ESCO

WORLD CLASS. WORLDWIDE.

CelCulture®

CO_2 Incubators

Cradle for Beautiful Cells

CelCulture® CO_2 Incubators

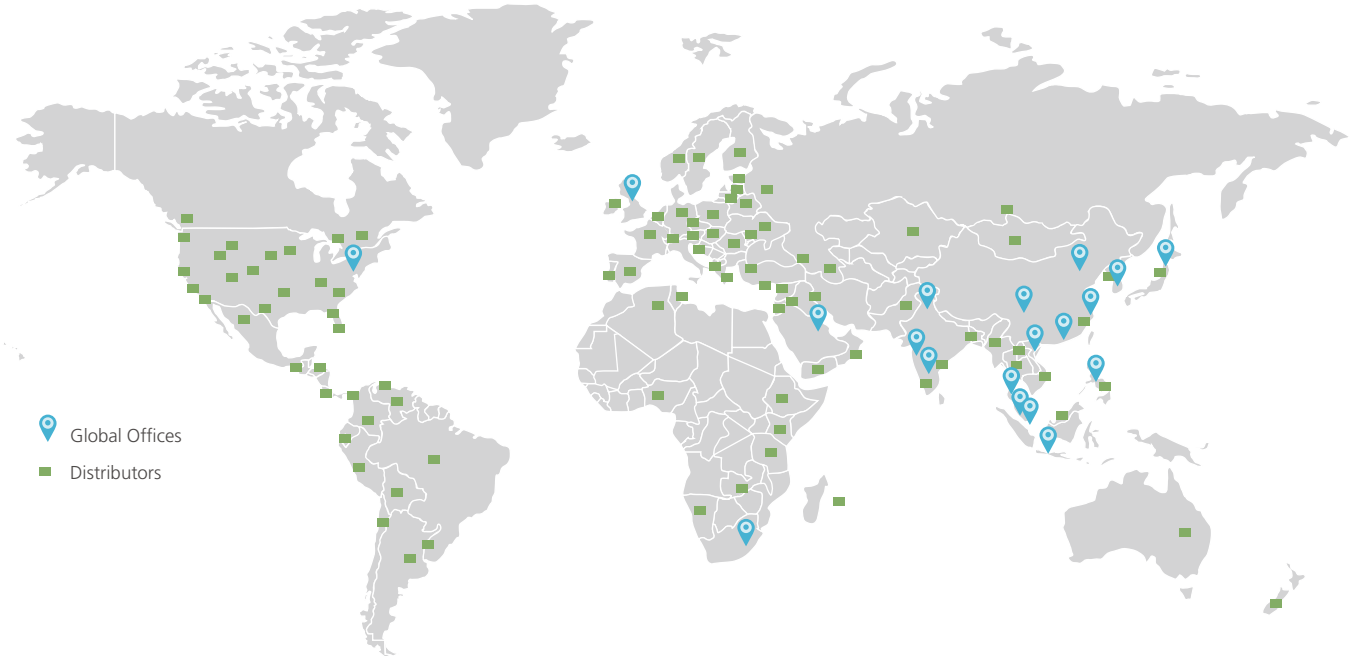
Designed in the USA

WELCOME TO ESCO

Esco's Vision is to provide enabling technologies for scientific discoveries to make human lives healthier and safer.

- A leader in the development of controlled environment, laboratory and pharmaceutical equipment solutions.
- A world leader in biological safety cabinets.
- Esco has established offices in 13 countries such as Bahrain, China, India, Japan, Korea, Malaysia, Philippines, Singapore, UK, US, Vietnam, South Africa and Indonesia and is continually expanding.
- North American facilities in Pennsylvania; sales, service, logistics for US & Canada.
- Group total of more than 600 employees.
- Distributors in more than 100 countries.
- Products independently tested to international standards.
- Large R&D investments, world leading technologies.
- State-of-the-art production; vertically integrated manufacturing floor space.
- Worldwide service played out over a geographic expanse so broad that the sun never sets on what we do.

GLOBAL NETWORK



PRODUCTS AND APPLICATION

Esco Life Science Tools

Laboratory Equipment

Biosafety and Laminar Flow

- Class II Type A2 Biological Safety Cabinets
- Class II Type B2 Biological Safety Cabinets
- Class III Biological Safety Cabinets
- Horizontal Laminar Flow Clean Benches
- Vertical Laminar Flow Clean Benches
- Laboratory Animal Research Workstations
- PCR Cabinets

Fume Hoods

- Laboratory Fume Hoods
- Ductless Fume Hoods
- Fume Scrubbers
- Exhaust Blowers
- Fume Hood Airflow Monitors

PCR

- PCR Thermal Cyclers
- *Not Available in North America*

Incubators and Ovens

- Forced Convection Laboratory Ovens
- Forced Convection Laboratory Incubators
- Refrigerated Incubators
- CO_2 Incubators
- Remote Monitoring, Data Logging, and Programming Software

Cold Storage

- Ultra-low Temperature Freezers

Medical Equipment

Assisted Reproductive Technology

- ART Workstations
- CO_2 Incubators with Suppressed O_2
- Multi-room Incubators

Pharmaceutical Equipment

Containment / Compounding Pharmacy

- Downflow Booths
- Powder Weighing Balance Enclosures
- Pharmacy Isolators
- Cytotoxic Safety Cabinets
- Soft Capsule
- Air Showers
- Straddle Units
- Garment Storage Cabinets
- Pass Boxes
- Transfer Hatches

CelCulture®
CO_2 Incubators

INTRODUCTION

CO_2 incubators are widely used in scientific research to grow and maintain cell cultures. Typical fields of application include tissue engineering, *in vitro* fertilization, neuroscience, cancer research and other mammalian cell research.

Sleek, reliable and intuitive, Esco CelCulture CO_2 incubators provide all-rounded sample protection that brings your scientific dreams one step closer to reality.

KEY FEATURES

CelCulture® CO_2 INCUBATORS

Cradle for Beautiful Cells

CelCulture® CO_2 Incubators are available in 3 sizes, 50L, 170L, 240L.

ULPA FILTER

- 99.999% efficient, superior to conventional HEPA filters
- Filters air continuously
- Chamber returns to ISO Class 5 cleanliness in 13 minutes upon door closing to prevent contamination

SHELVING

- Perforated shelving to improve uniformity
- Anti-tip
- Stainless steel
- Built-in grip
- Dismantles without tools for easy cleaning

DIRECT HEAT & AIR JACKET

- Fast and uniform heating
- Rapid temperature recovery without overshoot
- Air jacket improves chamber stability

DUCT WORK

- Directs air flow for rapid recovery and excellent uniformity
- Easily removed for cleaning

WATER PAN

- Precisely heated by base heater to provide high humidity
- Gentle airflow over water surface accelerates humidity recovery

ROUNDED CORNERS

- Seamless design
- Facilitates cleaning

O_2 SENSOR

for suppressed O_2 model

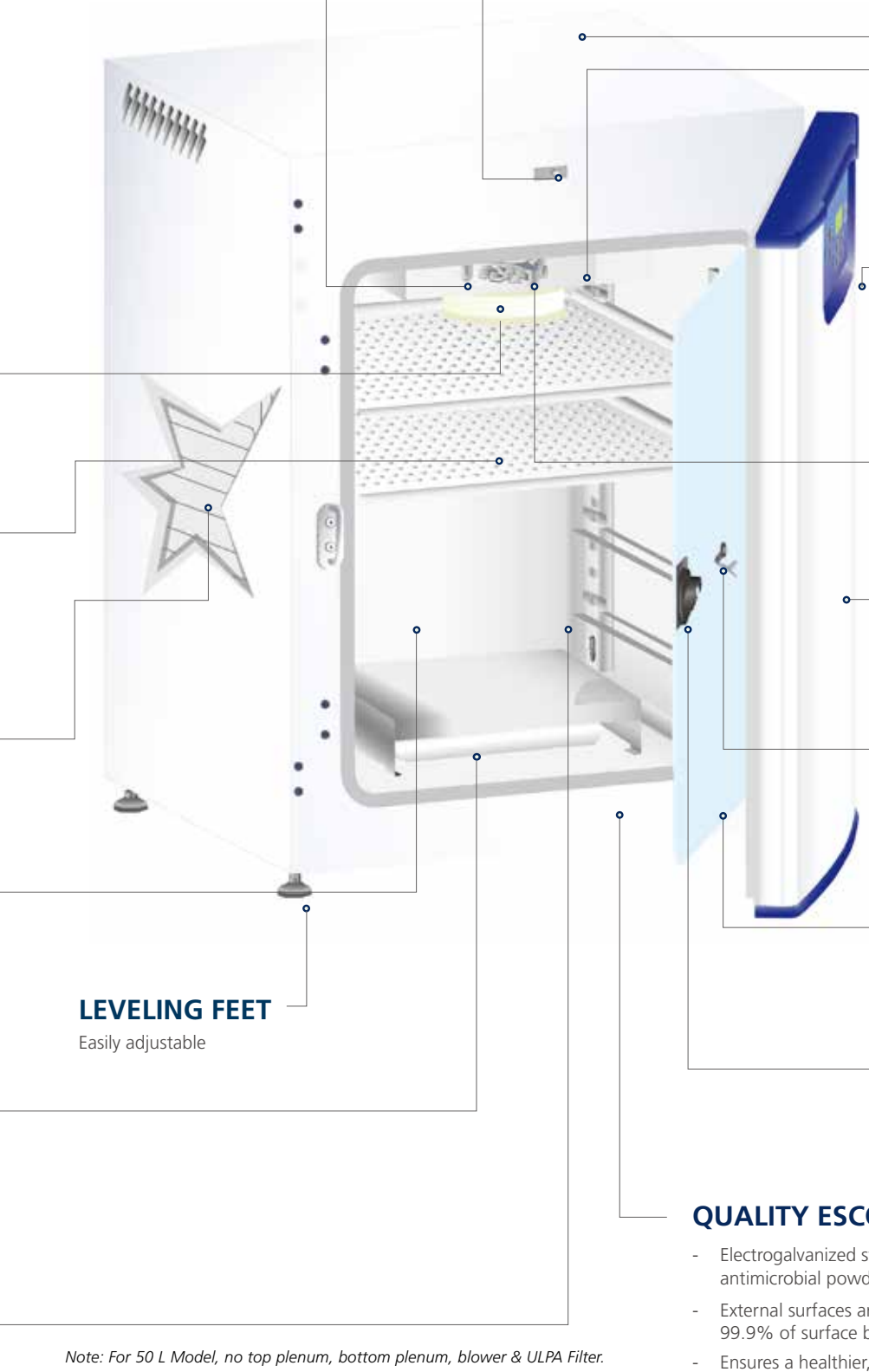
- Long life
- Stable output signal
- No influence from CO_2

