



IN VITROCELL ES
energy saver

DIRECT HEAT MICROBIOLOGICAL CO₂ INCUBATORS



The In-VitroCell ES (Energy Saver) NU-5800 Series Direct Heat Microbiological CO₂ Incubators provide a reliable controlled in-vitro environment for optimum tissue cell culture growth. The chamber also provides an environment for the storage and preservation of gametes and animal tissue cell cultures intended for research at body temperature or under hypoxic conditions.

Constant Contamination Control

A unique blend of product features to promote cell growth through the precise control of humidity, temperature, and CO₂ gas while minimizing the potential for contamination creating the most reliable conditions.

Sensitivity and Accuracy of Gas Control

A microprocessor-based, non-dispersive, single source dual wave infrared (IR) sensor controls CO₂ levels within the chamber. The wavelengths used are absorbed by only CO₂ making the measurement insensitive to other components such as water vapor. Advanced design provides a very stable output minimizing drift and requiring less frequent calibration.

Temperature Uniformity and More Useable Space

A large capacity (7 cu. ft.) has more useable space with a small footprint. Chamber walls are directly heated by heating elements on the sides, bottom, top, and back of the chamber, providing a superior temperature uniformity. Dual temperature sensor probes monitor the growth chamber environment making necessary changes when needed. A high-density insulation with a high "R" rating covers the complete outer surfaces of the incubator inner chamber.

CuVerro®

Optional Feature: Add CuVerro® Antimicrobial Copper Surfaces to the incubator growth chamber and/or shelving to kill bacteria* to minimize potential incubator contamination. CuVerro® is laboratory tested and EPA registered. CuVerro® Antimicrobial Copper Surfaces kill more than 99.9% of bacteria* within 2 hours, and continues to kill 99% of bacteria* even after repeated contamination, when cleaned regularly

* Laboratory testing shows that, when cleaned regularly, CuVerro® antimicrobial copper surfaces kill greater than 99.9% of the following bacteria within 2 hours of exposure: MRSA, *Staphylococcus aureus*, *Enterobacter aerogenes*, *Pseudomonas aeruginosa*, and *E. coli* O157:H7. CuVerro® antimicrobial copper surfaces are a supplement to and not a substitute for standard infection control practices and have been shown to reduce microbial contamination, but do not necessarily prevent cross contamination; users must continue to follow all current infection control practices, including those practices related to cleaning and disinfection of environmental surfaces EPA Reg No 85353-5, EPA Est No 088257-MN-001



NU-5840

Dual Sterilization Cycles

Two heated sterilization cycles can be selected to eradicate contaminating agents. The chamber will heat up to 95°C humidified decontamination or 145°C dry sterilization.

Advanced Construction

The inner chamber is constructed of 16 gauge, type 304L, polished stainless steel using crevice-free construction, which provides an easily cleanable inert surface that does not promote biological growth. All shelves, shelf supports, and guide rails are easily removable and can be autoclaved separately.

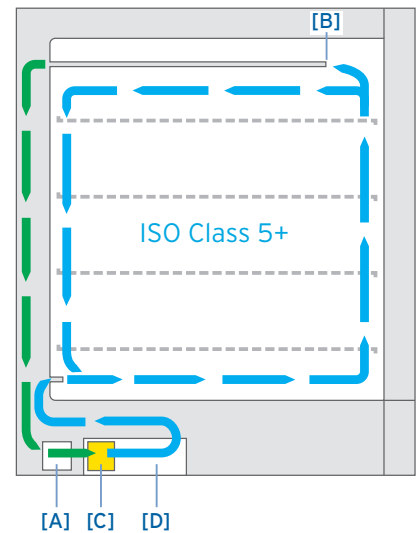


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ISO Class 5 Cleanroom Conditions - Closed Loop HEPA Filtration



A durable air pump [A] continuously draws air from the chamber [B] and circulates the sample through a 99.99% capsule HEPA filter [C] before entering the sensor bay [D] where gas (CO₂, O₂, RH) is measured by sensors. The sampled air is then injected back into the growth chamber as the NuTouch Electronic Control system determines the appropriate course of action to maintain set points. This closed loop system continuously filters chamber air lowering airflow to a single air change every 20 minutes to minimize desiccation. The chamber is maintained at positive pressure similar to an ISO Class 5 clean-room to eliminate potential contaminated laboratory air to enter the chamber even when the door is open.

