



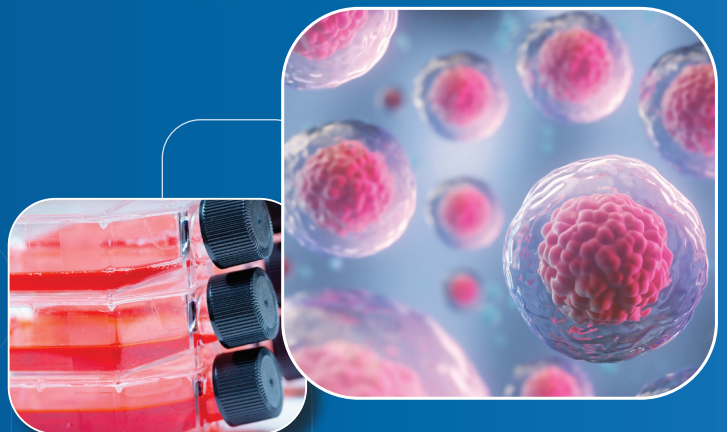
Model: CCL-170/240B-_-TS

Model: CCL-170/240B-_-HHS-TS

CelCulture® Touch

CO₂ Incubators with Touchscreen Controller

One Touch Closer to Cell Culture Innovation



CelCulture® Touch

CO₂ Incubators with Touchscreen Controller



INTRODUCTION

Elevate your workflow efficiency with the new touchscreen user interface of Esco CelCulture® Touch CO₂ Incubator. Have efficient operation, reliable results, and complete sample protection against contaminations while providing optimal conditions for cell growth.

With its intuitive operation and versatile features, CelCulture® Touch is designed to optimize research productivity, bringing you one touch closer to your cell culture innovations.

STREAMLINE YOUR CELL CULTURING EXPERIENCE WITH NEW FEATURES

Easy-to-use Touchscreen Controller

Immerse yourself in a vibrant and user-friendly experience with CelCulture® Touch color-rich touchscreen controller. The high-resolution display offers clear visibility, while the intuitive interface simplifies navigation.

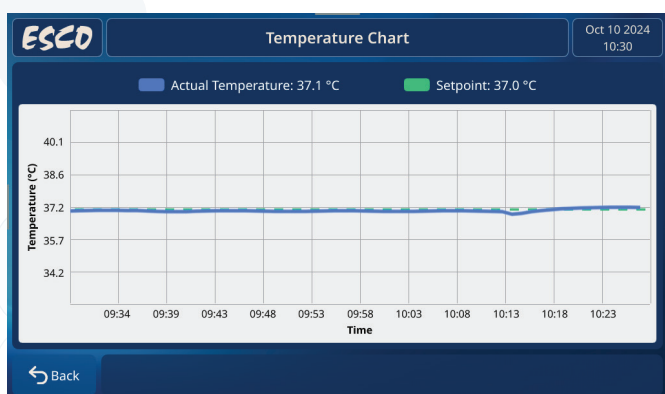
Designed with you in mind, the capacitive touchscreen controller functions seamlessly even when being used with gloves on. Maintain precision and control, enhancing your workflow efficiency.

Integrated USB Port

Streamline your workflow and seamlessly extract crucial experiment data by plugging in your USB device. Embrace hassle-free software upgrades through the USB port, ensuring your incubator remains at the forefront of innovation with the latest features and capabilities.



Built-in Graphic and Maintenance Reminder

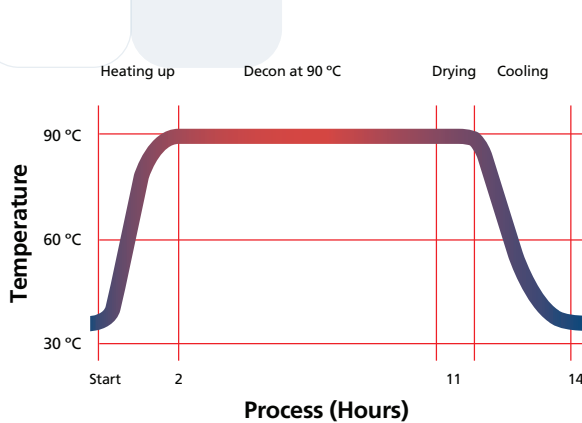


The built-in graphic display provides real-time monitoring of your CO₂ incubator's performance, stay up-to-date on your cell culture conditions with easy-to-read data at a glance.