DOOR SWITCH

Automatically turns off the blower and gas supply when the door is opened

TOP COVER

Provides quick access to electrical panel components



CO_2 SENSOR

- Choice of TC or IR
- Single-beam, dual-wavelength IR sensor is drift-free
- Auto-zeroing

SMARTSENSE ™ MICROPROCESSOR INTERFACE

Intuitive, fully equipped control and monitoring system

BLOWER

Gentle airflow in chamber improves recovery and uniformity

OUTER DOOR

- Reversible
- Heated to prevent condensation

SAMPLE PORT

Allows direct measurement of chamber atmosphere such as temperature and CO_2 concentration

GLASS DOOR

For observing sample cells inside the chamber during operation

DOOR LATCH

To lock / unlock the glass door

LEVELING FEET

Easily adjustable

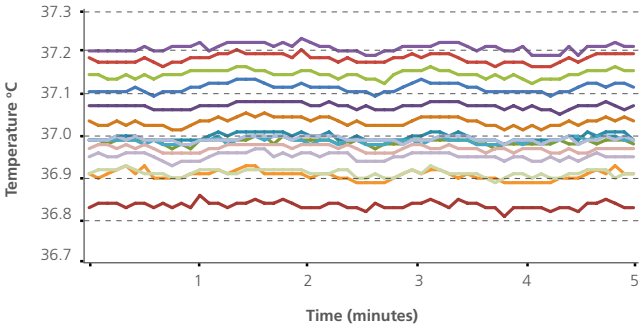
QUALITY ESCO CONSTRUCTION

- Electrogalvanized steel with white oven-baked epoxy-polyester antimicrobial powder-coated finish.
- External surfaces are powder coated with Esco ISOCIDE™ to eliminate 99.9% of surface bacteria within 24 hours of exposure.
- Ensures a healthier, safer and cleaner lab environment.

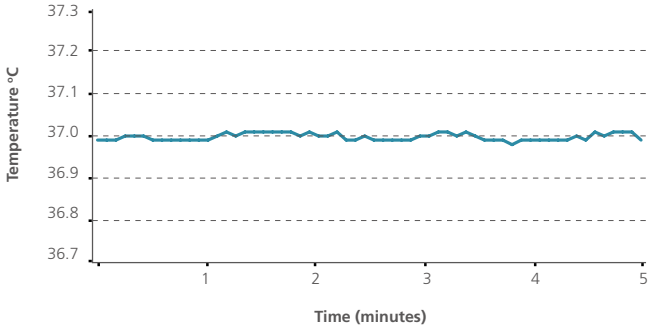
Note: For 50 L Model, no top plenum, bottom plenum, blower & ULPA Filter.

VIVOCELL™ PRECISE PARAMETER CONTROL

BEST UNIFORMITY AND CONTROL AMONG COMPETITION

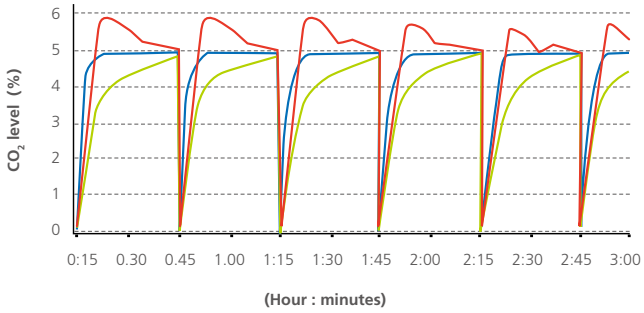


Different lines represent different sensor positions inside the chamber. Esco CelCulture has uniformity variance of less than ± 0.2 °C which means all the samples are evenly heated.*



Minimal fluctuation (± 0.1 °C) ensures temperature stability.*

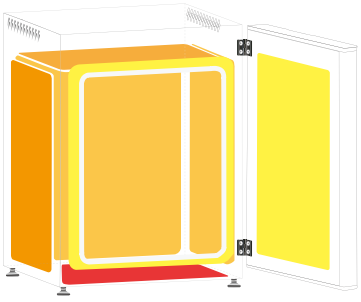
FAST CO_2, TEMPERATURE AND HUMIDITY RECOVERY WITHOUT OVERSHOOT

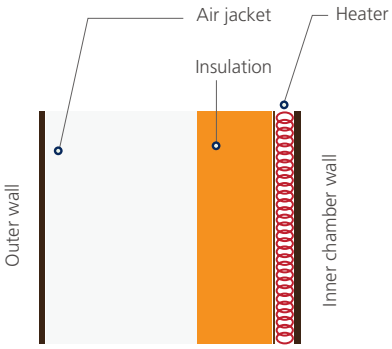


Precisely tuned sensor and software result in fast recovery of CO_2 without overshoot. This ensures uniform CO_2 levels even with frequent incubator door openings.*Similarly, temperature and humidity recoveries are twice as fast as conventional incubators.

- Company A's model: overshoot.
- Company B's model: slow recovery.
- Esco CelCulture: fast recovery, no overshoot.

DIRECT HEAT AND AIR JACKET

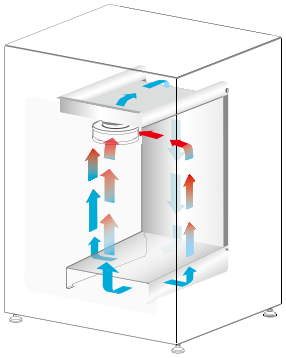


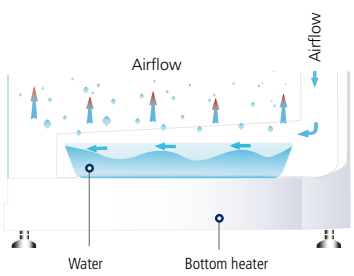


- Direct heating enables rapid temperature recovery while air jacket provides isolation against ambient temperature fluctuations.
- Precise heating in the chamber is achieved by using 8 heaters (3 zones). The 3 zones are intelligently controlled by the microprocessor for best temperature uniformity and minimal fluctuation.

- The main heater provides precise temperature control.
- The bottom heater warms the water pan and controls humidity.
- The outer door heater prevents condensation on glass door and facilitates temperature recovery.

VENTIFLOW™ FORCED CONVECTION

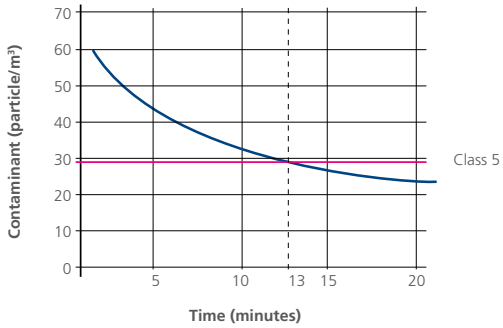




- No disturbance to cell culture.
- Blower automatically stops when door is opened to minimize mixing of chamber and room air.
- Accelerates recovery of chamber air to ISO Class 5 Cleanliness after door closing to prevent contamination.
- Improves CO_2, humidity and temperature uniformity.
- Filtered air circulates across water pan to accelerate humidifying process.

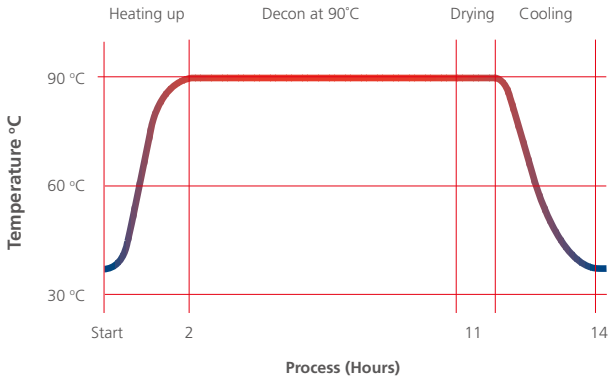
CELSAFE™ ROBUST CONTAMINATION CONTROL

STERISAFE™ ULPA FILTRATION SYSTEM



- Chamber air is continuously filtered by ULPA filters to keep the chamber at ISO Class 5 cleanliness, this ensures all contaminants from the room air and chamber air are filtered and only clean air is recirculated.
- ULPA filters operate at 99.999% efficiency, superior to conventional HEPA filters which are 99.99% efficient.
- Chamber achieves ISO Class 5 Cleanliness condition after a mere 13 minutes following a door closing.*

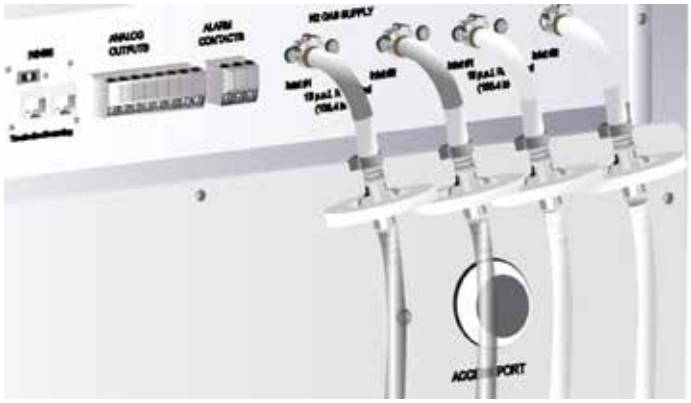
VALIDATED SWIFTCON™ OVERNIGHT DECONTAMINATION CYCLE



Microorganisms	Before Decon	After Decon
Bacillus atrophaeus	1.59×10^6	0
Aspergillus brasiliensis	1.52×10^4	0
Pseudomonas aeruginosa	2.38×10^6	0
Staphylococcus epidermis	2.33×10^6	0
Escherichia coli	1.57×10^6	0
Staphylococcus aureus	5.72×10^6	0
Enterobacter faecalis	2.15×10^6	0

- The Esco CelCulture CO_2 incubator 90°C decontamination cycle has been evaluated by the Health Protection Agency (HPA) in UK and shown to be an effective method of deactivation of the normally resistant fungi, bacterial spore and vegetative cell.
- Use of 90°C moist heat kills most microorganisms.**
- SwiftCon™ completes within 15 hours.
- Chamber is cool and dry at the end of the cycle. No further wipe down is needed.
- Independently proven to be as effective as high temperature decontamination.
- Lower temperature causes less damage to electronic components, therefore prolongs the life span of the incubator.
- For CelMate models, Swiftcon completes within 20 hours.

