Thermo Scientific
Environmental Chambers

Controlled Temperature Storage Solutions

Optimum uniformity

plus a wide temperature range

Thermo
SCIENTIFIC

A Choice of Environmental Chambers to Meet Your Specific Needs

From stability testing to cell culturing, CO_2, RH, and refrigeration control to temperature-only, and 311 L to 821 L, Thermo Scientific™ environmental chambers are designed to last and meet your needs now and in the future.

If you require a high precision cabinet to meet ICH, FDA, TAPPI, DIN12880 or national testing standards, our **Thermo Scientific 3948/3907 environmental chamber series** is the ideal choice.

- Optimum uniformity and a wide temperature range designed for easy compliance with regulatory requirements.
- Rugged construction and durable shelving for long life.
- Broad range of options to create the perfect fit for your applications.

Consider our **Thermo Scientific 3962 reach-in incubator/environmental chamber** if you are focused on elevated temperature-only segments of drug stability and culture.

- Optimum uniformity and an elevated temperature range designed for easy compliance with regulatory requirements.
- Rugged construction and durable shelving for long life.
- Valuable features for flexibility and cost-effectiveness.

At-A-Glance Chamber Comparison

Type	Thermo Scientific Cat. No.	Temp Range	Uniformity	RH	Size (L)	CO_2
Stability	3948	0°C TO 60°C	±0.3°C @ 25°C to 37°C	Above ambient to 95% @ 37°C	821	Optional
	3907	0°C TO 60°C	±0.3°C @ 25°C to 37°C	Above ambient to 95% @ 37°C	311	Optional
	3962	5°C above ambient to 60°C	±0.4°C @ 30°C ±0.3°C @ 37°C ±0.5°C @ 45°C	N/A	821	N/A

Performance values are based on 15 point measurement at ambient temperature of 22° C and 230V line voltage.

Thermo Scientific Stability Chambers for a Multitude of Applications

This series of environmental chambers meets International Conference on Harmonization (ICH) guidelines for drug substance and product storage testing. The units are ideal for drug stability studies, shelf life testing for packaged products, and insect and other large-scale biological research.

Optimum uniformity and a wide temperature range designed for easy compliance with regulatory requirements

These chambers feature a 0°C to 60°C (32°F to 140°F) temperature range that can be set in 0.1°C increments. The broad temperature range, and optimum temperature uniformity and recovery contribute to an ideal test environment, even when the chamber contains large product loads and low output, heat-generating equipment.

Advantages of our directed horizontal laminar airflow system

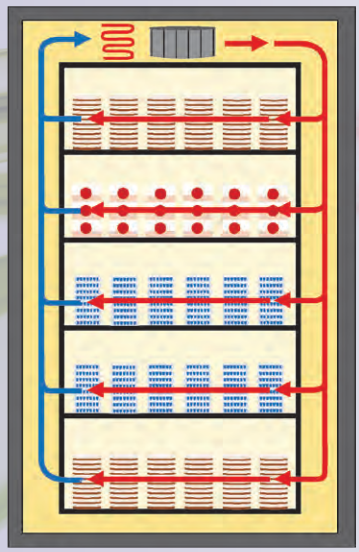
Our directed airflow system (shown below) promotes an ideal growth environment. The enhanced design includes a positive pressure feed plenum on the right side of the chamber and a negative pressure return plenum on the left to distribute the airflow uniformly throughout the chamber.

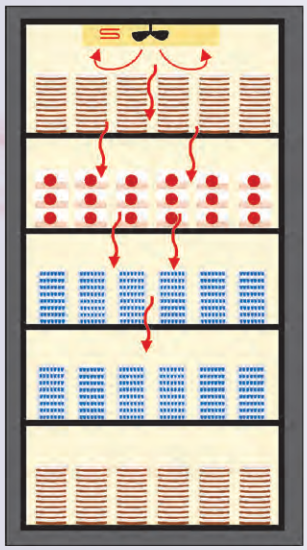
This combination directs air across the surface of each solid shelf. Even when filled with samples or equipment, each shelf receives a consistent flow of conditioned air for optimum temperature uniformity and recovery.

As opposed to our horizontal airflow system, top-to-bottom (non-directed) airflow systems use a top- mounted fan to push air down through wire shelves.