Maintenance Reminder				Jan 01 2024 12:00 PM
Maintenance	Period	Schedule	Reminder	
Check CO ₂ /N ₂ gas tank level	Daily	Jan 31 2024	<input checked="" type="checkbox"/>	
Check Water Level in the Humidity Pan	Weekly	Jan 08 2024	<input checked="" type="checkbox"/>	
Clean the Interior and Exterior of Incubator	Weekly	Jan 29 2024	<input checked="" type="checkbox"/>	
General Inspection	Yearly	Oct 24 2024	<input checked="" type="checkbox"/>	
Calibration of Temperature, CO ₂ , O ₂ , and Humidity	Yearly	Oct 24 2024	<input checked="" type="checkbox"/>	
Replace ULPA Filter	Yearly	Jan 23 2025	<input checked="" type="checkbox"/>	
Replace Inlet Filter	Yearly	Oct 24 2024	<input checked="" type="checkbox"/>	
Replace Outer Door Magnetic Gasket	As Needed	Dec 10 2024	<input checked="" type="checkbox"/>	

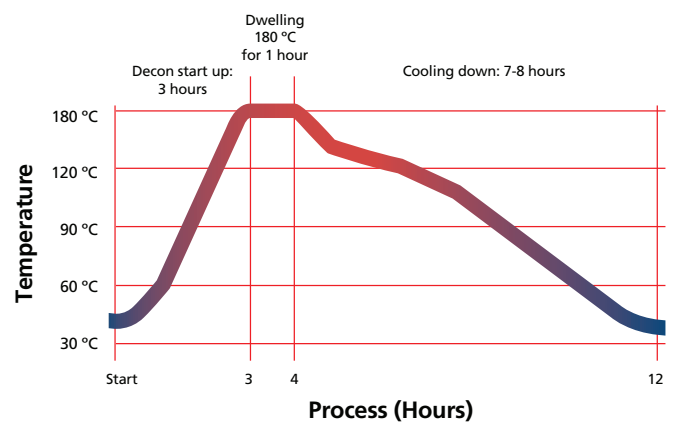
The maintenance reminder feature notifies you when it's time for routine care, whether it's simple cleaning or professional servicing, so your CO₂ incubator stays in top condition without disrupting your research.

HASSLE-FREE HEAT DECONTAMINATION SYSTEM



90°C Moist Heat Decontamination:

Minimize contamination risks and maintain a sterile environment for your cell cultures with the 90°C Moist Heat Decontamination system. This gentle yet effective process ensures a thorough decontamination within 15 hours. The chamber is left cool and dry at the end of the cycle, ensuring it is ready for use and optimal for preserving cell viability.



180°C High Heat Sterilization:

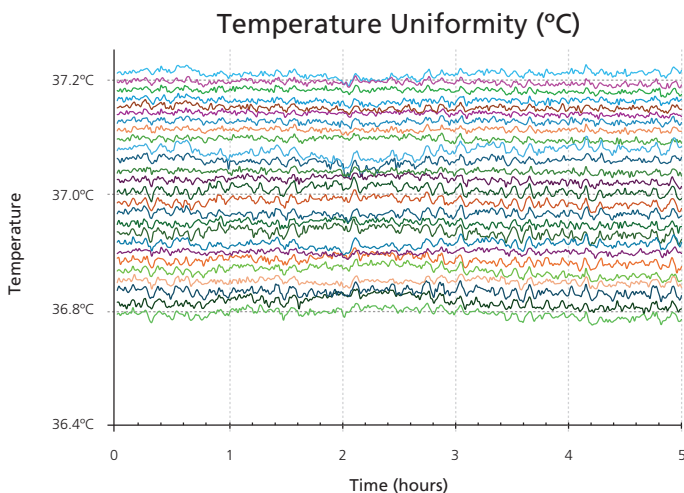
Conforms to the International Standards, 180°C High Heat Sterilization has proven to be effective in killing normally-resistant fungi, bacterial spore, and vegetative cells. Nontoxic and noncorrosive sterilization that completes within 12 hours leaving the chamber cool and dry, offering peace of mind in your research.

