

ESCO

WORLD CLASS. WORLDWIDE.



CelMate®

CO₂ Incubators
Cradle for Beautiful Cells

CelMate® CO₂ Incubators





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.



Products and Application

Life Sciences Laboratory Equipment

Sample Preparation

- Class I Biological Safety Cabinets
- 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
- Freeze Dryers

Sample Cultivation

- CO₂ Incubators with Cooling System
- CO₂ Incubators with Stainless Steel Exterior
- CO₂ Incubators (Water Jacketed)
- Laboratory Shakers

Sample Analysis

- PCR Thermal Cyclers
 - Conventional Thermal Cyclers
 - Real-time PCR Systems
- PCR Sample Handling
 - Microplate Shakers
 - PCR Cabinets

Sample Storage & Sample Protection Solutions

- Ultra-low Temperature Freezers
- Lab Refrigerators and Freezers
- Sample Database Management Software
- Intelligent Remote Monitoring Application Protocol
- Remote Monitoring, Datalogging, Programming Software
- Wireless Monitoring System

Chemical Research

- Ductless Fume Hoods
- Laboratory Fume Hoods
- Fume Hood Airflow Monitors
- Exhaust Blowers
- Powder Weighing Balance Enclosures

General Equipment

Laboratory Thermostatic Products

- Laboratory Oven
- Laboratory Incubator
- Refrigerated Incubator
- Constant Climate Chamber

Medical / IVF Equipment

- Time-Lapse Embryo Incubators
- Benchtop Multi-room Embryo Incubators
- CO₂ Incubators
- IVF Workstation
- Anti-Vibration Table
- CO₂ / O₂ Temperature Validation Unit

Pharmaceutical Equipment

Airflow Containment

- Downflow Booths
- Ceiling Laminar Airflow Units
- Laminar Flow Horizontal Trolley
- Laminar Flow Vertical Trolley
- Laminar Flow Straddle Units
- Garment Storage Cabinet

Isolation Containment

- Aseptic Containment Isolator (ACTI)
- Weighing and Dispensing Containment Isolator (WDCI)
- General Processing Platform Isolator (GPPI)

Cross Contamination Facility Integrated Barrier

- Cleanroom Air Showers
- Air Shower Pass Box
- Cleanroom Transfer Hatch
- Pass Boxes
- Soft Wall Cleanroom
- Dynamic Passboxes and Dynamic Floor Label Hatches

Barrier Isolation System

- Pharmacy Compounding Aseptic Containment Isolator (Recirculating)
- Pharmacy Compounding Aseptic Isolator
- Cytotoxic Safety Cabinets



CelMate® CO₂ Incubators

INTRODUCTION

The CelMate® CLM-170-B is a cell culture 170 liters CO₂ incubator with moist heat decontamination, 0.2 micron gas in-line filter and Isocide™ anti-microbial powder coating.

CO₂ 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 CelMate® CO₂ incubators provide all-rounded sample protection that brings your scientific dreams one step closer to reality.