Temperature uniformity and recovery can deteriorate quickly when shelves are filled because air movement is blocked. That variation in temperature, alone or when combined with frequent door openings, may compromise environmental conditions or make process validation difficult.

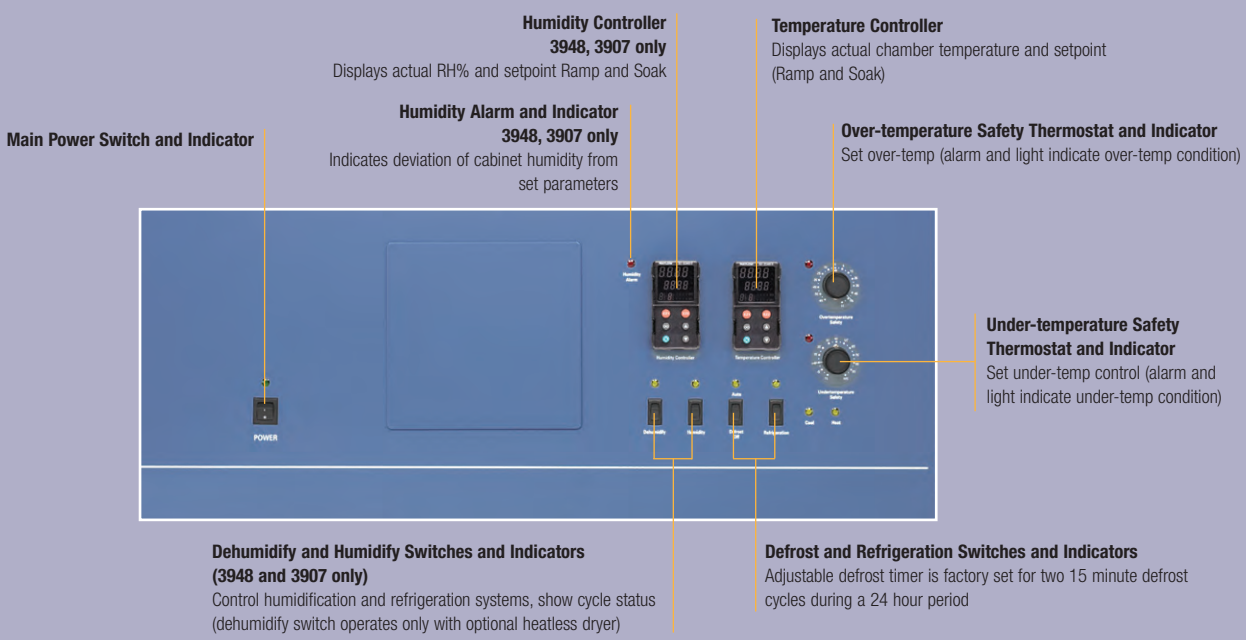
Standard 4 to 20 milliamp output connects to most alarm/monitoring systems, allowing you to meet internal and regulatory product documentation requirements. Chart recorders are also available.





The Thermo Scientific directed airflow design (left) versus a top-to-bottom, undirected airflow design (right).

The directed airflow minimizes the risk of product desiccation and loss, and wasted time and money due to poor temperature uniformity and recovery.



Rugged construction and durable shelving for long life

- Exterior cabinet is 18 gauge cold-rolled steel, powder coated for durability and a high quality appearance that resists scratches and chipping.
- 51mm (2.0") thick, non-CFC, foamed-in-place polyurethane cabinet insulation provides maximum product thermal protection and increased rigidity for reliable daily use.
- Phenolic-coated evaporator protects against corrosive by-products or agents in the chamber atmosphere (e.g., secretions from insects such as flies), designed for long life.
- Solid, stainless steel interior is more durable and corrosion-resistant than plastic or painted metal, designed for long life and minimizing equipment costs.
- Heavy-duty, solid, stainless steel shelves are easy-to-clean, saving time and effort; more corrosion-resistant than coated wire shelves for long life; and adjustable for convenience.
- 821 L models include 6 shelves that are adjustable on 76mm (3 in.) centers.
- 311 L model includes 3 shelves that are adjustable on 51mm (2 in.) centers.
- Reinforced floor/shelf components for 821 L models are available so you can use shakers, cell rollers, or other heavy equipment or product loads inside the chamber to meet a variety of applications.
- Swivel, locking casters designed for easy mobility during installation and cleaning. Leveling feet provide stability and added safety in the lab.

