



Cell culture

# Reliable technology with effortless touchscreen control

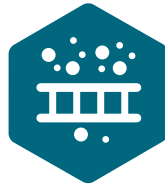
Forma Series 3 Water Jacketed  
CO<sub>2</sub> Incubator

# Reliability, purity and simplicity

For routine cell culture applications



reliability



purity



simplicity



The Thermo Scientific™ Forma™ Series 3 Water Jacketed CO<sub>2</sub> Incubator offers reliability, purity and simplicity. The easy-to-use Thermo Scientific™ iCAN™ touchscreen is intuitive and provides complete data visibility. Reliable temperature stability and HEPA clean room air purity are paired with a simple way to control and monitor your incubator, helping to ensure protection for your important cell cultures. A combination that's truly hard to beat.

- ◀ Easily stackable, large 6.5 cu ft (184.1 liters) capacity, polished stainless steel chamber with choice of CO<sub>2</sub> gas sensors and oxygen control.

# Trustworthy water jacket technology

## Triple-wall construction for enhanced stability



reliability



purity

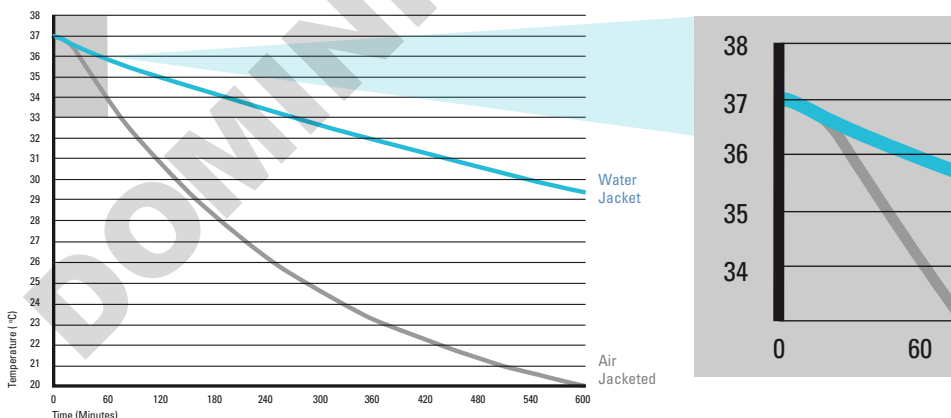


simplicity

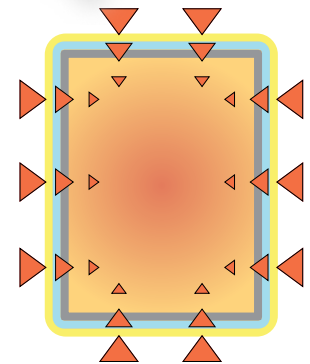
Durable triple-wall construction delivers optimal temperature uniformity. Enables outstanding thermal stability for your valuable cell cultures to help protect against ambient temperature swings and unexpected power outages that can ruin your cultures.

### Protect your cultures from the unexpected

Temperature loss from a power outage or extreme ambient swings can ruin your cultures. Product testing during a power failure in an 18° C (64.4° F) ambient environment showed the water jacketed incubator's temperature gradually dropping just 1° C, from 37° C to 36° C (98.6° F to 96.8° F), in 1 hour and 7.6° C in 10 hours.



- ▶ Water jacketed incubator temperature versus air jacketed incubator temperature during a power failure in an 18° C ambient environment.



- ▶ Unique triple-wall construction provides outstanding temperature stability supplied by dual layers of water and high-quality insulation.