KEY FEATURES

CelMate® CO₂ INCUBATORS

Cradle for Beautiful Cells



CelMate® CO₂ Incubators available in
50 L, 170 L and 240 L



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



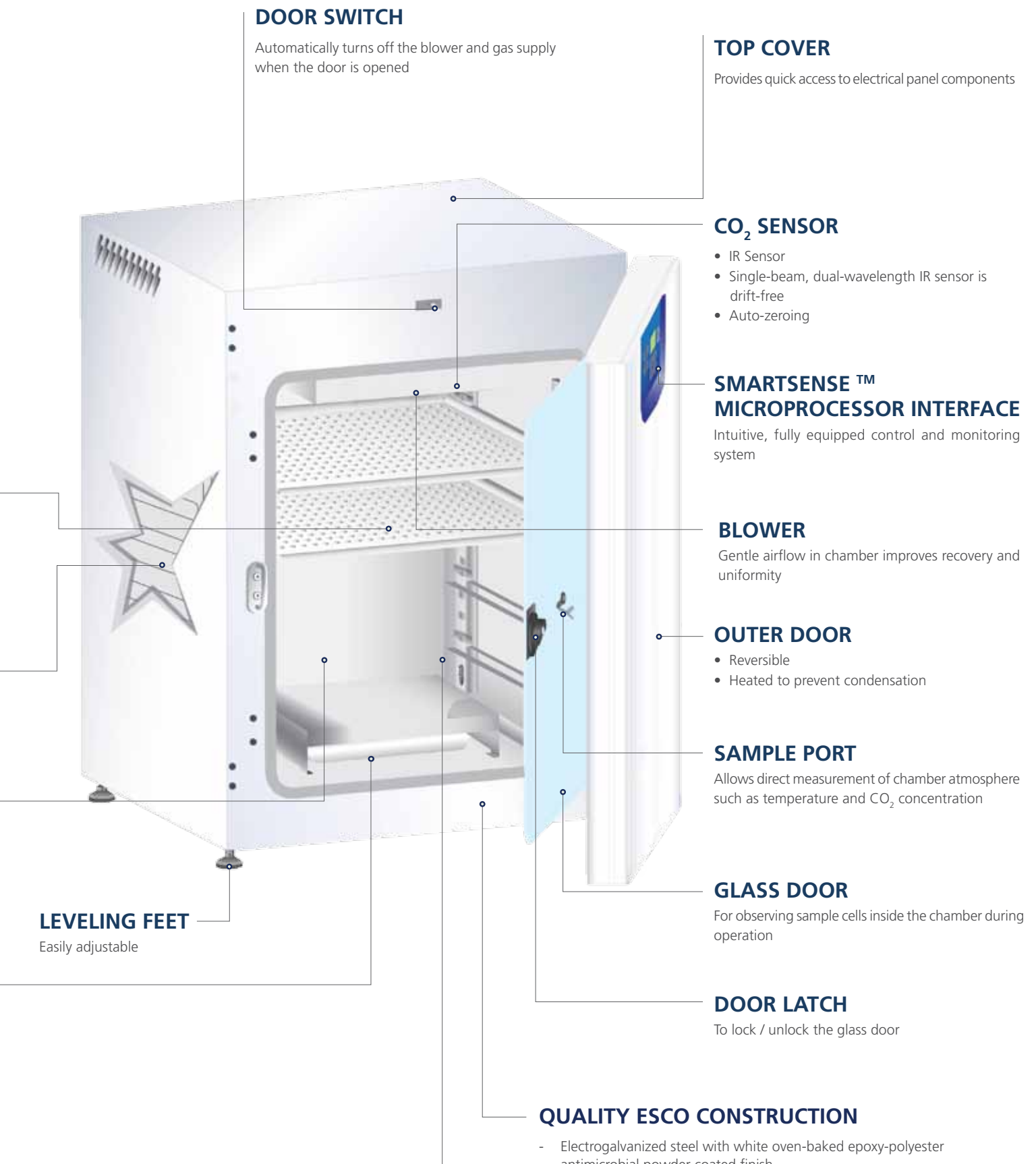
WATER PAN

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



ROUNDED CORNERS

- Seamless design
- Facilitates cleaning



DOOR SWITCH

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

TOP COVER

Provides quick access to electrical panel components

CO₂ SENSOR

- IR Sensor
- 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 CO₂ concentration

GLASS DOOR

For observing sample cells inside the chamber during operation

DOOR LATCH

To lock / unlock the glass door

LEVELING FEET

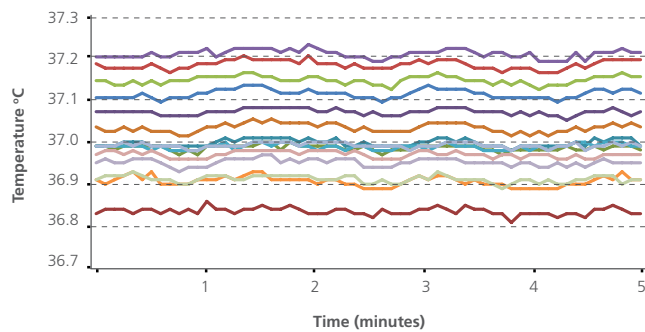
Easily adjustable

QUALITY ESCO CONSTRUCTION

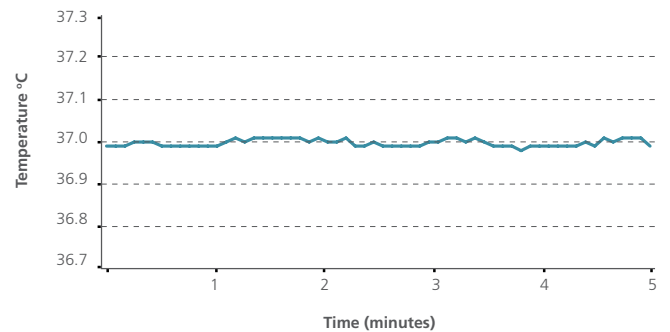
- Electrogalvanized steel with white oven-baked epoxy-polyester antimicrobial powder-coated finish.
- External surfaces are powder coated with Esco **ISOCIDE™** to eliminate 99.9% of surface bacteria within 24 hours of exposure.
- Ensures a healthier, safer and cleaner lab environment.