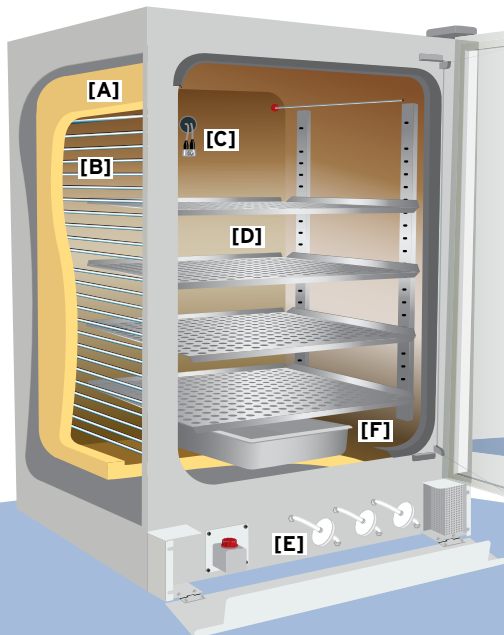


Advanced Design Creating the Perfect Growth Environment



Front Service Access

HEPA filters are accessible on the front of the unit by simply flipping down a panel. Encased are disk HEPA filters for the air, CO₂, N₂, water reservoir fill port, and the sample port to calibrate the incubator's growth chamber.



- [A]** High Density Insulation
- [B]** Direct Heating Elements
- [C]** Dual Temperature Probes
- [D]** Large 7 cu. ft. (200 L) Chamber
- [E]** Front Filter and RH Reservoir Access
- [F]** Seamless Covered Interior Corners



NU-5810, NU-5840
(Stacked Configuration)

NuTouch Incubator Electronics

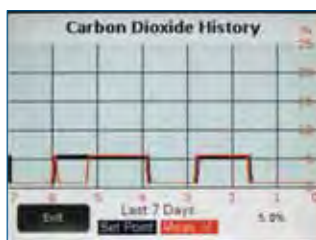


NuTouch

The NuTouch Electronic Control System is a state-of-the-art microcomputer based specifically designed to service the precise control requirements of the chamber environment providing optimum programmable conditions for culture growth. NuTouch is a user-friendly 5" x 7" color touch screen available in English, Spanish, German, and French that provides operating control parameters, status indicators, additional key operational parameters, and an imbedded

touch panel to permit efficient operator entry of data. The microcomputer is supported with Read Only Memory (ROM) containing executable software, Random Access Memory (RAM) for temporary storage, and Electronically Erasable Programmable Read Only Memory (EEPROM) for control set points and parameters. The EEPROM provides for indefinite storage of these values during periods of power off or power interruption (power fault tolerant).

NuTouch Screen Shots:



Hypoxic O₂ Control Options

In-VitroCell NU-5830 and NU-5840

Standard Fuel Cell O₂ Sensor
A standard fuel cell sensor provides basic hypoxic control by displacement with nitrogen.

obstructive pulmonary disease (COPD) in aging humans by suppressing oxygen levels to replicate tissue degradation.

Example Studies:

Tumor Research - Replicate carcinogenic tumor conditions by reducing O₂ levels.

Aging studies - Research pathological conditions such as heart failure, diabetes, chronic

O₂ Range: 2 to 21%

O₂ Accuracy: ± 1.0%

In-VitroCell NU-5831 and NU-5841

Zirconia Ceramic O₂ Sensor
A maintenance-free Zirconia O₂ ceramic sensor provides improved accuracy and lower range hypoxic control by displacement with nitrogen.

differentiation to maintain full pluripotency of cell lines.

O₂ Range: 0.5 to 21%

O₂ Accuracy: ± 0.25%

Example Studies:

Stem Cell Research - Suppressed oxygen environment provides control in stem cell

In-VitroCell™ NU-5800 Series Direct Heat Microbiological CO₂ Incubators

Specifications	Model	Chamber Volume (Ft. ³ / Liters)	Electrical*	Chamber Dimensions (W x D x H)	Exterior Dimensions (W x D x H)	Weight
	NU-58XX	7 / 200	115 VAC / 60 Hz E: 230 VAC / 50-60 Hz *Specify NU-5800 / NU-5800E	21 x 20 x 28 ½ in. 540 x 509 x 724 mm	26 ½ x 27 x 41 ½ in. 673 x 691 x 1054 mm	235 lbs. / 106 kg