GAS INJECTION LINES ARE FILTERED



- All gas injection lines are filtered via 0.2 micron in-line filters to remove impurities and contaminants before being injected into the chamber.
- In-line filters are field replaceable external to the incubator.

** Units were factory tested under controlled environmental conditions per Esco method. Esco does not guarantee identical results in the field under differing conditions. Original report available upon request. Model used in the test is CCL-170B-8.*

*** During decontamination cycle, temperature may increase from 90°C to 94°C.*

ORDERING INFORMATION

TC SENSOR MODEL WITH STAINLESS STEEL CHAMBER

MODELS	DESCRIPTION
CCL-050A-8	CelCulture® Incubator, 50L, TC Sensor, CO_2 Control, Moist Heat Decon, 230VAC, 50/60HZ
CCL-050A-9	CelCulture® Incubator, 50L, TC Sensor, CO_2 Control, Moist Heat Decon, 115VAC, 50/60HZ
CCL-170A-8	CelCulture® Incubator, 170L, TC Sensor, CO_2 Control, ULPA, Moist Heat Decon, 230VAC, 50/60HZ
CCL-170A-8-NF	CelCulture® Incubator, 170L, TC Sensor, CO_2 Control, Moist Heat Decon, 230VAC, 50/60HZ, (No ULPA Filter)
CCL-170A-9	CelCulture® Incubator, 170L, TC Sensor, CO_2 Control, ULPA, Moist Heat Decon, 115VAC, 50/60HZ
CCL-170A-9-NF	CelCulture® Incubator, 170L, TC Sensor, CO_2 Control, Moist Heat Decon, 115VAC, 50/60HZ, (No ULPA Filter)
CCL-240A-8	CelCulture® Incubator, 240L, TC Sensor, CO_2 Control, ULPA, Moist Heat Decon, 230VAC, 50/60HZ
CCL-240A-8-NF	CelCulture® Incubator, 240L, TC Sensor, CO_2 Control, Moist Heat Decon, 230VAC, 50/60HZ, (No ULPA Filter)
CCL-240A-9	CelCulture® Incubator, 240L, TC Sensor, CO_2 Control, ULPA, Moist Heat Decon, 115VAC, 50/60HZ
CCL-240A-9-NF	CelCulture® Incubator, 240L, TC Sensor, CO_2 Control, Moist Heat Decon, 115VAC, 50/60HZ, (No ULPA Filter)

IR SENSOR MODEL WITH STAINLESS STEEL CHAMBER

MODELS	DESCRIPTION
CCL-050B-8	CelCulture® Incubator, 50L, IR Sensor, CO_2 Control, Moist Heat Decon, 230VAC, 50/60HZ
CCL-050B-9	CelCulture® Incubator, 50L, IR Sensor, CO_2 Control, Moist Heat Decon, 115VAC, 50/60HZ
CCL-170B-8	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, ULPA, Moist Heat Decon, 230VAC, 50/60HZ
CCL-170B-8-NF	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, Moist Heat Decon, 230VAC, 50/60HZ, (No ULPA Filter)
CCL-170B-9	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, ULPA, Moist Heat Decon, 115VAC, 50/60HZ
CCL-170B-9-NF	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, Moist Heat Decon, 115VAC, 50/60HZ, (No ULPA Filter)
CCL-240B-8	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, ULPA, Moist Heat Decon, 230VAC, 50/60HZ
CCL-240B-8-NF	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, Moist Heat Decon, 230VAC, 50/60HZ, (No ULPA Filter)
CCL-240B-9	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, ULPA, Moist Heat Decon, 115VAC, 50/60HZ
CCL-240B-9-NF	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, Moist Heat Decon, 115VAC, 50/60HZ, (No ULPA Filter)

SURPRESSED O_2 MODEL WITH STAINLESS STEEL CHAMBER

MODELS	DESCRIPTION
CCL-050T-8	CelCulture® Incubator, 50L, IR Sensor, CO_2 Control, O_2 Control, Moist Heat Decon, 230VAC 50/60HZ
CCL-050T-9	CelCulture® Incubator, 50L, IR Sensor, CO_2 Control, O_2 Control, Moist Heat Decon,115VAC 50/60HZ
CCL-170T-8	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, O_2 Control, ULPA, Moist Heat Decon, 230VAC 50/60HZ
CCL-170T-8-NF	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, O_2 Control, Moist Heat Decon, 230VAC 50/60HZ, (No ULPA Filter)
CCL-170T-9	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, O_2 Control, ULPA, Moist Heat Decon,115VAC 50/60HZ
CCL-170T-9-NF	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, O_2 Control, Moist Heat Decon,115VAC 50/60HZ, (No ULPA Filter)
CCL-240T-8	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, O_2 Control, ULPA, Moist Heat Decon, 230VAC 50/60HZ
CCL-240T-8-NF	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, O_2 Control, Moist Heat Decon, 230VAC 50/60HZ, (No ULPA Filter)
CCL-240T-9	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, O_2 Control, ULPA, Moist Heat Decon,115VAC 50/60HZ
CCL-240T-9-NF	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, O_2 Control, Moist Heat Decon,115VAC 50/60HZ, (No ULPA Filter)

CelMate®

CO_2 Incubators

INTRODUCTION

Esco now offers the new CelMate, 170-liter and 240-liter, entry-level cell culture CO_2 incubator with superb contamination control.

This is for customers looking for a CO_2 incubator that can provide the best protection for their cell cultures but with a limited budget.

CONTAMINATION CONTROL SYSTEMS:

ULPA Filtration System , Validated Swiftcon Overnight Decontamination Cycle (20 hours), Filtered Gas Injection Lines , and Exterior is coated with Isocide.

OPTIONS AND ACCESSORIES:

All options and accessories for CelCulture CO_2 incubators are also appropriate to use on CelMate CO_2 incubator.

CelMate® CO_2 Incubators are available in 170L and 240L.

CelMate is using TC CO_2 sensor and no decontamination pump.

ORDERING INFORMATION

MODELS	DESCRIPTION
CLM-170-A-8	CelMate® Incubator, 170L, TC Sensor, CO_2 Control, ULPA, Moist Heat Decon, 230VAC, 50/60HZ (Without Decon Pump)
CLM-170-A-9	CelMate® Incubator, 170L, TC Sensor, CO_2 Control, ULPA, Moist Heat Decon, 115VAC, 50/60HZ (Without Decon Pump)
CLM-240-A-8	CelMate® Incubator, 240L, TC Sensor, CO_2 Control, ULPA, Moist Heat Decon, 230VAC, 50/60HZ (Without Decon Pump)
CLM-240-A-9	CelMate® Incubator, 240L, TC Sensor, CO_2 Control, ULPA, Moist Heat Decon, 115VAC, 50/60HZ (Without Decon Pump)

CelCulture®

CO_2 Incubators with Copper Interior Chamber

Copper has been known for millennia to have anti-microbial properties. 100% pure solid copper interiors offer additional protection for your precious samples.

ACCESSORIES

COA-2026-F Extra Shelf (50L, Solid Copper)

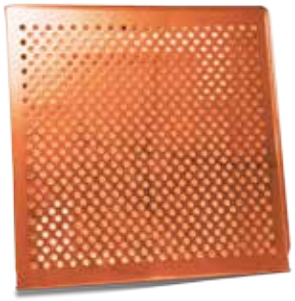
Each CelCulture CO_2 Incubator comes standard with 3 shelves for 50L and it can accommodate up to a maximum of 4 shelves for 50L. Extra shelves are available.

COA-2027-F Extra Shelf (170L, Solid Copper)

Each CelCulture CO_2 Incubator comes standard with 4 shelves for 170L and it can accommodate up to a maximum of 7 shelves for 170L. Extra shelves are available.

COA-2028-F Extra Shelf (240L, Solid Copper)

Each CelCulture CO_2 Incubator comes standard with 4 shelves for 240L and it can accommodate up to a maximum of 7 shelves for 240L. Extra shelves are available.



Other options and accessories for CelCulture CO_2 incubators except for the shelves are also appropriate to use on CelCulture CO_2 incubator with Copper Interior Option.