VIVOCELL™ PRECISE PARAMETER CONTROL

BEST UNIFORMITY AND CONTROL AMONG COMPETITION

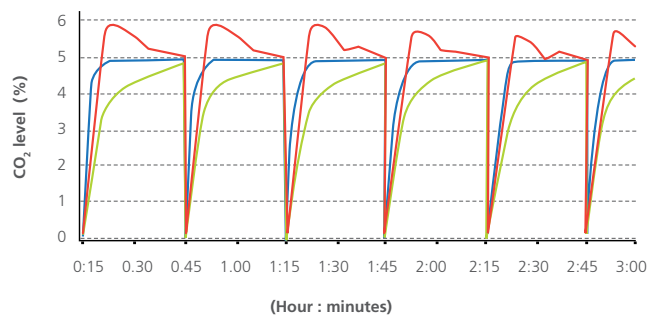


Different lines represent different sensor positions inside the chamber. Esco CelMate® has uniformity variance of less than ± 0.2 °C which means all the samples are evenly heated.*



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

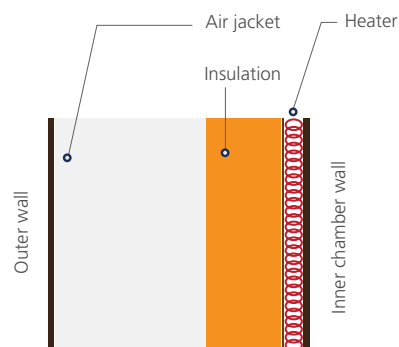
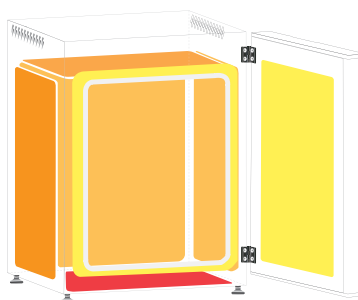
FAST CO₂, TEMPERATURE AND HUMIDITY RECOVERY WITHOUT OVERTHOOT



Precisely tuned sensor and software result in fast recovery of CO₂ without overshoot. This ensures uniform CO₂ 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 CelMate®: fast recovery, no overshoot.

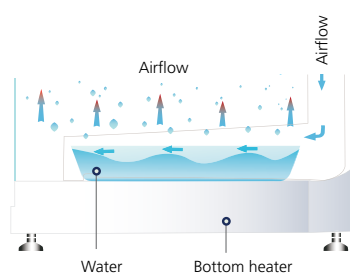
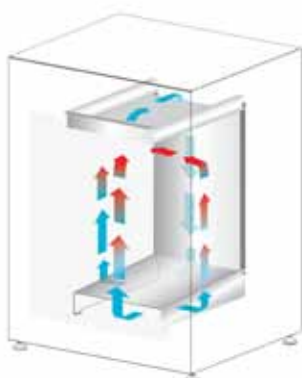
DIRECT HEAT AND AIR JACKET



- 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.