FAST HEATING AND RAPID RECOVERY AGAINST DOOR OPENINGS

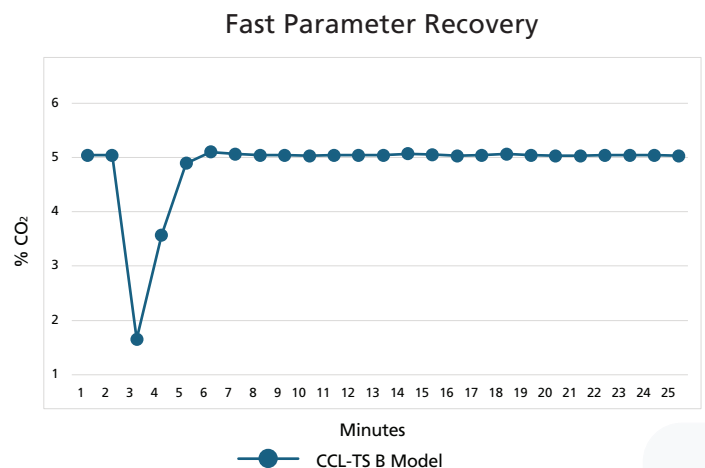
Forced Convection with Direct Heat and Air Jacket Technology

Minimize downtime between door openings and maintain uniform conditions throughout the chamber with a temperature control system that combines direct heat and air jacket technology. This design ensures precise temperature regulation and rapid recovery upon door openings, maintaining safe environment for cell cultures.

The forced convection design features a blower that expedites air recovery and promotes swift humidification for improved uniformity. The blower automatically halts upon door opening, minimizing air mixing and preserving the controlled environment.



Ensures uniform heating for consistent results across the chamber. With uniformity variance of less than $\pm 0.35^\circ\text{C}$, all the samples are evenly heated.



Instant restoration of ideal temperature, CO₂, and humidity levels helps minimize cellular stress and maintain optimal growth conditions.

High Accuracy Infra-Red (IR) CO₂ Sensor

Experience reliable CO₂ readings with our heat-resistant Infra-Red (IR) sensor. It stays accurate over time and works well even in the warm, humid conditions inside an incubator. No need to take it out during high-heat decontamination, keeping your workflow simple and uninterrupted.

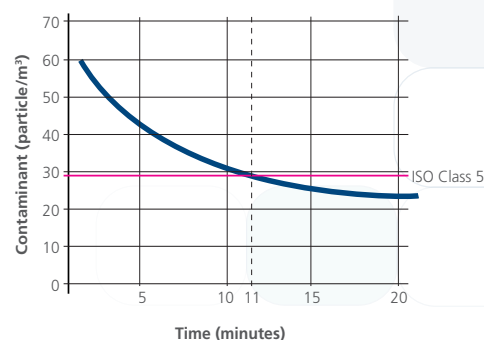
ISO CLASS 5 AIR CLEANLINESS FOR YOUR CELL CULTURE

In-Chamber ULPA Filter

Cultivate cells with confidence, knowing that the air your cultures breathe is of the utmost purity, promoting consistent and reliable results. This system ensures air cleanliness equivalent to ISO Class 5 within the chamber, reducing the risk of airborne contaminants affecting your experiments.

The chamber is restored to ISO Class 5 conditions within 11 minutes after door closing.*

* 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 was CCL-170B-8-TS.



Antimicrobial ISOCIDE™ Powder Coating

The external surfaces are electrogalvanized steel, coated with a white oven-baked epoxy-polyester antimicrobial powder. This advanced finish is designed to eliminate 99.9% of surface bacteria within 24 hours of exposure, ensuring a cleaner, safer environment for your critical research and laboratory work.

0.2µm Gas Inlet Filters on All Gas Injections

Guard against external contaminants with 0.2µm gas inlet filters strategically placed on all gas injections. This meticulous design ensures that gases entering the chamber are free from impurities, maintaining the purity of your cell culture environment.



IMPROVED DESIGN FOR EFFORTLESS MAINTENANCE

Perforated Stainless Steel Shelves

Carefully designed to improve uniformity, these shelves are not only visually appealing but also easy to remove without the need for tools.

Rounded Corner Chamber

The easy-to-clean chamber design helps reduce hidden spots where contaminants can grow, lowering the risk of contamination and keeping your cell cultures safer.

Optimized Humidity with Removable Water Pan

Precisely heated by the base heater, this system ensures uniform humidity levels, ideal for cultivating sensitive cell lines and specialized research applications. The removable pan simplifies maintenance, promoting a sterile environment, while the user-friendly design enhances the overall ease of operation.



Integrated Access Port

Designed for seamless integration of external instruments, the port allows cables, hoses, or additional sensors routed into the workspace without compromising the controlled environment. Equipped with a plug stopper, this port ensures easy and secure integration, providing researchers unparalleled flexibility and convenience.

Stackable Design for Optimal Space Utilization

To further enhance user convenience, we provide a dedicated floor stand for stacking two units. This not only facilitates easy relocation within your laboratory but also streamlines maintenance processes. The innovative design allows you to easily take out the lower unit for maintenance without the need to unstack, saving time and reducing hassle.