Broad range of options to create the perfect fit for your applications

Many options are available so you can tailor this series to your specific applications.

Factory-installed options (ordered separately) include:

- Choice of access ports for inserting data logging sensors or cables.
- Convenience receptacles to run electrical devices in chamber.
- Choice of chart recorders for data logging.
- Choice of data outputs for monitoring/alarm (3960/3962 models only).
- Infrared CO_2 Control Package for control of a CO_2 environment.
- Heatless dryer for low humidity conditions – check temperature / humidity chart (see page 5 for details).
- Stainless steel glass door cover for light sensitive applications.
- Door options include door lock, left-hand door, and Lexan™ inner door.
- Choice of shaker support systems provides system safety.
- Temperature mapping and calibration certificate – customized.

Accessories/on-site options (ordered separately) include:

- Extra and special shelving.
- Reinforced floor options for heavy weights – up to 68 kg (150 lb.).
- Sensaphone™ telephone dialing systems – interfaces with standard touch-tone phone.

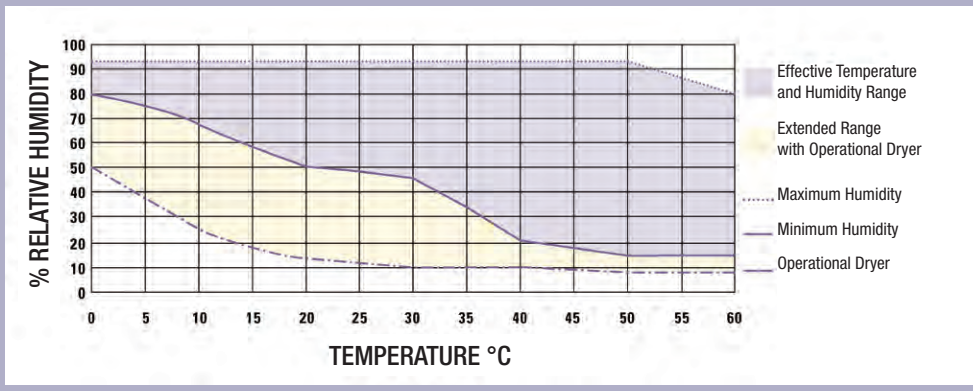
Options for the humidity system:

- Condensate pump kit – recommended when the accessible drain on lab wall is well above the drain on back of environmental chamber.
- Condensate evaporator – external heating device which burns off water that drips out the back of the unit when there is no drain available.
- Cell roll system for production of monolayer cell cultures (see page 7 for details).
- On site IQ/OQ/PQ validation services.

See page 11 for order numbers, model capabilities and additional information.

Temperature/Humidity Performance Chart for 3948 and 3907

This chart illustrates the maximum and minimum attainable humidity within the cabinet at a given set temperature under the following nominal conditions: refrigeration on, defrost off, no wet bulb recorder, no air exchange, set for 22.2°C (72°F) and 50% RH ambient. Optional heatless dryer is available for lower humidity levels.