ORDERING INFORMATION

IR SENSOR MODEL WITH 100% COPPER CHAMBER

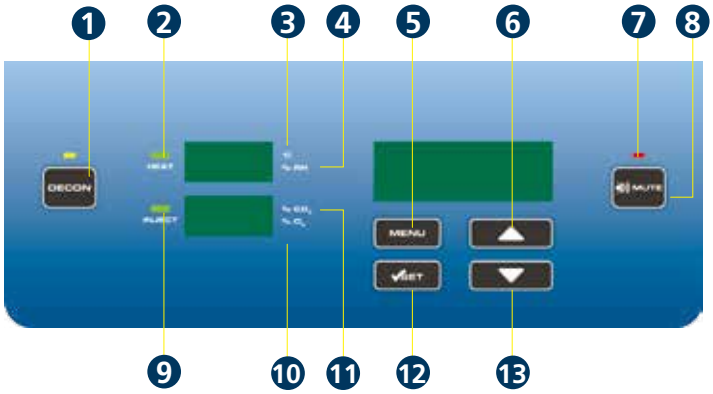
MODELS	DESCRIPTION
CCL-050B-8-Cu	CelCulture® Incubator, 50L, IR Sensor, CO_2 Control, Moist Heat Decon, 230VAC, 50/60HZ
CCL-050B-9-Cu	CelCulture® Incubator, 50L, IR Sensor, CO_2 Control, Moist Heat Decon, 115VAC, 50/60HZ
CCL-170B-8-Cu	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, ULPA, Moist Heat Decon, 230VAC, 50/60HZ
CCL-170B-9-Cu	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, ULPA, Moist Heat Decon, 115VAC, 50/60HZ
CCL-240B-8-Cu	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, ULPA, Moist Heat Decon, 230VAC, 50/60HZ
CCL-240B-9-Cu	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, ULPA, Moist Heat Decon, 115VAC, 50/60HZ

SURPRESSED O_2 MODEL WITH 100% COPPER CHAMBER

MODELS	DESCRIPTION
CCL-050T-8-Cu	CelCulture® Incubator, 50L, IR Sensor, CO_2 Control, O_2 Control, Moist Heat Decon, 230VAC 50/60HZ
CCL-050T-9-Cu	CelCulture® Incubator, 50L, IR Sensor, CO_2 Control, O_2 Control, Moist Heat Decon,115VAC 50/60HZ
CCL-170T-8-Cu	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, O_2 Control ULPA, Moist Heat Decon, 230VAC 50/60HZ
CCL-170T-9-Cu	CelCulture® Incubator, 170L, IR Sensor, CO_2 Control, O_2 Control ULPA, Moist Heat Decon,115VAC 50/60HZ
CCL-240T-8-Cu	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, O_2 Control ULPA, Moist Heat Decon, 230VAC 50/60HZ
CCL-240T-9-Cu	CelCulture® Incubator, 240L, IR Sensor, CO_2 Control, O_2 Control ULPA, Moist Heat Decon,115VAC 50/60HZ

CONTROLLER TYPE

USER - FRIENDLY SOFTWARE INTERFACE



1. Start / stop decontamination cycle
2. **HEAT LED**
   Lights when heat is applied to chamber
3. °C is lit when displaying the temperature
4. %RH is lit when displaying the humidity level
5. Enter menu / go back to previous menu
6. Scroll up / increase value
7. **ALARMS LED**
   Will blink when errors and warnings occur
8. Mute alarms
9. **INJECT LED**
   Lights when gas is injected
10. $\%O_2$ is lit when displaying the O_2 concentration
11. $\%CO_2$ is lit when displaying the CO_2 concentration
12. Confirm value / enter a menu
13. Scroll down / decrease value

- **Comprehensive, user-configurable alarms:**
  Temperature
  CO_2
  Humidity (if installed)
  O_2 (if installed)

- **CelAlert™ alarm system reminds user to replace parts.**

CO_2 tank depletion reminder in addition to CO_2 tank low alarm. Automatic calculation of how much CO_2 gas is left in the tank provides fail proof reminder that alerts user one week before the gas is depleted. This gives user some buffer time to place order for new tanks.

ULPA reminder will alert user to replace ULPA filter.

- **Intelligent data and event logger records all incubator parameters for on screen recall. A16Mb built-in flash memory guarantees long term storage of data.**

- **Diagnostic interface and online quick help provide comprehensive solutions to frequently encountered problems.**

Voyager®

Remote Monitoring, Datalogging, Programming Software

Esco Voyager® is a PC-based software package developed for the remote monitoring, datalogging, and programming / device configuration of Esco thermostatic products

It is a centralized monitoring and control system for your laboratory which provides EXTRA PROTECTION FOR YOUR SAMPLES.

Voyager® interfaces with individual Esco equipment over RS485 using the EscoBUS communications protocol. Multiple equipment maybe interfaced to a single PC.

Compatible Equipment

- Lexicon® – Ultra-low Temperature Freezer
- CelCulture® – CO_2 Incubator (CCL)
- CelMate® - CO_2 Incubator (CLM)
- Isotherm® – Forced Convection Oven (OFA)
- Isotherm® – Forced Convection Incubator (IFA)
- Isotherm® – Refrigerated Incubator (IFC)

REAR PANEL

1 Power Supply Inlet

The power supply inlet connects the incubator unit to the power source.

2 Cooling Fan

The cooling fan prevents the electrical panel from overheating.

3 RS485 Communication Port

The RS485 provides serial communication port for PC. It can be daisy chained from product to product and connected to a PC.

4 Analog Port (Optional)

The analog port allows the incubator to output analog signals representing temperature, CO_2/O_2* concentration and relative humidity, depending on the options available in the incubator. This allows the Incubator to be connected to an in-house data acquisition or alarm system.

5 Alarm Contact

A set of relay contacts located on the rear of the unit is provided to monitor temperature, humidity or CO2 alarms. The alarm contacts can be connected to a remote alarm system.

6 N_2 Gas Supply Inlet (for Suppressed O_2 model)

The N_2 gas supply inlet is only applicable for models with N_2* Control function. Inlet pressure requirement is 15 psi.

7 CO_2 Gas Supply Inlet

The CO_2 gas supply inlet connects the CO_2 gas supply with the Incubator unit. Inlet pressure requirement is 15 psi.

8 Gas Inline Filter

Inline filters are provided to remove any contaminants from the gas supply.

9 Access Port

Allows cables, hoses or additional sensors to be routed into the work space. A rubber stopper with controlled leak is installed as standard configuration and is part of standard accessories.

** O_2 and N_2 functions are applicable only to models with Suppressed O_2.*

CelCulture CO_2 INCUBATOR SENSORS

IR SENSOR

An IR sensor is a versatile instrument for measuring CO_2 level inside the incubator. The CARBOCAP® sensor is silicon based and its operation is based on the NDIR Single-Beam Dual-Wavelength principle.

IR based sensors are not affected by water vapor, dust or most chemicals. The single-beam dual-wavelength technology (one reference and one measurement) ensures a drift-free sensor that does not require calibration by the user.

Operating principle

The light source is positioned to shine at the IR detector so that the light travels a fixed distance to the detector, where the intensity of the light is measured. A Fabry-Perot Interferometer (FPI) is positioned just in front of the IR detector. The FPI is a tunable filter which allows only certain wavelengths of light to pass through to the detector.

Carbon dioxide absorbs certain wavelengths of light and not others, so the FPI is designed to pass light at a CO_2 absorption wavelength (4.26 µm) and a nearby, non-absorbing wavelength.

When the sensor is operating, the FPI is regularly tuned back and forth between the two wavelengths. At the CO_2 absorption wavelength, the intensity of detected light is reduced in proportion to the concentration of CO_2 in the optical path. The light intensity measured at the non-absorbing wavelength serves as a baseline for comparison.

Operating Conditions:

%CO_2 detection range: 0 to 20% CO_2 Concentration
%RH operating range: Not affected by Humidity
Temperature range: -20°C to +60°C

TC CO_2 SENSOR

Esco TC CO_2 sensor's operating principle relies on a resistor as a heater and two thermocouples as a sensing element for the CO_2 gas. Accurate sensing is made possible by the porous cap on the eye of the sensor probe.

One of the thermocouples functions as a reference signal, while the other functions as the sensing signal. An amplifier will feed the data variance between the two thermocouples to an electronic control system.

Operating Conditions:

%CO_2 detection range: 0 to 20% CO_2 Concentration
%RH operating range: 40% to 98% Relative Humidity
Temperature range: +25°C to +100°C

O_2 SENSOR

Figaro's O_2 sensor is a unique galvanic cell type oxygen sensor. Its most notable features are long life expectency, excellent chemical durability, and it is not influenced by CO_2. The O_2 sensor is ideal to meet the ever-increasing demand for oxygen monitoring in various fields such as combustion gas monitoring, the biochemical field, medical applications, domestic combustion appliances, etc.

Operating Conditions:

%O_2 detection range: 1 to 20.7% O_2 Concentration
%RH operating range: 10% to 90% Relative Humidity
Temperature range: 5°C to +40°C

TESTING & CERTIFICATION

For IVF applications, Esco CelCulture CO_2 incubators are certified EMBRYO-SAFE.

Rigorously tested with the Mouse Embryo Assay (MEA), the CelCulture remarkably has 100% embryo survival. The Mouse Embryo Assay (MEA) is the de facto standard test done to demonstrate that a procedure or an article of equipment is safe to use for manipulating human embryos (e.g., *in vitro* fertilization or IVF).

c UL us

The Esco CelCulture CO_2 incubators is listed by Underwriters Laboratory (UL)*, to meet the requirements of both the U.S. and Canada standards for electrical/ mechanical integrity.

**applicable for 170L*

HPA Validated Decontamination Cycle

The Esco CelCulture CO_2 Incubator 90°C decontamination cycle has been evaluated and shown to be an effective method for deactivation of the normally resistant fungi and bacterial spores *Aspergillus brasiliensis* and *Bacillus atrophaeus*, and the vegetative cells *Pseudomonas aeruginosa, Staphylococcus aureus, Staphylococcus epidermidis, Enterobacter faecalis* and *Escherichia Coli*.

OPTIONS AND ACCESSORIES

COA-1001 / COA-1001-F Humidity Display

This option allows the Incubator to monitor the relative humidity inside the chamber. The probe for the sensor works in freezing conditions (-70°C) and also in temperatures up to +180°C. The sensor is easy to install and has excellent accuracy. The airflow in the chamber does not affect the measurement. The sensor is maintenance free. It does not need to be removed during 90°C moist heat decontamination cycle.

COA-1002 / COA-1002-F CO_2 Backup

This option allows two tanks of CO_2 to be connected to the incubator. It will automatically switch from the primary tank to the secondary tank when low gas pressure is detected on the primary tank.

COA-1005 / COA-1005-F Analog Output

A set of relay contacts are provided at the rear of the incubator that allows the incubator to output analog signals representing the temperature, CO_2 / O_2 content and relative humidity, depending on the options available in your incubator. This allows the chamber to be connected to an in-house data acquisition or alarm system. This option can also be field-installed.

The analog signal outputs can be set to operate in either voltage DC (0-5 Vdc) or current (4-20 mA) mode. The factory default setting is voltage. Switch on the board to toggle between the modes.