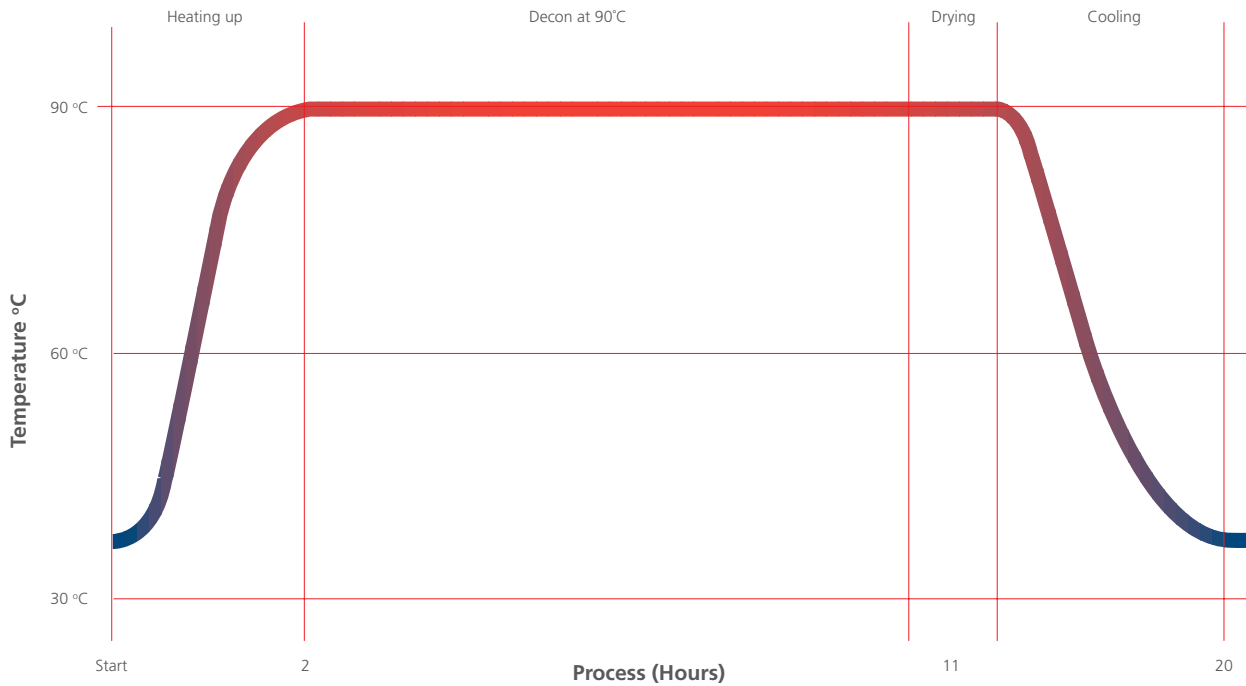
- The main heater provides precise temperature control.
- The bottom heater warms the water pan and controls humidity.
- The outer door heater prevents condensation on glass door and facilitates temperature recovery.

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 CO₂, humidity and temperature uniformity.
- Filtered air circulates across water pan to accelerate humidifying process.

VALIDATED SWIFTCON™ OVERNIGHT DECONTAMINATION CYCLE



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

- The Esco CelMate® CO₂ 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 20 hours.

- Chamber is wet at the end of the cycle. Wiping 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.

GAS INJECTION LINES ARE FILTERED



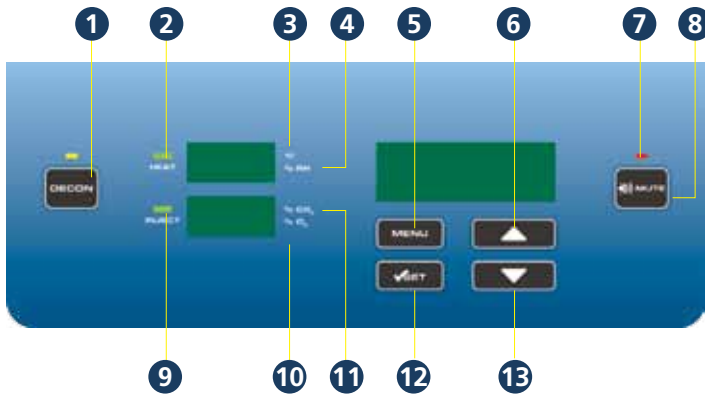
- All gas injection lines are filtered via 0.2 micron in-line filters to remove impurities and contaminants before being injected into the chamber.
- In-line filters are field replaceable external to the incubator.

**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 CLM-170B-8.*

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

CONTROLLER TYPE

USER - FRIENDLY SOFTWARE INTERFACE



1. Start / stop decontamination cycle

HEAT LED

2. 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

ALARMS LED

7. Will blink when errors and warnings occur

8. Mute alarms

INJECT LED

9. Lights when gas is injected

10. %O₂ is lit when displaying the O₂ concentration

11. %CO₂ is lit when displaying the CO₂ concentration.

12. Confirm Value / Enter a Menu

13. Scroll Down / Decrease Value

• Comprehensive, user-configurable alarms:

Temperature
CO₂
Humidity (if installed)

• CelAlert™ alarm system reminds user to replace parts.



CO₂ tank depletion reminder in addition to CO₂ tank low alarm. Automatic calculation of how much CO₂ 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.

• 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.