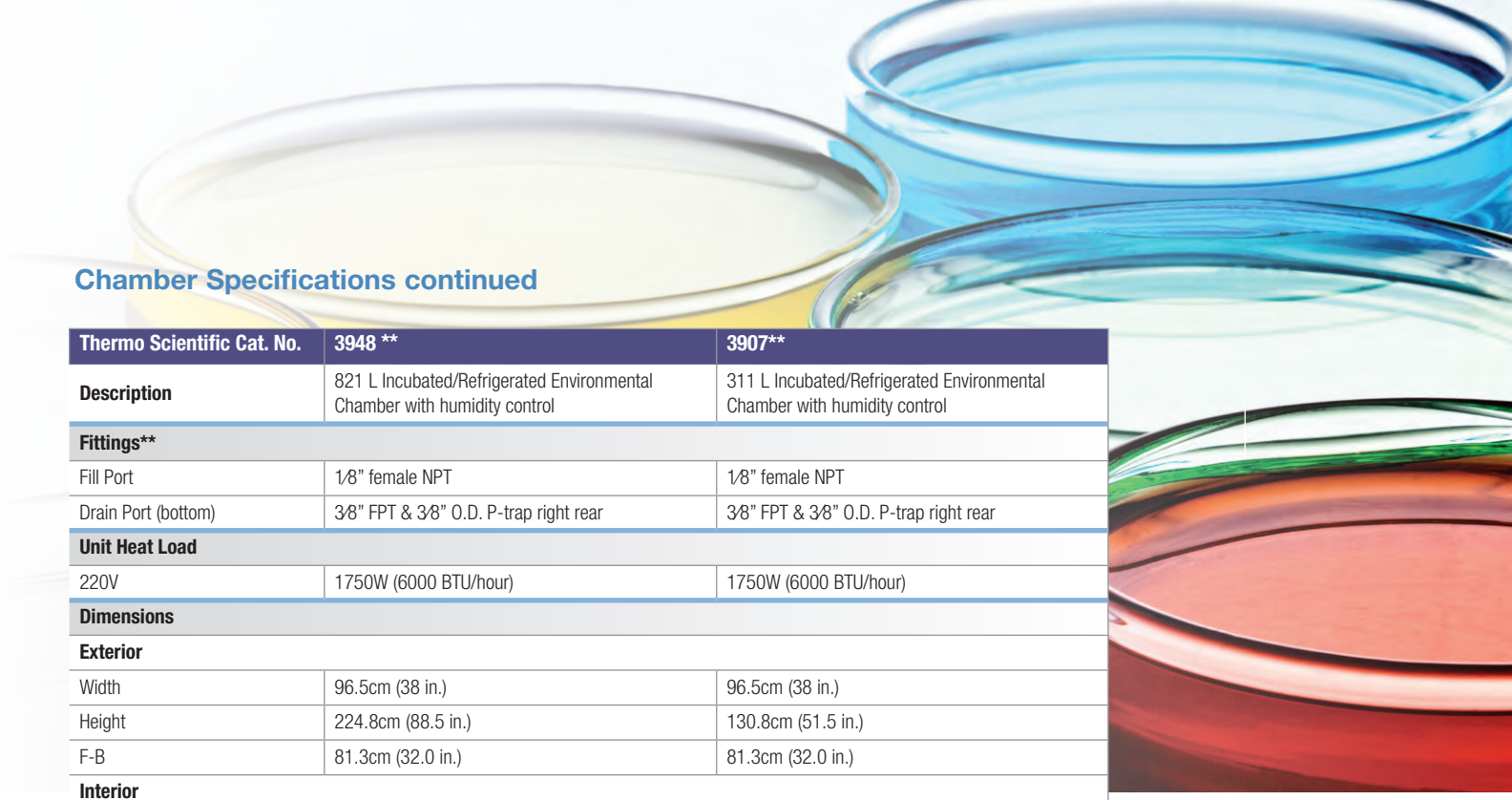


Chamber Specifications

Thermo Scientific Cat. No.	3948 **	3907**
Description	821 L Incubated/Refrigerated Environmental Chamber with humidity control	311 L Incubated/Refrigerated Environmental Chamber with humidity control
Voltage	220-240V, 50/60 Hz	220-240V, 50/60 Hz
Temperature		
Control	±0.1°C @ 25°C to 37°C (77°F to 98.6°F)	±0.1°C @ 25°C to 37°C (77°F to 98.6°F)
Range	0°C to 60°C (32°F to 140°F)	0°C to 60°C (32°F to 140°F)
Sensor	RTD	RTD
Controller	Microprocessor, PID	Microprocessor, PID
Programmability	Ramp & Soak (to 40 steps)	Ramp & Soak (to 40 steps)
Setpoint	Digital	Digital
Display	Digital dual LED	Digital dual LED
Readability & Setability	0.1°C	0.1°C
Uniformity*	±0.3°C @ 25°C to 37°C (77°F to 98.6°F)	±0.3°C @ 25°C to 37°C (77°F to 98.6°F)
Temperature Safety		
Sensor & Controller	Thermostat	Thermostat
Setpoint	Analog reference dial	Analog reference dial
Alarm	Audible/visual	Audible/visual
Refrigeration		
Compressor	185W (1⁄4 HP), air-cooled	185W (1⁄4 HP), air-cooled
Refrigerant	Non-CFC, R134A refrigerant	Non-CFC, R134A refrigerant
Humidity		
Input Water Quality	50K-1Megohm resistance	50K-1Megohm resistance
Input Water Volume	3.78 L/hour (1 gallon/hour)	3.78 L/hour (1 gallon/hour)
Input Water Pressure	Gravity to 2.76 bar (40 psi)	Gravity to 2.76 bar (40 psi)
RH	Above ambient to 95% @ 37°C (98.6°F) ±5.0% RH	Above ambient to 95% @ 37°C (98.6°F) ±5.0% RH
Sensor	Bulk polymer	Bulk polymer
Controller	Microprocessor, PID	Microprocessor, PID
Programmability	Ramp & Soak (to 40 steps)	Ramp & Soak (to 40 steps)
Setpoint	Digital (direct set in % RH)	Digital (direct set in % RH)
Display	Digital, dual LED (direct read in % RH)	Digital, dual LED (direct read in % RH)
Readability & Setability	1.0%	1.0%
Steam Generator	Initial fill approx. 1 liter (1 qt.)	Initial fill approx. 1 liter (1 qt.)
Setable Alarm	Audible/visual	Audible/visual
Certification	CE	CE