# Feature for contamination control

## In-chamber HEPA air filtration



reliability

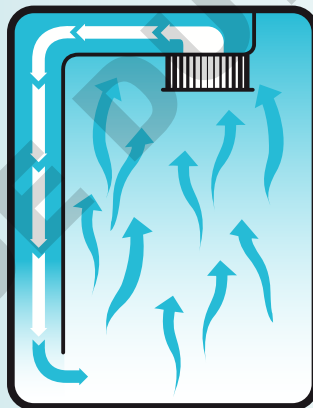
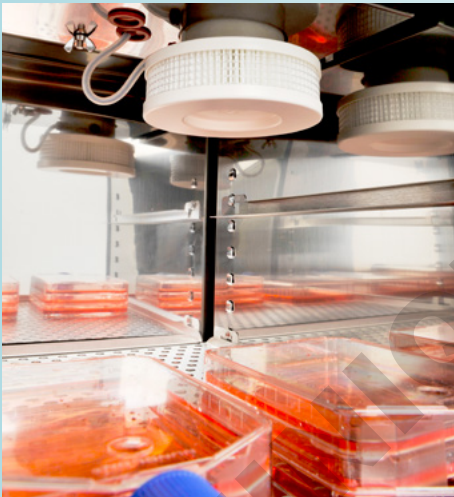


purity



simplicity

Minimize the risk of airborne contaminants entering the incubator from multiple door openings with proven HEPA air filtration system. Maintain your valuable cultures in ISO Class 5 clean room air purity in under five minutes from door opening. HEPA-VOC filters are also available to remove volatile organic vapors often found in lab solvents and cleaning agents that risk the safety of sensitive cultures.

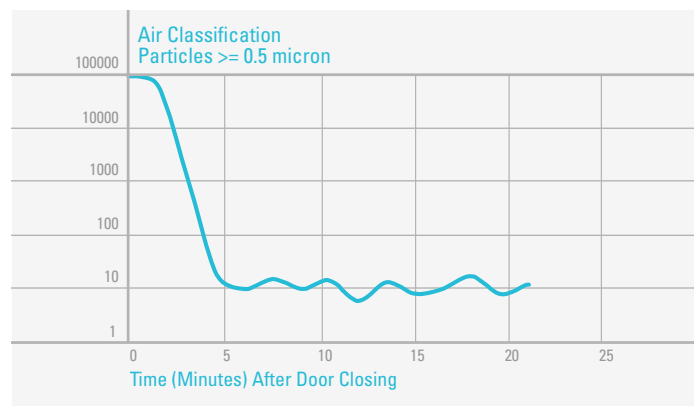


Our patented HEPA Filter Airflow System continuously filters the entire chamber volume every minute for an aseptic atmosphere. Fan-assisted airflow helps prevent stratification and facilitates fast recovery of all conditions after door opening.

### Air quality defined

Federal Standard 209E and International Standard ISO 14644-1 define air quality classifications (e.g., Class 1, 10, 100 and ISO Class 1, 2).

The federal class number is the maximum allowable number of particles  $>0.5$  microns per cubic foot of air. ISO Class 5 correlates most closely to Federal Standard Class 100.



# iCAN touchscreen interface

Intuitive control and complete visibility



reliability



purity



simplicity

Experience data visibility and monitor incubator interaction with the Forma Series 3 CO<sub>2</sub> Incubator providing on-screen menu prompts, error and usage logs, data logging, performance trend graphing, and multiple language selection. Download your incubator performance, including error and data logs, with the installed USB port and provided software.



◀ Door-mounted touchscreen interface provides data visibility to monitor incubator interaction.

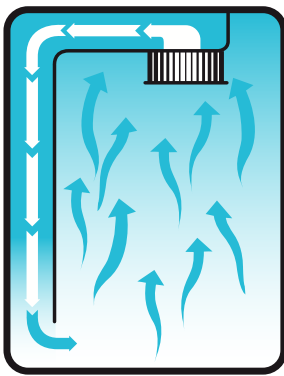
◀ Automatically logs all incubator interactions to better monitor culturing conditions.

# Optimize growth parameters

## With the right technologies

### Fan-assisted air circulation for rapid recovery

For advanced uniformity and recovery, our airflow patterns are specifically designed for optimal distribution on critical environmental conditions such as temperature, gas exchange, and humidity. Efficient circulation minimizes variation between cultures, while preventing desiccation — no matter where your cultures are located in the incubator.



- ◀ Our patented HEPA Filter Airflow System continuously filters the entire chamber volume every minute for an aseptic atmosphere. Fan-assisted airflow prevents stratification and facilitates fast recovery of all conditions after door opening.



Convenient removable humidity pan

### Relative humidity

Humidity is supported with a convenient removable water pan. For applications requiring flexibility and precise monitoring of humidity levels, an optional RH sensor is available for monitoring humidity levels inside the chamber. It displays current conditions on the iCAN with an alarm to alert of low water, and assists in automatically compensating for the effect of RH on CO<sub>2</sub> with thermal conductivity sensors.