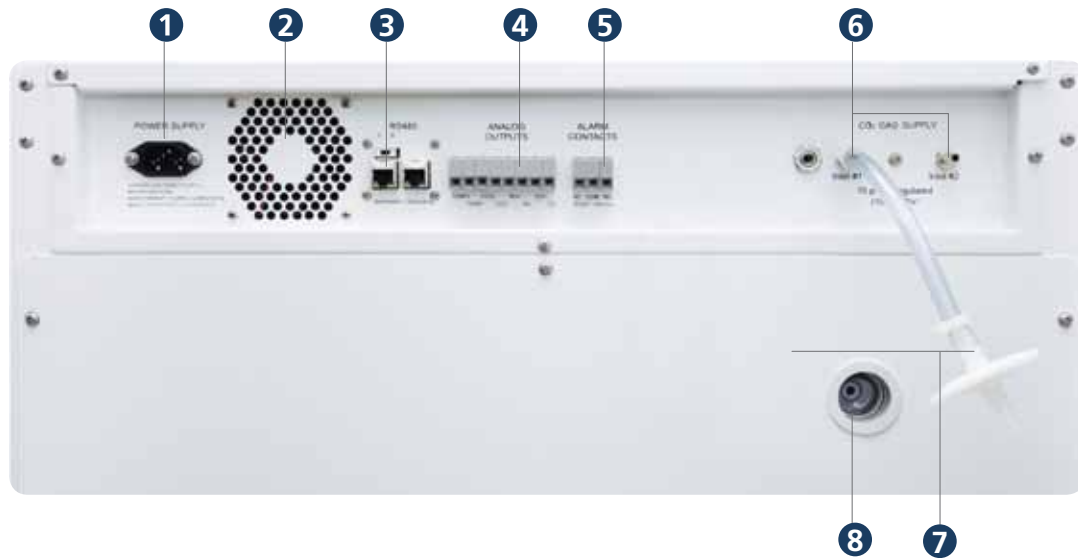
Voyager® interfaces with individual Esco equipment over RS485 using the EscoBUS communications protocol. Multiple equipment maybe interfaced to a single PC.

Compatible Equipment

- Lexicon® – Ultra-Low Temperature Freezer
- CelCulture® – CO₂ Incubator (CCL)
- CelMate® - CO₂ 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, CO₂ 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 CO₂ Gas Supply Inlet
The CO₂ gas supply inlet connects the CO₂ gas supply with the Incubator unit. Inlet pressure requirement is 15 psi.



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



8 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.

CelMate® CO₂ INCUBATOR SENSORS



IR SENSOR

An IR sensor is a versatile instrument for measuring CO₂ 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 CO₂ 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 CO₂ absorption wavelength, the intensity of detected light is reduced in proportion to the concentration of CO₂ in the optical path. The light intensity measured at the non-absorbing wavelength serves as a baseline for comparison.

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 CO₂ Backup

This option allows two tanks of CO₂ 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, CO₂ 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 (170 L)

CelCulture CO₂ 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-2018-F (50 L) / COA-2001-F (170 L) / COA-2019-F (240 L) Roller Base

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



COA-2020-F (50 L) / COA-2002-F (170 L) / COA-2021-F (240 L) 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 (50 L) / COA-2003-F (170 L) / COA-2023-F (240 L) Floor Stand 700 mm (27.6") with Caster Wheels

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 CO₂/N₂

CO₂ and N₂ 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 (50 L) / COA-2007-F (170 L) / COA-2025-F (240 L) Extra Shelf (Stainless Steel) for Standard Stainless Steel Chamber

Each CelCulture CO₂ Incubator comes standard with 3 shelves for 50 L / 4 shelves for 170 L & 240 L and it can accommodate up to a maximum of 4 shelves for 50 L / 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 CO₂ Analyzer, For CO₂ / Temp Measurement

The Electronic Analyzer allows the measurement of CO₂ concentration, Relative Humidity and temperature (temperature probe already included).



COA-2012-F 6" Chart Recorder, Temperature, 115-230 VAC, 50/60 Hz

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, Temperature/Temperature, 115-230 VAC, 50/60 Hz

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, 115-230 VAC, 50/60 Hz

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) (170 L)

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, CO₂ Incubators and Ultra-low Temperature Freezer.

ORDERING INFORMATION

MODELS	DESCRIPTION
CLM-50-B-8	CelMate® Incubator, 50 L, IR Sensor, CO ₂ Control, ULPA, Moist Heat Decon, 230 VAC, 50/60 Hz (without Decon Pump)
CLM-50-B-9	CelMate® Incubator, 50 L, IR Sensor, CO ₂ Control, ULPA, Moist Heat Decon, 115 VAC, 50/60 Hz (without Decon Pump)
CLM-170-B-8 2170106	CelMate® Incubator, 170 L, IR Sensor, CO ₂ Control, ULPA, Moist Heat Decon, 230 VAC, 50/60 Hz (without Decon Pump)
CLM-170-B-9 2170250	CelMate® Incubator, 170 L, IR Sensor, CO ₂ Control, ULPA, Moist Heat Decon, 115 VAC, 50/60 Hz (without Decon Pump)
CLM-240-B-8 2170107	CelMate® Incubator, 240 L, IR Sensor, CO ₂ Control, ULPA, Moist Heat Decon, 230 VAC, 50/60 Hz (without Decon Pump)
CLM-240-B-9 2170251	CelMate® Incubator, 240 L, IR Sensor, CO ₂ Control, ULPA, Moist Heat Decon, 115 VAC, 50/60 Hz (without Decon Pump)

