NUAIRE
A Kewaunee Company

# $CO_2$ INCUBATORS
## FOR RESEARCH LABORATORIES



## DIRECT HEAT AND WATER JACKETED MODELS

made in the USA

# WORLD-CLASS LABS DESERVE
# FIRST-IN-CLASS SOLUTIONS

Empower Your Research with Kewaunee and NuAire.

KEWAUNEE® | NUAIRE

**We are thrilled to share that NuAire is now a Kewaunee company.** This partnership brings together two of the most renowned names in laboratory furnishings, combining world-class portfolios and nearly two centuries of shared expertise to create a powerhouse of innovation and customer-centered solutions.

**Together, Kewaunee and NuAire offer a comprehensive range of laboratory-grade products** that cater to the unique needs of diverse scientific spaces. From Kewaunee's nearly 120 years of experience producing superior lab furniture and fume hoods to NuAire's advanced biosafety cabinets and airflow products, we offer tailored solutions that meet the highest standards of quality, safety,  and efficiency.

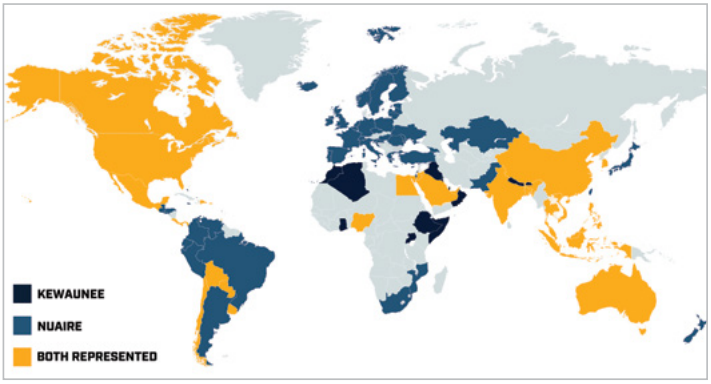
**NuAire has over 50 years of experience** designing and building airflow equipment and is a leading brand in the biocontainment industry. Founded by Max Peters in the early 1970s, NuAire products serve the needs of many industries including microbiological research, animal research, hospital pharmacy compounding, and more.




**Kewaunee Headquarters**
& USA Manufacturing Facilities: Statesville, North Carolina




**NuAire Headquarters**
& Manufacturing Facilities: Plymouth, Minnesota




**Sales Partner Network**

# TOTAL LAB SOLUTIONS

# A WORLD CLASS PARTNERSHIP

## The partnership of Kewaunee Scientific and NuAire allows us to offer comprehensive laboratory equipment solutions and complete laboratory furniture infrastructure.





- Class II Biological Safety Cabinets
- Laminar Airflow Workstations
- Containment Ventilated Enclosures
- Restricted Access Barrier Systems
- $CO_2$ Incubators
- Ultra Low Temperature Freezers
- Animal Transfer Stations
- Animal Refuse Workstations
- Custom Lab Automation Enclosures

- Steel casework
- Wood casework
- Fume hoods & ventilated products
- Adaptable modular systems
- Moveable workstations
- Stand-alone benches
- Epoxy resin worksurfaces and sinks

### A Leader in Lab Equipment

NuAire contributes the key airflow equipment to protect lab environments, personnel, and processes.



### A Leader in Lab Furniture

Kewaunee contributes the key furnishings to create productive laboratory environments for science.



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# A PORTFOLIO OF EQUIPMENT

## OPTIONS FOR CELL CULTURE RESEARCH



# YOUR CHOICES FROM NUAIRE

## DIRECT HEAT AND WATER JACKET MODELS

NuAire's portfolio of $CO_2$ incubators is designed to serve cell culture laboratories around the world with varying priorities. Many laboratories may prioritize the rapid startup time and robust contamination control of direct heat incubators. Other laboratories face uncertain power supplies and changing room temperatures, for which the stability of water jacketed incubators may be ideal. Choose the model that fits your requirements.