# The right sensor

## Choose your in-chamber CO<sub>2</sub> measuring technology

All Forma Series 3 CO<sub>2</sub> incubators feature in-chamber CO<sub>2</sub> sensors positioned near your cultures — responding quickly to any deviations in desired conditions.

Choose from two sensor technology options:

Proven reliable thermal conductivity (TC) sensors for accurate monitoring and long service life for your valuable cultures.

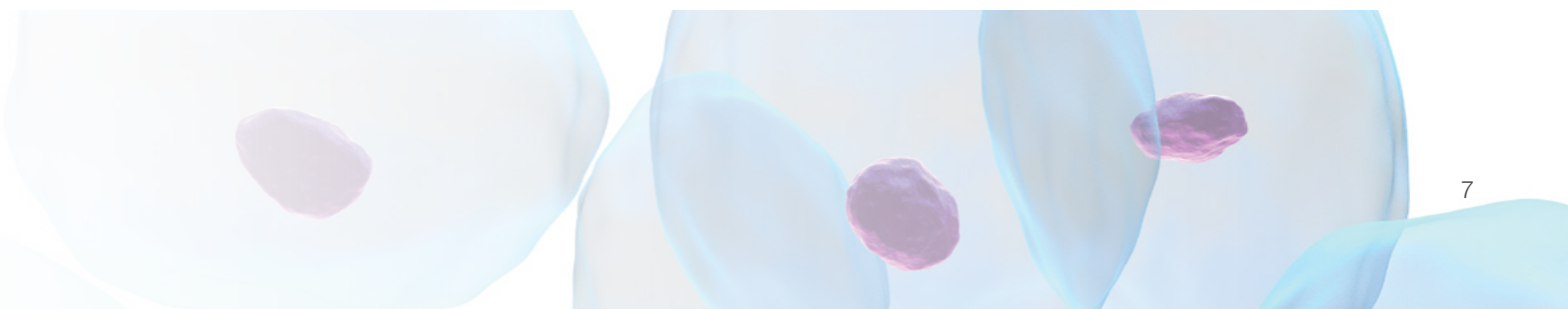
or

Advanced infrared (IR) sensors for precise monitoring where temperature and humidity levels are less predictable due to frequent door openings.

## Enhanced flexibility with complete O<sub>2</sub> control

Many cell cultures thrive best in CO<sub>2</sub> incubators with controlled levels of oxygen. Select an O<sub>2</sub> option to simulate physiological or hypoxic environments in a range of 1–20%. A dedicated O<sub>2</sub> display set point and control allow for accurate monitoring.

Forma Series 3 Incubators are easily stacked.



# Features in detail

All you need for standard cell culture work

Ergonomically designed  
outer door handle

iCAN touchscreen  
controller

## In-chamber probes and sensors

Support accurate and precise  
control of temperature gas  
concentration by being near  
your cultures

Chamber access port

Non-CFC foam-insulated  
outer door (field reversible)

Sturdy stainless steel  
shelves

Polished stainless steel interior  
with 100% covered corners

## Heated inner door with sealed door trim

Proprietary heated, inner glass door  
minimizes potential condensation  
that can cause contamination

Fan-assisted  
directed airflow

## In-chamber HEPA

Enables ISO class 5 clean room air  
quality in five minutes by filtering the  
chamber air every 60 seconds

## Triple-wall construction water jacket

Enhances temperature stability and  
uniformity with layers of thermal conditioned  
water and non-CFC fiberglass insulation