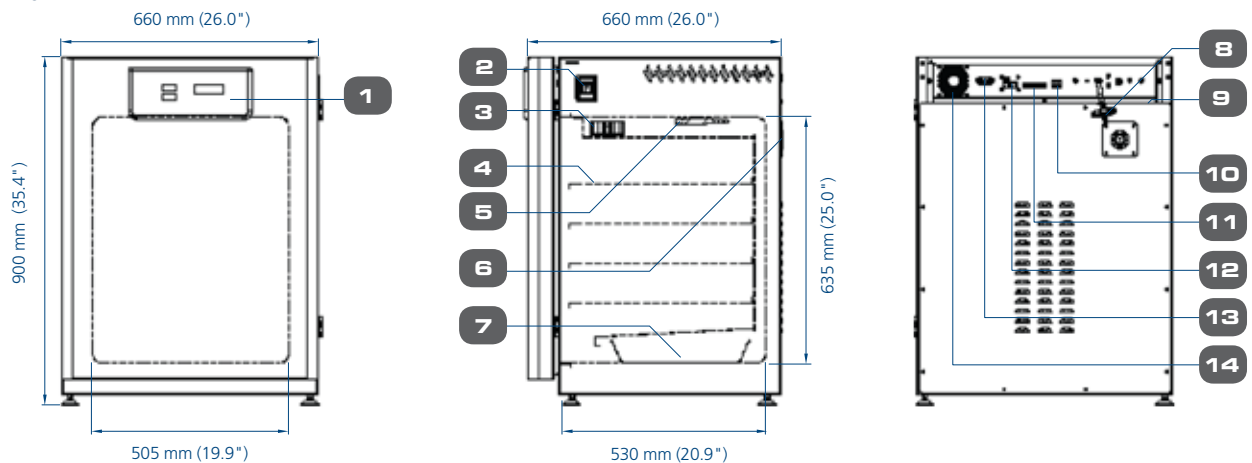
OPTIONS	DESCRIPTION
COA-1001 5170470	Humidity Display, Factory Installed
COA-1001-F 5170471	Humidity Display, Field Install Kit
COA-1002 5170472	CO ₂ Backup (Tank Switcher), Factory Installed
COA-1002-F 5170473	CO ₂ Backup (Tank Switcher), Field Installed
COA-1004 5170474	Reversed Door Swing, Factory Installed
COA-1005 5170475	Analog Outputs, Factory Installed
COA-1005-F 5170476	Analog Outputs, Field Installed
COA-1006 5170477	Sealed Inner Door Kit for 170 L (4 Glass Doors with Latches), Factory Installed
COA-1006-F 5170488	Sealed Inner Door Kit for 170 L (4 Glass Doors with Latches), Field Installed
COA-2001-F 5170478	Roller Base (170 L)
COA-2019-F 5170420	Roller Base (240 L)
COA-2020-F 5170421	Floor Stand 200 mm (8.0") With Adjustable Feet (50 L)

ORDERING INFORMATION

COA-2002-F 5170479	Floor Stand 200 mm (8.0") With Adjustable Feet (170 L)
COA-2021-F 5170422	Floor Stand 200 mm (8.0") with Adjustable Feet (240 L)
COA-2002-F 5170479	Floor Stand 200 mm (8.0") with Adjustable Feet
COA-2003-F 5170480	Floor Stand 700 mm (27.6") with Caster wheel
COA-2005-F 5170481	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-2007-F 5170327	Extra Shelf (170 L, Stainless Steel)
COA-2008-F 5170483	Stacking Kit (One Set Included With Every Unit Purchased)
COA-2010-F 5170329	Electronic CO ₂ Analyzer, For CO ₂ / Temperature Measurement (with Temperature Probe)
COA-2016-F 5170397	Electronic CO ₂ + O ₂ Analyzer, For CO ₂ / O ₂ / Temperature Measurement
COA-2017-F 5170398	Electronic CO ₂ + O ₂ + RH Analyzer, For CO ₂ / O ₂ / RH / Temperature Measurement
COA-2011-F 2170020	IQ / OQ Documentation
COA-2012-F 2170021	6" Chart Recorder, Temperature 115-230 VAC, 50/60 Hz
COA-2013-F 2170022	8" Chart Recorder, Temperature/Temperature 115-230 VAC, 50/60 Hz
COA-2014-F 2170023	6" Chart Recorder, Temperature/RH, 115-230 VAC, 50/60 Hz
COA-2015-F 5170487	Inner Door Shelving Kit for 170 L (4 Sets With Total 12 Mini Shelves for One Incubator)
5250001	Voyager® Software Kit