*Six shelves in 3948; three shelves in 3907; uniformity is ±0.5°C at all other temperature parameters. Values based on 15 point measurement at ambient temperature of 22ºC, 230V line voltage.

**All models require a drain unless fitted with the optional Condensate Evaporator (No. 1900031). They also require a constant water source.



Chamber Specifications continued

Thermo Scientific Cat. No.	3948 **	3907**
Description	821 L Incubated/Refrigerated Environmental Chamber with humidity control	311 L Incubated/Refrigerated Environmental Chamber with humidity control
Fittings**		
Fill Port	1⁄8" female NPT	1⁄8" female NPT
Drain Port (bottom)	3⁄8" FPT & 3⁄8" O.D. P-trap right rear	3⁄8" FPT & 3⁄8" O.D. P-trap right rear
Unit Heat Load		
220V	1750W (6000 BTU/hour)	1750W (6000 BTU/hour)
Dimensions		
Exterior		
Width	96.5cm (38 in.)	96.5cm (38 in.)
Height	224.8cm (88.5 in.)	130.8cm (51.5 in.)
F-B	81.3cm (32.0 in.)	81.3cm (32.0 in.)
Interior		
Width	78.7cm (31.0 in.)	78.7cm (31.0 in.)
Height	152.4cm (60.0 in.)	60.9cm (24.0 in.)
F-B	68.6cm (27.0 in.)	68.6cm (27.0 in.)
Shelves		
Dimensions	77.8cm x 65.6cm F-B (30.6 in.W x 25.8 in.)	77.8cm x 65.6cm F-B (30.6 in.W x 25.8 in.)
Construction	Solid stainless steel, reinforced	Solid stainless steel, reinforced
Surface Area per Shelf	0.5 sq. m (5.4 sq. ft.)	0.5 sq. m (5.4 sq. ft.)
Max. Surface Area per Chamber	9.7 sq. m (104.3 sq. ft.)	5.5 sq. m (59.4 sq. ft.)
Standard/Maximum Number of Shelves	6, 19	3, 11
Load per Shelf	15.9 kg (35 lbs.), slide in/out 22.7 kg (50 lbs.), stationary	15.9 kg (35 lbs.), slide in/out 22.7 kg (50 lbs.), stationary
Construction		
Interior Volume	821.2 liters / 29.0 cu. ft.	311.5 liters / 11.0 cu. ft.
Interior Material	EN standard 1.4301, 2B, Stainless Steel	EN standard 1.4301, 2B, Stainless Steel
Exterior Material	Cold-rolled steel, powder coated	Cold-rolled steel, powder coated
Outer Door Gasket	Four-sided, vinyl compression	Four-sided, vinyl compression
Electrical	220-240V,50/60 Hz 15.0 Amps	220-240V,50/60 Hz 15.0 Amps
Plug	CEE 7/7	CEE 7/7
Dry Contacts	Common, NO, NC	Common, NO, NC
Data Output	4-20 milliamp, temperature and RH	4-20 milliamp, temperature and RH
Power Switch	2 Pole	2 Pole
Weight		
Net	347.0 kg (765 lbs.)	260.8 kg (575 lbs.)
Shipping (motor)	426.4 kg (940 lbs.)	324.3 kg (715 lbs.)