TAILORED FOR DIVERSE APPLICATIONS IN SCIENTIFIC DISCOVERY

Esco CelCulture® CO₂ Incubator series is not just a piece of equipment, it's a catalyst for groundbreaking research. With a design that prioritizes versatility, precision, and user-friendliness, Esco incubators are tailored for a multitude of applications, empowering researchers across various scientific disciplines.



Cancer Research

Create controlled environments for cell culture, supporting the study of cancer cell behavior and responses to various treatments with precise conditions that mimic the human body.



Tissue Engineering

Create an environment that supports the growth and maintenance of three-dimensional cell structures, contributing to innovations in regenerative medicine and organ transplantation studies.



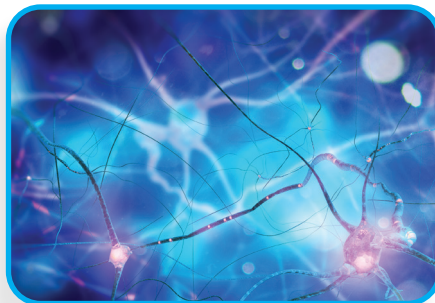
Stem Cell Research

Create an environment conducive to the cultivation and differentiation of stem cells, supporting studies in regenerative medicine, developmental biology, and disease modeling.



Microbial Cultivation

The controlled environment is ideal for the production of microbially-derived products such as enzymes and biofuels.



Neuroscience

Facilitate precise conditions for neuronal cell culture, enabling the study of neural development, function, and responses to stimuli, crucial for advancements in neuroscience research.



Drug Discovery & Development

CO₂ Incubators are used to culture cells for testing the efficacy and toxicity of drug candidates, as well as for studying cellular mechanisms underlying diseases and potential therapeutic interventions.

OUR SERVICES

We Provide a One-stop Solution from Installation to Decommissioning of Your Equipment!



Accreditation

Our Field Service Representatives undergo annual safety training and hold credentials such as NSF, TÜV NORD, NEBB, IFBA, and CETA-CNBT.



Fast Response

On-site response within 24 hours for priority cases/ clients. Easy to reach customer service, through email and phone call.



Strong Global Network

We provide reliable services through our global network of Field Service Representatives, offering ready parts, technical support, field engineers, factory experts, and after-sales support.



Good Global Reputation

Our Service Team is dedicated to providing service of the highest standards. We provide timely, responsive service while meeting or even exceeding customer's expectations.



Safeguard Your Equipment with Our Service and Warranty Package!



GUIDE TO MODELS

CCL-170 - - -TS

Product Line	Code	Volume	Code	Gas Control	Code	Electrical Rating	Code	Decontamination Method	Code	Controller	Code
CelCulture®	CCL	170L	170	CO ₂	B	220-240 VAC 50/60 HZ	8	90 °C Moist Heat	N/A	Touchscreen	TS
		240L	240			110-130 VAC 50/60 HZ	9	180 °C High Heat	HHS		

ORDERING INFORMATION

TOUCHSCREEN MODEL WITH MOIST HEAT DECONTAMINATION

MODEL	ITEM CODE	DESCRIPTION
CCL-170B-8-TS	2170371	CelCulture® Incubator 170 L, IR Sensor, CO ₂ Control, ULPA, 220-240 VAC 50/60 Hz
CCL-240B-8-TS	2170372	CelCulture® Incubator 240 L, IR Sensor, CO ₂ Control, ULPA, 220-240 VAC 50/60 Hz
CCL-170B-9-TS	2170412	CelCulture® Incubator 170 L, IR Sensor, CO ₂ Control, ULPA, 110-130 VAC 50/60 Hz
CCL-240B-9-TS	2170413	CelCulture® Incubator 240 L, IR Sensor, CO ₂ Control, ULPA, 110-130 VAC 50/60 Hz

