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SPECIFICATIONS FOR NUAIRE US AUTOFLOW NU-4950 AUTOMATIC CO^2 WATER-JACKETED INCUBATOR

This document is concise statement of requirements for a quality Automatic CO^2 Water-Jacketed Incubator, which may be used to augment your purchase request/order.

A NuAire sales representative will be pleased to explain the importance of the performance and control affected by each of the following requirements. The US AUTOFLOW NU-4950 meets all of the requirements in the following specification.

Overall Dimension - Inches [mm]

Height:	Exterior:	35.0 [889]
Width:		31.0 [787.4]
Depth:		25.5 [647.7]
Height:	Interior:	25.5 [647.7]
Width:		21.5 [546.1]
Depth:		21.0 [533.4]
Volume:	6.65 $Ft.^3$ [188.5 liters]	

1. The outer shell is constructed of 16 gauge, type 304 stainless steel with powder coat paint finish.
2. The inner chamber is 16 gauge, type 304-polished stainless steel using coved corner crevice-free construction.
3. All stainless steel shelves, shelf supports, and guide rails are easily removable for decontamination.
4. The outer chamber's walls are lined with a space-age insulation providing a R.5 rating, minimizing heat loss.
5. The large water-jacket [20 gallon {75.7 liters}] surrounding the inner chamber permits the water to circulate within the jacket, producing a temperature uniformity of ± 0.2° C.
6. A water fill port shall be provided on front of the chamber with a ¼" NPT opening for a " tubing connection. An over fill port on front of chamber will assure optimal water levels. A low water level warning system is activated if water levels fall below proper operating conditions.
7. A drain valve is located on bottom front of chamber for complete drainage.
8. A HEPA filtration system shall be provided. Closed loop HEPA filter system is designed to minimize contamination at a recirculation rate of 1 chamber volume change every 30 minutes.
9. Manually adjustable out front door heater is duty cycle controlled to reduce condensation within the chamber.
10. Incubator shall come with four [4] square polished stainless steel shelves, 8 ft. [2.5m] electrical power cord, utility side access port, and heavy duty leg levelers.

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11. A state-of-the-art microcomputer based control system is specifically designed to service the precise control requirements of the chamber's environment.
12. 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. The microcomputer includes a complete internal diagnostic software package that permits fault isolation detection down to the failed component.
13. The water-jacketed incubator incorporates an integrated digital microprocessor-based, solid-state, non-dispersive infrared CO^2 sensor. Advanced design provides a very stable drift-free output requiring less frequent calibration.
14. The incubator shall be listed by Underwriters Laboratory to meet the requirements of both the U.S. and Canada standards for electrical/mechanical integrity.
15. Relative humidity level up to 95% ±3.0 % is achieved in the incubator by injecting a heated water vapor from a water reservoir tank located outside of the chamber.
16. The humidity control system uses a solid-state capacitance humidity sensor to monitor the relative humidity within the chamber. If humidity is required, the control system will activate a solenoid valve to allow humidified heated vapor into the chamber. The relative humidity display and control offers an accurate and reliable method to control humidity when required.
17. The NU-4950 includes both an Oxygen display and control system.
18. Oxygen sensor shall be a fuel cell type, which generates a linear mVDC signal based on O^2 content in the chamber. An automatic sensor monitors the O^2 fuel cell as the cell depletes. If current output is less than 70% of original output, a "RPL" replace message is indicated on the O^2 display.
19. Incubators are stackable.
20. Performance Parameters

Temperature Range:	5°C above ambient to 55°C
Temperature Sensitivity:	±0.125° C
Temperature Uniformity:	±0.2° C at 37° C
Temperature Accuracy:	±0.0125° C
CO^2 Range:	0.1 - 20 %
CO^2 Accuracy:	±0.1 %
CO^2 Recovery to 5.0 ± 0.2%:	Less than 3 minutes
Temperature Display Resolution:	0.1° C
CO^2 Uniformity:	±0.1 %
CO^2 Display Resolution:	0.1 %
Door Heater Control Logic:	Proportional 1-100% [adjustable]
Temperature Sensor Type:	Precision Integrated Circuit
CO^2 Control Logic:	Fixed Algorithm/Manual Environmental Adaptable
CO^2 Sensor Type:	Infrared
RH Accuracy:	± 3.0 %

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RH Range:	5 % above ambient to 95 %
RH Recovery:	95 % ± 3.0 % within ten minutes
O^2 Accuracy:	± 1.0 %
O^2 Range:	2 to 21 %
O^2 Recovery:	5.0 % ± 2.0 % within ten minutes

RJ-11 Jack - on rear panel for remote alarm connection

21. The following optional equipment shall be available to support installation and user requirements:

    Automatic CO^2 Tank Switch [Internal]
    Automatic N^2 Tank Switch [Internal]
    Internal Coil for Chilled Water
    RS-232 Communication Interface
    Chart Recorder Outputs
    Four [4] Inner Lexan® Doors
    Platform
    Platform with Casters
    Surge Protector
    Moisture Proof Duplex Outlet
    Two-Stage Regulators
    Additional Shelves
    CO^2 Tank Alarm
    O^2 Tank Alarm

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