### Direct Heat Incubators

Prioritizes Speed & Contamination Control

#### Advantages

- Faster Initial Setup
- Light Weight
- High Heat Decontamination Cycles

**Note:** Direct heat and water jacketed incubators each have advantages and disadvantages. Want to know more? Scan to read a white paper on this topic:

### Water-Jacketed Incubators

Prioritizes Stability in Dynamic Environments

#### Advantages

- Less Impacted by Power Losses
- Less Sensitive to Ambient Temperature Changes
- Less Susceptible to Vibration
- Better Temperature Uniformity

**Note:** Heating technology is just one of many aspects of choosing the right incubator. Want a broader introduction? Scan to read our purchasing guide:

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# IN-VITROCELL
# DIRECT HEAT INCUBATORS

## Superior startup time and contamination control for modern laboratories.

NuAire incubators are designed to serve the needs of cutting-edge modern research centers where start up time and contamination control are top of mind. Our direct heat models get up and running the quickest and most models offer a choice of two decontamination cycles. For quick start up and contamination control, choose NuAire direct heat incubators.



Shown with optional platform

Scan for more information

**Direct Chamber Heaters**
Foil heating elements on chamber walls, top and bottom.

**Chamber Insulation**
High density chamber insulation

**Front Door Heater*** (Illustrated below)
Internal radiant heater

**Perimeter Heater*** (Illustrated below)
Front frame perimeter heater

* Separately adjustable to balance heat and minimize condensation.



**Note:** Conceptual illustration only. Exact size, placement, and design of components may vary.

# CONTROLLED CONDITIONS
# FOR CELL CULTURE GROWTH

## Active control of four key chamber parameters for laboratory cell culture.

The In-Vitrocell offers control of chamber parameters and contamination to laboratories performing advanced cell culture requiring complete control and protection. Unlike incubators that only control a few parameters, our direct heat models can be built to directly control temperature, $CO_2$ and $O_2$ levels, and relative humidity all in one chamber. **Note:** *Parameters controlled vary by model. Example shown for NU-5741/NU-5841 models.*



A



B



C

Direct heat models route fresh air and gas through disk filters on the front when they initially enter the incubator **(A)**. The air pump constantly recirculates chamber air through a separate bay located under the chamber where a capsule HEPA filter cleans it and gas sensors measure its $CO_2$ and $O_2$ levels **(B)**. The air is returned to the chamber after going through a humidity reservoir if more RH is needed **(C)**.
**Note:** *View is from the rear of the incubator construction.*

## Advantages of a Separate Gas Sensor Bay and Humidity Reservoir

- Provides the benefits of constant hepa filtration without obstructing or cluttering chamber space
- Eliminates the need to remove capsule HEPA filter, $CO_2$ and $O_2$ sensors from bay during decontamination*
- Provides active RH control with chamber RH sensor and reservoir instead of a passive water pan†

*Decontamination cycles available on NU-5710, NU-5720, NU-5731, NU-5741, NU-5810, NU-5820, NU-5831, and NU-5841 direct heat models only.
† Direct RH control available on NU-5720, NU-5741, NU-5820, and NU-5841 direct heat models only.

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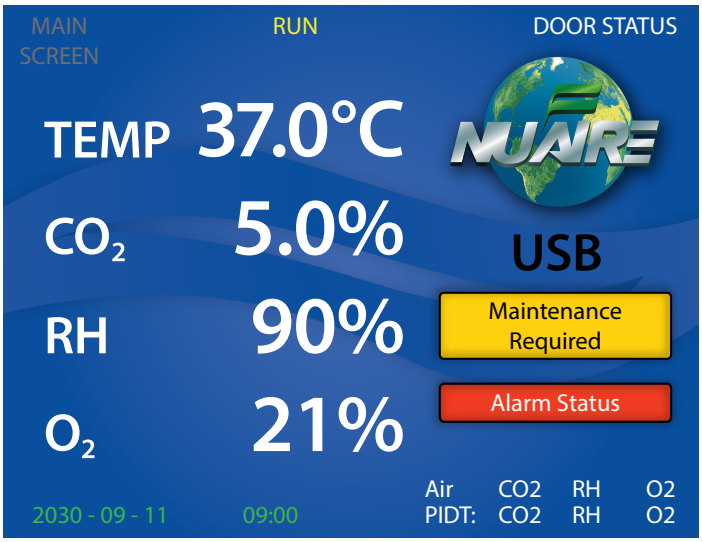
# A SUPERIOR INTERFACE
# FOR USER CONTROL

## Easy control of setpoints via the NuTouch controls

The touch screen allows users to see actual chamber conditions immediately and to adjust the setpoints by simply pressing the same displayed parameters and keying in their target values. As needed, one can drill down to preventive maintenance and service menus. Colorful displays and clear text make navigating the NuTouch easy for any operator task.