Removable,  
cleanable gasket

Stainless steel  
humidity pan

Adjustable foot

Optional roller base



## Specifications

Details	
Temperature	
Control	±0.1°C
Range	5°C above ambient to 55°C (131°F)*
Uniformity	±0.2°C @ 37°C (98.6°F)**
Tracking alarm	+/-1°C
Temperature safety	
Sensor	Precision thermistor
Controller	Independent analog electronic
Setability	0.1°C
CO <sub>2</sub> /O <sub>2</sub>	
CO <sub>2</sub> /O <sub>2</sub> control	Better than ±0.1%
CO <sub>2</sub> range	0-20%
O <sub>2</sub> range	1-20%
Inlet pressure	15 PSIG (1.0 bar)
CO <sub>2</sub> sensor	T/C or IR
O <sub>2</sub> sensor	Fuel cell
Readability & setability	0.1%
Tracking alarm	+/-1°C
Humidity	
RH	Ambient to 95% @ 37°C (98.6°F)
Humidity pan	3.2 qt. (3.0 liters) standard
Display (opt.)	In 1% increments
Fittings	
Fill port	3/8" (0.95 cm) hose (barbed)
Drain port	1/4" (0.64 cm) hose (barbed)
Access port	1.3" (3.3 cm) with removable silicone plug with filter
CO <sub>2</sub> inlet	1/4" (0.64 cm) hose (barbed)
Unit Heat Load	
115V/230V	344 BTUH (100 Watt)

\* 50°C (122°F) on Model 4120 (4121), 45°C (113°F) on Models 4130 (4131) and 4140 (4141).

\*\*Truncated

Shelves	
Dimensions	18.5" x 18.5" (47.0 cm x 47.0 cm)
Construction	Stainless steel, perforated
Surface area	2.4 sq. ft. (0.2 sq. m)
Maximum per chamber	40.8 sq. ft. (3.8 sq. m)
Standard, maximum	3, 16
Maximum shelf load/ shelf	Shelf load limit 35 lbs. (16kg) slide in and out 50 lbs. (23kg) stationary
Construction	
Water jacket volume	11.7 gal. (43.5 liters)
Interior volume	6.5 cu. ft. (184.1 liters)
Interior	Type 304, mirror finish, stainless steel
Exterior	18 gauge, cold-rolled steel, powder coated
Outer door gasket	Four-sided, molded, magnetic vinyl
Inner door gasket	Removable, cleanable, feather-edged, silicone
Electrical	
4110/4120/4130/4140	115V, 50/60 Hz, 3.6 FLA (operating range 90-125V)
4111/4121/4131/4141	230V, 50/60 Hz, 2.0 FLA (operating range 180-250V)
Circuit breaker/ power switch	6 Amps/2 Pole
Convenience receptacle	75 Watts max. (one per chamber)
Plug	115V: NEMA 5-15P Plug 230V: CEE 7/7 Plug
Alarm Contacts	Power interruption; deviation of temp, CO <sub>2</sub> , O <sub>2</sub> , RH; customer connections through jack on back of unit
Data Outputs (opt.)	USB (standard), 4–20 milliamp (optional)
Dimensions	
Exterior	26.0"W x 39.5"H x 25.0" F-B (66.0 cm x 100.3 cm x 63.5 cm)
Interior	21.3"W x 26.8"H x 20.0" F-B (54.1 cm x 68.1 cm x 50.8 cm)
Weight	
Net	265 lbs. (120.2 kg)
Net operational	365 lbs. (165.6 kg)
Shipping (motor)	324 lbs. (147.0 kg)

## Order information

Product name	CO <sub>2</sub>	O <sub>2</sub>	Voltage	Cat. No.
Forma Water Jacketed Series 3 CO <sub>2</sub> Incubator	T/C	No	115V, 50/60 Hz	4110
	T/C	No	230V, 50/60 Hz	4111
	IR	No	115V, 50/60 Hz	4120
	IR	No	230V, 50/60 Hz	4121
	T/C	Yes	115V, 50/60 Hz	4130
	T/C	Yes	230V, 50/60 Hz	4131
	IR	Yes	115V, 50/60 Hz	4140
	IR	Yes	230V, 50/60 Hz	4141

### Choice of T/C or IR Sensor

Select a T/C sensor when chamber temp and RH are relatively constant. Typically, a T/C sensor has a longer life than an IR sensor. Select an IR sensor when temp and RH levels are changed frequently. With either sensor, elevated RH is critical to prevent desiccation.

All units are UL Listed to United States and Canadian requirements and bear the CE Mark.