**All models require a drain unless fitted with the optional Condensate Evaporator (No. 1900031) and a constant water source.

Incubator/Environmental Chamber for Elevated Temperature Applications

The 821 L (29 cu. ft.) chamber 3962 offers precise temperature control in a range of 5°C above ambient to 60°C (140°F), making this unit ideal for clinical applications, elevating temperature stability

- Large size for high volumes and a broad range of products.
- Heated glass door for minimal condensation and a clear view.
- Interior and exterior convenience receptacles, and five adjustable shelves.
- Thermo Scientific™ Enviro-Scan™ controls with easy-to-read display of actual temp studies, and shelf life testing.

Model Number 3962

Cell Roll System

The optional cell roll system allows extensive production of monolayer cell cultures in standard roller culture vessels. Oxygenation and exposure of the cells to the media growth area are improved. Culture yields are increased by the uniform temperature control and cell roll system's continuous, gentle rotation.

The environmental chamber accommodates a cell roller up to 7 decks high with 5 positions per deck for a maximum total of 35 positions, or bottles.

Achieving maximum capacity requires option 4862: a three-tier cell roller base (15 positions), four add-on tiers (20 positions), and a reinforced floor/ramp.

All position drive is standard. Adjustable speed control provides precise speeds of 0.125 to 6.25 RPM with ±1.0% accuracy, based on 110mm bottles.

Optimum Uniformity and an Elevated Temperature Range Designed for Easy Compliance with Regulatory Requirements

Our directed airflow system promotes an ideal growth environment. The proven design includes a positive pressure feed plenum and a negative pressure return plenum. This combination directs air across the surface of each solid shelf. Even when filled with samples or equipment, each shelf receives a consistent flow of conditioned air for optimum temperature uniformity and recovery. By design, the feed plenum cannot be blocked by the chamber's contents.
(Refer to the diagram on page 3.)

Intuitive, powerful Enviro-Scan

> Designed to ensure precise temperature control without complicated programming

> Provides audible/visual under-temperature and over-temperature alarms for peace-of-mind

> Includes an easy-to-read display for convenient, continuous monitoring

- Enviro-Scan operating modes include Run, Setpoint, Calibration, and System Configuration.
- Standard remote alarm contacts and available data outputs allow connection to an in-house monitor/alarm system to track chamber conditions, helping you meet internal and regulatory documentation requirements. Chart recorders are available.

Durable construction and shelving for long life

- Exterior cabinet is 18 gauge cold-rolled steel, powder coated for durability and a high quality appearance that resists scratches and chipping.
- Maximum product thermal protection and added cabinet strength for reliable daily use are provided by the 51mm (2 in.) thick fiberglass cabinet insulation.
- Solid, stainless steel interior is more durable and corrosion-resistant than plastic or painted metal, ensuring long life and minimizing equipment costs.
- Five heavy-duty, solid, stainless steel shelves, adjustable on 51mm (2 in.) centers, are easy-to-clean, saving time and effort; more corrosion-resistant than coated wire shelves for long life; and adjustable for convenience.
- Reinforced floor/shelf components are available so you can use shakers, cell rollers, or other heavy equipment or product loads inside the chamber to meet a variety of applications.

Valuable features included for cost-effectiveness and flexibility

Casters, access ports, convenience receptacles, heated glass door, and remote alarm contacts – all are included up-front. Our 3962 Incubator/ Environmental Chamber is prepared to meet your changing application needs without the added cost of expensive add-on options.

- Swivel, locking casters ensure easy mobility during installation and cleaning. Leveling feet provide stability and added safety in the lab.
- Thru-wall access ports, located on the right and left sides of the chamber, make it possible to add probes, sensors, etc. without altering the cabinet.
- Interior and exterior accessory receptacles provide a convenient power source.
  - > Interior receptacle European 230V CEE 7 on 3962 located in the upper right corner of the rear wall, permits the use of shakers, cell rollers, and other equipment inside the chamber, eliminating the inconvenience of an extra external power strip.
  - > Exterior receptacle, located on the upper-right side of the control panel, is available for connecting an optional recorder or other equipment.