### Chamber Parameters
Chamber parameters clearly shown in easy to see readout

### USB Port
USB port next to screen for data downloads or software updates

### Maintenance Reminders
Reminders for changing capsule HEPA filter and refilling the RH reservoir

### Alarm Status
Alarms notification with details on specific alarm(s) if pressed

## Advantages of Full Color NuTouch User Interface

- Easy menu access for both users and technicians
- Setpoint selection
- On-screen graphs of recent chamber parameters
- Step-by-step guidance for decontamination cycles on select direct-heat models
- Sensor calibration and unit diagnostics
- Conveniently located USB port
- Download up to one month of data for logging chamber parameters and key incubator events

# SUPERIOR CONTROL
# FOR DEMANDING RESEARCH

## Key Performance Metrics for Direct Heat Incubators

| Direct Heat | Range | Accuracy | Uniformity | Recovery |
|---|---|---|---|---|
| **Temperature** | 5ºC – 55ºC<br>5ºC above ambient to 30ºC max ambient | +/- 0.1ºC | +/- 0.3ºC @37ºC | 0.12ºC per minute average |
| **Carbon Dioxide ($CO_2$)** | 0.1% - 20% | +/-0.1% | * * * | Up to 5% +0.2/-0.5 in 5 minutes average |
| **Oxygen ($O_2$)** | 0.5% - 21%<br>2%-21% when RH setpoint is above 90% | +/- 0.25% | * * * | 5% +/- 2% in 15 minutes average |
| **Relative Humidity** | Low is Ambient Dependent to 95% maximum | +5% / -3% | * * * | 90% +/- 5% in 25 minutes average |

**Note:** Parameters controlled vary by model. Example shown for NU-5741/NU-5841 models.

## Advantages of Infrared $CO_2$ Sensors



The infrared sensor measures how much of a specific wavelength of light is absorbed when emitted through a sample of the chamber's air in order to calculate $CO_2$ levels. Measurement is not affected by temperature and RH, which may temporarily change after a recent door opening. All In-Vitrocell units use IR sensors.

**Note:** Want to know more about this topic? Scan to read our white paper about IR $CO_2$ sensors:

Scan for more information

# A DISTINCT APPROACH
# TO CHAMBER AIR FILTRATION

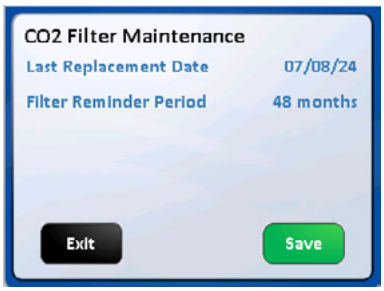
## Constant Contamination Control ($C^3$) for Microbiological Cell Culture

Deciding whether to pick an incubator that filters the chamber air shouldn't be a hard choice. Unlike some designs that may embed a HEPA filter into the chamber or simply exclude it to avoid the resulting clutter, the In-Vitrocell routes chamber air through a capsule HEPA filter located in a sensor bay outside the chamber to provide protection without the drawbacks of clutter.

### Easy Access for Filter Changes



### Timed Capsule Filter Reminder




### Smooth, Cleanable Chamber



### Optional Copper Alloy Parts



### Advantages of Closed Loop HEPA Filtration

HEPA

Closed loop capsule HEPA filtration continuously filters and recirculates chamber air through the sensor bay while helping minimize desiccation on direct heat models. Most filters are easily accessible from the front of the unit, and an on-screen reminder can be set for the large capsule filter.