TOUCHSCREEN MODEL WITH HIGH HEAT STERILIZATION

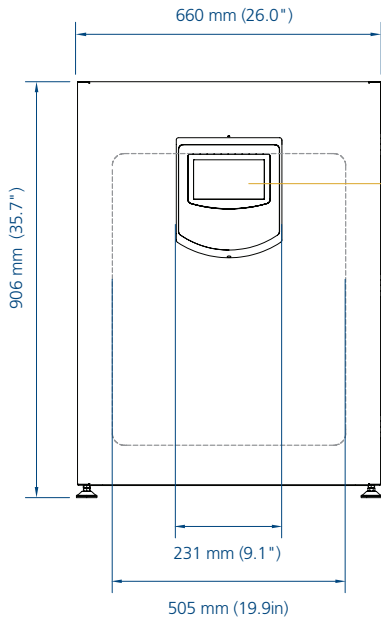
MODEL	ITEM CODE	DESCRIPTION
CCL-170B-8-HHS-TS	2170363	CelCulture® Incubator 170 L, IR Sensor, CO ₂ Control, ULPA, 220-240 VAC 50/60 Hz
CCL-240B-8-HHS-TS	2170364	CelCulture® Incubator 240 L, IR Sensor, CO ₂ Control, ULPA, 220-240 VAC 50/60 Hz
CCL-170B-9-HHS-TS	2170405	CelCulture® Incubator 170 L, IR Sensor, CO ₂ Control, ULPA, 110-130 VAC 50/60 Hz
CCL-240B-9-HHS-TS	2170407	CelCulture® Incubator 240 L, IR Sensor, CO ₂ Control, ULPA, 110-130 VAC 50/60 Hz