COA-1006 / COA-1006-F Sealed Inner Door Kit (170L)

CelCulture CO_2 Incubators can be equipped with 4 glass doors, which allows access to defined sections of the incubator without disturbing the inner atmosphere. This minimizes recovery times and contamination risks. The Sealed Inner Door is available as a factory installed option or field installed retrofit kit.

COA-1007 / COA-1007-F N_2 Back-up

This option allows two tanks of N_2 to be connected to the incubator. It will automatically switch from the primary tank to the secondary tank when low gas pressure is detected on the primary tank.

COA-2018-F (50L) / COA-2001-F (170L) / COA-2019-F (240L) Roller Base

Roller base is available with casters for mobility of your incubators and to provide protection against floor contamination.

COA-2020-F (50L) / COA-2002-F (170L) / COA-2021-F (240L) Floor Stand 200 mm (8.0”) With Adjustable Feet

Floor stands are available with adjustable feet, with a nominal range of 180 mm to 250 mm (7.1” to 9.8”) for comfortable access to the incubator and to avoid floor contamination.

COA-2022-F (50L) / COA-2003-F (170L) / COA-2023-F (240L) Floor Stand 700 mm (27.6”) With Casters

This support stand raises the incubator to a height of 700 mm (27.6”) above the floor for comfortable access. It comes with casters for mobility of your incubators.

COA-2005-F 2-Stage Gas Regulator for CO_2/N_2

CO_2 and N_2 gas input regulators reduce pressure from the tank to the incubator. It has dual pressure gauges, barbed line connection and shut-off valve. It prevents over-pressurization of the gas supply into the incubator which could cause the tubing to burst.

- CGA 320 connector (U.S. Standard)
- BP-BS341-#8-NT4 connector (British Standard)

Note: Compatible with European DIN477, French NFE29-650 and Australia AS2473

- G5/8-RH connector (China Standard)

COA-2024-F (50L) / COA-2007-F (170L) / COA-2025-F (240L) Extra Shelf (Stainless Steel) for Standard Stainless Steel Chamber

Each CelCulture CO2 Incubator comes standard with 3 shelves for 50L / 4 shelves for 170L & 240L and it can accommodate up to a maximum of 4 shelves for 50L / 7 shelves for 170L & 240L.

COA-2008-F Stacking Kit

Stacking kit is a provision to stack one incubator on top of another incubator. Four stacking brackets are included as standard inside the Accessories Kit Box with each incubator.

COA-2010-F Electronic CO_2 Analyzer, For CO_2 / Temp Measurement
COA-2016-F Electronic CO_2 + O_2 Analyzer, For CO_2 / O_2 / Temp Measurement
COA-2017-F Electronic CO_2 + O_2 + RH Analyzer, For CO_2 / O_2 / RH / Temp Measurement

The Electronic Analyzer allows the measurement of CO_2 concentration, O_2 concentration, Relative Humidity and temperature (temperature probe already included).

COA-2012-F 6" Chart Recorder, Temp, 115/230VAC 50/60HZ

The chart recorder provides an easy-to-read graph of data vs time. It is a reliable, accurate, and stable instrument for on-the-spot written documentation of incubator chamber temperature. This model offers 6" chart of temperature data.

COA-2013-F 8" Chart Recorder, Temp/Temp, 115/230VAC 50/60HZ

The chart recorder provides an easy-to-read graph of data vs time. It is a reliable, accurate, and stable instrument for on-the-spot written documentation of incubator chamber temperature. This model offers 8" chart of temperature data and comes with 2 remote probes for dual temperature monitoring.

COA-2014-F 6" Chart Recorder, Temp/RH, 115/230VAC 50/60HZ

The chart recorder provides an easy-to-read graph of data vs time. It is a reliable, accurate, and stable instrument for on-the-spot written documentation of incubator chamber temperature. This model offers 6" chart of temperature and humidity data.

COA-2015-F Inner Door Shelving Kit (4 Sets With Total 12 Mini Shelves For One Incubator) (170L)

These mini shelves are to be used with the Sealed Inner Door Kit installed. There are 4 sets with a total of 12 mini shelves on each incubator.

5250001 Voyager Software Kit

Esco Voyager is a PC-based software package developed for the remote monitoring, datalogging and programming / device configuration of Esco controlled environment laboratory equipment. Compatible equipment includes Laboratory Ovens and Incubators, Low Temperature Incubators, CO_2 Incubators and Ultra-low Temperature Freezer.

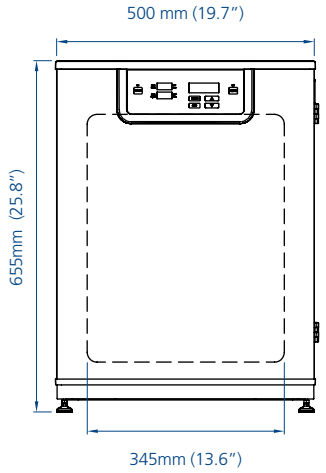
ORDERING INFORMATION

ACCESSORIES	DESCRIPTION
COA-1001	Humidity Display, Factory Installed
COA-1001-F	Humidity Display, Field Install Kit
COA-1002	CO_2 Backup (Tank Switcher), Factory Installed
COA-1002-F	CO_2 Backup (Tank Switcher), Field Installed
COA-1004	Reversed Door Swing, Factory Installed
COA-1005	Analog Outputs, Factory Installed
COA-1005-F	Analog Outputs, Field Installed
COA-1006	Sealed Inner Door Kit for 170L (4 Glass Doors With Latches), Factory Installed
COA-1006-F	Sealed Inner Door Kit for170L (4 Glass Doors With Latches), Field Installed
COA-1007	N_2 Back-up (Tank Switcher), Factory Installed
COA-1007-F	N_2 Back-up (Tank Switcher), Field Installed
COA-2018-F	Roller Base (50L)
COA-2001-F	Roller Base (170L)
COA-2019-F	Roller Base (240L)
COA-2020-F	Floor Stand 200 mm (8.0") With Adjustable Feet (50L)
COA-2002-F	Floor Stand 200 mm (8.0") With Adjustable Feet (170L)
COA-2021-F	Floor Stand 200 mm (8.0") With Adjustable Feet (240L)
COA-2022-F	Floor Stand 700 mm (27.6") With Casters (50L)
COA-2003-F	Floor Stand 700 mm (27.6") With Casters (170L)
COA-2023-F	Floor Stand 700 mm (27.6") With Casters (240L)
COA-2005-F	2-Stage Gas Regulator for CO_2/N_2 Choose One of The Connectors Below: 1080588 - CGA 320 Connector (US Standard) 1080589 - BP-BS34-#8-NT4 Connector (British Standard) 1080590 - G5/8-RH Connector (China Standard)
COA-2024-F	Extra Shelf (50 L, Stainless Steel)
COA-2007-F	Extra Shelf (170 L, Stainless Steel)
COA-2025-F	Extra Shelf (240 L, Stainless Steel)
COA-2008-F	Stacking Kit (One Set Included With Every Unit Purchased)
COA-2010-F	Electronic CO_2 Analyzer, For CO_2 / Temp Measurement (With Temp. Probe)
COA-2016-F	Electronic CO_2 + O_2 Analyzer, For CO_2 / O_2 / Temp Measurement
COA-2017-F	Electronic CO_2 + O_2 + RH Analyzer, For CO_2 / O_2 / RH / Temp Measurement
COA-2011-F	IQ / OQ Documentation
COA-2012-F	6" Chart Recorder, Temp, 115/230VAC 50/60HZ
COA-2013-F	8" Chart Recorder, Temp/Temp, 115/230VAC 50/60HZ
COA-2014-F	6" Chart Recorder, Temp/RH, 115/230VAC 50/60HZ
COA-2015-F	Inner Door Shelving Kit for 170L (4 Sets With Total 12 Mini Shelves For One Incubator)
5250001	Voyager Software Kit