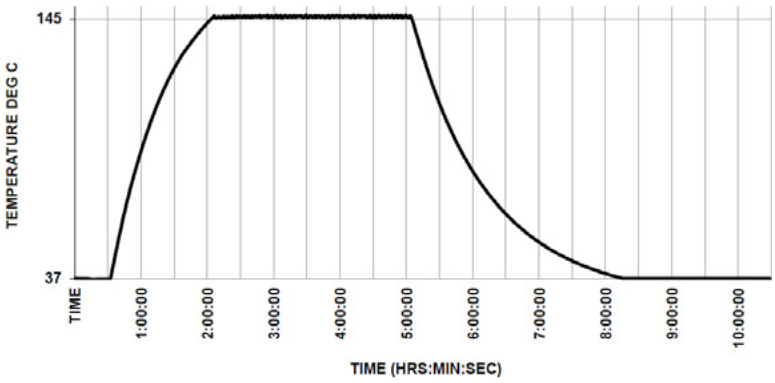
# AN INTEGRATED DEFENSE
# AGAINST CONTAMINATION

## A choice of two decontamination cycles on most direct heat models

The best defenses are layered. Unlike some incubators that may focus on a handful of contamination control features, the In-Vitrocell can include a full suite of features that both prevent contamination on an ongoing basis (such as HEPA filtration) and remove it if there is a need (such as a choice of two decontamination cycles on most direct heat models).

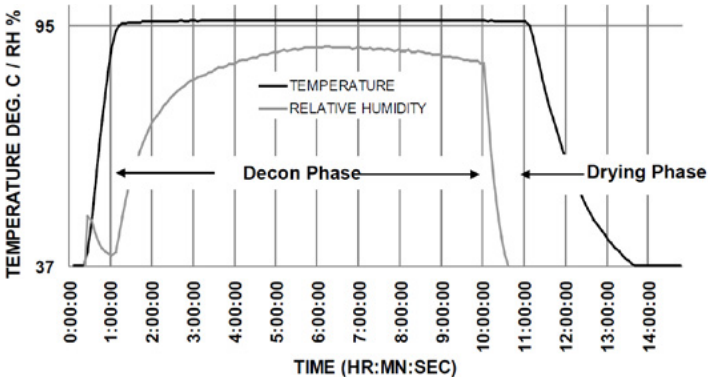
## Run a 145°C cycle in 8 hours or a 95°C humidified cycle in 14 hours










## Advantages of Two Decontamination Cycles

Most In-Vitrocell direct heat models offer two decontamination cycles, allowing you to choose the option that best fits your standard operating procedures (SOPs). On-screen prompts simplify cycle setup, while the unit's design allows all sensors and filters, except the chamber RH sensor, to remain in place during decontamination.

# DIVERSE OPTIONS
# FOR DATALOGGING

## View recent performance, download history, or monitor at a distance

Laboratories often need to demonstrate the conditions under which they performed their cell culture as well as generally monitor the working condition of their equipment. The In-VitroCell not only displays short term history on screen but also allows a month-long history to be downloaded via a USB port (as shown below) or the unit to connect to external monitoring.

## Download a suite of four history files with each USB export performed

| | | Daylog | Weeklog | Monthlog | Eventlog |
|---|---|---|---|---|---|
| TIME | **Collected Every:** | **10 Minutes** | **1 Hour** | **3 Hours** | **Occurence** |
| | **For the Last:** | **24 Hours** | **1 Week** | **1 Month** | **672 Event Records** |
| PARAMETERS | Time Stamp | ✓ | ✓ | ✓ | ✓ |
| | Temperature | ✓ | ✓ | ✓ | |
| | $CO_2$ | ✓ | ✓ | ✓ | |
| | Relative Humidity | ✓ | ✓ | ✓ | |
| | $O_2$ | ✓ | ✓ | ✓ | |
| | Door Ajar | | | | ✓ |
| | Door Closed | | | | ✓ |
| | Power Interrupted | | | | ✓ |
| | Deviations | | | | ✓ |
| | Others | | | | ✓ |

**Note:** Parameters controlled vary by model. Example shown for NU-5741/NU-5841 models. Files for other models may contain default data for RH and/or O2 that should be disregarded.