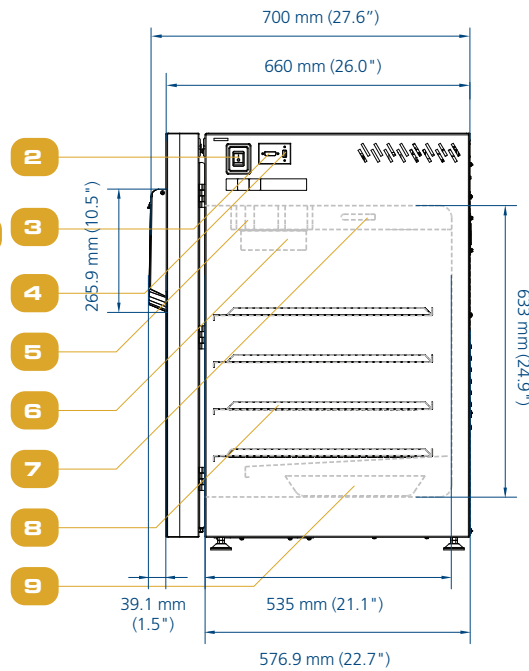
TECHNICAL SPECIFICATIONS

MODEL 170L

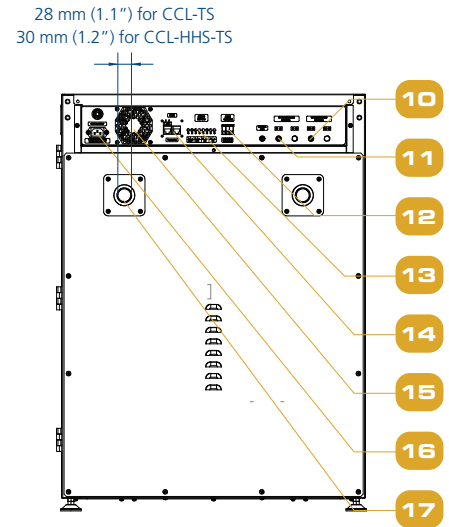
Front view



Side view



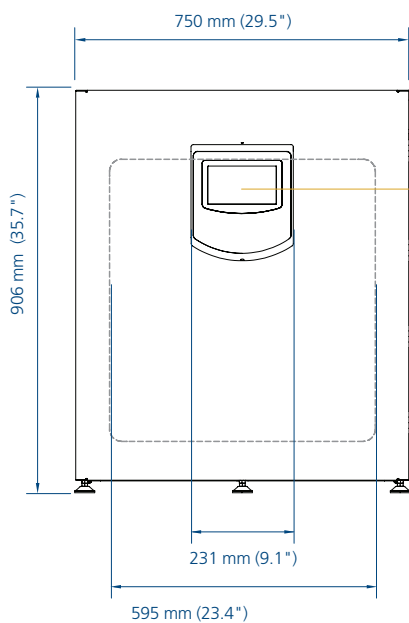
Rear view



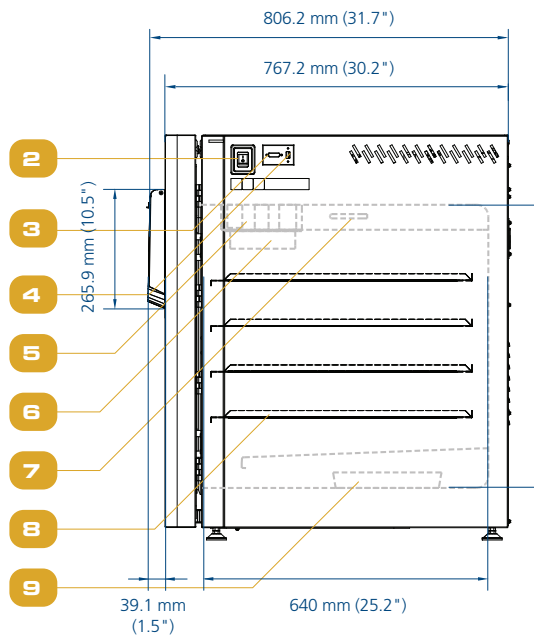
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|------------------|----------------|--|----------------------------|-------------------|------------------|
| 1. Control Panel | 4. USB Port | 7. GMP251 CO ₂ Sensor (CCL-TS) | 9. Water Pan | 12. Alarm Contact | 15. Cooling fan |
| 2. Power Switch | 5. Blower Fan | GMP231 CO ₂ Sensor (CCL-HHS-TS) | 10. N ₂ Supply | 13. Analog Output | 16. Power Supply |
| 3. Flashing Port | 6. ULPA Filter | 8. Shelf | 11. CO ₂ Supply | 14. RS 485 | 17. Access Port |

MODEL 240L

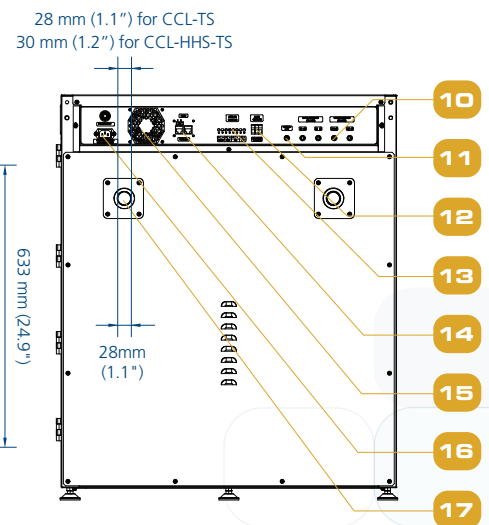
Front view



Side view



Rear view



- | | | | | | |
|------------------|----------------|--|----------------------------|-------------------|------------------|
| 1. Control Panel | 4. USB Port | 7. GMP251 CO ₂ Sensor (CCL-TS) | 9. Water Pan | 12. Alarm Contact | 15. Cooling fan |
| 2. Power Switch | 5. Blower Fan | GMP231 CO ₂ Sensor (CCL-HHS-TS) | 10. N ₂ Supply | 13. Analog Output | 16. Power Supply |
| 3. Flashing Port | 6. ULPA Filter | 8. Shelf | 11. CO ₂ Supply | 14. RS 485 | 17. Access Port |

GENERAL SPECIFICATIONS		CCL-170B-_-TS	CCL-240B-_-TS
CONTROLLER			
Type	Touchscreen		
TEMPERATURE			
Temperature Control Method	Direct Heat and Air Jacket using Microcontroller PI		
Ambient Temperature Range	18 to 32°C (64.4 to 89.6°F)		
Temperature Control Range, °C	Ambient +5 to 60		
Temperature Uniformity, °C *	< ± 0.35	< ± 0.5	
Temperature Fluctuation, °C *	± 0.2		
Temperature Accuracy, °C *	± 0.1		
Temp. Recovery Time** (after 30 seconds door opening, 98% from initial value)	≤5 minutes	≤6 minutes	
CO ₂			
CO ₂ Control System	Microcontroller PI		
CO ₂ Control Range, % CO ₂	0 to 19.5		
CO ₂ Accuracy, % CO ₂ ***	± 0.1		
CO ₂ Sensor	Infrared (IR) CO ₂ Sensor		
CO ₂ Recovery Time**** (after 30 seconds door opening, 98% from initial value)	≤5 minutes		
HUMIDITY			
Humidification Method	Water pan		
Humidity Range, % RH*****	85% to 90%		
PHYSICAL CONSTRUCTION			
Interior Volume	170 L (6.0 ft³)	240 L (8.5 ft³)	
External Dimensions (W x D x H)	660 x 700 x 906 mm (26" x 27.6" x 35.7")	750 x 806 x 906 mm (29.5" x 31.7" x 35.7")	
Internal Dimensions (W x D x H)	505 x 535 x 633 mm (19.9" x 21.1" x 24.9")	595 x 640 x 633 mm (23.4" x 25.2" x 24.9")	
Net Weight	109 kg (240.3 lbs.)	131.5kg (289.9 lbs.)	
Chamber Construction	Main Body	Electrogalvanized steel with Isocide™ antimicrobial coating	
	Interior Material	Stainless steel, type 304	
	Number of Shelves	4	
	Maximum Number of Shelves	7	
	Shelves Dimensions (W x D x H)	470 x 476 x 16 mm (18.5" x 18.75" x 0.63")	560 x 585 x 16 mm (22.0" x 23.9" x 0.63")
	Maximum Load per Shelf	11 kg/shelf (24.3 lbs/shelf)	15 kg/shelf (33.1 lbs/shelf)
Electrical Configuration (110-130 VAC, 50/60 Hz)	Nominal Power at 37°C	90 W	95 W
	Maximum Power Consumption	1550 W	1650 W
	Full Load Amps	12.7 A	13.7 A
Electrical Configuration (220-240 VAC, 50/60 Hz)	Nominal Power at 37°C	45 W	50 W
	Maximum Power Consumption	1500 W	
	Full Load Amps	7 A	
Shipping Weight	128.5 kg (283.3 lbs.)	151.5 kg (334.0 lbs.)	
Shipping Dimensions (W x D x H)	830 x 710 x 950 mm (32.7" x 28.3" x 37.4")	880 x 850 x 1110 mm (34.6" x 33.5" x 43.7")	
CONTAMINATION CONTROL			
Contamination Control Methods	1) Main body is electro-galvanized steel with Isocide™ antimicrobial-coating; 2) 90°C moist heat decontamination; 3) ULPA filter; 4) 0.2-micron inlet filter for gas inputs; 5) 1-micron air circulation filter.		