### Remote monitoring

4-20mA signal output is included for interfacing with external data collection systems such as the Thermo Scientific™ Smart-Vue™ Pro Remote Monitoring System provides external sensors and CFR-21 compliant software packages suitable for GMP environments. The Smart-Vue Pro system offers a customizable and scalable architecture that is compatible across multiple brands and equipment types, offering self-installation and long range capabilities.

Learn more at [thermofisher.com/smart-vuepro](https://www.thermofisher.com/smart-vuepro)

## Accessories and options

Accessories are customer installed unless otherwise indicated.

Description		Cat. No.
<b>Humidity (RH) sensor and display</b>		
Readable in 1% increments, includes low RH programmable alarm (alerts you of need to add water to humidity pan and a TC sensor that monitors humidity compensation), factory installed		1900587
<b>Shelving, ductwork, and humidity pan</b>		
Stainless steel	Stainless steel shelf and channels	190884
	Solid copper interior ductwork (in place of stainless steel components); includes copper interior ductwork, four shelves, and humidity pan; factory installed at time of order	190656
	Copper interior ductwork	1900057
	Copper perforated shelf with channels	190879
	Copper humidity pan ( <b>Fig. 01</b> )	237020
<b>Filters* and decontamination kit</b>		
Replacement HEPA filter ( <b>Fig. 02</b> )		760175
HEPA value pack (4 filters)		760209
10 disposable polypropylene in-line filters		760210
HEPA filter replacement kit, includes HEPA, in-line, and access port filters		1900067
Replacement HEPA <sup>2</sup> VOC filter		760200
HEPA <sup>2</sup> VOC filter replacement kit, includes HEPA <sup>2</sup> , in-line and access port filters		1900094
HEPA <sup>2</sup> VOC filtration system (kit), converts HEPA filter airflow system to HEPA <sup>2</sup> filtration system, includes HEPA <sup>2</sup> filter and two silicone plugs		760199
Decontamination kit, includes sample port, HEPA filters, sensor gasket, wheel, and miscellaneous components		190651
<b>Door kit, lock, and right hand door swing</b>		
Independent inner glass door kit (eight glass doors with latches), mounts inside heated inner glass door, is removable and can be autoclaved ( <b>Fig. 03</b> )		190650
Door lock for heated inner glass door		190646
Right hand door swing, factory installed at time of order		190666
<b>CO<sub>2</sub> and N<sub>2</sub> accessories</b>		
Built-in gas guards to monitor CO <sub>2</sub> or N <sub>2</sub> , automatically switch from one cylinder to the other when supply is exhausted, factory installed	CO <sub>2</sub> gas guard	1900589
	N <sub>2</sub> gas guard	1900590
Regulators with barbed connection and shut off valve	Two-stage CO <sub>2</sub> gas regulator ( <b>Fig. 04</b> )	965010
	Two-stage N <sub>2</sub> gas regulator	961027
Wall clamp for a CO <sub>2</sub> bottle, includes cylinder holder with web strap		950316
<b>Roller base and stand</b>		
Roller base (heavy-duty steel) with dual-wheel, swivel locking casters and leveling feet; pre-drilled for easy attachment; raises unit 2.8" (7.1 cm) off the floor ( <b>Fig. 05</b> )		190647
Stand (heavy-duty steel) with leveling feet, raises unit 6.5" (16.5cm) off the floor		190648
<b>Data outputs, factory installed</b>		
4-20 milliamp		192078

\*HEPA and HEPA<sup>2</sup> filters are rated a minimum 99.97% efficient at 0.3 microns. Filters are easily replaced without tools.

Description	Cat. No.
<b>Miscellaneous accessories</b>	
Sealed modular incubator chamber, purge with any gas mixture to create a “mini-incubator” inside your incubator for unusual gas and temperature controlled experiments, dimensions: 12.0" (30.5 cm) circular chamber, 4.7" (11.9 cm) high <b>(Fig. 06)</b>	190043
Chamber cooling coil, use with refrigerated water bath/circulator to operate incubator at lower than ambient temperatures, factory installed	190645



Fig. 01 | Copper humidity pan and shelves



Fig. 02 | HEPA air-filter (VOC)



Fig. 03 | Inner glass door kit

Fig. 04 | Two-stage CO<sub>2</sub> gas regulator

Fig. 05 | Roller base and stand



Fig. 06 | Sealed modular incubator chamber