier access to single sections of the chamber

2 year *warranty*

Because we are convinced of the quality of our products.

2 YEARS GUARANTEE 2 ANOS GARANTIA

*More information www.cruma.es

We recognise our responsability and dependence towards a healthy environment and, therefore, we destinate more than 7% of our annual budget in innovating and developing new products for the lab operator

our 7% engagement

Do you need help or *technical assistance?*

Contact your distributor or call us if you have any questions or need technical support, spare parts, maintenance service...

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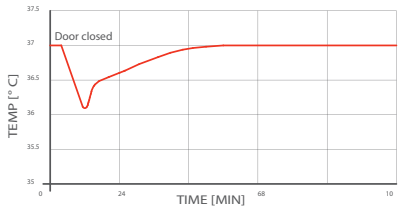
CRUMA CO_2 INCUBATOR

COMFORT FOR YOUR CULTURES IS GUARANTEED...

Precise control and recovery of set temperature

The accurate and precise temperature is maintained by means of a 4 sections independently controlled and validated Direct Heater system. A total of 73 meters of heating elements ensure even heating of all internal surfaces (chamber, front frame and door inner side); on top of this, a seven RT curve matched thermistors control system can measure and control temperature within to 0.1°C of the set value. Over-temperature protection is independent of the controls and inhibits all heaters when the temperature raises by 1 degree above the programmed value. The recovery of set temperature, after 15 seconds door opening, occurs within 5 minutes, thus protecting cultures against thermal shocks (see Graph)

Temperature recovery after 15 sec. door opening

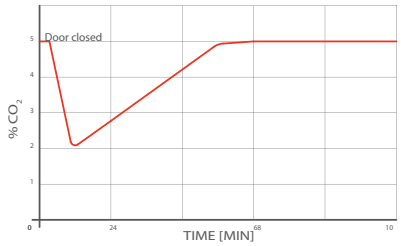


The graph shows data from the sensor inside the chamber. Standard results in normal working conditions

Precise control and recovery of set CO_2 percentage

The CO_2 percentage is maintained within the chamber, thanks to a state-of-the-art controller, with a solid state infrared sensor with atmospheric auto zeroing of CO_2. Mixing of air with inlet CO_2 gas is gently achieved, thanks to the complete absence of a forced air fan circulation system, enhancing a fast recovery of set CO_2 percentage within 5 minutes, following a 15 seconds long door opening (see Graph)

CO_2 Recovery after 15 sec. door opening



The graph shows data from the sensor inside the chamber. Standard results in normal working conditions.

Fully automatic 12 hours decontamination cycle

A fully tested "on demand" automatic decontamination cycle, heating up to 125°C, is a standard feature assuring your peace of mind when you start your culturing cycle. The beauty of the system is that there is no need to remove any parts or fixtures whatsoever. The total decontamination cycle is run overnight, with a 1.5-2.5 hour temperature ramp up time, a 4 hour exposure time and a 5-7 hour temperature ramp down time, totalling between 11-12 hours in average, depending upon the room temperature.

At the end of the cycle, normal control of the CO_2 is automatically resumed, and the only action to be performed is the addition of sterile water into the humidity tray before start up.

High temperature uniformity during decontamination cycle

Uniform heating to 125 ° C for 4 hours, ensures a reduction in bacterial load equal to 12* log, applied for substantially the same surgical instruments
(* Bacillus subtilis var. Niger ATCC # 9372).

A NUMBER OF FEATURES DESIGNED TO EASE YOUR WORK

The direct heated, single door, magnetic closure SafeGrow CO_2 incubator (Italian design) assures to the users an easy and quick access, without any loss of operational stability and performance.

Choosing the double door design, with fully sealed inner glass door and outer heated door, the CO_2 incubator can be equipped with an optional 4 or 8 inner glass door system to give you unmatched choice.

Left opening door option, factory installed, allows for optimal placement of the CO_2 incubator in an expensive and crowded lab space.

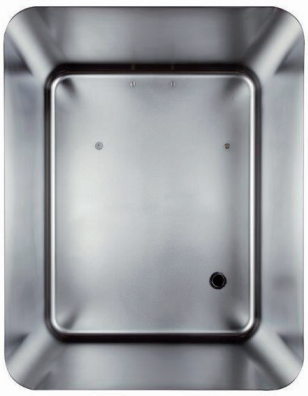
Optional multi-position shelf rack set, allows up to 8 shelves to be used, optimizing the area available for culture vessels.

Solid shelves are supplied as standard to provide even surface for the culture vessels however, at no extra cost, the traditional perforated shelves can be supplied.

Fanless construction, with gentlest possible air movement by thermal convection, ensures low contamination risk, simplifies cleaning and decontamination and allows for long life of incubator components.

Seamless, electro-polished, Stainless Steel 304 internal chamber (with fully rounded corners and no internal projections or holes) makes it easy to clean, corrosion resistant and minimize contamination risk.

Large 27.5 mm access port allows user to supply power to small instruments placed on the interior, or allows any other utilities access to the incubator chamber.