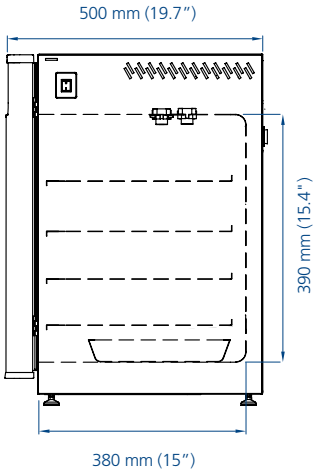
TECHNICAL SPECIFICATIONS

MODEL 50L

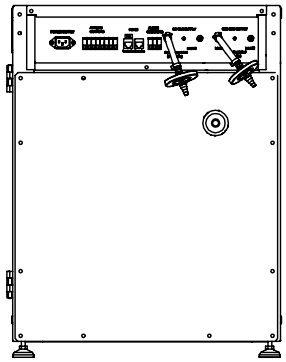
Front view



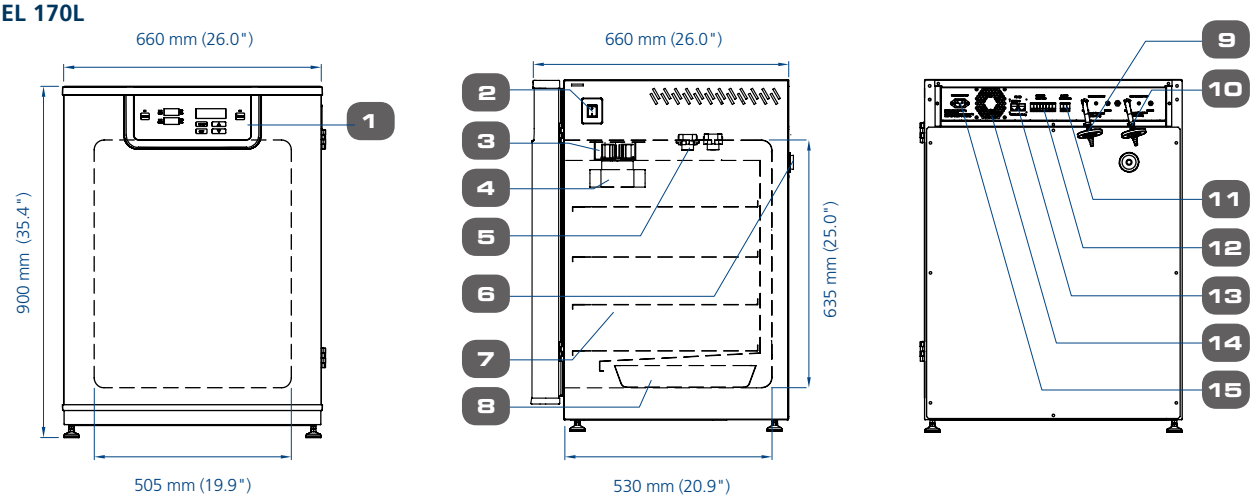
Side view



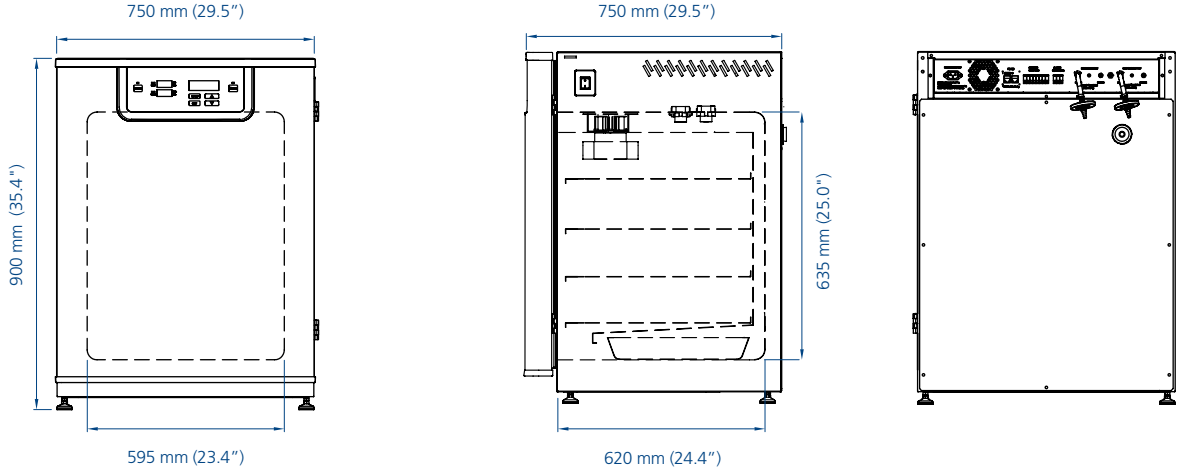
Rear view



MODEL 170L



MODEL 240L



1. Control panel*
2. On / off switch
3. Blower fan
4. ULPA filter
5. Sensors
6. Access port
7. Adjustable shelves
8. Humidity pan
9. N_2 gas supply
10. CO_2 gas supply
11. Alarm contact
12. Analog output
13. RS485
14. Cooling fan
15. Power supply inlet

**Control panel position differs for CelMate CO_2 incubator models.*

GENERAL SPECIFICATIONS

CELCULTURE CO_2 INCUBATORS

	CCL-050_-_	CCL-170_-_ CLM-170_-_	CCL-240_-_ CLM-240_-_
TEMPERATURE			
Temp. Control Method	Direct heat & air jacket using Microprocessor PID		
Temp. Range, °C	Amb. +3 to 60		
Temp. Uniformity, °C	<± 0.2*	<± 0.2*	<± 0.3*
Temp. Accuracy, °C	<± 0.1		
Recovery Time** (after 1 min. door opening, 98% from initial value)	4 mins	6 mins	6 mins
Ambient Temp. Range	18 to 34°C (64 to 93 °F)		
CO_2			
CO_2 Control System	Microprocessor PID		
CO_2 Range, % CO_2	0-20		
CO_2 Accuracy, % CO_2	± 0.1		
CO_2 Sensor	Infrared (IR) Sensor*** / TC Sensor		
CO_2 Recovery Time*** (after 1 min. door opening, 98% from initial value)	Standard Unit: 8 minutes Suppressed O_2 model: 8 minutes	Standard Unit: 4 minutes Suppressed O_2 model: 5 minutes	Standard Unit: 5 minutes Suppressed O_2 model: 5 minutes
O_2 SPECS (FOR SUPPRESSED O_2 MODEL)			
O_2 Control System	Microprocessor PID		
O_2 Range, % O_2	1-20.7%		
O_2 Accuracy, % O_2	± 0.1		
O_2 Sensor	Galvanic Cell Type		
O_2 Recovery Time (after 1 minute door opening)	At 1.0% O_2 by volume: 10 minutes	At 1.0% O_2 by volume: 20 minutes	At 1.0% O_2 by volume: 24 minutes
	At 5.0% O_2 by volume: 6 minutes	At 5.0% O_2 by volume: 10 minutes	At 5.0% O_2 by volume: 12 minutes
HUMIDITY			
Humidification Method	Humidity pan		
Humidity Range, % RH	Up to 97%		
PHYSICAL CONSTRUCTION			
Interior Volume	50 L (1.8 cu.ft.)	170 L (5.7 cu.ft.)	240 L (8.5 cu.ft.)
External Dimensions (W x D x H)	500 x 500 x 655 mm (19.7" x 19.7" x 25.8")	660 x 660 x 900 mm (26.0" x 26.0" x35.4")	750 x 665 x 900 mm (29.5" x 26.2" x 35.4")
Internal Dimensions (W x D x H)	345 x 375 x 390 mm (13.6" x 14.8" x 15.4")	505 x 530 x 635 mm (19.9" x 20.9" x 25.0")	595 x 620 x 635 mm (23.4" x 24.4" x 25.0")
Shipping Weight	70 kg (154.3 lbs)	120 kg (264.6 lbs)	155 kg (341.7 lbs)
Shipping Dimensions (W x D x H)	660 x 660 x 890 mm (26.0" x 26.0" x 35.0")	850 x 720 x 1150 mm (33.5" x 28.3" x 45.3")	860 x 830 x 1110 mm (33.9" x 32.7" x 43.7")
Number of Shelves	3	4	4
Maximum No. of Shelves	4	7	7
Shelves Area (W x D)	310 x 310 mm (12.2" x 12.2")	470 x 470 mm (18.5" x 18.5")	550 x 550 mm (21.7" x 21.7")
Max. Load per Shelf	4 kg/shelf (8.8 lbs/shelf)	11 kg/shelf (24.3 lbs/shelf)	15 kg/shelf (33.1 lbs/shelf)
Available Electrical Configuration	220 - 240 VAC, 50 / 60 Hz, 1Φ, 3.4 A		
	110 - 130 VAC, 50 / 60 Hz, 1Φ, 7.0 A		
Maximum Power Consumption	372 watts	800 watts	1100 watts
Power Consumption 37°C	37 watts	80 watts	110 watts
Interior Material	Stainless steel, type 304		
CONTAMINATION CONTROL			
Contamination Control Methods	1) Main body is electrogalvanized steel with ISOCIDE antimicrobial coating; 2) Moist 90°C OVERNIGHT decon. cycle (HPA validated); 3) 0.2 micron in-line filter for gas inputs; 4) ULPA filter****		

* *Data recorded under optimum factory setting conditions*
** *For temperature not exceeding 37°C*
*** *For CO_2 not exceeding 5.2%. Recovery time with TC sensor is longer.*
*****Not available for 50L*

ESCO

WORLD CLASS. WORLDWIDE.

CelCulture® Water-Jacketed CO_2 Incubator

CelCulture®

Water-Jacketed CO_2 Incubator

Cradle for Beautiful Cells

CelCulture®

Water-Jacketed CO_2 Incubator

INTRODUCTION

Esco CelCulture® Water-Jacketed CO_2 Incubator provides a very stable environment to grow and maintain cell cultures.

Water-Jacketed CO_2 Incubator can maintain temperature by surrounding the chamber by hot walls generated from the heated water. The heated water circulates and radiates heat around the inner chamber which maintains constant temperature.

Water-Jacketed CO_2 Incubator can hold the chamber temperature much longer when power is lost. The CO_2 incubator will also be able to recover temperature much faster after power failure as it also gets back more quickly as temperature settings change due to frequent opening of the door.

KEY FEATURES

MORE STABLE TEMPERATURE CONTROL

- Faster temperature recovery times after power outage and door openings.
- Better temperature uniformity

INCREASED SECURITY

Hold a set temperature inside the chamber much longer than air-jacketed units in the event of power failure.

COMPLETE CONTAMINATION CONTROL METHODS

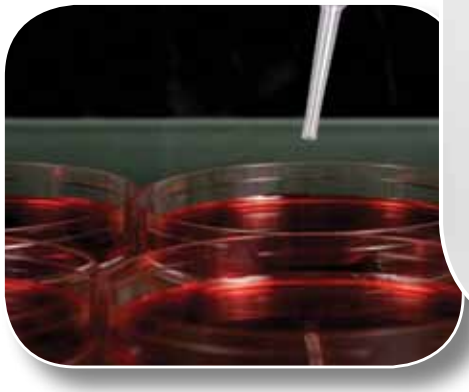
- ULPA filter
- 0.2 micron inline filter
- ISOCIDE™ antimicrobial coating.
- 90°C Moist Heat Decon Cycle (water in the external chamber needs to be drained first)

CONVENIENCE

The unit is equipped with a fill-in port to place water and a drain valve to facilitate faster depletion of water when cleaning, before decon cycle or before transporting the equipment

EASY MONITORING

Water level can be check via the water level sensor.



OPTIONS AND ACCESSORIES

All options and accessories for standard CelCulture® CO_2 Incubators are also appropriate to use on Water-Jacketed CelCulture® CO_2 Incubators.