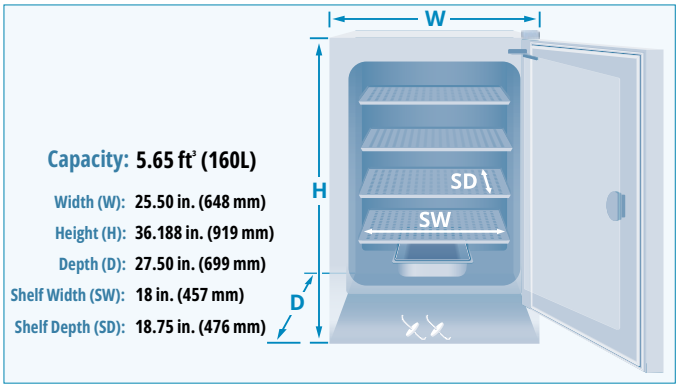
## Connect to a remote alarm, computer, or an external monitoring system




See documentation for complete information on specific data points outputted, setup instructions, etc.

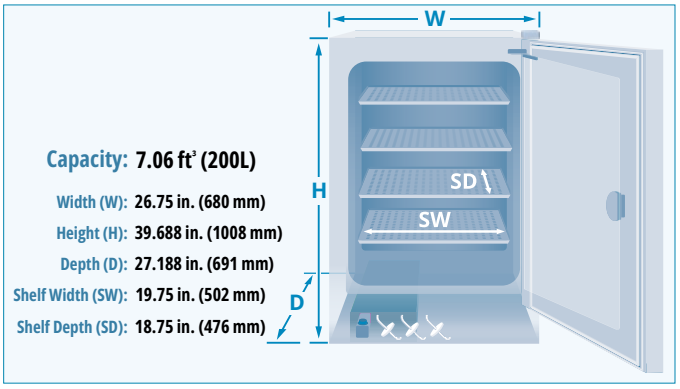
# A CHOICE OF MODELS
# FOR YOUR LAB'S NEEDS

## Choose the incubator size for your volume needs and available space




**Capacity:** 5.65 ft³ (160L)

Width (W): 25.50 in. (648 mm)
Height (H): 36.188 in. (919 mm)
Depth (D): 27.50 in. (699 mm)
Shelf Width (SW): 18 in. (457 mm)
Shelf Depth (SD): 18.75 in. (476 mm)




**Capacity:** 7.06 ft³ (200L)

Width (W): 26.75 in. (680 mm)
Height (H): 39.688 in. (1008 mm)
Depth (D): 27.188 in. (691 mm)
Shelf Width (SW): 19.75 in. (502 mm)
Shelf Depth (SD): 18.75 in. (476 mm)

## Choose the model with the parameters you need to control for your cells

| 160L Model | 200L Model | Temperature Control | $CO_2$ Control | $O_2$ Control | Humidity Control |
|---|---|---|---|---|---|
| NU-5700 | NU-5800 | ✓ | ✓ | | |
| NU-5710 | NU-5810 | ✓ | ✓ | | |
| NU-5720 | NU-5820 | ✓ | ✓ | | ✓ |
| NU-5731 | NU-5831 | ✓ | ✓ | ✓ | |
| NU-5741 | NU-5841 | ✓ | ✓ | ✓ | ✓ |

**Note:** Models NU-5700 and NU-5800 do not have decontamination cycles. Add an "E" to model number for 230V.

## Choose the ideal inner door configuration for your cell culture workflow



**Standard Single Door**



**6 Segmented Doors (200L only)**



**4 Segmented Doors**

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# IN-VITROCELL
# WATER JACKET INCUBATORS

## Superior stability for demanding and dynamic laboratory environments

NuAire incubators serve laboratories around the world. Some face difficult circumstances where everything from the room temperature to the power supply may be unpredictable. For them, we offer water jacket models to minimize the impact of changing ambient temperature, temporary electrical outages, potential vibrations, and risk of dryness on their cell cultures.




Shown with optional platform

**Surrounding Water Jacket**
Circulates water around the chamber

**Chamber Insulation**
Lines outer stainless-steel wall

**Water Jacket Heater** (Illustrated below)
Warms water in the jacket

**Front Door Heater*** (Illustrated below)
Internal radiant heater

* Front door heater duty cycle is adjustable to help balance temperature and condensation.