Detail of the inner chamber showing the position of the tempearture probe and CO_2 sensor. On the lower right the standard access port is visible

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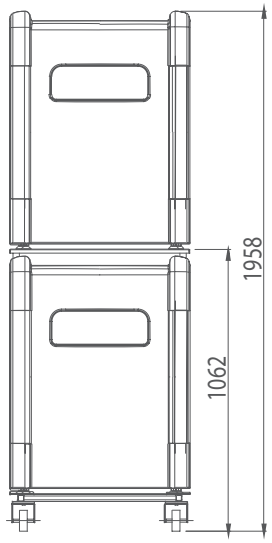
CRUMA CO_2 INCUBATOR

TECHNICAL SPECIFICATIONS

Temperature Control	Direct heat, 6 sides, 4 independently controlled heaters, 73 meters of heating elements
Temperature range	10-50° C in 0.1 increments (minimum setting: ambient + 1° C)
Temperature measurement	Seven RT curve matched thermistors
Temperature Control	+/- 0,1°C
Temperature Precisión	+/- 0,1°C
Temperature Uniformity	Better than ± 0.3° C
Temperature recovery	About 5 minutes following a 15 seconds door opening
Over Temperature Protection	Independent, inhibits all heaters above 1.0° C over set temp. value (in the unlikely event of a control system failure)
CO_2	
Sensor	Solid State IR Sensor, automatic atmospheric C02 zeroing. Measurement is independent from chamber humidity level
CO_2 Range	0.5 to 20 % C02, in steps of 0.1%
CO_2 Control	+/- 0,1%
Uniformity	Better than ± 0.1 % CO_2
Accuracy	± 0.2% at 5% CO_2 set point
Recovery rate	About 5 minutes following a 15 seconds door opening
RELATIVE HUMIDITY SYSTEM	
Reservoir	2.5 litres, 304 Stainless Steel electro-polished humidity tray
RH level	Minimum 95%
DECONTAMINATION CYCLE	
Decontamination cycle type	Fully automatic, 125° C cycle, Validated
Temperature ramp up time	1,5- 2,5 hours
Exposure time	4 hours
Temperature ramp down time	5-7 hours
Total cycle time	10,5 - 13,5 hours

SIZES (mm)

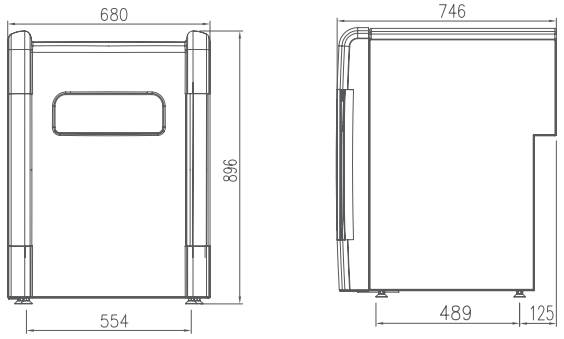
Stacking system with castors



CONSTRUCTION

Inner Chamber	304 Stainless Steel, totally seamless, electro-polished
Chamber volume (gross /usable)	188.6 litres/140 litres
Internal Dimensions (W x H x D) mm	530 x 690 x 500
External Dimensions (W x H x D) mm	680 x 896 x 746
Exterior	Powder painted mild steel with ABS plastic outer door cover
Interior access	Heated outer door with direct chamber access or sealed inner glass door (with optional 4/8 inner glass doors)
Door swing	Right side opening with optional left side door swing (factory fitted)
Net Weight	102 Kg
Packed Weight	135 Kg
SHELVING SYSTEM	
Shelf racks	Easy to assemble , 304 stainless steel construction, with high temperature plastic spacerss
Shelf type	Solid (non perforated) stainless steel shelves (perforated available as option)
Shelf dimensions (W x D) mm	510x 455 mm, with 150 mm height above each shelf
Shelf surface area, Sq meter	0,23 m2
Capacity: standard - maximum	4-8 shelves
ALARM SYSTEM	
Chamber status alarm	Fully programmable, audio-visual, auto reset when chamber conditions resume
Incubator function alarm	Fully automatic alarms to advise failure in heaters or sensors
Alarm events Log	Up to 500 alarm events held in memory on a rolling basis, displayed on 2 x 24 display, showing programmed value, actual value, time and duration of alarm event
POWER REQUIREMENTS	
Voltage	220-240 V - 50-60 Hz
Rated Power	1,5 kW
Power to maintain 37°C	< 0,1 kW
EXTERNAL CONNECTIONS	
RS 232 output	Operating conditions, alarms and events data output
RS 232 interface	Standard supply, for remote access
Contact for remote alarm	Volt-free. Remote external alarm device or alarm system (BMS)

SIZES (mm)



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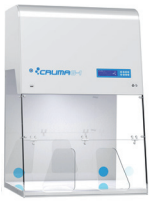
PLUG&PLAY RANGE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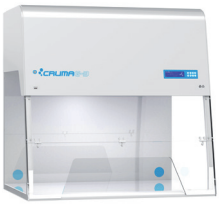
G-2


G-3

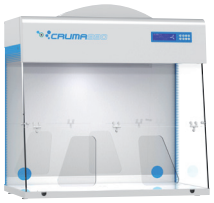

G-4


G-5

CRUMA
CLASSIC RANGE


670


870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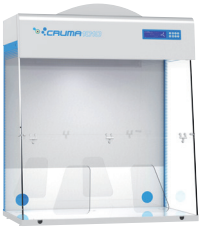
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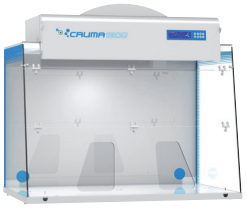
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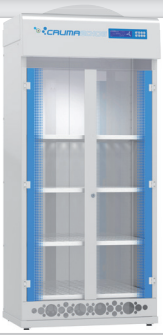

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CRUMA
POWDER CABINETS


P-1


P-2

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PCR CABINET


PCR

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INCUBATOR

CRUMA
LAMINAR FLOW CABINETS


670FL


870FL


FL-1

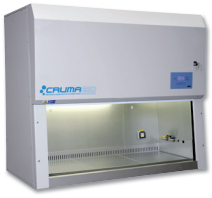

FL-2


HZ-1


HZ-2

CRUMA
BIOSAFETY CABINETS


BIO-1


BIO-2


VIRUSFREE


CYTO-2&3

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