All data recorded is specified for standard models with unloaded chambers and tested under optimum factory setting conditions of 23°C and 60% ambient humidity.

*Results are achieved when tested at 37°C as set point. Results may vary if set point changes and calibration is needed.

**For temperature not exceeding 37.2°C.

***Results are achieved when tested at 5% CO₂ as set point. Results may vary if set point changes and calibration is needed.

****For CO₂ level not exceeding 5.2%.

***** Esco does not guarantee condensation-free chamber at humidity level higher than 90%.

GENERAL SPECIFICATIONS		CCL-170B-_-HHS-TS	CCL-240B-_-HHS-TS
CONTROLLER			
Type	Touchscreen		
TEMPERATURE			
Temperature Control Method	Direct Heat and Air Jacket using Microcontroller PI		
Ambient Temperature Range	18 to 32°C (64.4 to 89.6°F)		
Temperature Control Range, °C	Ambient +5 to 60		
Temperature Uniformity, °C *	<± 0.35		
Temperature Fluctuation, °C *	± 0.2		
Temperature Accuracy, °C *	± 0.1		
Temp. Recovery Time** (after 30 seconds door opening, 98% from initial value)	≤5 minutes	≤6 minutes	
CO ₂			
CO ₂ Control System	Microcontroller PI		
CO ₂ Control Range, % CO ₂	0-19.5		
CO ₂ Accuracy, % CO ₂ ***	± 0.1		
CO ₂ Sensor	Infrared (IR) CO ₂ Sensor		
CO ₂ Recovery Time**** (after 30 seconds door opening, 98% from initial value)	≤5 minutes		
HUMIDITY			
Humidification Method	Water pan		
Humidity Range, % RH*****	85% to 90%		
PHYSICAL CONSTRUCTION			
Interior Volume	170 L (6.0 ft³)	240 L (8.5 ft³)	
External Dimensions (W x D x H)	660 x 700 x 906 mm (26.0" x 27.6" x 35.7")	750 x 806 x 906 mm (29.5" x 31.7" x 35.7")	
Internal Dimensions (W x D x H)	505 x 535 x 633 mm (19.9" x 21.1" x 24.9")	595 x 640 x 633 mm (23.4" x 25.2" x 24.9")	
Net Weight	110.5 kg (243.6 lbs.)	133 kg (293.2 lbs.)	
Chamber Construction	Main Body	Electrogalvanized steel with Isocide™ antimicrobial coating	
	Interior Material	Stainless steel, type 304	
	Number of Shelves	4	
	Maximum Number of Shelves	7	
	Shelves Dimensions (W x D x H)	470 x 476 x 16 mm (18.5" x 18.75" x 0.63")	560 x 585 x 16 mm (22.0" x 23.9" x 0.63")
	Maximum Load per Shelf	11 kg/shelf (24.3 lbs/shelf)	15 kg/shelf (33.1 lbs/shelf)
Electrical Configuration (110-130 VAC, 50/60 Hz)	Nominal Power at 37°C	90 W	
	Maximum Power Consumption	1600 W	1700 W
	Full Load Amps	13 A	14 A
Electrical Configuration (220-240 VAC, 50/60 Hz)	Nominal Power at 37°C	50 W	
	Maximum Power Consumption	1500 W	
	Full Load Amps	7 A	
Shipping Weight	130 kg (286.6 lbs.)	153 kg (337.3 lbs.)	
Shipping Dimensions (W x D x H)	830 x 710 x 950 mm (32.7" x 28.3" x 37.4")	880 x 850 x 1110 mm (34.6" x 33.5" x 43.7")	
CONTAMINATION CONTROL			
Contamination Control Methods	1) Main body is electro-galvanized steel with Isocide™ antimicrobial-coating; 2) 180°C dry heat sterilization; 3) ULPA filter; 4) 0.2-micron inlet filter for gas inputs; 5) 1-micron air circulation filter.		