ORDERING INFORMATION

TC SENSOR MODEL WITH STAINLESS STEEL CHAMBER

Models		Description
230 V / 5 0-60 Hz	115 V / 50-60 Hz	
CCL-050A-8-WJ	CCL-050A-9-WJ	Celculture® Incubator, 50 L, TC Sensor, CO_2 Control, Water-Jacketed
CCL-170A-8-WJ	CCL-170A-9-WJ	Celculture® Incubator, 170 L, TC Sensor, CO_2 Control, ULPA, Water-Jacketed
CCL-240A-8-WJ	CCL-240A-9-WJ	Celculture® Incubator, 240 L, TC Sensor, CO_2 Control, ULPA, Water-Jacketed

IR SENSOR MODEL WITH STAINLESS STEEL CHAMBER

Models		Description
230 V / 50-60Hz	115 V / 50-60 Hz	
CCL-050B-8-WJ	CCL-050B-9-WJ	Celculture® Incubator, 50 L, IR Sensor, CO_2 Control, Water-Jacketed
CCL-170B-8-WJ	CCL-170B-9-WJ	Celculture® Incubator, 170 L, IR Sensor, CO_2 Control, ULPA, Water-Jacketed
CCL-240B-8-WJ	CCL-240B-9-WJ	Celculture® Incubator, 240 L, IR Sensor, CO_2 Control, ULPA, Water-Jacketed

SUPPRESSED O_2 MODEL WITH STAINLESS STEEL CHAMBER

Models		Description
230 V / 50-60 Hz	115 V / 50-60 Hz	
CCL-050T-8-WJ	CCL-050T-9-WJ	Celculture® Incubator, 50 L, IR Sensor, CO_2 Control, O_2 Control, Water-Jacketed
CCL-170T-8-WJ	CCL-170T-9-WJ	Celculture® Incubator, 170 L, IR Sensor, CO_2 Control, O_2 Control, ULPA, Water-Jacketed
CCL-240T-8-WJ	CCL-240T-9-WJ	Celculture® Incubator, 240 L, IR Sensor, CO_2 Control, O_2 Control, ULPA, Water-Jacketed

GENERAL SPECIFICATION

Models	CCL-50-_-_WJ	CCL-170-_-_WJ	CCL-240-_-_WJ
Temperature			
Ambient Temp Range	18 to 34°C (64 to 93°F)		
Temperature Control Method	Direct Heat and Water Jacketed using PID microprocessor		
Temperature Range	Ambient +3°C to 60°C		
Temperature Uniformity	± 0.2°C*	± 0.2°C*	± 0.3°C*
Temperature Fluctuation	± 0.1°C	± 0.1°C	± 0.1°C
Temperature Recovery time** (after 1 min. door opening, 98% from initial value)	4 minutes	6 minutes	6 minutes
Start up time (25°C amb. to 37.0°C)	60 minutes	60 minutes	80 minutes
Power Off Temperature Drop Rate: 1 hour 10 hours	1.8°C 7.0°C	0.6°C 6.2°C	1.2°C 5.5°C
CO_2			
CO_2 Control System	Microprocessor PID		
CO_2 Range	0-20%		
CO_2 Accuracy	± 0.1%		
CO_2 Sensor	Infrared (IR) Sensor**/TC Sensor		
CO_2 Recovery Time*** (after 1 min. door opening, 98% from initial value)	Standard Unit: 8 minutes Suppressed O_2 model: 6 minutes	Standard Unit: 4 minutes Suppressed O_2 model: 5 minutes	Standard Unit: 5 minutes Suppressed O_2 model: 5 minutes
O_2 for Supressed O_2 Model			
O_2 Control System	Microprocessor PID		
O_2 Range	1% - 20.7%		
O_2 Accuracy	± 0.1%		
O_2 Sensor	Galvanic Cell Type		
O_2 Recovery Time*** (after 1 min. door opening, 98% from initial value)	At 1.0% O_2 volume: 10 minutes At 5.0% O_2 volume: 6 minutes	At 1.0% O_2 volume: 20 minutes At 5.0% O_2 volume: 10 minutes	At 1.0% O_2 volume: 24 minutes At 5.0% O_2 volume: 12 minutes

Humidity			
Humidification Method	Humidity pan		
Humidity range*****	85% - 93%		
Humidity range (Suppressed O_2 control)*****	85% - 91%		
Physical Parameters			
Interior Volume	50 L (1.8 cu. ft.)	170 L (6.0 cu. ft.)	240 L (8.5 cu. ft.)
Internal Dimensions (W x D x H)	345 mm x 375 mm x 390 mm (13.6" x 14.8" x 15.4")	505 mm x 530 mm x 635 mm (19.9" x 20.9" x 25.0")	595 mm x 620 mm x 635 mm (23.4" x 24.4" x 25.0")
External Dimension (W x D x H)	500 mm x 500 mm x 705 mm (19.7" x 19.7" x 27.8")	660 mm x 670 mm x 980 mm (26.0" x 26.4" x 38.6")	750 mm x 765 mm x 980 mm (29.5" x 30.1" x 38.6")
Water Jacket Volume	10 L	20 L	45 L
Net Weight	75 kg (165 lbs) (no water)	102 kg (225 lbs) (no water)	170 kg (374 lbs) (no water)
Shipping Weight	90 kg (198 lbs)	118 kg (260 lbs)	185 kg (407 lbs)
Shipping Dimension (W x D x H)	660 mm x 690 mm x 980 mm (26.0" x 27.2" x 38.6")	850 mm x 750 mm x 1240 mm (33.5" x 29.5" x 48.8")	860 mm x 860 mm x 1240 mm (33.8" x 33.8" x 48.8")
Number of Shelves	2	4	
Maximum No. of Shelves	4	7	
Shelves Area (W x D)	310 mm x 310 mm (12.2" x 12.2")	470 mm x 470 mm (18.5" x 18.5")	550 mm x 550 mm (21.7" x 21.7")
Max. Load per Shelf	4 kg/shelf (8.8 lbs/shelf)	11 kg/shelf (24.3 lbs/shelf)	15 kg/shelf (33.1 lbs/shelf)
Available Electrical Configuration	220 - 240 VAC, 50 / 60 Hz, 1Φ, 3.4 A 110 - 130 VAC, 50 / 60 Hz, 1Φ, 7.0 A		
Airflow	6-8 cfm		
Interior Material	Stainless steel, type 304		
Nominal Power 37˚C	28 Watts	50 Watts	80 Watts
Power/FLA current	495 Watts, 2.8 A, 230 V 495 Watts, 5.6 A, 115 V	640 Watts, 2.8 A, 230 V 640 Watts, 5.6 A, 115 V	850 Watts, 3.7 A, 230 V 850 Watts, 7.4 A, 115 V
Contamination Control			
Contamination Control Methods	1) Main body is electrogalvanized steel with ISOCIDE™ antimicrobial coating; 2) 0.2 micron in-line filter for gas inputs; 3) ULPA filter****** 4) 90°C Moist Heat Decon Cycle (water in the external chamber needs to be drained first)		

* Data recorded under optimum factory setting conditions
** For temperature not exceeding 37°C
*** For CO_2 not exceeding 5.2%. Recovery time for TC sensor is longer
**** For O_2 not exceeding 5.2%
***** Esco does not guarantee condensation free chamber at higher humidity level.
****** Not available on 50 L size model

ESCO
WORLD CLASS. WORLDWIDE.

CelCulture® CO_2 Incubator
Model CCL-170_-_

CelCulture®

CO_2 Incubator with Integrated Cooling System

Solution for Highly Specialized Applications

CelCulture®

CO_2 Incubator with Integrated Cooling System

INTRODUCTION

Esco CelCulture CO_2 Incubator with Integrated Cooling System provides solution for highly specialized application.

The integrated cooling system allows studies of samples that requires temperature at/or below ambient temperature.

KEY FEATURES

WIDER TEMPERATURE RANGE

Temperature range of 12°C below ambient to 60°C above ambient means wider range of applications.

HIGHLY EFFICIENT, ENVIRONMENTALLY FRIENDLY PELTIER COOLING SYSTEM

This provides precise heating and cooling inside the chamber making sure that your samples are safe from temperature changes.

COMPLETE CONTAMINATION CONTROL METHODS

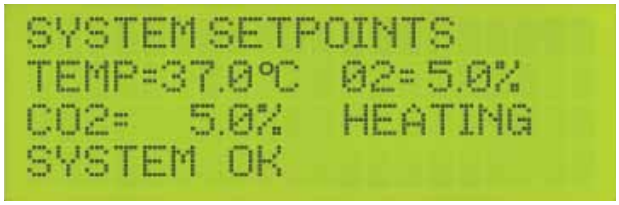
- *90 °C validated moist heat decontamination cycle*
- *ULPA filter*
- *ISOCIDE® anti-microbial coating*
- *0.2 micron in-line filter*

APPLICATIONS

- *Stem Cell Research*
- *Mammalian Research*
- *Tissues Re-generation*
- *Food Research*
- *Regenerative Medicine*
- *Marine Biology*
- *Fish Cell Research*
- *Amphibian cell Research*
- *Insect Cell Research*

HEATING AND COOLING FUNCTION

Users can use it as a conventional CO_2 incubator using heating mode or switch to cooling mode.



OPTIONS AND ACCESSORIES

All options and accessories for standard CelCulture CO_2 incubators are also appropriate to use on CelCulture CO_2 Incubator with Integrated Cooling Option.