Chamber Specifications continued

Thermo Scientific Cat. No.	3962
Description	**821 L Incubated Environmental Chamber**
Voltage	200-230V, 50/60 Hz
Temperature	
Control	±0.1°C
Range	5°C above ambient to 60°C (140°F)
Uniformity	±0.4°C @ 30°C (86°F) / ±0.3°C @ 37°C (98.6°F) / ±0.5°C @ 45°C (113°F)
Low Alarm	User programmable and indicator
Over-temperature	
Sensor	Precision thermistor
Setability	0.1°C
Function	User programmable, action (shuts off heat), and indicator
Temperature Safety (Cabinet)	
Sensor	Independent thermostat
Type	Independent analog electronic
Fittings	
Access Port With Stopper	6.1 cm (2.4 in.) I.D., one on each side
Unit Heat Load	
115V/230V	150W (510 BTU / hour); 129 kcal per hour
Shelves	
Dimensions	77.7cm x 65.5cm F-B (30.6 in. W x 25.8 in.)
Construction	2B finish, solid stainless steel
Surface Area	0.5 sq. m (5.4 sq. ft.) per shelf
Max. per Chamber	13.0 sq. m (140.4 sq. ft.)
Standard/Maximum No. of Shelves	5, 26
Loading	13.6 kg (30 lbs.) per shelf, fully inserted and stationary; not to exceed 136.0 kg (300 lbs.) total per cabinet
Construction	
Interior Volume	821.2 liters (29 cu. ft.)
Interior Material	Type 304, 2B finish, stainless steel
Exterior Material	Cold-rolled steel, powder coated
Insulation	5.1cm (2.0 in.) fiberglass
Exterior Door	Heated, triple pane, tempered glass
Outer Door Gasket	Molded vinyl
Electrical	
	200/230V, 50/60 Hz, 5.0 Amps (Operating range 180-250V includes voltage fluctuations)
Circuit Breaker/Power Switch	8 Amps; 2 pole
Exterior Convenience Receptacle	75 Watts maximum (matches cabinet voltage)
Interior Convenience Receptacle	230 Watts maximum (matches cabinet voltage)
Plug	Plug 230V: CEE 7/7 Plug
Alarm Contacts	Temperature deviation and power failure; Common, NO, and NC; customer connections through RJ11 jack on rear of unit
Data Outputs (opt.)	RS-485, 0-1V, 0-5V, 4-20 milliamp
Dimensions	
Exterior	96.5cm x 203.2cm x 83.8cm F-B (38.0 in. W x 80.0 in.H x 33.0 in.)
Interior	78.7cm x 152.4cm x 68.6cm F-B (31.0 in. W x 60.0 in.H x 27.0 in.)
Weight	
Net	226.8 kg (500 lbs.)
Shipping (motor)	299.4 kg (660 lbs.)
Certification	CE

Specifications are based on nominal voltages of 230V in ambients of 22ºC to 25ºC.
Performance is plus or minus the least significant digit unless otherwise specified.

Accessories (All are customer installed unless indicated otherwise)

Thermo Scientific Cat. No	Description
Shelving	
Stainless Steel Shelves for 3948, 3907, and 3962	
224139	Solid Stainless Steel Shelf and Channels for 3948, 3907 and 3962
224155	Perforated Stainless Steel Shelf and Channels for 3948, 3907 and 3962
224161	Reinforced Stainless Steel Shelf and Channels for 3948, 3907, and 3962; two per unit max., not for shakers; 68.0 kg load maximum with shelf fully inserted and stationary
Shaker Support System, factory installed	
1900005*	Two shelf shaker support system without duplex outlet, each shelf will hold 90 kg. for 3948 and 3962. Must be ordered with duplex outlet (505099 or 505094)
190761*	Three shelf shaker support system includes duplex outlet, each shelf will hold 90 kg for 3948 and 3962
Door Options, factory installed	
190239	Lexan® Inner Door Kit (five doors) for 3948 and 3962; factory installed
190514	Door Lock Assembly for 3948 and 3962; factory installed
190597	Left-Hand Door Swing Kit for 3948; factory installed
Stainless Steel Door Glass Covers	
190591	For 3948 and 3962; factory installed
190892	For 3948 and 3962**
Reinforced Floor Options	
500182***	Reinforced Floor with Removable Ramp for 3948 and 3962; accommodates a cell roller
190777***	Same as No. 500182 but factory installed
Access Ports, factory installed	
505101	Port for 3948 and 3907; 38mm I.D.; on center right wall
193004	51 mm nominal ID port with cover
190164	Port for 3962, 61 mm I.D., customer specified location
193005	102 mm nominal ID port with cover
193006	152 mm nominal ID port with cover
Convenience Receptacles, factory installed	
505094	230V (includes separate line cord) for 3948 and 3907; located on center rear wall
Data Outputs (select one) for 3962, factory installed	
190523	RS-485 interface (compatible with 1535 Monitor/Alarm only)
190512	4-20 milliamp
190543	0-5V
190544	0-1V
Sensaphone Telephone Dialing Systems, interface with standard touch-tone phone	
400047	For up to four input channels
400134	For up to eight input channels