ENGINEERING DRAWING

MODEL 170L



- 1. Control PPanel*
- 2. On / Off Switch
- 3. Blower
- 4. Adjustable Shelves
- 5. IR Sensor

- 6. Access Port
- 7. Humidity Pan
- 8. N₂ Gas Supply
- 9. CO₂ Gas Supply
- 10. Alarm Contact

- 11. Analog Output
- 12. RS485
- 13. Cooling Fan
- 14. Cooling Fan

GENERAL SPECIFICATIONS CELMATE® CO ₂ INCUBATORS		CLM-170B-__
TEMPERATURE		
Temperature Control Method	Direct heat & air jacket using Microprocessor PID	
Temperature Range, °C	Ambient +3 to 59.9	
Temperature Uniformity, °C	<± 0.2*	
Temperature Accuracy, °C	<± 0.1	
Recovery Time** (after 1 minute door opening, 98% from initial value)	6 mins	
Ambient Temperature Range	18 to 34°C (64 to 93 °F)	
CO₂		
CO ₂ Control System	Microprocessor PID	
CO ₂ Range, % CO ₂	0.1 - 19.9	
CO ₂ Accuracy, % CO ₂	± 0.1	
CO ₂ Sensor	IR Sensor	
CO ₂ Recovery Time*** (after 1 minute door opening, 98% from initial value)	Standard Unit: 5 to 6 minutes	
HUMIDITY		
Humidification Method	Humidity pan	
Humidity Range, % RH	Up to 97%****	
PHYSICAL CONSTRUCTION		
Interior Volume	170 L (5.7 cu.ft.)	
External Dimensions (W x D x H)	660 x 660 x 900 mm (26.0" x 26.0" x 35.4")	
Internal Dimensions (W x D x H)	505 x 530 x 635 mm (19.9" x 20.9" x 25.0")	
Shipping Weight	120 Kg (264.6 lbs)	
Shipping Dimensions (W x D x H)	850 x 720 x 1150 mm (33.5" x 28.3" x 45.3")	
Number of Shelves	4	
Maximum Number of Shelves	7	
Shelves Area (W x D)	470 x 470 mm (18.5" x 18.5")	
Maximum 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	
Maximum Power Consumption	800 Watts	
Power Consumption 37°C	80 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 decontamination cycle (HPA validated); 3) 0.2 micron in-line filter for gas inputs;	

*Data recorded under optimum factory setting conditions

**For temperature not exceeding 37°C

***For CO₂ not exceeding 5.2%. Recovery time with TC sensor is longer.

**** 97% RH is achievable, but Esco cannot guarantee that there will be no condensation inside the chamber, wall base, and glass door in such humidity

GENERAL SPECIFICATIONS CELMATE® CO ₂ INCUBATORS	CLM-50B-__	CLM-240B-__
TEMPERATURE		
Temperature Control Method	Direct heat & air jacket using Microprocessor PID	
Temperature Range, °C	Ambient +3 to 59.9	
Temperature Uniformity, °C	± 0.2*	± 0.3*
Temperature Accuracy, °C	<± 0.1	
Recovery Time** (after 1 minute door opening, 98% from initial value)	5 - 10 minutes	6 - 8 minutes
Ambient Temperature Range	18 to 34°C (64 to 93 °F)	
CO₂		
CO ₂ Control System	Microprocessor PID	
CO ₂ Range, % CO ₂	00.1 - 19.9	
CO ₂ Accuracy, % CO ₂	± 0.1	
CO ₂ Sensor	IR Sensor	
CO ₂ Recovery Time*** (after 1 minute door opening, 98% from initial value)	4 - 6	5 - 6
HUMIDITY		
Humidification Method	Humidity pan	
Humidity Range, % RH	Up to 97%****	
PHYSICAL CONSTRUCTION		
Interior Volume	50 L (1.8 cu.ft.)	240 L (8.5 cu.ft.)
External Dimensions (W x D x H)	500 x 500 x 665 mm (19.7" x 19.7" x 26.2")	750 x 665 x 900 mm (29.5" x 19.7" x 35.4")
Internal Dimensions (W x D x H)	345 x 375 x 390 mm (13.6" x 14.8" x 15.4")	595 x 620 x 635 mm (23.4" x 24.4" x 25.0")
Shipping Weight	70 Kg (154.3 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")	860 x 830 x 1110 mm (33.9" x 32.7" x 43.7")
Number of Shelves	3	4
Maximum Number of Shelves	4	7
Shelves Area (W x D)	310 x 310 mm (12.2" x 12.2")	550 x 550 mm (21.7" x 21.7")
Maximum Load per Shelf	4 Kg / shelf (8.8 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	420	1110
Power Consumption 37°C	42	110
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 decontamination cycle (HPA validated); 3) 0.2 micron in-line filter for gas inputs;	