ORDERING INFORMATION

IR SENSOR MODEL WITH INTEGRATED COOLING SYSTEM

Models	Description
CCL-170-B-8-P	CelCulture Incubator, 170L, IR sensor, CO_2 control, Moist Heat Decon, Peltier System, 230VAC, 50/60 Hz
CCL-170-B-9-P	CelCulture Incubator, 170L, IR sensor, CO_2 control, Moist Heat Decon, Peltier System, 115VAC, 50/60 Hz

SUPPRESSED O_2 MODEL WITH INTEGRATED COOLING SYSTEM

Models	Description
CCL-170-T-8-P	CelCulture Incubator, 170L, IR sensor, CO_2 control, O_2 control, Moist Heat Decon, Peltier System, 230VAC, 50/60 Hz
CCL-170-T-9-P	CelCulture Incubator, 170L, IR sensor, CO_2 control, O_2 control, Moist Heat Decon, Peltier System, 115VAC, 50/60 Hz

GENERAL SPECIFICATION

Models	CCL-170B-8-P CCL-170B-9-P
TEMPERATURE (Heating Mode)	
Ambient Temp Range	18 to 34°C (64 to 93 °F)z
Temperature Control Method	Direct Heat and Air Jacketed with Peltier Cooling System using PID microprocessor
Temperature Range, °C	12°C below ambient to 60°C above ambient
Temperature Uniformity, °C	± 0.2*
Temperature Fluctuation, °C	± 0.1
Temperature Recovery time** (after 1 min. door opening, 98% from initial value), minutes	6
TEMPERATURE (Cooling Mode)	
Pull Down Time to 8°C below Ambient (at 25°C Ambient Temperature),minutes	42
Pull Down Time to 12°C below Ambient (at 25°C Ambient Temperature), minutes	90
Temperature Uniformity at 8°C below Ambient, °C	± 0.4
Temperature Recovery Time** (after 1 min. door opening, 98% from initial value), minutes	32
Power Off Temperature Increase Rate 1 hour, °C 10 hours, °C	 1.9 10
CO_2 (Heating Mode)	
CO_2 Control System	Microprocessor PID
CO_2 Range, % CO_2	0-20
CO_2 Accuracy, % CO_2	± 0.1
CO_2 Sensor	Infrared (IR) Sensor**
CO_2 Recovery Time*** (after 1 min. door opening, 98% from initial value) (Heating Mode)	Standard Unit: 4 minutes Suppressed O_2 model: 5 minutes
CO_2 (Cooling Mode)	
Start-up Time at 5% CO_2, minutes	14
Recovery Time at 5% CO_2, minutes	9
CO_2 Fluctuation, %CO_2	± 0.3
FOR SUPPRESSED O_2 MODEL (Heating Mode)	
O_2 Control System	Microprocessor PID
O_2 Range, % O_2	1-20.7
O_2 Accuracy, % O_2	± 0.1
O_2 Sensor	Galvanic Cell Type
O_2 Recovery Time**** (after 1 min. door opening, 98% from initial value), minutes	At 1.0% O_2 volume: 20 At 5.0% O_2 volume: 10

FOR SUPPRESSED O_2 MODEL (Cooling Mode)	
Start-up Time at 5% O_2, minutes	14
O_2 Recovery Time at 5% O_2**** (after 1 min. door opening, 98% from initial value), minutes	12
O_2 Fluctuation, %O_2	± 0.2
Humidity (Heating Mode)	
Humidification Method	Humidity pan
Humidity range	85% - 93%
Humidity range (Suppressed O_2 control)	85% - 91%
Physical Parameters	
Interior Volume	170l (5.7 cu. Ft.)
Internal Dimensions (W x D x H)	505 mm x 530 mm x 635 mm (19.9" x 20.9" x 25.0")
External Dimension (W x D x H)	660 mm x 672 mmx 900 mm (26.0" x 26.46" x 35.4")
Net Weight	105 kg (231 lbs)
Shipping Weight	131.5 kg (289 lbs)
Shipping Dimension (W x D x H)	820 mm x 850 mm x 930 mm 32.28" x 33.47" x 36.62"
Number of Shelves	4
Maximum No. of Shelves	7
Shelves Area (W x D)	470 mm x 470 mm (18.5" x 18.5")
Max. Load per Shelf	11 kg/shelf (24.3 lbs/shelf)
Available Electrical Configuration	220 - 240 VAC, 50 / 60 Hz, 1Φ, 3.4 A 110 - 130 VAC, 50 / 60 Hz, 1Φ, 7.0 A
Airflow	6-8 cfm
Interior Material	Stainless steel, type 304
Maximum Power Consumption	800 Watts
Power Consumption 37˚C	80 W
CONTAMINATION CONTROL	
Contamination Control Methods	1) Main body is electrogalvanized steel with ISOCIDE® antimicrobial coating; 2) Moist 90˚C OVERNIGHT decon. cycle (HPA validated); 3) 0.2 micron in-line filter for gas inputs; 4) ULPA filter

* Data recorded under optimum factory setting conditions
** For temperature not exceeding 37°C
*** For CO_2 not exceeding 5.2%.
**** For O_2 not exceeding 5.2%

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WORLD CLASS. WORLDWIDE.

CelCulture®

CO_2 Incubator with Stainless Steel Exterior Cabinet

- Corrosion Resistant Surface
- Meets Pharmaceutical and Clinical Laboratory Requirements

ORDERING INFORMATION

TC SENSOR MODEL WITH STAINLESS STEEL EXTERIOR CABINET

Models	Description
CCL-050A-8-SS	CelCulture® Incubator, 50 L, TC sensor, CO_2 Control, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz
CCL-170A-8-SS	CelCulture® Incubator, 170 L, TC Sensor, CO_2 Control, ULPA, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz
CCL-240A-8-SS	CelCulture® Incubator, 240 L, TC Sensor CO_2 Control, ULPA, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz

IR SENSOR MODEL WITH STAINLESS STEEL EXTERIOR CABINET

Models	Description
CCL-050B-8-SS	CelCulture® Incubator, 50 L, IR sensor, CO_2 Control, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz
CCL-170B-8-SS	CelCulture® Incubator, 170 L, IR Sensor, CO_2 Control, ULPA, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz
CCL-240B-8-SS	CelCulture® Incubator, 240 L, IR Sensor CO_2 Control, ULPA, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz

SUPPRESSED O_2 MODEL WITH STAINLESS STEEL EXTERIOR CABINET

Models	Description
CCL-050T-8-SS	CelCulture® Incubator, 50 L, IR sensor, CO_2 & O_2 Control, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz
CCL-170B-8-SS	CelCulture® Incubator, 170 L, IR Sensor, CO_2 & O_2 Control, ULPA, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz
CCL-240B-8-SS	CelCulture® Incubator, 240 L, IR Sensor, CO_2 & O_2 Control, ULPA, Moist Heat Decon, SS Cabinet, 230 VAC, 50/60 Hz

GENERAL SPECIFICATIONS

CELCULTURE® CO_2 INCUBATORS

	CCL-050_-_-SS	CCL-170_-_-SS	CCL-240_-_-SS
Temperature			
Temperature Control Method	Direct heat & air jacket using Microprocessor PID		
Temperature Range	Amb. +3°C to 60°C		
Temperature Uniformity	<± 0.2°C*	<± 0.2°C*	<± 0.3°C*
Temperature Accuracy	<± 0.1°C		
Recovery Time** (after 1 min. door opening, 98% from initial value)	4 minutes	6 minutes	6 minutes
Ambient Temperature Range	18 to 34°C (64 to 93°F)		
CO_2			
CO_2 Control System	Microprocessor PID		
CO_2 Range	0-20%		
CO_2 Accuracy	± 0.1%		
CO_2 Sensor	Infrared (IR) Sensor*** / TC Sensor		
CO_2 Recovery Time**** (after 1 min. door opening, 98% from initial value)	Standard Unit: 8 minutes Suppressed O_2 model: 8 minutes	Standard Unit: 4 minutes Suppressed O_2 model: 5 minutes	Standard Unit: 5 minutes Suppressed O_2 model: 5 minutes
O_2 Specs (For Suppressed O_2 Model)			
O_2 Control System	Microprocessor PID		
O_2 Range	1-20.7%		
O_2 Accuracy	± 0.1%		
O_2 Sensor	Galvanic Cell Type		
O_2 Recovery Time (after 1 minute door opening)	at 1.0% O_2 by volume: 10 minutes	at 1.0% O_2 by volume: 20 minutes	at 1.0% O_2 by volume: 24 minutes
	at 5.0% O_2 by volume: 6 minutes	at 5.0% O_2 by volume: 10 minutes	at 5.0% O_2 by volume: 12 minutes
Humidity			
Humidification Method	Humidity pan		
Humidity Range*****	85% - 93% RH		
Humidity Range (Suppressed O_2 Control)*****	85% - 91%		
Physical Construction			
Interior Volume	50 L (1.8 cu. ft.)	170 L (6.0 cu. ft.)	240 L (8.5 cu. ft.)
External Dimensions (W x D x H)	500 mm x 500 mm x 655 mm (19.7" x 19.7" x 25.8")	660 mm x 660 mm x 900 mm (26.0" x 26.0" x35.4")	750 mm x 665 mm x 900 mm (29.5" x 26.2" x 35.4")
Internal Dimensions (W x D x H)	345 mm x 375 mm x 390 mm (13.6" x 14.8" x 15.4")	505 mm x 530 mm x 635 mm (19.9" x 20.9" x 25.0")	595 mm x 620 mm x 635 mm (23.4" x 24.4" x 25.0")
Shipping Weight	70 kg (154.3 lbs)	120 kg (264.6 lbs)	155 kg (341.7 lbs)
Shipping Dimensions (W x D x H)	660 mm x 660 mm x 890 mm (26.0" x 26.0" x 35.0")	850 mm x 720 mm x 1150 mm (33.5" x 28.3" x 45.3")	860 mm x 830 mm x 1110 mm (33.9" x 32.7" x 43.7")
Number of Shelves	3	4	4
Maximum No. of Shelves	4	7	7
Shelves Area (W x D)	310 mm x 310 mm (12.2" x 12.2")	470 mm x 470 mm (18.5" x 18.5")	550 mm x 550 mm (21.7" x 21.7")
Max. Load per Shelf	4 kg/shelf (8.8 lbs/shelf)	11 kg/shelf (24.3 lbs/shelf)	15 kg/shelf (33.1 lbs/shelf)
Available Electrical Configuration	220 - 240 VAC, 50/60 Hz, 1Φ, 3.4 A		
	110 - 130 VAC, 50/60 Hz, 1Φ, 7.0 A		
Maximum Power Consumption	372 Watts	800 Watts	1100 Watts
Power Consumption 37°C	37 Watts	80 Watts	110 Watts
Interior Material	Stainless steel, type 304		
Contamination Control			
Contamination Control Methods	1) Moist 90°C OVERNIGHT decon cycle (HPA validated) 2) 0.2 micron in-line filter for gas inputs 3) ULPA filter******		

* Data recorded under optimum factory setting conditions
** For temperature not exceeding 37°C
*** For CO_2 not exceeding 5.2%. Recovery time for TC sensor is longer
**** For O_2 not exceeding 5.2%
***** Esco does not guarantee condensation free chamber at higher humidity level.
****** Not available on 50 L size model

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Esco Micro Pte. Ltd. • 21 Changi South Street 1 • Singapore 486 777
Tel +65 6542 0833 • Fax +65 6542 6920 • mail@escoglobal.com
www.escoglobal.com

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