All data recorded is specified for standard models with unloaded chambers and tested under optimum factory setting conditions of 23°C and 60% ambient humidity.

*Results are achieved when tested at 37°C as set point. Results may vary if set point changes and calibration is needed.


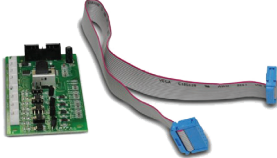

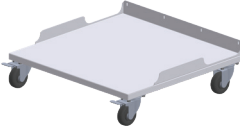
**For temperature not exceeding 37.2°C.

***Results are achieved when tested at 5% CO₂ as set point. Results may vary if set point changes and calibration is needed.

****For CO₂ level not exceeding 5.2%.

***** Esco does not guarantee condensation-free chamber at humidity level higher than 90%.

OPTIONS AND ACCESSORIES

	DESCRIPTION	MODEL CODE	ITEM CODE
	HUMIDITY DISPLAY This option allows the incubator to monitor the relative humidity inside the chamber. 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 and does not need to be removed prior to sterilization.	COA-1001 (factory-installed)	5170470
		COA-1001-F (field-installed)	5170471
	CO₂ 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-1009 (factory-installed)	5171427
		COA-1009-F (field-installed)	5171428
	ANALOG OUTPUT A set of relay contacts is provided at the rear of the incubator that allows the incubator to output analog signals representing the temperature, %CO ₂ , %O ₂ and relative humidity, depending on the options available in the 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-1005 (factory-installed)	5170475
		COA-1005-F (field-installed)	5170476
	2-STAGE GAS REGULATOR FOR CO₂ CO ₂ gas input regulators reduce pressure from the tank to the incubator. It has dual pressure gauges, barbed line connection and shutoff valve. It prevents over-pressurization of the gas supply into the incubator which could cause the tubing to burst.	COA-2005-F	5170481
	EXTRA STAINLESS STEEL SHELF WITH SUPPORT RAILS Each CO ₂ incubator comes standard with 4 shelves and it can accommodate up to a maximum of 7 shelves.	COA-2007-F (for 170 L models)	5170327
		COA-2025-F (for 240 L models)	5170426
	ROLLER BASE Roller base is available with casters for mobility of your incubators and to provide protection against floor contamination.	COA-2001-F (for 170 L models)	5170478
		COA-2019-F (for 240 L models)	5170420
	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-2002-F (for 170 L models)	5170479
		COA-2021-F (for 240 L models)	5170422

OPTIONS AND ACCESSORIES

	DESCRIPTION	MODEL CODE	ITEM CODE
	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-2003-F (for 170 L models)	5170480
		COA-2023-F (for 240 L models)	5170424
	2-UNITS FLOOR STAND STACKING KIT This floor stand allows two incubator units to be stacked without being physically in contact with each other. For the lower unit, it uses roller base for mobility and for easy pull out of the lower unit in case of troubleshooting. Floor stand for upper unit also has casters for easy relocation.	COA-2004-F (for 170 L models)	5170489
		COA-2042-F (for 240 L models)	5170999
	ELECTRONIC CO₂ ANALYZER, FOR CO₂ / TEMP MEASUREMENT (WITH TEMPERATURE PROBE)	COA-2010-F	5170329
	IQ / OQ DOCUMENTATION The execution of the IQ / OQ verifies that the incubator is installed and is operating pursuant to the validated Standard Operating Procedures (SOPs).	COA-2011-F	9010179
	PROtect GEN 2 Esco PROtect Generation 2 monitoring automatically send data to a central server to monitor temperature and other parameters and send real-time alerts to users. It complies with ISO 17025, GMP, and GLP requirements.	PROtect Gen 2	(See PROtect Gen 2 brochure)
	Esco Voyager® 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 freezers.	Voyager	5250001



WolfLabs

Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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Please contact us if this literature doesn't answer all your questions.