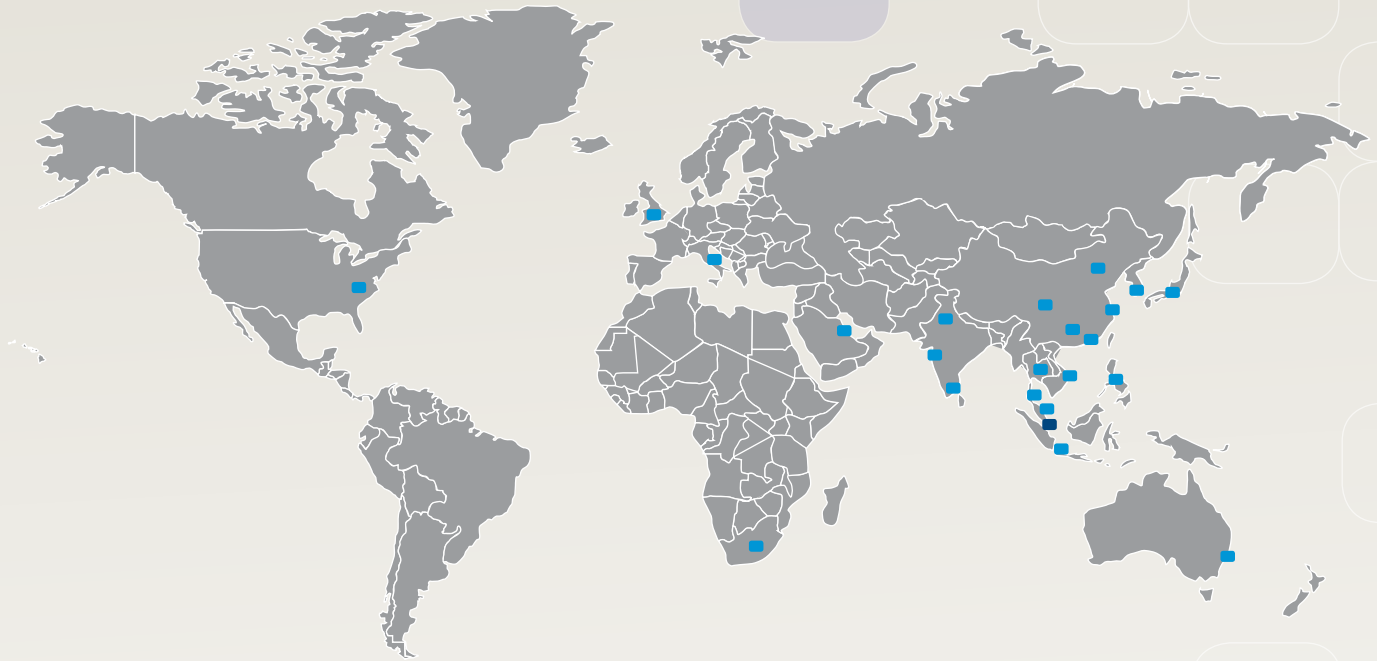
*Data recorded under optimum factory setting conditions

**For temperature not exceeding 37°C

***For CO₂ not exceeding 5.2%. Recovery time with TC sensor is longer.

**** 97% RH is achievable, but Esco cannot guarantee that there will be no condensation inside the chamber, wall base, and glass door in such humidity

ESCO GLOBAL NETWORK



- ART Equipment
- Biological Safety Cabinets
- CO₂ Incubators
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- Compounding Pharmacy Equipment
- Containment / Pharma Products
- Ductless Fume Hoods
- Lab Animal Research Products
- Laboratory Fume Hoods
- Laboratory Incubators
- Laboratory Ovens
- Laminar Flow Cabinets
- Laboratory Freeze Dryers
- PCR Cabinets
- PCR Thermal Cyclers
- Powder Weighing Balance Enclosures

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