Thermo Scientific Cat. No	Description
Chart Recorders and Paper	
6 in., 7 Day Chart Recorders for 3948 and 3907; 0°C to 60°C (32°F to 140°F)	
201144	Single Pen, factory installed
201145	Single Pen, onsite installation
201146	Dual Pen, factory installed
201147	Dual Pen, onsite installation
6 in., 7 Day Chart Recorders for 3962, 0°C to 60°C (32°F to 140°F)	
201156	Single Pen, 230V, 50/60 Hz
6 in. Chart Paper for Recorders, 50 per box	
180006	For Single Pen, 0°C to 60°C (32°F to 140°F)
197030	For Single Pen, -10°C to 70°C (14°F to 158°F)
197075	For Single or Dual Pen, 0°C to 100°C (32°F to 212°F)
RH System Options	
1900391	Condensate Evaporator for 3948 and 3907; includes separate line cord; 240V
1900139	Heatless Dryer Kit for 3948 and 3907, for sub-ambient chamber RH, factory installed; The heatless dryer requires an air supply of 6.2 bar (90 PSI) at 17 m3/h (10 CFM) compressor, at minimum. It is recommended that the air supply be greater than the minimum required by the dryer.
Deionization Cartridge Assembly for chambers with humidity and no DI water source	
019-168-00	DI cartridge assembly includes DI cartridge, wall bracket, pressure regulator and gauge and 1/4" flexible tubing
585-036-00	Replacement DI cartridge
Calibration Certificate and Temperature Mapping with Report	
260045	Temperature Mapping Report (factory installed)
260049	Calibration Certificate (specify test parameters)
cGxP Protocols and on site Validation Services**	
GLP Level Protocols (IQ OQ)	
IOQDOCE89003499	For 3962
IOQDOCE89003710	For 3948, 3907
GMP Level Protocols (IQ OQ PQ)	
IOPQDOCE89003499	For 3962
IOPQDOCE89003710	For 3948, 3907
GLP Level Field Validation (IQ OQ) Performed at the customer site (protocol included at no extra charge)	
IOQPCKE89003499	For 3962
IOQPCKE89003710	For 3948, 3907
GMP Level Field Validation (IQ OQ PQ) Performed at the customer site (protocol included at no extra charge)	
IOPQPCKE89003499	For 3962
IOPQPCKE89003710	For 3948, 3907
Miscellaneous Accessories Infrared CO2 Control Packages, factory installed	
1900227	For 3948 and 3907
Cell Roll System	
4868	Three-Tier Cell Roller Base (15 positions), 230V, 50/60 Hz, 757mm W x 706mm H x 620mm F-B (29.8" x 27.8" x 24.4")
190049	Add-On Tier (5 positions), 29.8"W x 7.1"H x 24.4"F-B (75.7cm x 18.0cm x 62.0cm), customer installed
190777	Reinforced Floor with Removable Ramp, ramp extends 23.0" (58.4cm), factory installed
500182	Same as No. 190777 but customer installed
228077	Rotation Alarm System, includes annunciator jack, factory installed
228078	Battery Back-Up, provides 24 hours of power if a power failure occurs, factory installed
475560	110mm x 285mm Glass Bottles (4 per case)

Warranty

We confidently back our environmental chambers with a standard limited two-year parts and labor warranty.

*Rubber isolators replace casters for maximum stability.
**Must be installed by qualified personnel.
***Ramp extends approximately 584mm (23") in front of the chamber.
****Specification sheets for protocol and field validations are available for review upon request.

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.