Model	CO ₂ Sensor	Sterilization Cycles	RH (Humidity) Control	O ₂ Control
NU-5800	Dual Wave IR		Convection	
NU-5810	Dual Wave IR	145°C Dry / 95°C Humidified	Convection	
NU-5820	Dual Wave IR	145°C Dry / 95°C Humidified	Sensor Controlled	
NU-5830	Dual Wave IR	145°C Dry / 95°C Humidified	Convection	Fuel Cell (2 - 21%)
NU-5831	Dual Wave IR	145°C Dry / 95°C Humidified	Convection	Zirconia (0.5 - 21%)
NU-5840	Dual Wave IR	145°C Dry / 95°C Humidified	Sensor Controlled	Fuel Cell (2 - 21%)
NU-5841	Dual Wave IR	145°C Dry / 95°C Humidified	Sensor Controlled	Zirconia (0.5 - 21%)

Size: 19 ¾" x 18 ¾" (502 mm x 476 mm)
Supplied: 4 Shelves
Max. Capacity: 23 Shelves
Max. Weight Capacity: 20 lbs. (9 kg) per Shelf / 50 lbs. (23 kg) per Incubator



Features

Standard Features

- NuTouch Electronic Control System
- 100% Stainless Steel Coved Interior Chamber
- Dual Temperature Sensor Probes
- Infrared (IR) CO₂ Sensor
- Dual Sterilization Cycles (NU-5810, 5820, 5830, 5840)
- Humidity Control System (NU-5820, 5840)
- O₂ Control System (NU-5830, 5840)
- Four (4) Stainless Steel Shelves
- Eight (8) Stainless Steel Shelf Guides
- Four (4) Wall Brackets
- Right Hinged Door Swing
- Remote Alarm Output Contacts
- 4 to 20 mA Analog Output RS-485 Communication USB Port
- CO₂ Sample Port
- Adjustable Leg Levelers
- Access Port and Plug with Breather Holes
- One (1) Water Pan
- One (1) 6.5 ft. / 2 m Electrical Cord

Optional Features

- CuVerro® Antimicrobial Copper Surface (Interior Chamber)
- CuVerro® Antimicrobial Copper Surface (Shelving)
- Automatic CO₂ Tank Switch (External)
- CO₂ Tank Alarm
- Left Hinged Door Swing
- Additional Shelves with Slide Brackets
- CO₂ Analyzer Fyrite Kit (Dry) 0-20%
- Replacement Fluid for CO₂ Analyzer
- Surge Protector
- CO₂ Regulator (2 Stage)
- Platform with Castors

Temperature Control System

Temperature Sensor Type: Precision Integrated Circuit
Default Set Point: 37°C
Chamber Temperature Range: 5°C to 55°C (5°C Above Ambient to 30°C Max. Ambient)
Chamber Temperature Uniformity: ± 0.35°C @ 37°C
Temperature Accuracy: ± 0.1°C
Temperature Recovery: 0.12°C/Minute Average

Temperature Display Resolution: 0.1°C

Minimum Qualifications for Sterilization:
 145 DEG Cycle 135°C
 95 DEG Cycle 85°C

Electrical Requirements

Startup Power: 625 watts
Running Power: 250 watts, 60 Hz
Decon Cycle: 995 watts
Heat Rejected: 14 BTU / min.

Utility Connections

Gas Connections: 0.25 in. (6.3 mm) Tubing Connections
Gas Input Pressure: 20 PSIG (1.4 BAR) Input Pressures Maximum. Two-Stage Gas Regulators Required.

CO₂ Control Systems

CO₂ Sensor Type: Infrared Single Source Dual Wave Length
CO₂ Control Logic: Fixed Algorithm / Manual Environmental Adaptable.
Default Set Point: 5%
CO₂ Range: 0.1 to 20%. (0.0 Set Point Idles System)
CO₂ Accuracy: ± 0.1%

CO₂ Recovery: Up to 5% -0.50% / +0.20% in 5 Minutes Average.

CO₂ Display Resolution: 0.1%

RH (NU-5820 / 5840)

Default Set-Point: 90%
RH Range: 5% Above Ambient to 90%
RH Accuracy: ± 3%
RH Recovery: 90% + 5% / - 3% 25 min.

O₂ (NU-5830 / 5840)

Fuel Cell Sensor
Default Set-Point: 21%
O₂ Range: 2 to 21%
O₂ Accuracy: ± 1.0%
O₂ Recovery: 5% ± 2% / 20 min.

O₂ (NU-5831 / 5841)

Zirconia Ceramic Sensor
Default Set-Point: 21%
O₂ Range: 0.5 to 21%
O₂ Accuracy: ± 0.25%
O₂ Recovery: 5% ± 2% / 20 min.





For more information please visit
www.nuaire.com or call **1.800.328.3352**