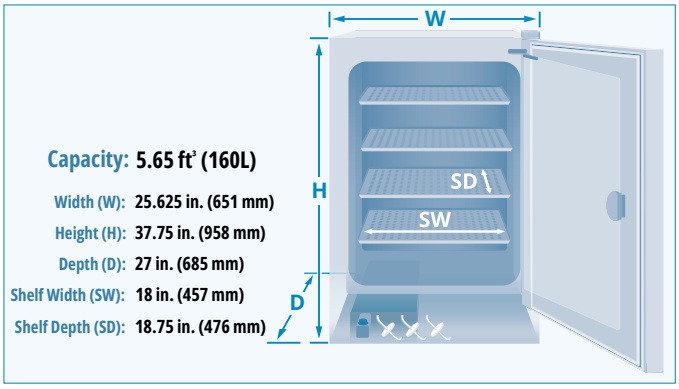


**Note:** Conceptual illustration only. Exact size, placement, and design of components may vary.

Scan for more information

# SUPERIOR STABILITY
# FOR DYNAMIC ENVIRONMENTS

## One compact incubator size is available for your laboratory floorspace




**Capacity:** 5.65 ft³ (160L)

Width (W): 25.625 in. (651 mm)
Height (H): 37.75 in. (958 mm)
Depth (D): 27 in. (685 mm)
Shelf Width (SW): 18 in. (457 mm)
Shelf Depth (SD): 18.75 in. (476 mm)

### Stack Two Units for More Volume

We offer accessories that allow you to stack two incubators to increase overall capacity while making efficient use of valuable laboratory floorspace. See the accessories listed on the following pages.

## Choose the model with the parameters you need to control for your cells

| 160L Model | Temperature Control | $CO_2$ Control | $O_2$ Control | RH Monitoring |
|---|---|---|---|---|
| NU-8600 | ✓ | ✓ | | |
| NU-8625 | ✓ | ✓ | | ✓ |
| NU-8631 | ✓ | ✓ | ✓ | |
| NU-8645 | ✓ | ✓ | ✓ | ✓ |

**Note:** Water jacketed models do not have decontamination cycles or active relative humidity control. Water pans can still be used, and RH monitoring is available. Add an "E" to model number for 230V.

## Choose the ideal inner door configuration for your cell culture workflow



**Standard Single Door**



**4 Segmented Doors**

# A CHOICE OF ACCESSORIES
# OPTIMIZE YOUR INSTALLATION

## Choose essential accessories for a basic incubator installation



**Platform with Castors & Leg Levelers**




**Two Stage Regulator**



**Extra Shelves (4 Included as Standard)**

## Optimize laboratory floorspace by stacking incubators vertically



**Stacking Brackets for Direct Heat Incubators**



**Stacking Accessories for Water Jacket Incubators**



**Stacking Table for WJ or DH Incubators**

**Note**: Not all options and accessories are shown. Please consult your local NuAire sales partner for a complete list of choices.

# A CHOICE OF ACCESSORIES

# OPTIMIZE YOUR INSTALLATION

Provide extra stability to your incubator and cleanliness to your lab



**Automatic Tank Switch**

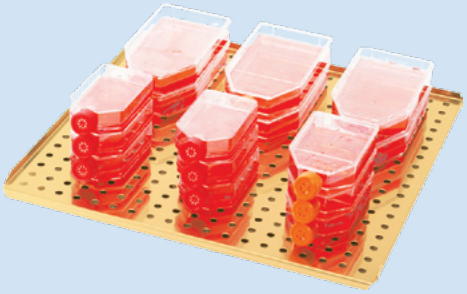


**Surge Protector**

No Image

**Filter Unit**

## Accessorize for contamination control and prepare for future service.



**Copper Alloy Shelves**



**Copper Alloy Water Pan**



**Filter & Tubing Kit**

## Incubator Resources

**Incubator Use & Care**
Explore the role of proper operation and maintenance in successful cell culture.

Scan for the guide

**Direct Heat Maintenance**
10 preventive maintenance tips for keeping direct heat models running reliably.

Scan for the tips

**Water Jacket Maintenance**
10 preventive maintenance tips for keeping water jacket models running reliably.

Scan for the tips

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## ABOUT NUAIRE

Since 1971, NuAire has been committed to bringing the highest-quality, most dependable laboratory products to the market. We are universally recognized as one of the world's leading providers of reliable equipment for the most demanding environments.

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